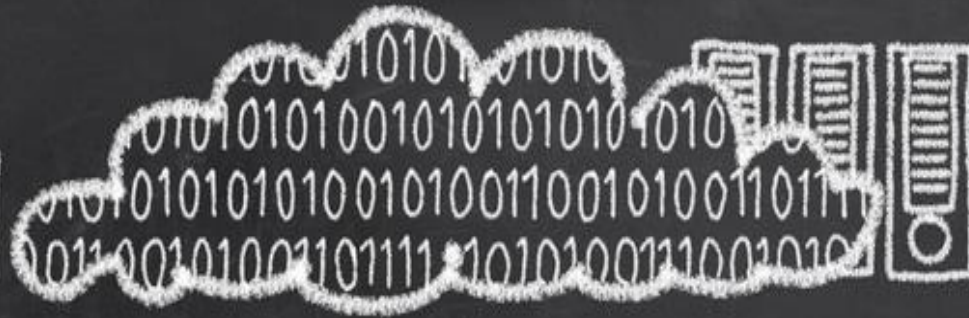


# Knowledge Engineering Insight through data mining

Alison Leary

London South Bank University

@alisonleary1 



# BIG DATA



**VOLUME**

DATA SIZE



**VELOCITY**

SPEED OF CHANGE



**VARIETY**

DIFFERENT FORMS  
OF DATA SOURCES



**VERACITY**

UNCERTAINTY OF  
DATA

# Common uses KDD



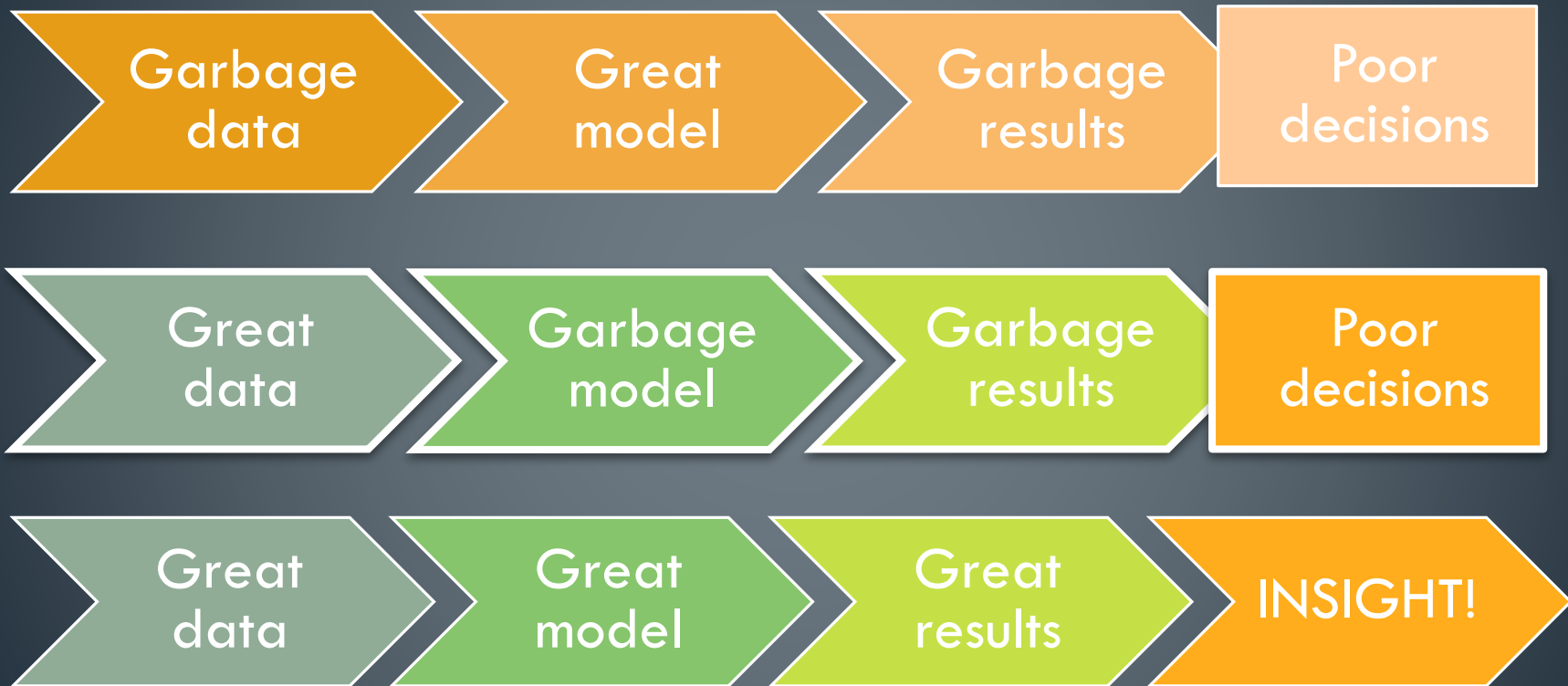
# Big data in nursing *Variety*

- Number of sources of structured and unstructured data
- staffing, nursing assessments, environment, temporal, patient feedback, incident reporting, social media traffic, video, KPIs, safety, pathology/physiology
- There is not distinction between qualitative and quantitative data as a source

# The challenge

- Lots of nursing data collection tools have little underpinning research/algorithms
- Little or no data ontology for nursing in informatics systems
- Data is silo'ed
- False assumptions made about nursing work as a series of linear tasks that occupy time
- Little data collected about the negative space ie for staffing harm, work left undone etc
- To turn the findings into models we require high volume real world data to drive them

# What nursing really suffers from

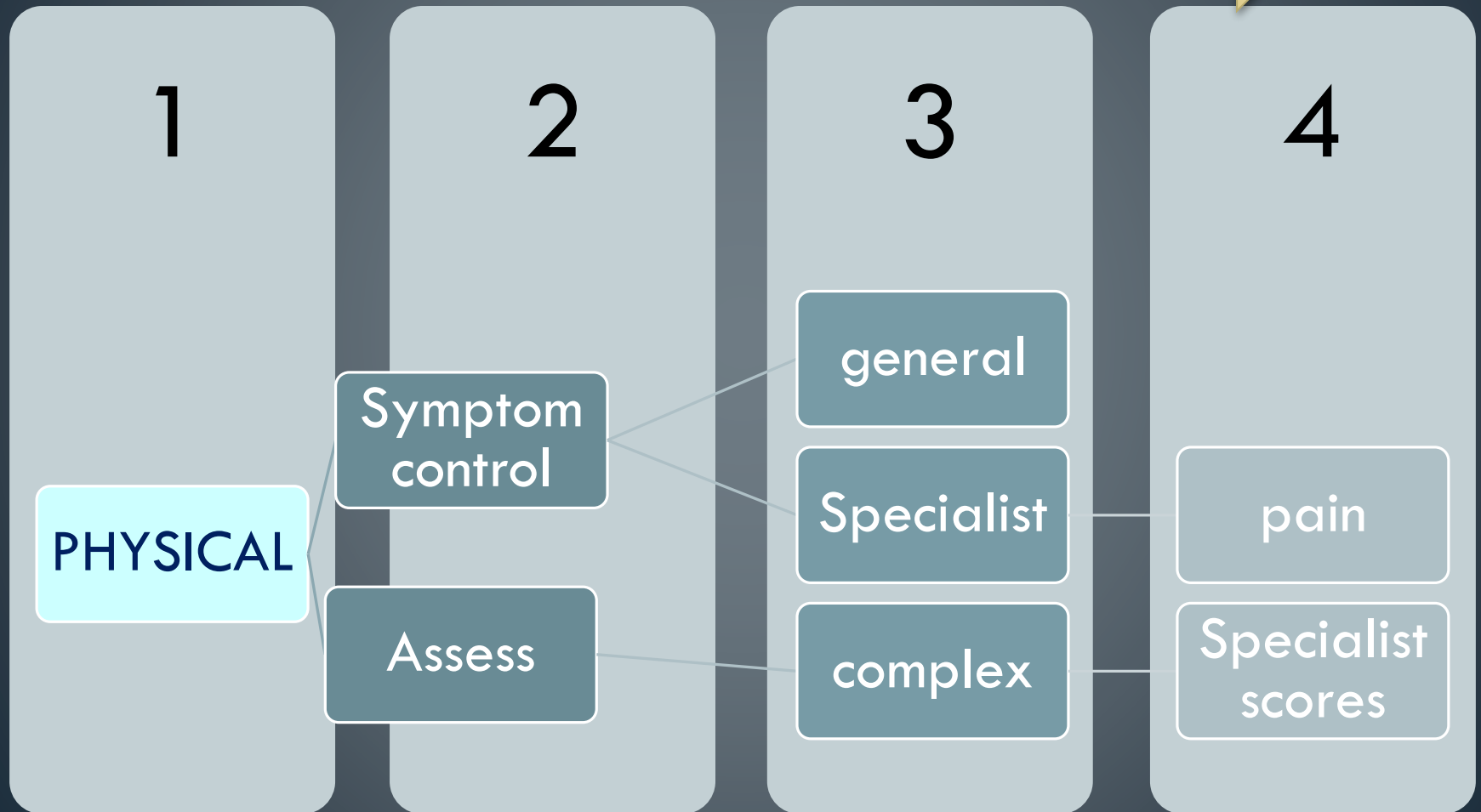


# What we use “big data” for

- Pattern recognition
- Explanative model building (conceptual and mathematical)
- Whole systems models
- Predictive modelling
- Optimisation
- Real time responsive solutions and visualisations
- Understanding the unknown unknowns

# Layers & patterns in specialist nursing 64k

Increasing technical knowledge





# 50million hours, 12k, 6.5K papers

## *Productive SNAP models*

- The proactive case manager
- The consulting technical specialist
- The technically focussed specialist

## *The limited Productive model*

- The reactive case manager

## *Facilitative models*

- Highly technical role substitution
- Information and co-ordination focussed interventions

Setting

Occupation

Strength of relationship  
driver of demand

<50%

50-80%

>80%



Primary &  
secondary

ANP

ANP

Managers

Specialist

Secondary

Community

Primary

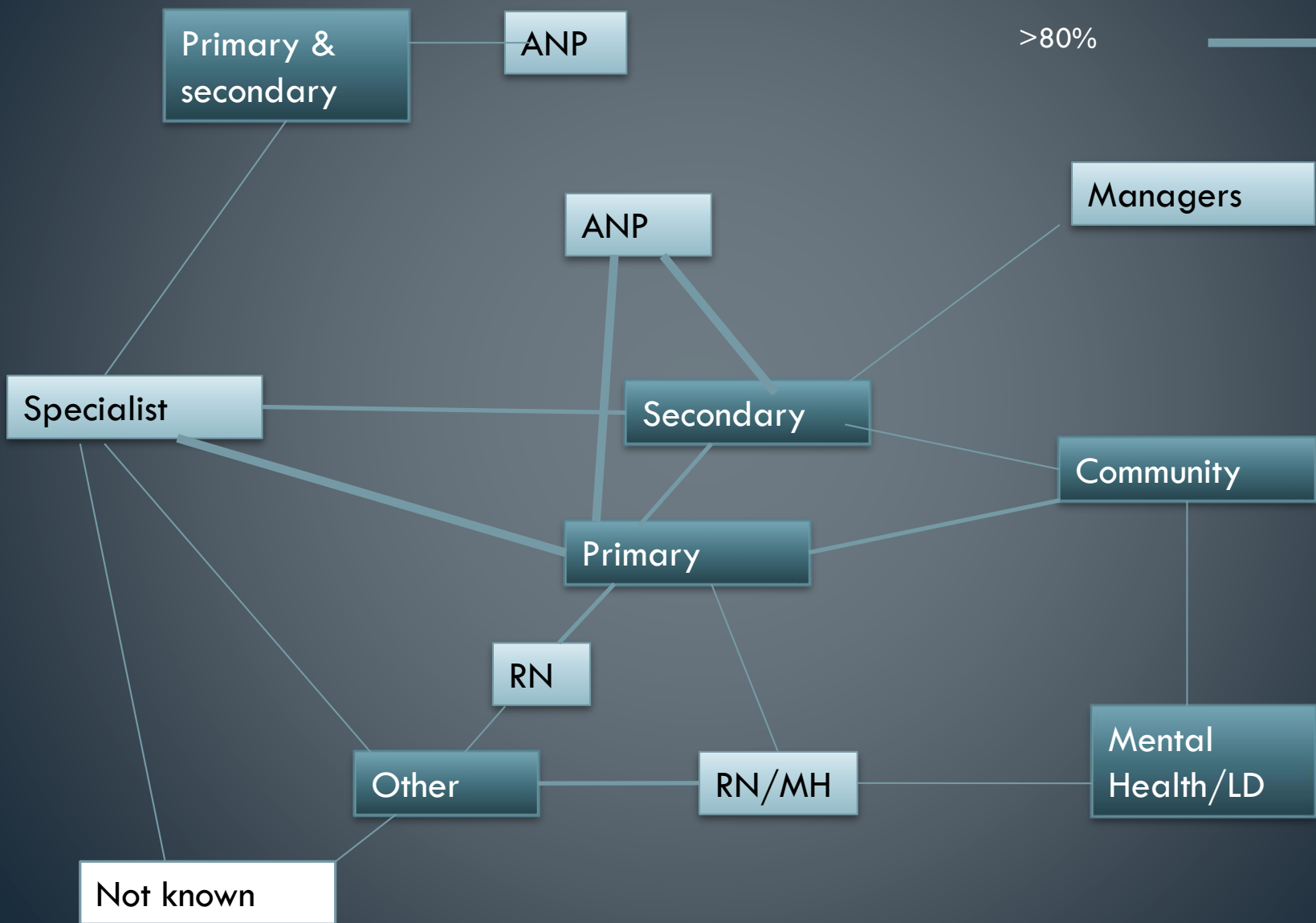
RN

Other

RN/MH

Mental  
Health/LD

Not known

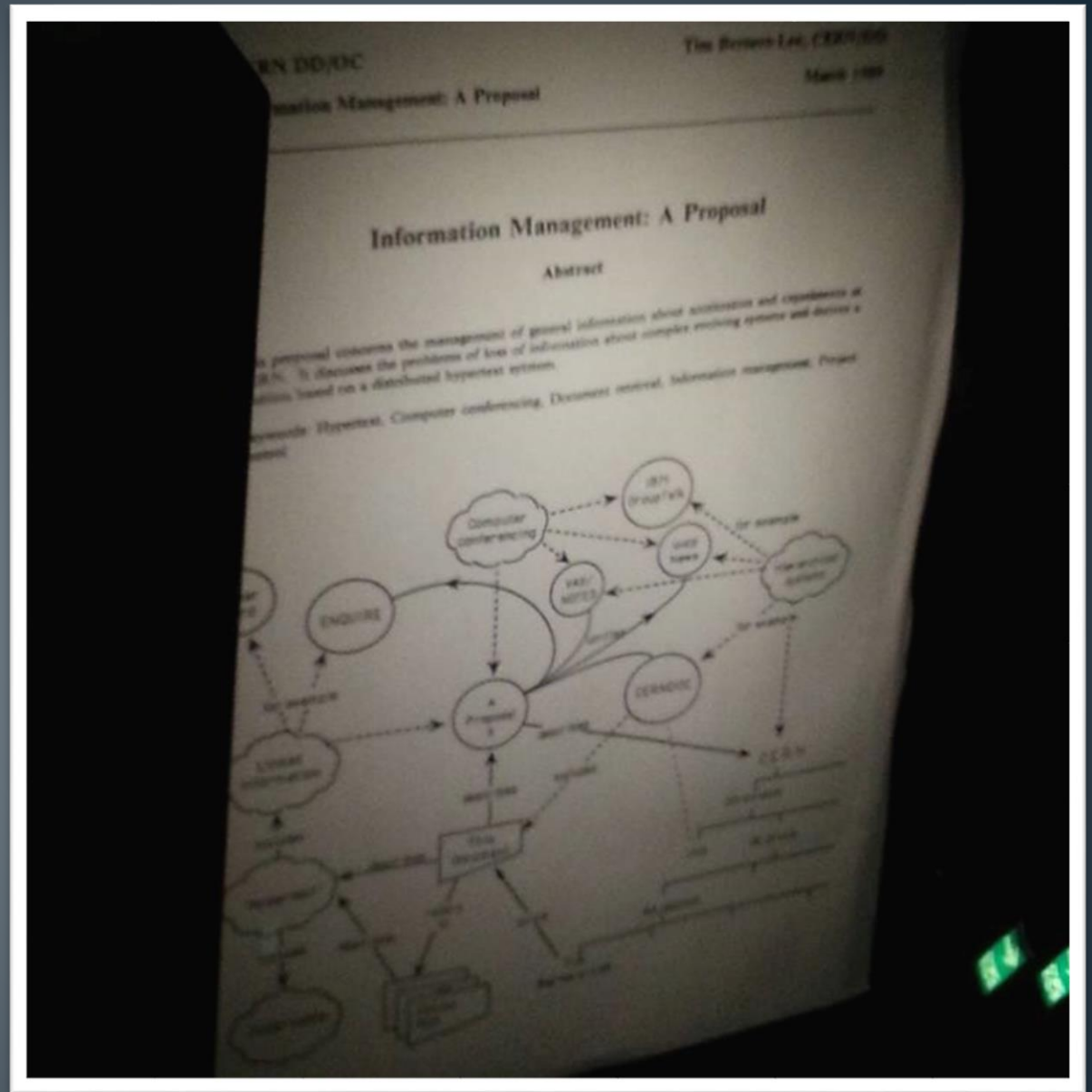


## In acute staffing

- Mine massive datasets to see what emerges
- Use the information to explain then predict staffing (and lots of other things too)
- Early studies show a lot of promise-watch this space!

“It's difficult to imagine the power that you're going to have when so many different sorts of data are available.”

Tim Berners Lee





Thank you

[alisonleary@yahoo.com](mailto:alisonleary@yahoo.com)