Creating interactive evidence gap maps with EPPI-Reviewer, EPPI-Mapper and EPPI-Visualiser

Online introductory webinar
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Dr Melissa Bond
melissa.bond@ucl.ac.uk

@misc_nerd   @EPPISupport   @EPPIReviewer4

Dr Melissa Bond

- Former high school teacher in South Australia (10 years)
- Research Associate (3 years, CvO Universität Oldenburg)

  > [PhD](), 2020: *'Facilitating student engagement through educational technology: Current research, practices and perspectives'*

- EPPI-Reviewer Support Officer (Feb 2020 onwards)
- Systematic & mapping [reviews]()

  - [COVID-19 studies on teaching and learning in higher education]()
  - [COVID-19 studies on teaching and learning in K-12]()
  - [Artificial Intelligence in Higher Education]()
  - [Student engagement and educational technology in higher education]()
  - [Student engagement and the flipped learning approach (K-12)]()
  - Editor of the open access book [Systematic Reviews in Educational Research]()
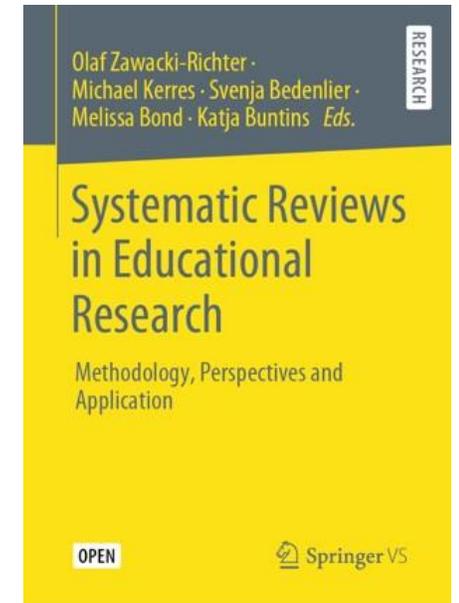
Program for today

- What are EPPI-Reviewer, evidence gap maps and EPPI-Mapper?

- Examples of interactive evidence gap maps.

- How to design your coding tool within EPPI-Reviewer.

- How to generate a map using EPPI-Mapper.

- What is EPPI-Visualiser?

- How to create a web database using EPPI-Visualiser.

- Q & A / Discussion
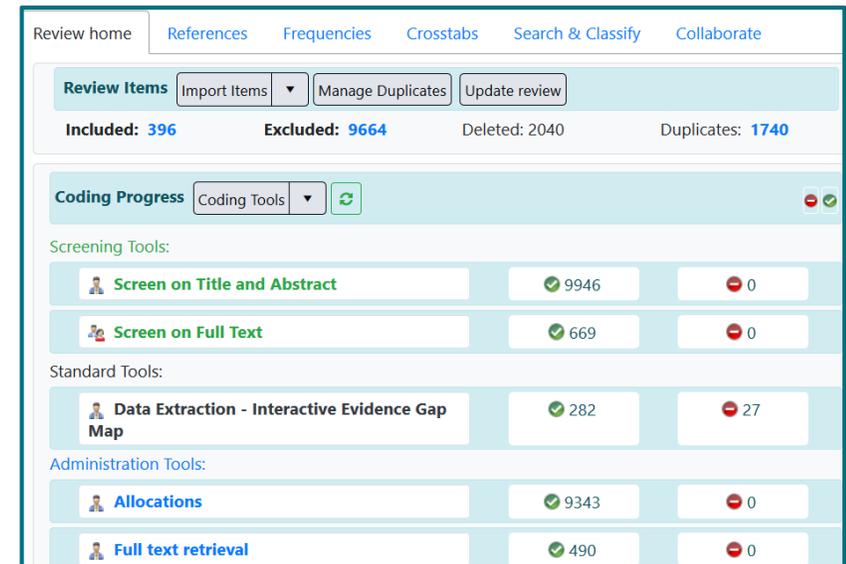
- Future professional development opportunities
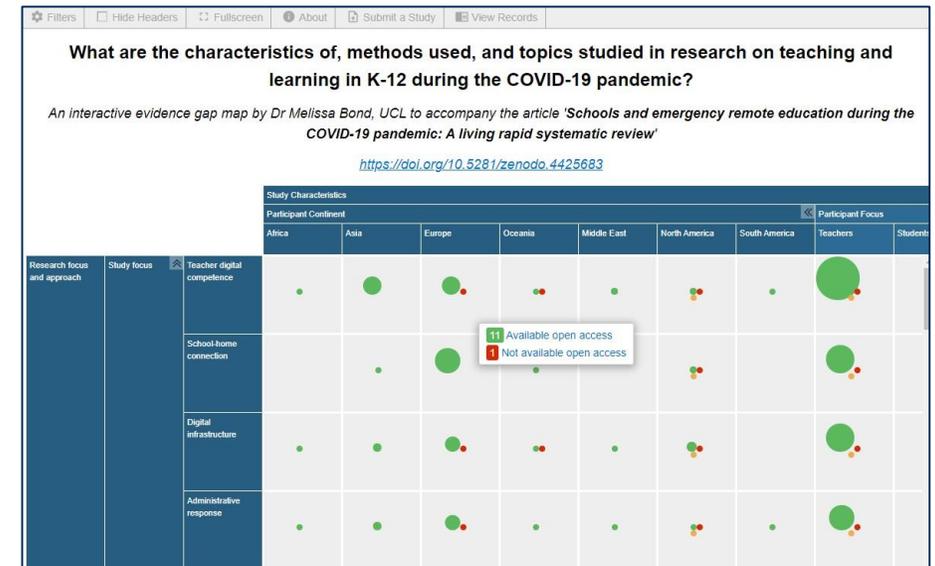
EPPI-Reviewer evidence synthesis software was created to support the methodological work conducted at the EPPI-Centre.

➢ Web-based - accessed from any device with an internet connection.

➢ Developed for all types of systematic review.
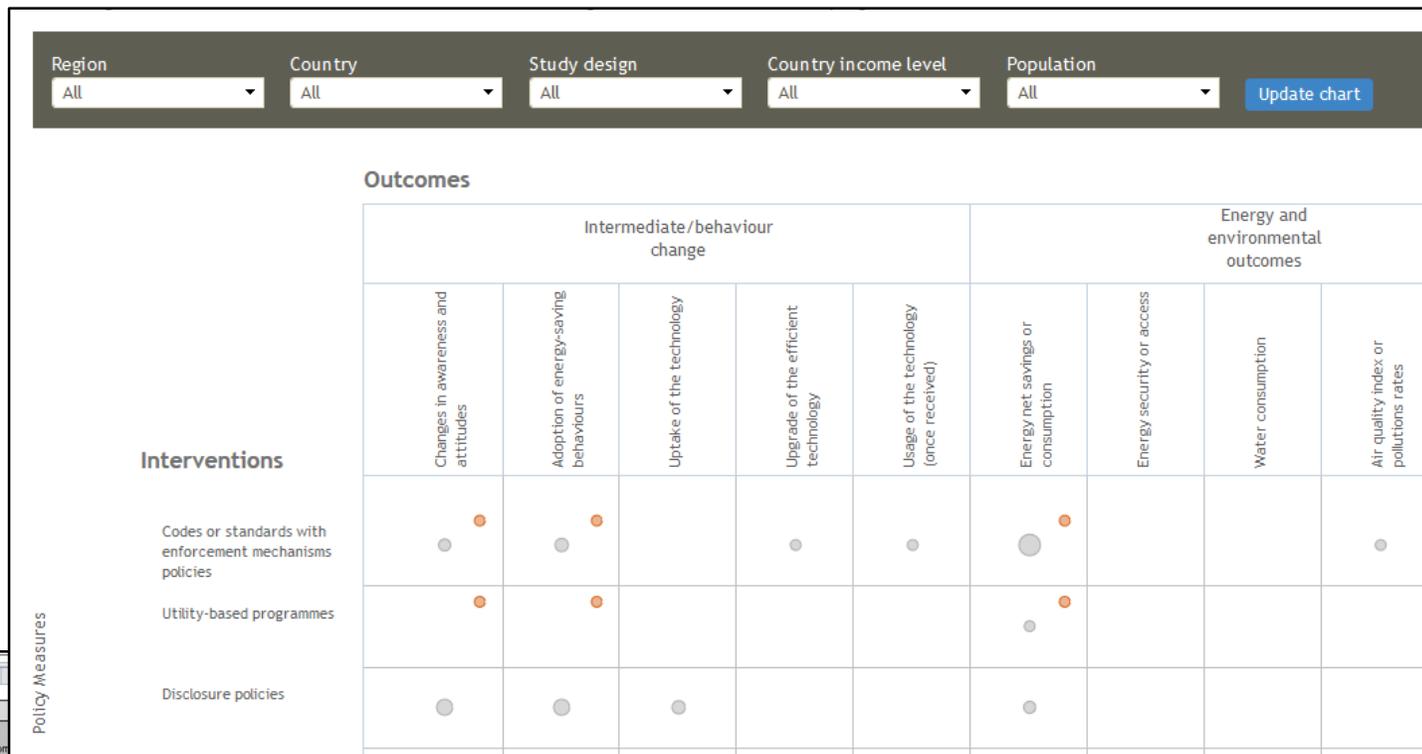
➢ Designed for flexibility.

EPPI-Reviewer helps by:

➢ keeping your review process explicit and replicable
➢ enabling you to work with many others in one review
➢ keeping your data in one place
➢ helping with large screening loads through priority screening
➢ enabling updates to your review, including through machine learning
➢ allowing the easy creation of interactive evidence gap maps

| Review home | References | Frequencies | Crosstabs | Search & Classify | Collaborate |

| Review Items | Import Items ▼ | Manage Duplicates | Update review |
| Included: **396** | Excluded: **9664** | Deleted: 2040 | Duplicates: **1740** |

| Coding Progress | Coding Tools ▼ | ⟳ | | ⊖ ⊘ |

Screening Tools:
| 👤 Screen on Title and Abstract | ⊘ 9946 | ⊖ 0 |
| 👥 Screen on Full Text | ⊘ 669 | ⊖ 0 |

Standard Tools:
| 👤 Data Extraction - Interactive Evidence Gap Map | ⊘ 282 | ⊖ 27 |

Administration Tools:
| 👤 Allocations | ⊘ 9343 | ⊖ 0 |
| 👤 Full text retrieval | ⊘ 490 | ⊖ 0 |

https://eppi.ioe.ac.uk/EPPIReviewer-Web/home

Evidence gap maps are a visual representation of the evidence, or lack of evidence, in a domain.

- Often consist of a matrix of interventions in one axis and outcomes in the other axis.
- Each intersection point indicates the number of corresponding records (e.g. studies).
- The number of records in each node can be broken down into categories and represented as bubbles.
- Most maps will have some type of filtering mechanism for a further breakdown of coding.

- Many different designs of evidence gap maps exist.

- Most organisations have their own design and layout.

https://gapmaps.3ieimpact.org/evidence-maps/energy-efficiency-egm

Maps from 3ie and Overseas Development Institute (ODI)

https://odi.org/en/publications/young-people-as-agents-and-advocates-of-development/

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EPPI-Mapper: What is it?

- An application to create interactive evidence gap maps (EGMs).

- Developed by the EPPI-Centre in partnership with the Campbell Collaboration.
  - First version was created in early 2018.

- Requires studies to be coded in EPPI-Reviewer.

- Designed for flexibility.

- Has many options for changing the appearance of the map.

- User has full control of branding.

- Exists as a standalone HTML file.

http://eppimapper.digitalsolutionfoundry.co.za/#/
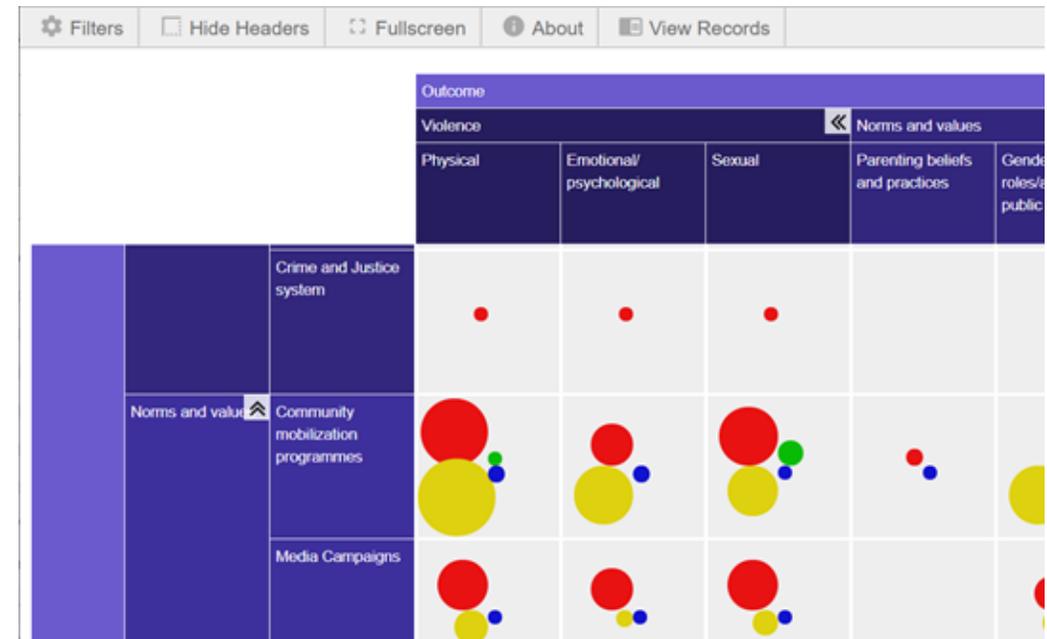
Campbell Mega-map is a good example of a map that uses much of the available functionality.
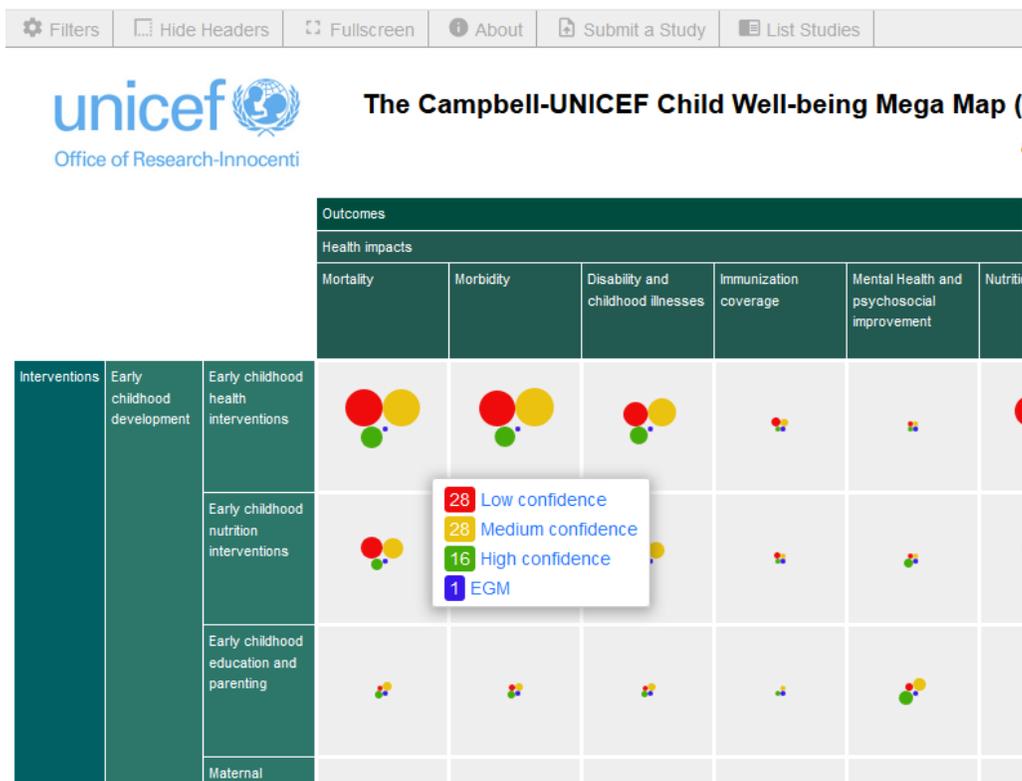
- Outcomes v Interventions.

- Each row and column have sections and subsections.

- Each cross-section is segmented into quality ratings within cells (hover to display)

https://onlinelibrary.wiley.com/pb-assets/assets/18911803/NEW-Mega-map-June2020-1603791519253.html

Map example - layout

Menu

Branding and title
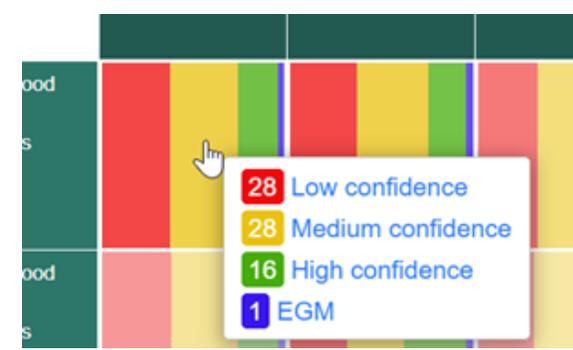
Legend for segments

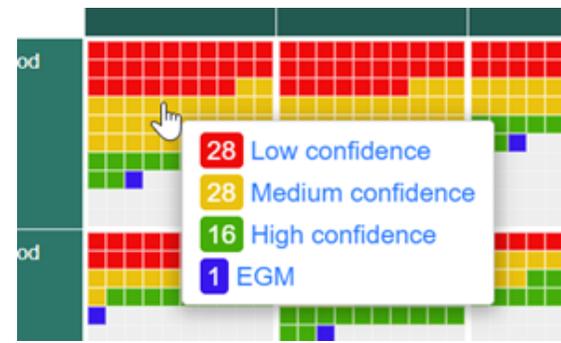EPPI-Mapper version

Style can be pre-set or changed.

Bubble
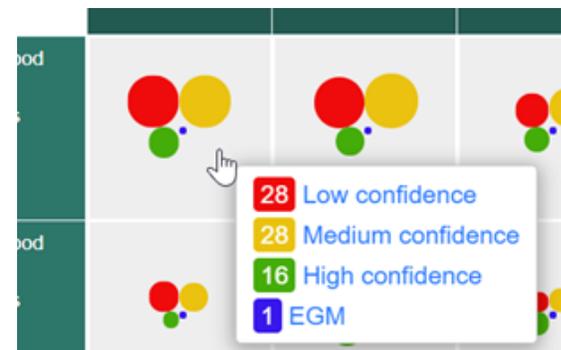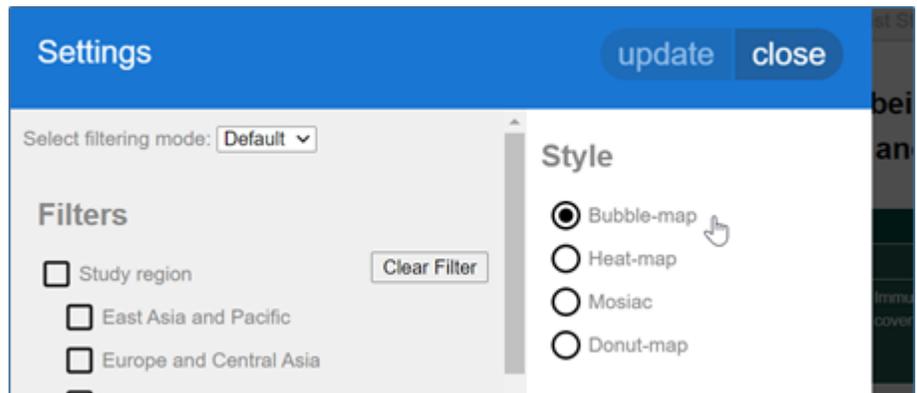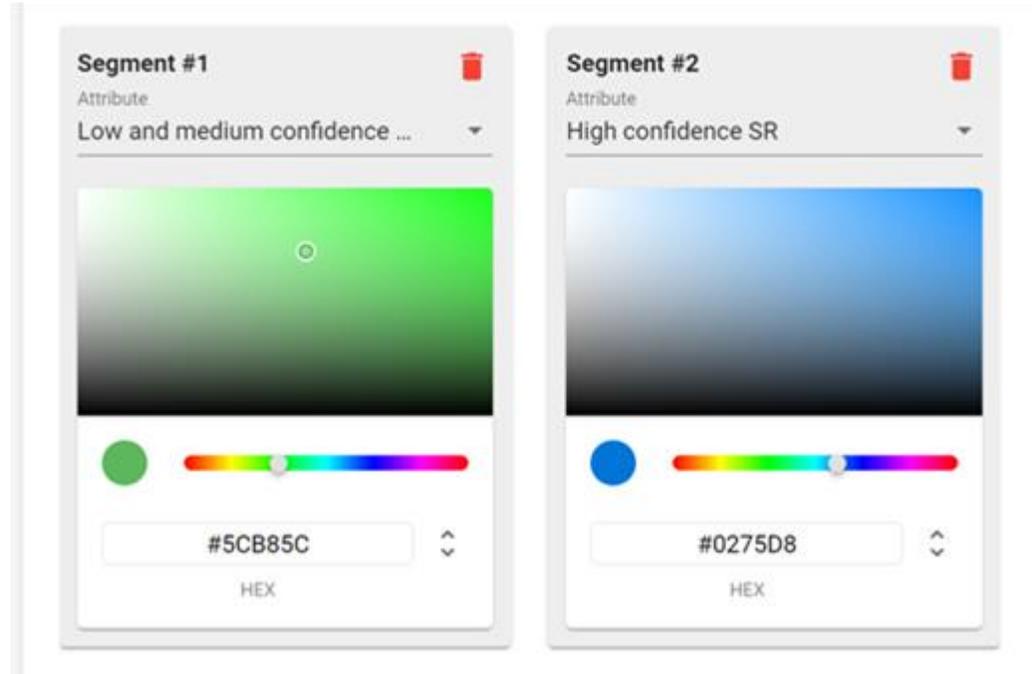

Heat

Mosaic

Donut

You can choose the colour of:

❖ Row headers

❖ Column headers

❖ Individual cells

Colours can be selected visually or entered manually in RGB or HSL

● RGB (Red, Green, Blue), e.g. Green: 0,255,00 or #00FF00

● HSL (Hue, Saturation, Lightness), e.g. Green: 120°, 150%, 50%

Map users can filter the studies being displayed

- ❖ **Default** - AND across sections and OR within sections

- ❖ **AND** - all selections

- ❖ **OR** - all selections

https://onlinelibrary.wiley.com/pb-assets/assets/18911803/NEW-Mega-map-June2020-1603791519253.html

Click on a cell or row / column to open references panel.

❖ Codes selected cell on the left can be adjusted.

❖ Group by option.

❖ Study info on right.

❖ Option to filter/search by Title, Author, Abstract

Top menu contains many options

- **Hide Headers** – hides the header area (logos, title, etc.) at top of screen

- **Full screen** – makes the browser fill your entire screen

- **About** – panel appears with information about the map (optional)

- **Submit a study** – panel appears with info on how a map user might contribute to the map (optional)

- **List studies** – all studies in the map will be listed in the documents panel

https://onlinelibrary.wiley.com/pb-assets/assets/18911803/NEW-Mega-map-June2020-1603791519253.html

Map example – collapse

- You can collapse sections of rows and columns to view more of the map

- Click on the (hover) icon in the row or column section to collapse/expand

- The bubbles will show an aggregate of the collapsed section
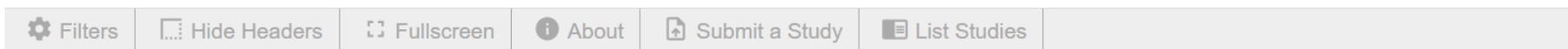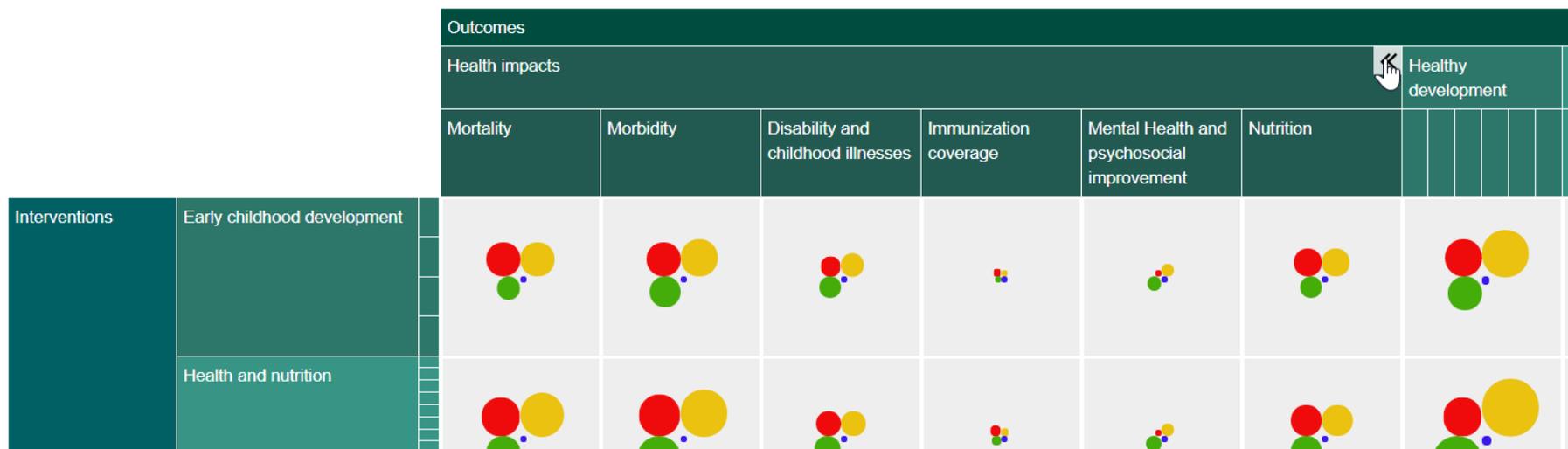
New function

- If the map has a lot of rows and columns you can set it to open in a collapsed state

https://onlinelibrary.wiley.com/pb-assets/assets/18911803/NEW-Mega-map-June2020-1603791519253.html

EPPI-Centre *Covid-19 'living' systematic map of research* shows some of the more recent functions added.

https://eppi.ioe.ac.uk/COVID19_MAP/covid_map_v59.html

- 57,143 studies
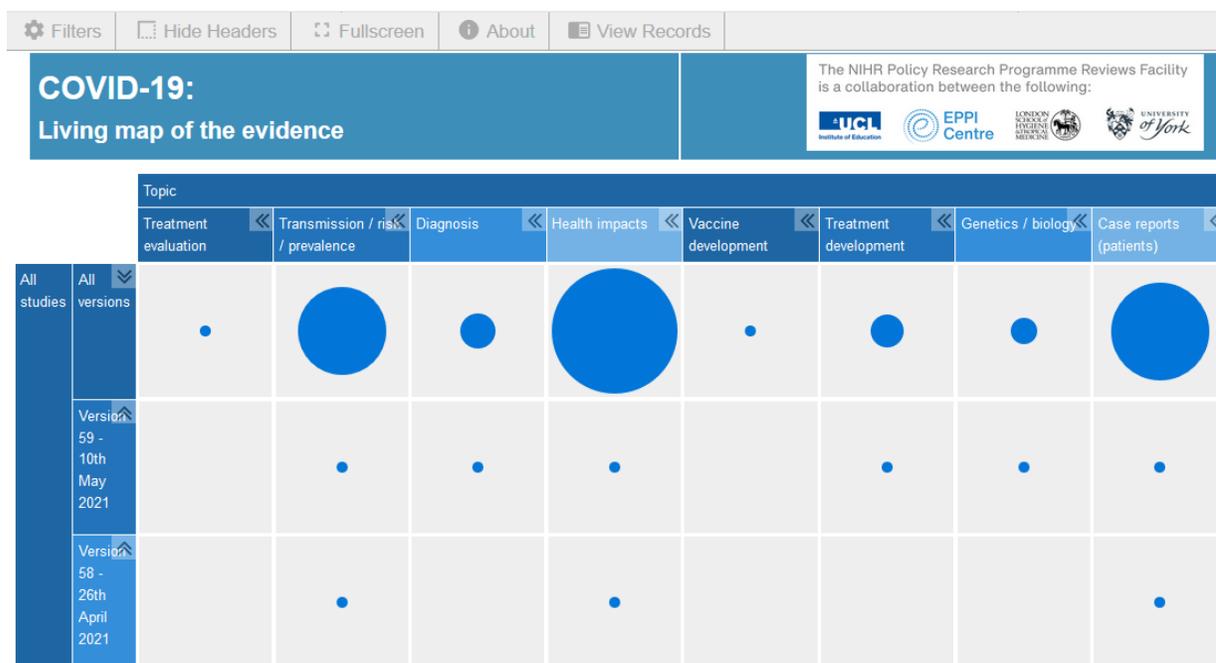
- **Topics** vs **Date of search**
- Each column is a topic (specific to a mesh term)
- Each row represents a specific search date. Top row is **All searches**
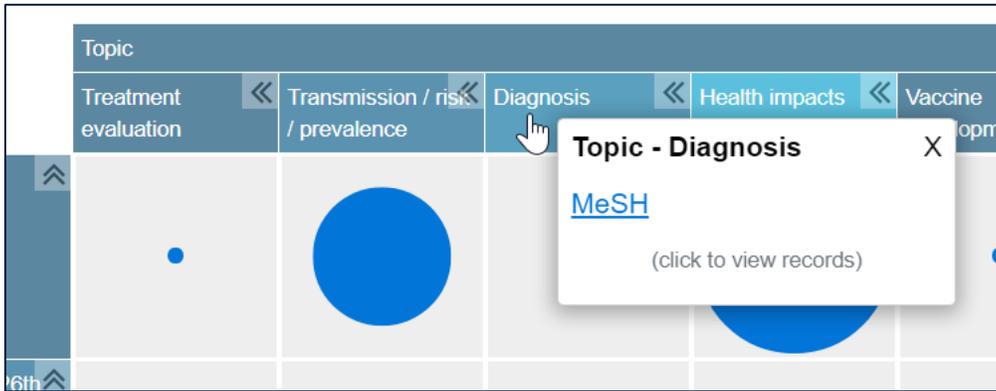
Links can be embedded into each column

- Clicking on link will take you to the relevant mesh term on the NIH website.

- Use of links is fully configurable and optional.

https://onlinelibrary.wiley.com/pb-assets/assets/18911803/NEW-Mega-map-June2020-1603791519253.html

The Records panel has a **Download Listed References** button
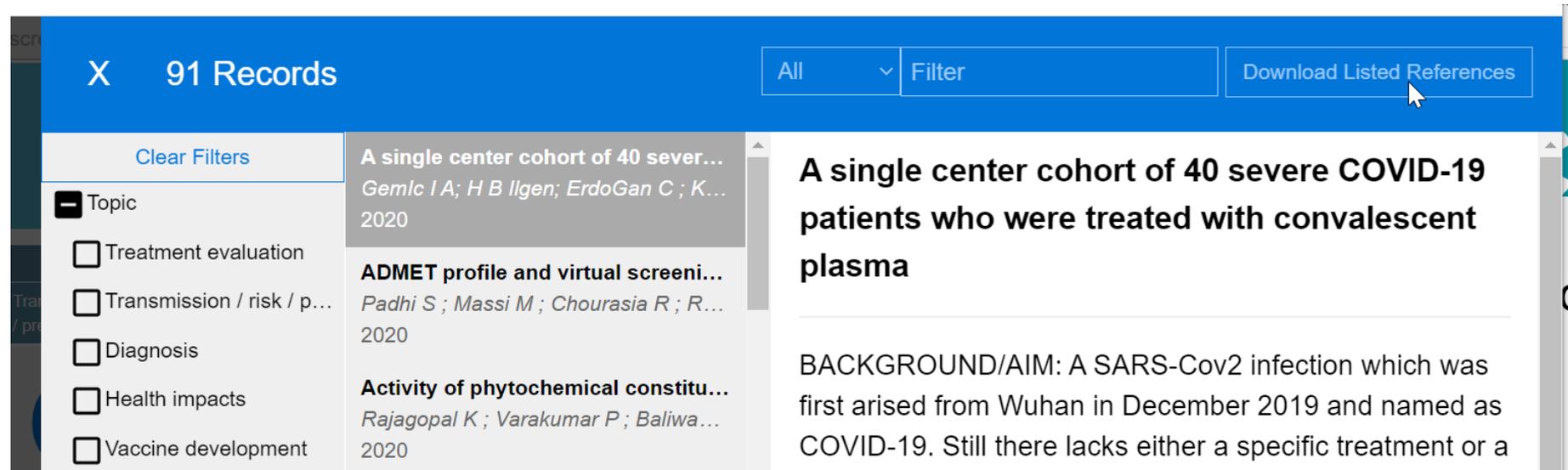
- This is an optional function.

- Clicking button will generate a RIS formatted file of the listed records.

- RIS is a 'standard' format for references that can be used with all reference management software (e.g. EndNote).

Live map example

EPPI-Reviewer data extraction coding tool structure is important

Author Information			
Author continent			
Africa	Asia	Europe	Middle East

❖ Rows and columns can have up to 3 levels.

▼ 👤 ✅ 📝 Data Extraction - Interactive Evidence Gap Map
  ▶ Publication Details
  ▼ Author Information
    ▼ Author continent
      ☐ Africa [Info]
      ☑ Asia [Info]
      ☐ Europe [Info]
      ☐ Middle East [Info]
      ☐ North America [Info]
      ☐ Oceania [Info]
      ☐ South and Central America [Info]
      ☐ Not stated [Info]

Level 1 (non selectable code)

Level 2 (non selectable code)

Level 3 (selectable codes)

❖ Filters can have up to 2 levels.

Settings

Select filtering mode: [Default ⌄]

Filters

☐ Publication language
  ☐ English
  ☐ German
  ☐ Spanish
☐ Open Access?
  ☐ Available open access
  ☐ Not available open access
  ☐ Unsure – need to check

▼ 👤 ✅ 📝 Data Extraction - Interactive Evidence Gap Map
  ▶ Publication Details
  ▶ Author Information
  ▶ Study Characteristics
  ▶ Research Focus and Methodology
  ▶ Type of ed tech
  ▼ Publication language
    ☑ English [Info]
   ☐ German [Info]
    ☐ Spanish [Info]
  ▶ Open Access?

Level 1 (non selectable code)

Level 2 (selectable codes)

Designing your coding tool

1. In the Review Home page, either click on **Coding Tools** or **Edit Tools**.

2. Click on **Add Coding Tool**.

3. Leave the tool type as Standard and give the coding tool a name.

4. Leave as Normal data entry mode (for Comparison or double coding, you will need to change it).

5. Click **Create**.

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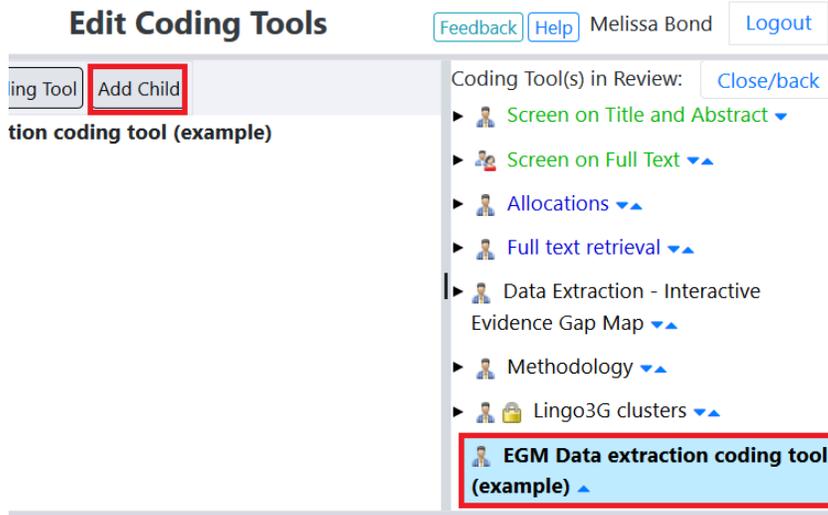
1. Select your new coding tool on the right hand side and click on 'Add Child'.

2. Leave the code type as 'Not selectable (no checkbox)' and type in the parent code name, e.g. Author Information.

3. Click on 'Create'.

4. Expand the coding tool, by clicking on the black arrow, and click on your new parent code.

5. Click 'Add Child'.
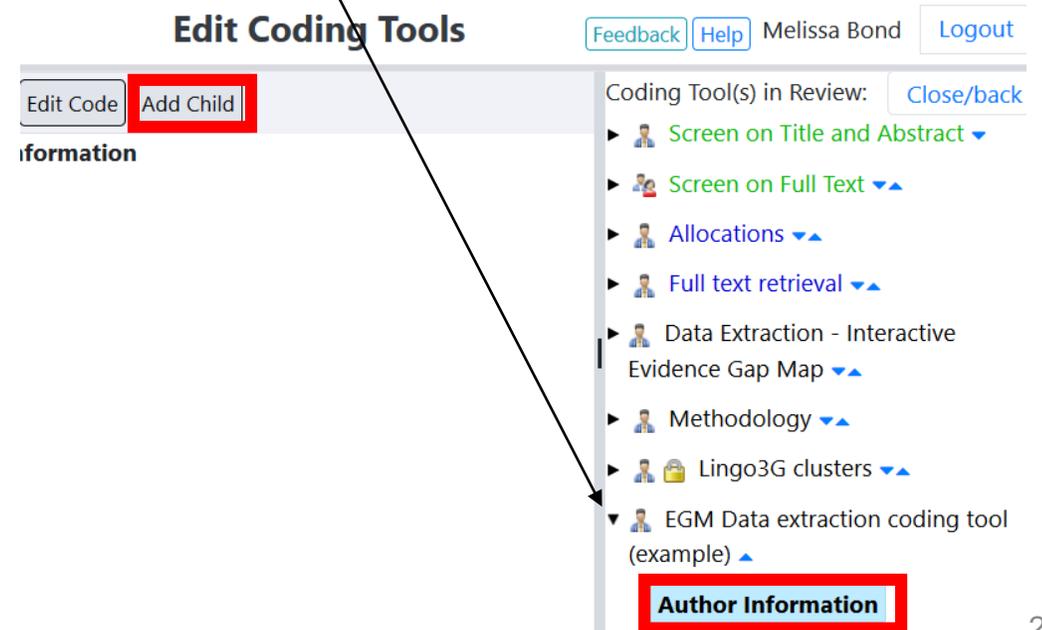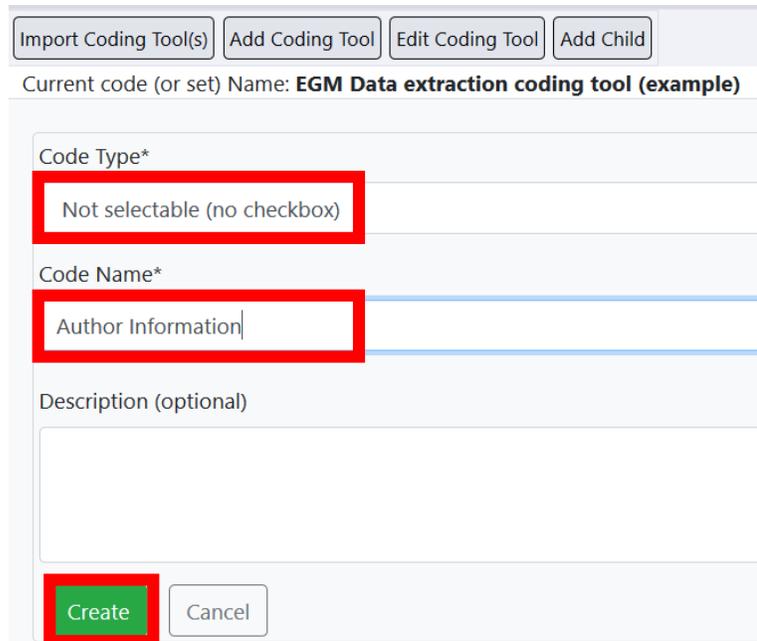
Video: https://youtu.be/bGTyqe_ySyA

Designing your coding tool

1. Leave the code type as 'Not selectable (no checkbox)' and type in the parent code name, e.g. Author Continent.

2. Click on 'Create'.

3. Expand the coding tool, by clicking on the black arrow, and click on your new parent code.

4. Click 'Add Child'.

5. Change the Code Type to 'Selectable (show checkbox)'.

6. Type in the Code Name, e.g. Asia.

7. Type in a description (optional).

8. Click on 'Create'.

Video: https://youtu.be/bGTyqe_ySyA

Coding your studies

Once you have finished designing your coding tool, you will need to:

- ➢ Import your items

- ➢ Manage duplicates

- ➢ Code your studies

For information on how to do this, please have a look at our instructional videos, have a look at our past EPPI-Reviewer Web webinars, or consider attending the webinar on Wednesday 30th June.

- ➢ Instructional video on importing items.

- ➢ Instructional video on managing duplicates.

- ➢ Previous EPPI-Reviewer Web introductory webinar.

- ➢ PowerPoint slides from the previous introductory webinar.

Exporting your data

After coding your items within EPPI-Reviewer, you will need to export your data as a JSON file.


1. Go to the 'References' tab and click on 'Coding Report'.

2. Choose the coding tool to export.

3. Select the 'JSON report?' checkbox.

4. Choose which items to get the report for.

5. Click on 'Get Report'.

6. Click on the save icon and save to your device.

Video: https://youtu.be/nW353pA75io

http://eppimapper.digitalsolutionfoundry.co.za/

- Free for all EPPI-Reviewer users

- Uses EPPI-Reviewer data (JSON report)

- Simple, easy to use wizard

- Add further links, graphics and videos

- Include information for how others can submit to your review

- Download and share
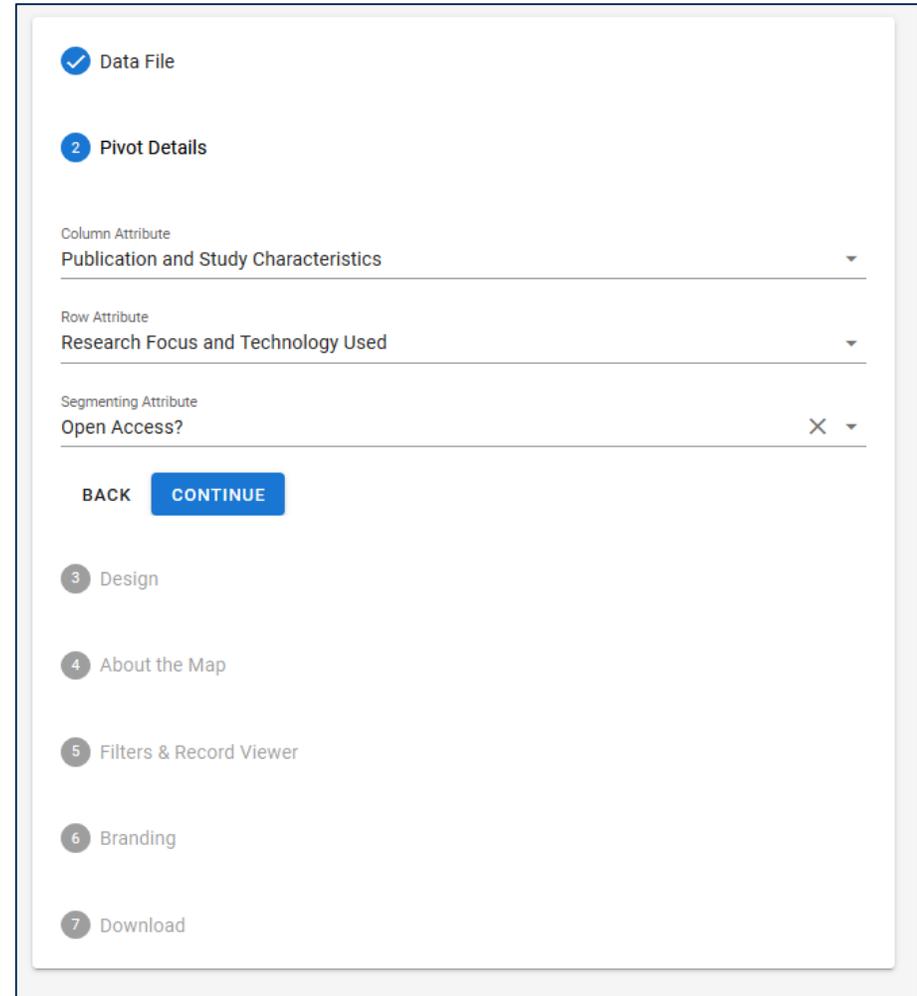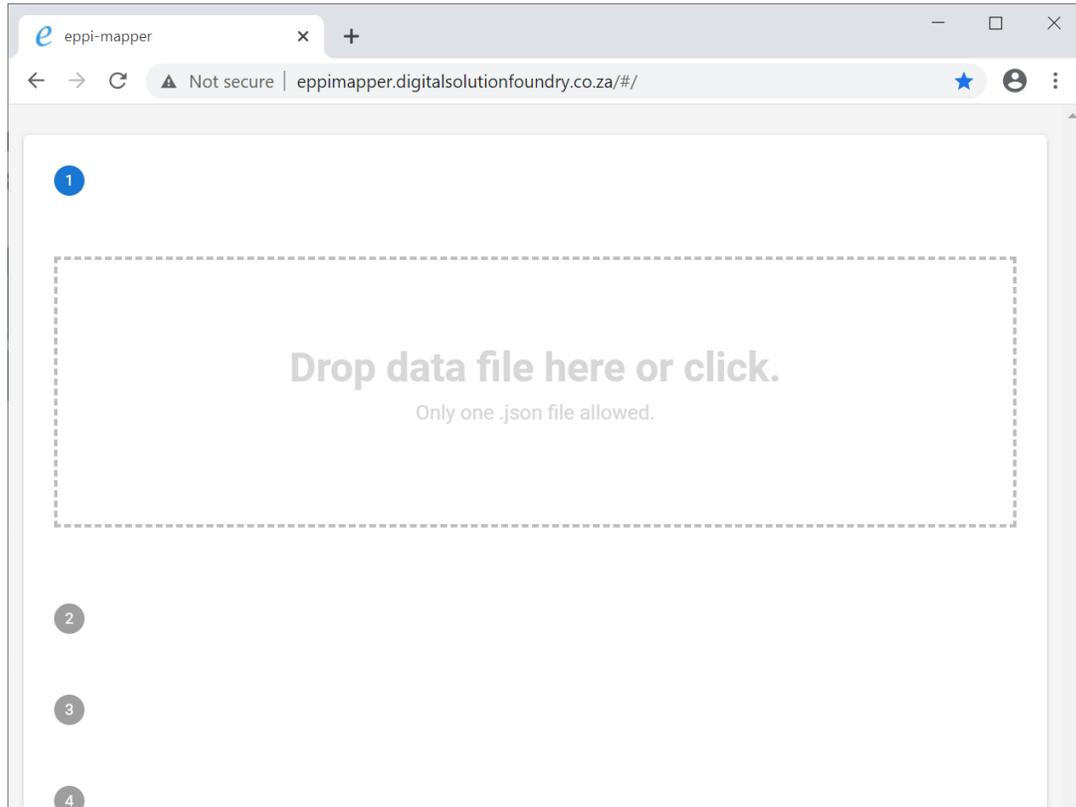
Step 1

Upload your JSON file.

➢ This file contains your mapping data

- EPPI-Mapper can be found at http://eppimapper.digitalsolutionfoundry.co.za/#/

- In this example I am using a JSON file of the Campbell mega-map project

Video: https://youtu.be/nW353pA75io

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Step 2

Select the Column and Row data.

Select bubble data (Segmenting Attribute).

2

Column Attribute
Outcome ▾

Row Attribute
Intervention ▾

Segmenting Attribute
Quality to be used ✕ ▾

BACK   **CONTINUE**

- The dropdown menus will be automatically populated based on the data found in the JSON file.

- Depending on your data, you might only have one choice in the Segmenting (bubble) attribute menu, or none at all.
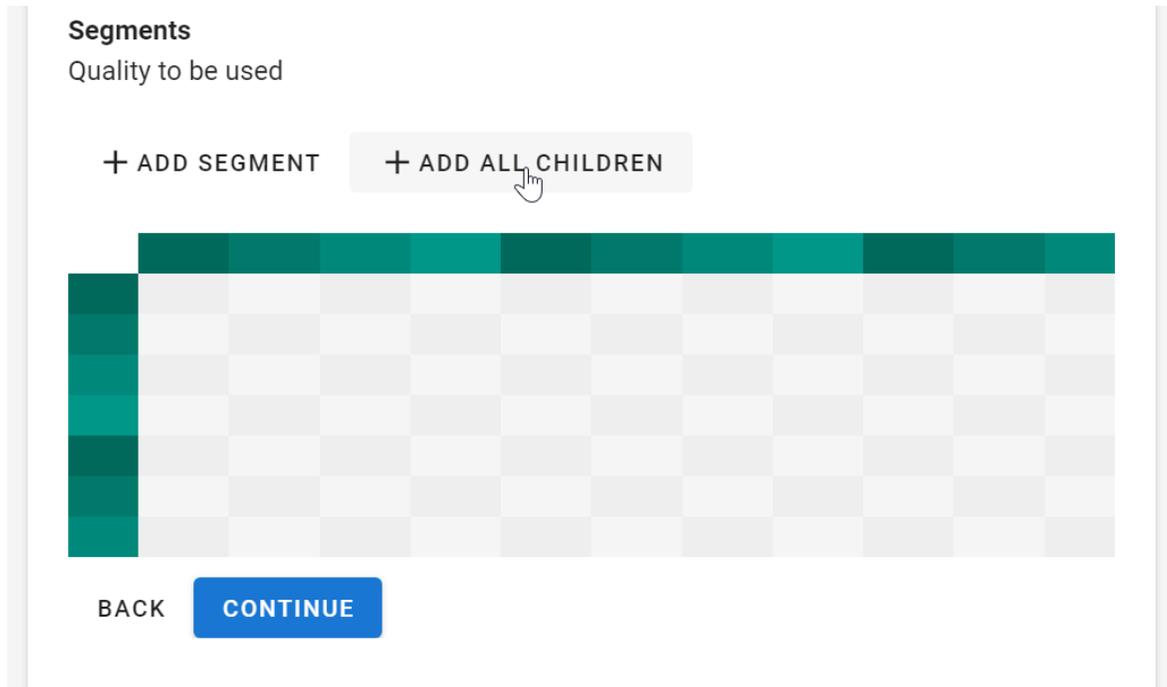
Video: https://youtu.be/nW353pA75io

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Step 3

Choose the map appearance.

- Choose the default style

- Start with collapsed headers?

- Colours for the rows and columns

Video: https://youtu.be/nW353pA75io

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Segments
Quality to be used

+ ADD SEGMENT   + ADD ALL CHILDREN

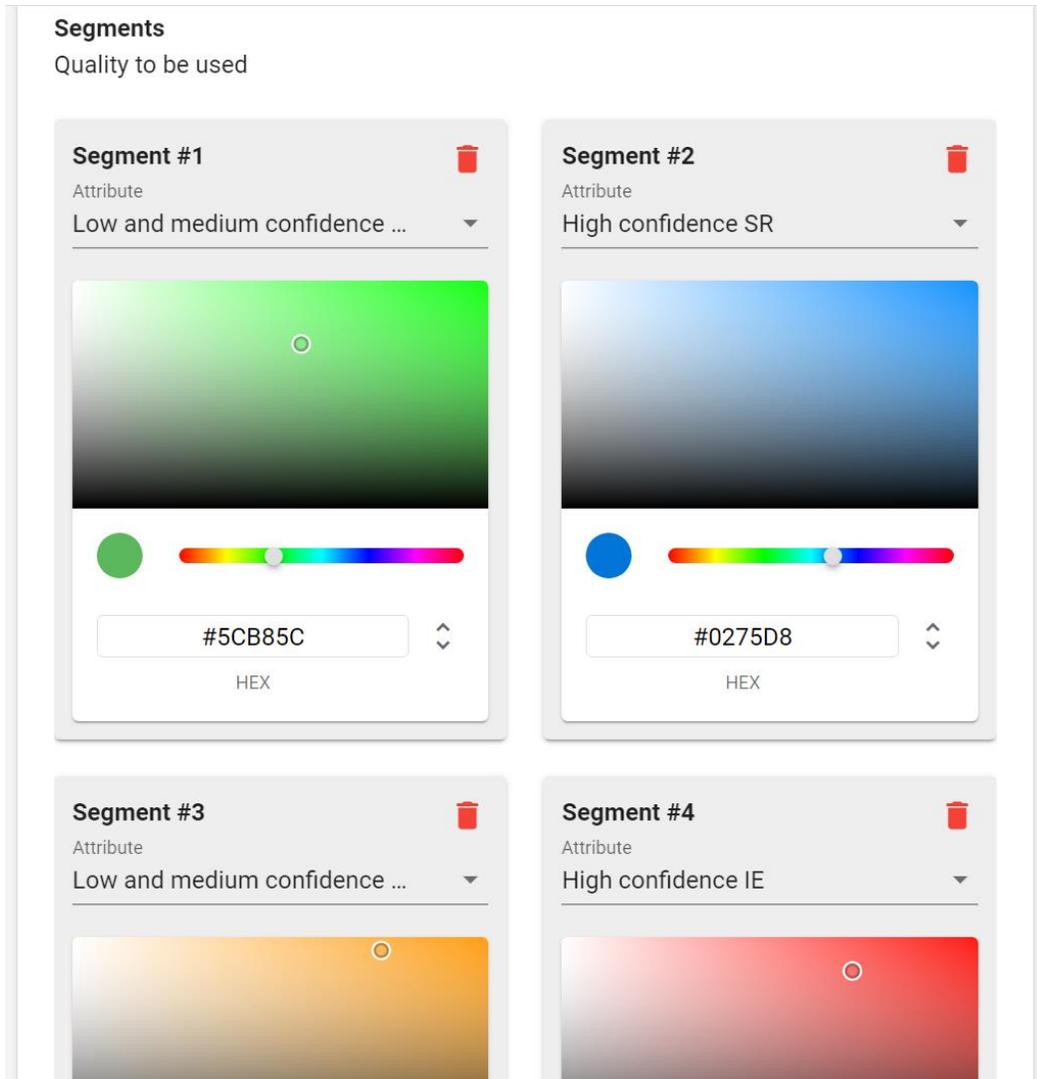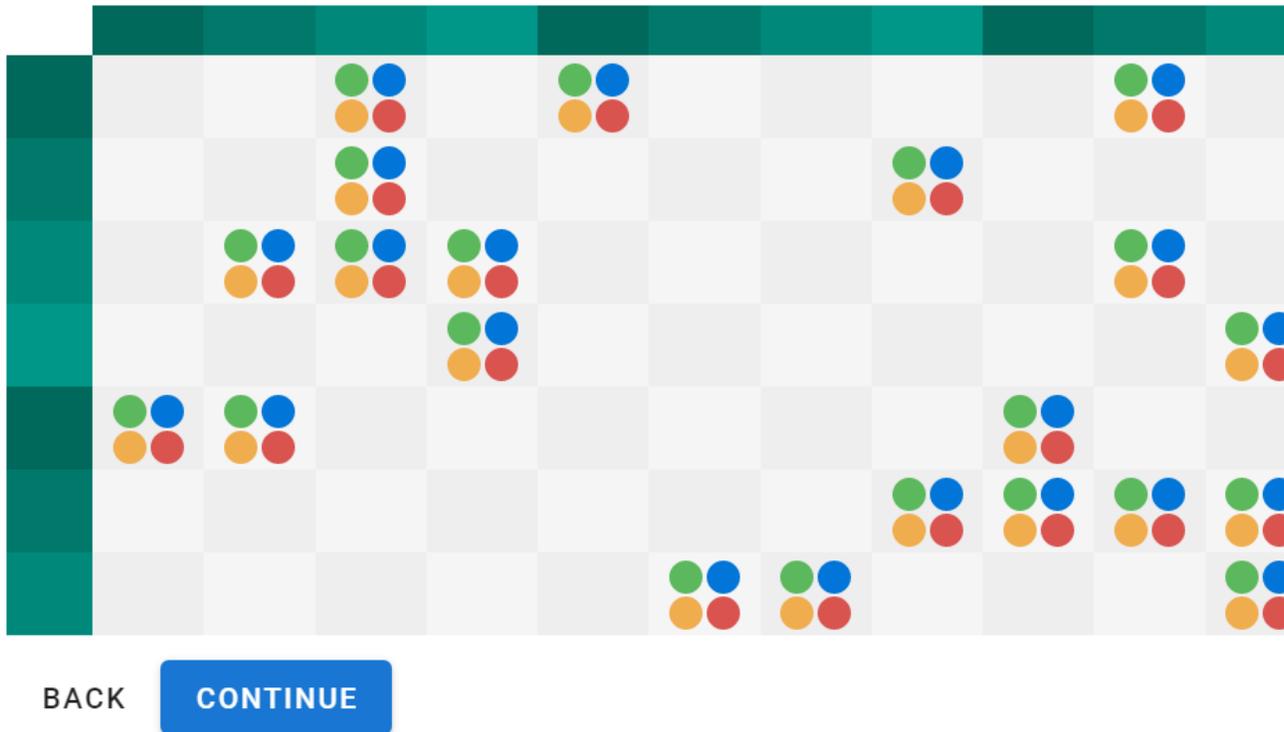BACK   **CONTINUE**

Step 3 (cont.)

Choose bubble codes.

- The child codes of the selected segment will be displayed.

- You can manually select the codes (up to 4) or have the utility select the first 4 listed (Add all children).

Video: https://youtu.be/nW353pA75io

Step 3 (cont.)

Choose bubble colours.

- You can visually select the colours or manually enter values

- RGB (hex and digital)

- HSL

- Recording values is useful if you need to generated an updated map in the future

Video: https://youtu.be/nW353pA75io

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Step 3 (cont.)

Preview

- Before clicking continue, you get a preview of the colours you have selected.

- At any point in the process you can click 'Back' to change any of your previous selections.

Video: https://youtu.be/nW353pA75io

Step 4

Add the **About** and **Submitting Studies** text

- These are optional and will not appear in the menu if left blank.

- The editors are very powerful and will be covered in Step 6.

Video: https://youtu.be/nW353pA75io

5 Filters & Record Viewer

[toggle on] Allow records to be downloaded in RIS format

Filter Attributes ▾

Select all the properties you would like to be able to filter by.

Record Meta Properties ▾

Select all the properties you want to show in the record viewer.

☐ Remove abstracts

BACK   CONTINUE

Step 5

Set the **Export records** option.

Select the **filters** to display.

Select the **citation fields** to display.

- **Important:** Filters will be displayed in the order they are selected.

- Citation fields will be displayed in the order they are selected.

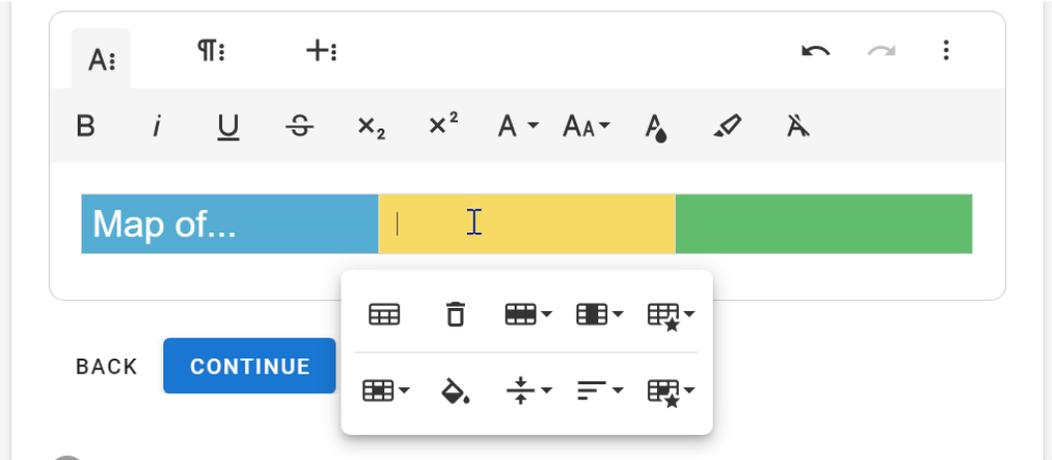- **Remove abstracts** option hides the abstract in the citation.

Video: https://youtu.be/nW353pA75io

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Step 6

Branding

- Creating a table in the header will allow you to arrange text and images.

- Insert images.

Video: https://youtu.be/nW353pA75io

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Step 6 (cont.)

Branding

- Use different fonts, font size, font colours.

- Change cell backgrounds.

- Add images, animated gifs, videos.

- Almost anything is possible!
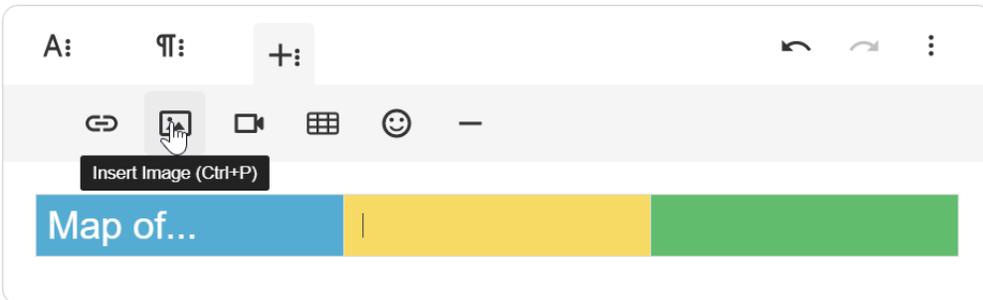
Video: https://youtu.be/nW353pA75io

Step 7

Download

- Click Download to generate and download the map file (as a HTML file).

- The map file can be used anywhere, no internet needed.

- The **host online** option will optimise the map, but that map will then need an internet connection.

- You can either upload your map to your own CMS, or we can host it on ours.

Video: https://youtu.be/nW353pA75io

- The finished map file is an HTML formatted text file, so it can be edited in any text editor after it is created (e.g. Notepad++)

- If you are even a little bit familiar with HTML you can do quite a bit to change the map's appearance after it is created.
  - Any static text on map can be edited (including 'About' section)
  - Most colours can be changed
  - Padding can be added to table cells

- If you know a little bit of JavaScript you can go even further and start changing how the map behaves.
  - You can add functionality. Many of the additions to the mapping utility started with me manually editing an existing map

What is EPPI-Visualiser?

EPPI-Visualiser is a new web database tool, displaying the studies and coding conducted in your review.

➢ Any changes made in your review are updated live in the database.

Video: https://youtu.be/bhQuGpeB2Lo

Source: https://t.co/EXPXjvHXgn?amp=1

Live Demonstration

https://eppi.ioe.ac.uk/eppi-vis/login/open?webdbid=6

1. On the Review Home page, click on the blue 'Setup Visualisations' button.
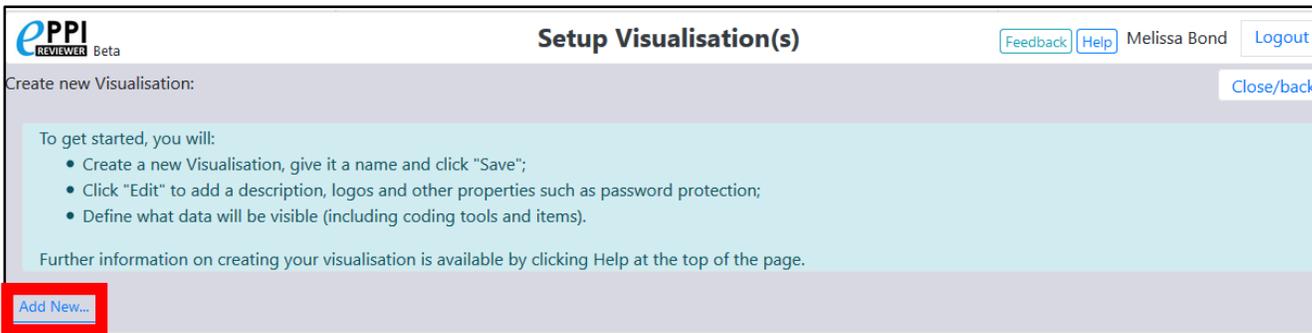
2. Click on 'Add New…'

3. Type in a database name.

4. Type in a Subtitle (optional).

5. If you want to assign a password to it, click on the toggle under 'Is open access' and type in a password (This can also be done later).

6. Click 'Save'.

Video: https://youtu.be/bhQuGpeB2Lo
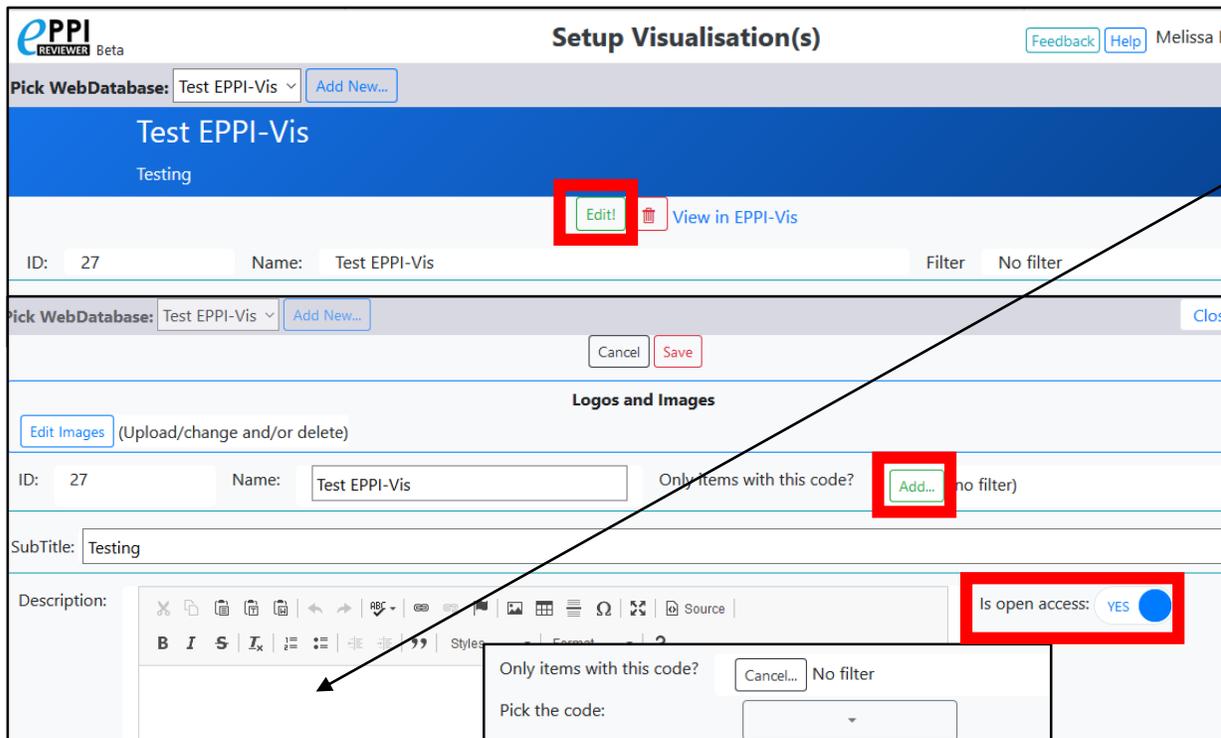
1. Click the green 'Edit!' button.

2. Type in a description – will appear in the 'Introduction' section.

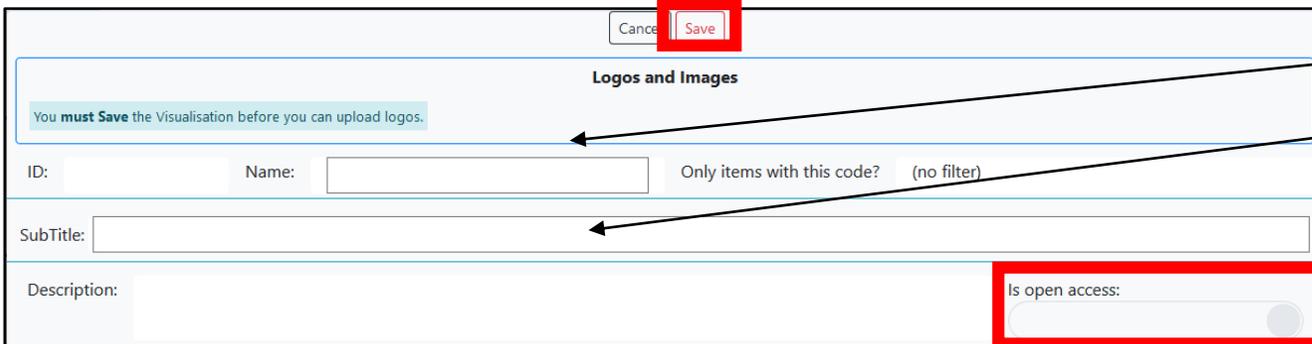3. If you only want to include studies that have a certain code, e.g. 'Include on Full Text', click on the green 'Add' button.

4. If you want to assign a password to it, click on the toggle next to 'Is open access' and type in a username and password.

5. Click save.

Video: https://youtu.be/bhQuGpeB2Lo

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Creating an EPPI-Vis web database
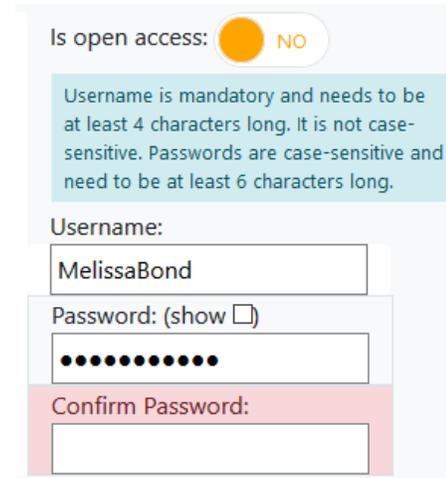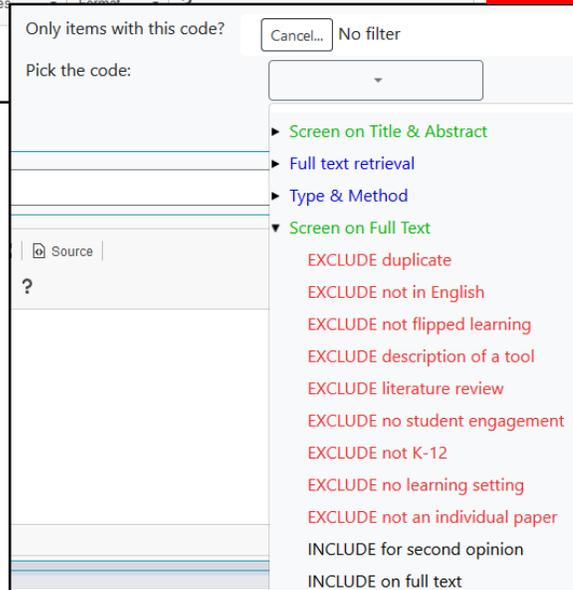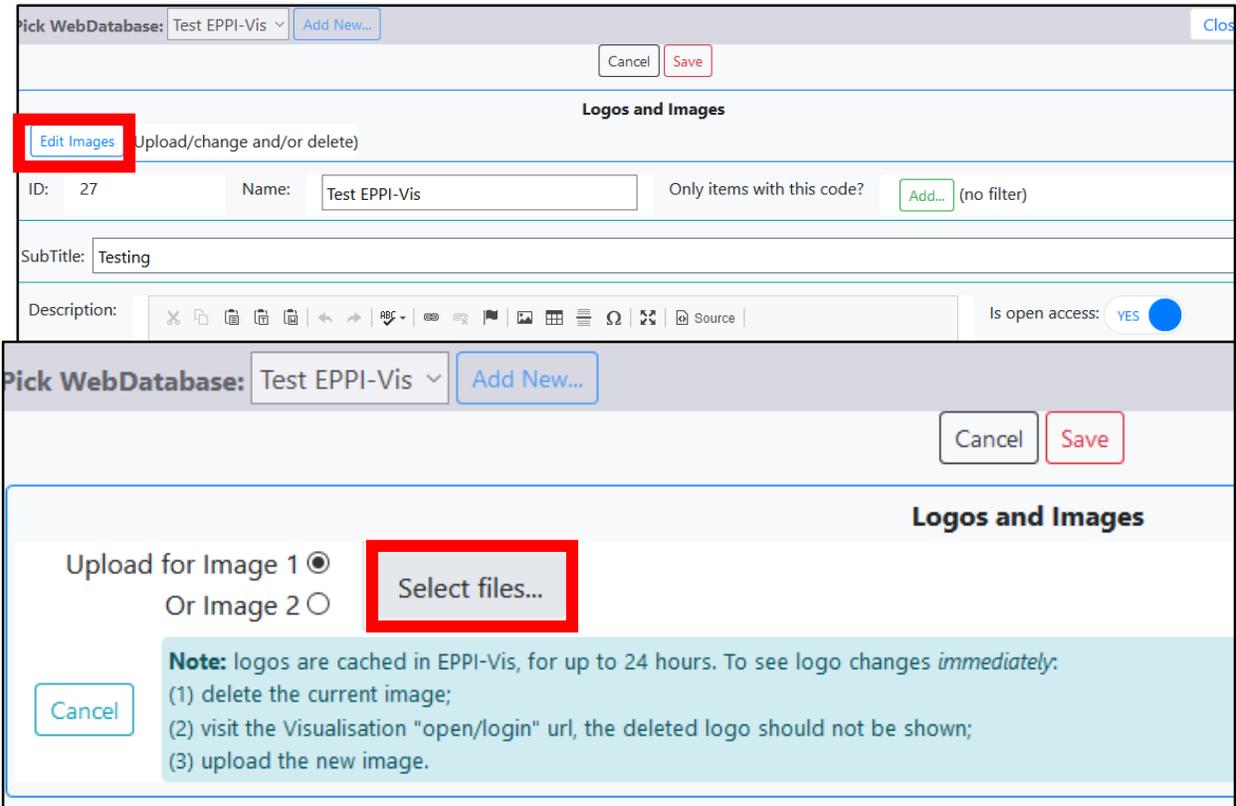
1. To upload images, click on 'Edit' and then the blue 'Edit Images' button.

2. Click on 'Select files…', choose the first image from your device.

3. Preview the image and click on 'Upload'.
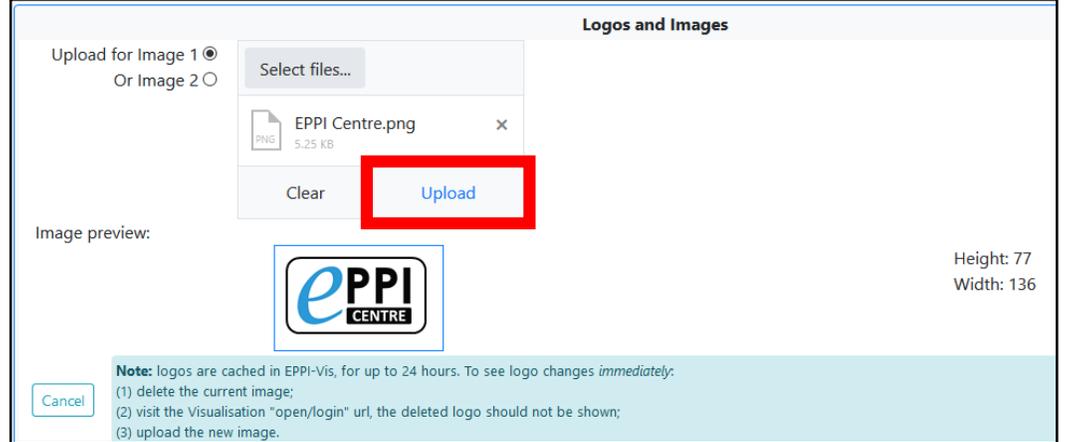
4. If your image is too big, you will get a warning message.
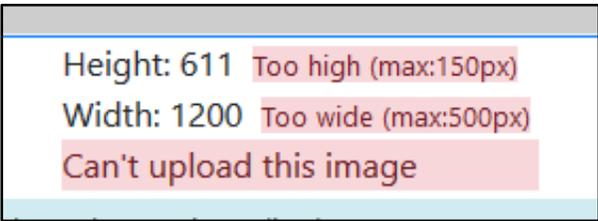
5. To add another image, click on 'Edit Images' again and repeat the steps for Image 2.

Video: https://youtu.be/bhQuGpeB2Lo

The database website address (URL) is now displayed.

You can now choose which coding tools you would like to have displayed. To do this:

1. Click on 'Please select'.
2. Choose the coding tool and click 'Add!'.

Video: https://youtu.be/bhQuGpeB2Lo

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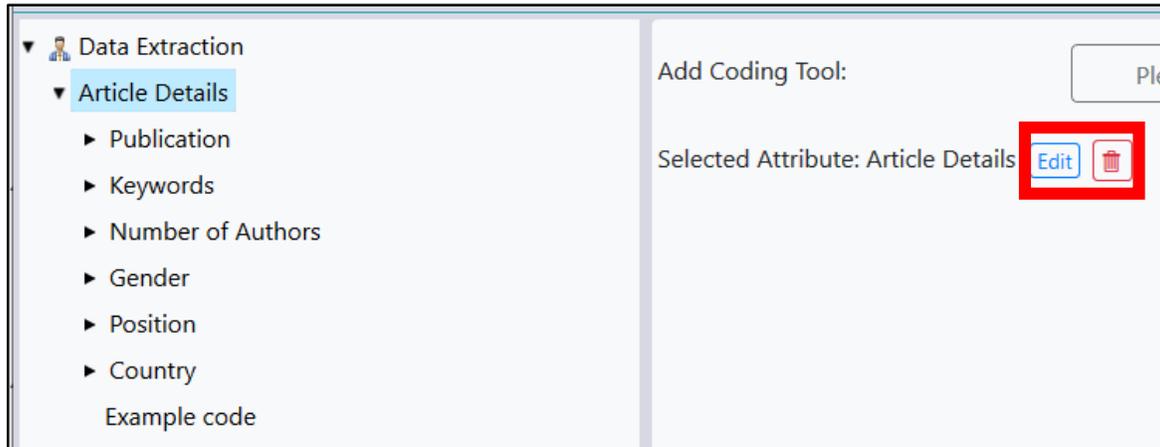
You can also choose to have certain codes not appear in your database.

➢ This does not delete the codes from your review!

1. To remove a code completely, click on the red bin icon.
2. To change the name of a code within your EPPI-Vis, click on 'Edit', change it and click on 'Save'.
   ➢ Only changes how it appears in EPPI-Vis.
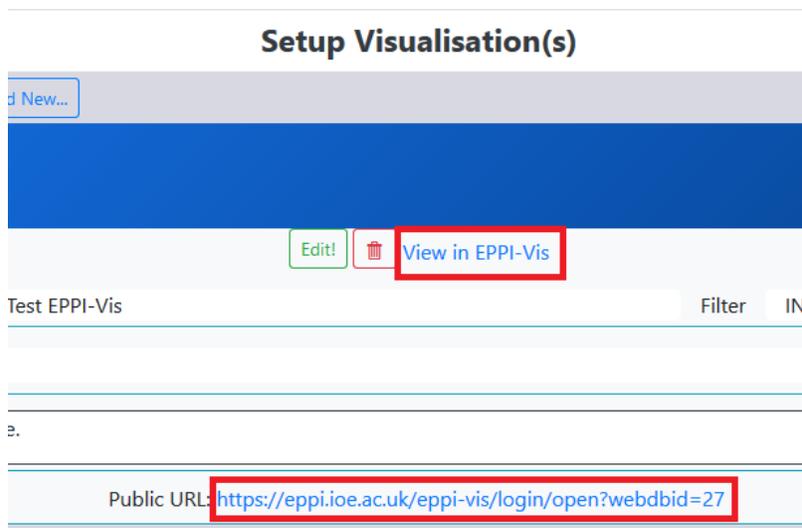
Now that your EPPI-Vis database has been setup, you can click on 'View in EPPI-Vis' or simply click on the blue URL link to see a preview.

Once you're happy with it, simply share the link.

Video: https://youtu.be/bhQuGpeB2Lo

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Q & A / Discussion

Do you have any specific questions about your own review/project?

Professional development opportunities

Introduction to EPPI-Reviewer Web
- Free online webinar
- Wednesday, 30th June 2021
- 10am-11:30am (BST)
- Register here

Scoping reviews, mapping reviews and evidence gap maps
- Online course – the University of Sheffield
- Wednesday, 7th July 2021
- Time TBA
- More info and registration here

Using Microsoft Academic in EPPI-Reviewer Web
- Free online webinar
- Friday, 23rd July 2021
- 11am-12pm (BST)
- Register here

INSTITUTE OF EDUCATION

Free EPPI-Reviewer Webinars

18 June 2021 – Creating evidence gap maps

30 June 2021 – Introduction to EPPI-Reviewer Web

23 July 2021 – Using Microsoft Academic

Dr Melissa Bond
EPPI-Reviewer Support Officer
EPPISupport@ucl.ac.uk

@misc_nerd   @EPPIReviewer

Further information

- [EPPI-Reviewer homepage](#) – sign up to a free one month trial.
- [EPPI-Mapper information](#) – includes links to example maps.
- [EPPI-Mapper app](#)
- [EPPI-Reviewer instructional video](#) on interactive evidence gap maps.
- [EPPI-Reviewer instructional video](#) on how to create an EGM using EPPI-Mapper.
- White et al. (2020) - [Guidance](#) for producing a Campbell evidence and gap map.
- Sarah & White (2018) - [Evidence and gap maps: a comparison of different approaches](#) – article.
- Information about [using Microsoft Academic Graph](#) within EPPI-Reviewer.
- [Schools and emergency remote education during the COVID-19 pandemic](#) – information and interactive evidence gap maps.
- [Schools and ERE during the COVID-19 pandemic](#) – article.

- [Mapping the field of emergency remote teaching in higher education due to COVID-19](#)

Contact Information
Dr Melissa Bond

Email: melissa.bond@ucl.ac.uk

ER Support: EPPISupport@ucl.ac.uk

Twitter: https://twitter.com/misc_nerd

Website: http://classroomelearningtools.weebly.com/

ResearchGate: https://www.researchgate.net/profile/Melissa-Bond-5

LinkedIn: https://www.linkedin.com/in/bondmelissa/

YouTube: https://www.youtube.com/user/EPPIReviewer4