HUNGARIAN HEALTH MANAGEMENT ASSOCIATION

Gesundheit Österreich Forschungs- und Planungs GmbH

HEAL NOW

Cooperation Agenda 2030 – Strategic Plan for

Cross-Border Cooperation between Austria and Hungary

Interreg Austria-Hungary
European Union – European Regional Development Fund
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1 THE HEALTH AND SOCIAL CONDITIONS IN THE BORDER REGION

1.1 Demographic characteristics of the border area - HUN

In this part, the demographic and socio-economic characteristics of the border area, the health status of the population, the state of the labour market and the volume and main directions of labour mobility has been explored.

According to the data at the end of 2020, a total of 989.476 people lived in the Nyugat-Dunántúl region. Among the three Hungarian NUTS3 regions (hereinafter counties), Győr-Moson-Sopron county is home to almost half of the population living on the Hungarian side of the border region (462.474 people), while 251.719 people live in Vas county and 275.283 people in Zala county. Between 2016 and 2020, the population stagnated at the regional level, but the population varied between counties. Győr-Moson-Sopron county was able to record a population increase, while the population decreased by 1% in Vas county and by 2,1% in Zala county during the 5 years examined.

As one of the main indicators of demographic trends, the **total fertility rate (TFR)** of a population is the average number of children a hypothetical cohort of women would have at the end of their reproductive period if they were subject during their whole lives to the fertility rates of a given period and if they were not subject to mortality. The total fertility rate is the sum of the age-specific fertility rates for all women multiplied by five. In line with the national trends, the highest numbers of life births are among women between the ages of 25 and 29 and between the ages of 30 and 39 in the region. A significant difference is that women aged 15 to 19 gave birth to an average of less than half as many children in 2019 as the national average, and the number of children born to women aged 20 to 24 was a quarter below the national average. Within the region, later births are most common in Győr-Moson-Sopron county, while the number of children born at a younger age is much higher in Zala county. The value of total fertility rate increased by almost 14% to 1,35 in the Nyugat-Dunántúl region between 2001 and 2019, but the value of the indicator remains very low compared to Hungarian (1,49) and European (1,53 in EU27 according to Eurostat data) averages. In terms of the value of TFR in 2019, there is no notable difference between the counties, however, examining the change between 2001 and 2019, there was a larger increase in the case of Zala (+15,7%) and Vas (+14,7%) counties than in case of Győr-Moson-Sopron county (+11,6%).

Table 1: Number of live births per thousand women by age groups, 2019

Territorial level	15-19	20-24	25-29	30-39	40-49
Győr-Moson-Sopron	7,3	31,0	81,8	68,9	5,0
Vas	9,1	37,7	83,0	65,1	4,1
Zala	14,3	41,8	73,5	62,1	5,2
Nyugat-Dunántúl	**9,6**	**35,4**	**80,2**	**66,3**	**4,8**
Hungary	**21,0**	**47,6**	**79,1**	**68,1**	**6,1**

Source: KSH

Table 2: Total fertility rate in 2001, 2012 and 2019

Territorial level	2001	2012	2019	Change between
Győr-Moson-Sopron	1,21	1,25	1,35	+11,6
Vas	1,19	1,18	1,36	+14,7
Zala	1,17	1,21	1,35	+15,7
Nyugat-Dunántúl	1,19	1,22	1,35	+13,9
Hungary	1,31	1,34	1,49	+14

Source: KSH

The natural change of the population is determined by birth and death rates. Due to the distorting effects of COVID-19 on mortality statistics, it is worth comparing regions based on 2019 data. In 2019, the number of live births per thousand of population per year was 8,1 ‰ in the region, which is 1‰-point below the national average (9,1‰). In Győr-Moson-Sopron county the value of the **birth rate** was above the regional average mainly due to the younger age structure and the larger number of young adults however, it did not reach the average there either. In the case of Vas county (8‰) and Zala county (7‰), remarkably less children were born than the national trend.

For the Nyugat-Dunántúl region as a whole (12,6 ‰), the **mortality rate** is below the national average (13,2 ‰), but the value of the indicator is above 10‰ for all three counties. Significant differences can be observed within the region. In Győr-Moson-Sopron county (11,2‰), notably fewer deaths were registered in proportion to the population than in Vas county (13,3‰) and especially in Zala county (14,4‰). Differences in mortality rates may be due to age structure and different existential conditions. In terms of mortality, there has been a significant improvement in infants and young children over the longer term; the improvement in mortality rates was more modest among the elderly, while the trend in mortality among the working age population – especially among men – did not improve markedly.

Table 3: The value of indicators describing natural population change in 2019 and 2020

Territorial level	Birth rate (‰)		Death rate (‰)		Natural population growth (‰)	
	2019	2020	2019	2020	2019	2020
Győr-Moson-Sopron	8,8	9,4	11,2	12,7	-2,4	-3,3
Vas	8,0	8,6	13,3	14,9	-5,3	-6,3
Zala	7,0	7,2	14,4	16,3	-7,4	-9,1
Nyugat-Dunántúl	8,1	8,6	12,6	14,2	-4,5	-5,6
Hungary	9,1	9,5	13,2	14,5	-4,2	-5,0

Source: KSH

Comparing the number of deaths and births, it can be concluded that the border area is characterized by a **natural population decline** (-4,5‰), barely above the Hungarian average (-4,2‰), which means a total number of 4.446 people in case of 2019. The volume of population decline was particularly high in Zala county (-7,4‰); it was also substantially above the national average in Vas county (-5,3‰), while in Győr-Moson-Sopron county the loss was only 2,4‰, which is one of the lowest values among the Hungarian counties.

The natural population decline could be offset by the region's **migration gains**. As the data in Table 4 also show that in the 5-year period between 2016 and 2020, compared to the 2016 population, 1,3% more people migrated to the area than those who left the region, which means a total amount of 12.329 people. The border region is one of the winning areas for intra-country migration in Hungary. The prosperous economy and labour market of the Nyugat-Dunántúl region attract a significant number of active-age people from the less developed regions, mainly from Eastern Hungary. The other most important factor is the proximity of the Austrian border, and thus commuting to Austria on a daily, weekly or even monthly basis. The highest migration gain was in Győr-Moson-Sopron county, the population of Vas county increased by almost 1% due to migration processes, while there was no considerable change in Zala county. The immigration surplus has increased the population of the cities and their surrounding areas in the region: primarily the agglomeration area of Győr.

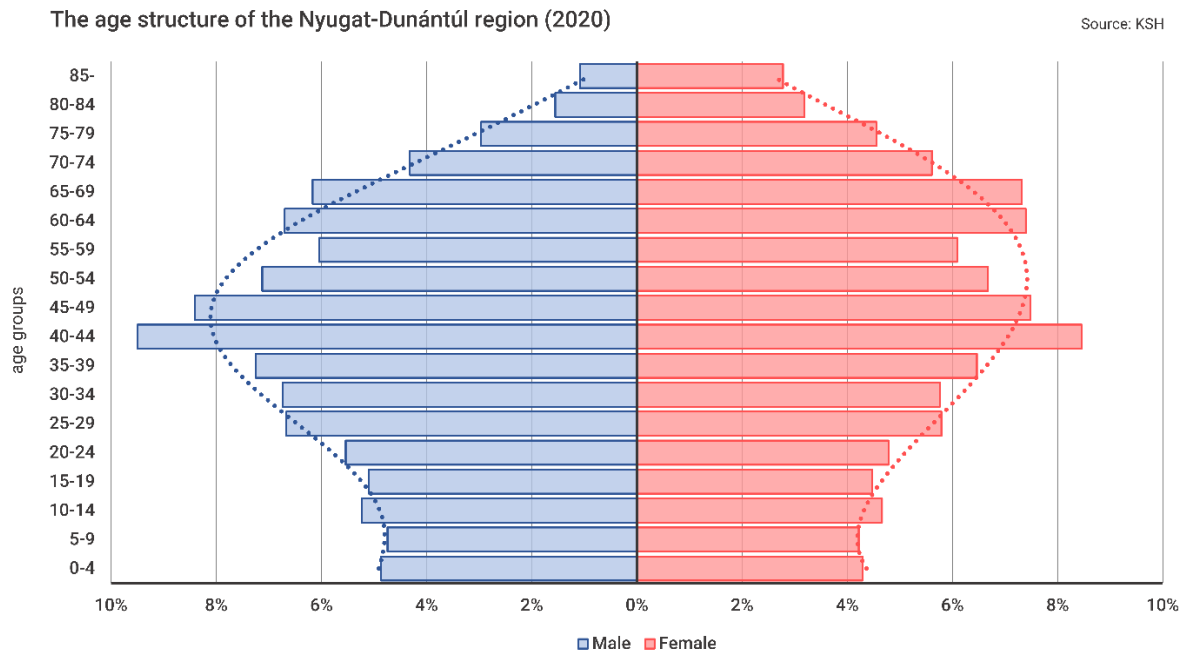
Table 4: Migration rate between 2016 and 2020

Territorial level	Migration rate (%)					
	2016	2017	2018	2019	2020	**2016–2020**
Győr-Moson-Sopron	+3,5	+3,6	+5,1	+4,6	+4,3	**+2,2**
Vas	+1,4	+1,8	+2,1	+2,1	+1,8	**+0,9**
Zala	-0,6	+0,1	+0,1	+0,4	+0,3	**0,0**
Nyugat-Dunántúl	+1,8	+2,2	+3,0	+2,9	+2,6	**+1,3**

Source: KSH

In the **age structure** of the region, the share of the child population (13,8%) is smaller than the national average, which raises problems regarding the reproduction of the population. The active population (67,4%) has a share above the national average – especially in case of population between 40 and 49 – while the proportion of the elderly population (population above 65) in the region as a whole is in line with national trends.

Figure 1: Age structure of the Nyugat-Dunántúl region



Source: KSH

There are differences between the age structure characteristics of the three counties in the border region. In the age structure of Győr-Moson-Sopron county, the share of those under 15 years of age (14,7%) and the share of the working age population is the highest (67,9%), while the elderly population here makes up the smallest part of the county's population (17,4%). In Zala county, the proportion of children is the lowest in Hungary and the proportion of the elderly is high compared to the national and regional averages. Demographic conditions are clearly the most unfavourable in the southernmost county of the border region, which is far from the west-east economic axis crossing the northern part of the border region. In terms of age composition, Vas county is somewhere "between" the other two counties; the relatively low number of children presents a challenge here as well. Focusing on the change in the share of each cohort in the last 5 years, there was a significant decrease in the proportion of the working-age population in Zala county and a marked increase in the number of elderly people.

In contrast, in the case of Vas county, an increase in the proportion of the working-age population and a decrease in the proportion of the elderly can be detected. In the case of Győr-Moson-Sopron county, there was no notable change between 2016 and 2020.

Table 5: The proportion of different age groups in 2020

Territorial level	Population 0-14 years	Population 15-64 years	Population above 65 years
Győr-Moson-Sopron	14,7	67,9	17,4
Vas	13,2	67,6	19,2
Zala	12,8	66,5	20,7
Nyugat-Dunántúl	13,8	67,4	18,8
Hungary	14,5	66,8	18,7

Source: KSH

Ageing is one of the main demographic challenges facing Europe today, which greatly affects the Nyugat-Dunántúl region as well, posing a number of challenges to the actors in the border region. One of the most frequently used measures of population ageing is the ageing index, which also predicts future trends. The ageing index shows the proportion of the elderly (aged 65 and over) to the population aged 14 and under. The ageing index is above the national average (139,5%) for the region as a whole (145,4%). Within the border region, there are serious differences in the ageing of local communities. The spatial characteristics of ageing are strongly related to the settlement network conditions of the border region. In the northern areas of the border region in the more urban and more economically active Győr-Moson-Sopron county ageing is less severe, while Vas county (157,1%) and especially Zala county (181,8%) are characterized by high and increasing ageing in recent years. Urban-rural differences are also crucial in this regard.

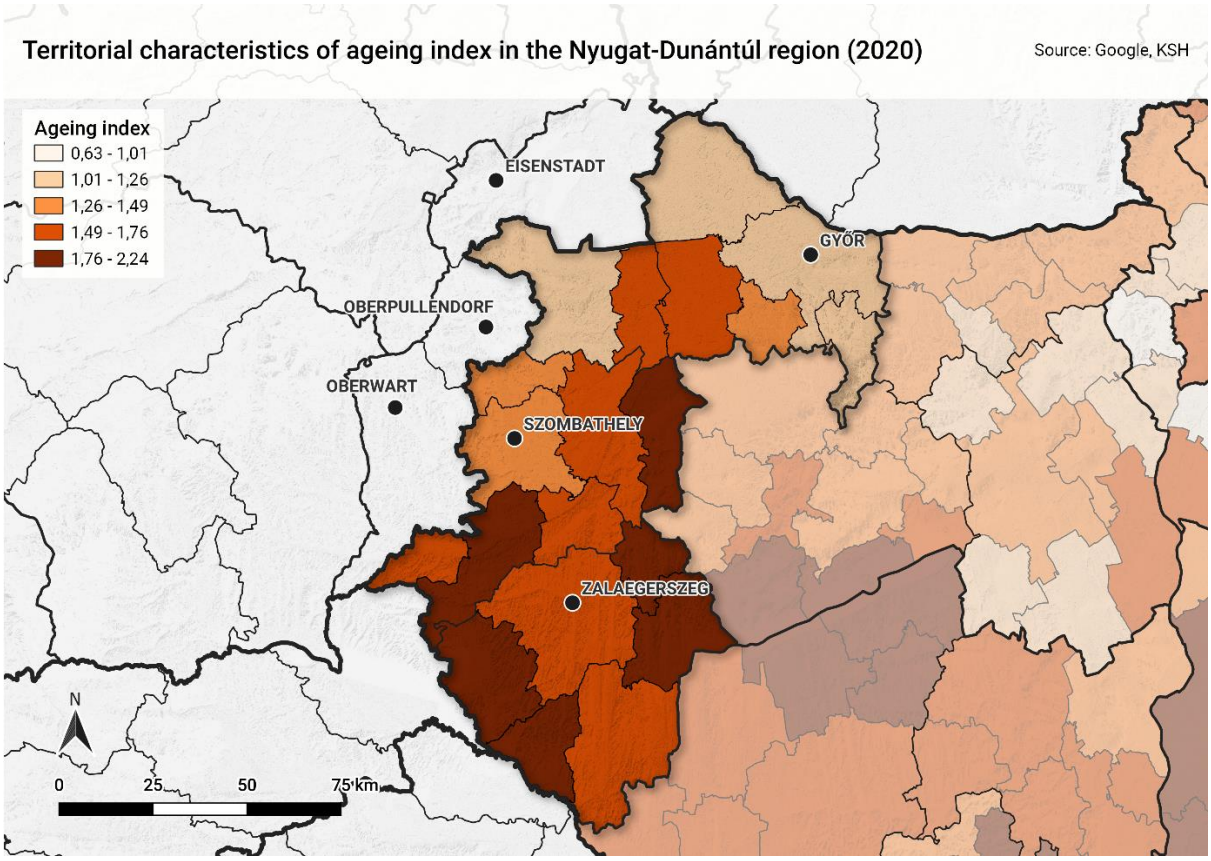
Table 6: Table Ageing and total dependency in 2020

Territorial level	Ageing index, 2020 (%)	Dependency ratio, 2020 (%)
Győr-Moson-Sopron	122,7	50,3
Vas	157,1	52,4
Zala	181,8	56,3
Nyugat-Dunántúl	145,4	52,4
Hungary	139,5	53,6

Source: KSH

By examining the ageing index at the district level (Figure 2.), we can get a more detailed picture about the spatial structure of the demographic status of the region. As already mentioned, most of Győr-Moson-Sopron county is characterized by a younger age structure compared to regional and national conditions, especially in districts which are closely related to the city of Győr, as Győr, Mosonmagyaróvár and Pannonhalma districts, and in Sopron district located along the border. In the case districts around Szombathely (Szombathely and Kőszeg districts) in Vas county, the rate of ageing is around the regional average, while in the rest of the county values above the regional average can be observed. In Zala county, the rate of ageing is above the regional average in all districts, it is extremely high in case of Keszthely, Zalaszentgrót, Lenti and Letenye districts. Overall, the ageing of the border districts is less severe, as these districts attract large numbers of people of working age who commute to Austria in large numbers.

Figure 2: Territorial characteristics of ageing index in the Nyugat-Dunántúl region (2020)



Source: Google, KSH

We see the same characteristics if we analyze the average age data (Table 7). The regional average is above the national level, and the numbers in Zala county are much higher than not only the Hungarian data, but the regional data too. As we mentioned above, the Győr-Moson-Sopron county have a younger age structure than the other two counties in the region. According to the average age data, the numbers in this county are almost the same, maybe even lower than the Hungarian populational average.

Table 7: Table Average age (2001-2020)

Territorial level	Male			Female		
	2001	2012	2020	2001	2012	2020
Győr-Moson-Sopron	37,1	39,3	40,0	40,6	42,9	43,6
Vas	37,6	40,4	41,8	41,3	44,3	45,6
Zala	37,6	40,9	43,0	41,9	45,3	47,4
Nyugat-Dunántúl	**37,4**	**40,0**	**41,3**	**41,2**	**44,0**	**45,1**
Hungary	**37,1**	**39,3**	**40,6**	**41,1**	**43,5**	**44,8**

Source: KSH

The **population projection** of Eurostat forecasts an increase of 0,9% (+9,2 thousand people) in the Nyugat-Dunántúl region, meanwhile Hungary's population could decrease by about half a million people. Within the region, growth is expected only in Győr-Moson-Sopron county, where the population is expected to increase by more than 10% (+53,4 thousand), due to the more favorable age structure and (domestic) migration gain. In Vas county, the calculations predict a modest decrease (2,5%); the natural population decline here can be partially offset by the migration surplus. Due to the demographic problems presented (increasing ageing, unfavorable age structure etc.), a severe population decline is expected in Zala county.

Table 8: Expected population change between 2019 and 2050

Territorial level	2019	2030	2050	Population change between 2019 and 2050)	
				person	**%**
Győr-Moson-Sopron	467.144	495.728	520.532	+53.388	+11,4
Vas	253.551	252.679	247.168	-6.383	-2,5
Zala	268.648	253.433	230.834	-37.814	-14,1
Nyugat-Dunántúl	989.343	1.001.840	998.534	+9.191	+0,9
Hungary	9.772.756	9619020	9.270.352	-502.404	-5,1

Source: Eurostat

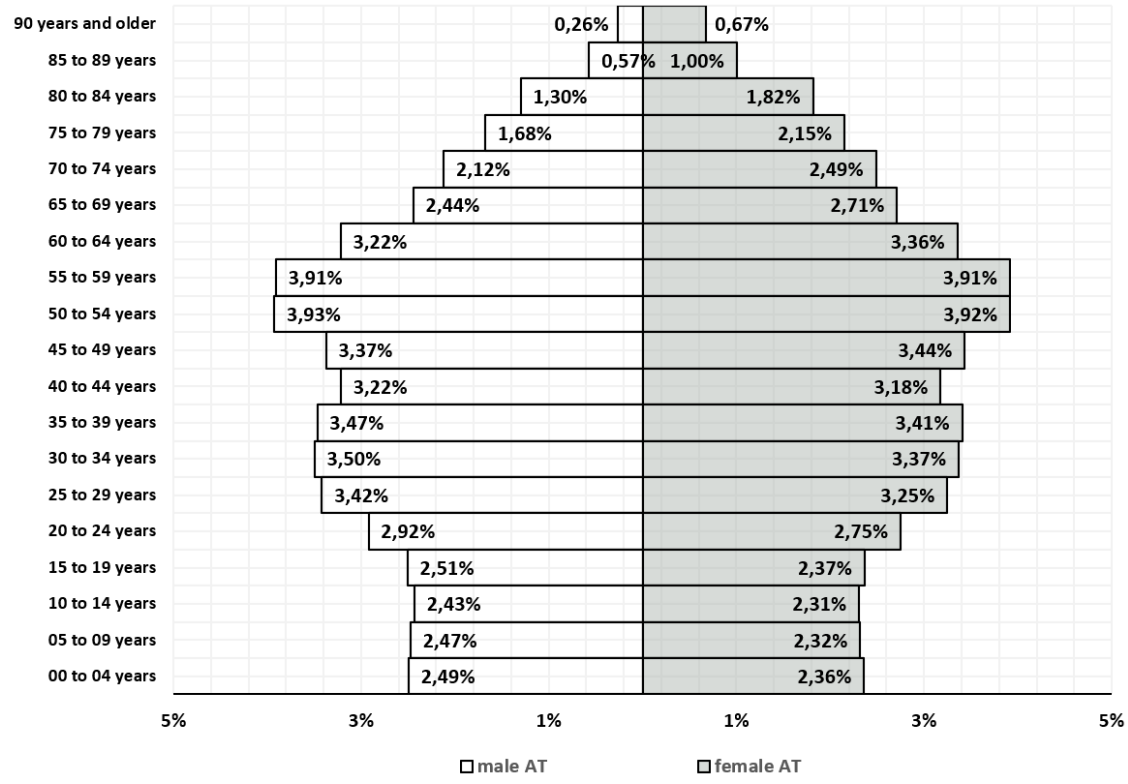
1.2 Demographic characteristics of the border area - AT

The data and analysis on the health and social conditions refer to the NUTS-3 regions Nordburgenland, Mittelburgenland, Südburgenland, Weinviertel, Niederösterreich-Süd, Wiener Umland-Nord and Wiener Umland-Süd (Austrian border region).

In a first step a demographic profile including analysis of the expected population development in the Austrian border region are conducted and put in relation auf the population structure auf Austria.

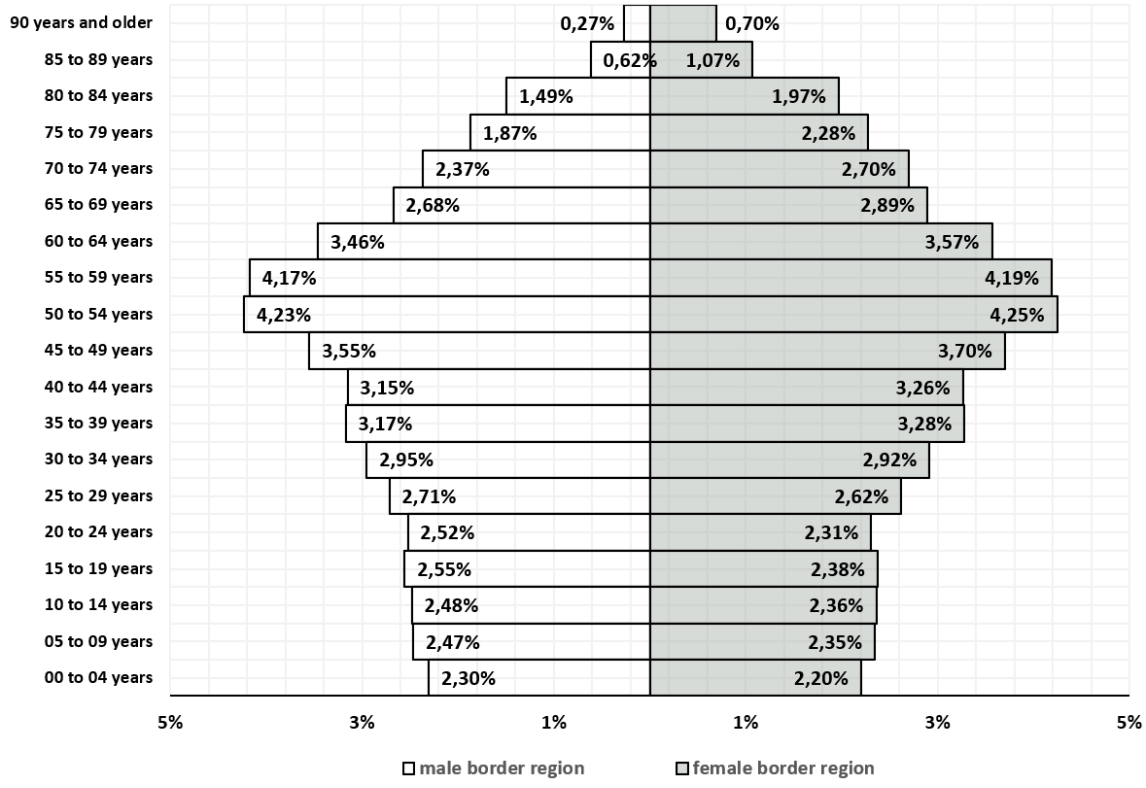
A population pyramid graphically depicts the composition of the population according to age and sex. Population pyramids are expressions of certain development stages of a population and allow statements to be made about future population development. In the following, the population pyramid of Austria is compared with the population pyramid of the Austrian border regions to be able to analyse any deviations.

Figure 3: Population pyramid of the Austria (2021)



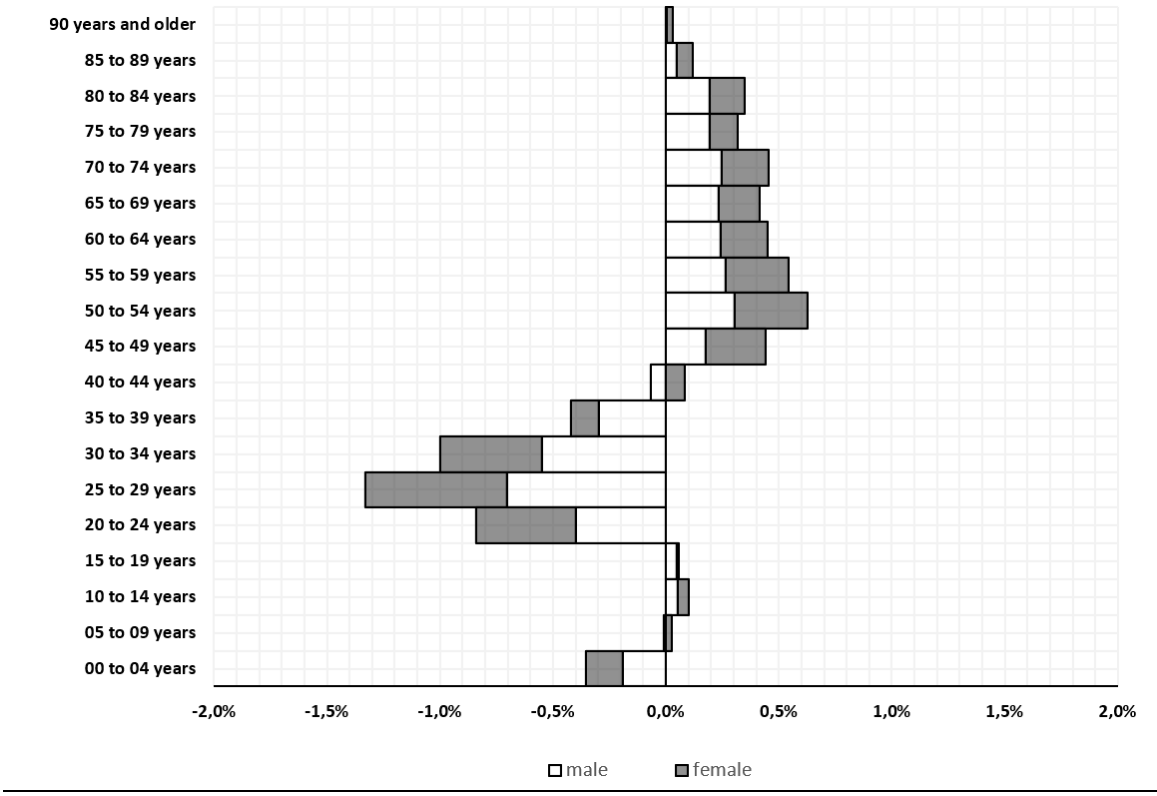
Source: Statistics Austria

Figure 4: Population pyramid of the Austrian Border Region (2021)



Source: Statistics Austria

Figure 5: Difference in age groups (percentage points) Austrian border region – Austria (2021)



Source: Statistics Austria

According to Statistik Austria 1.366.434 people are living in the Austrian border region which corresponds to about 15,3 % of the total population (2021).

The population pyramids show that the Austrian border region has an older structure compared to the total Austrian population. The age groups 45 and older are more pronounced among both men and women whereas the younger age groups are generally less well represented.

Table 9: Population development in the border region in comparison – total population 2020 to 2030

	2020	2025	2030	Change 2020 to 2025	Change 2020 to 2030
Burgenland	294.436	299.983	305.470	1,9%	3,7%
Kärnten	561.293	558.532	555.526	-0,5%	-1,0%
Niederösterreich	1.684.287	1.720.799	1.754.465	2,2%	4,2%
Oberösterreich	1.490.279	1.520.741	1.547.285	2,0%	3,8%
Salzburg	558.410	566.387	572.338	1,4%	2,5%
Steiermark	1.246.395	1.257.757	1.266.273	0,9%	1,6%
Tirol	757.634	773.433	785.602	2,1%	3,7%
Vorarlberg	397.139	405.458	411.707	2,1%	3,7%
Wien	1.911.191	1.970.326	2.013.859	3,1%	5,4%
Border-region AT	**1.358.332**	**1.399.020**	**1.435.640**	**3,0%**	**5,7%**
Austria	**8.901.064**	**9.073.416**	**9.212.525**	**1,9%**	**3,5%**

Source: Statistics Austria – Population Statistics 2021; Statistics Austria/ÖROK – Population Forecast 2020–2030

Table 10:Population development in the border region in comparison – population aged 65 and over 2020 to 2030

	2020	2025	2030	Change 2020 to 2025	Change 2020 to 2030
Burgenland	65.485	73.479	83.503	12,2%	27,5%
Kärnten	123.868	137.324	154.044	10,9%	24,4%
Niederösterreich	341.839	377.422	429.994	10,4%	25,8%
Oberösterreich	277.872	312.214	359.252	12,4%	29,3%
Salzburg	105.872	118.133	133.196	11,6%	25,8%
Steiermark	255.529	282.733	318.135	10,6%	24,5%
Tirol	137.957	154.183	176.695	11,8%	28,1%
Vorarlberg	69.715	77.973	89.144	11,8%	27,9%
Wien	315.490	336.611	372.057	6,7%	17,9%
Border-region AT	**281.159**	**311.218**	**354.871**	**10,7%**	**26,2%**
Austria	**1.693.627**	**1.870.072**	**2.116.020**	**10,4%**	**24,9%**

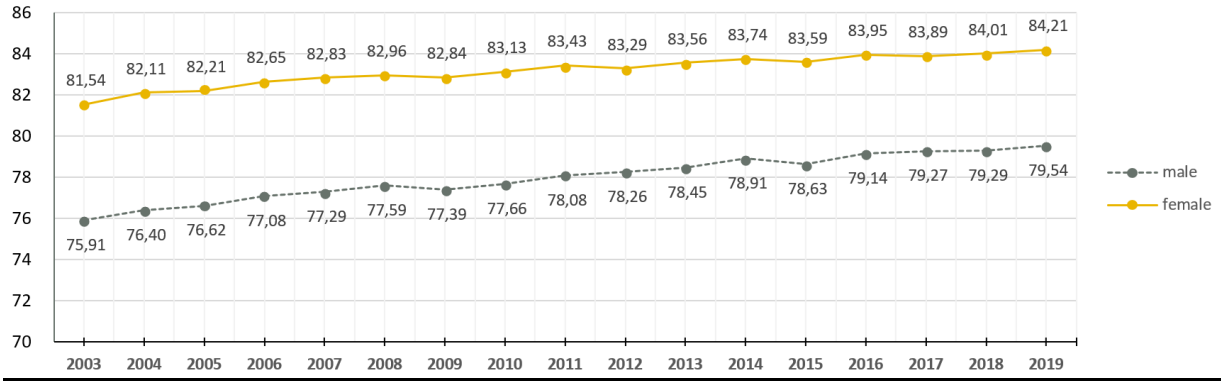
Source: Statistics Austria – Population Statistics 2021; Statistics Austria/ÖROK – Population Forecast 2020–2030

According to the small-scale population forecast of Statistics Austria, the total population in the border region will grow at an above-average rate until 2025 and 2030, respectively.

The population group of the over 65-year-olds will also grow more strongly than in Austria as a whole; by 2030, this group will increase by more than a quarter and once again illustrates that demographic change is already in full swing.

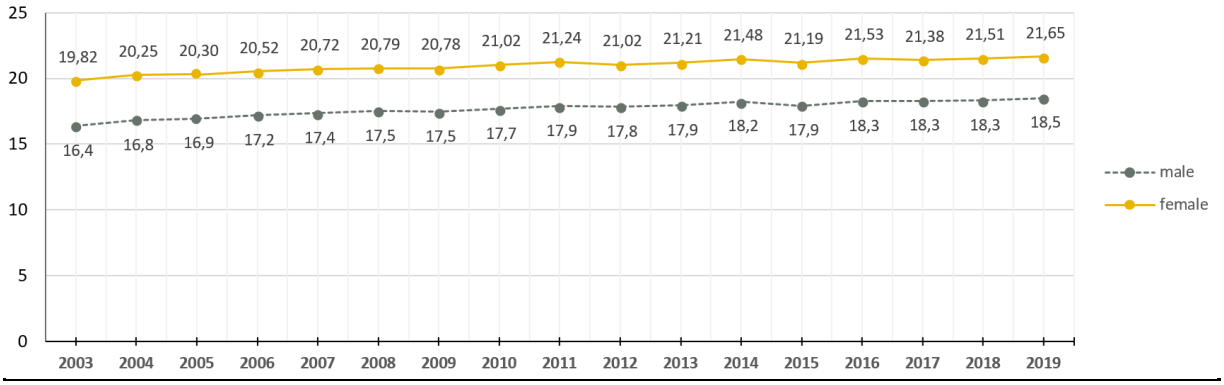
The aging of the population in combination with an increasing shortage of skilled workers will become one of the most important challenges for health care and health system planning in the short to medium term.

Figure 6: Life expectancy in Austria at birth by gender – 2003 to 2019



Source: Statistics Austria

Figure 7: Further life expectancy in Austria at age 65 by gender – 2003 to 2019



Source: Statistics Austria

This challenge is further exacerbated by the continuous increase in life expectancy (see above) and the associated phenomenon of 'compression of morbidity'. This means that in the future the focus will have to be increasingly on shortening the period of morbidity, meaning the average onset age of a marker of morbidity (i.e.: first heart attack, first disability from osteoarthritis, first memory loss etc.) has to increase more rapidly than life expectancy from the same age.

This suggests that, in addition to strengthening the health care system, measures must also be taken to establish health promotion and prevention on a sustainable basis.

1.3 The standard of living of the population in the border area – HUN

The standard of living and the social, material and lifestyle factors that determine it have a serious impact on the health conditions of a given population. There is a clearly demonstrable positive relationship between education and economic, social, physical and mental well-being.

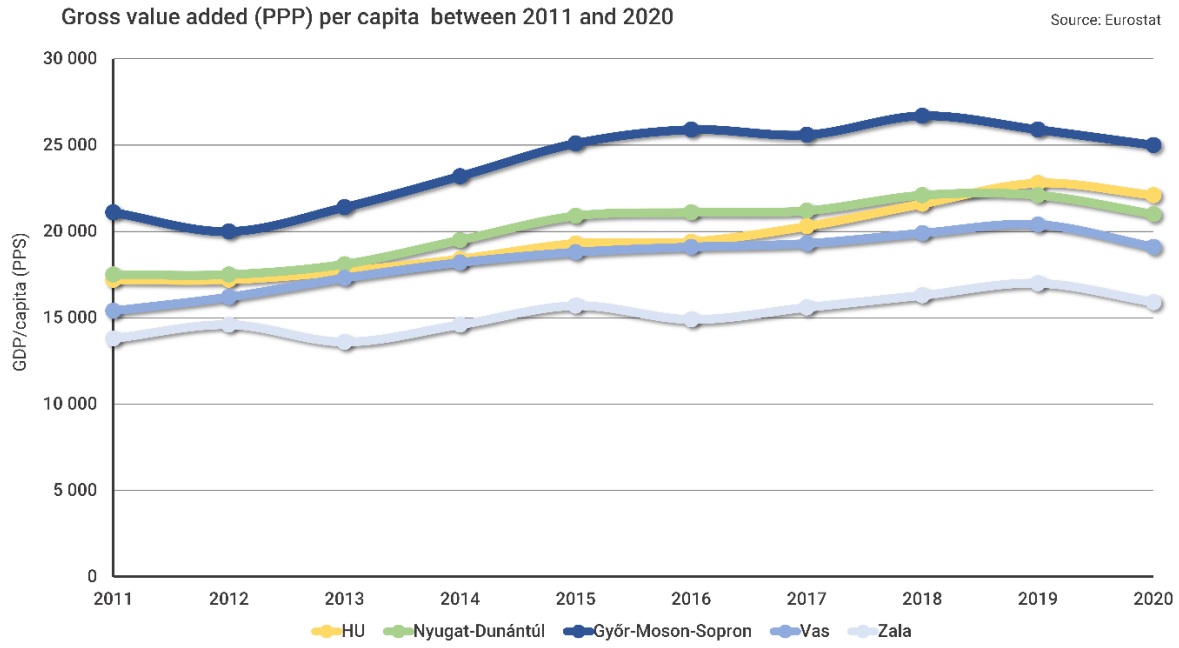
One of the most commonly used – albeit strongly economically focused – indicator for measuring **socio-economic well-being** is the gross value added (PPP) per capita. As shown in the graph below (Figure 8.), the value of the indicator for the Nyugat-Dunántúl region developed in accordance with the national trends between 2011 and 2020. In 2020, it was by 5% below the national value. Significant differences in development can be identified within the border area. Győr-Moson-Sopron county is one of the most dynamic economic areas in Hungary, with high economic performance. The gross value added (PPP) per capita was 25.000 USD in 2020, which is by 12,1% above the national value (22.100 USD). Meanwhile, in Vas and Zala counties, the economic performance in proportion to population remained below the regional and national averages. In 2020, the gross added value (PPP) per capita was in Vas county by 13,6%, in Zala county by 28,1% lower than the Hungarian national average.

Table 11: Gross value added (PPP) per capita (2020)

Territorial level	Gross added value (PPP) per capita, 2020 (USD)
Győr-Moson-Sopron	25.000
Vas	19.100
Zala	15.900
Nyugat-Dunántúl	21.000
Hungary	22.100

Source: Eurostat

Figure 8: Gross value added (PPP) per capita 2011-2020 (USD)



Source: Eurostat

The value of personal income tax per taxpayer suggests inferences about **income conditions** in the border region. The value of the indicator was 3.116 thousand HUF (9.737 EUR according to the 2019 average exchange rate), which is slightly below the national average (3.144 thousand HUF / 9.825 EUR). The extent of the existential differences within the border region is indicated by the fact that there was a difference of almost 20% between the value of the income index of Győr-Moson-Sopron county (3.327 thousand HUF / 10.397 EUR) and Zala county (2.457 thousand HUF / 7.678 EUR). In Vas county (3.108 thousand HUF / 9.713 EUR), income conditions are in line with the regional average. Between 2016 and 2019, the average value of the income indicator in the region increased almost one and a half times, which proves the development of the region and the improvement of the living conditions of the local population in recent years.

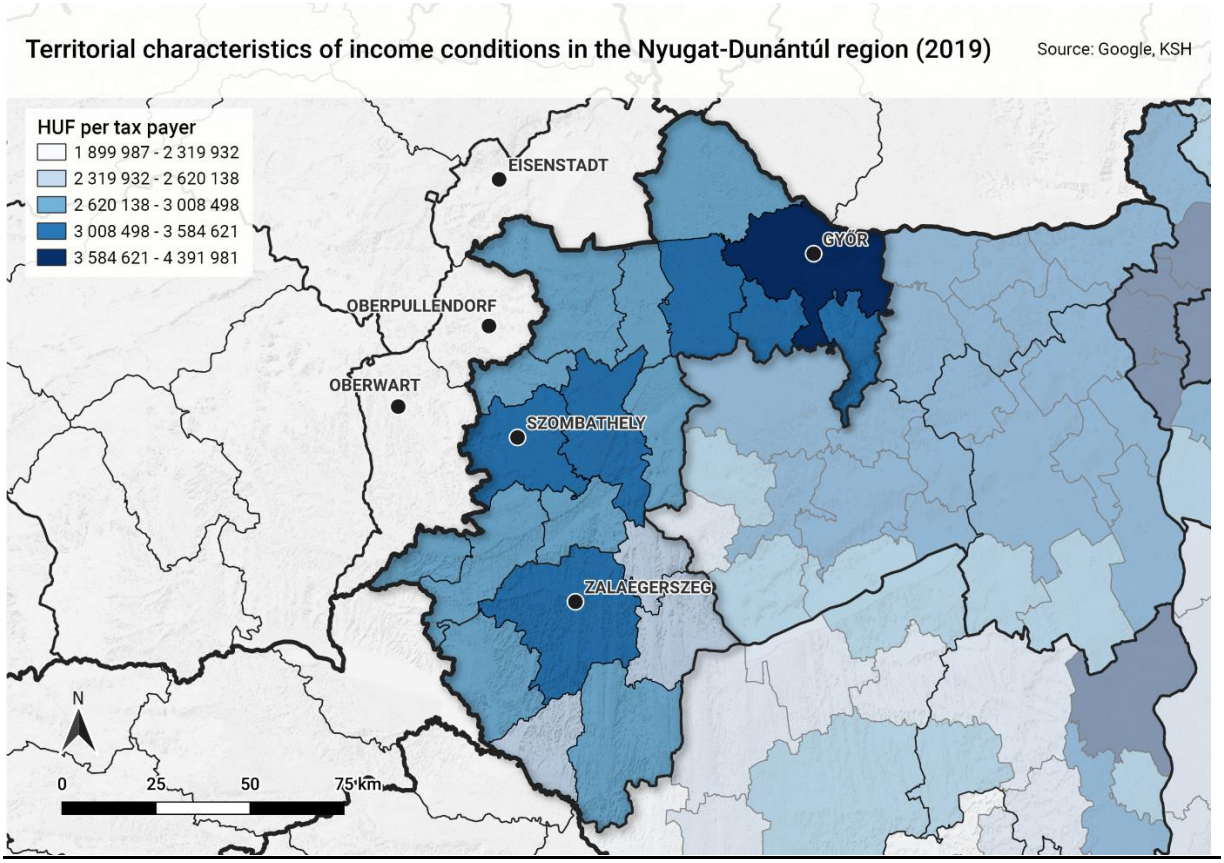
Table 12: Personal income tax per taxpayer (thousand HUF) between 2016 and 2019

Territorial level	2016	2017	2018	2019
Győr-Moson-Sopron	2.215	2.493	2.794	3.327
Vas	2.173	2.483	2.717	3.108
Zala	1.931	2.210	2.457	2.781
Nyugat-Dunántúl	2.124	2.412	2.680	3.116
Hungary	2.166	2.467	2.764	3.144

Source: Eurostat

The map showing the spatial pattern of income conditions (Figure 9) illustrates well the urban-rural inequality in the border region. In terms of material well-being, the conditions of the settlement network are decisive. In the vicinity of cities concentrating urban functions and higher value-added economic activities - in the agglomeration of Győr as well as around Szombathely and Zalaegerszeg cities - the value of personal income tax per taxpayer is significantly higher than in rural districts.

Figure 9: Territorial characteristics of income conditions in the Nyugat-Dunántúl region (2019)



Source: KSH

Another possible indicator of the **living conditions and liveability** of the region is the number of constructions in proportion to the population. The real estate market of Győr-Moson-Sopron county is expanding significantly; in 2020 there were 85,5 constructions per thousand people, almost three times more than the Hungarian average (28,9 pieces). In Vas (32,2 pieces per thousand people) and Zala (18,6 pieces per thousand people) counties, the volume of house construction is significantly more modest.

Labour market conditions in the border area - HUN

Due to the abundant supply of labour in a market economy, unemployment is practically minimal in the border region. The value of **employment rate** calculated as the ratio of the employed to the working age (15-64) population was 65,8% in the Hungarian side of the border area by 3,2 %-points above the national average. Within the region, employment is significantly lower in Zala county (63,2%), than in Vas (66,3%) and Győr-Moson-Sopron (67%) counties.

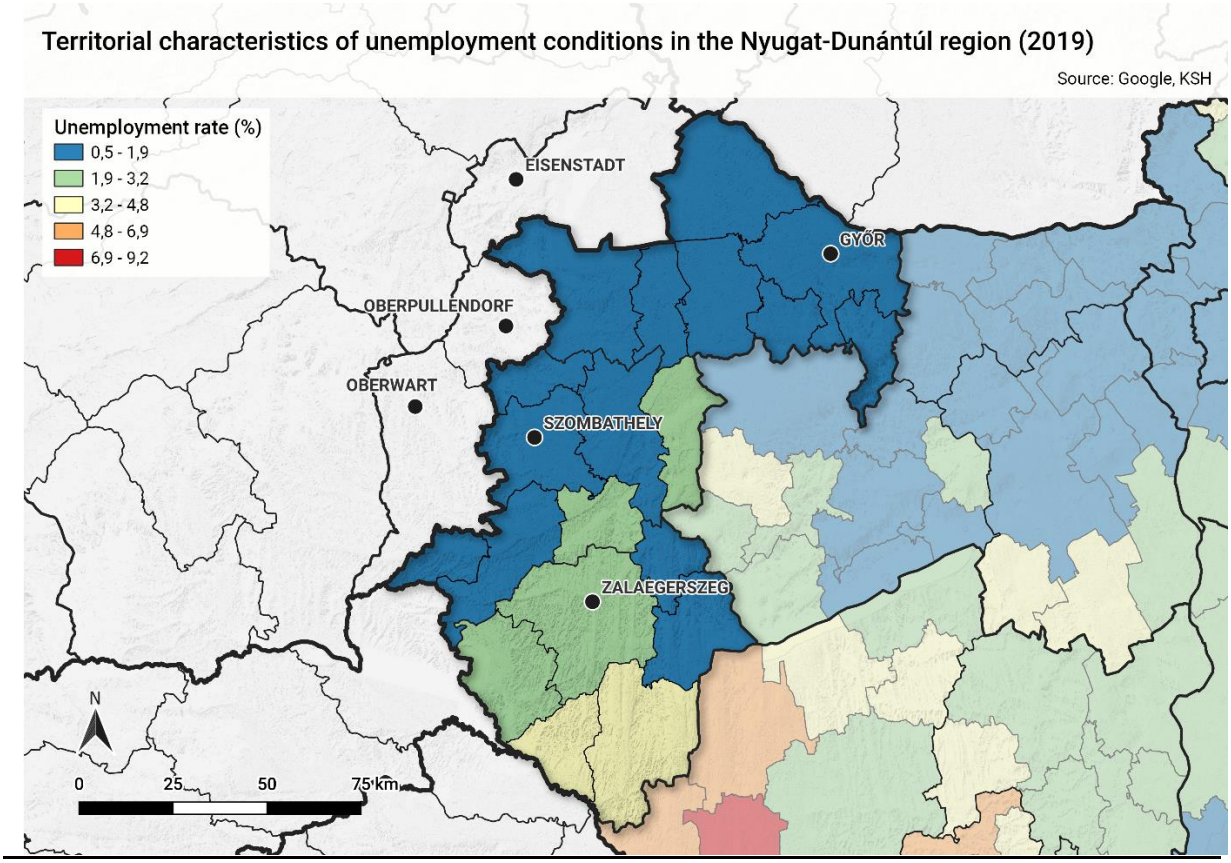
Table 13: Unemployment rate (%) between 2016 and 2019

Territorial level	2016	2017	2018	2019	2020
Győr-Moson-Sopron	0,8	0,7	0,6	0,7	1,0
Vas	1,6	1,6	1,6	1,7	2,1
Zala	2,6	2,5	2,4	2,5	3,2
Nyugat-Dunántúl	1,5	1,4	1,4	1,4	1,9
Hungary	2,8	2,6	2,5	2,4	3,0

Source: KSH

The locally higher **unemployment** rates result from the low level of local employment, and to a large extent from personal competencies, low work culture and individual problems including factors affecting individual health (for instance alcoholism). Despite the favourable overall picture, there are significant territorial disparities within the border area. The territorial characteristics of unemployment conditions correlates with the territoriality of the demographic's conditions. In the southernmost part of the border region where demographic challenges are also more significant can be characterized by a higher unemployment rate. Unemployment is actually minimal in the districts right along the Austrian border and in the northern part of the region.

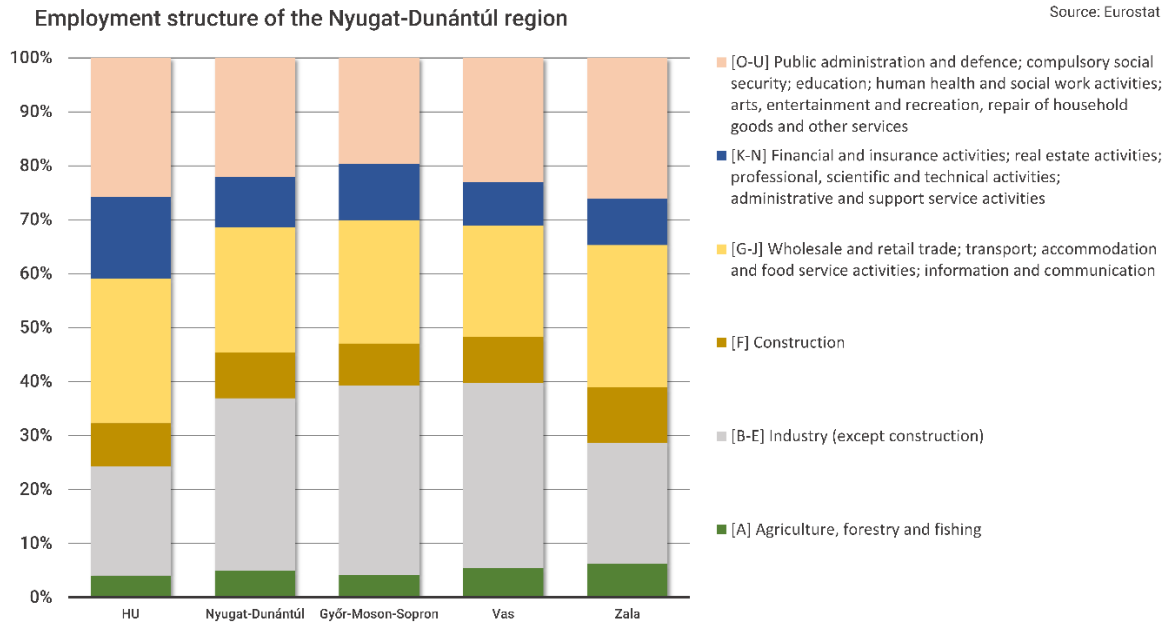
Figure 10: Unemployment conditions in the Nyugat-Dunántúl region in 2019



Source: Google,KSH

To present the regional labour market conditions, the distribution of employees by national economy (NACE Rev. 2) were examined. The Nyugat-Dunántúl region is characterized by a strong industrial sector. The automotive industry and the closely related supplier network are the region's driving force, with the highest economic performance and employment. Győr-Moson-Sopron and Vas counties are heavily industrialized, while industry is less dominant in Zala county, where public services as well as wholesale and retail trade play a more important role in employment. Wholesale and Retail; transport; accommodation and hospitality; information and communication sections concentrate the 23,1% of the employers in the border region. Sections mostly related to the public sphere (public administration and defence; compulsory social security; education; human health and social work activities; arts, entertainment and recreation, repair of household goods and other services) are also important, with 22% of the employers in total, although less markedly than on national level. 8,5% of the working population in the Nyugat-Dunántúl region is employed in construction, 5% in agriculture, forestry and fishing.

Figure 11: Employment structure of the Nyugat-Dunántúl region



Source: Eurostat

On the Hungarian side of the border region, Győr's employment catchment area is the largest – based on both the number of settlements concerned and the area of the catchment area. The vast majority of the active population belonging to the functional urban area of Győr commutes to Győr. In addition to its geographical proximity, Győr's outstanding attractiveness is largely due to its diversified economic structure; workers in occupations not requiring a more specialized job or higher education not found in the municipality of residence find a large number of jobs in Győr, furthermore commuting is also fuelled by higher average wages. Szombathely is the third most populous complex of settlements in the country, covering a quarter of the county's territory and settlements (817 km² in total). Zalaegerszeg is the regional centre of the southern areas of the border region. Its role in employment, trade, education, health, administration and culture is important at regional level. At the same time, the territorial extent and labour market attractiveness of Zalaegerszeg agglomeration is smaller compared to the other two centres.

1.4 The standard of living of the population in the border area – AT

In the following, the standard of living of the Austrian border region is presented and compared based on two central measures. First, the *total income* according to the calculation method of Statistics Austria is used, and second, the unemployment rate. The analyses are carried out up to the year 2018 and 2019, respectively, as there are strong distortions in the following years due to the pandemic.

Total income per year is based on the integrated wage and income tax statistics. The aim of the integrated wage and income tax statistics is to record and present the total income of individuals as comprehensively as possible. The term "total income", is determined from income tax, payroll tax and transfer payment data.

Income distribution on the Austrian side is relatively heterogeneous across regions (compare Table 14). Overall, the average total income of the border region is above that of Austria, but three regions are in part significantly above the average income (Wiener Umland-Nord, Wiener Umland-Süd, Nordburgenland) and four regions are in part significantly below it (Südburgenland, Mittelburgenland, Weinviertel,

Niederösterreich-Süd). Particularly noteworthy in this context are Südburgenland and Wiener Umland-Süd (compare Figure 12 and Figure 13) The strongly above-average income of the region Wiener Umland-Süd is largely explained by the neighbouring city of Vienna.

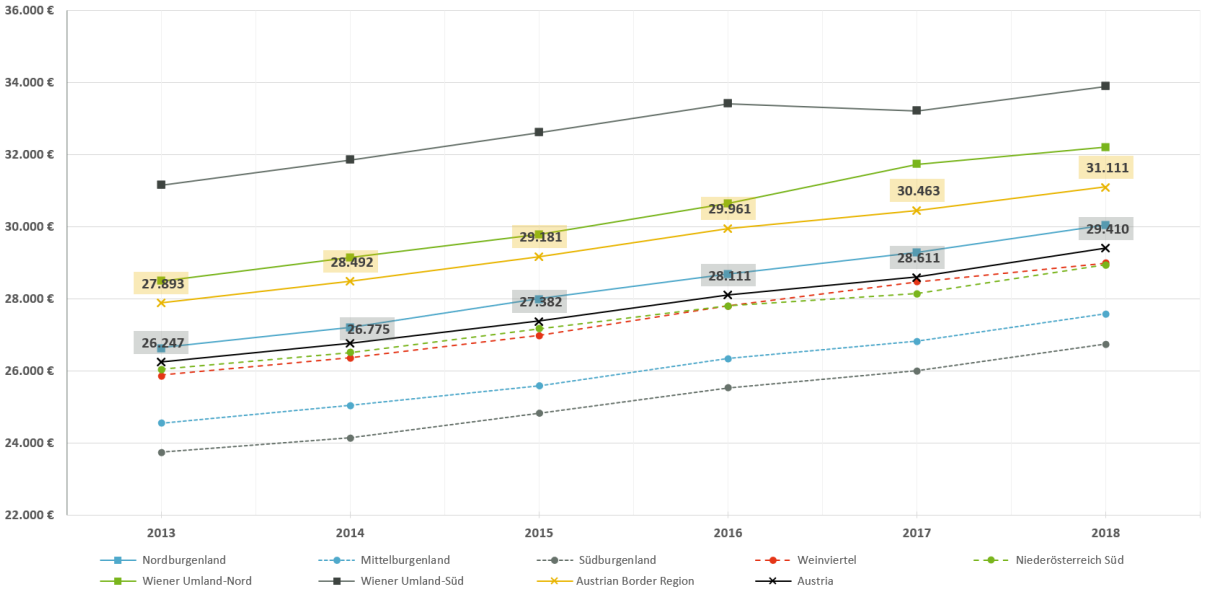
Basically, the same phenomenon can be observed as in the Hungarian border region: The lowest average incomes were predominantly found outside metropolitan areas and near the border.

Table 14: Total yearly income in Euro per taxpayer between 2013 and 2018

Region	2013	2014	2015	2016	2017	2018
Nordburgenland	26.644	27.218	28.006	28.687	29.295	30.054
Mittelburgenland	24.550	25.056	25.589	26.346	26.835	27.588
Südburgenland	23.747	24.157	24.836	25.539	26.010	26.754
Weinviertel	25.882	26.367	26.990	27.810	28.477	29.003
Niederösterreich Süd	26.043	26.517	27.177	27.811	28.145	28.950
Wiener Umland-Nord	28.500	29.160	29.790	30.656	31.739	32.211
Wiener Umland-Süd	31.160	31.863	32.620	33.424	33.223	33.894
Austrian Border Region	27.893	28.492	29.181	29.961	30.463	31.111
Austria	26.247	26.775	27.382	28.111	28.611	29.410

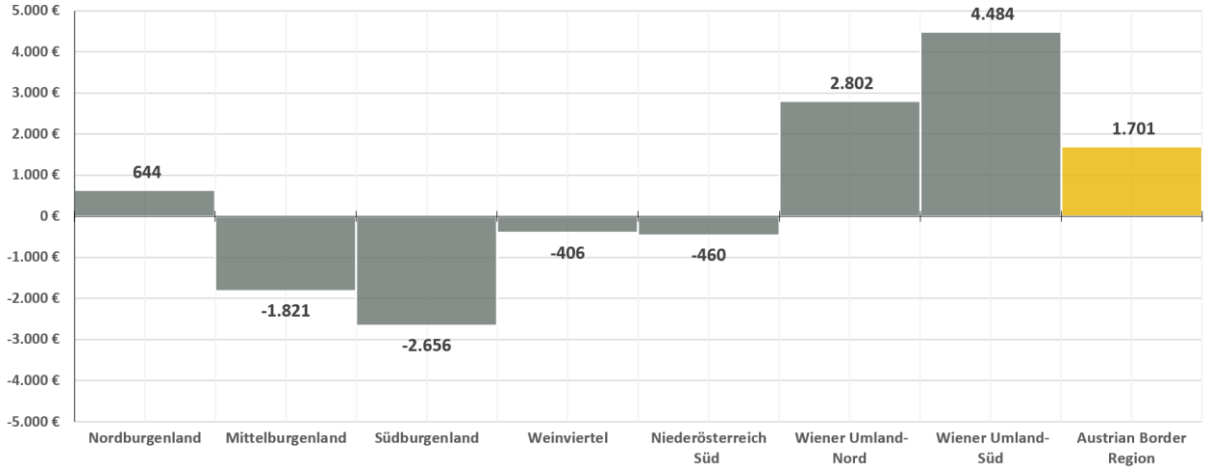
Statistics Austria

Figure 12: Total yearly income in Euro per taxpayer between 2013 and 2018



Source: Statistics Austria

Figure 13: Regional deviation of total annual income from the Austrian average in 2019



Source: Statistics Austria

There are two different measures of unemployment available in Austria: on the one hand there is the unemployment rate, which is defined by national criteria, and on the other hand the measure of unemployment following the definition of the International Labour Organization (ILO), which allows international comparisons.

The Austrian Public Employment Service (AMS) calculates the unemployment rate based on the unemployed registered with the Labor Office and the employed persons registered with the Main Association of Social Insurance Institutions (HV).

The ILO concept is based on the international definition of employment and unemployment. According to this concept, a person is considered to be employed if he or she has worked at least one hour in the reference week or has not worked because of vacation, illness, etc., but is in principle normally employed. Persons with an ongoing employment relationship who receive parental leave or child benefit are included in the employed persons. Unemployed persons are defined as those who are not gainfully employed in this sense, who are taking active steps to look for work and who may start working in the short term. In principle, the data refer to the population living in private households, excluding military and civilian service personnel.

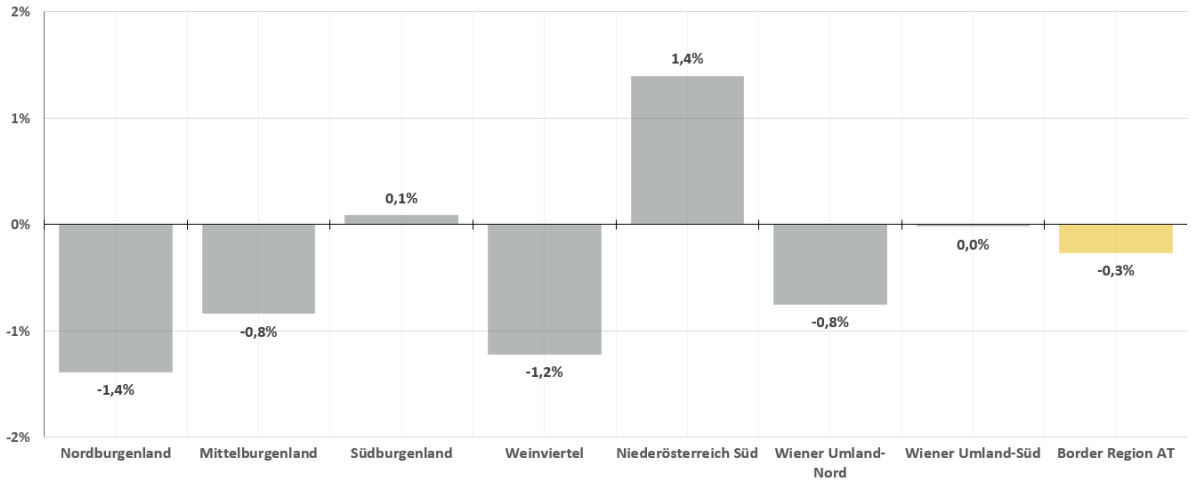
Basically, the development and regional comparison of unemployment shows a similar picture as in the analysis of total income. Overall, the border region records a slightly below-average unemployment rate with regional variations (compare Table 15 and Figure 14) . Niederösterreich Süd is particularly notable here, with a strongly above-average unemployment rate. This deviation can be attributed to the region's higher degree of urbanization, as unemployment is generally higher in cities than in rural areas.

Table 15: Unemployment rate (national definition) between 2013 and 2019 in regional comparison

	2013	2014	2015	2016	2017	2018	2019
Nordburgenland	6,5%	6,9%	7,4%	7,3%	7,0%	6,5%	6,2%
Mittelburgenland	7,8%	8,3%	8,5%	8,4%	7,8%	7,0%	6,7%
Südburgenland	9,0%	9,5%	10,1%	10,2%	9,2%	8,1%	7,7%
Weinviertel	6,1%	6,6%	7,2%	7,2%	7,3%	6,5%	6,4%
Niederösterreich Süd	8,6%	9,2%	10,1%	10,5%	10,2%	9,2%	9,0%
Wiener Umland-Nord	6,4%	7,1%	7,8%	7,9%	7,8%	7,1%	6,8%
Wiener Umland-Süd	7,6%	8,4%	9,1%	9,2%	8,8%	8,0%	7,5%
Border Region AT	7,3%	7,9%	8,6%	8,7%	8,4%	7,6%	7,3%
Austria	7,8%	8,6%	9,4%	9,3%	8,8%	7,9%	7,6%

Source: Statistics Austria

Figure 14: Regional deviation in unemployment (national definition; percentage points) from the Austrian average in 2019



Source: Statistics Austria

Unemployment by ILO definition for 2019 is slightly lower overall, but confirms the regional pattern, with the exception that in this statistic unemployment in the border region is slightly above the national average (compare Table 16). Compared to the Hungarian border region, unemployment in the Austrian border region is significantly higher.

Table 16: Unemployment rate (ILO-definition) 2019 in regional comparison

	2019
Nordburgenland	4,8%
Südburgenland	5,7%
Mittelburgenland	5,4%
Niederösterreich Süd	7,5%
Wiener Umland Süd	5,9%
Wiener Umland Nord	5,0%
Weinviertel	5,0%
Border Region AT	5,6%
Austria	5,0%

Source: Statistics Austria

1.5 Cross-border commuting and Migration – HUN/AT

Austria is an important migration destination for the Hungarians, mainly due to its geographical proximity and the resulting benefits. This neighbouring situation, the significantly higher salaries compared to the Hungarian wage level and the benefits of the exchange rate between currencies of the two countries are the main motivating forces for **cross-border commuting**. The increase in cross-border commuting is largely fuelled by a narrowing yet still existing a roughly threefold gap in the available wages and standard of living between Austria and Hungary.

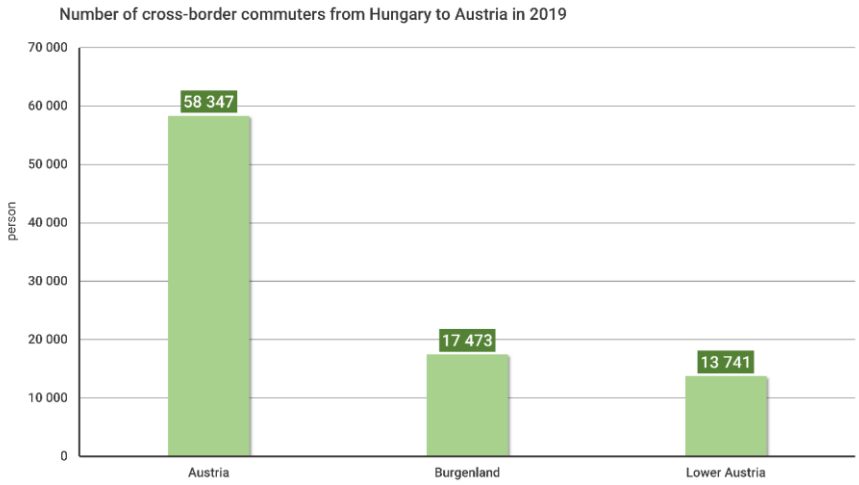
Table 17: Number of cross-border commuters from Hungary to Austria in 2019

Target area	Number of commuters (persons)
Austria	58.347
Burgenland	17.473
Carinthia	1.434
Lower Austria	13.741
Upper Austria	4.525
Salzburg	2.186
Styria	6.764
Tyrol	2.746
Vorarlberg	911
Vienna	8.567

Source: Statistics Austria

In 2019, according to the Austrian Statistical Office, 58.347 people commuted to Austria from Hungary. However, there is no exact data on the share of sending areas, a significant part of which commutes from the Nyugat-Dunántúl region to Austria on a daily or weekly basis. In Burgenland, a total of 17.473 people were registered, which is 30% of all cross-border commuters from Hungary. The main target area for cross-border commuting coincides with the geographic scope of the HEAL NOW project. A total of 17.473 people were registered in Burgenland in 2019, which is 30% of all Hungarian commuters. Lower Austria's share was 23,6%, with a total of 13.741 people commuting regularly to the region. Austrian employers employ a larger number of workers, mainly in the construction, agricultural and catering industries, but demand has also increased recently in the social and healthcare sectors.

Figure 15: Number of cross-border commuters from Hungary to Austria in 2019



Source: Statistics Austria

Unfortunately, up-to-date data on the geographical distribution of cross-border commuters are not available. The most recent 2011 census data can serve as a guide for the demographic and territorial characteristics of cross-border commuters. The conclusions drawn from the statistical data are nuanced by more recent literature sources. However, it is important to note that the findings described should be reviewed after the publication of the 2022 census data.

At the time of the last census, 83% of those who commuted abroad (22,5 thousand) worked in Austria. Commuting to Austria was considerable in case of 95 municipalities in Hungary, mainly in the western and north-western parts of Győr-Moson-Sopron county, and in the area of Vas county from Szombathely to the border. Most of the 95 municipalities are within 20 km of the border, and about a quarter of them have a direct contact with the neighbouring state. A total of almost 18.000 people from the Nyugat-Dunántúl region commuted to Austria.

Table 18: Number of employees commuting to Austria by county, 2011

Territorial level	Number of employees (person)
Győr-Moson-Sopron	12.252
Vas	4.812
Zala	893
Nyugat-Dunántúl	17.957
Hungary	22.488

Source: KSH

Commuters from Hungary to Austria come from groups with higher mobility: 72% are men and almost 60% are under 40 years old; 40% of workers were in their 30s and a quarter in their 40s, one in five was up to 29 years old. Most of them have a secondary education degree, including a vocational school certificate. According to their qualifications, they work primarily in the hospitality, industry, and construction industries, while in health care the proportion of people with higher education is higher.

Nearly a third of commuters to Austria worked in industry, construction, and more than a fifth in trade and service. Territorial features can also be observed. Among commuters, long-term or seasonal agricultural work plays a key role in Győr-Moson-Sopron county. An important aspect for road accidents caused by commuting is the fact that due to the greater distance between the place of residence and the

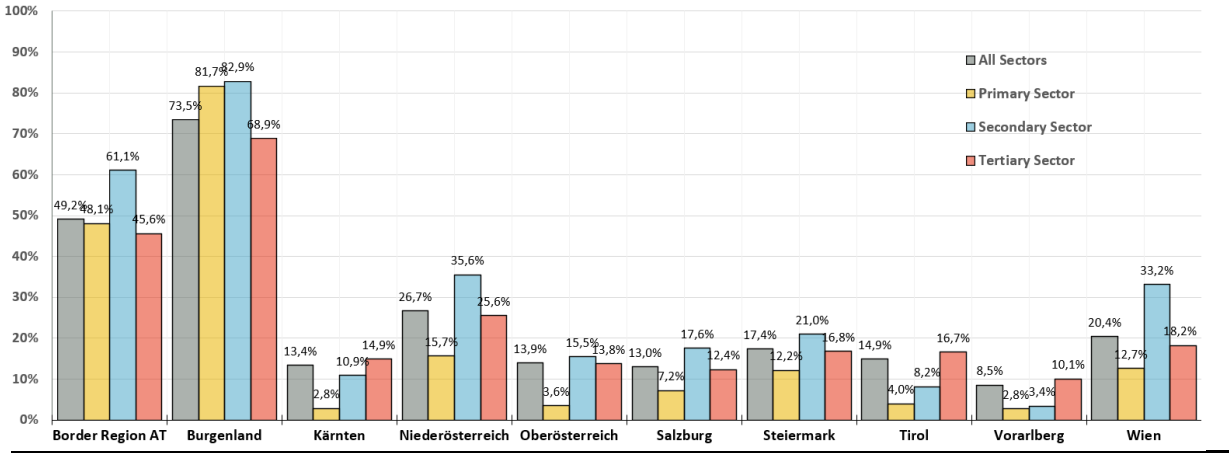
place of work and the constraints on public transport, 88% of the cross-border commuters went to work by car.

Further analyses by economic sector and regional breakdown show that Hungarian commuters in the Austrian border region as a whole account for about half of all foreign commuters, and in Burgenland for as many as three quarters.

Overall, Hungarian commuters are distributed relatively evenly among the economic sectors, but the most pronounced is the secondary sector (industry, construction, crafts, etc). especially in the border region (compare Figure 16).

These analyses highlight once again the importance of Hungarian commuters for the economy in the Austrian border region.

Figure 16: Percentage of Hungarian commuters among all cross-border commuters by economic sector and region 2019



Source: Statistics Austria

Commuting for work is a less significant, practicably negligible motivation for cross-border movements from Austria to Hungary. The main motivating factors for movements towards Hungary are the demand for tourism in the region, leisure activities, or tourists passing through the region, mainly towards Lake Balaton and the main spa settlements (for instance Hévíz and Zalakaros).

A significant factor in the use of the Hungarian care system is the number of **Austrian** (mostly elderly) **citizens settling in Hungary** due to lower real estate prices and living costs. The number of permitting decisions made in the case of Austrian citizens applying for a registration certificate in Hungary may serve as a guideline for determining the number of persons settled in Hungary. In accordance with the restrictions on cross-border mobility during the COVID-19 pandemic, the crossing of the border was subject to the presentation of a document certifying the declared address. Consequently, the number of applications accepted between May 2020 and December 2021 may indicate the number of foreign nationals residing in the country so far undeclared. A total of 2.912 applications from Austrian nationals were granted during that period.

Summary and Recommendation Chapter 1

The two central points that emerge in the socio-demographic characterization of the border regions relate, on the one hand, to the population structure and, on the other hand, to commuter movements from Hungary to Austria and the migration of retired Austrians to Hungary.

In these areas, the greatest challenges are to be expected in the future, also regarding health and health care.

The aging of the population in combination with an increasing shortage of skilled workers will become one of the most important challenges. Compression of morbidity further exacerbates the expected burden on the healthcare system on both sides of the border.

Therefore, cross-border projects in the field of health promotion and prevention, as well as in the field of a joint strategy for the training and recruitment of health care personnel, are the logical conclusion.

Due to the large commuter and migration flows between the border regions, there is a high potential to achieve a cross-border impact, especially in health promotion projects or projects that focus on the transfer of health knowledge.

However, the existing disparity in the economic situation between the Hungarian and Austrian border regions must also be considered.

This was confirmed in the interviews conducted (see Chapter 4): although the interview partners stated, they do not possess any specific data regarding this topic, they feel like the conditions of the people living in the Hungarian border region are probably better than the Hungarian average, but still not nearly as good compared to the Austrian side.

2 ANALYSES OF HOSPITAL STAYS IN THE BORDER REGION

2.3 Hospital Stays - Hungary

According to the data (Table 19), the life expectancy - both in the male and female population on a regional level - is a bit higher than other parts of the country between 2001 and 2019. The expected years of living constantly are the highest in Győr-Moson-Sopron county, among the examined counties. In contrast, if we compare the data with the Austrian national statistics, it is clear that the Hungarian part has a big deficit (the Austrian data in Burgenland and Lower Austria may contain some differences compared to the national numbers).

Table 19: Average life expectancy at birth (2001-2019)

	Male			Female		
	2001	2012	2019	2001	2012	2019
Győr-Moson-Sopron	69,48	71,95	74,24	78,04	78,71	80,94
Vas	68,84	70,66	73,09	77,12	78,25	79,66
Zala	68,24	71,84	73,57	76,83	78,96	79,60
Nyugat-Dunántúl	68,93	71,57	73,78	77,44	78,67	80,25
Hungary	68,15	71,45	72,86	76,46	78,38	79,33
Austria	75,60	78,40	79,70	81,70	83,60	84,20

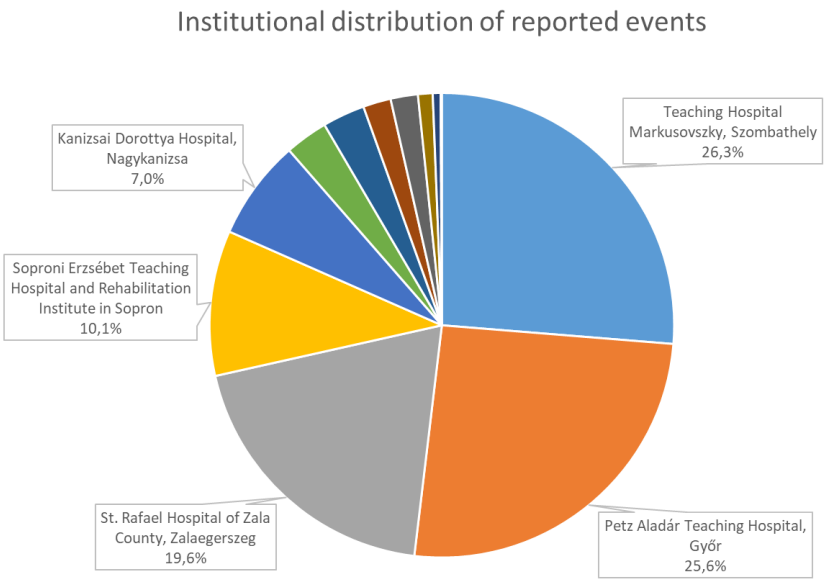
Source: KSH

Statistics

We reviewed the most common adult diseases in the Nyugat-Dunántúl region (Győr-Moson-Sopron county; Vas county; Zala county). Only publicly funded cases were included in the statistical analysis. Data were analyzed using IBM SPSS Statistics. In several cases where data from Austria were available, comparisons were also made.

Our data are from inpatient facilities in the Nyugat-Dunántúl region that provide publicly funded care for the cases underlying the data we used. We have processed data from twelve such institutions. Most of the reported cases came from county-centre hospitals located in the county capitals during the period under review. The Petz Aladár Teaching Hospital in Győr and the Teaching Hospital Markusovszky in Szombathely accounted for more than 50% of the reported cases in roughly equal proportions, while the St. Rafael Hospital of Zala County in Zalaegerszeg, accounted for a further 20% of the data. A case rate of more than 5% was also recorded from the Soproni Erzsébet Teaching Hospital and Rehabilitation Institute in Sopron, and the Kanizsai Dorottya Hospital in Nagykanizsa, so these five hospitals can be considered the largest inpatient care providers in the region:

Figure 17: Institutional distribution of reported events



The statistics are based on the 14 most frequently registered disease groups in the NEAK system (using the ICD-10 coding system) between 2014 and 2021 (n=679.472). From these, the five most frequently coded adult disease groups in the time period under study are shown in the table below:

Table 20: Most frequently registered disease groups in Nyugat-Dunántúl region (2014-2021)

ICD-10-CM sections	Codes	Percentage of the sample tested
Disorders of lens	H25-H28	9,9%
Other forms of heart disease	I30-I52	9,8%
Ischemic heart diseases	I20-I25	9,4%
Malignant neoplasms of digestive organs	C15-C26	9,2%
Malignant neoplasms of ill-defined, other secondary and unspecified sites	C76-C80	9,1%

The table clearly shows that the most important disease groups, as most public health studies agree, are cardiovascular diseases and tumours. “Disorders of lens” are also basically related to cardiovascular and other metabolic diseases, and these ICD codes can be interpreted as symptoms of these diseases (e.g. cataracts). The high representation of the disease group based on the ICD code “Malignant neoplasms of ill-defined, other secondary and unspecified sites” is most likely due to the high incidence of metastases.

We also collected data from the Hungarian border regions of Austria, for comparison (NUTS3 regions: Nordburgenland, Mittelburgenland, Südburgenland, Weinviertel, Wiener Umland-Nordteil, Wiener Umland-Südteil, Niederösterreich-Süd).

It can be noticed that although the percentages vary - almost naturally, for example because of the national coding habits - in the results of the Austrian side, the overall leading diseases with the highest morbidity are the same:

Table 21: Most frequently registered disease groups in the Austrian border region (2015-2021)

ICD-10-CM sections	Codes	Percentage of the sample tested
Disorders of lens	H25-H28	17,9%
Other forms of heart disease	I30-I52	12,3%
Ischemic heart diseases	I20-I25	9,6%
Malignant neoplasms of digestive organs	C15-C26	9,5%
Osteoarthritis	M15-M19	7,8%

From the Hungarian side, only the fifth recent disease group is missing from the Austrian fifth place, “Malignant neoplasms of ill-defined, other secondary and unspecified sites”, but it is probably understandable, because this group is not as delimited as the rest of the disease groups, so different interpretations may occur. On the Austrian side “Malignant neoplasms of ill-defined, other secondary and unspecified sites” is one of the rarest from the listed disease groups. Instead, “Osteoarthritis” is fifth on the Austrian list, which is eighth on the Hungarian list, so the difference in this case is not significant.

If, looking at the two sexes separately (just in the hungarian data again), there are large differences in the leading groups of diseases between the female and male sexes:

Table 22: Most frequently registered disease groups in Nyugat-Dunántúl region, separated by sexes; Males (2014-2021)

ICD-10-CM sections	Codes	Percentage of the sample tested
Malignant neoplasms of ill-defined, other secondary and unspecified sites	C76-C80	12,7%
Malignant neoplasms of digestive organs	C15-C26	12,7%
Ischemic heart diseases	I20-I25	12,3%
Other forms of heart disease	I30-I52	11,8%
Cerebrovascular diseases	I60-I69	9,2%

Table 23: Most frequently registered disease groups in Nyugat-Dunántúl region, separated by sexes; Females (2014-2021)

ICD-10-CM sections	Codes	Percentage of the sample tested
Noninflammatory disorders of female genital tract	N80-N98	12,6%
Malignant neoplasms of breast	C50	12,1%
Disorders of lens	H25-H28	10,9%
Osteoarthritis	M15-M19	8,4%
Other forms of heart disease	I30-I52	8,3%

The gender distribution cannot be explained away by the fact that cardiovascular and tumour diseases are among the leading morbidity groups for both sexes. In terms of relative prevalence, it is noticeable that there is a significant difference between the leading cardiovascular disease prevalence rates for men and women (highest for women 8.3%, while for men there are three higher rates, 9.2-11.8-12.3%). It is also striking that while only cardiovascular and tumour diseases, i.e. those with a high mortality rate, are among the top five most common types of diseases in men, women also have three types of diseases with a low mortality rate, mostly affecting only their quality of life ("Noninflammatory disorders of female genital tract", "Disorders of lens" and "Osteoarthritis"). It is also interesting to note that men's tumour diseases, which could basically affect both sexes in the same proportions, were ranked first, which suggests that the health status of the male population and their lifestyle may be more in need of intervention.

Analysis by age groups:

As only the 14 most commonly coded disease groups - using the ICD code system - were analyzed, the analysis of distributions by age groups does not objectively reflect the actual burden of which disease is affecting mostly the different age groups, especially the younger ones. As shown above in the section of descriptive statistics, the most common diseases in the Nyugat-Dunántúl region are cardiovascular diseases and tumours, and in general these tend to affect the older age groups, so that the problems affecting the younger age groups are less likely to be inferred.

We would not draw any particular conclusions from the data, but it is noticeable that while cardiovascular diseases (and their co-morbidities) predominate in the over-80s, the proportion of these diseases is steadily decreasing in the slightly younger age groups of 60-79 and 40-59, and in contrast, the tumour diseases becoming the strong majority.

Table 24: Most frequently registered disease groups in Nyugat-Dunántúl region, separated by age groups; Above 80 (2014-2021)

ICD-10-CM sections	Codes	Percentage of the sample tested
Other forms of heart disease	I30-I52	17,2%
Acute kidney failure and chronic kidney disease	N17-N19	15,4%
Cerebrovascular diseases	I60-I69	13,5%
Disorders of lens	H25-H28	13,2%
Diseases of arteries, arterioles and capillaries	I70-I79	9,8%

Table 25: Most frequently registered disease groups in Nyugat-Dunántúl region, separated by age groups; Between 60 and 79 (2014-2021)

ICD-10-CM sections	Codes	Percentage of the sample tested
Disorders of lens	H25-H28	11,7%
Malignant neoplasms of digestive organs	C15-C26	10,8%
Malignant neoplasms of ill-defined, other secondary and unspecified sites	C76-C80	10,6%
Ischemic heart diseases	I20-I25	10,1%
Other forms of heart disease	I30-I52	9,5%

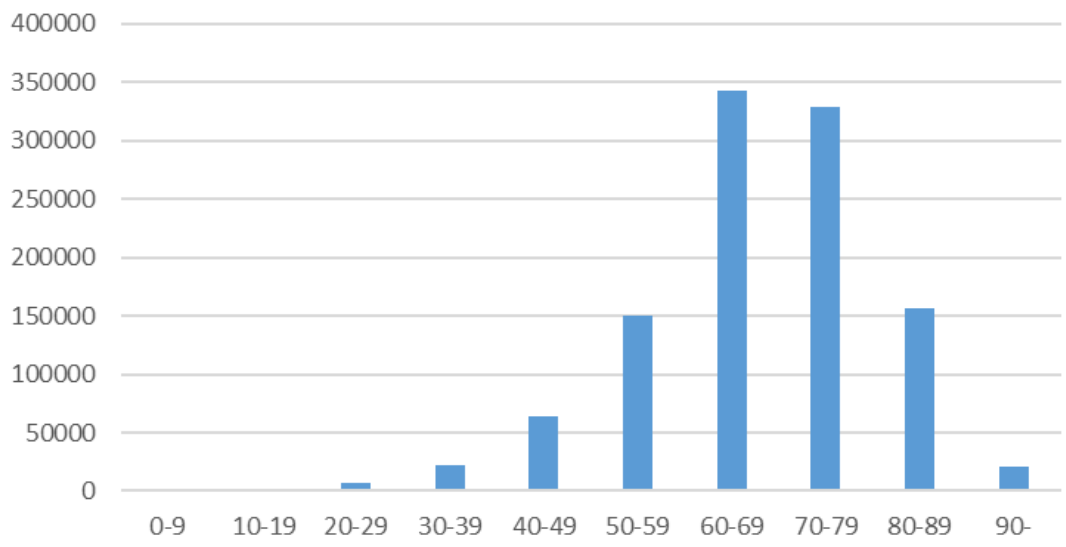
Table 26: Most frequently registered disease groups in Nyugat-Dunántúl region, separated by age groups; Between 40 and 59 (2014-2021)

ICD-10-CM sections	Codes	Percentage of the sample tested
Noninflammatory disorders of female genital tract	N80-N98	16,7%
Malignant neoplasms of breast	C50	12,9%
Malignant neoplasms of ill-defined, other secondary and unspecified sites	C76-C80	10,2%
Ischemic heart diseases	I20-I25	9,9%
Malignant neoplasms of digestive organs	C15-C26	8,5%

For the younger age groups, descriptive comparisons are not very relevant, as they are likely to be in contact with the care system for other reasons (this is reflected in the reported numbers, more than 5.5 times from the 40-59 age group, more than 15 times from the 60-79 age group, and even more than 4 times more reports came from the 80+ age group compared to the 20-39 age group).

The graph below (Figure 18) shows the age distribution of the 14 most common disease groups based on the data registered in the NEAK system:

Figure 18: Distribution of case numbers by age groups



2.4 Hospital Stays – Austria and further comparison

In total, there are 15 hospitals in the Austrian Border Region, which is composed of the NUTS-3 regions described above, distributed regionally as follows. As of 2020 those Hospitals provide in total 4.723 hospital beds which equal about 3,5 beds per 1.000 inhabitants.

Figure 19: Hospitals in the Austrian border region

Source: Austrian Hospital Statistics.

Table 27: Hospitals in the Austrian border region

NUTS-3 region	Hospital
Nordburgenland	Eisenstadt BBR KH
	Kittsee LKH
Mittelburgenland	Oberpullendorf LKH
Südburgenland	Güssing LKH
	Oberwart LKH
Niederösterreich-Süd	Hochegg LKL
	Neunkirchen LKL
	Wiener Neustadt LKL
Weinviertel	Hollabrunn LKL
	Mistelbach LKL
Wiener Umland-Nordteil	Klosterneuburg LKL
	Korneuburg-Stockerau LKL
	Tulln UnivKL
Wiener Umland-Südteil	Hainburg LKL
	Baden-Mödling-Hinterbrühl LKL

Source: Austrian Hospital Statistics.

In total, there are 12 hospitals in the Hungarian Border Region included in the analysis, which is composed of the NUTS-3 regions described above, distributed regionally as follows. As of 2020 those Hospitals provide in total 7.122 hospital beds which equal about 7.1 beds per 1.000 inhabitants[1].

Figure 20: Hospitals in the Hungarian border region

Source: Hungarian Central Statistical Office.

[1] Source: Hungarian Central Statistical Office: https://www.ksh.hu/stadat_files/ege/en/ege0048.html

Table 28: Hospitals in the Hungarian border region

NUTS-3 region	Hospital
Győr-Moson-Sopron	Csornai Margit Kórház
	Karolina Kórház - RI, Mosonmagyaróvár
	Lumniczer Sándor Kh-RI., Kapuvár
	Petz Aladár Egyetemi Oktató Kórház
	Soproni Gyógyközpont
	KARDIREX Eü. Központ Győr KFT.
Vas	Markusovszky Egyetemi Oktatókórház
	Szent László Kórház, Sárvár
Zala	Kanizsai Dorottya Kórház Nagykanizsa
	Keszthelyi Kórház
	Zala Megyei Szent Rafael Kórház
	Hévízgyógyfürdő és Szent András Reumakh.

Source: Hungarian Central Statistical Office.

In the following, the number of hospitalizations ('hospital stays') in the two border regions in the period from 2015 to 2020 is compared in various ICD-10 diagnosis groups. The 15 most frequently documented diagnosis groups in Hungary were selected:

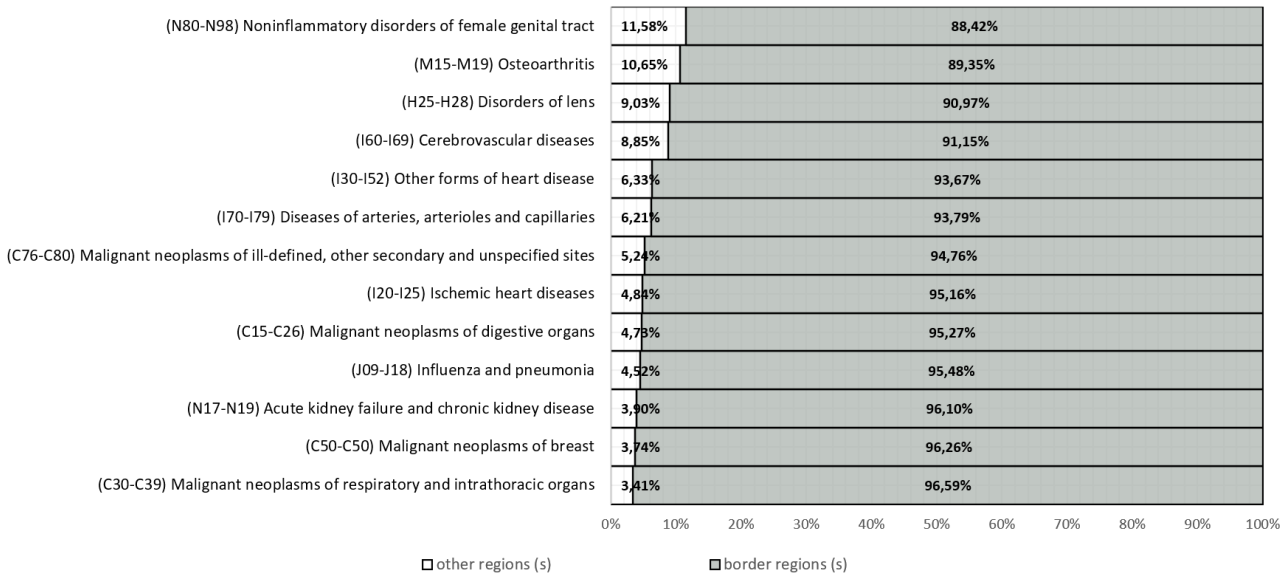
1.	C15-C26	Malignant neoplasms of digestive organs
2.	C30-C39	Malignant neoplasms of respiratory and intrathoracic organs
3.	C50-C50	Malignant neoplasms of breast
4.	C76-C80	Malignant neoplasms of ill-defined, other secondary and unspecified sites
5.	H25-H28	Disorders of lens
6.	I20-I25	Ischemic heart diseases
7.	I30-I52	Other forms of heart disease
8.	I60-I69	Cerebrovascular diseases
9.	I70-I79	Diseases of arteries, arterioles and capillaries
10.	J09-J18	Influenza and pneumonia
11.	M15-M19	Osteoarthritis
12.	M50-M54	Other dorsopathies
13.	N17-N19	Acute kidney failure and chronic kidney disease
14.	N80-N98	Noninflammatory disorders of female genital tract
15.	P90-P96	Other disorders originating in the perinatal period

Due to documentation differences and missing values, diagnosis groups *'(M50-M54) Other dorsopathies'* and *'(P90-P96) Other disorders originating in the perinatal period'* were excluded from the analyses.

Both the Austrian and the Hungarian data were provided in a target-related manner, i.e. the analyses and calculations refer exclusively to those hospital stays that occurred in the two border regions. For example, if someone living in a border region was hospitalized in eastern Hungary or in western Austria, he or she does not appear in the data.

Regional Intramural Care

Figure 21: Regional intramural care in the Austrian border region by group of diagnosis (Data 2019)



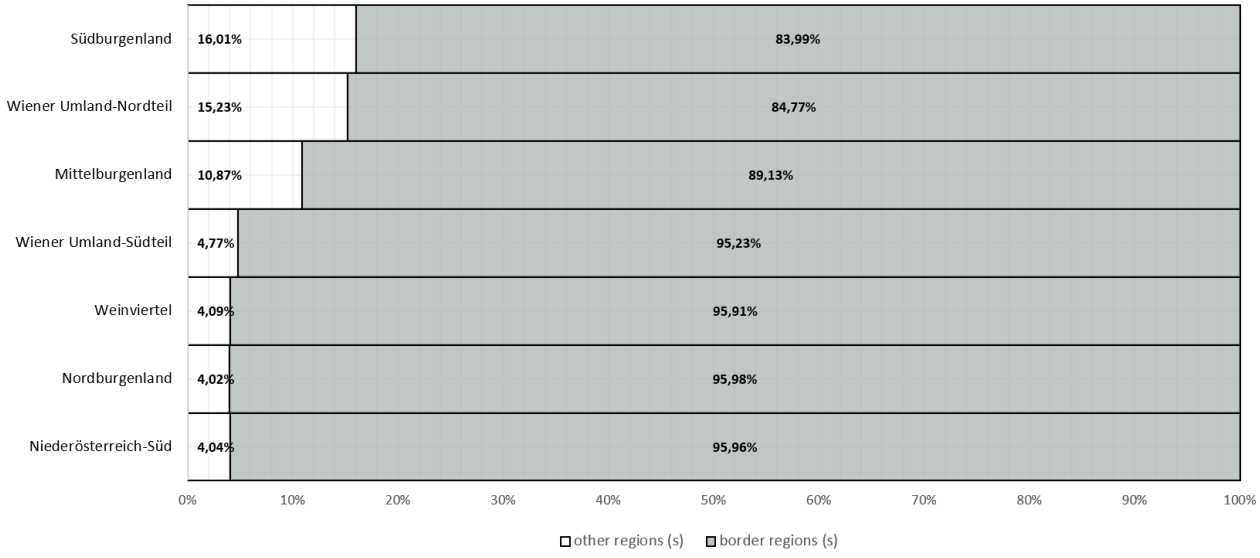
Source: Austrian Hospital Statistics.

The chart above shows the proportion of patients by diagnosis group who were treated in hospitals in the Austrian border regions in 2019 without residing there. Overall, this proportion was 7 % in 2019, which remained relatively stable from 2015 to 2021 (6,79 % to 7,27 %).

An above-average number of external patients were treated in the diagnosis groups '*Disorders of lens, Cerebrovascular diseases, Osteoarthritis and Noninflammatory disorders of female genital tract'*, which may be due to corresponding specialized centres in the region or regional epidemiological reasons.

The diagram below shows in which Austrian NUTS-3 regions the proportion of patients who do not reside in the border region was the highest and provides information about the location of the centres or the regions that may be epidemiologically different.

Figure 22:Regional intramural care in the Austrian border region by 'source-region' (Data 2019)



Source: Austrian Hospital Statistics.

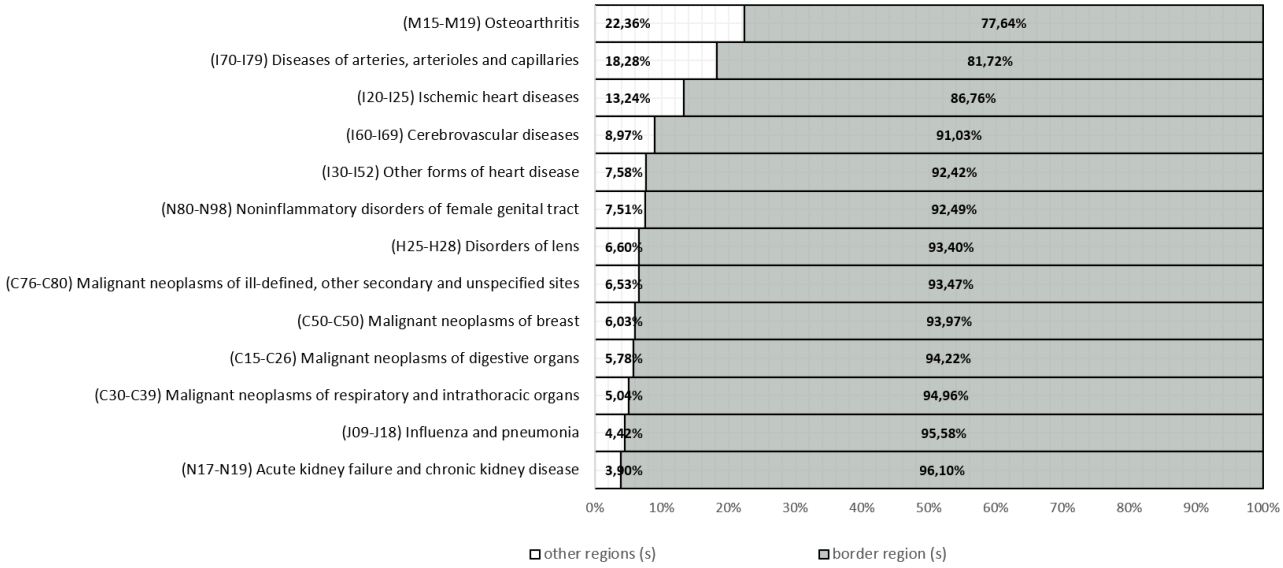
The chart below shows – analogous to the analyses of the Austrian border region – the proportion of patients by diagnosis group who were treated in hospitals in the Hungarian border regions in 2019 without residing there. Overall, this proportion was 9 % in 2019, which is the lowest value since 2015 (in 2015 the proportion was 11,34 % and has dropped since). In 2020 and 2021 this value has dropped to 6,9 % respectively 5,9 % which might be due to the pandemic.

An above-average number of external patients were treated in the diagnosis groups '*'Ischemic heart diseases, Diseases of arteries, arterioles and capillaries and Osteoarthritis'*, which also may be due to corresponding specialized centres in the region or regional epidemiological reasons.

At this point, it should be mentioned that if hospital Hévízgyógyfürdő és Szent András Reumakh is excluded from the analysis the value in diagnosis group Osteoarthritis is reduced by approximately ten percentage points.

It is also important to note that primarily the year 2019 was used for the analyses, as it is unclear how the years 2020 and 2021 have been affected by the pandemic and how to deal with this data onwards.

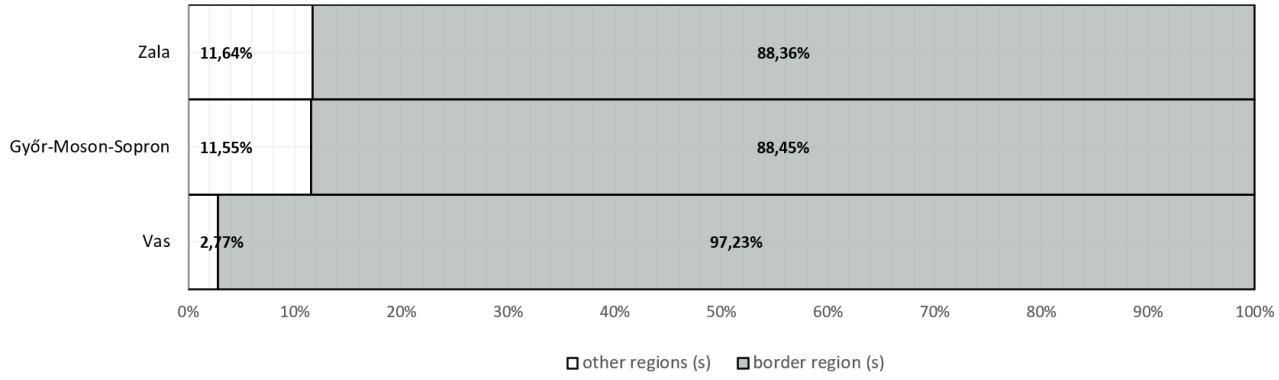
Figure 23:Regional intramural care in the Hungarian border region by group of diagnosis (Data 2019)



Source: Hungarian Hospital Statistics.

The diagram below shows in which Hungarian NUTS-3 regions the proportion of patients who do not reside in the border region was the highest and provides information about the location of the centres or the regions that may be epidemiologically different.

Figure 24: Regional intramural care in the Hungarian border region by 'source-region' (Data 2019)



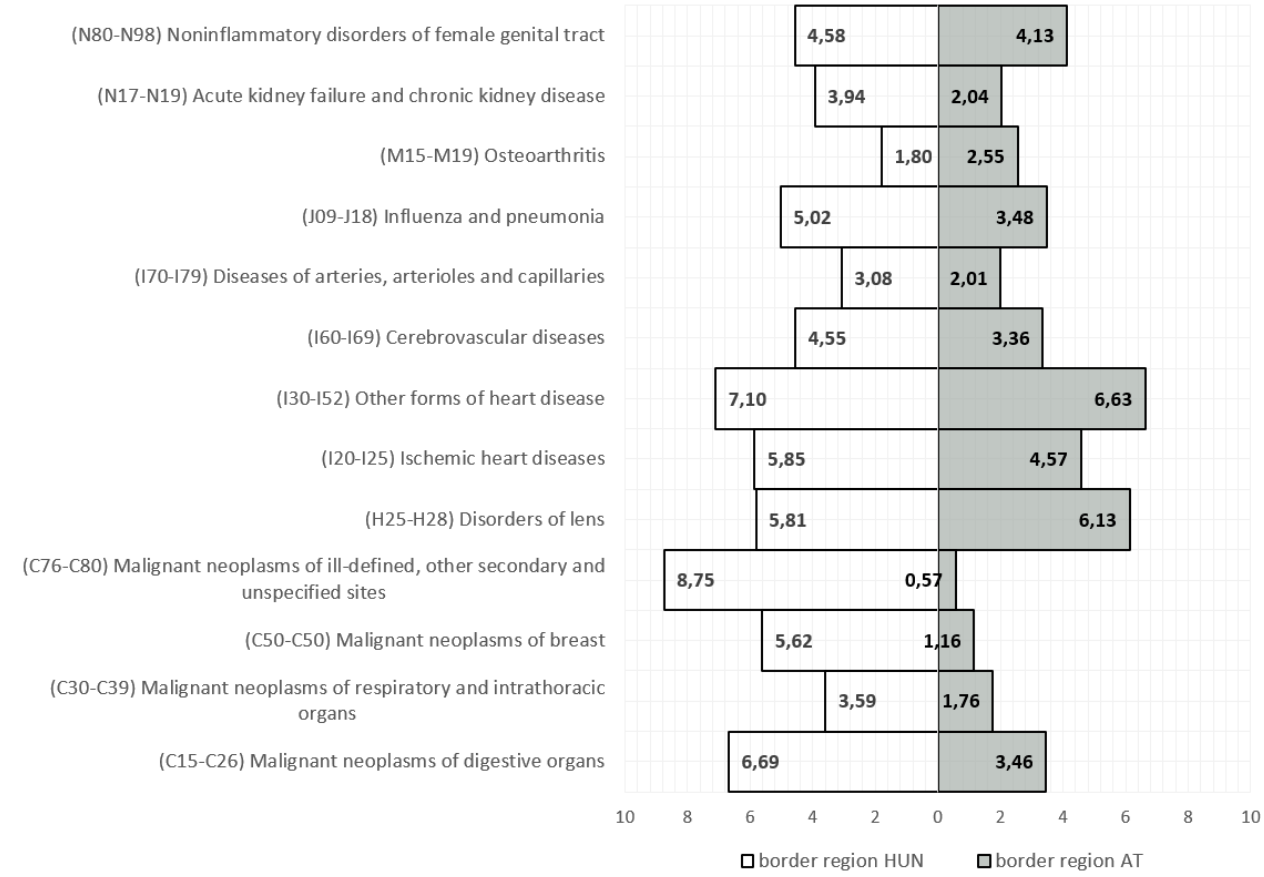
Source: Austrian Hospital Statistics.

Overall, the share of external patients is somewhat higher in the Hungarian border region than in Austria, which may be partly due to the higher number of hospital beds per inhabitant.

The analyses of the diagnosis groups allow careful conclusions to be drawn about the differences of the two border regions: they seem to differ both in the medical specialization of the border hospitals as well as in the epidemiology, which could result in synergetic effects in cross-border cooperation.

Regional Hospital admission rates

Figure 25: Hospitalization rates (hospital stays per 1.000 inhabitants) in the Hungarian and Austrian border region by group of diagnosis (Data 2019)



Source: Austrian & Hungarian Hospital Statistics.

The chart above compares hospitalization rates (hospitalizations per 1.000 population) in the two border regions for 2019.

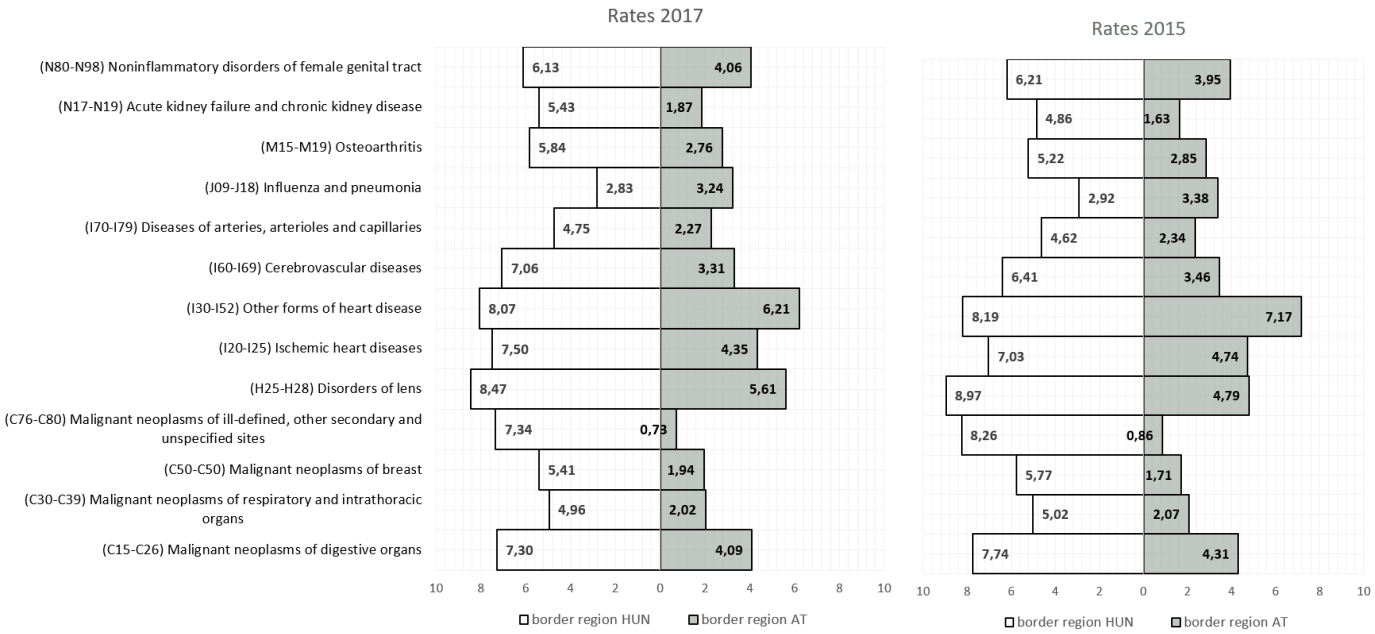
Apart from diagnosis groups '*Disorders of lens and Osteoarthritis'* these rates are (significantly) higher in the Hungarian border region in comparison.

The significantly higher hospitalization rates for malignant neoplasms are striking, although it appears, at least for the 'collective' diagnosis group '*Malignant neoplasms of ill-defined, other secondary and unspecified sites*', that different ways of documentation may be used in the two countries.

The hospitalization rates for groups '*Influenza and pneumonia'* and '*Acute kidney failure and chronic kidney disease*' are also up to twice as high in the Hungarian border region.

The figure below shows that the development of hospitalization rates is relatively stable over time with slight fluctuations (both positive and negative) in the individual diagnosis groups.

Figure 26: Hospitalization rates (hospital stays per 1.000 inhabitants) in the Hungarian and Austrian border region by group of diagnosis (Data 2015 and 2017)



Source: Austrian & Hungarian Hospital Statistics.

The diagnosis groups in which the largest discrepancies in hospitalization rates were found should be considered for possible future cross-border synergies and partnerships.

It would also be interesting to compare the hospitalization rates in the border regions to the respective national rates. These data were not available during this analysis.

Summary and Recommendation Chapter 2

The analysis of the data shows a relatively high number of hospitals on both sides of the border, and a correspondingly high density of hospital beds (beds per 1.000 inhabitants).

No conclusions can be drawn about the quality of intramural care based on the available data, but the two central points that emerged in the analysis of sociodemographic data can be confirmed:

The analysis of diagnoses shows an increase in the incidence of diseases (cardiovascular diseases, and tumours) that are associated with an aging population and whose occurrence could be efficiently reduced by appropriate prevention and education measures.

Moreover, a high density of hospital beds also means a high demand for nurses and medical staff.

In view of the fact that many Austrian students complete their medical studies in Hungary and the increasing shortage of specialists on both sides of the border, there is on the one hand an acute need for action and on the other hand a high potential for cross-border cooperation.

In the future, it will primarily be a matter of using cross-border synergies, for example through the different specialities of the hospitals in the border areas or in the training of junior doctors, and on the other hand to avoid competition for specialists, especially with regard to the income gap and the gap in standard of living between Austria and Hungary mentioned in Chapter 1.

3 POTENTIAL AND OPPORTUNITIES FOR CROSS-BORDER COOPERATION

In this part, the framework conditions and possibilities of cross-border cooperation in the health sector between Austria and Hungary will be presented on the basis of the analysis of the data.

For this purpose, a literature research, further analysis of data, a research on the legal framework, and expert interviews in Austria and Hungary were conducted, furthermore the results of a workshop with the Austrian regional rescue coordinators from all nine federal states were incorporated.

3.1 Analysis of the Structure of the Care System – Literature Research & Data Analysis

Introduction

In 2021, more than 108,000 Hungarian adults worked and 3,200 Hungarian children studied in Austria, a significant proportion of whom, approximately 2/3 of them, commute across the border on a daily basis. At the same time, due to the rapidly rising real estate prices in the Vienna and Bratislava agglomerations and the more favourable living conditions on the Hungarian side, the number of Austrian citizens settling on the Hungarian side but working in the motherland is continuously increasing. In both cases, it can be said that the persons concerned are mostly insured in Austria, but some of the public services, including health services, are mainly used on the Hungarian side. However, there is currently no systemic, well-suited solution for accounting for extra capacity requirements in the current supply system, so service providers are trying to manage the situation according to a unique methodology, mostly in accordance with the possibilities provided by the Community legal framework. Precisely because of these individual procedures, it is not yet clear exactly how much of a burden the phenomenon imposes on the Hungarian care system.

The aim of the activity is to map the impact of cross-border labour mobility on the health care system on the basis of available data and the experience of stakeholders, so that the strategic document can make an appropriate proposal to address the problem.

Search strategy:

Given the complexity of the project, we map it to the following areas:

- » general structure and operation of Hungarian and Austrian health care systems
- » effects of changes in demographics in border areas, in particular on health
- » labour market development, especially in the health field

The aim of the review of the literature related to the topics examined is to reveal the health situation of the Austro-Hungarian border population, thereby developing a short-, medium- and long-term cooperation strategy in the field of health care.

Topic by area, if possible, search for 10 articles and then prioritize them according to relevance.

After matching the focus of the research, we create a list of keywords and search terms for the topic with our colleagues. This is followed by the search for publications in domestic and international databases.

Search algorithm based on the following keywords in the title and abstract:

- Western Hungary
- Burgenland
- Lower Austria
- Medical system
- Demography (cross border mobility)
- Healthcare workers, Health systems, HR
- Morbidity/multimorbidity
- Mortality
- Healthcare system
- Private sector
- emergency care
- Ambulance
- patient transport
- personalised care

Databases used for literature research:

Foreign databases:

- PubMed
- EBSCO host
- Ovid

Domestic databases:

- MATARKA (Magyar folyóiratok tartalomjegyzékeinek kereshető adatbázisa)
- MTMT (Magyar Tudományos Művek Tára)
- Magyar Orvosi Bibliográfia

Selection criteria:

- text availability
  - Free full text
- article type
  - Books and Documents
  - Review
  - Systematic Review
- publication date
  - 10 years
- language: English, Hungarian

Collection of found items:

The results of the search are collected in a results summary table based on a pre-prepared template, the information relevant to the research is recorded, and on the basis of these text summaries are prepared.

The table contains the following elements/fields:

- » Article ID
- » relevance
- » author
- » year
- » title
- » appearance location
- » DOI ID
- » link/availability
- » abstract
- » Purpose of Article
- » literature search methodology
- » topics covered in this article
- » result
- » conclusion, lesson
- » Article limitation, conflict of interest
- » what is the relevant information the article contains?

When extracting literature, the information collected in each topic is grouped by topic, thereby organizing the literature results. The collection of literature can be carried out by two methods: firstly, by systematic exploration, preceded by the definition of search terms; in the second step, use the snowball method to search for information contained in the notices already found.

Austrian and Hungarian healthcare systems

Operational principles

The health care system enables the delivery of health services and the achievement of public health objectives. The aim of health care is to promote the development and restoration of health, to prevent ill health and to facilitate the integration of people with health problems into work and the community.

Preventive care

The health care system includes preventive care, which covers care to prevent and detect disease at an early stage. Preventive care includes tests to prevent communicable diseases, screening tests, environmental and occupational health activities, and family and nursing care.

Austria

In 2020, life expectancy at birth in Austria is 81.3 years, The gender gap in life expectancy in 2020 is 4.7 years (78.9 years for men and 83.6 years for women).

Before the pandemic, the main causes of death were heart disease, stroke, and lung cancer.

In 2019, circulatory diseases were the leading cause of death, accounting for 39% of all deaths). Cancers were the second leading cause of death, accounting for around 25% of all deaths).

Most deaths occurred among people aged 60 years and over.

In a health care system based on social security, responsibilities are divided between federal government and the nine provincial authorities. The government is responsible for health care care beyond the exceptions provided for by law. The main exception is the hospital sector, where the government's responsibility extends to the basic law, the application of which is the responsibility of the provinces. The federal task is the professional supervision of the medical profession in the hospital section... Both the public and private sectors are involved in the provision of services.

In Austria, an independent Ministry of Health was first established in 1972.

In 2020, as part of a major reform, the existing health insurance funds were merged into five funds: the nine regional health insurance funds now form a single fund - Österreichische Gesundheitskasse (ÖGK) - covering around 82% of the insured population, while self-employed persons, farmers, civil servants and railway workers remain insured in two specialised health insurance funds. All health insurance funds cover broadly the same benefits, and since 2017 several steps have been taken to further harmonise benefits, but there are still differences between the insured of the LGU and between the funds of the different professions.

Austria's healthcare system is one of the most expensive in the EU Compared to other national healthcare systems in the EU, Austria's healthcare system is relatively expensive. Per capita healthcare expenditure in 2019 (adjusted for differences in purchasing power) reached €3.943, the third highest in the EU after Germany and the Netherlands. Measured as a share of GDP, Austrian spending in 2019 was 10,4% of GDP, also above the EU average of 9,9%.

Austria had the second highest number of doctors in the EU in 2019, with 5.3 doctors per 1 000 inhabitants, compared to the EU average of 3.9. One of the main priorities of the Austrian Recovery and Resilience Plan is to make primary care more attractive by building more primary care centres. One of the main priorities of the Austrian Recovery and Resilience Plan is to make primary care more attractive by building more primary care centres. The provision of health services in Austria is characterised by free choice of providers and unrestricted access to all levels of care (general practitioners, specialists and hospitals). Austria has a very high inpatient hospitalisation rate, with 7.2 hospital beds per 1000 inhabitants in 2019 - the third highest in the EU after Germany and Bulgaria and well above the EU average (5.3 beds/1000 inhabitants).

Healthcare coverage is almost universal and access to services is generally good. Austria is among the countries with the lowest self-reported unmet health needs in the EU. However, there is concern that the wave of doctors' retirement and the stagnation of the number of doctors with social insurance contracts could reduce the availability and accessibility of services in the future. Meanwhile, the number of doctors without a contract is increasing, especially in urban areas; this may increase financial barriers to access and have a negative impact on equity.

Hungary

The Hungarian Constitution states that all Hungarian citizens have the right to access to benefits. The Hungarian healthcare system has a single health insurance fund and is highly centralised. A single health insurance fund provides health insurance for almost all residents. The fund is managed by the National Health Insurance Fund Management Agency (NEAK), which since 2017 has been under the direct control of the Ministry of Human Resources. Citizens and foreigners working in the country are obliged to join the national social security scheme. Social security coverage is high, with 95% of the population insured and only 5% with an unclear social security status. While the majority of inpatient care expenditure is publicly funded, public coverage of outpatient (ambulatory) care, medicines prescribed under outpatient

care, medical aids and dental care is much more limited, with the range of publicly subsidised medicines and equipment reviewed annually by the NEAK.

Until the end of 2020, the Ministry of Human Resources managed the health system through the State Health Care Supply Centre (ÁEEK). At the end of 2020, the Centre was merged into the newly created National Healthcare Services (OKFŐ) under the Ministry of the Interior, as part of this change, with local county hospitals under the supervision of the National Directorate General of Hospitals responsible for planning and managing inpatient care at county level. These include oversight of the public health care system, implementation of strategic government decisions, monitoring of hospital operations and contributing to the development of a new national health governance system. In early 2020, the government established an operational tribe to manage the country's response to the Covid19 pandemic.

The growth rate of health expenditure in Hungary is increasing but remains below the EU average. Despite this recent increase, health expenditure per capita is below half the EU average after adjustment for purchasing power parity. The ratio of health expenditure to GDP is also relatively low at 6.4%, compared to 9.9% for the EU.

Outpatient care providers are paid on a fee-per-service basis, with each procedure having a fixed number of so-called German points and providers claiming these directly from the health insurer. Except for a few specific procedures, the health insurer pays on the basis of diagnoses related groups (HBCs) for acute inpatient care and on a per diem basis adjusted for the complexity of the case for chronic inpatient care. The government exercises strong control over the budgets of individual health care providers through the NEAK. However, the health sector is struggling to operate within the established budget constraints, so debt accumulation and arrears are a problem. Chronic shortages of human resources, as well as funding and volume constraints, undermine access to and quality of care.

Under the budget, funding limits for health providers are set based on their performance in the previous year and reviewed annually. Although this measure does not remove the overall budget constraints and quantitative limitations, the performance-based framework aims to improve efficiency and reduce debt accumulation.

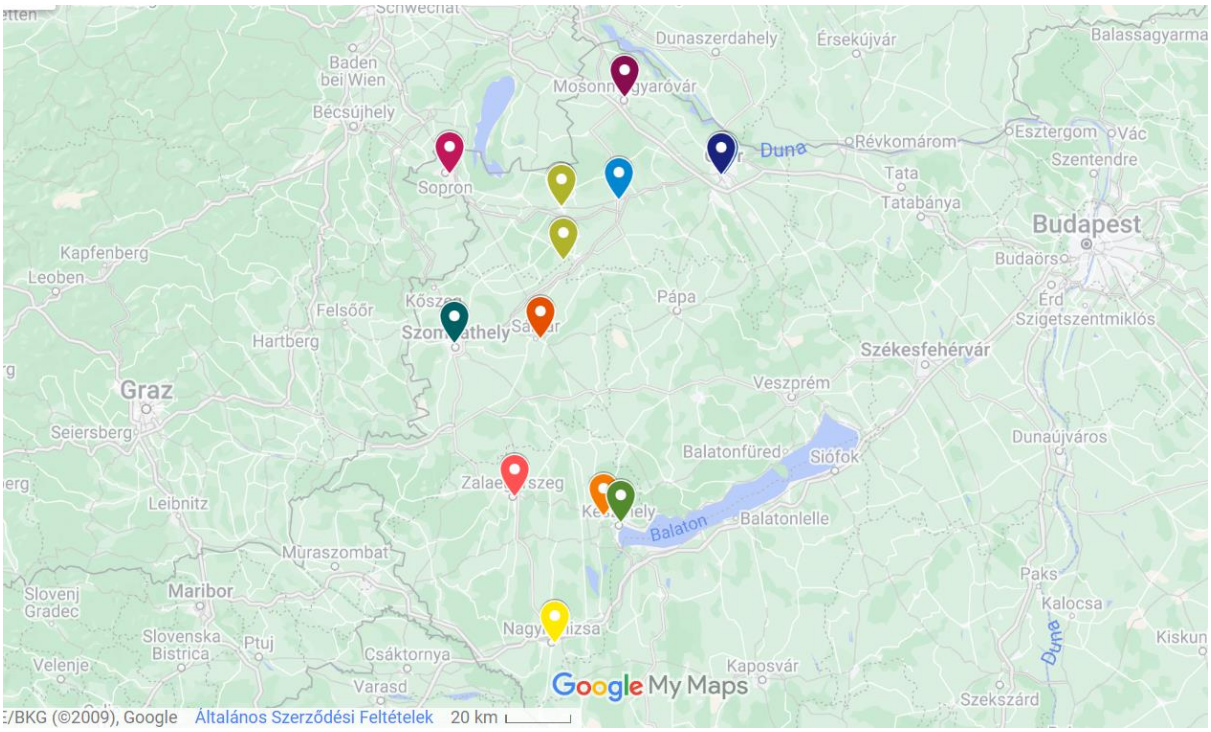
Cadastral

The cadastral structure includes three counties (Vas, Győr-Moson-Sopron and Zala) and three sanitary areas; inpatient outpatient care and general medical services (adult, child, mixed). The data were collected from the public databases of Institute of Health Insurance Fund Management (Hungarian acronym: NEAK), Hospitals and Health Care (Hungarian acronym: NNK) and National Directorate General for Hospitals (Hungarian acronym: OKFŐ).

Structurally, the classical cadastre contains data, except for general practitioners. Here, since more public data was available and was relevant for a full analysis, we can find in it the type of practice (adult, child, mixed), the form of care (provision of territorial care, not having it) and we can also filter out the vacant and vacant practices.

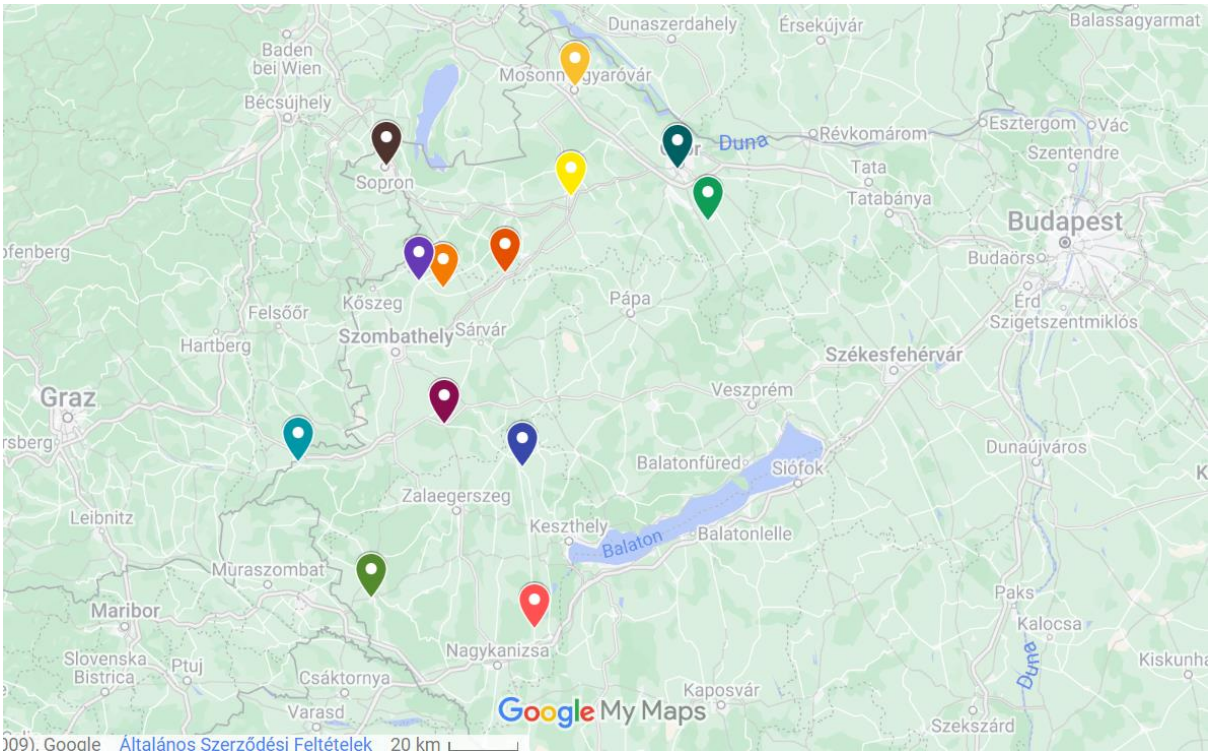
In the three counties, 14 hospitals cover the area, one of them is a private hospital with no territorial obligation to provide care in Győr-Moson-Sopron county, but financed by NEAK for certain services.

Figure 27: Hospitals in the Hungarian Border Region



Outpatient specialist care is provided by 18 institutions, 9 of them in some form of business association, so basically as private providers with NEAK funding.

Figure 28: Outpatient specialist care in the Hungarian Border Region



The "human resources crisis" characteristic of domestic healthcare is the most pronounced in primary care, the increase in the number of vacant practices has accelerated spectacularly in the last 10 years. As of December 2022, there were 647 vacant GP practices, of which 474 were vacant for more than one year. Unfortunately, these three counties are also heavily affected — there are a total of 59 vacant practices out of 620. Of the 561 practices filled, there are 264 adults, 116 children's, and 181 mixed practices, 7 of which have no territorial supply obligations.

Examination of supply reserves

When initiating cross-border health cooperation, it is important to map the remaining capacity of providers in the region for the disease groups with the highest rates of treatment in the area. Obviously, empirical data alone cannot be the basis for a conclusion, as knowledge of the institutional structure and personal capacities is of paramount importance, but statistics can point to some groups of diseases, which ones require serious care, and for which there are already more patients coming from outside the territorial coverage.

As in the first document, the most common adult diseases in the Nyugat-Dunántúl region (Győr-Moson-Sopron county; Vas county; Zala county) were investigated. Statistical analyses continued to include only publicly funded cases.

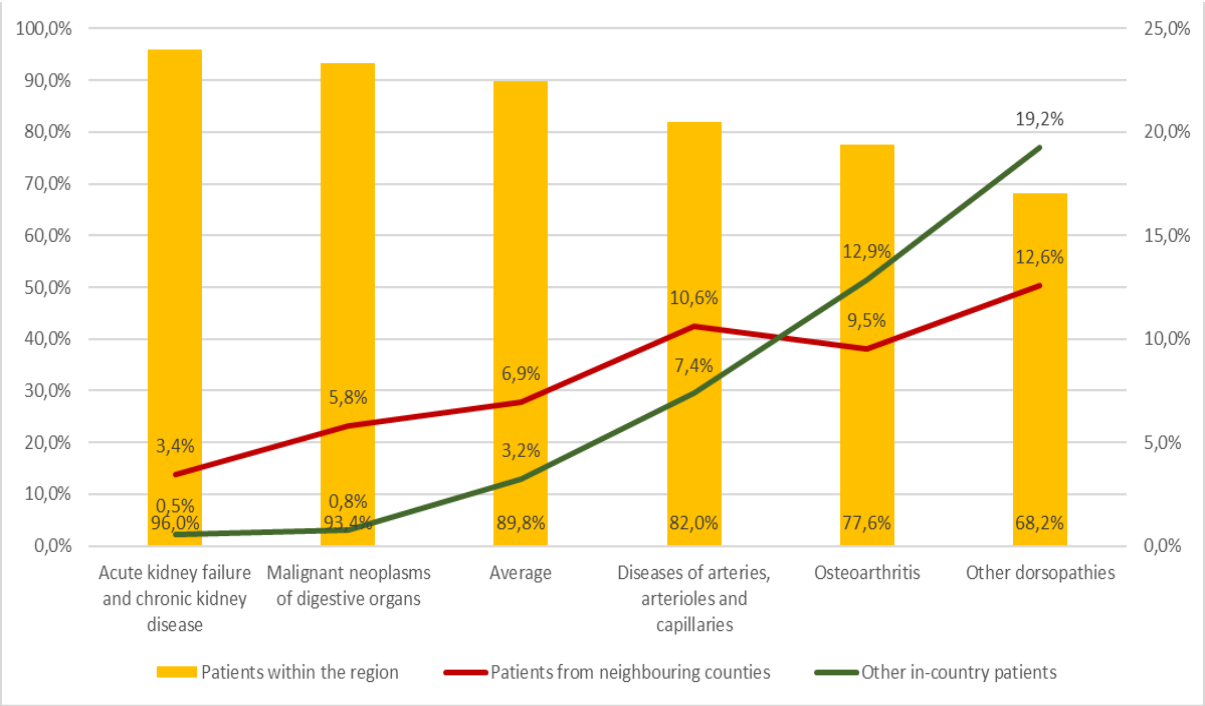
Between 2014 and 2021, looking at the total number of cases (n=679,472), 89.8% of the patients treated in the region came from the three counties of the region: 258,960 (38.1%) from Győr-Moson-Sopron county, 182,750 (26.9%) from Zala county and 168,187 (24.8%) from Vas county.

The remaining cases should also be considered in two separate groups. In the counties bordering the region (Komárom-Esztergom county, Veszprém county and Somogy county), it is possible that the nearest inpatient facility for residents may be in the counties of the Nyugat-Dunántúl region. These three counties accounted for 6.9% of all patients, with an average of more than 15,000 patients per county.

Only 3,3% of patients came from the remaining 13 counties in the country and the capital region (an average of approximately 1600 patients per county).

It is also important to look at the distribution of patients by disease groups and by place of residence. The vast majority of the 14 disease groups examined have an average or higher (>90%) proportion of patients within the region, but there are three groups ("Diseases of arteries, arterioles and capillaries", „Other dorsopathies", „Osteoarthritis"), where this rate is well below the average, by more than 5% (the figure also includes the disease groups "Malignant neoplasms of digestive organs" and "Acute kidney failure and chronic kidney disease", where the majority of patients were from within the region, just for demonstration purposes):

Figure 29: Classification of the treated patients in the region by disease group and origin within the country



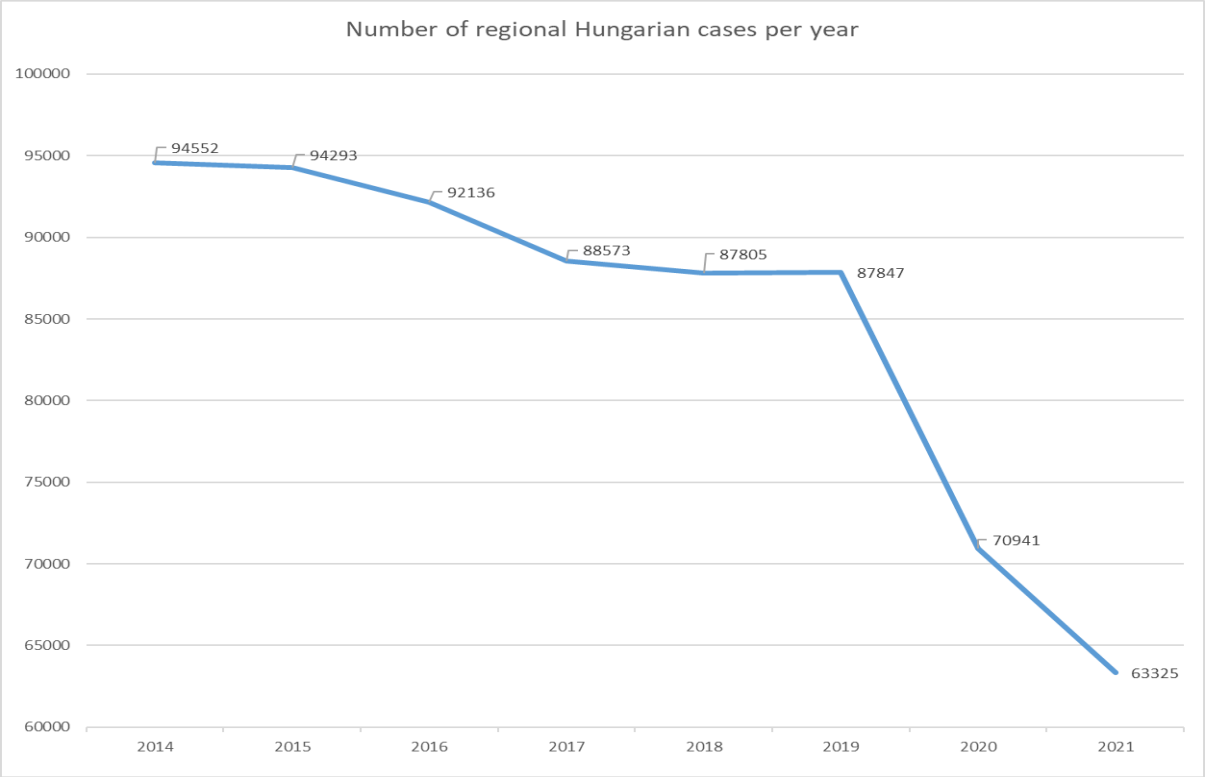
For these diseases, it is important to note that although the rate of patients from the neighbouring counties is higher too, the number of patients from the other parts of the country has increased significantly. This suggests that the region certainly has huge flexibility and reserves in the treatment of these diseases, especially musculoskeletal diseases ("Other dorsopathies", „Osteoarthritis"). This fact certainly offers potential for cross-border health cooperation in the future. In the event of possible future cooperation, it would be worthwhile to evaluate in advance the capacities and the available services of the two sides of the border.

Changes in reported cases by year

A good predictor of the flexibility and adaptability to change in the care system is currently the annual case numbers. Our analysis is based on the period from 2014 to the present, with 2021 being the last year for the statistics. When carrying out statistical analyses in yearly splits, it is clear that the discussed time period has to be divided into two parts, the part before and the part during the COVID-19 pandemic, as the health care systems were quite different in the two periods. From one point of view, it can be certainly interesting to look at the numbers of patients during the pandemic in contrast to the numbers before, because this can be a good indicator of which types of care can be expected to have approximately the same number of patients in a similar situation in the future, and which groups of diseases are able to adapt to a reduced or even increased capacity requirements.

If we look at the five years preceding the pandemic, there was a general, steady decline in the number of patients treated per year in the studied disease groups (which almost stopped in 2019), and then these numbers dropped dramatically, from 2019 to 2020, just the 80% of cases registered, and by 2021 this had fallen to 72% of the pre-pandemic situation.

Figure 30: Number of regional Hungarian cases (patients treated) per year

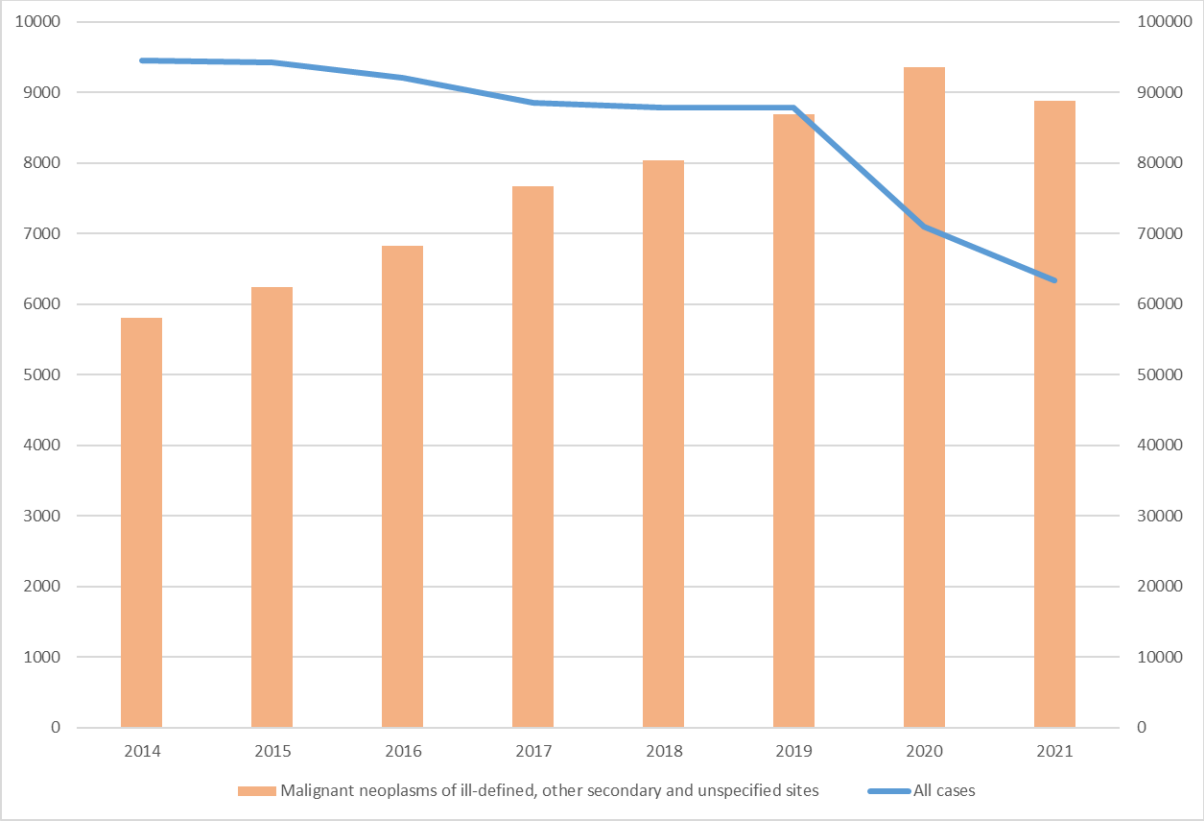


For the reasons detailed above, and in view of the dramatic decline in the number of cases, it is worth examining the trends in individuals in the disease groups and in the context of the overall decline in the number of cases.

Of course, there were some groups of diseases that showed a similar decrease to the general case numbers, but there were also some groups that – contrary to the trend – showed an increase in the number of cases. The most interesting trend was seen in the patient group "Malignant neoplasms of ill-defined, other secondary and unspecified sites", where there was a 70% (68.3%) difference compared to the overall trends in case numbers, and when looking at the data during the pandemic, there is no dramatic decrease, and case numbers are well above the average of the years preceding the COVID-19:

The disease groups "Malignant neoplasms of respiratory and intrathoracic organs" and "Disorders of lens" also show a more significant positive trend in the pre-pandemic period (24.6% and 22.9% positive trends respectively). In the negative direction, there was no major deviation from the general trend.

Figure 31: Development of regional Hungarian cases (patients treated) with the diagnosis “Malignant



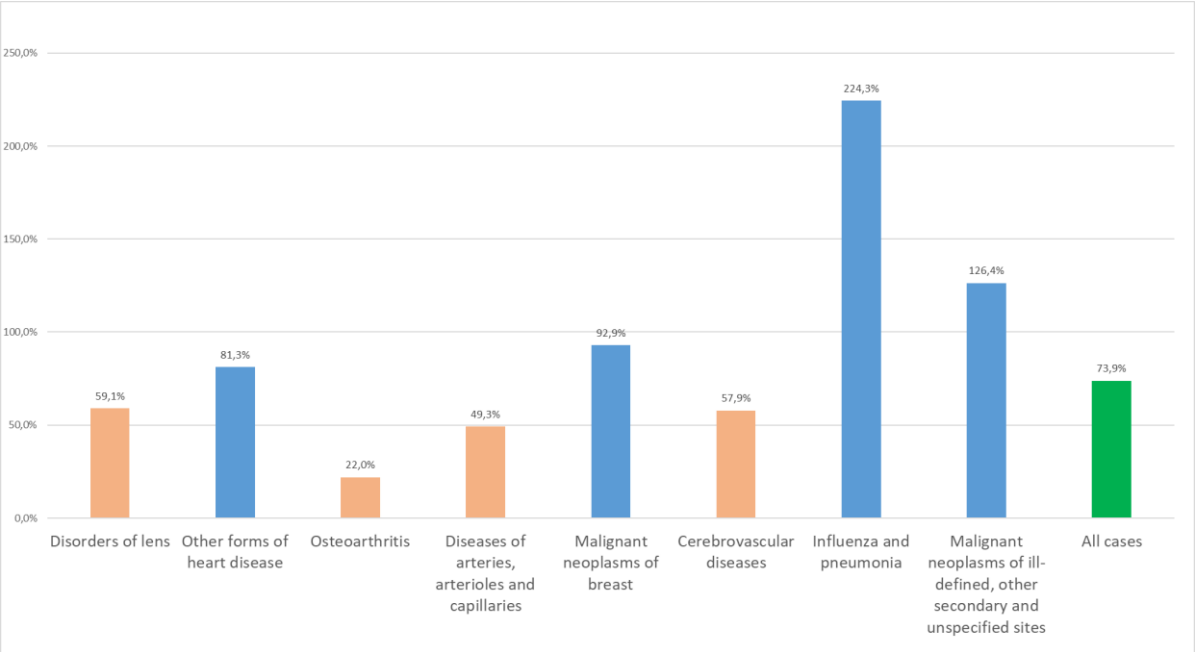
neoplasms of ill-defined, other secondary and unspecified sites”

Of course, our statistical analysis is not able to identify the causes, but the group's experts are clear that the changes are unlikely to be due to epidemiological, health or lifestyle changes (rather, for example, to changes in "coding" the financing system).

The disease rates during the COVID-19 pandemic may obviously be a different cause from other reasons. The generally accepted fact, that the number of hospitalizations decreased during the pandemic, is reflected in the numbers. However, it is also interesting to look at which groups of diseases have changed in what proportions. The average annual decrease in the number of patients during the years of the epidemic (2020-2021) compared to the years before (2014-2019) is approximately 26.1%. For comparison, the already considered significant decrease in the five-year period 2014-2019, was 7.1%.

In the graph below, we have indicated the groups of diseases that have shown the most significant decrease from the average expected decrease (100% for each group of diseases is taken as the average of the years before the pandemic period; the decreases in the blue columns are lower, in the yellow ones higher than the average):

Figure 32: Groups of diseases that have shown the most significant decrease from the average expected decrease

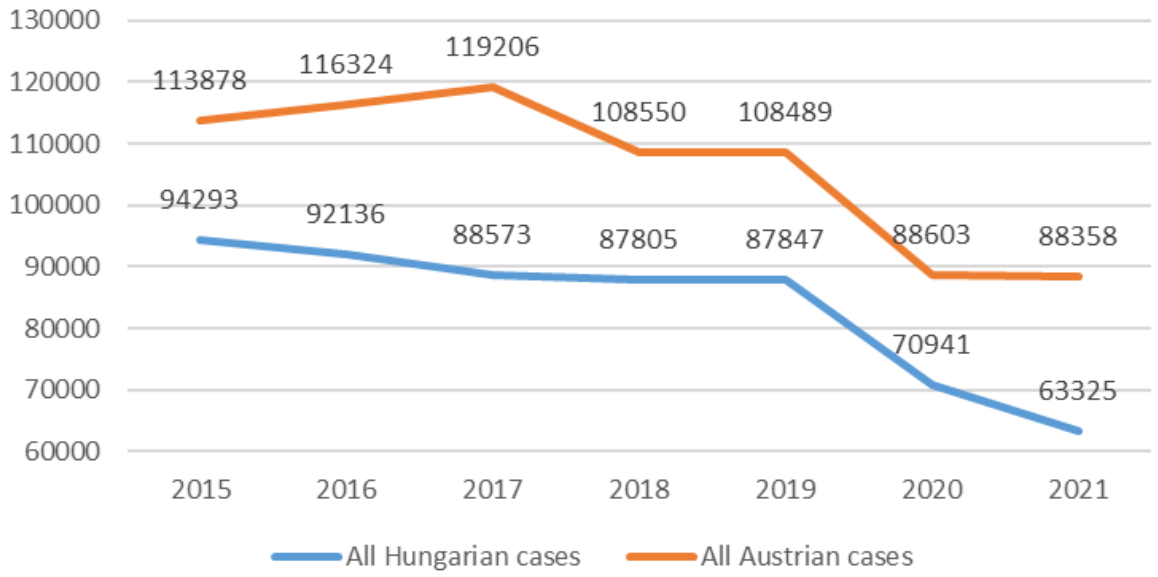


Based on this graph, the largest reduction in proportion was observed in diseases with lower mortality ("Eye diseases", "Arthrosis"). For example, arthrosis as a disease clearly requires elective surgery, so the proportion of these diseases has understandably decreased with the postponement of elective surgery in Hungary. It is also interesting to note that the rate of vascular type diseases has also been seriously reduced, and although there is a high rate of elective interventions, there is also a high rate of acute interventions, one can only hope that the serious reduction has not affected acute interventions. For those disease groups that show a positive trend away from the mean, it is clear that the number of cases of influenza and pneumonia starts to rise sharply during a pandemic period as respiratory disease.

The small decrease in the proportion of tumour cases may be evident given the nature of the diseases, and the "Malignant neoplasms of ill-defined, other secondary and unspecified sites" disease group continued its upward trend in accordance with the trends already detailed above, which resulted in an increase in the number of cases during the pandemic period, rather than a decrease. Another disease group with a smaller proportional decrease is "Other forms of heart disease", where the acute nature of care is responsible for the smaller rate of the numerical decrease. Among cardiac diseases, our experts believe that this group may also be the one that peaks upward, because, in many cases of emergency care, there is no diagnostic capability that can further refine the cases as the "Other forms of heart disease" diagnosis.

When the totals of the Hungarian and Austrian case numbers are compared by year, the trends are quite similar. A more minimal, steady decrease in the period before the pandemic (with a larger spike in 2017 on the Austrian side) and then a decrease in 2020 due to COVID-19 are proportionally the same. One interesting difference can be detected, however, which may be worth monitoring in the future; while on the Austrian side, patient numbers stabilised quickly after the first year of the epidemic, this had not yet happened on the Hungarian side by 2021 (it is only the ratios that should be looked at, not the exact numbers, as the population is different):

Figure 33: Austrian and Hungarian number of cases by year



3.2 Interviews - HUN

For this chapter the team mainly focused to ask people who are working as a head director of a healthcare institutions at the Austro-Hungarian border area, on the 2 days interview period the team conducted 4 interviews with the people listed below:

- Zoltán Benedek, MD; General Director of Lumniczer Sándor Hospital and Clinic, Kapuvár;
- Birgit Ringelhan, MD; Chief Physician; Pathology Department of Soproni Erzsébet Teaching Hospital and Rehabilitation Institute, Sopron;
- Lajos Nagy, MD; General Director of Teaching Hospital Markusovszky, Szombathely
- Ágota Kránicz, MD; Medical Director of Hévíz Medicinal Bath and St. Andrew's Hospital for Rheumatology

Health status of the border region

The health status of the population of the border region considers it to be close to the Hungarian average. The problem areas are formed in accordance with national trends, it cannot highlight any particular regional specificity. An unhealthy lifestyle plays an important role in this. All of the interviewees agreed that the cardiovascular- and cancer diseases are the most common health problems in Hungary. An unhealthy lifestyle plays an important role in this, unfortunately Hungarian people are not aware when it comes to healthy living and lifestyle.

According to the interviews, based on their experience, the biggest problem is that Hungarians who work in Austrtia have their general medical care outside, but there is no connection or transfer of information between Hungarian and Austrian care, so examinations are often repeated, and some important information sometimes lost. It would be important to build the processes of this exchange of data. For now, getting information based on relationships with a person is the only thing that works.

The Hospital in Sopron must be connected not only at institutional but also at general medical level with general practitioners from the Austrian region.

However, it was also mentioned that it is not only the lack of cross-border cooperation that is completely to blame for the lack of information flow, in many cases there is no quality communication channel between Hungarian institutions, which could be used to transfer, for example, good quality visual information.

Capacities, gaps, areas for improvement

The Hévíz Spa and St. Andrew's Rheumatic Hospital are at the city hospital level in the current system, but in practice they are an important specialist hospital in the field of musculoskeletal rehabilitation and rheumatology. As a structural unit, Hévíz is a special-position hospital with a musculoskeletal orientation. Despite the status of a city hospital, the hospital in these areas is a national admission, with a large number of chronic patients being cared for here.

The hospital has 225 rehabilitation beds and 39 rheumatic beds. They are trying to replenish this at the expense of Hungarian insurance, before the COVID there was constantly almost full occupancy in the institution. At the moment, it can still operate within limits, territorial competence is being prioritized at the moment.

In terms of capacities, the lack of human resources is a problem in the region, which makes it difficult to plan for supplies. The shortage exists for both doctors and nurses. A significant number of people from the region go to Austria to work.

Both doctors, nurses and other health professionals are affected by the shortage of human resources. But for doctors there is also an interesting geographical factor. From the northern part of the region (Győr, Sopron, etc.), specialist doctors can easily find their way to the big Austrian cities (Wiener Neustadt, even Vienna), but from the southern part of the region (southern part of Vas County and Zala County), these cities are already far away for daily commuting, and there is no other cities on the other side of the border, so in the absence of serious professional challenges, the outflow of specialists is apparently lower.

This problem does not really affect nurses and other hospital staff, as there are also jobs of a suitable level of competence on the southern side of the border. In fact, several interviews revealed that institutions have organized German language courses for their staff (either because they wanted to open up to Western patients at the institutional level in the form of paid care or simply as an institutional training to motivate staff), but even after half a year of German language experience, staff members have quit, and went to work to the other side of the border, and because of this, these opportunities have been eliminated.

However, it was also mentioned in their interviews that there have been examples of nurses who, although they leave Austria because of the salaries, return home after a while because of homesickness or more serious professional challenges.

The issue of the existence of human resources can also be one of the main obstacles to the exploitation of the hospital's goals and the potential of its areas to be developed and strengthened.

The hospital role in the classical sense in the region is played by the Keszthely Hospital. There is no emergency care in Hévíz, but in Keszthely and Zalaegerszeg. She sees the issue of emergency care as a problem area. In his view, the rules for the organisation of patient journeys are not clearly declared and that obligations should be systematised. Currently, in many cases, it depends on individual decisions who is taken where, so it happens that the patient circulates unnecessarily. By clarifying patient pathways, in addition to reducing costs, capacities could also be created.

Another problem area in the region is radiology, where there is a significant shortage of specialists. Here, the application of teleradiology may be possible.

Obstetrics-gynecology is becoming more and more problematic, also due to a shortage of specialists.

Traumatology is a problem area in places, especially when the need for care ramps up during the tourist season.

Changes, improvements made, plans

In recent years, significant infrastructural developments have been implemented in Hévíz. Care buildings have been modernized, as well as an outpatient patient management system and established.

An important development (almost 200 million items) was a movement analysis laboratory established within the framework of the National Healthcare Services project, which is a unique feature in the country. In the laboratory, they can measure all the qualities of movement, which can also be used in musculoskeletal rehabilitation, diagnosis, and monitoring the success of therapy.

The opportunities offered by the lab are not yet sufficiently exploited, according to the director, due to capacity reasons, COVID has diverted attention from this direction.

They want to strengthen this profile of the hospital, even as part of a public health program to address the posture problems that are commonplace among children today. There is also cross-border potential in the rehabilitation-sports areas of the hospital.

Strengthening the health tourism is clearly the main professional goal in the future of the institution.

A cooperation between Sopron and Wiener Neustadt was launched 2 years ago, but funding and support are needed if cooperation in the field of pathology is to be developed.

It would also be important to clarify the legal issues, as has already been mentioned, which is the basis for further improvements.

The flow of Hungarian nurses and doctors to Austria is indeed a problem, but there is a need for qualified assistants on both sides of the border.

A telepathology conference is held every Tuesday, where relevant individuals are invited and someone on a certain topic performs, which is a good start for possible workshops so that the interest holders of the region can get to know each other.

It would be important to support regional development at EU level and, in this cooperation, to create a cross-border hospital, especially in the part where this region has already fully 'grown together'.

Cross-border practices, potential

In Hévíz, there is a long tradition of providing care to foreigners, which, although it has declined because of COVID, has long been part of the life of the institution. They will continue to be open to cross-border cooperation and to participation in the development of technical frameworks for cooperation.

The hospital is also connected to a 4-star rated hotel, which would like to strengthen the health tourism profile. This can also offer opportunities for cross-border patients. The hotel has a capacity of 54 rooms with 112 beds. Some of the rooms are barrier-free.

From 1972 to the present, our institution had an annual contract with the Austrian insurer AUVA. In the last 2 years, no patients have been sent due to the COVID pandemic. We received patients in 3-week tours for years between the end of March and the beginning of October. There were 25 people per turnaround. This number has gradually decreased over the past 10 years to a level of about 10 people per turn.

Regarding uninsured patients, the role of Hévíz in health tourism is well known. In addition to domestic guests, many people from Austria, Germany and Russia also came to the settlement. There has been a rearrangement in this area due to COVID (or now the war); the region is also forced to open up to new target groups.

Permanent foreign residents are also many in the settlement.

It would be important to support regional development at EU level and, in this cooperation, to create a cross-border hospital, especially in the part where this region has already fully 'grown together'.

A telepathology conference is held every Tuesday, where relevant individuals are invited and someone on a certain topic performs, which is a good start for possible workshops so that the interest holders of the region can get to know each other.

Telemedicine

The more widespread use of telemedicine is one of the positive benefits of COVID. It can be used during patient care (control examination) in patients treated with medication.

Pathology and radiology are a shortage profession not only in Hungary, but also in Austria, here there would be many opportunities within the field of telemedicine, this would somewhat eliminate the shortage of doctors, since in this diagnostic area the patient does not have to be present and the information could be shared immediately, although these findings are very large in size and it would require IT investments in order for this data exchange to take place, not to mention the legal hurdles.

Rescue and emergency medical services

Another focus of the interviews was on the rescue and emergency medical services, the current situation in this regard in western Hungary and possibilities for cross-border cooperation. The 4 interviewees were interviewed by the project's experts according to the previously created interview method plan:

How is the organizational background of the ambulance service structured? Who is responsible for:

» the legislation?
» the professional coordination and policy making?
» the implementation (executive body)?
» any other role?

How the ambulance service is financed?

» who is the financing body?
» what mechanism is applied? (fix budget/year, performance-based, etc.)
» how do the financial issues affect cross-border cooperation?

The people asked for the interview could give a deep and valuable input on the situation of the rescue in Hungary: Hüse-Nyerges Enikő, dr. Golopencza Pál, dr. Gecse Krisztián, dr. Nagy Lajos

Potential for cross-border cooperation

In the Austro-Hungarian border region, cross-border cooperation has equally relevant potential in both directions in terms of rescue and emergency care. In Hungary, Győr-Moson-Sopron and Vas counties are affected in this regard, where capacities capable of serving cross-border needs are available. Szombathely is close to the border, there are still many Austrian patients in the city. On the Austrian side, the Oberwart hospital is the nearest care facility, but only with limited capacities. Due to the distance of Vienna, it is worth bringing the Hungarian injured and, if necessary, the Austrian injured to Hungary. In terms of rescue and emergency care, Zala County is less relevant; there is no definite supply in Zalaegerszeg and Hévíz. In Austria, the border areas of Burgenland are primarily affected, and in part even Lower Ausria may be affected, but there, due to the proximity of Vienna, the organization of emergency care is less problematic.

Talking about traumas. Austrians who do extreme sports in Hungary (Pannonia Ring) are common, from where they arrive in Szombathely daily, especially in the summer period. The region is transit in nature in terms of tourist travel, because of which there are many foreign injured people, and public accidents suffered by a large number of Hungarians commuting to Austria on a daily basis are also common cases.

In addition to cross-border emergency care, there is also a big problem in organizing patient transport within the current operational framework. Ensuring the smooth process of patient transfer is also a task to be solved. Austrian patients then turn to the insurance company, during which administrative problems may occur, the process does not go routinely. Often these patients wait 3-4-5 days in the Hungarian hospital. The Hungarian ambulance service only takes the foreign patient to the border, and the Austrian ambulance service transports the patient only after the necessary paperwork. As such, the inefficient operation of cross-border transcription of foreign patients entails the commitment of capacities. In the case of cross-border rescue, these transports and the relevant direct and associated costs could be prevented.

In the Austro-Hungarian border region, cross-border rescue is a relevant potential in areas where the institution is geographically closer across the border (in the case of Győr, Sopron, Szombathely or Vienna), or an institution with a higher level of progressivity can be reached. On the Hungarian side, this can be discussed primarily in Győr-Moson-Sopron and Vas county, Zala county is considered less relevant from this point of view.

In his view, cross-border rescue rarely has a right to exist, however, joint action with Austria would be vital in mass cases. It is necessary to prepare for these cases by defining the appropriate regulatory framework and coordinating professional and technical procedures.

Current connection, operation

According to the territorial duty of care, life-saving interventions must be carried out. If the patient has insurance, the details of the care must be recorded, which is then arranged by the insurance company. In the case of a non-life-threatening condition, the guest decides where he wants to receive the care.

There is no meaningful connection with the institutions in Austria. They are in direct contact with the insurer, who name the receiving institution. In the event of a more serious accident, the details of the patient's care, medical condition, etc. must be forwarded in an e-mail. Conversely, there is no flow of information. When a Hungarian patient who has received emergency care in Austria is transported to the institution by Austrian ambulances, it is not agreed in advance. On the Hungarian side, they don't know anything about the patient.

In terms of the size of the patients being cared for, the number of Austrian patients being treated in Hungary is significantly higher than the number of Hungarian patients being cared for in Austria (in the case of Vas County).

According to current practice, there is no direct link in terms of management. In the case of care for a foreign patient, the Hungarian institution transmits the information exclusively to the insurance company. There is no connection between the radio systems and IT networks of the two countries, and the protocols used during professional procedures are not coordinated.

Main impediments for cross border cooperation

Cross-border rescue is a complex issue. The maintenance and operation of health systems is in the hands of the Member States. The EU has tried to take action to create the conditions for cooperation, but

member states' competences are expected to remain in place in the future. This means that it is essentially possible to achieve anything that has multiple levels at the cost of bilateral or multilateral initiatives.

The political will of the Member States to cooperate is crucial. This can appear at a lower level along the border than federal states, quasi-closer to the people, but in centralised countries such as Hungary there must be a will to cooperate at the highest level of state administration, which is more difficult to establish, since these are regularly grassroots initiatives

A legal framework must be created, after which the professional bodies can come and work out the details of the content of the cooperation.

The funding of public health varies greatly from one Member State to another, with a difference of up to 5-10% of GDP. There are also differences in the structure and operating practices of insurance systems, the relationship and interconnectedness of public and private care are also different in different countries.

An important element of cooperation is trust, not only at the level of decision-makers, but also among people living in the border region. For effective cooperation, a prerequisite is a general integration.

There are also operational technical issues regarding cooperation. These include, among other things, the license to operate ambulances, the use of a distinctive sign, professional qualifications, the issue of accepting diplomas, the need for membership of a chamber, etc. These are problems that can be easily overcome by bilateral contracts.

Operating protocols must be known to the parties (who controls, who makes decisions, etc.) However, due to possible different competencies and professional protocols, it is necessary to organize cross-border trainings for the workforce.

In the case of the Hungarian-Austrian border, I consider the language barrier to be important, especially among patients, which can be important for certain types of care.

The development of the technical background of communication between units and dispatch centers should not be a problem if there is sufficient intention and legal background.

Another dimension is the issue of funding. The European practice of cooperation in the field of emergency care is generally that the cooperating states do not reimburse each other for the care provided in a neighbouring country. Everyone pays for benefits made in their own system, which mostly equalize each other. This will significantly simplify the process.

The financing of hospital (non-emergency) care requires clarification; at the moment this is not going smoothly.

An important hindering factor from the point of view of financing is that it is currently not worth it for Hungarian institutions, and therefore it is not in their interest to care for foreign patients. It does not appear as revenue, but rather as an additional cost factor for institutions.

Legal barriers are the number one obstacle: Ambulances are not allowed to move across borders. Another determining factor is funding issues at institutional level.

At institutional level, factors in terms of capacity and human resources for the organisation would not be a major problem, and funding and legal obstacles and bureaucratic reasons stand in the way of progress.

He doesn't see language barriers as a serious issue. Regulated exchange of information in English or German without unnecessary circumstances, regulated according to the SBBAR, should not be a problem.

TETRA rescue guidance system is available on both sides, there is no technical barrier to connecting them.

Officially, Hungary has no insight into the operation of the rescue and care system on the Austrian side. They know about how to operate through informal information. There is no significant difference between the quality of care provided on both sides, from a professional point of view. The differences are mainly in terms of the amenities provided by hospitals (room facilities, food, etc.).

The primary issue to be overcome is the obstacles posed by the legal regulations in force.

- » Hungarian doctors with a Hungarian diploma cannot currently treat patients in Austria, they currently need an operating license abroad.
- » Use of driving licenses in Austria.
- » Currently, Hungarian rescue units cannot use blue lights in Austria.
- » An ambulance cannot cross the border.
- » Who gets to decide whether to send a unit across the border?

All of these must be clearly regulated. It is necessary to establish a legal framework and fully regulate the topic, with the involvement of competent legal professionals.

Language barriers in communication: Hungarian-German software with a translation function is required.

Technical issues:

Issue of data sheets: The recording and transmission of basic data, as well as the professional protocol, must be coordinated. This can be solved by connecting software currently in use at the national level.Ensuring radio connectivity. In Hungary, the UDS (unified digital system) is used by priority bodies under the authority of the Ministry of Home Affairs. For national strategic reasons, it is highly questionable whether Hungary will share its radio system with other countries.

Technical obstacles can be overcome if there is political will and funding.

Obstacles of a professional nature:

Harmonization of medicine stock and equipment. Are the drug sets used in the same way?

There is no consensus on what the main consideration during transport to the hospital should be? Should the patient be transported to the nearest facility, or should progression levels be authoritative?

Financing issue:

In the case of an EU card, the patient is entitled to the first care without reimbursement, but certain elements, such as repatriation, are not covered by the card. Who pays the shipping costs if there is no insurance?

3.3 Interviews - AT

On the Austrian side, the expert interviews were conducted with the Head of Strategy and Quality in Medicine at the Lower Austrian Regional Health Agency and the Medical Director of a clinic in the border region.

The interviews were conducted based on an interview guide, which can be found in the Annex. The course of the interviews led to a focus on the cross-border cooperation opportunity, respectively the challenges and obstacles in this regard

Main impediments for cross border cooperation

According to the experts, systematic cooperation with Hungary is generally difficult. It exists and has existed for a while on a low level in certain Austrian and Hungarian hospitals. One fact that is proving to be very obstructive concerns the migration of nursing staff and, above all, doctors: Hungarian doctors from the border region, who speak German to some extent, are already working in Austria, furthermore there is also active promotion from the Austrian side at career fairs in order to recruit health professionals from abroad Lower Austria tends to concentrate in their efforts on Slovakia, Burgenland tends to concentrate on Hungary.

This leads to a large brain drain on the Hungarian side on the one hand, on the other hand Hungary is forced at the same time to improve the working conditions (including salary) decisively. Nevertheless, in times of shortage of doctors and nurses, cooperation is generally difficult, and the priority of the local policy and the hospitals is the comprehensive provision of hospital services for the local population.

The language barrier is the biggest obstacle to any cooperation. In the case of the pilot project in Wiener Neustadt in pathology/histology, this works in part so well because, because the Hungarian counterpart also speaks German, and therefore language plays a minor role in this project.

Moreover, the entire system in Austria is very process-oriented and bureaucratically structured. In some cases, even cooperation within Austria between individual federal states is very challenging due to different responsibilities in the health care system. Innovations, for example also in the field of telemedicine, are very difficult to implement within such a system.

The pandemic has also not led to increased international cooperation, as might have been expected. On the contrary, it was very difficult to maintain existing cooperation across closed borders.

Cross-border practices, potential

Cooperation generally is only possible with great difficulty, most likely within the framework of training cooperation in the sense that Hungarian doctors can be trained at Austrian hospitals in medical specialities in which it is difficult to obtain a training position in Hungary and vice versa.

Cross-border cooperation in rescue and ambulance services would also not only be desirable, but also implementable. Especially in case of disasters, one should be prepared accordingly for cross-border joint operations.

Prerequisite for a real cooperation would be on the one hand resources, a comprehensive legal framework, uniform schemes for reporting and documenting health data.

Another reason that the pathology/histology collaborative project is doing so well is that it is filling an (unmet) need. There is a high potential for innovative international collaborations in specialized medical fields, where there may even be a limited number of experts across Europe (pathology, molecular genetics, tropical medicine etc).

Irrespective of this, an essential prerequisite for the success of international cooperation is the clarification of the question of financing (How do the parties involved earn their money?)

In this context, it is also important to note that bureaucratic and legal hurdles can be solved very quickly and easily when an innovative cooperation project meets local needs, even financial matters can be solved very quickly under such circumstances.

Another area in which cross-border cooperation could be possible and useful is telemedicine. The prerequisite for this is an appropriate infrastructure as well as a clear legal framework - neither of which is currently guaranteed in Austria, which also means that there is room for improvement and innovation in this area.

Telemedicine solutions are also of particular interest when it comes to the transfer of health knowledge, (e.g. diabetes training etc.). Especially in times of a shortage of specialists, resources could be used efficiently and independent of borders. What speaks even more for a joint development of such solutions is the relatively large commuter and migration flows between the border regions can also be used for joint projects concerning the transfer of health knowledge (see recommendations Chapter 1).

Rescue and emergency medical services

Regarding the current state and challenges in the Austrian rescue and emergency system with a focus on cross border operations a workshop took place with the Austrian regional rescue coordinators from all nine federal states.

A short summary of the results can be found below.

Currently the biggest issues relate to cross-border as well as interstate emergency helicopter operations: It is increasingly difficult to find a bed or a hospital that is ready to accept a patient due to limited capacities in the target hospitals. This problem is aggravated by the unclear financing of operations that cross federal state or international borders and leads in extreme cases to the fact that hospitals are not willing to accept patients.

Furthermore, there are legal issues/problems with emergency physician missions across state borders e.g., registration of physicians from abroad in the Austrian physician list is required to operate in Austria. Also, there are unanswered questions about the international use of emergency medical equipment).

Although there are individual agreements, there are no comprehensive agreements with all of Austria's neighbouring countries, but negotiations between the respective ministries of foreign affairs are currently on the way.

General challenges in emergency medical services relate to the increase in missions which will be difficult to manage in the future:

The number of ambulance transports increased significantly, especially during the pandemic, resulting in additional workload for the rescue service.

At the same time the willingness of volunteer paramedics is decreasing (partly due to increased deployment numbers), and there is also a general shortage of emergency physicians.

In order to counteract the increasing number of emergency calls, the experts recommend that the population be informed more about the tasks of the rescue service and that the health literacy of the population be strengthened so that the rescue service is only called when it is actually needed. Telemedicine solutions are also being discussed in the context of potentially easing the burden on emergency medical services. Potential measures and solutions based on these recommendations should be thought of with cross-border cooperation in mind, to make use of possible synergies.

Recommendation cross-border rescue/emergency patient care

Systemic cooperation is needed.

It is not individual injured people who cause problems, but mass cases, for which cooperation is necessary to deal effectively, it is necessary to be prepared for this. This requires an infrastructural and technical connection. On the Hungarian side (non-cross-border cases), it also happens that in the case of a mass accident, they do not know about the important details (how many injured, what kind they are, etc.).

There is an opinion that direct, personal communication between the two-sided shift supervisor is the best option. Absolutely no complex systems are required, only a shift manager available on a fixed number. Of course, for efficiency, efficiency can be enhanced with data-based solutions, even technologies supported by artificial intelligence, but the basis is personal, direct contact.

The first step before any form of cooperation is the conclusion of an interstate agreement.

The next step is to set up a team of experts who will work on solving the issues listed above. In the permanent team of experts, there must be a leader with a comprehensive view of the field, as well as a lawyer, a doctor, a medical liaison, and a financing specialist. In order to solve specific cases, an IT specialist, an engineer, a telecommunications expert, etc. involvement is required. (One of the interviewees can also recommend specific people for the task)

The framework for cross-border cooperation can be provided by a web interface that enables communication between the two control centres. In fact, the control centres of both countries use their own software in their day-to-day work - in Hungary it is MIR.

The main recommendations for cooperation:

Based on previous experience, it has been formulated that successful cooperation requires that the parties do not get lost in the details.

It is good to have external funding. Many good European examples started from projects financed by Interreg, on which it is possible to build infrastructural developments with public funds in the future.

Not only professional organisations should cooperate, but also involve the population, whose lives will be directly affected by the cooperation. The basis for cooperation to work is to have confidence in the system. This requires ensuring transparency and long-term, systematic cooperation.

Concrete Proposal for Cooperation in Rescue and Emergency Care

The software of the two centers can be connected through a web application. The application forms and automates the request from across the border using a data sheet.

Three variations can be imagined:

The Austrian side requests a Hungarian rescue unit

The Hungarian side requests an Austrian rescue unit

Transfer of the patient from one ambulance unit to another at the border

After that, the dispatcher selects the disease for which he is requesting help. It is advisable to harmonize the list of major disease groups by means of a drop-down menu.

The address and coordinates must also be entered on the data sheet, then a list of nearby Austrian and Hungarian rescue units will appear on the interface, indicating their type (ALS, BLS) and the distance from the incident.

The dispatcher selects the most suitable rescue units and sends the request to the other side of the border.

The request is translated into the language of the receiving party by the translation program integrated into the application. The receiving party can then accept or reject the request with one click. If you accept, you will be able to chat between the two dispatchers, which can also work through a translator.

Simultaneously, it is also possible to record the two-way radio connection. For this, it is necessary to ensure access to the EDR radios for the Austrian side.

In all cases, the chief physician or the rescue manager decides on the rescue across the border. The precise definition of decision-making competences is essential.

In case of cross-border rescue, both parties use their own communication system, EDR radio in Hungary, and keep in touch with their own centre.

In each case, the specific ambulance unit decides on the transport of the patient/injured person to the hospital, while the appropriate hospital is selected by the two dispatchers (in Hungary, sv, chief doctor or rescue manager, possibly after consultation with the relevant ICS).

This requires a list of border hospitals and a description of their level of progressivity.

In the case of cross-border rescue, each unit works based on its own national and professional protocol. The same applies to the use of the distinguishing mark and the driver's license.

The patient's wish cannot be neglected as an emotional factor, but the seriousness/priority of the case and the level of progress of the hospitals near the border must also be considered.

Summary and Recommendation Chapter 3 – Cooperation Agenda

Prerequisite for every kind of real cooperation between Hungary and Austria are financial resources, a comprehensive legal framework and uniform schemes for reporting and documenting health data.

The analyses and interviews show that parts of the border regions have grown extremely close together. It would be important to support regional development at EU level and ideally to create a real "cross-border hospital" in those regions.

A major challenge on both sides of the border is the shortage of skilled workers - be it nurses or physicians. Austrian hospitals are actively trying to recruit health professionals from abroad and many young Austrians study medicine in Hungary. It would be therefore very important to initiate projects for a joint strategy for the training and recruitment of health care personal in order to avoid competition for specialists and a one-sided brain drain.

Cross-border cooperation in rescue and ambulance services should be aspired and should also have high chance of a timely implementation (see above for detailed recommendations).

In order to implement further successful cooperation projects such as the pathology/histology collaborative project, local unmet needs in specialized medical fields have to be identified. It is therefore essential to talk to the relevant experts in the hospitals on both sides of the border at regular intervals to be able to identify these needs at an early stage.

Telemedicine solutions also offer a high potential for collaboration, especially when it comes to the transfer of health knowledge, (e.g. diabetes training etc.). As a first step, it is important to establish the appropriate technical and legal framework.

Due to the epidemiological and demographic conditions and circumstances, as well as large commuter and migration flows between the border regions, projects on health promotion and prevention could possible have a significant impact and would therefore be suitable for future cross-border endeavours.

4 ANALYSIS OF THE LEGAL AND INSTITUTIONAL FRAMEWORK FOR COOPERATION

4.1 The EU and Hungarian legal framework of cross-border patient mobility and saving

In the development of the European Union law, the cross-border interoperability, the free movement of persons and services are essential factors, and ensuring these fundamental rights is a long process, as is the development of the legal framework of the cross-border provision of healthcare services, the known stages of which so far are the following:

» Regulation (EEC) No 1408/71 on the social security of migrant workers
» Article 129 of the Treaty of Maastricht (1992)
» court cases (1998)
» Regulation (EC) No 883/2004 on the coordination of social security systems
» Article 168 of the Treaty of Lisbon
» Directive 2011/24/EU (2011).

Regulation (EEC) No 1408/71[2] on the social security of migrant workers

The regulation was based on a principle as a starting point which provides that no natural person should suffer lasting health-related harm just because in the moment when the person is in need of healthcare the person is in a country other than the country in which the person is entitled to healthcare according to the person's medical insurance.

For this reason the regulation recognises the insured person's existing entitlement to healthcare in one Member State to have healthcare in another Member State, in such a way as to ensure that person receives the same assessment as the insured patients of the country of treatment when receiving the service. Healthcare services provided in the Member State of stay in order to prevent lasting health-related harm should not entail extra costs for the insured person in addition to person's payment of insurance premiums.

Regulation (EEC) No 1408/71 created for this purpose and Regulation (EEC) No 574/72[3] issued for implementing Regulation (EEC) No 1408/71 introduced an **entitlement and settlement mechanism** to certify existing insurance status between Member States of treatment with **the help of standard forms**.

The Treaty of Maastricht

Before the Single European Act[4] healthcare systems had not been discussed at a Community level, at best in an indirect way or in exceptional circumstances. However, The Treaty of Maastricht[5] and the Treaty of Amsterdam[6] which partly contains the amendments of the former, stated that when defining and implementing Community policies and activities the high level of human health protection needs to be ensured. These declarations helped to establish the institution of the **Directorate General for Health**

[2] See https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A31971R1408
[3] See https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A31972R0574
[4] See https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=LEGISSUM%3Axy0027
[5] The Treaty on European Union, signed in Maastricht on 7 February 1992, entered into force on 1 November 1993.
[6] The treaty had been signed on 2 October 1997 and came into effect on 1 May 1997.

and Consumer Protection (DG SANCO), the range of activities of which includes healthcare and welfare activities that affect directly the daily lives of European citizens

Court cases

Between the years 1990-2000 the European Court of Justice dealt with court cases ((e.g. Deckler and Kohll)[7] where a social security institution refused for a citizen of a Member State to travel on the expense of said Member State to another Member State for a medical treatment or to pay for prescription medicinal products in another Member State.

The European Court of Justice ruled in such cases that the rules according to which the reimbursement of the costs of healthcare services provided in a Member State other than the Member State of affiliation requires authorisation restrict the freedom to provide services and the free movement of goods. These restrictions are possible but they are only justified if the financial equilibrium of the concerned social security system which has the capacity to ensure to every insured person a balanced medical and hospital service is danger.

The regulation on coordination

The Regulation (EC) No 883/2004 on coordination[8] adopted in 2004 after Regulation (EEC) No 1408/71 and Regulation (EEC) No 574/72 strove to respond in a modern way to the needs of the cross-border collaboration of healthcare providers and services. The standard entitlement and settlement form apparatus remained in use, at the same time a new change was introduced that is still relevant today, in the form of the European Health Insurance Card (EHIC) which provides access to emergency care in case of a temporary stay without the purpose of employment.

The Treaty of Lisbon

Article 168 of the Treaty of Lisbon[9], adopted in 2007, defines the aspirations of the EU to be achieved in close cooperation with the Member States. According to this it is on overall objective to ensure the high level of human health protection in all EU policies and through all EU activities.

At the same time the Article encourages Member States to strengthen their cooperation, thus improving the complementary aspect of their healthcare services in border regions. The Article expands the competences of the EU by making decisions about medicinal products and devices intended for medical use. In this way the Treaty becomes one of the most important source of law for cross-border cooperation between healthcare service providers and services, while not infringing the healthcare service powers of the Member States.

Directive on the application of patients' rights in cross-border healthcare

After the Treaty of Lisbon, rules about patients' rights continued to be based on the judgements of the Court of Justice of the European Union in individual cases (case-law). The Directive 2011/24/EU[10] on the

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[7] See extract from the Decker and Kohll case: https://curia.europa.eu/en/actu/communiques/cp98/cp9826en.htm

[8] See https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A02004R0883-20140101

[9]The Treaty had been signed on 13 December 2007 and it came into effect after being ratified by all 27 Member States.

[10] The Directive has been in force since 24 April 2011 and had to be transposed into national law by 25 October 2013. Therefore, by this deadline each Member State was obliged to properly ensure in its legal system that the

application of patients' rights in cross-border healthcare (hereinafter referred to as 'Directive') was created in part to clarify rights resulting from the judgements of the Court of Justice in relation to healthcare, to provide sufficient clarity about the rules of cross-border healthcare, and to allow for these rights to be exercised in a framework manner.

Another no less important task of the Directive was to ensure the link between the clarified rules and the framework established by the Regulation (EC) No 883/2004 on the alignment of social security systems.

The main areas of the Directive mechanism are the following:

1. The Member State of affiliation ensures the **reimbursement** of the insured person receiving cross-border healthcare if the person in question is entitled to healthcare in the Member State of affiliation. The entitlement and the degree of the assumption of costs are determined by the Member State of affiliation. The indicative level of costs is the so called **domestic level of costs**, namely the domestic rate of reimbursement for the same healthcare received.
2. The Directive determines the responsibilities of the Member State of treatment concerning healthcare, that is in principle **primarily the healthcare needs to be provided according to the legislation of the Member State of treatment**, but it is a rule that along common basic principles the Member State needs to determine clear quality and safety standards regarding territorial healthcare.
3. The Member State of affiliation helps **on request to provide patients with information** on receiving healthcare in another Member State, and the terms and conditions that would apply, inter alia, whenever harm is caused as a result of healthcare received in another Member State. The information shall be made easily accessible, including by electronic means, and shall include information on patients' entitlements, on procedures for accessing those entitlements and on systems of appeal and redress if the patient is deprived of such entitlements.
4. The Member State of affiliation ensures that insured persons travelling to another Member State with the purpose of receiving healthcare there **will not be prevented from receiving healthcare provided in another Member State**. For this those healthcare services can be received which are part of the "insurance package" in the Member State of affiliation, furthermore, the patient needs to have entitlements to receive such healthcare. The patient receives the healthcare service with the obligation to reimburse and afterwards the patient is entitled to reimbursement from the insurer on the basis of an invoice.
5. The Member State of affiliation, under certain conditions, **can set a requirement of prior authorisation of reimbursement, and it can also choose to limit the reimbursement** for reasons relating to the quality and safety of the healthcare provided, based on reasons of general interest relating to public health.
6. The insured person has the right to receive in another Member State all the healthcare services to which the person is entitled in the Member State of affiliation, but the competent insurance provider **is not obliged to provide reimbursement** in case of healthcare services which are not provided for by the legislation of the Member State of affiliation. If the country does not have an itemized

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objectives of the Directives were achieved by means of legislation(s). (This means that it is not a full or partial transposition of the text of the directive, although several Member States use such solution when integrating directives into their national law – see e.g. the transposition of the EU public procurement directives.)

In order to ensure proper enforcement the European Court of Justice lays down three sets of requirements by which 'the directives must be adopted in a legal source of law which is general, binding and effective' (see András Osztovics (ed.): Commentary on the Treaty on European Union and on the Treaty on the Functioning of the European Union 3. CompLex. 3084. p.)

and precise list of financed interventions and procedures, the insurance provider will have to reimburse the domestic rate of cost of such healthcare which is the same or similar to the healthcare received abroad.

7. The **recognition of prescriptions issued in another Member State** is possible, in case it is issued for a named patient. Restrictions on the recognition of prescriptions are prohibited with some exceptions. The recognition of prescriptions shall not affect the rules on reimbursement of medicinal products, the national rules for prescribing medicinal products, and neither the generic or other substitution. After purchasing a reimbursable medicine in another Member State the insured person is obliged to pay the same level of reimbursement, as the provided level of reimbursement is in case of purchasing it domestically.

In the framework of cooperation between Member States, the Directive also facilitates **healthcare services between border regions**, in terms of the recognition of prescriptions issued in other countries, European reference networks, the assessment of health technology, data collection, as well as quality and safety. In that respect **providing patients with adequate information is even more important**, as well as the implementation of the necessary systems for this, due to the possible different rules of the regions. For an adequate system the Commission can provide the following support:

a) it can determine the conditions of **establishing European Reference Networks**[11] in order to provide knowledge-intensive healthcare services that also require high investments and costs;
b) in the field of eHealth it may adopt measures for the purpose of the **interoperability of information and communication technologies**, which need to be applied by the Member States in the case of introducing an eHealth system (eHealth Digital Service Infrastructure – eHDSI).

To ensure all these activities Member States have the responsibility of setting up and operating a network connecting authorities responsible for the health technology assessment, as well as collecting statistical data necessary for monitoring cross-border services which need to be transmitted to the Commission at least once a year.

The Directive does not include every additional rule, therefore many implementing and delegated acts have been adopted related to the Directive, such as:

» Implementing decision 2013/329/EU on the establishment, management and transparent functioning of the Network of national authorities or bodies responsible for health technology assessment;
» Delegated decision 2014/287/EU on the criteria for establishing and evaluating European Reference Networks and their Members and for facilitating the exchange of information and expertise on establishing and evaluating such Networks;
» Implementing decision 2019/1765 on providing the rules for the establishment, the management and the functioning of the network of national authorities responsible for eHealth.

4.2 The Hungarian legal framework of patient mobility

In the case of Community Regulations (Regulation (EEC) No 1408/71, Regulation (EEC) No 574/72, Regulation (EC) No 883/2004) there is no need to harmonise the legislation of the Member States, as they are, by their nature, incorporated into national law with direct effect, however, to transpose the Directive 2011/24/EU, national legislation is required. In the Hungarian context we should briefly mention and

[11] See: Decision 2014/286/EU on setting out criteria and conditions that European Reference Networks and healthcare providers wishing to join a European Reference Network must fulfil, 17-05-2014; OJ L 147, p. 70, 10 March 2014).

present[12] the Act LXXXIII of 1997 on services provided by the Compulsory Health Insurance (hereinafter referred to as: 'HIA').

In terms of our topic the HIA is also particular because it was **the first to lay down the definition of cross-border healthcare**[13] in the Hungarian law in force.

The mentioned definition is the following:

"s) *cross-border healthcare:* with the exceptions of long-term care services in healthcare, access to organs for the purpose of organ transplantation and organ allocation, and publicly funded vaccination programmes against infectious diseases:

sa) healthcare service provided in Hungary or by a Hungarian healthcare provider to an EU patient, or

sb) the healthcare received by an insured person – not including those entitled to healthcare based on the agreement – in another Member State of the European Union or at a service provider established there, which healthcare is received by the insured person without being pursuant to EU regulations."

Procedure related to treatment abroad

If the patient requests to be treated abroad (planned treatment abroad) the **National Health Insurance Fund of Hungary**, as the central financing institution of Hungarian healthcare, pharmaceuticals, and medical care equipment (hereinafter referred to as 'NEAK')[14] determines, in the case of said patient, the medically justifiable time of the treatment, also involving an external expert during the process of determining the time.

The expert informs the NEAK within 30 days about the results of the examination. The NEAK takes into account the expert's opinion and primarily looks for a domestic publicly funded healthcare provider that undertakes to provide care to the patient within the medically necessary time-limit in addition to the performance volume limit (Hungarian abbreviation: TVK), and beside the territorial care obligation (Hungarian abbreviation: TEK). If the NEAK can find such a provider and there is available capacity, it shall reject the application for treatment abroad, at the same time it shall send the applicant the declaration of the domestic care provider in which it undertakes to provide care to the applicant.

If there is no such Hungarian publicly funded healthcare provider that can perform the requested treatment within the medically justifiably time, than the NEAK has the right to check the adequacy of the publicly funded healthcare provider in the EU designated by the patient.

If the patient does not make a declaration about requesting the application of the Directive, the procedure continues according to the rules of the coordination regulations, namely the application needs to be considered in which the patient requests the reimbursement of all costs of the provided healthcare. If the service provider designated by the patient undertakes to provide care for an amount 30% higher than the domestic funding, the NEAK has the right to look for another EU publicly funded healthcare provider.

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[12] Also see for example: the Government Decree 340/2013 (IX.25.) on the detailed rules of treatments abroad.

[13] See section. 5/B (s)

[14] See the EMMI Instruction 29/2017. (VII. 6.) on the rules for the organisation and operation of the National Health Insurance Fund of Hungary. The management body of the NEAK is the Hungarian Ministry of Human Resources (EMMI), and it is under the leadership of the Director-General.

If the patient requests the application of the Directive, the patient can designate and select even a private healthcare provider within the EU, however, pursuant to the Directive, in all cases (including healthcare provided by publicly funded or private healthcare provider), the patient can only request a retrospective reimbursement for the domestically funded amount of the costs.

An overview on the connections between the Austrian and the Hungarian healthcare

Although it is not the task of the present study to give an overview on the Austrian national legislation with regard to the cross-border collaboration of healthcare providers and services, we would like to indicate here that similarly to the Hungarian situation, the rules of the already presented EU regulations and directives apply to the Austrian legal order as well.

The cross-border collaboration of healthcare providers and services between the two Member States is not yet complete, but the intention to coordinate is very well shown by the development in the coordination of the activity of ambulance service of a cross-border nature.

The idea of the cross-border cooperation of the Austrian and Hungarian ambulance services emerged before, mainly when managing certain crisis situations. The agreement on this was concluded in 1996[15], and ratified in 1998. However, in certain respects the agreement is obsolete and unnecessarily complicated, so the issues were explored in detail and adapted to new demands with the help of external experts. As a result of this in 2021, in Hungary, the **preparations for the framework agreement about the cross-border cooperation of ambulance services between the two countries began**[16]. The authorisation includes the preparation of the negotiations, the conduct of the negotiations, signing the draft text resulted from those negotiations, and the submission of the draft decision about the authorisation of the final text to the Government.

4.3 Health sector professional's mobility in Hungary

Free movement of persons is a basic principle of the EU, and health professionals' mobility was expected to increase after the accession of Hungary to the EU in 2004. Capturing health professionals' mobility, however, is challenging. Based on international professional debates, the outflow indicator most frequently used for measurement is the number of requested good-standing certifications, which is required when a health professional wants to work abroad. Requesting this certificate indicates only an intention to work abroad, and does not necessarily mean that the person will in fact leave the country. Despite this methodological limitation, the indicator is considered to be a good- enough proxy to monitor migration trends.

Since 2004, the outflow of medical doctors from Hungary showed a significant increase and peaked in 2011. In 2012 still more than 1100 persons requested the certificate, which decreased to 823 in 2016. It is also important to note that this number includes those foreign medical graduates, who obtained their diploma in Hungary and intend to return home, and also not corrects for repeated certificate requests. Excluding the cases of freshly graduated foreign medical doctors and repeated requests, the figures still show a decrease from 831 in 2011 to 398 in 2016. Nevertheless, no data are available on the duration and/or parallel jobs in foreign countries.

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[15] Act CXII proclaimed in 1999 between the Republic of Hungary and the Republic of Austria on the mutual assistance in case of disasters and serious accidents. *https://net.jogtar.hu/jogszabaly?docid=99900112.TV*

[16] See the Ministerial Decree 35/2021. (VI. 24.) on the authorisation to create a framework agreement about the cross-border cooperation of ambulance services between the Government of Hungary and the Government of the Republic of Austria.

Previous research emphasized the financial opportunities as the most important key driver and motivation factor of Hungarian medical doctors to work abroad (Eke et al, 2011). Health policy recognized this and intervened into the system with various financial measures, including scholarship programs for medical residents (graduated medical doctors, who are in a professional training program and work to obtain a medical specialisation) and salary increases (for more details see also log from 30/12/2016).

It seems that these programmes had a measurable impact on the outflow of medical doctors, but latest figures are still high. In 2015, 492 doctors requested the good-standing certificate out of which 329 apparently do not work at home (estimated by inactivities in the Hungarian health system as not filling a prescription), which still constituted around 40% of the new Hungarian medical graduates in that year. Further monitoring and interventions are needed to mitigate the influence of the continuous outflow and the shortages of certain specialties in the Hungarian health system.

5 Bibliography

REGULATION (EEC) No 574/72 OF THE COUNCIL of 21 March 1972 fixing the procedure for implementing Regulation (EEC) No 1408/71 on the application of social security schemes to employed persons and their families moving within the Community

Treaty on European Union

The Amsterdam Treaty

REGULATION (EC) No 883/2004 OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 29 April 2004 on the coordination of social security systems

The Treaty of Lisbon

DIRECTIVE 2011/24/EU OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 9 March 2011 on the application of patients' rights in cross-border healthcare

2013/329/EU: Commission Implementing Decision of 26 June 2013 providing the rules for the establishment, management and transparent functioning of the Network of national authorities or bodies responsible for health technology assessment

2014/286/EU: Commission Delegated Decision of 10 March 2014 setting out criteria and conditions that European Reference Networks and healthcare providers wishing to join an European Reference Network must fulfil Text with EEA relevance

COMMISSION IMPLEMENTING DECISION of 10 March 2014 setting out criteria for establishing and evaluating European Reference Networks and their Members and for facilitating the exchange of information and expertise on establishing and evaluating such Networks (Text with EEA relevance)

Commission Implementing Decision 2019/1765 of 22 October 2019 providing the rules for the establishment, the management and the functioning of the network of national authorities responsible for eHealth, and repealing Implementing Decision 2011/890/EU (notified under document C(2019) 7460) (Text with EEA relevance)

Act LXXXIII of 1997 on the benefits of compulsory health insurance

Act CXII of 1999 on the announcement of the convention concerning to the mutual assistance in case of disasters or serious catastrophes between the Government of the Hungarian Republic and the Government of the Government of Austrian Republic

The Government Decree 340/2013. (IX. 25.) (Decree) on The detailed rules of the healthcare services abroad

29/2017. (VII. 6.) EMMI instruction on the organizational and operational regulations of the National Health Insurance Fund Manager of Hungary

35/2021. (VI. 24.) ME Decision authorizing the establishment of a framework agreement on cross-border rescue co-operation between the Government of Hungary and the Government of the Republic of Austria

Eke E, Girasek E, Szócska M: From melting pot to change lab central Europe: Health workforce migration in Hungary. In: Wismar M, Maier C B, Glinos I A, Dussault G, Figueras J (eds.) Health professional mobility and health systems: Evidence from 17 European countries. p.595. Copenhagen: World Health Organization; European Observatory on Health Systems and Policies (Observatory Studies Series: 23), 2011, pp.365-394

Government Resolution No. 1248/2011. (VII. 18.) Korm.

Government Decree No. 162/2015. (VI.30.) Korm.

MÉRTÉK health system performance report for 2013-2015.

http://www.portfolio.hu/gazdasag/egeszseggazdasag/fordulatrol_beszel_az_allamtitkar_kevesebb_orvos_megy_kulfoldre.249137.html

http://www.enkk.hu/hmr/index.php/migracios-statisztikak/eves-statisztikak

http://medicalonline.hu/eu_gazdasag/cikk/mennyit_keres_egy_nover?utm_source=newsletter&utm_medium=medicalonline_hirlevel&utm_campaign=23135#

http://medicalonline.hu/eu_gazdasag/cikk/bernover_vagy_penztaros?utm_source=newsletter&utm_medium=medicalonline_hirlevel&utm_campaign=23349

OECD/EU (2020), Health at a Glance: Europe 2020

- State of Health in the EU Cycle. Paris, OECD Publishing,https://doi.org/10.1787/82129230-en.

WHO Regional Office for Europe, European Commission,

European Observatory on Health Systems and Policies

(2021), COVID-19 Health Systems Response Monitor

- Hungary: https://www.covid19healthsystem.org/

countries/hungary/countrypage.aspx; accessed on 12 May 2021.

European Commission (2021c), The European Health Data Space.