

BIG DATA ANALYSIS



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INTRODUCTION:

- The Term “Big data” is relatively new, but the concept is not new to Nursing. Nurses have used big data to improve patient care since the dawn of our profession. Florence Nightingale applied analytics to big data by using diagram of the causes of mortality in the Army in the East” (1854-1855) changed our understanding of the impact of sanitation in hospitals she did it with note cards! Imagine what we can accomplish now using computers.
- The New Trend has transformed the whole scenario in a bigger way and that is – Big data.

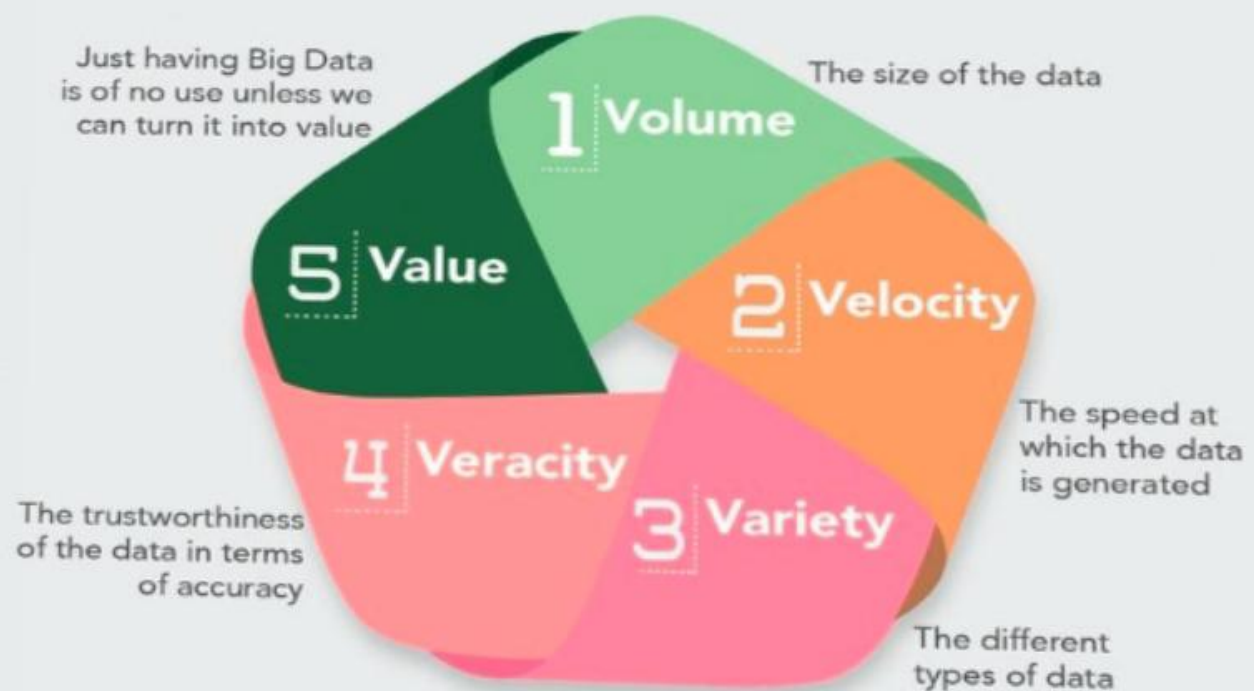
What is Big data:

- “Big data” is similar to “small data” but bigger in size (Terabytes (10^{12} bytes) to Zetabytes (10^{21} bytes))
- Big data is data that exceeds the processing capacity of conventional data base systems. The data is too big, moves too fast does not fit to the structure of traditional data base architectures. (Edd dumbol – 2016)
- Large data set collected through multiple computers and the analyzed in such a way that association, trends and patterns of human behaviour are revealed.
- It's also known as “Predictive analytics”



Characteristics of Big Data – 5.Vs

THE 5 Vs OF BIG DATA



Turning Big data into value:

The datafication of
our world

- Activities
- Conversations
- Words
- Voice
- Social media
- Browser logs
- Photos
- Videos
- Sensors
etc...

Volume

Velocity

Variety

Veracity

Analyzing Big data

- Text analytics
- Sentiment analytics
- Face recognition
- Voice analytics
- Movement analysis

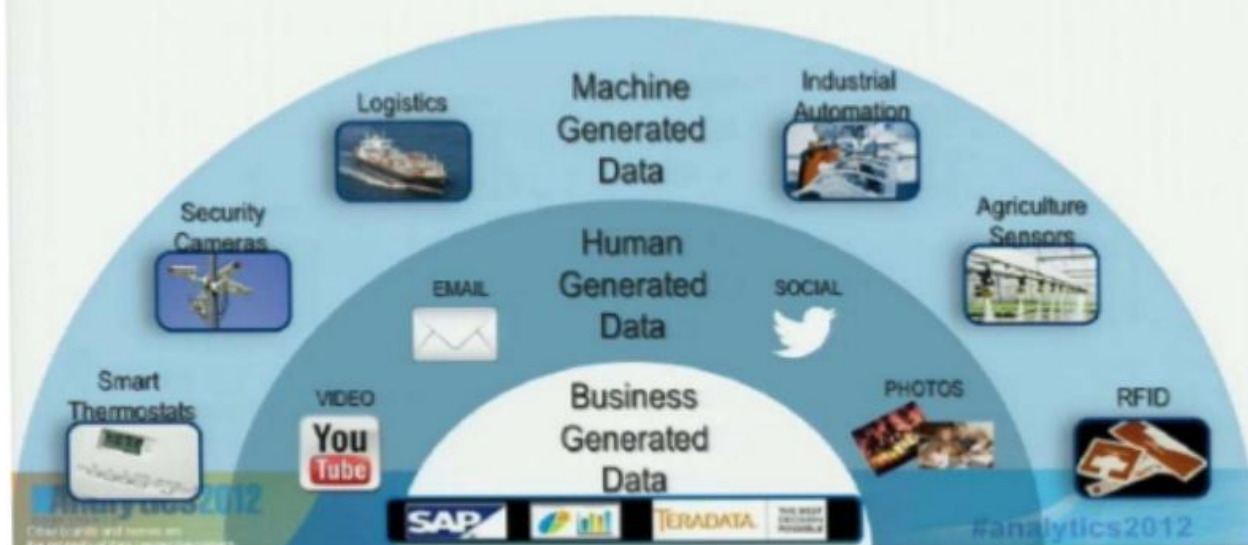
VALUE

"Big data is not big if you know how to use it"

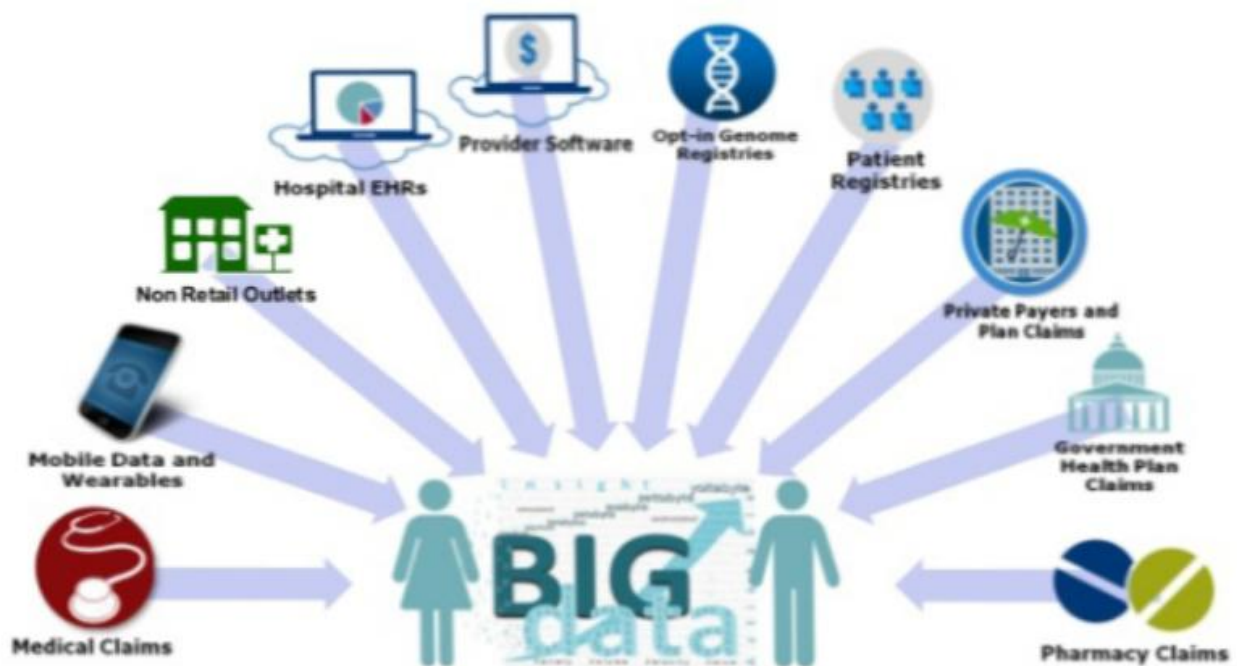


Big Data sources

BIG DATA



Digital interactions between patients and health systems lead to a high amount of available data



Source: IMS Institute for Healthcare Informatics Closing the Healthcare Gap (December 2015).

Benefits of Big data for Educational Research:

Educational Big Data

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graph TD; A([Educational Big Data]) --> B([Administrative data]); A --> C([Learning Process data]);
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Administrative data

- Demographic
- Behavioural data
- Achievements data
- Collected through schools, observations
- Govt. Agencies, Attendance (deep)
- Test scores, transcripts, Surveys, census data, International
- Test Scores, State Standardized Test Score

+
Address
Educational
Inequities

Learning Process data

- Many Participants (Tall)
- Large number of variables (Wide)
- Multiple fine grained
- Theoretically coded
- Massive open online courses

Why is Big data such a Big deal?

1. The data is massive
2. The data is messy and unstructured
3. Data has become a commodity, that can be sold and bought.
4. The possibilities of big data are endless.



Needs of Big Data:

Description

Right living	Informed lifestyle choices that promote well being and the active engagement of consumers in their own care
Right Care	Evidence-based care that is proven to deliver needed outcomes for each patient while ensuring safety.
Right Provider	Care provider (eg.nurse, physician) and setting that is most appropriate to deliver prescribed clinical impact.
Right Value	Sustainable approaches that continuously enhance healthcare value by reducing cost at the same or better quality.
Right innovation	Innovation to advance the frontiers of medicine and boost R&D productivity in discovery, development, and safety.

Big data is going to impact education in a big way. It's inevitable, It has already



Big data Applications in Education:

Higher Education Analytics:

- Big data enables the maximization of student learning. The tracking of student performance, extracurricular interactions and social behaviour results in the creation of a profile which is mapped with student profiles from the institution network to suggest the most relevant major.

Student Engagement:

- Data mining can help universities to get a holistic perspective about the students, which allows institutions to create immersive learning experiences for all students.

**IS BIG DATA
THE RIGHT MOVE ?**

edureka!

Big data Analytics:

- Examining large amount of data which help for faster, better decision making.
- Appropriate information
- Identification of hidden patterns, unknown correlations.
- Competitive advantage & Education needs an enduring technology partner.
- Better business decisions, strategic and operational
- Effective marketing, customer satisfaction, and increased revenue.

Learning Analytics:

- *"Information is the oil of the 21st century and analytics is the combustion engine"*
- "Learning analytics is the use of intelligent data, learner produced data and analysis models to discover information and social connections for predicting and advising people's learning".

eg: Student dropout predictions systems, live statistics about the learners



Academic Vs Learning Analytics:

Academic Analytics	Learning Analytics
A process for provider higher education institutions with the data necessary to support operational and financial decision making	The use of analytic techniques to help target instructional, curricular and support resources to support the achievement of specific learning goals.
Focused on the business of the institution	Focused on the student and their learning behaviours.
Management / Executives are the primary audience`	Learners and instructors are the primary audience

Documentation Guidelines that Promote Big Data Use

1. Use and document according to evidence-based practice standards.
2. Document consistently, using a standard terminology.
3. Limit the use of free text.
4. Avoid using "within defined limits".
5. Support research sponsored by organization.
6. Learn about nursing informatics.



Learning Analytics:



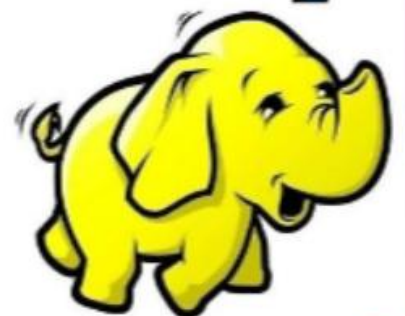
Data Analysis:

- Big Data Analysis requires sophisticated scalable and interoperable algorithms.
- Hadoop is the commonly used data analyzer for Big data.

What is Hadoop:

- "Flexible and available architecture for large scale computation and data processing on a network of commodity hardware. It's an open source distributed storage and analysis application that was developed by Yahoo, based on research papers published google.

hadoop



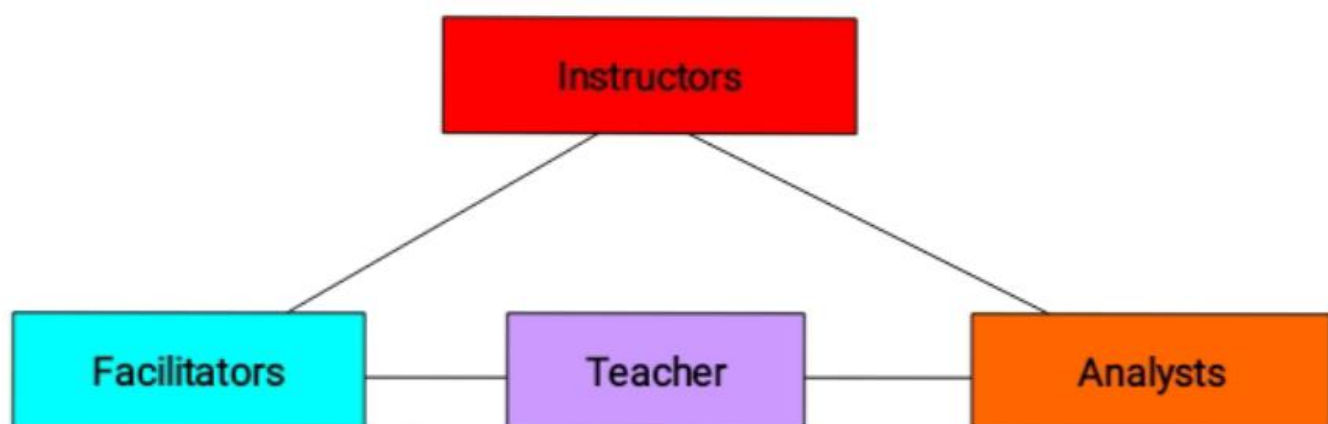
Challenges:

- *Technical*: Handling big data, interoperability of data systems, asking the right questions.
- *Institutional*: Requires a culture of data driven decision making and transparency in models that analyze data.
- *Privacy and Ethics*: Maintain student and teacher privacy while allowing data aggregation to drive powerful models.

Cont...

- Collaboration: Working sectors to build capacity and knowledge, include learning systems designers (often commercial entities), learning scientists, I.T departments, administrators and educators an teams.
- Health care data is unique, it's complex and diverse, making many traditional or linear analysis in applicable, data's are stored in multiple places (HR software, EMRs, different department like Radiology, Pharmacy. etc)

The Future:



Nurse: Let the data Speak!

- Nursing needs big data, and big data needs nursing. As a profession we have much to gain and much to contribute to health care system informed by the discoveries enabled by data science.

Conclusion:

- The promise of massive data assets lies not merely in their size, but in the way they are used. Adequately utilized big data can be a practically inexhaustible source of knowledge to fuel a learning health care system.



BIG THANK YOU

