

# EAN Fact Sheet

Country profile of France

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The EAN is pleased to present this fact sheet to each and every national neurological society, offering key insights into the latest epidemiological, economic, and demographic trends. This data aims to support informed decision-making and enhance understanding of neurological conditions on both national and European level with information provided by three EAN projects: the [“Burden of Neurological Disease in Europe”](#) study, the EAN [“COst of Illness in Neurology in EUrope \(COIN-EU\)”](#) project, the EAN NNS 2021-2022 survey.

# Burden of Disease in Europe – Collaboration with IHME

Neurological disorders are the second most common cause of disability and premature death in the European Region and their prevalence and burden will likely increase with the progressive ageing of the European population. Greater attention to neurological diseases must be paid by health authorities for prevention and care. For this reason, the European Academy of Neurology is conducting research on gaining and analysing reliable data on the number of patients with neurological diseases.

These data are obtained from the currently most developed data base, the [Global Burden of Disease \(GBD\)](#) study of the Institute for Health Metrics and Evaluation (IHME), University of Washington, Seattle. The burden of neurological disorders in Europe was calculated for the year 2021 as prevalence, mortality, disability-adjusted life-years (DALYs), years of life lost (YLLs), and years lived with disability (YLDs) for the countries in the EU and the WHO European region for a total of 26 neurological disorders.

The study in Europe is run by the EAN and led by Prof. Dr. Günther Deuschl, Dr. Maurizio Leone and Maria Konti, M.Sc., in close collaboration with the leading scientists of the IHME Institute.

In the table below, you will find the national total counts for DALYs, YLDs, YLLs, prevalence, and deaths, the age-standardised rates by neurological disorder category for the years 1990 and 2021, and the percentage change for both of your country and the WHO Europe.

Diseases with counts less than one have been excluded and the number of decimal points has been adjusted individually for each disease.

	Counts	Age-standardized rate		Percentage change, 1990-2021	
	(thousands)	(per 100 000 people)		France	WHO Europe
	2021	1990	2021		
<b>All Neurological Disorders</b>					
DALYs	2,742,710	3,157	2,445	-22.6%	-29.0%
Deaths	110,458	102	59	-42.5%	-43.2%
Prevalence	31,624,031	44,303	44,320	0.0%	0.3%
YLDs	1,270,360	1,418	1,429	0.8%	2.9%
YLLs	1,472,225	1,739	1,015	-41.6%	-44.4%
<b>Alzheimer's disease and other dementias</b>					
DALYs	699,416	388	367	-5.5%	-2.5%
Deaths	46,573	23	22	-5.6%	-2.8%
Prevalence	924,607	554	525	-5.1%	-2.1%
YLDs	193,002	114	108	-5.1%	-2.6%
YLLs	506,413	274	259	-5.6%	-2.5%
<b>Chromosomal abnormalities</b>					
DALYs	3,893	9.14	7.62	-16.6%	-12.3%
Prevalence	41,946	102	84	-17.5%	-12.8%
YLDs	3,893	9.14	7.62	-16.7%	-12.4%
<b>Covid-19 (neurological)</b>					
DALYs	12,105	-	15	-	-
Prevalence	115,237	-	154	-	-
YLDs	12,105	-	15	-	-
<b>Diabetic neuropathy</b>					
DALYs	115,970	49	98	101.1%	98.1%
Prevalence	897,011	374	755	101.6%	97.9%
YLDs	115,970	49	98	101.1%	98.1%
<b>Down syndrome</b>					
DALYs	2,499	7	5	-28.8%	-19.6%
Prevalence	26,545	72	51	-29.8%	-20.7%
YLDs	2,499	7	5	-28.8%	-19.8%

<b>Encephalitis</b>					
DALYs	6,173	10	8	-21.6%	-30.1%
Deaths	239	0.23	0.20	-10.7%	-15.9%
Prevalence	2,745	3.56	3.36	-5.7%	-13.6%
YLDs	283	0.39	0.37	-4.1%	-12.0%
YLLs	5,890	9	7	-22.3%	-31.0%
<b>Epilepsy</b>					
DALYs	123,645	177	160	-9.6%	-12.6%
Deaths	2,011	1.70	1.66	-2.4%	3.9%
Prevalence	323,490	389	427	9.7%	3.3%
YLDs	74,972	105	100	-5.2%	-11.3%
YLLs	48,674	72	60	-16.1%	-14.3%
<b>Guillain-Barre Syndrome</b>					
DALYs	326	0.53	0.41	-23.2%	12.4%
Prevalence	1,102	1.80	1.39	-23.0%	12.4%
YLDs	326	0.53	0.41	-23.1%	12.4%
<b>Idiopathic intellectual disability</b>					
DALYs	10,264	21	17	-17.8%	-19.7%
Prevalence	209,683	434	351	-19.2%	-21.2%
YLDs	10,264	21	17	-17.8%	-19.7%
<b>Klinefelter syndrome</b>					
DALYs	30	0.02	0.03	27.6%	5.7%
Prevalence	2,268	3.47	4.38	26.2%	5.5%
YLDs	30	0.02	0.03	27.6%	5.5%

	Counts (thousands)	Age-standardized rate (per 100 000 people)		Percentage change, 1990-2021	
	2021	1990	2021	France	WHO Europe
<b>Meningitis</b>					
DALYs	8,055	49	14	-71.1%	-80.5%
Deaths	232	0.81	0.25	-68.8%	-75.4%
Prevalence	5,920	24	8	-64.8%	-66.7%
YLDs	492	2.07	0.75	-63.7%	-64.6%
YLLs	7,563	47	13	-71.4%	-81.3%
<b>Migraine</b>					
DALYs	441,401	666	661	-0.8%	0.0%
Prevalence	11,508,602	17,613	17,479	-0.8%	0.3%
YLDs	441,401	666	661	-0.8%	0.0%
<b>Motor neuron disease</b>					
DALYs	50,543	45.83	47.40	3.4%	37.5%
Deaths	2,138	1.43	1.65	15.6%	54.1%
Prevalence	11,408	8.95	10.84	21.1%	19.8%
YLDs	2,410	1.90	2.29	20.6%	19.5%
YLLs	48,134	43.93	45.10	2.7%	38.5%
<b>Multiple sclerosis</b>					
DALYs	36,595	33	40	20.8%	-5.0%
Deaths	628	0.52	0.55	6.8%	-12.5%
Prevalence	78,617	63	92	46.2%	26.4%
YLDs	19,600	16	23	44.2%	25.5%
YLLs	16,994	17.29	17.09	-1.1%	-22.2%
<b>Nervous system cancer</b>					
DALYs	136,065	146	152	4.3%	-3.3%
Deaths	4,960	3.86	4.38	13.7%	10.8%
Prevalence	25,164	19	30	59.6%	35.9%
YLDs	3,048	2.28	3.26	42.9%	25.3%
YLLs	133,018	143	149	3.7%	-3.7%

<b>Neurosyphilis</b>					
DALYs	25	0.05	0.03	-43.7%	-43.6%
Prevalence	495	0.76	0.64	-15.8%	-11.7%
YLDs	25	0.05	0.03	-43.7%	-43.4%
<b>Other neurological disorders</b>					
DALYs	72,850	85	90	6.4%	25.8%
Deaths	2,299	1.92	1.87	-2.5%	45.0%
YLDs	18,309	14	26	78.2%	62.9%
YLLs	54,417	70	64	-8.4%	14.2%
<b>Parkinson's disease</b>					
DALYs	138,582	79	83	4.8%	5.6%
Deaths	8,247	4.58	4.43	-3.3%	4.0%
Prevalence	238,852	108	152	40.2%	21.9%
YLDs	33,196	15	21	40.3%	21.4%
YLLs	105,387	64	62	-3.6%	2.0%
<b>Spinal cord injury</b>					
DALYs	84,063	132	101	-24.0%	-26.9%
Prevalence	307,982	460	360	-21.7%	-21.9%
YLDs	84,063	132	101	-24.0%	-26.9%
<b>Stroke</b>					
DALYs	685,558	1,104	444	-59.8%	-52.6%
Deaths	43,128	64	22	-65.7%	-55.6%
Prevalence	928,694	760	737	-3.0%	-19.2%
YLDs	139,843	107	105	-1.7%	-18.9%
YLLs	545,715	997	339	-66.0%	-55.3%

	Counts (thousands)		Age-standardized rate (per 100 000 people)		Percentage change, 1990-2021	
	2021	1990	2021	France	WHO Europe	
<b>Tension-type headache</b>						
DALYs	55,823	74.73	74.92	0.3%	-1.6%	
Prevalence	21,984,828	31,421	31,418	-0.01%	-0.8%	
YLDs	55,823	74.73	74.92	0.3%	-1.6%	
<b>Tetanus</b>						
DALYs	21.14	0.99	0.01	-98.7%	-97.3%	
Deaths	1.70	0.064	0.001	-98.7%	-95.8%	
<b>Traumatic Brain Injury</b>						
DALYs	58,806	80	59	-26.2%	-28.2%	
Prevalence	450,831	605	446	-26.2%	-28.0%	
YLDs	58,806	80	59	-26.2%	-28.2%	

Table 1: National total counts for DALYs, YLDs, YLLs, prevalence, and deaths, age-standardised rates by neurological disorder category for 1990 and 2021, and percentage change of 1990-2021. Diseases with counts less than one have been excluded and the number of decimal points has been adjusted individually for each disease.

## Neurological conditions

In figure 1 below, the top 20 neurological disorders are ranked based on the national age-standardised rate of DALYs per 100 000 population in 2021 for all age groups.

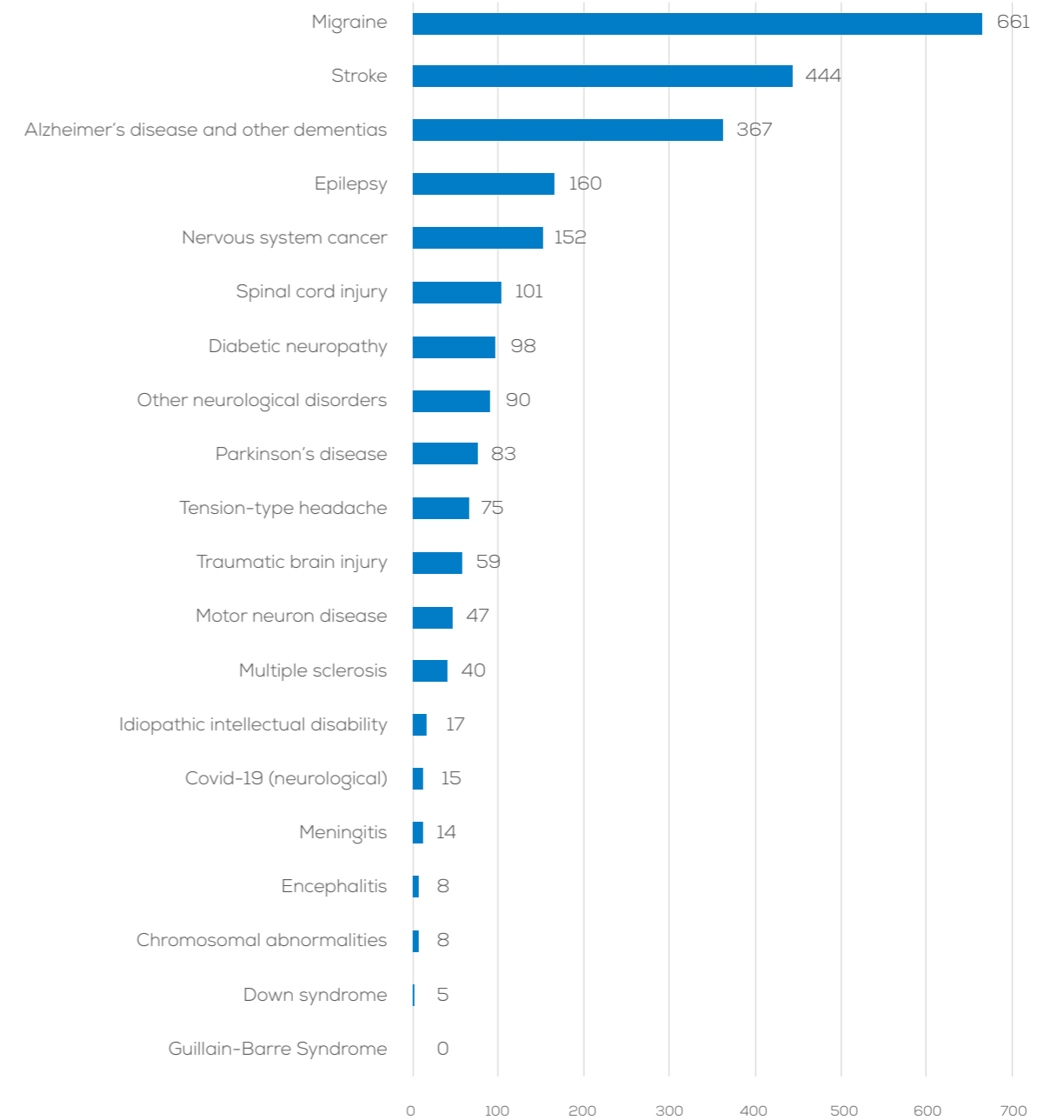


Figure 1: National age-standardised DALYs per 100 000 population by neurological disorder in 2021.

## DALYs per 100 000 population

In order to show how the diseases are evolving both in **France** and the European Region, we present the temporal pattern of DALYs per 100 000 population over the last three decades in the figure below:

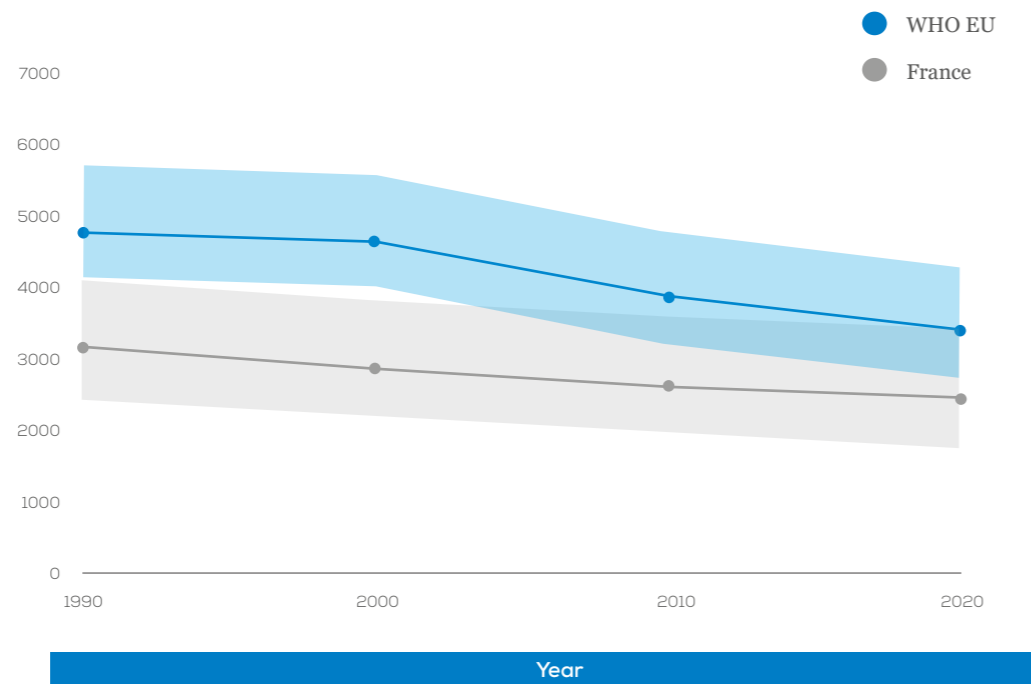


Figure 2: Age-Standardized DALYs per 100 000 population over the last 3 decades.

In figure 3 we show the distribution of DALYs rate per 100 000 population by age group divided in female and male:

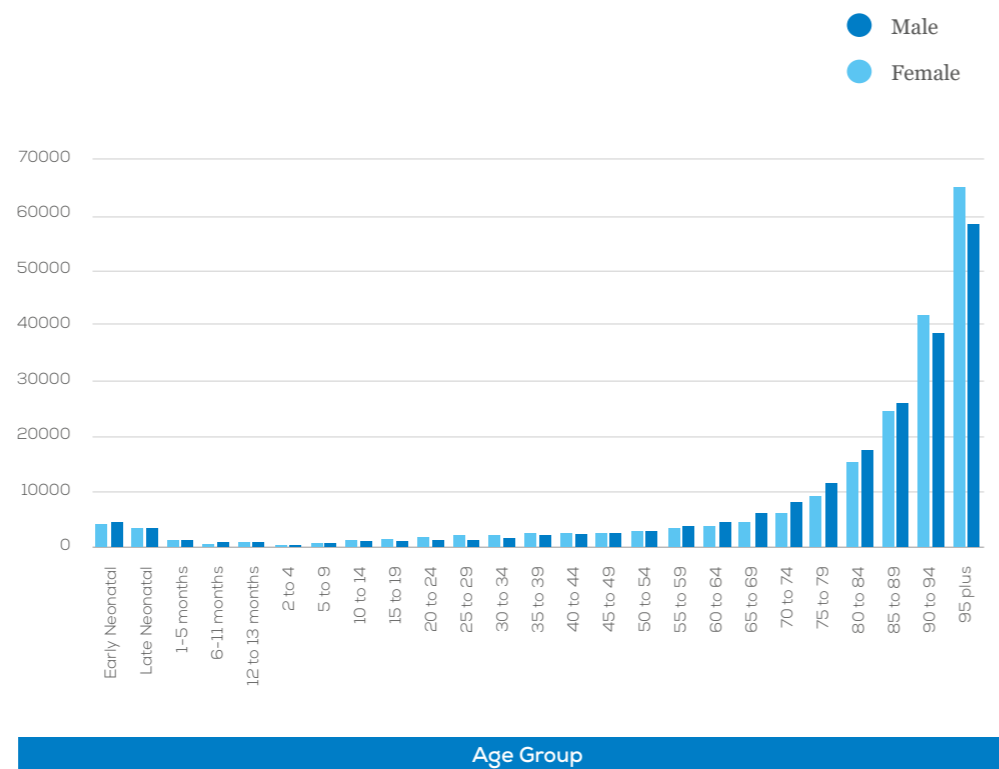


Figure 3: National DALYs per 100 000 population by age group and sex in 2021.

Extensive data and analyses are provided in the published paper and it will be communicated to the National Neurological societies.

# COIN-EU (Cost of Illness in Neurology in Europe)

The Cost of Illness in Neurology in Europe (COIN-EU) project, which was launched in 2021, is run by EAN and led by Prof. Richard Dodel, Prof. Uwe Siebert and Prof. Günther Deuschl. This project is overseen at the EAN by Prof. Paul Boon, Prof. Claudio Bassetti and Prof. Thomas Berger.

The aim of the study is to assess disease- and country-specific annual costs for 12 categories of neurological diseases in Europe with a focus on the prevalent adult patient population. Costs have been calculated in three main categories: a) direct health care costs (i.e., all goods and services related to the prevention, diagnosis and treatment of a disorder; e.g. physician visits, hospitalizations and pharmaceuticals), b) informal care costs (i.e. other goods and services related to the disorder; e.g. social services, special accommodation and informal care), and c) indirect costs (i.e., lost productivity due to work absence or early retirement).

As the literature review revealed many gaps in research for many diseases and many countries, the group has developed a method to provide estimations of the above cost categories for the cases where no data are available. Data are imputed for those countries which belong to the same GNI category with countries that do present data. In case none of the countries which belong to the same GNI category present data, then an imputation is not possible.

In the table below, costs for **France** have been calculated for the diseases with available data, in three main categories where the numbers represent millions € PPP 2019.

million € PPP  
2019

Informal Care

Neurological Disorder	Total Costs	Direct Costs	Informal Care Costs	Indirect Costs
Headache disorders	83,197.5	37,250.4	11,956.5	33,990.6
Sleep disorders	67,751.4	31,105.5	-	36,645.9
Alzheimer's disease and other dementias	20,635.5	9,614.8	11,019.0	1.6
Stroke	7,315.9	2,758.3	2,216.8	2,340.9
Traumatic brain injury	7,172.9	2,926.5	1,768.9	2,477.5
Parkinson's disease	5,279.6	4,598.8	583.5	97.2
Polyneuropathies	3,413.2	1,775.9	-	1,637.2
Idiopathic epilepsy	2,319.5	1,374.0	-	945.6
Multiple sclerosis	1,400.0	1,135.7	86.3	178.1
Motor neuron disease	151.9	88.9	47.5	15.5
Brain and central nervous system cancer	138.6	79.9	58.7	-
Meningitis	17.7	17.7	-	-
<b>Total Costs:</b>	<b>198,793.8</b>	<b>92,726.4</b>	<b>27,737.3</b>	<b>78,330.1</b>

Table 2: Total, direct, informal care and indirect costs per neurological disorder. Number of diseases depends on the availability of original studies and imputation of data.

# NNS Survey 2021

In December 2021, the EAN conducted a survey among the national neurological societies. By combining the data from the Burden of Disease in Europe study across all European Region countries, we can provide demographic data regarding the workforce of neurologists in Europe for the 37 countries who took part in the survey.

The figure below represents the number of neurologists, fully specialised and in training per 100 000 population.

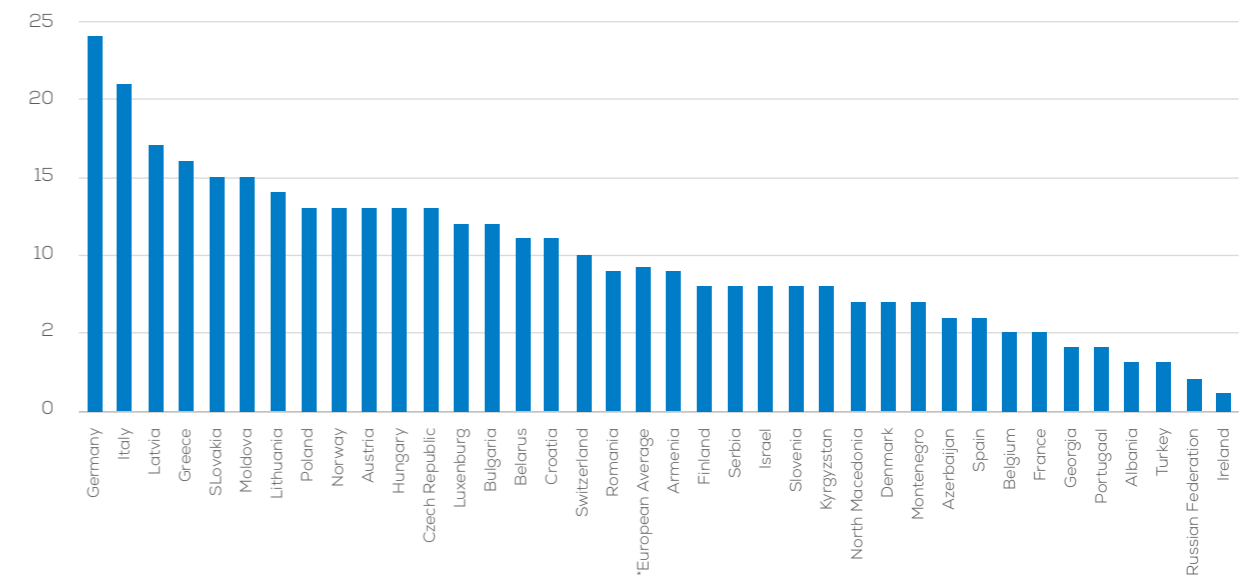


Figure 4: Number of neurologists (fully specialised and in training) per 100 000 population.

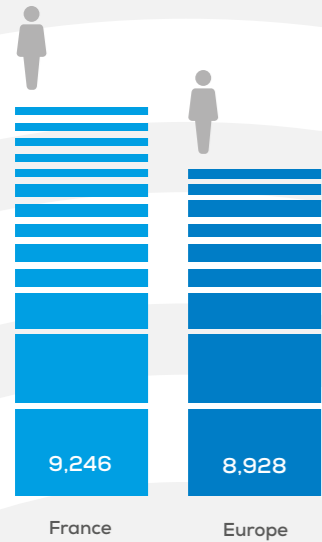
In the last figure the number of patients per neurologist is displayed:



Figure 5: Number of patients per neurologist (fully specialised and in training).

# Neurological Diseases in Europe and France:

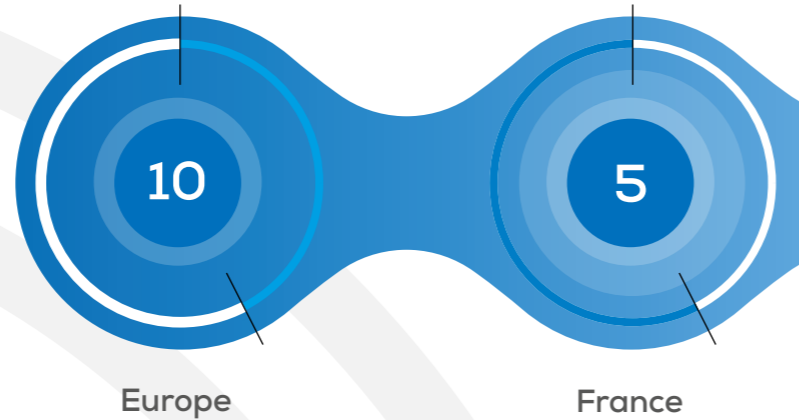
Key Data and Trends from 2021



Patients per Neurologist in Europe\* and France

## Neurologists per 100,000

population in Europe\* and France:



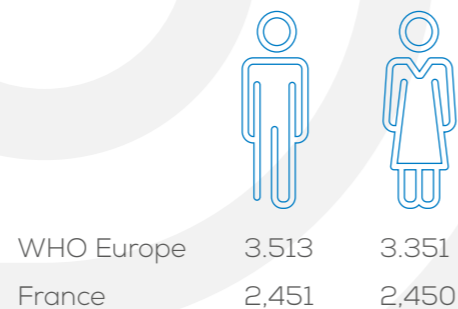
## Most prevalent neurological diseases in France in

# 2021

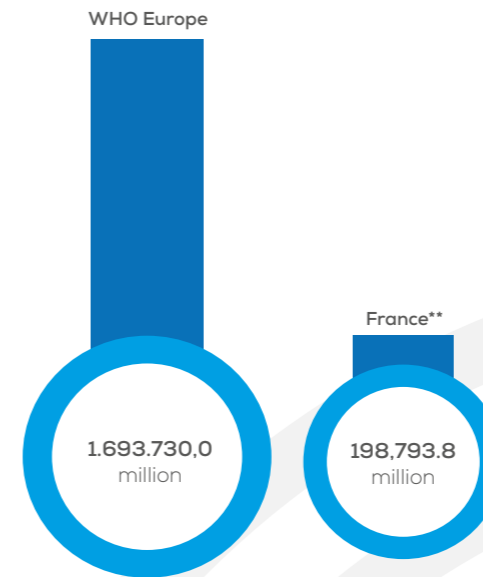
- 1 Tension-type headache
- 2 Migraine
- 3 Stroke
- 4 Alzheimer's disease and other dementias
- 5 Diabetic neuropathy

## Percentage change of age-standardised DALYs, Deaths and prevalence from 1990 to 2021:

	WHO Europe	vs	France
DALYs	-28.98%		-22.55%
Deaths	-43.19%		-42.54%
Prevalence	0.34%		0.04%

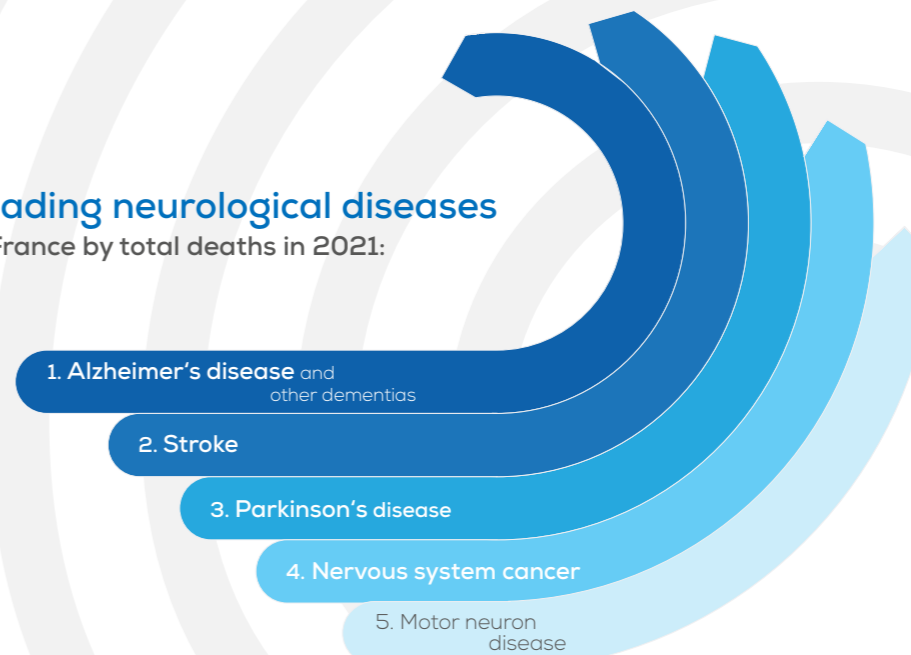


Age-standardised DALYs rate per 100,000 population in 2021 by sex



Annual total costs (in million € PPP 2019) for 12 major neurological diseases:

## Leading neurological diseases in France by total deaths in 2021:



\*Based on data from 37 countries of the WHO European region  
 \*\*Cost estimates are derived from country-specific data available for specific diseases.

