

EAN Fact Sheet

Country profile of Norway

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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 (thousands)		Age-standardized rate (per 100 000 people)		Percentage change, 1990-2021	
	2021	1990	2021	Norway	WHO Europe	
All Neurological Disorders						
DALYs	214,111	3,605	2,559	-29.0%	-29.0%	
Deaths	7,617	117	64	-45.6%	-43.2%	
Prevalence	2,816,787	46,969	47,804	1.8%	0.3%	
YLDs	107,345	1,527	1,506	-1.4%	2.9%	
YLLs	106,741	2,078	1,053	-49.3%	-44.4%	
Alzheimer's disease and other dementias						
DALYs	51,747	477	428	-10.4%	-2.5%	
Deaths	3,242	27	25	-6.3%	-2.8%	
Prevalence	73,853	769	639	-16.9%	-2.1%	
YLDs	15,305	158	131	-16.9%	-2.6%	
YLLs	36,441	320	296	-7.2%	-2.5%	
Chromosomal abnormalities						
DALYs	296	8.03	6.88	-14.3%	-12.3%	
Prevalence	3,210	90	76	-15.0%	-12.8%	
YLDs	296	8.03	6.88	-14.3%	-12.4%	
Covid-19 (neurological)						
DALYs	415	-	7	-	-	
Prevalence	3,782	-	62	-	-	
YLDs	415	-	7	-	-	
Cystic echinococcosis						
DALYs	1	0.02	0.02	-5.0%	-18.3%	
Prevalence	5	0.07	0.08	7.4%	-9.0%	
YLDs	1	0.02	0.02	-5.0%	-18.4%	
Diabetic neuropathy						
DALYs	15,495	132	176	33.0%	98.1%	
Prevalence	122,070	1,044	1,379	32.2%	97.9%	
YLDs	15,495	132	176	33.0%	98.1%	

Down syndrome						
DALYs	208	5.65	4.53	-19.8%	-19.6%	
Prevalence	2,227	63	50	-21.0%	-20.7%	
YLDs	208	5.65	4.53	-19.9%	-19.8%	
Encephalitis						
DALYs	324	4.11	4.22	2.7%	-30.1%	
Deaths	14	0.11	0.14	31.2%	-15.9%	
Prevalence	379	7.34	5.76	-21.5%	-13.6%	
YLDs	39	0.77	0.63	-18.7%	-12.0%	
YLLs	285	3.34	3.59	7.5%	-31.0%	
Epilepsy						
DALYs	8,873	184	149	-19.0%	-12.6%	
Deaths	107	1.58	1.36	-14.1%	3.9%	
Prevalence	24,153	423	413	-2.2%	3.3%	
YLDs	5,589	112	96	-14.5%	-11.3%	
YLLs	3,284	72	53	-26.1%	-14.3%	
Guillain-Barre Syndrome						
DALYs	66	0.84	1.01	19.7%	12.4%	
Prevalence	221	2.85	3.41	19.6%	12.4%	
YLDs	66	0.84	1.01	19.5%	12.4%	
Idiopathic intellectual disability						
DALYs	500	13	10	-22.4%	-19.7%	
Prevalence	10,521	272	213	-21.6%	-21.2%	
YLDs	500	13	10	-22.4%	-19.7%	
Klinefelter syndrome						
DALYs	2	0.03	0.03	2.0%	5.7%	
Prevalence	162	3.59	3.70	3.1%	5.5%	
YLDs	2	0.03	0.03	2.0%	5.5%	

	Counts	Age-standardized rate		Percentage change, 1990-2021	
	(thousands)	(per 100 000 people)		Norway	WHO Europe
	2021	1990	2021		
Meningitis					
DALYs	824	82	17	-79.6%	-80.5%
Deaths	20	1.23	0.28	-77.1%	-75.4%
Prevalence	2,028	67	33	-50.1%	-66.7%
YLDs	168	6	3	-46.5%	-64.6%
YLLs	656	76	14	-81.9%	-81.3%
Migraine					
DALYs	36,469	606	653	7.8%	0.04%
Prevalence	980,507	16,450	17,700	7.6%	0.3%
YLDs	36,469	606	653	7.8%	0.04%
Motor neuron disease					
DALYs	3,919	43.54	45.15	3.7%	37.5%
Deaths	164	1.45	1.69	16.5%	54.1%
Prevalence	937	9.77	11.46	17.3%	19.8%
YLDs	197	2.07	2.42	16.7%	19.5%
YLLs	3,722	41.47	42.73	3.0%	38.5%
Multiple sclerosis					
DALYs	4,806	56	63	13.0%	-5.0%
Deaths	92	1.10	1.02	-7.2%	-12.5%
Prevalence	9,510	83	132	58.8%	26.4%
YLDs	2,376	21	33	58.2%	25.5%
YLLs	2,430	35	30	-14.3%	-22.2%
Nervous system cancer					
DALYs	11,769	204	167	-18.1%	-3.3%
Deaths	392	5.22	4.65	-11.0%	10.8%
Prevalence	6,707	72	99	38.4%	35.9%
YLDs	564	6	8	26.9%	25.3%
YLLs	11,205	198	159	-19.5%	-3.7%

Neurosyphilis					
DALYs	17	0.04	0.21	481.0%	-43.6%
Prevalence	101	0.64	1.33	107.9%	-11.7%
YLDs	17	0.04	0.21	481.1%	-43.4%
Other neurological disorders					
DALYs	4,609	100	73	-27.5%	25.8%
Deaths	110	2.03	1.29	-36.4%	45.0%
YLDs	1,594	16	27	69.2%	62.9%
YLLs	2,990	84	45	-46.2%	14.2%
Parkinson's disease					
DALYs	10,018	64	89	39.9%	5.6%
Deaths	626	4.06	5.32	30.9%	4.0%
Prevalence	10,192	26	96	265.1%	21.9%
YLDs	1,437	4	14	257.3%	21.4%
YLLs	8,581	60	76	26.0%	2.0%
Rabies					
DALYs	11	0.03	0.15	421.3%	-59.7%
Prevalence	1	0.001	0.006	513.5%	-57.2%
YLDs	11	0.03	0.15	422.8%	-59.7%
Spinal cord injury					
DALYs	5,369	113	79	-29.6%	-26.9%
Prevalence	19,519	402	284	-29.3%	-21.9%
YLDs	5,369	113	79	-29.6%	-26.9%

	Counts (thousands)		Age-standardized rate (per 100 000 people)		Percentage change, 1990-2021	
	2021	1990	2021	Norway	WHO Europe	
Stroke						
DALYs	50,401	1,373	468	-65.9%	-52.6%	
Deaths	2,849	74	23	-68.6%	-55.6%	
Prevalence	91,233	1,341	956	-28.7%	-19.2%	
YLDs	13,272	185	135	-27.1%	-18.9%	
YLLs	37,129	1,188	333	-71.9%	-55.3%	
Tension-type headache						
DALYs	4,344	69	71	3.4%	-1.6%	
Prevalence	2,063,243	35,123	35,492	1.1%	-0.8%	
YLDs	4,344	69	71	3.4%	-1.6%	
Traumatic Brain Injury						
DALYs	3,621	69	47	-32.1%	-28.2%	
Prevalence	27,644	519	352	-32.2%	-28.0%	
YLDs	3,621	69	47	-32.1%	-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.

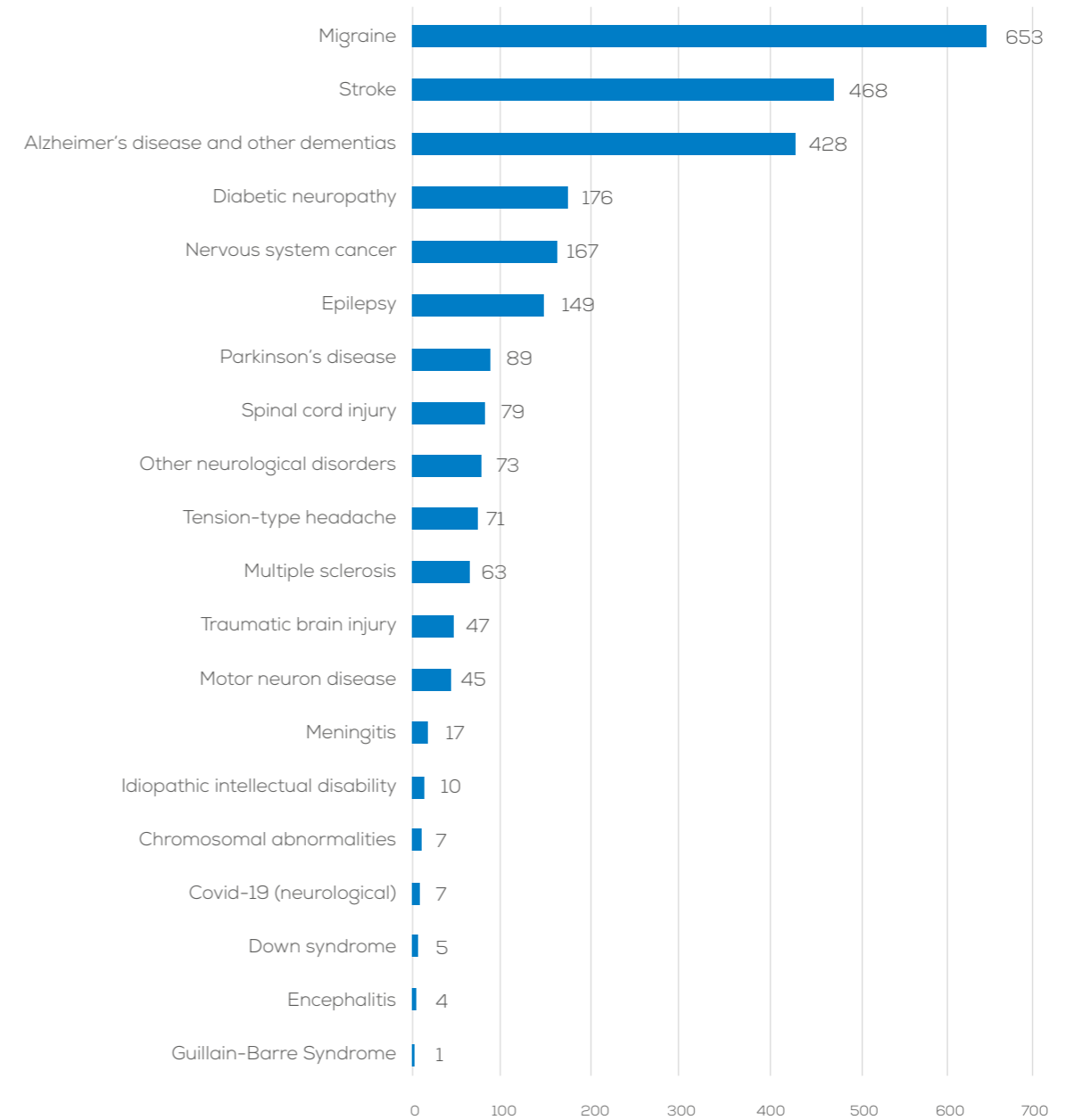


Figure 1: National age-standardised DALYs per 100 000 population by neurological disorder in 2021.

DALYs per 100 000 population

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

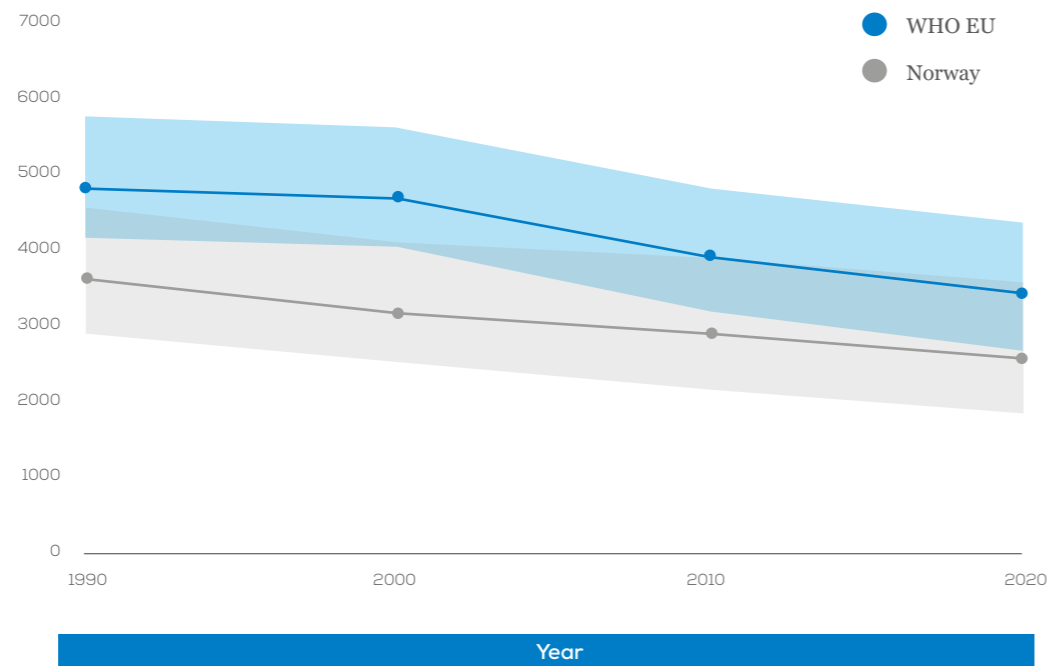


Figure 2: Age-Standardized DALYs per 100 000 population over the last 3 decades.

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

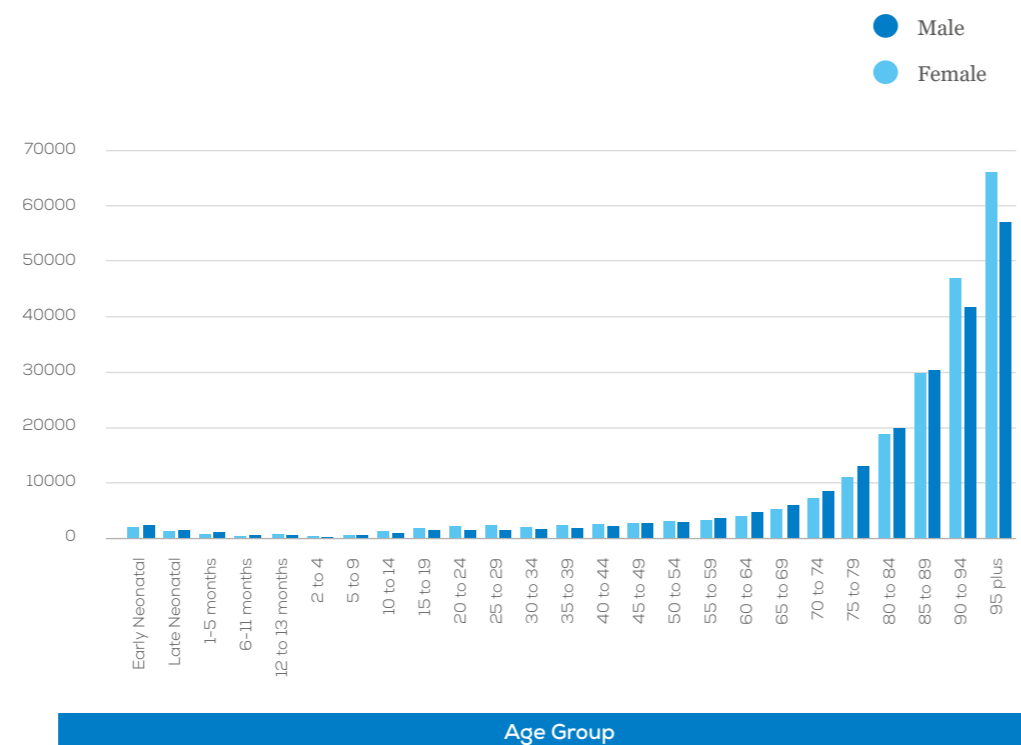


Figure 3: National DALYs per 100 000 population by age group and sex in 2021.

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 **Norway** 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	9,128.0	2,772.3	1,005.3	5,350.4
Sleep disorders	5,446.5	1,825.8	-	3,620.7
Alzheimer's disease and other dementias	1,295.7	683.3	611.9	0.6
Stroke	709.9	522.6	81.2	106.1
Traumatic brain injury	573.0	184.6	111.6	276.9
Polyneuropathies	459.5	157.2	-	302.3
Multiple sclerosis	276.3	140.4	19.3	116.6
Idiopathic epilepsy	274.9	120.4	-	154.5
Parkinson's disease	97.0	60.7	24.4	12.0
Brain and central nervous system cancer	17.8	10.8	7.0	-
Motor neuron disease	13.3	6.9	3.7	2.6
Meningitis	3.7	3.7	-	-
Total Costs:	18,295.6	6,488.7	1,864.3	9,942.6

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.

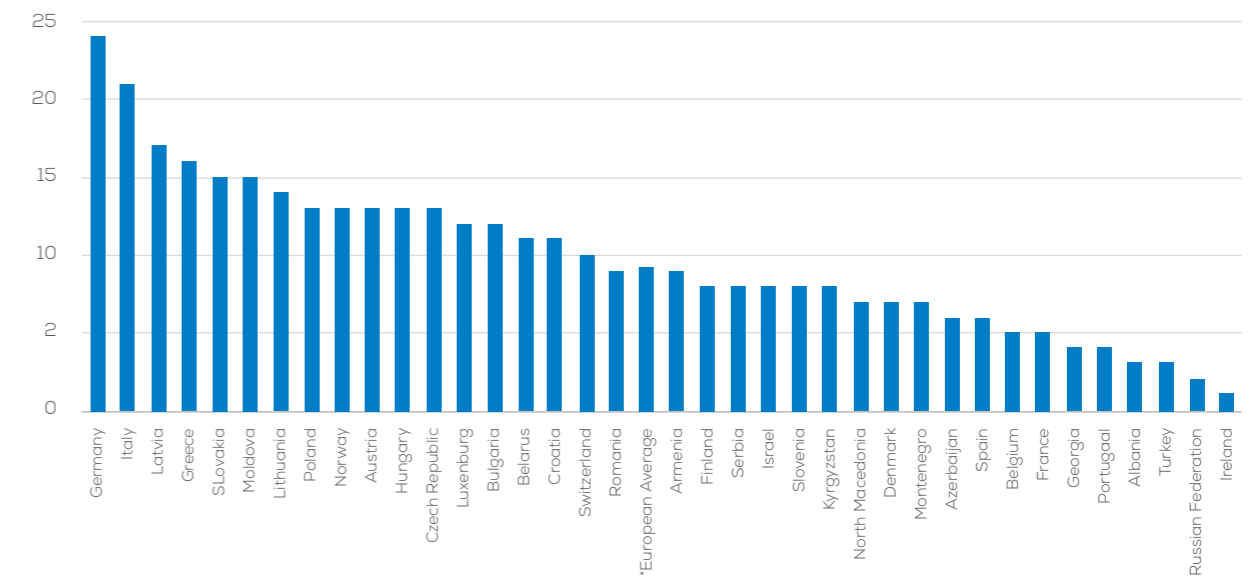


Figure 4: Number of neurologists (fully specialised and in training) per 100 000 population.

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

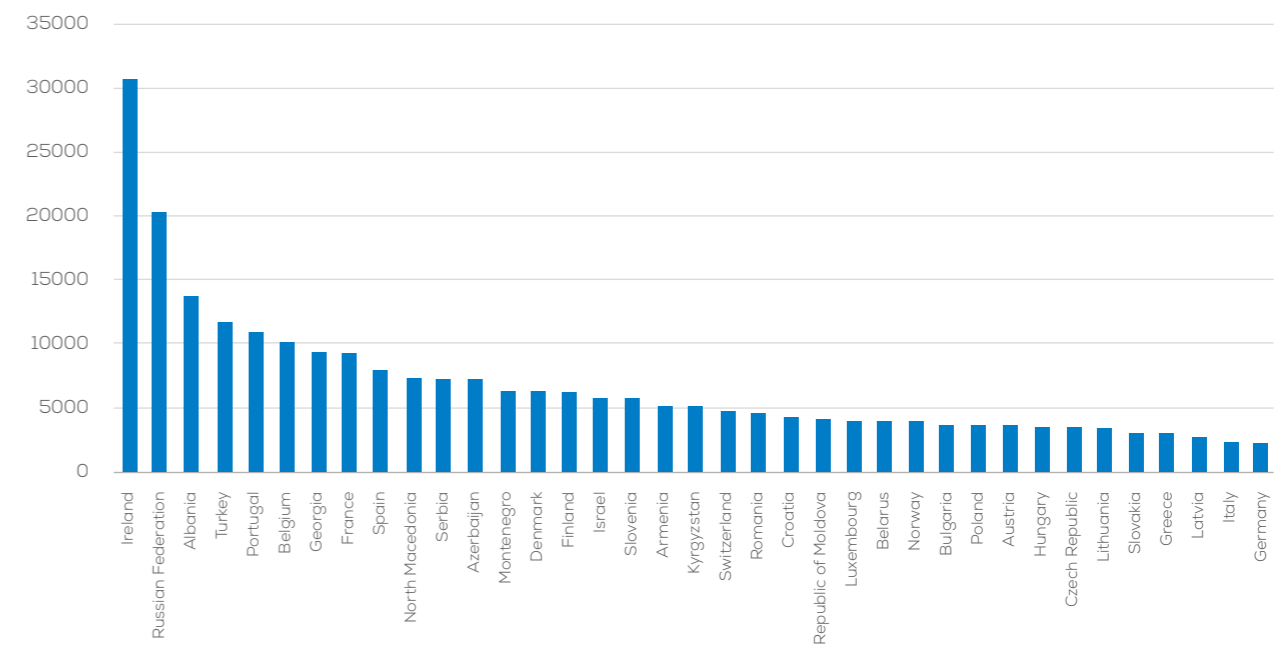
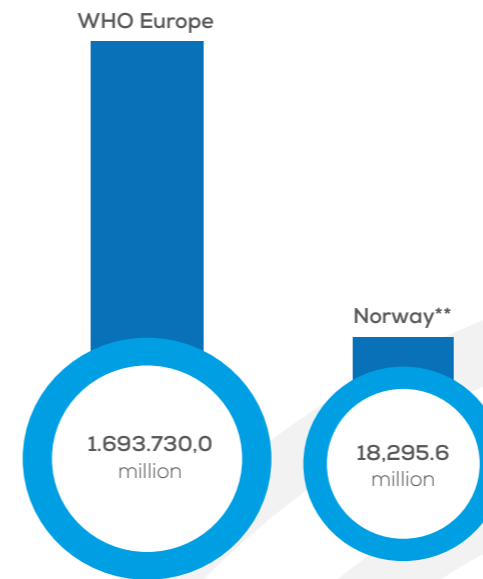
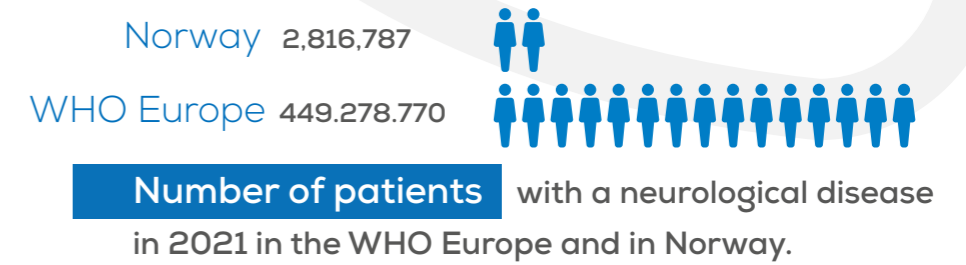
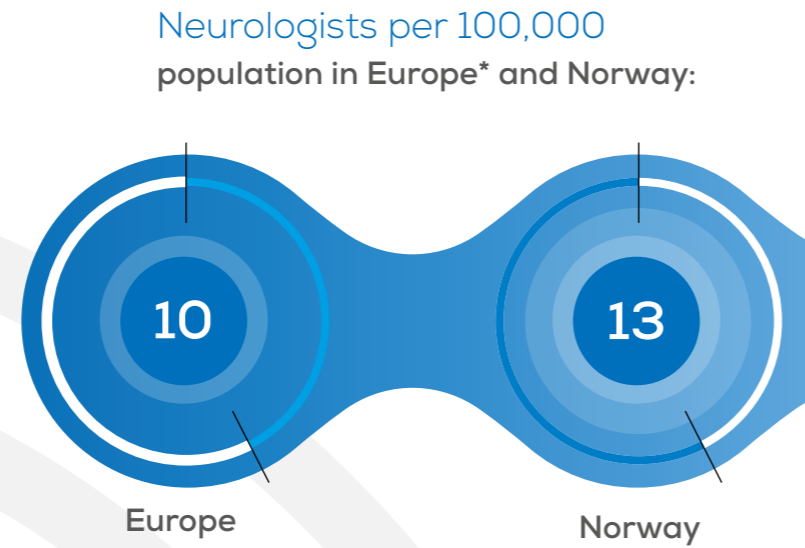
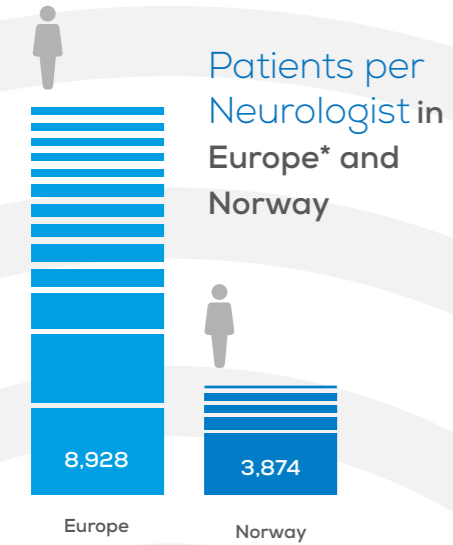


Figure 5: Number of patients per neurologist (fully specialised and in training).

Neurological Diseases in Europe and Norway:

Key Data and Trends from 2021



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

	WHO Europe	vs	Norway
DALYs	-28.98%		-29.00%
Deaths	-43.19%		-45.60%
Prevalence	0.34%		1.78%

Most prevalent neurological diseases in Norway in

2021

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

	Male	Female
WHO Europe	3.513	3.351
Norway	2,492	2,629

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

Leading neurological diseases in Norway by total deaths in 2021:

1. Alzheimer's disease and other dementias
2. Stroke
3. Parkinson's disease
4. Nervous system cancer
5. Motor neuron disease

*Based on data from 37 countries of the WHO European region

**Cost estimates are derived from country-specific data available for specific diseases.

