

Neuromodulation Market Report by Technology (Internal Neuromodulation, External Neuromodulation), Biomaterial (Metallic Biomaterials, Polymeric Biomaterials, Ceramic Biomaterials), Application (Parkinson's Disease, Epilepsy, Depression, Dystonia, Pain Management, and Others), and Region 2024-2032

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Abstracts

The global neuromodulation market size reached US\$ 7.4 Billion in 2023. Looking forward, IMARC Group expects the market to reach US\$ 17.4 Billion by 2032, exhibiting a growth rate (CAGR) of 9.7% during 2024-2032. The market is experiencing robust growth, driven by the increasing prevalence of chronic and neurological disorders, imposition of favorable regulatory environment, rising expenditure on healthcare, significant advancements in device technology, and growing demand for minimally invasive (MI) therapies, supported by strong investment in research and development (R&D) initiatives.

Neuromodulation Market Analysis:

Major Market Drivers: The neuromodulation market is driven by the increasing prevalence of chronic diseases and neurological disorders, such as Parkinson's disease, chronic pain, and depression. Moreover, the rising expenditure on healthcare, the implementation of favorable regulations that offer improvements in reimbursement policies, and rapid technological advancements in neuromodulation devices, including the development of magnetic resonance imaging (MRI)-safe and rechargeable devices, are boosting the market growth.

Key Market Trends: There is a trend towards the integration of artificial intelligence (AI) and machine learning (ML) technologies into neuromodulation devices that enable real-

time monitoring and adjustments of therapy. Moreover, the expansion of indications for neuromodulation therapies, facilitated by ongoing research and successful clinical trials, is broadening the market expansion.

Geographical Trends: North America dominates the neuromodulation market due to its advanced healthcare infrastructure, robust regulatory framework, and high healthcare expenditure. Other regions are also experiencing rapid growth, driven by improving healthcare infrastructures, increasing disposable incomes, and growing awareness of neuromodulation therapies.

Competitive Landscape: Some of the major market players in the neuromodulation industry include Abbott Laboratories, Bioventus Inc., Boston Scientific Corporation, Helius Medical Technologies, Integer Holdings Corporation, LivaNova PLC, Medtronic plc, MicroTransponder Inc., Neuronetics, NeuroPace Inc., NeuroSigma Inc., and Nevro Corp., among many others.

Challenges and Opportunities: A major challenge is the high cost of devices and procedures, which can limit market penetration, especially in developing regions. Additionally, the complexity of device implantation and potential side effects pose hurdles. However, opportunities lie in the expanding scope of neuromodulation applications, including potential treatments for untapped medical conditions, such as obesity and addiction. Furthermore, increasing healthcare spending presents a significant opportunity for market expansion into previously underserved areas.

Neuromodulation Market Trends:

Rising Prevalence of Chronic Diseases and Neurological Disorders

The heightened incidence of chronic diseases such as diabetes, obesity, and cardiovascular conditions, alongside neurological disorders like Parkinson's disease, epilepsy, and depression, is a significant driver for the neuromodulation market. As per the Centre for Disease Control and Prevention (CDC), 6 in 10 adults in the U.S. are suffering from chronic diseases. And 4 out of 10 people have more than two chronic conditions. Also, about 21% of the geriatric adults in India have at least one chronic disease. 17% of geriatric people in rural areas and 29% in urban areas suffer from at least one chronic disease. These health issues lead to complications that can be managed or treated through neuromodulation therapies. For instance, spinal cord stimulation (SCS) is widely used for pain relief in conditions that result from failed back surgery syndrome or complex regional pain syndrome.

Increasing Expenditure on Healthcare

Several countries across the globe are witnessing increased adoption of

neuromodulation therapies owing to rising expenditure on healthcare, the growing population of the middle class, and the establishment of advanced healthcare infrastructures. For instance, India's public expenditure on healthcare touched 2.1% of GDP in FY23 and 2.2% in FY22. Also, the Indian government is planning to introduce a credit incentive program worth Rs. 50,000 crores (US\$ 6.8 billion) to boost the country's healthcare infrastructure. Similarly, in Europe, the general government spending on health amounted to ?1221 billion or 7.7% of GDP in 2022. The U.S. healthcare spending saw a hike of 4.1%, reaching \$4.5 trillion or \$13493/person. This expansion is increasing the geographical footprint of the neuromodulation industry and introducing these advanced therapies to new patient populations.

Implementation of Favorable Reimbursement Policies

The ongoing improvements in reimbursement policies for neuromodulation procedures is a main factor driving the market growth. In many countries, health insurance providers have revised their policies to include several neuromodulation therapies as they recognize their benefits in treating many refractory conditions. These changes have made neuromodulation technologies more accessible to a broader range of patients. In 2022, 92.1 percent of people, or 304.0 million in the U.S., had health insurance at some point during the year, as per the U.S. Census Bureau. Moreover, private health insurance coverage was more prevalent than public coverage, at 65.6 percent and 36.1 percent, respectively. Also, insurers are recognizing the cost-effectiveness of neuromodulation in the long term, especially in terms of reduced hospital stays and medication use, which is expanding the scope of reimbursement coverage.

Neuromodulation Market Segmentation:

IMARC Group provides an analysis of the key trends in each segment of the market, along with forecasts at the global, regional, and country levels for 2024-2032. Our report has categorized the market based on technology, biomaterial, and application.

Breakup by Technology:

Internal Neuromodulation

Spinal Cord Stimulation (SCS)

Deep Brain Stimulation (DBS)

Vagus Nerve Stimulation (VNS)

Sacral Nerve Stimulation (SNS)

Gastric Electrical Stimulation (GES)

External Neuromodulation

Transcutaneous Electrical Nerve Stimulation (TENS)

Transcranial Magnetic Stimulation (TMS)

Others

Internal neuromodulation accounts for the majority of the market share

The report has provided a detailed breakup and analysis of the market based on the technology. This includes internal neuromodulation (spinal cord stimulation (SCS), deep brain stimulation (DBS), vagus nerve stimulation (VNS), sacral nerve stimulation (SNS), and gastric electrical stimulation (GES)) and external neuromodulation (transcutaneous electrical nerve stimulation (TENS), transcranial magnetic stimulation (TMS), and others). According to the report, internal neuromodulation represented the largest segment.

Based on the neuromodulation market analysis and forecast, internal neuromodulation emerged as the largest segment. It includes advanced therapies, such as spinal cord stimulation (SCS), deep brain stimulation (DBS), sacral nerve stimulation (SNS), and vagus nerve stimulation (VNS), among others. They are utilized for treating a wide range of chronic conditions and neurological disorders, including chronic pain, Parkinson's disease, urinary and fecal incontinence, and refractory epilepsy. Moreover, the proven efficacy of internal neuromodulations in improving patient outcomes, significant advancements in device technology that enhance user safety and comfort, and the broadening scope of clinical applications are fueling the neuromodulation market revenue.

Breakup by Biomaterial:

Metallic Biomaterials

Polymeric Biomaterials

Ceramic Biomaterials

Metallic biomaterials hold the largest share of the industry

A detailed breakup and analysis of the market based on the biomaterial have also been provided in the report. This includes metallic biomaterials, polymeric biomaterials, and ceramic biomaterials. According to the report, metallic biomaterials accounted for the largest market share.

As per the neuromodulation market report and overview, metallic biomaterials stand out as the largest segment, owing to their critical role in the manufacturing of implants and devices used in neuromodulation therapies, such as electrodes and leads. Metallic biomaterials are favored for their superior electrical conductivity, biocompatibility, and durability. They are essential for ensuring the long-term reliability and performance of neuromodulation devices, particularly those that require chronic implantation or are subject to bodily fluids and tissues. Besides this, the ongoing advancements that improve their functionality and safety, such as coatings to enhance biocompatibility or technologies to reduce the risk of infection, are favoring the neuromodulation market growth.

Breakup by Application:

- Parkinson's Disease
- Epilepsy
- Depression
- Dystonia
- Pain Management
- Others

Parkinson's disease represents the leading market segment

The report has provided a detailed breakup and analysis of the market based on the application. This includes Parkinson's disease, epilepsy, depression, dystonia, pain management, and others. According to the report, Parkinson's disease represented the largest segment.

According to the neuromodulation market outlook and trends, Parkinson's disease emerged as the largest segment, reflecting the significant impact and utility of neuromodulation therapies in managing chronic neurological disorders. The increasing utilization of deep brain stimulation (DBS) for the treatment of patients who do not respond adequately to pharmacological treatments is enhancing the market growth. DBS helps in alleviating symptoms such as tremors, rigidity, and bradykinesia, significantly enhancing the quality of life for patients. Moreover, the efficacy of neuromodulation in providing substantial and sustained symptom relief, leading to its widespread adoption in clinical settings, is catalyzing the neuromodulation market share.

Breakup by Region:

North America
United States
Canada
Asia-Pacific
China
Japan
India
South Korea
Australia
Indonesia
Others
Europe
Germany
France
United Kingdom
Italy
Spain
Russia
Others
Latin America
Brazil
Mexico
Others
Middle East and Africa

North America leads the market, accounting for the largest neuromodulation market share

The report has also provided a comprehensive analysis of all the major regional markets, which include North America (the United States and Canada); Asia Pacific (China, Japan, India, South Korea, Australia, Indonesia, and others); Europe (Germany, France, the United Kingdom, Italy, Spain, Russia, and others); Latin America (Brazil, Mexico, and others); and the Middle East and Africa. According to the report, North America represents the largest regional market for neuromodulation.

North America accounted for the largest segment in the neuromodulation market, attributed to several key factors, including advanced healthcare infrastructure, strong regulatory support, and substantial investments in research and development (R&D).

Moreover, the region is a hub of some of the leading companies in the neuromodulation industry, which drives innovation and market growth through continuous advancements in technology. Additionally, the high prevalence of chronic diseases and neurological disorders, coupled with a well-established healthcare system that facilitates early adoption of new technologies, is contributing to the neuromodulation market revenue.

Competitive Landscape:

The market research report has also provided a comprehensive analysis of the competitive landscape in the market. Detailed profiles of all major companies have also been provided. Some of the major market players in the neuromodulation industry include Abbott Laboratories, Bioventus Inc., Boston Scientific Corporation, Helius Medical Technologies, Integer Holdings Corporation, LivaNova PLC, Medtronic plc, MicroTransponder Inc., Neuronetics, NeuroPace Inc., NeuroSigma Inc., Nevro Corp., etc.

(Please note that this is only a partial list of the key players, and the complete list is provided in the report.)

The top neuromodulation companies are engaged in enhancing their competitive edge through strategic initiatives, such as mergers, acquisitions, and partnerships. They are investing in research and development (R&D) to innovate and improve their neuromodulation devices. These innovations focus on increasing the precision, effectiveness, and safety of therapies for conditions like chronic pain, Parkinson's disease, and urinary disorders. Additionally, industry leaders are involved in clinical trials to expand the indications for existing technologies, thereby broadening the potential user base. They are also prioritizing obtaining regulatory approvals in new markets to ensure global access to their advanced therapies. Furthermore, major companies are enhancing patient and practitioner engagement through digital platforms that facilitate better monitoring and management of therapy outcomes. This helps them align with the broader trend toward digital health solutions in medical technology, thereby positively impacting the neuromodulation market's recent development and opportunities.

Neuromodulation Market News:

In April 2022, Boston Scientific Corporation (US) received FDA approval for its Vercise Neural Navigator with visualization software, STIMVIEW XT. The device allows medical professionals to view the real-time location of leads, or electrodes, in patients with Parkinson's disease and those undergoing deep brain stimulation (DBS).

In December 2022, Abbott Laboratories received FDA approval for its Eterna spinal

cord stimulation (SCS) system. It is a small implantable and rechargeable spinal cord stimulator for treating chronic pain. The neuromodulation device utilizes Abbott's proprietary low-dose BurstDR stimulation.

Key Questions Answered in This Report:

How has the global neuromodulation market performed so far, and how will it perform in the coming years?

What are the drivers, restraints, and opportunities in the global neuromodulation market?

What is the impact of each driver, restraint, and opportunity on the global neuromodulation market?

What are the key regional markets?

Which countries represent the most attractive neuromodulation market?

What is the breakup of the market based on technology?

Which is the most attractive technology in the neuromodulation market?

What is the breakup of the market based on biomaterial?

Which is the most attractive biomaterial in the neuromodulation market?

What is the breakup of the market based on the application?

Which is the most attractive application in the neuromodulation market?

What is the competitive structure of the market?

Who are the key players/companies in the global neuromodulation market?

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