

Artificial Organs Market Size, Share, Trends and Forecast by Type and Region 2026-2034

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Abstracts

The global artificial organs market size reached USD 23.8 Billion in 2025. Looking forward, the IMARC Group expects the market to reach USD 44.7 Billion by 2034, exhibiting a growth rate CAGR of 7.25% during 2026-2034. North America currently dominates the market, holding a market share of over 45.0% in 2025. The increasing need for 3D bioprinting due to its capability to minimize the risk of organ rejection, rising prevalence of chronic diseases, such as cancer, diabetes, hypertension, stroke, heart disease, and respiratory diseases, and escalating demand for organ transplantation.

Advances in medical technology and the growing incidence of chronic diseases are contributing to the growth of the artificial organ market. Key factors include the increasing incidence of organ failures caused by conditions such as diabetes, cardiovascular diseases, and liver disorders. Such health issues increase the demand for artificial organs, as these are a life-saving option for patients waiting for a transplant. Technological advances in the form of 3D bioprinting and bioartificial organ development are also propelling market growth. More efficient, patient-specific solutions improve outcomes and reduce complications. Prosthetic and organ system technologies with embedded robotics and artificial intelligence enhance functionality, increasing adoption rates. Another strong driver is the elderly population, as this demographic is at a higher risk for organ-related problems as they age. Furthermore, investment in healthcare infrastructure is also growing, coupled with an awareness about organ replacement technologies that will fuel expansion in this market. Governments' supporting initiatives and suitable regulatory approvals also pave the way for the fast commercialization of innovative products.

The United States has emerged as a key regional market for artificial organs. The United States, a robust healthcare infrastructure and significant investments in research

activities drive innovation in artificial organs. High rates of chronic diseases like kidney failure and cardiovascular issues, coupled with long transplant waiting lists, have amplified the demand for alternatives such as artificial hearts and dialysis machines. Government initiatives, like funding for bioengineering and medical devices, further support market growth. Moreover, China's rapidly expanding healthcare sector is also propelling the market. The growing prevalence of chronic diseases due to aging and lifestyle changes, combined with increasing healthcare spending, accelerates adoption. China also benefits from technological collaborations and the rise of local manufacturers developing cost-effective solutions for artificial organs. Furthermore, Europe's market is bolstered by strong regulatory support and funding for innovative healthcare solutions. Aging populations across countries like Germany, France, and Italy have led to increased demand for advanced organ replacement technologies. Furthermore, Europe's emphasis on biocompatibility and sustainability in medical devices drives advancements in bioartificial organs and 3D printing.

Artificial Organs Market Trends:

Advancements in 3D bioprinting

Innovations in the field of 3D bioprinting are crucial in organ transplanting as it is used for developing artificial organs. 3D bioprinting is gaining traction due to its capability to minimize the risk of organ rejection. In addition, the integration of artificial intelligence (AI) in artificial organs is transforming the global trends for artificial devices. Moreover, many countries are focusing on a tool that provides a customized assessment of organ and donor suitability. This tool can be very helpful in making effective decisions about organ retrieval while assisting patients in deciding if they should accept donor organs or wait for better options. Moreover, numerous cutting-edge 3D bioprinting methods, such as embedded bioprinting and multimaterial bioprinting approaches, have been proposed to create complex tissues and organs with intricate geometry, complex compositions, and functional microvasculature, in light of the heterogeneous constructs and diversity of native tissues. Furthermore, the growing focus on bioprinting organs and tissues, recellularization strategies, cellular repair or regeneration, and new functional biomaterials for the next generation of devices is offering a favorable market outlook. In line with this, the development of bioreactors to provide adequate oxygenation and guarantee transport of nutrients is bolstering the artificial organs market growth.

Increasing prevalence of chronic diseases

The rising incidence of chronic diseases such as cancer, diabetes, hypertension, stroke,

heart disease, respiratory diseases, arthritis, obesity, and oral diseases is driving the demand for artificial organs. They offer a way to save patients who are experiencing organ failure or functional incapacitation. With the eventual organ failure due to chronic diseases, there is an increase in the demand for artificial organs, but the supply of organ donors is limited. Therefore, artificial organs and bionic plants are used as alternatives that provide life-saving treatments with reduced dependency on organ donors. In addition, the growing demand for artificial hearts due to the increasing incidence of cardiovascular diseases to replace damaged heart ventricles and valves is also providing significant growth opportunities for industry investors. Artificial hearts have ventricles made from polyurethane, a very commonly used artificial material that is both durable and flexible, which makes it highly dependable.

Rising demand for organ transplantation

The increasing demand for organ transplants due to increased cases of end-stage organ failure throughout the world is driving a conducive market outlook. More than 46,000 transplants took place in 2023 according to the Organ Donation Statistics. In 2024, more than 103,223 men, women, and children awaited transplant placement on the US national waiting list. In addition, the rising demand for renal transplantation over dialysis, along with the escalating demand for lifesaving transplants to treat patients suffering from liver, heart, or lung irreversible diseases, is strengthening the growth of the market. Besides this, organ transplantation is the best therapy for terminal and irreversible organ failure. Besides, the introduction of cyclosporine to enhance transplant outcomes, along with the increasing number of solid organ transplant programs worldwide, is positively impacting the market. In addition, the implementation of transplant programs helps motivate people toward organ donation and defines the optimization of transplant clinical practices and an economic effort by the different healthcare systems. This was aimed at enhancing the life expectancy, clinical condition, and quality of life of recipients of solid organ transplants.

Artificial Organs Industry Segmentation:

IMARC Group provides an analysis of the key trends in each segment of the market, along with the global artificial organs market forecast at the global, regional, and country levels for 2026-2034. Our report has categorized the market based on the type.

Analysis by Type:

Artificial Kidney

Artificial Heart

Artificial Pancreas

Cochlear Implants

Others

The artificial kidney dominates the market in 2025 due to an increasing number of patients needing renal replacement therapy. Moreover, lifestyle diseases such as diabetes, hypertension, and metabolic syndrome are catalyzing the demand for artificial kidneys. Kidney transplantation, whenever feasible, is the most preferred mode of RRT. This leads to the increased demand for artificial kidneys that can be wearable or implantable, performing the complete excretory, filtration, tubular, endocrine, and metabolic functions of the kidney while maintaining the quality of life and minimizing complications.

The artificial heart is a device that maintains blood circulation and oxygenation in the human body for an extended period. It can be used by people having conditions, such as uncontrollable ventricular arrhythmia, end-stage complications of congenital heart defects, ventricles that are not the right shape for a ventricular assist device (VAD), broken or ruptured ventricles, a left ventricle that fails to work properly after a mechanical valve replacement surgery, and blood clots in the lining of the blood vessels and heart. It is very helpful for heart patients as it is made of material from which the body usually doesn't reject.

An artificial pancreas consists of three parts that work in concordance to replicate what a healthy pancreas is supposed to do when keeping blood glucose levels under the body's control. It has mainly been used to manage type 1 diabetes. However, it uses a CGM, which measures glucose levels in the blood, every few minutes using an extremely small sensor implanted just underneath the skin. The sensor wirelessly transmits the information to a program saved on either a smartphone or an insulin infusion pump. The small amounts of insulin are administered from the insulin infusion pump for the entire day whenever the glucose levels in the blood are outside the target range.

Cochlear implants are small electronic devices that have enabled people to hear sound.

They can help improve the understanding of speech using less lip reading and be able to perceive sounds as they directly stimulate the non-functioning part of the ear by applying a mild electrical current to the structures of the cochlea.

Regional Analysis:

North America

Europe

Asia Pacific

Latin America

Middle East and Africa

North America had the highest artificial organs market share of over 45.0% in 2025. The market share is primarily dominated by North America, as the number of transplant surgeries is on the rise there. Additionally, artificial organs are in high demand due to the increasing rate of organ failure, which is further contributing to this market. Other drivers behind the growth of this market are the development of well-crafted health facilities in this area, the local existence of various prominent companies in biotechnology, and the medical device market, among other factors. Added to these is the high number of donors and demand for kidney transplant cases in the area.

The growing aging population in Europe is providing a conducive market outlook. An aging population increases the incidence of chronic diseases and organ failure due to advancing age, which accelerates the demand for artificial organs to cater to the healthcare requirements of this population. Also, the increasing burden of heart disease and end-stage kidney and lung disorders is influencing the market positively. Along with this, increasing demand for medical bionic implants and artificial organs is on account of the surging use of bionic prosthetic devices which is bolstering the market growth in this region.

Asia-Pacific will grow significantly due to an extensive consumer base, soaring government initiatives in enhancing the healthcare system, and an average disposable income in the country. In addition, the rising awareness among the masses about the advantages of organ transplantation is boosting the growth of the market. Apart from

this, the governing agencies in the region are promoting domestic medical devices at a high level of legitimacy in the global context, allowing key players to expand their overseas footprint, attract international talent, and scale up clinical research programs.

With an increase in chronic conditions, such as cardiovascular diseases, diabetes, and kidney disorders, comes an increase in the demand for artificial organs in the Middle East and Africa region. Artificial organs, such as the heart and pancreas, grant patients a better quality of life and longer life spans than otherwise. Furthermore, the Middle East and Africa region experience a shortage of viable organs for transplantation. Artificial organs are a bridge to transplantation, providing patients with critical support until a suitable donor organ becomes available. In addition, the growth of the market is being impelled by advancements in materials science, miniaturization, and biotechnology.

Increased prevalence of organ failure due to blood loss, drug addiction, severe trauma, poor habits related to sanitation, and genetic deformities are positively affecting the market in the Latin America region. Lifestyle disorders such as eating habits, smoking, consumption of alcohol, stress, and lack of exercise are the factors contributing to the growth of the market in the region.

Key Regional Takeaways:

United States Artificial Organs Market Analysis

In 2025, the United States holds 82.30% of the artificial organ market in North America. The increase in the incidence of organ failure, along with advancement in the medical technology sector, is the leading factor driving the artificial organs industry in the US. Organ failure, more so kidney and heart failure, is increasingly on the rise within the United States due to the ever-increasing prevalence of chronic diseases such as diabetes, hypertension, and heart problems. According to data from the National Kidney Foundation, more than 37 Million Americans suffer from chronic kidney disease, but more than three-quarters of the population are unaware of having it. More than 120,000 people remain on the national organ transplant waiting list, with over 98,000 waiting for a life-saving kidney. There is a growing scarcity of donor organs and an increasing demand for artificial alternatives like prosthetic hearts, kidneys, and lungs.

Good health infrastructure, heavy medical spending, and medical innovation and research efforts favor the U.S. market. The FDA has fast-tracked approval processes for some artificial organs like SynCardia Total Artificial Heart and AbioCor Artificial

Heart. For starters, bioengineering and regenerative medicine are heavily financed, which propels innovations in the market for artificial organs. With an ever-aging population and rapidly increasing healthcare expenditures, alternative organ transplants will push this demand for artificial organs sky-high. Finally, alliances involving private businesses, medical centers, and academic institutions foster and increase this market.

Europe Artificial Organs Market Analysis

The market for artificial organs is expanding in Europe as a result of biotechnology breakthroughs, an aging population, and a rise in chronic illness. According to the WHO, the population aged 60 and older is rapidly growing with 215 Million in 2021, 247 Million by 2030, and 300 Million by 2050. The European Commission reports a severe lack of suitable donor organs, notwithstanding the increasing demand for organ transplants in the European market. To address this demand, nations like Germany, the UK, and France are concentrating on creating substitutes, such as artificial liver, kidney, and cardiac devices. The market is growing as a result of the European Society for Artificial Organs (ESAO) active promotion of research and development in this area.

Another important motivator is government financing for medical innovation. Research in bioengineering and regenerative medicine, which are essential for the creation of artificial organs, has received significant financing from the EU's Horizon 2020 initiative and other supported programs. Technological developments like better artificial organ materials and integration with intelligent healthcare systems also help the European market. The need for artificial organs is anticipated to increase as age-related ailments including diabetes and cardiovascular disorders become more common.

Asia Pacific Artificial Organs Market Analysis

The principal factors driving the market for artificial organs in the Asia-Pacific region include increased lifestyle disorders, the growth of elderly populations, and insufficient organ donation networks. For example, according to the Indian Council of Medical Research – India Diabetes (ICMR INDIAB) study of 2023, it was stated that the incidence of diabetes is 10.1 Crores. Similarly, China accounts for the highest diabetes population, with more than 118 million people diagnosed with the illness, and thus with close to 22% prevalence of global diabetes in the year 2021. A massive unmet demand exists in other countries, like China and India, where enormous populations alongside growing incidence rates of diabetes, cardiovascular disease, and renal diseases demand artificially constructed organs like an artificial kidney and hearts. Artificial organs have recently increased demand, and organ transplantation is still an emerging

practice in China. Renal disease has increased tremendously in India, as per industry reports, and the demand for artificial kidney solutions has increased because of this. The market is expanding because of better healthcare infrastructure and technology. Countries such as Japan, being at the forefront of robotic surgery and regenerative medicine, are the ones who are going to play a big role in the artificial organ market. The Japanese healthcare system also has research in artificial organ technology, especially on substitutes for heart and kidney. The South Korean Ministry of Health and Welfare has also offered funding for projects that will promote the development of artificial organs and organ transplantation.

Latin America Artificial Organs Market Analysis

Increasing incidences of chronic diseases and an increased number of patients in need of organ transplantation have boosted the Latin America artificial organs market. A serious shortage of donors to cater to organ transplantation poses significant challenges to Brazil and Mexico, mainly due to countries having a high percentage of diabetes, hypertension, and cardiovascular disorders. The demand for artificial organs is on the rise as the Latin American region remains plagued by the persistent unavailability of kidney, liver, and heart transplants, according to the PAHO. The industry is also being driven by increased healthcare investments in countries like Brazil, Argentina, and Chile as they expand access to cutting-edge medical technologies. Additionally, the availability of artificial organ devices is being facilitated by regional hospitals through collaborations with global medical technology firms.

Middle East and Africa Artificial Organs Market Analysis

The rising prevalence of NCDs such as diabetes, chronic renal disease, and cardiovascular disease is driving the market for artificial organs across the Middle East and Africa. The International Diabetes Federation predicts that the Middle East and North Africa (MENA) Region has the highest regional prevalence at 16.2% and the second largest predictable growth (86%) in the number of persons with diabetes to reach 136 Million by 2045. The MENA Region presents the highest percentage, standing at 24.5% of diabetes-related mortality amongst persons of working age. Even though 13.6% of people worldwide have diabetes, only USD 32.6 Billion, or 3.4% of global spending, was spent on the disease in the MENA region. Limited access to organ donation burdens many governments in Africa, which is currently driving the industry due to the required reasonably priced healthcare solutions. The region is also advancing in medical technology areas through international partnerships and support by the likes of institutions like the World Bank and the African Development Bank.

Competitive Landscape:

The artificial organs market is highly fragmented with the presence of many large, small, and medium-scale vendors. In addition, key players are focusing on developing innovative products and regional expansion to gain maximum revenue share in the industry. Mergers and acquisitions (M&A) are supporting them to expand their existing product portfolio and increase their geographical footprints. Moreover, key manufacturers are evolving advanced artificial intelligence (AI) designs that can recognize patients who are expected to have a lesser gait speed outcome, after hip or knee surgical intervention. They are also introducing robotic technologies digitally designed to offer transformative data-powered clinical insights to boost patient outcomes, with strong predictive analytic capabilities. Furthermore, key players are focusing on the demonstration of a functional prototype of their implantable artificial kidneys, which is expected to positively influence the artificial organs market scope.

The report provides a comprehensive analysis of the competitive landscape in the artificial organs market with detailed profiles of all major companies, including:

Abiomed, Inc.

HeartWare International, Inc.

Edwards Lifesciences Corp

Boston Scientific Corporation

Cochlear Limited

Key Questions Answered in This Report

- 1.What are artificial organs?
- 2.How big is the artificial organs market?
- 3.What is the expected growth rate of the global artificial organs market during 2026-2034?
- 4.What are the key factors driving the global artificial organs market?
- 5.What is the leading segment of the global artificial organs market based on the type?
- 6.What are the key regions in the global artificial organs market?
- 7.Who are the key players/companies in the global artificial organs market?

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