



UK Health  
Security  
Agency

# Sexual Health Dashboard

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- Surveillance of STIs – why and how
- Time series
- Causes of variation
- Statistical process control charts (SPCCs)
- SPCC rules for identifying special cause variation
- UKHSA Sexual health dashboard
- Video demonstration (12 mins)
- Limitations
- Next steps
- Further support

# Why do we do surveillance of STIs?

1. Early detection of changes in disease occurrence

Detecting exceptional results that may represent the existence of an outbreak. Timely application of control measures.

2. Quantification of trends over time which enable an assessment of the impact of disease control interventions

Is the occurrence of disease, risk factors, preventative measures etc. changing over time?

3. Describe the basic epidemiology and natural history of disease to develop research hypotheses that can be tested in specifically designed studies

Is the observed recent increase in gonorrhoea in young adults caused by changes in sexual practice?

# Before we start looking at our data, consider:

1. What is the primary purpose for examining the data?

For example, assess whether there is any systematic change in the incidence of syphilis in local authority A

2. What data are you going to use to achieve the primary purpose?

Counts of monthly syphilis diagnoses identified in local authority A sexual health clinics between January 2019 and December 2023

3. Does the data have any obvious deficiencies?

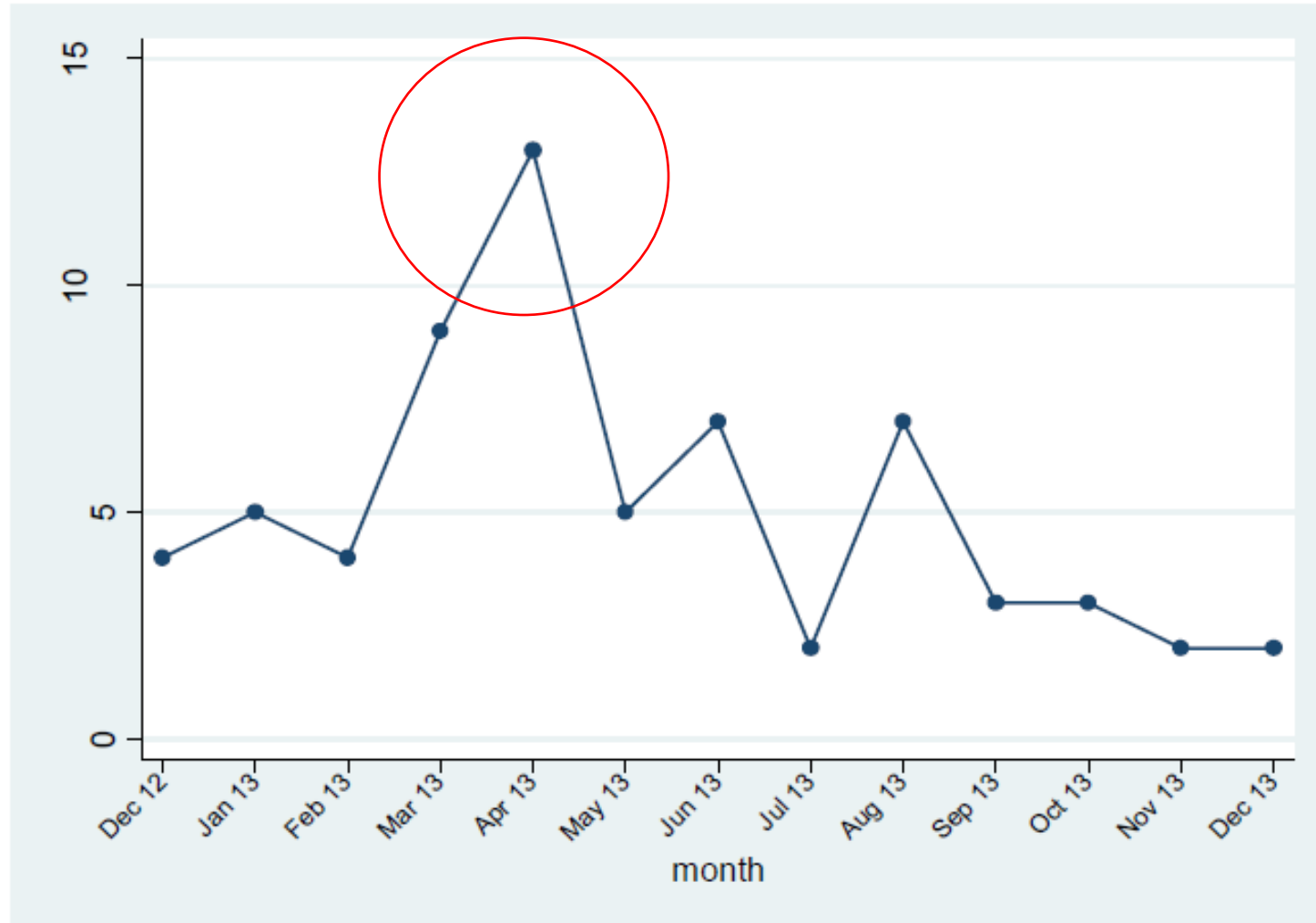
Are all syphilis cases in the local authority reported to these sexual health clinics? Is all the data available in a timely manner?

4. Visualise the time-series

Plot a line graph of the number of cases of syphilis per month

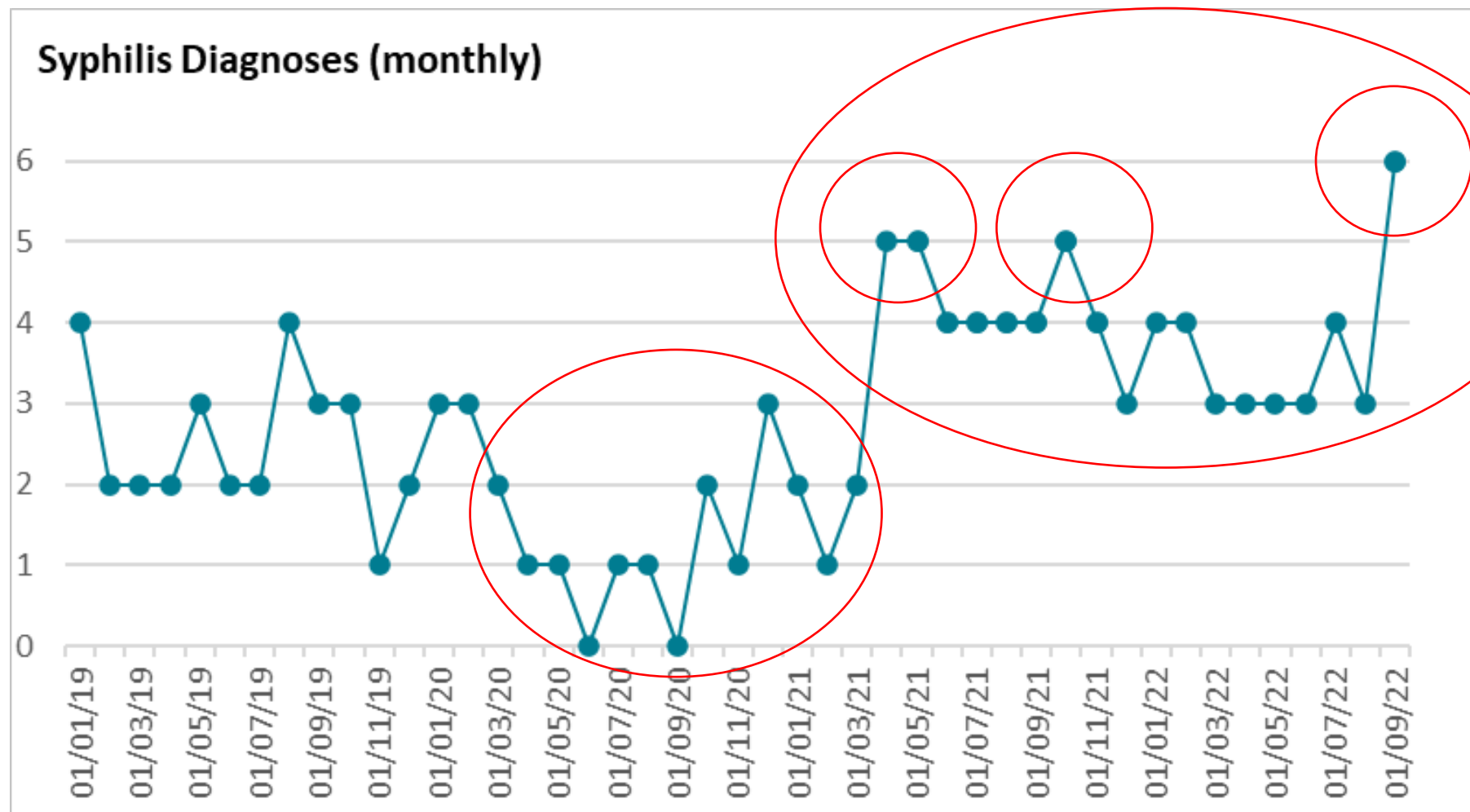
# Time-series

The human brain is good at detecting patterns



# Time-series

But what about more complicated data?



# Causes of variation

1. Random variation (the play of chance)
2. Variation from known sources (changes in case-mix, new laboratory methods, changes in testing, etc.)
3. Variation from unknown sources (unmeasured or even non-measurable factors, e.g., social mixing, treatment non-compliance)
4. Seasonal variation and external forces (meteorological conditions)
5. **Breakdown in control measures (outbreaks and endemic problems)**

# Statistical Process Control Charts (SPCCs)

Used to prospectively monitor whether a “process” is in control.

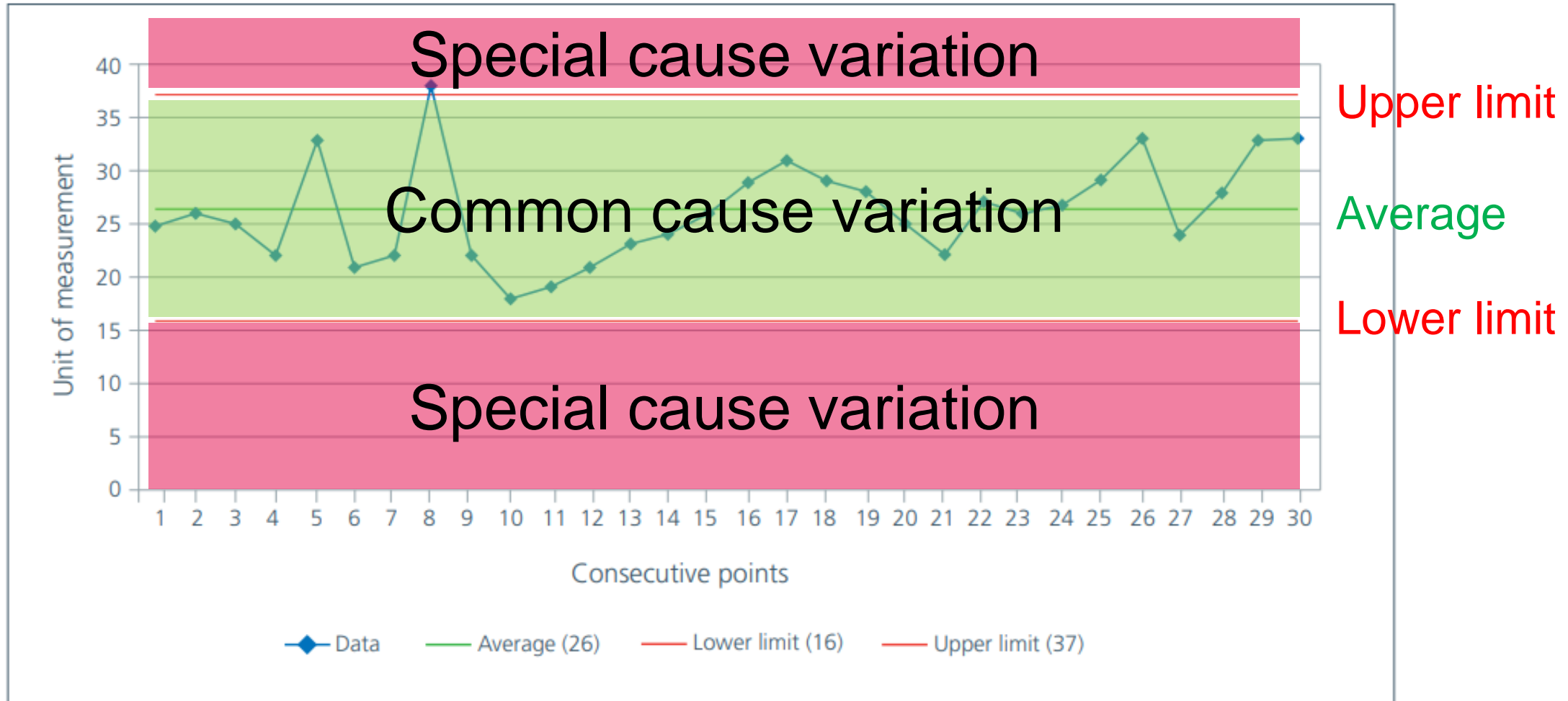
Bringing a production process into a state of "statistical control", where there is only **chance-cause variation**, and keeping it in control, is necessary to predict future output and to manage a process economically'

*Walter Shewhart (credited as the founder of SPC methodology)*



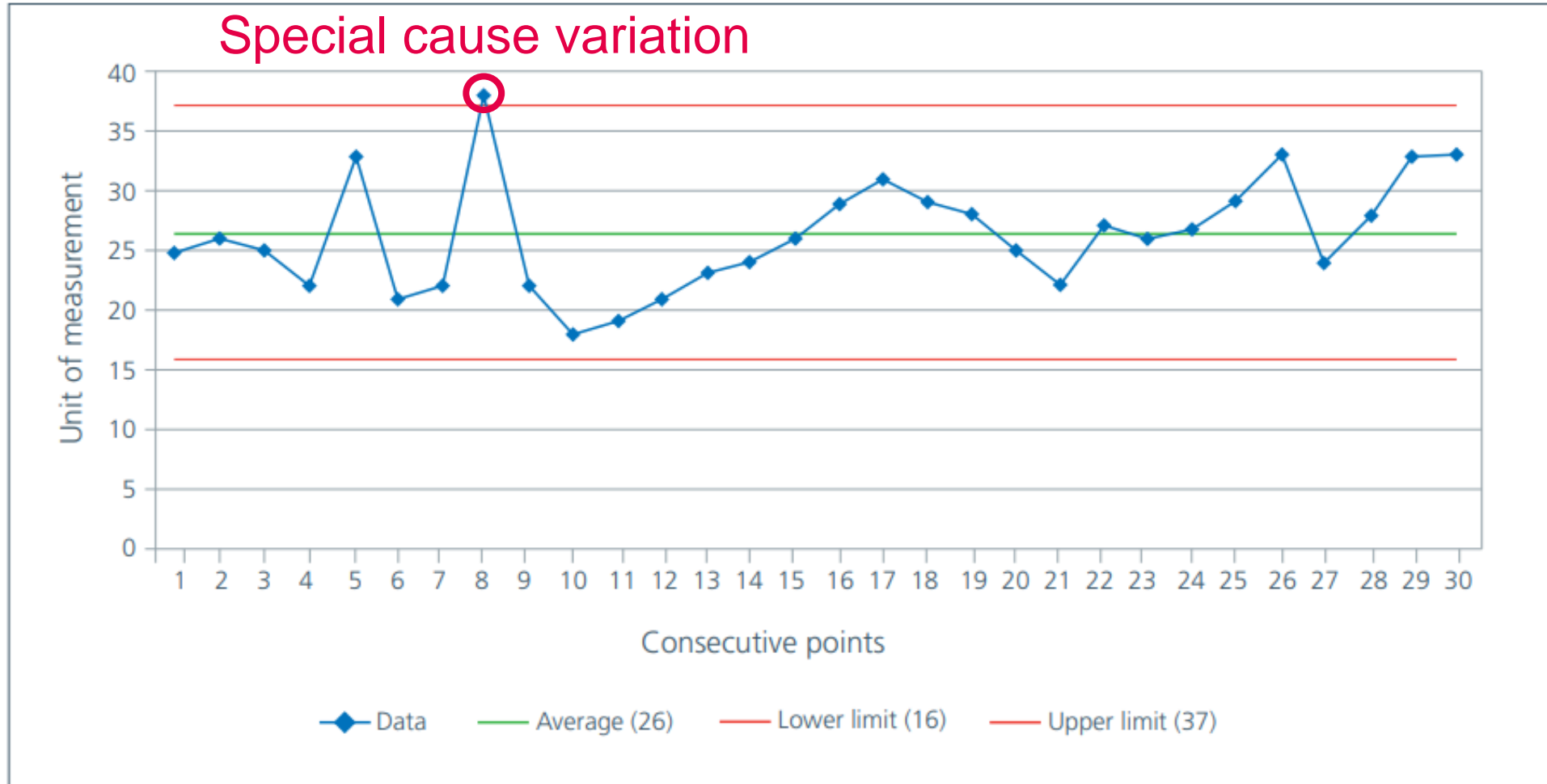
# Statistical Process Control Charts (SPCCs)

Figure 1: Example of an SPC chart



# Statistical Process Control Charts

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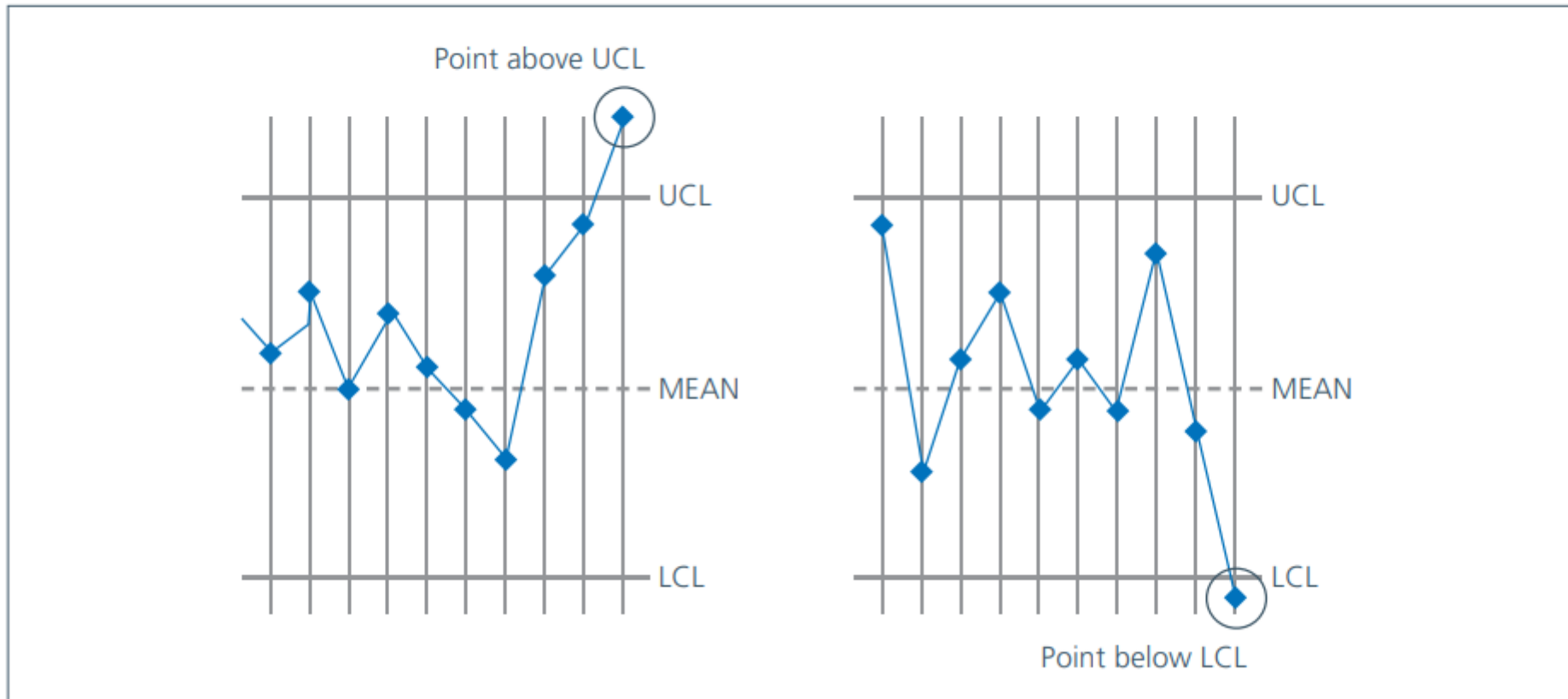


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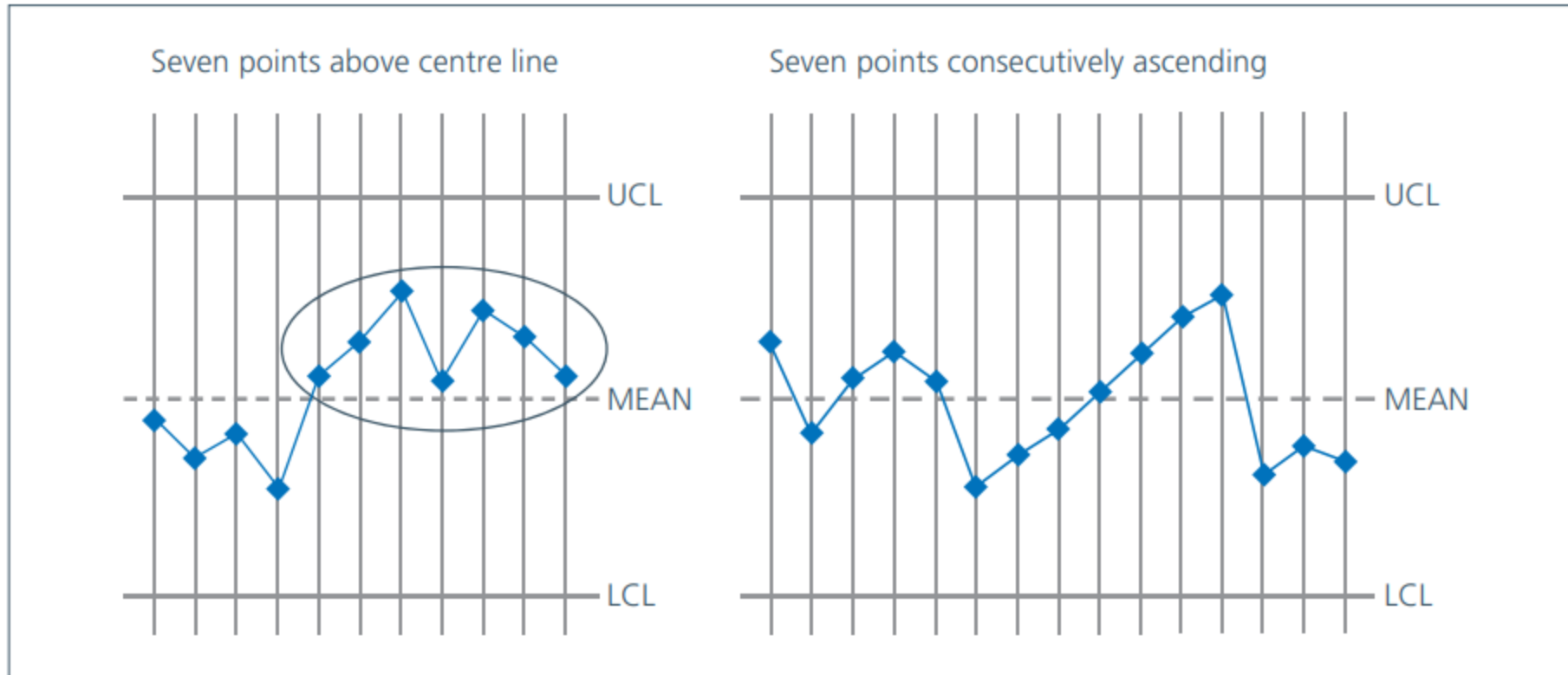
# SPCC rules: outliers

**Figure 2: Rule 1** – any single point outside the control limits:



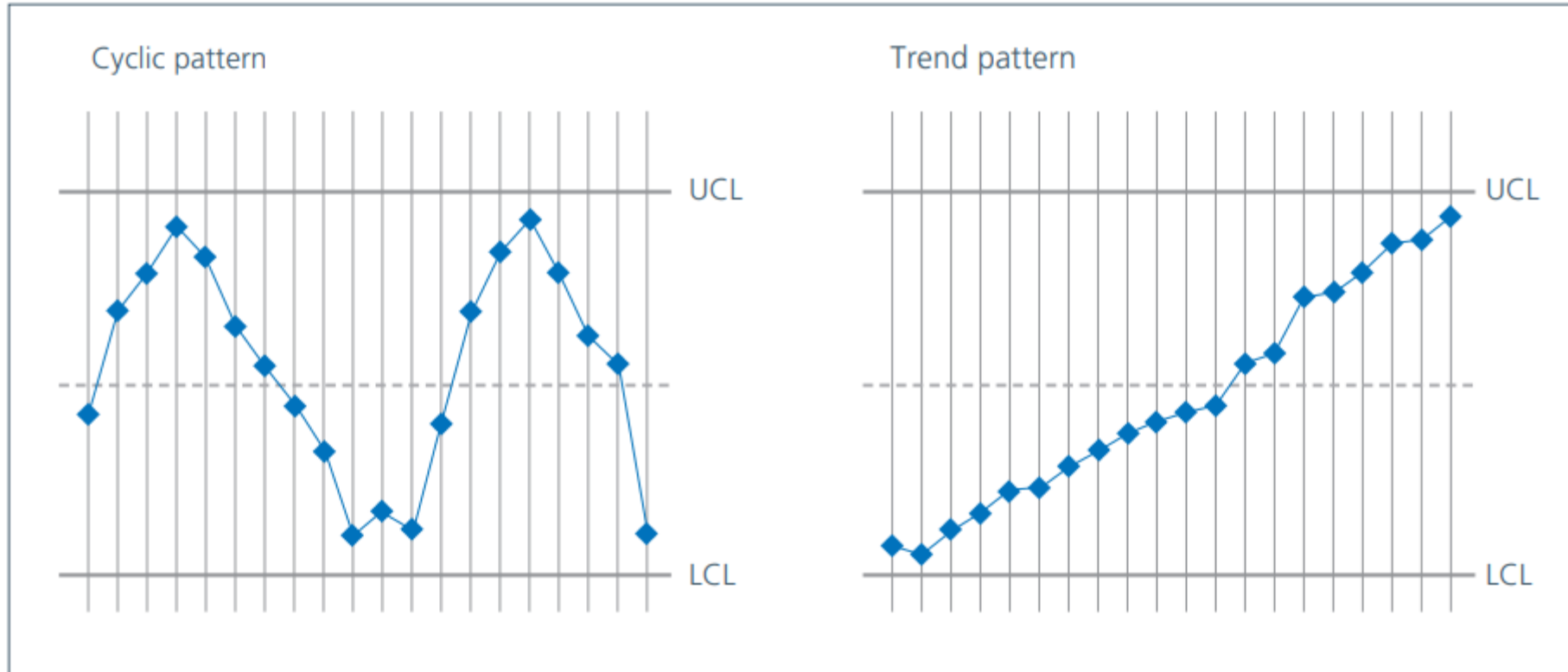
# SPCC rules: shift or drift

**Figure 3: Rule 2** – a run of seven points all above or all below the centre line (a shift), or a run of seven points all consecutively ascending or descending (a drift):



# SPCC rules: pattern or trend

**Figure 4: Rule 3** – any unusual pattern or trends within the control limits:



# Special cause variation

What do you do if you identify special cause variation in your data?

**Investigate!**

# UKHSA Sexual Health Dashboard

Introduction

Set-up

Enter data

View summary

Dashboards

All indicators

Six indicators

Re-arrange labels

Print

Export all charts to PowerPoint

Export one chart to PowerPoint

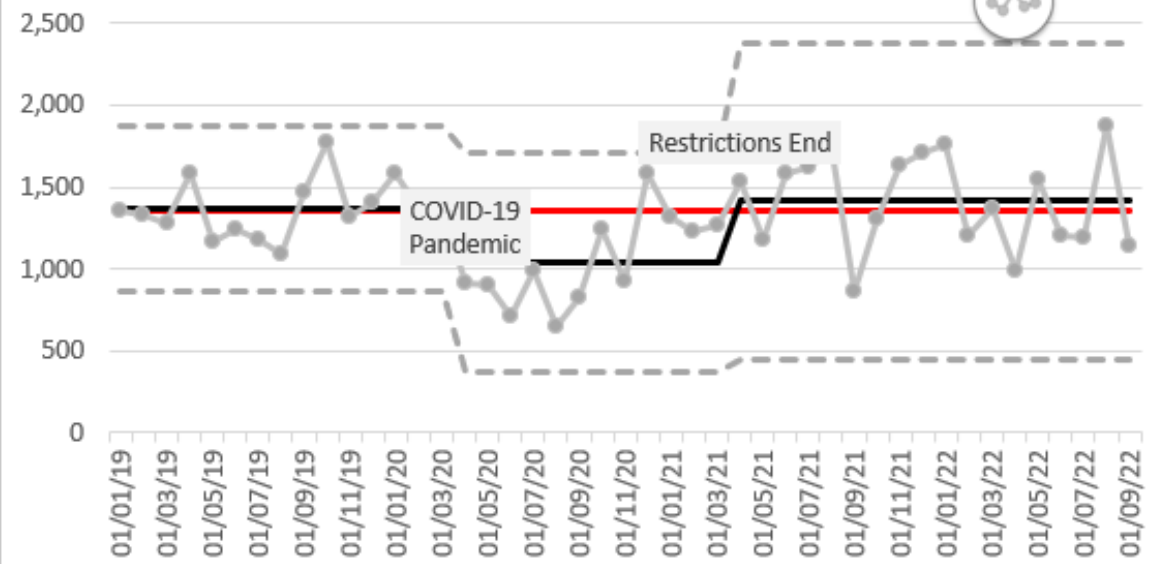
Select one indicator:

## Sexual health dashboard: All indicators

Face to Face Attendances



Total Attendances





# UKHSA Sexual Health Dashboard

**Aim:** Timely analysis of local level data to identify outbreaks and other issues early

- Developed from an NHSI SPCC workbook
- Enter your **own local data**
- Automatically create time series and SPCCs
- Automatically flag **special cause variation**
- Add breakpoints to **adjust for known causes** of special cause variation, e.g., impact of COVID-19 social distancing and reductions in testing
- Compare **multiple indicators** at the same time, e.g., positive chlamydia tests, number of attendances, number of online tests
- Compare data against performance indicators for **assurance**
- Output SPCCs and summary tables into PowerPoint **presentations**

# Requirements

- Need an average of **one count per time period** across the time series
  - If rare infection then **aggregate** data, e.g. cases per quarter
- Minimum of **five data points** between breakpoints and in each chart
- Microsoft Excel – manual data entry
- Update and review frequently

# Further investigation

- Changes in testing practice and consultation, e.g. use of online services and postal kits
- Changes in case characteristics, e.g. age, sex, sexual orientation, location, risk factors, treatment success
  - Summarise – descriptive epidemiology
  - Investigate – analytical epidemiology
- Identify and establish control measures ← Incident Management Team (IMT)

} UKHSA Field Service

# Available support

## Health Protection

Yorkshire and Humber Health Protection Team (HPT)

[yorkshirehumberhpt@ukhsa.gov.uk](mailto:yorkshirehumberhpt@ukhsa.gov.uk)

## Epidemiological support

Including Sexual Health Dashboard feedback and queries

North East and Yorkshire and Humber Field Service

[yhfs@ukhsa.gov.uk](mailto:yhfs@ukhsa.gov.uk)

Dashboard will be available on [www.yhphnetwork.co.uk](http://www.yhphnetwork.co.uk)

Thank you