

DATA SCIENCE

The background is a solid black field decorated with various abstract digital motifs. These include thin, light blue lines forming circuit-like paths, some ending in small circles. There are also clusters of small, light blue dots arranged in horizontal or vertical patterns. Larger, solid light blue shapes, such as rectangles and chevrons, are scattered across the composition. A prominent feature is a horizontal bar with a blue-to-white gradient, positioned below the main text. The overall aesthetic is clean, modern, and tech-oriented.

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The background is black with various geometric elements. In the top left, there's a dark blue polygon with a light blue line extending from it. In the top center, a light blue line with three small circles at its ends. In the top right, a dark blue arrow pointing left. In the middle left, a light blue line with two small circles. In the middle right, a horizontal light blue line. In the bottom left, a light blue line with two small circles. In the bottom center, a light blue line with two small circles. In the bottom right, a dark blue arrow pointing up with four light blue chevrons inside. There are also several horizontal and vertical dotted light blue lines scattered around.

01

Introduction




A horizontal bar with a gradient from dark blue on the left to light blue on the right, with rounded ends.



Introduction

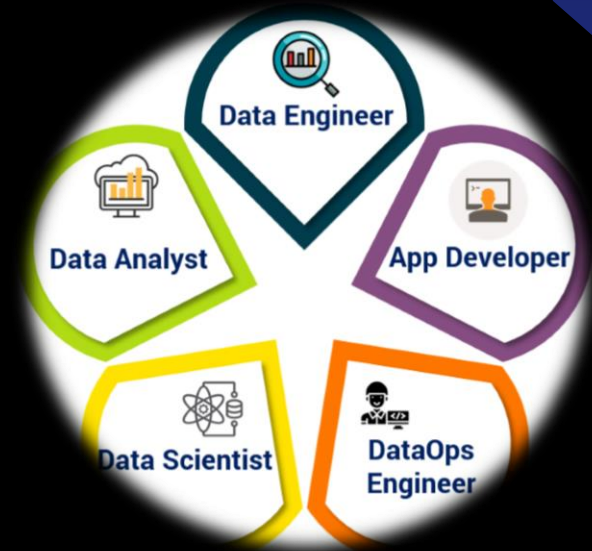


We have worked on this project to talk about data science, its areas of important sources in many fields one of these fields. It's relation about health Care.



Data In General

In general, data are atoms of decision making: they are the smallest units of factual information that can be used as a basis for reasoning, discussion, or calculation. Data can range from abstract ideas to concrete measurements, even statistics. Data are measured, collected, reported, analyzed, and used to create data visualizations such as graphs, tables, or images.



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02

Data Science

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Data Science

Data science is a multi-disciplinary field that uses scientific methods, processes, algorithms, and systems to extract knowledge and insights from structured and unstructured data.



Example of company that use Data Science Tasks



Application of Data Science:

Security



Sports



Internet search



Health Care



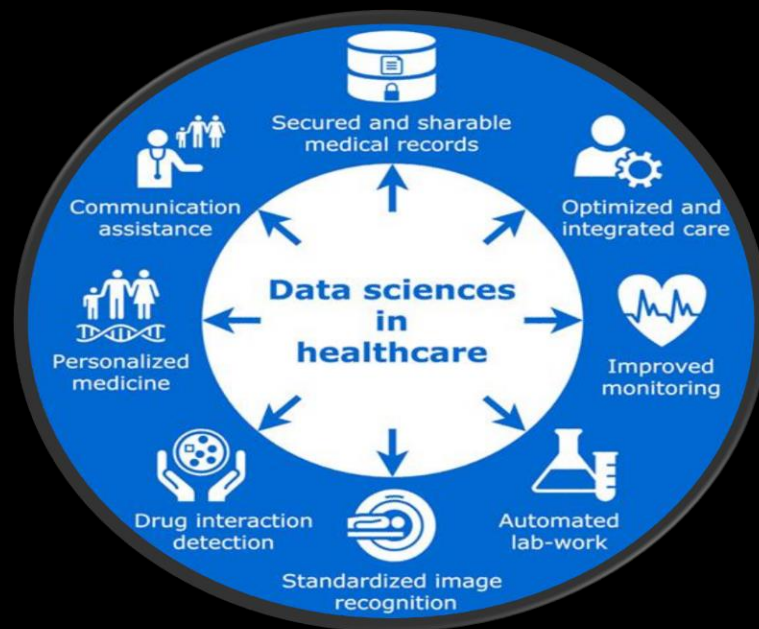
The background is a solid black field decorated with various geometric elements. There are several light blue chevrons pointing right, some of which are grouped together. A horizontal bar with a blue-to-white gradient is positioned below the main text. Scattered throughout are thin white lines, some ending in small circles, and a few small clusters of white dots. The overall aesthetic is modern and digital.

03

Health Care

What Can Data Science Provide To Health Care ? <<<<<<




- **Making Medicines**
- **Medical records**
- **Personalized Medicine**
- **Improved monitoring**
- **Genetic research**
- **Control patient deterioration**
- **Mental health treatment**



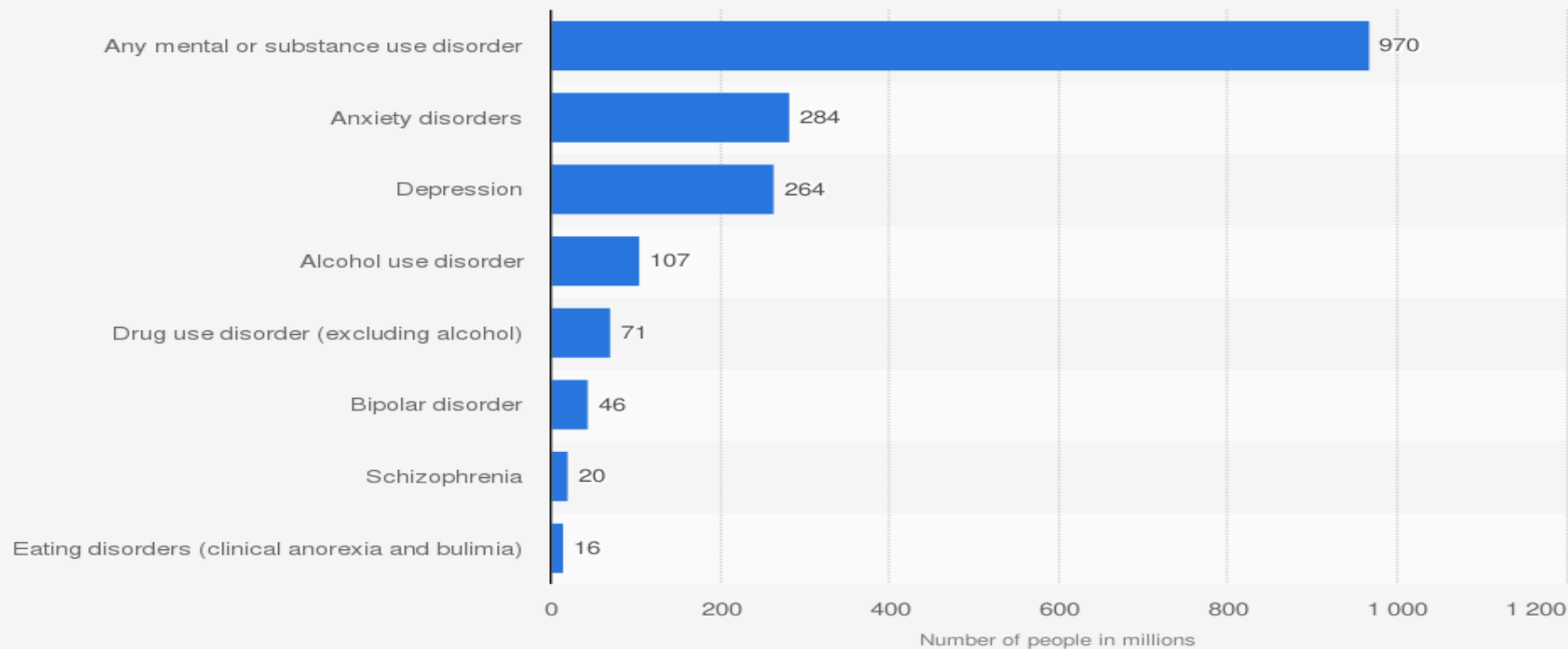


Mental Health

Mental health includes our emotional, psychological, and social well-being. It affects how we think, feel, and act. It also helps determine how we handle stress, relate to others, and make choices. Mental health is important at every stage of life.



Number of people globally that suffered from select mental health or substance use disorders as of 2017 (in millions)






Source
OWID
© Statista 2021

Additional Information:
Worldwide; 2017



How can Data Science come into the role?

In psychology, data is everything. Without data, it's difficult to quantify findings that lead to more effective care and positive outcomes. Although data science is not widely used in the mental health sector at the moment, there has been encouraging signs that data science can have important impacts on the not-too-distant future.




Applications for Data science in mental health:

- ❖ NLP techniques are used to predict suicidal symptoms.
- ❖ Suicide attempts can be predicted by analyzing Electronic Health records.
- ❖ AI tools are used to explore how parent relationships and social media affect young people's mental health.
- ❖ Using Artificial Intelligence powered by IBM's Watson platform, they are developing a real-time chat bot app that will help those suffering from mental health issues to be connected to resources for treatment.



Advantages of Data science in mental health:

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- It can make mental healthcare treatments more accessible.
 - It can help find links between mental and physical illnesses.



Challenges:

- Funding can be difficult to get. Studies and research are often costly.
- Privacy of the patient's data.

The background is dark blue with various geometric shapes and lines in a lighter blue and white. There are several small circles connected by lines, resembling a circuit or network. There are also larger shapes like triangles and rectangles, some with internal patterns. The overall aesthetic is modern and tech-oriented.

04


Case Study




Virtual Therapist, University of Southern California

To make mental health care more accessible, the Institute of Creative Technologies at the University of Southern California has developed a [virtual therapist](#), a 3-D chatbot viewed on a television screen. The virtual therapist, Ellie, can show facial expressions and detect non-verbal cues using algorithms. Data, in the form of patients' verbal input and facial expressions, run through these algorithms that determine Ellie's visual and verbal responses.

In a study with military personnel who recently returned from a tour in Afghanistan, Ellie was found to be more effective at detecting Post Traumatic Stress Disorder (PTSD) symptoms than the military's routine health assessment. Researchers believe effectively building rapport and trust with interviewees is the [key to Ellie's success](#). The algorithms used by the virtual therapist are continually being improved with additional data from human therapists, making the assessment process more productive.



The goal of virtual therapists is to provide more mental health resources for those in need. The intention is not to replace human therapists, but to divert more mental health professionals' time to the treatment of mental illness. The shortage of mental health professionals in the United States has made it difficult for those suffering from mental illness to receive the treatment they need. Approximately 40% of the U.S. population lives in areas with a shortage of mental health professionals (as determined by the federal government), and "more than [60% of U.S. counties](#) are without a single psychiatrist within their borders". Ellie is an example of how Data Science in the mental health industry can significantly impact mental healthcare accessibility.



The background is a solid black field decorated with various geometric elements. There are several light blue shapes: a large arrow pointing right on the left side, a horizontal bar with rounded ends in the center, and a vertical bar on the bottom left. Green lines and small circles are scattered throughout, some forming circuit-like patterns. A series of white dots is arranged in a curved line on the left. The text '05 Conclusion' is prominently displayed on the right side.

05

Conclusion

CONCLUSION

By providing on demand mental health support to millions of people globally, data science can help create a world where mental health is never an obstacle



Reference:

- <https://en.wikipedia.org/wiki/Data>
- <https://www.discoverdatascience.org/social-good/mental-health/>
- https://www.slideshare.net/fvsandoval/introduction-to-data-science-164979975?from_action=save
- [Data Science in Mental Health. Opportunities and Advancements | by Emily A. Halford | Towards Data Science](#)



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The background is a solid black field decorated with various geometric elements. In the top-left corner, a dark blue arrow points right, containing five white chevrons. The top-center features a horizontal dotted line. The top-right has two vertical white lines of different lengths. The bottom-left shows a dark blue upward-pointing arrow. The bottom-center has a horizontal dotted line. The bottom-right includes a dark blue arrow pointing left, containing five white chevrons. Scattered throughout are small white circles connected by thin white lines, resembling circuit traces or data paths.

Any Question?

The background is black with various abstract geometric elements. There are blue shapes: a horizontal arrow pointing right in the top left, a vertical arrow pointing down in the top right, a vertical arrow pointing up in the middle left, a horizontal arrow pointing left in the bottom right, and a vertical arrow pointing up in the bottom left. There are green lines and dots: a horizontal line with a dot at the end in the top left, a horizontal dotted line in the top center, a vertical dotted line in the middle left, a horizontal line with a dot at the end in the middle left, a horizontal line with a dot at the end in the middle right, a horizontal dotted line in the bottom right, a horizontal dotted line in the bottom left, and a horizontal line with a dot at the end in the bottom center.

Thanks!