Advancing analytical skills of the Public Health Division: designing and delivering an Introduction to R for Public Health course

BIRMINGHAM City Council
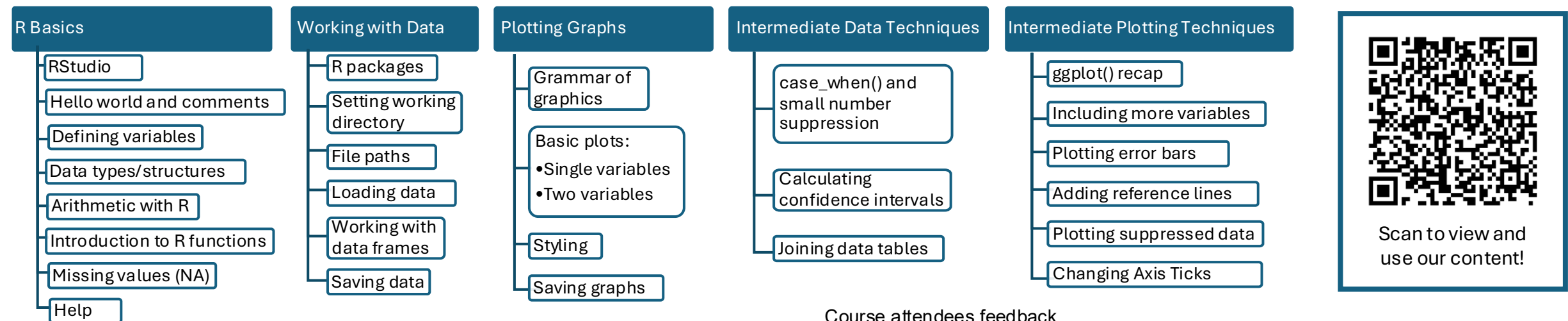
HEALTH AND CARE ANALYTICS Conference 2025

Introduction: Much of the PHM team's work supports the Public Health Division with analysis and map production. To advance the analytical skills of non-analysts and increase the capacity of the PHM team, a tailored Public Health R training programme was designed and delivered.
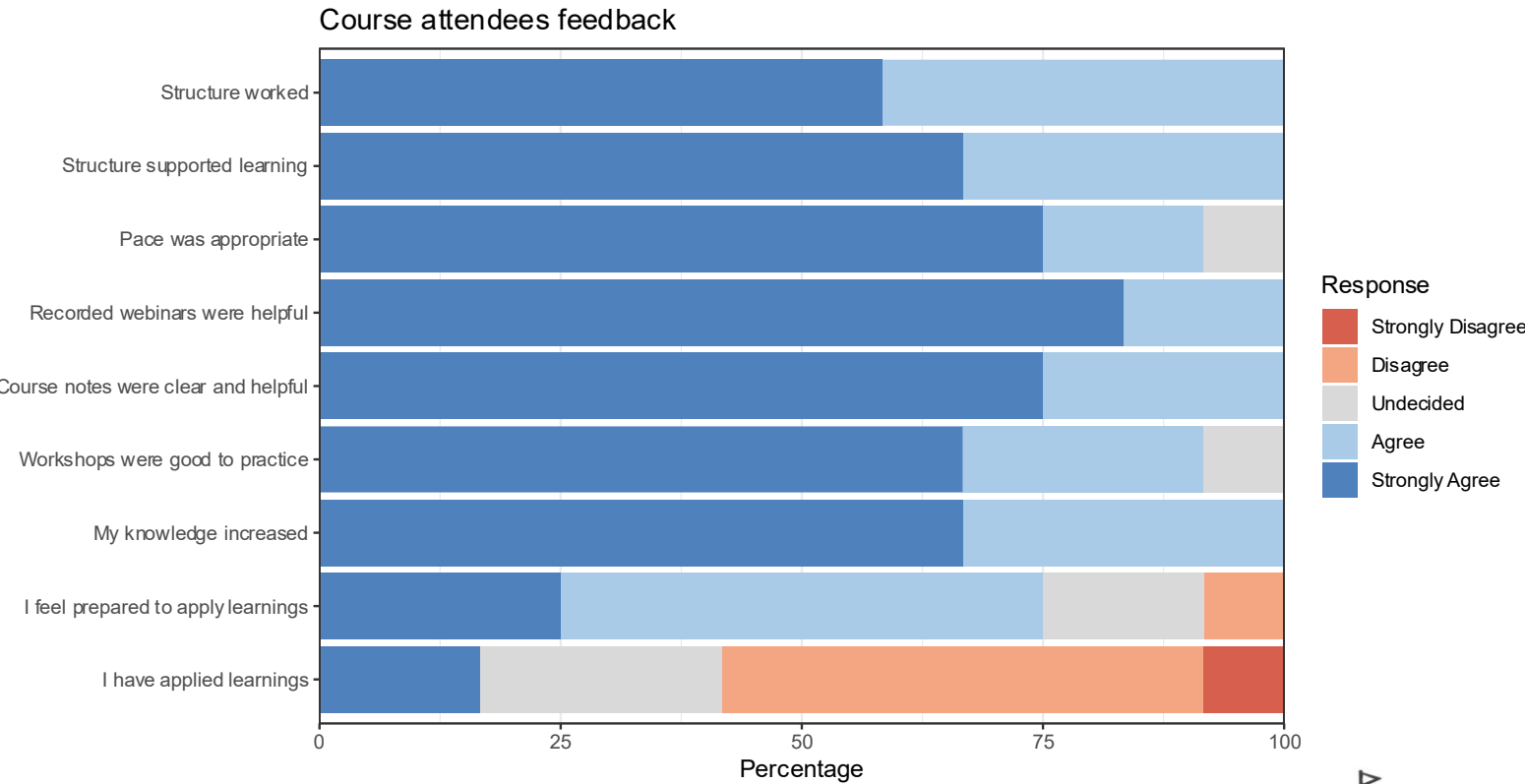
Methods: An expression of interest form captured participants' needs and expectations, informing tailored course design. Weekly sessions alternated between webinars and hybrid workshops across 6 themes: R basics, working with data, plotting data, intermediate data techniques, intermediate plotting and BSol.mapR (a bespoke package for producing maps for Birmingham and Solihull). Webinars introduced concepts, workshops provided the opportunity to practice (worked answers were provided) and course notes summarised the content. Attendees could complete an assessment to consolidate learning and receive a certificate. Feedback was collected after each session to inform future content, and a post-course evaluation form was used to evaluate impact

R Basics
- RStudio
- Hello world and comments
- Defining variables
- Data types/structures
- Arithmetic with R
- Introduction to R functions
- Missing values (NA)
- Help

Working with Data
- R packages
- Setting working directory
- File paths
- Loading data
- Working with data frames
- Saving data

Plotting Graphs
- Grammar of graphics
- Basic plots:
  - •Single variables
  - •Two variables
- Styling
- Saving graphs

Intermediate Data Techniques
- case_when() and small number suppression
- Calculating confidence intervals
- Joining data tables

Intermediate Plotting Techniques
- ggplot() recap
- Including more variables
- Plotting error bars
- Adding reference lines
- Plotting suppressed data
- Changing Axis Ticks

Scan to view and use our content!

Results: 36 practitioners registered, with attendance at webinars and workshops being variable. 15 responses were received to the evaluation, with 9 and 8 attending all the webinars and workshops respectively, suggesting a relatively large drop of from original expressions of interest. The evaluation suggested the main barrier to attendance was time.

Impact: All respondents to the evaluation said the course increased their knowledge of using R for public health data analysis and visualisation. However, only 17% had applied their learning, with barriers including not having relevant projects, using other tools or needing to review the content.

Lessons learned: The course structure and content supported learning and was relevant to public health. Participants may have benefited from longer sessions as it was sometimes fast paced and may find top up sessions useful. Time pressures and inconsistent opportunities to apply skills were key challenges for maintaining knowledge.

Course attendees feedback

Response
- Strongly Disagree
- Disagree
- Undecided
- Agree
- Strongly Agree

(y-axis categories: Structure worked; Structure supported learning; Pace was appropriate; Recorded webinars were helpful; Course notes were clear and helpful; Workshops were good to practice; My knowledge increased; I feel prepared to apply learnings; I have applied learnings)

Percentage (0, 25, 50, 75, 100)

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RESET   RESHAPE   RESTART