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Demystifying data analysis: an introduction
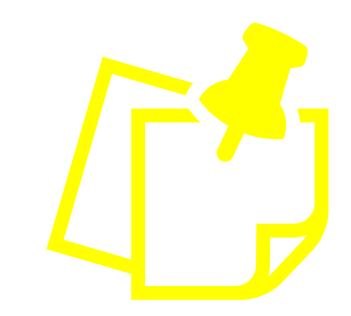
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Workshop outline

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Demystifying data and data analysis

The bigger picture- a reminder

Descriptive statistics

Asking/being asked a question

Case example

Answering a question

Worked example

Your action plan

Activities are suggested throughout – you will get more from the session if you can participate in these!

What this workshop won't talk about

- Ways to 'get' data out of your electronic record system
  - You may want to go to the technical/IG workshop session
- Inferential statistics (hypothesis testing or regression)
  - These form part of formal research (aim to generalise findings) which is beyond the scope here.
  - RCSLT does have some other resources to support this, see [Sage Research Methods](#) via your website member login.

Demystifying data and data analysis

The bigger picture- a reminder

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Case example
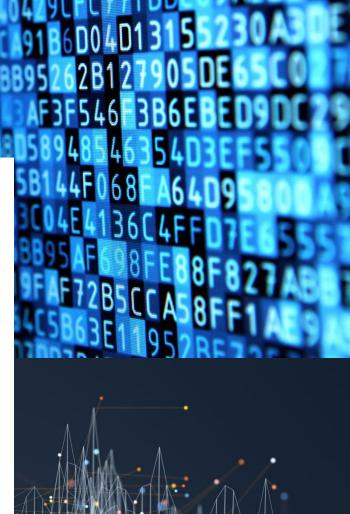
Answering a question

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Your action plan

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Rate your understanding of what clinical data can be used for, on a scale of 0-10.

0= no idea, 5= I have some understanding, 10= I am confident in what data can be used for

Put in the chat!

Demystifying data analysis

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- Does **not need** to be:
  - Complicated
  - Time-consuming
  - Something only a statistician can do
- **Simple** questions require **simple** analysis
- Doing the doing of things **you already know** how to do
- **Findings from analysis** should not be hidden away (positive or negative!)

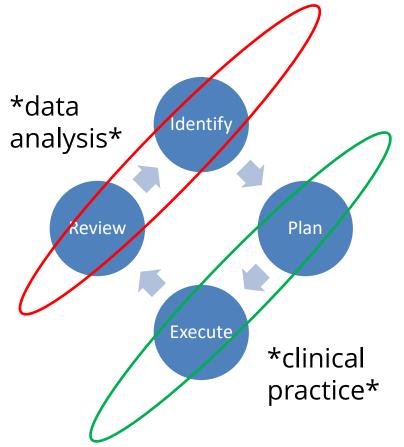# The bigger picture

Remember, outcome measures can be used to:

1) Review

- Understand the impact of your therapy on service users
- See what is going well
- Highlight challenges
- Check for unwarranted variation

2) Identify

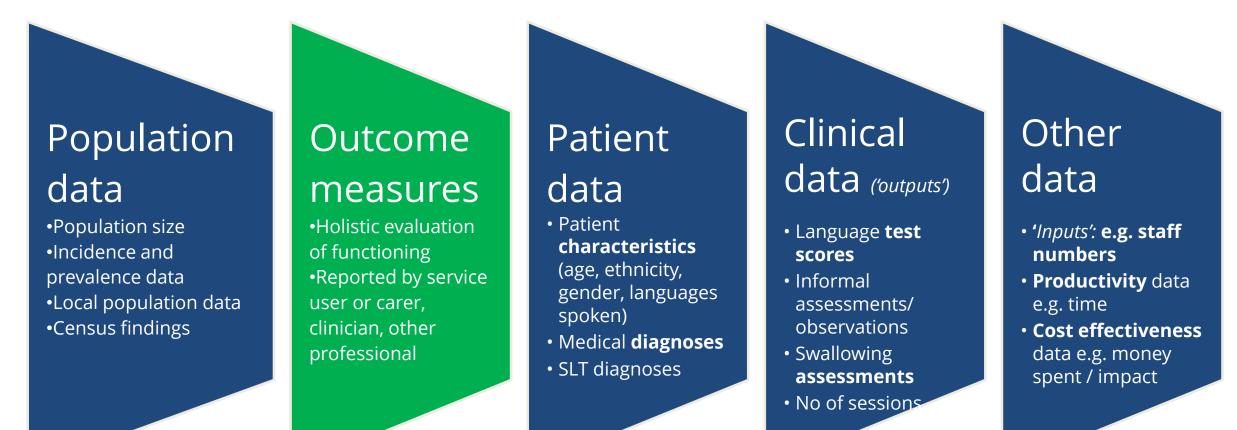- Areas for improvement

- And then... **review** impact of changes

data analysis

Identify

Plan

Review

Execute

clinical practice

Real-world evidence
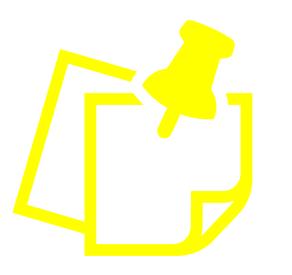
- Outcome measures data can be used in conjunction with other real-world evidence to build a picture

Population data

- Population size
- Incidence and prevalence data
- Local population data
- Census findings

Outcome measures

- Holistic evaluation of functioning
- Reported by service user or carer, clinician, other professional

Patient data

- Patient **characteristics** (age, ethnicity, gender, languages spoken)
- Medical **diagnoses**
- SLT diagnoses

Clinical data *('outputs')*

- Language **test scores**
- Informal assessments/ observations
- Swallowing **assessments**
- No of sessions

Other data

- *'Inputs'*: **e.g. staff numbers**
- **Productivity** data e.g. time
- **Cost effectiveness** data e.g. money spent / impact

Activity!

Can you think of a time where you have **used data (of any kind) to illustrate a point**?

This could be to anyone, including something to guide your own clinical decision making, for service users, your team, to your managers, SENCo, commissioners...

Or, it may be outside of SLT, in your personal life.

Write down what was it?

For example:

Using the number of new referrals made to your service in the last month to demonstrate to your manager the current demand on your resource/capacity.

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Descriptive statistics

Whatever it was, was likely to be descriptive statistics…

It's in the name… they <u>describe</u> and <u>summarise</u>

<u>Outcome measures </u>are descriptive, as are a lot of <u>output measures, </u>and <u>patient characteristics</u>

Quick and useful way to understand your overall data, and to answer meaningful questions

Descriptive Statistics

- This could mean **counting things**, like how many...

referrals you've received

children with a **diagnoses of DLD** on your caseload

people you've seen with **aphasia** who **also** have a diagnoses of **dysarthria**

Descriptive Statistics

- Which might also then involve **percentages and proportions,** for example:

% change in referrals from before COVID to now

% of girls and boys with DLD

% of stroke admissions screened for dysphagia by day 3

Descriptive statistics

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- It could also mean looking at **averages** (mean, median, mode), such as:

The average CAT score for service users with aphasia beginning group therapy

The average change over time in TOM score

The average number of goals attained by your caseload

- Often this might also involve looking at the range of data, or variability
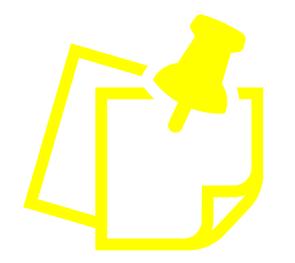
Descriptive statistics

- **Correlations** are also a form of descriptive statistics, showing the **strength of a relationship** between variables, such as between:

Number of co-occurring conditions and severity of impairment

Amount of therapy and therapy outcomes

Service user wellbeing and carer wellbeing scores

Descriptive statistics

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Look back at the example you came up with before, where you had 'used' data to illustrate a point.

Do you think it was descriptive data? What kind?

If you like, share your thoughts in the chat or with the group by raising your hand.

Break – any questions?

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Asking/being asked a question

Quite basic bits of data can be used to answer a range of different but simple questions...

- What is important for **you** to know and understand?
- What do **others** need to know and understand about you? (e.g. commissioners?)

You may be asked specific questions, or you may have you own queries.

An important part is identifying **exactly what it is** you need to find out, and then you can identify what **bits of data** might help you answer it.

Asking a question

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What would you (or others) like to know and understand about your service in terms of impact on service users' overall functioning (ie. outcomes)?

Write down a possible question – keep it simple!

Let's work through an example?

Identifying a question: worked example

You are an SLT working in a voice clinic. Your whole team does a dysphonia TOM with each patient at the beginning and end of therapy. You have been doing this routinely for the last 6 months.

2 months ago, your team lost 2 SLTs and their roles have not been replaced. The remaining team members have had to absorb these therapists' patients, and re-prioritise patients within new caseloads.

You feel like you've had to spread yourself quite thin in terms of what provision you can offer and are concerned about the effect of this on your patients.

A possible, simple, question could be:
Has this change in staffing and capacity had an impact on service user outcomes?

Asking a question

Would anybody like to share their question with the group?

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Answering a question

Now you have a question, ***write down briefly <u>what data</u> you could look at, and <u>how</u> you could use it, to answer your question.***

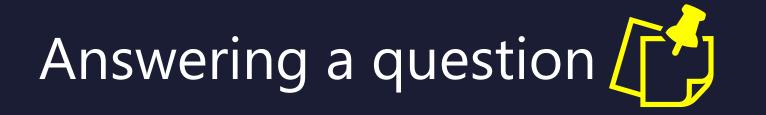Does not need to be complicated – keep it simple.

Shall we go back to our example in the voice clinic?

Answering a question: worked example

Has this change in staffing and capacity had an impact on service user outcomes?

Examples of some simple bits of data that might be useful (there will be many more!)
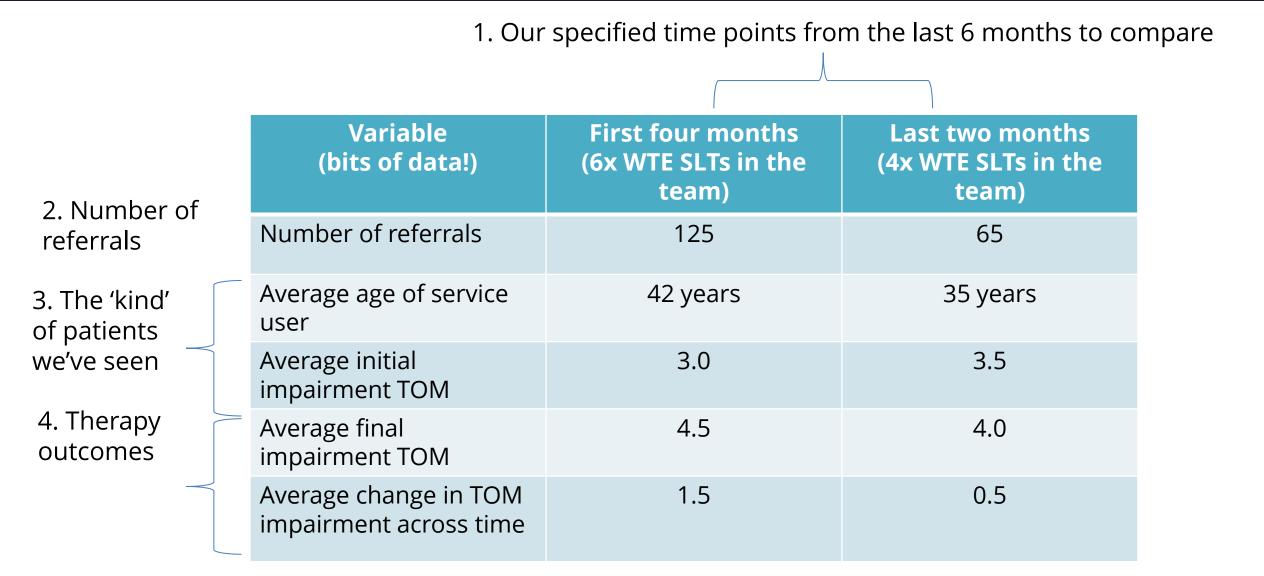1. The **time points** to compare ie. before and after the 2 SLTs left
2. How **many referrals** have we had in this time?
3. The **kind of patients** we've been seeing in those periods
4. The **therapy outcomes** for the patients seen in those periods

Answering a question

Would anybody like to share their ideas with the group?

Let's go back to our example…

Answering a question: worked example

1. Our specified time points from the last 6 months to compare

Variable (bits of data!)	First four months (6x WTE SLTs in the team)	Last two months (4x WTE SLTs in the team)
Number of referrals	125	65
Average age of service user	42 years	35 years
Average initial impairment TOM	3.0	3.5
Average final impairment TOM	4.5	4.0
Average change in TOM impairment across time	1.5	0.5

2. Number of referrals

3. The 'kind' of patients we've seen

4. Therapy outcomes

Answering a question: worked example

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Average change in TOM impairment across time	1.5	0.5

Would anyone like to share any immediate comments or thoughts on this data and how it links to our question?

Answering a question: worked example

Finding 1:
The rate of referrals has been roughly consistent across the sixth month period, we have received almost half the amount of referrals in two months, as we had in the four months prior.

Answering a question: worked example

Finding 2:
Episodes of care have recently been given to a slightly younger and apparently clinically less severe group of service users.

Why is this?
- Perhaps older and more impaired service users are not turning up to therapy?
- Has our change over to mostly telephone and video initial consultations meant that people's voice impairments appear less severe to the SLT?
- Could it be that we are prioritising those who we think might have the most potential for recovery?

What is causing this in our service? What could be checked or changed to improve this?

What else? Raise your hand or put your thoughts in the chat.

Answering a question: worked example

Finding 3:
Service users seen when the full team were in operation made, on average, substantially and significantly greater progress through the course of therapy, than those being seen now.

Why is this?

- Are the episodes of care shorter/less therapy being given?

- Perhaps the more mildly impaired service users are less motivated to engage/improve?

- Are the therapists burning out and working less effectively?

How do we ensure each service user reaches their potential and our therapists are fully supported?

What else? Raise your hand or put your thoughts in the chat.

Has this change in staffing and capacity had an impact on service user outcomes?

Yes, in many ways!

Break – any questions

ONE question + quite straight-forward descriptive analysis

- Provide lots of avenues for further investigation
- Lots of ideas for quality improvement
- Compelling case for change

Rate your understanding of what clinical data can be used for, on a scale of 0-10.

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Planning your own

Drawing on the ideas you've come up with in the workshop, you are tasked with making a short action plan for something you can genuinely take away and 'do' after this workshop.

| Revisit your question, reflect and update it if needed. | Identify what bits of data you want to (and can) look at to answer this. | Write a few sentence on how will you analyse this data (e.g. calculating averages, or counting things)? | List 3 stakeholders who you will communicate your findings with. |

Would anybody like to share their plan with the group?

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