



DATA SCIENCE

Lecturer: Mark Gillan

WHAT IS DATA?

Data:

Facts that can be analysed or used in an effort to gain knowledge or make decisions; information.



WHERE DOES DATA COME FROM?

- Data facts are distinct pieces of information that are stored and formatted so that they can be automatically interpreted by a computer.
- Data allows visibility of what has been happening and supports good decisions to be made for the future.
- Data is being created all the time, from phones, sensors all around us and the internet.
- Data is everywhere, but it is what it is used for that makes it special.



Types of Data About Us



Personal

Name
Address
Email
Telephone number
IP address
MAC address
Online identifiers
(cookies)
Location data



Sensitive

Gender
Race
Religion
Political memberships
Genetics
Biometrics
Health
Sexual orientation
Criminal record



Behavioural

Browsing history
Search history
Purchase history
Preferences
Relationships
Likes
Dislikes
Shares



Societal

Census data
Demographics
Travel patterns
Crime statistics
Clinical trial results
School performance
indicators
A&E waiting times

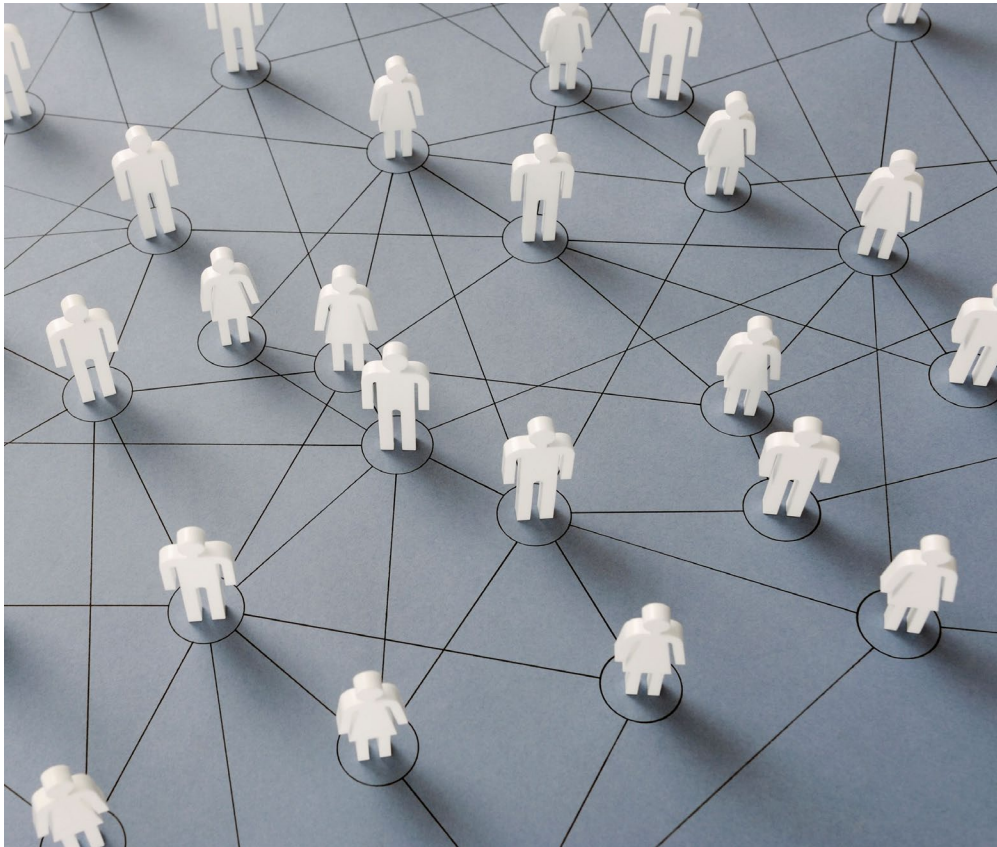


As people

As society



YOUR OWN DATA



- Consider your own data footprint
- Social Networking, Google, Fitness



SOURCES OF DATA

○ Systems

- Lots of data is created by software systems.
- Any interaction with an organisation will result in data about who, what and when something happened.
- This could be booking, manufacturing, retail purchasing systems or even banks.

○ Devices and Sensors

- Devices, such as mobile phones or fitness trackers, or sensors such as temperature, light, sound or pressure
- Constantly monitoring their environment
- Creating data all the time.

○ The Internet

- The internet is a special system, not only creating data as individuals browse it, such as “likes” and “shares”
- Also providing an access point to download datasets

○ Manually Captured

- Data can be manually captured through surveys.
- Can be done either using an online tool or by filling in paper forms
- Often digitised to enable analysis.



GROWTH OF DATA

- What would Florence Nightingale make of big data?
- <https://www.bbc.co.uk/ideas/videos/what-would-florence-nightingale-make-of-big-data/p075lxkt?playlist=thinkers-from-the-past-on-the-world-today>



PAST THINKERS



- What would Freud make of our obsession with selfies?

<https://www.bbc.co.uk/ideas/videos/what-would-freud-make-of-our-obsession-with-selfie/p074jg17?playlist=thinkers-from-the-past-on-the-world-today>

- DATA: Do people know and care more than they are given credit?
- Are we treated as not caring about our data?



DATA — DO WE CARE?



- Do people know and care more than they are given credit?
- Are we treated as not caring about our data?



DATA VISUALISATIONS

- 11 Awesome Data Visualisations Way Ahead of Their Time ...
- <https://www.investintech.com/resources/blog/archives/5692-data-visualizations-infographic.html>



TRY THIS

- Search for data online
- Find a dataset
- Look over the dataset
- Think about how the data could be analysed and used
- How could it be visualised

