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Big Data Analytics in Healthcare Market Assessment, By Analytics [Prescriptive, Predictive, Diagnostic, Descriptive], By Application [Clinical Analytics, Financial Analytics, Operational Analytics, and Others], By End-user [Research Organisations, Hospitals and Clinics, Finance and Insurance Agencies, and Others], By Region, Opportunities, and Forecast, 2016-2030F

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Abstracts

The Big Data Analytics in Healthcare Market was valued at 30.6 billion in 2022 and will reach USD 117.70 billion in 2030 growing at a CAGR of 18.34% for the forecast period between 2023 and 2030. In recent years, there has been a continuous increase in the demand for solutions offering effective analytical tools. Both public and private hospitals are seeking ways to leverage big data's capabilities for enhanced decision making, competitive advantage, and improving company performance.

Big data analytics and prediction models are being used by providers, lawmakers, and researchers to better allocate resources, predict surges, improve patient care and outcomes, and implement preventive measures. Roughly, 30% of the global data volume is created by the healthcare sector. Globally, there are around 350,000 health applications available, with over 90,000 of those being released in the same year. Hence, presence of enormous data enables the scope of utilizing big data analytics to improve healthcare decision making. Furthermore, Electronic Health Records (EHR) is the major application of big data in healthcare, where doc tors and nurses can access real-time, precise patient/resident data. Several other factors in the healthcare sector, such as increase in the use of data in healthcare, use of predictive analytics, increasing

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use of ML algorithms drive the demand for big data technology to improve overall efficiency and quality of care delivery.

Additionally, healthcare technology integrating use of sensors to collect data across numerous applications in upcoming years provides ample growth opportunity for the market. From earphones that can measure a person’s core temperature, socks that can monitor a baby's heart rate, or a sports bra that can identify cancer. The development of comfortable, patient-friendly wearables will boost customer compliance and enhance data collection due to the convergence of consumer wearables with medical technology. The newest developments will do more than just collect data; they will also offer advice and administer care. Technolog y is rapidly personalising healthcare on a global scale, from a small ring that encourages deeper sleep to insoles that aids in walking.

Increasing Demand for Population Health Analytics

On a population-wide scale, employing big data analytics to improve healthcare can significantly save costs by identifying the people who are at higher risk for disease and arranging early treatments before the situation worsens. Big data is used in healthcare by aggregating data on a variety of parameters such as medical history, lab values, medications, comorbidities, and socioeconomic profile. Policymakers have started to use data for decision-making as more data becomes available. Data related to hospital readmission rates is used to establish policies targeted at reducing needless readmissions. Patient satisfaction data is now being utilised to impact policies ranging from provider reimbursement to hospital transparency. For instance, in April 2023, Amitech Solutions, a healthcare data, analytics and automation consulting company, released Healthcare Pricing Analytics Solution, a first-of-its-kind, on Snowflake's Marketplace. It is based on publicly available hospital and payer pricing data, but they go beyond the raw data to provide insights that support collaboration among all healthcare stakeholders to reduce costs of treatment.

Extensive Implementation in Cancer Research

According to World Health Organization, approximately 14 million people suffer from cancer every year. In the next 20 years, the number is predicted to increase by almost 70%. Oncologists are using data to deliver individualised treatments based on biopsy specimens, patient histories, and other relevant data. Numerous types of cancer-related data from patient case histories, international research, and surveys are being compiled by institutions all over the world. Researchers are utilising Natural Language Processing (NLP) systems to analyse through millions of health records in a population to

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determine patterns, trends, and patient similarity metrics. For instance, in October 2022, Tem pus, a pioneer in AI and precision medicine, has introduced Tempus+, a proprietary platform that uses real-world data to drive collaborative precision oncology research.

Government Initiative

Several local governments have introduced various initiatives for the upliftment of big data in healthcare industry. For instance, the Data Integration Partnership for Australia (DIPA) is a three-year, USD130.8 million project, aimed to maximize the use and value of the government's data assets. DIPA used data integration and analysis to provide fresh insights into crucial and challenging policy issues. Over 20 Commonwealth agencies worked together as a whole-of-government initiative to advance technical data infrastructure and data integration capabilities throughout the Australian Public Service. Important data assets, such as those in the social welfare, health, and education sectors, were upgraded, enabling policymakers to get insights that were previously not possible. Because DIPA only allowed access to regulated, de-identified, and confidential data for policy analysis and research purposes, individual privacy and the security of sensitive data is preserved. Likewise, governments across the globe are encouraging use of big data analytics to enhance healthcare infrastructure and promote well-structured healthcare landscape.

Predictive Analytics to Grow at a Faster Rate

With growing demand for population health analytics, further advancements in predictive analytics are expected to take place in the future. Healthcare organizations with the help of predictive analytics can identify potential health problems before they occur. Predictive analytics can anticipate future patient needs and identify population health patterns more quickly and precisely than ever before by utilizing data-driven insights. Additionally, predictive analytics allows healthcare practitioners to better forecast patient outcomes and allocate resources, accordingly, resulting in better treatment for people and cost savings for organizations. Personalizing therapies based on an individual's medical history or genetic profile, improving operational efficiency by forecasting resource requirements, and lowering hospital readmissions through early interventions are some of the other applications of predictive analytics in healthcare. For instance, in July 2022, Trilliant Health launched Site Selec tion, an analytics tool that provides dynamic comparisons at the service line level for M&A, and organic exp ansion plans for providers, payers, or life science firms.

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Growing Application of Big Data Analytics in Pharmaceutical Research

The development of a new medicine is a highly costly endeavor as it requires extensive pharmaceutical research. As per Congressional Budget Office (CBO), the cost of medicine development can range from USD 1 billion to USD 2 billion, encompassing capital expenditures and investments in unsuccessful drug candidates. However, big data analytics offers a powerful solution by enabling intelligent searches across extensive databases comprising patents, academic articles, and clinical trial data. This technology empowers researchers to efficiently navigate these vast datasets, accelerating the process of generating new medications. In the pharmaceutical sector, big data analytics have already been leveraged to streamline online searches for immense datasets encompassing existing and pending patents, as well as publications from relevant academic journals. This capability enables researchers to access and analyze valuable information swiftly, enhancing their knowledge base and facilitating the discovery of novel therapeutic compounds.

Moreover, big data analytics plays a crucial role in the pharmaceutical industry's pre-commercialization phase. By harnessing these analytics, companies can identify the optimal patient demographics for clinical trials, ensuring a diverse and representative participant pool. Remote monitoring and analysis of previous clinical trial data can also be facilitated, allowing for comprehensive evaluation of drug safety and efficacy. This technology aids in the early detection and reporting of potential side effects, enabling pharmaceutical companies to address any concerns proactively.

Hence, big data analytics in healthcare present significant opportunities for the pharmaceutical industry to streamline drug development processes, improve research efficiency, and enhance patient safety. By harnessing the power of vast datasets and advanced analytical techniques, the industry can drive innovation, optimize decision-making, and ultimately bring safer and more effective medications to the market.

Impact of COVID-19

The utilization of big data analytics has emerged as a pivotal factor in healthcare decision-making, particularly in the context of the COVID-19 pandemic. The ongoing global health crisis has witnessed an exponential surge in the volume and variety of health data being collected and modified, thereby facilitating more extensive and sophisticated analytics. This has, in turn, led to a deeper comprehension of effective response strategies and treatment modalities for patients. Significantly, the COVID-19 pandemic has underscored the existing challenges associated with health data

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exchange between organizations and the notable lack of standardization in data collection and analysis methodologies. These obstacles have further highlighted the criticality of implementing robust data governance frameworks and standardized protocols to enhance data sharing and promote interoperability within the healthcare ecosystem. In the aftermath of the pandemic, the healthcare industry has recognized the operational advantages of leveraging big data analytics to drive informed decision-making processes. Industry players are increasingly forging strategic partnerships aimed at developing advanced data analytics platforms tailored specifically for the healthcare sector.

Key Players Landscape and Outlook

Companies operating in the global Big Data Analytics in Healthcare market are increasingly collaborating with healthcare bodies and popular hospitals to accelerate digital transformation of healthcare systems. Healthcare bodies and hospitals possess vast amounts of valuable patient data, including medical records, clinical trials, genomic data, and real-time patient monitoring data. By collaborating with these entities, companies can gain access to diverse and comprehensive datasets necessary for developing and refining their big data analytics solutions. Access to such data enables companies to train and validate their algorithms, improve predictive models, and generate meaningful insights for healthcare decision-making.

For instance, in 2022, Hartford HealthCare has entered into a strategic and enduring collaboration with Google Cloud to propel the health system's digital evolution, enhance data analysis capabilities, and elevate the delivery and accessibility of healthcare services. The health system will use Google Cloud’s Healthcare Data Engine (HDE) and HDE accelerators, leveraging artificial intelligence (AI) and machine learning (ML), to make its healthcare data more accessible and actionable.

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