

# Getting to know EPPI Reviewer

James Thomas (EPPI-Centre, UCL)

Webinar  
12/07/2016

# Outline

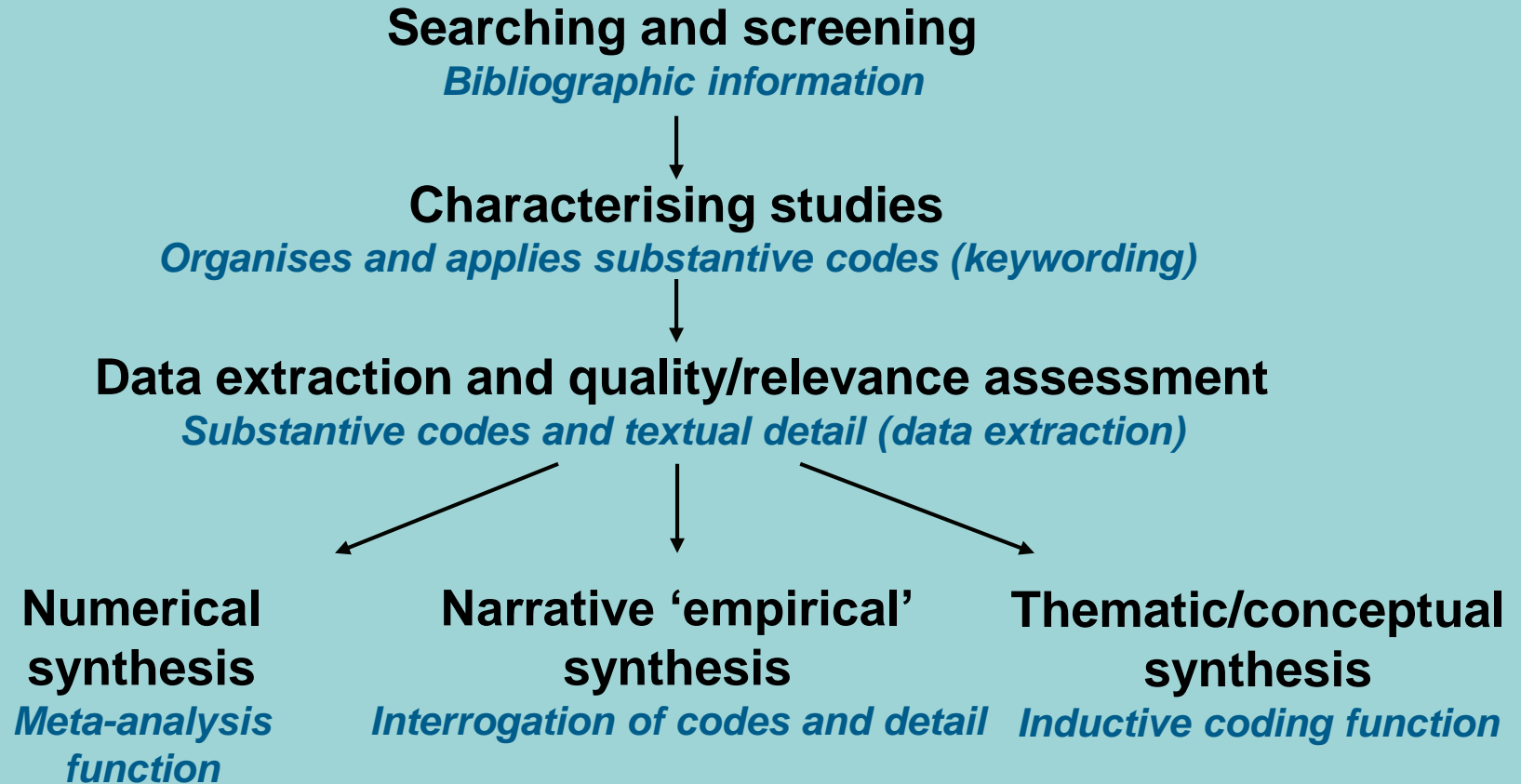
- Introductory overview of EPPI-Reviewer
- Integration with Archie and Revman
- More efficient screening using text mining & machine learning
- Quality assessment / data extraction in complex / qualitative reviews
- Advanced meta-analysis



A photograph of a park scene. In the foreground, there is a green lawn with several pigeons. A low, light-colored stone wall runs across the middle ground. Behind the wall, several people are sitting on black park benches. Some are talking, some are looking towards the camera. In the background, there are large, leafy green trees and a white building with arched windows. A small fountain with water spraying upwards is visible on the right side. The overall atmosphere is peaceful and sunny.

# A (very) quick overview of EPPI-Reviewer

# EPPI-Reviewer: web-based review management tool



- *Web-based browsing and interrogation of coding within and across reviews, and review reports and summaries*
- *Online since 2000*





# EPPI-Reviewer: How it Works

<http://eppi.ioe.ac.uk/eppireviewer4/>


1. Silverlight Web Application
2. Runs on the Desktop
3. Data comes from central server
4. Concurrent use:
  1. Data is saved in real time
  2. Last change is retained
5. Safety:
  1. Encrypted communication
  2. Backups
  3. Error Messages

Welcome to EPPI-Reviewer 4: software for systematic reviews

User Name:

Password:

[Forgot Password?](#)


 [Click Here to Create your Account](#)


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Please visit the EPPI-Reviewer 4 gateway at:

<http://eppi.ioe.ac.uk/cms/er4>

The Gateway contains: User manual, Account Manager, Forgotten Password facility, Export to RIS utility, Support Forums and much more.

[EPPI-Reviewer 4 How-To videos](#) 

 **For Cochrane Authors:** [click HERE](#) to logon with your Archie credentials

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**Latest CHANGES:** Version: 4.5.0.1 Sep 28, 2015

This release includes new statistical (meta-analysis) features, relying on the R statistical software and the Metafor package. Cochrane authors can now access EPPI-Reviewer via the new "logon via Archie" features.

[Read More...](#)

A photograph of a park scene. In the foreground, a green lawn is populated by several pigeons. A low, light-colored stone wall runs across the middle ground. Behind it, several people are sitting on black park benches. Some are talking, some are looking towards the camera. In the background, there are large, leafy green trees and a white building with arched windows. A small fountain with a single jet of water is visible on the right side. The overall atmosphere is peaceful and public.

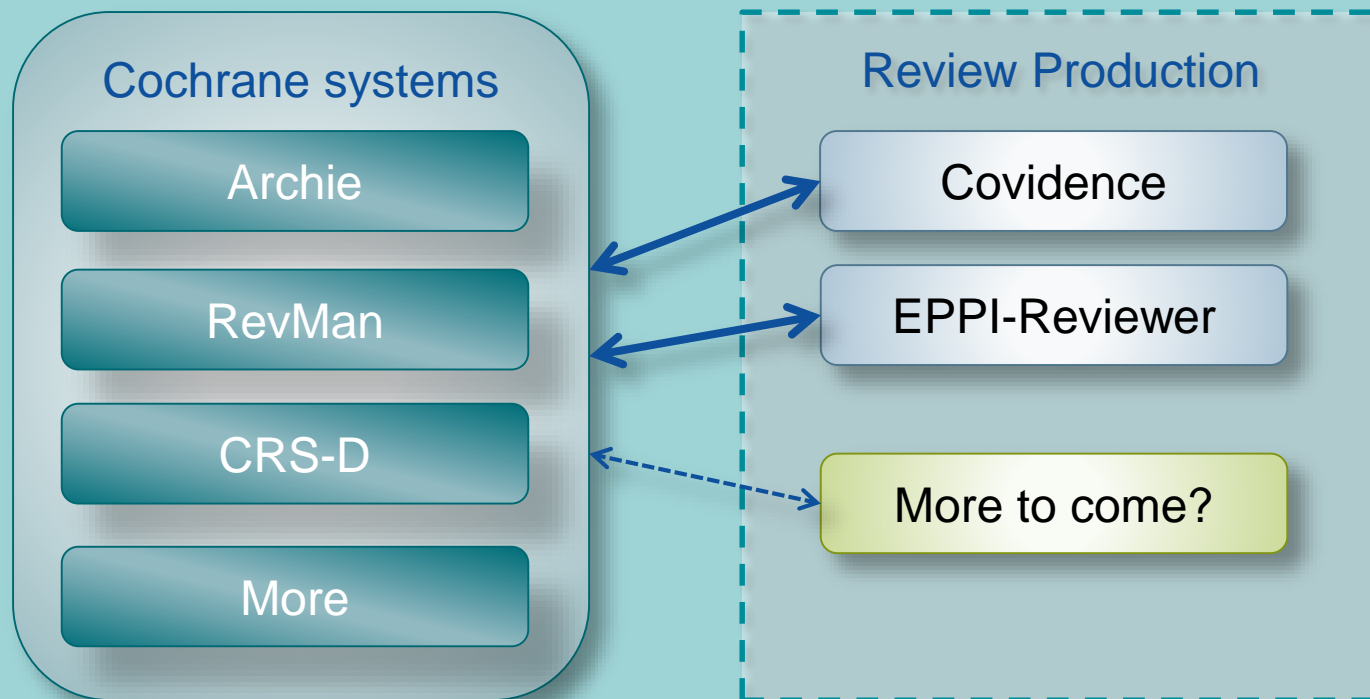
# Interaction with Archie





# Cochrane Author Support Tool (CAST) and more

Produce, write and maintain Cochrane reviews, using a range of intercommunicating tools.





# EPPI-Reviewer and Cochrane Systems

Welcome to EPPI-Reviewer 4: software for systematic reviews

User Name:



Linking Archie and EPPI-Reviewer Accounts

## Welcome to EPPI-Reviewer 4

**You have successfully authenticated through Archie.** However, your Archie Identity is not currently known to EPPI-Reviewer.

In order to work properly, EPPI-Reviewer needs to establish a link between an EPPI-Reviewer account and your Archie credentials. This can be done in two ways:

**1. Link an existing EPPI-Reviewer account to your Archie details.** Please choose this option if you already have an EPPI-Reviewer account.

You will be asked to log on again, using your EPPI-Reviewer username and password. In case you don't remember your EPPI-Reviewer details, you can retrieve your username and/or reset your password by clicking [here](#).

**2. Create a new EPPI-Reviewer account.** Please choose this option only if you don't already have an EPPI-Reviewer account.

If you have an Expired account, please do not choose this option: an expired account will work best with option 1.

**Whichever your choice, you will need to successfully complete this process only once.**

Please pick your route below:

Link to an existing account:  (Preferred)

Create new account:

[Read More...](#)



Cochrane





# EPPI-Reviewer and Cochrane Systems

## Manage reviews


Please select review

Select	Review	EPPI I	Archie CD
Undo Check Out Open	Test review for EPPI 1	457	
Check Out Open	Test review for EPPI 2	460	



Cochrane

1. Like in RevMan, you need to check it out.
2. Checked-in reviews are ReadOnly in EPPI-Reviewer
3. Archie controls who can open the review.
4. **No Other Data is Exchanged!**

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Machine learning / text mining for  
**reducing workload during  
citation screening**



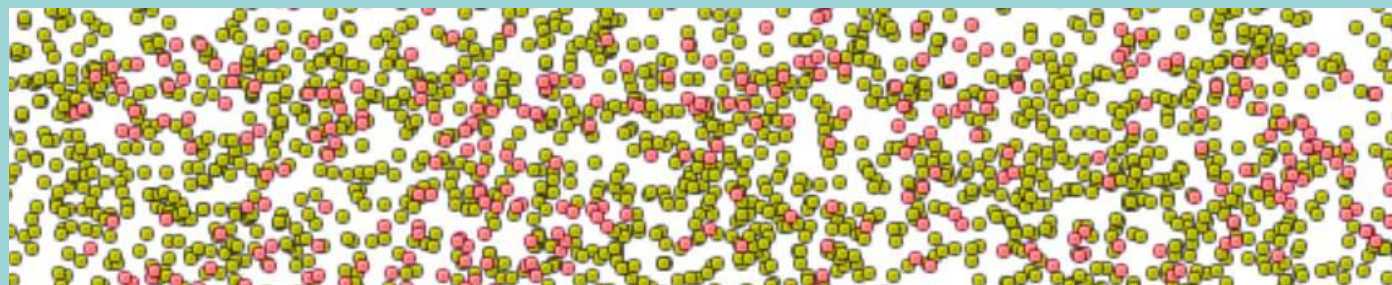


The screenshot shows the EPPI-Reviewer4 (V.4.2.1.1) interface. The browser address bar shows <http://eppi.ioe.ac.uk/eppireviewer4/>. The main window displays 'Document details' for 'Item 14 in current list'. The 'Title' is 'Smoking habits in secondary school students.' The 'Author(s)' are 'Damas C; Monteiro S; Marinho A; Fernandes G'. The 'Month' is 'January' and the 'Year' is '2009'. The 'Abstract' text is visible below. On the left, a 'Codes' panel is open, showing a list of screening criteria under 'Screening Criteria'. One criterion, 'T&A: Include Quantitative 98+ prevalence of sources', is checked. At the bottom, a 'Files' section shows a table with columns for 'Title', 'Document', 'Extension', 'Delete', 'View text', and 'Download'.

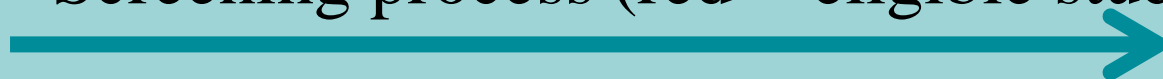
1. Read title & abstract
2. Click include / exclude
3. Click 'next' and move on to the next reference
4. Repeat...

# Screening prioritisation: Changing the distribution of studies

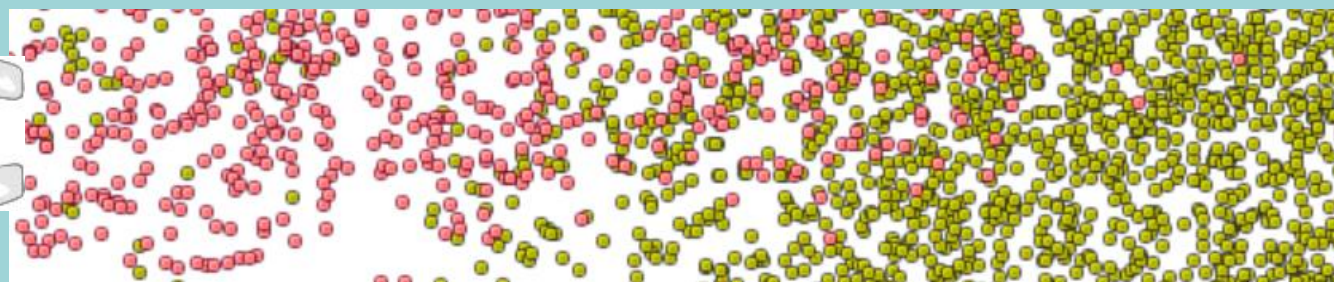
Traditional screening



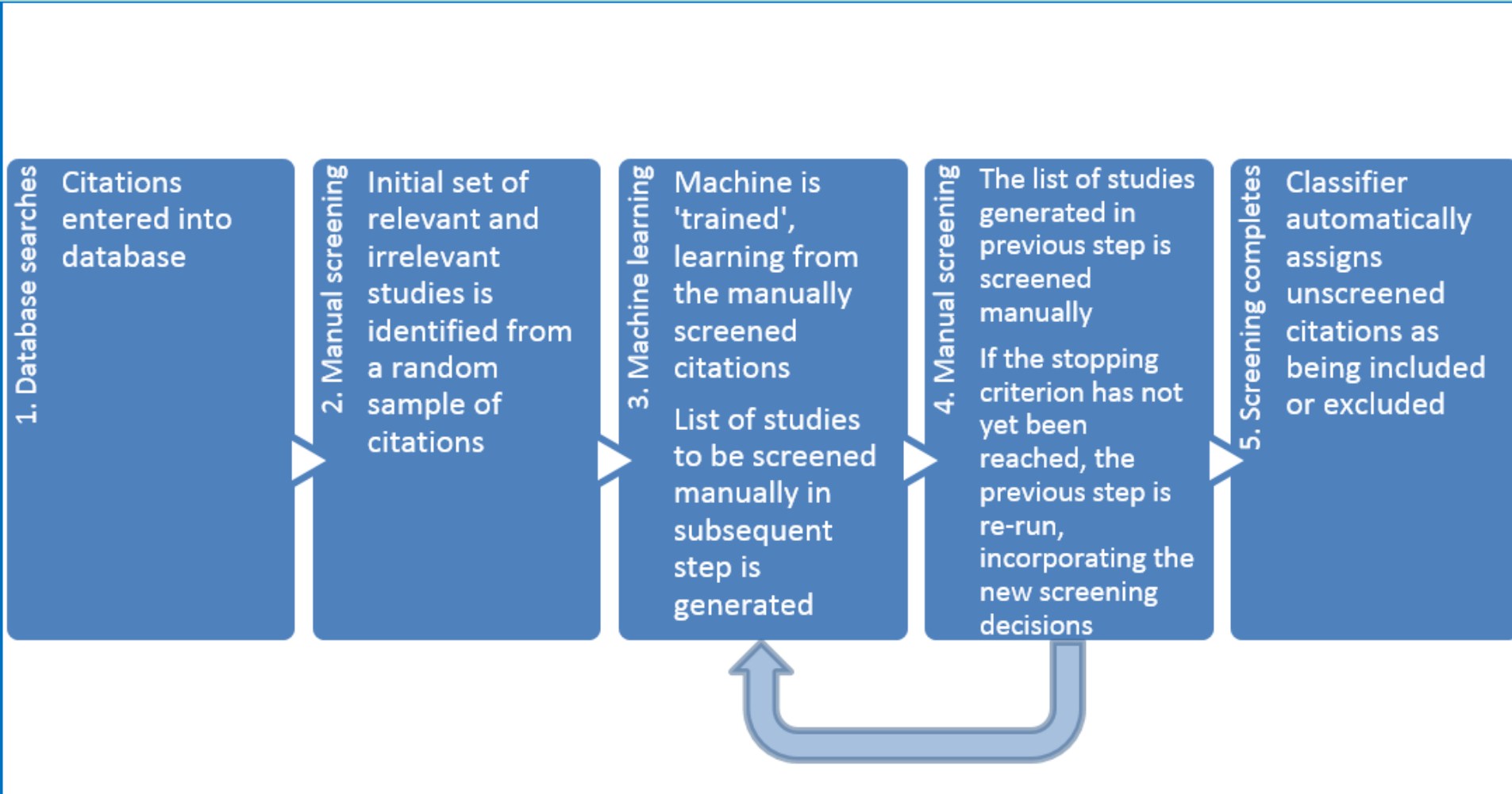
Screening process (red = eligible study)



Screening aided by text mining







## The result

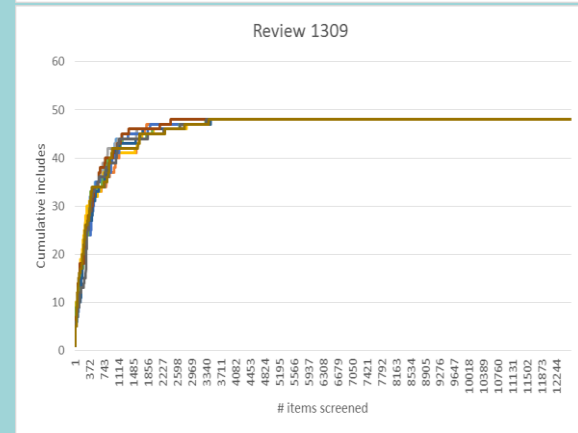
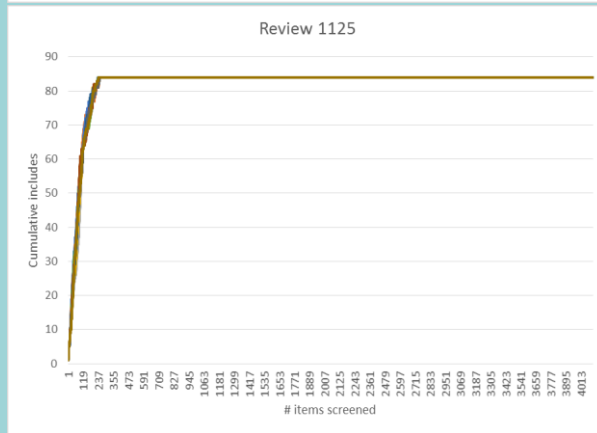
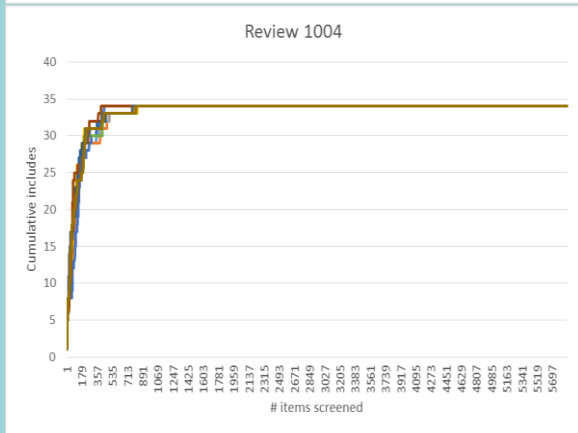
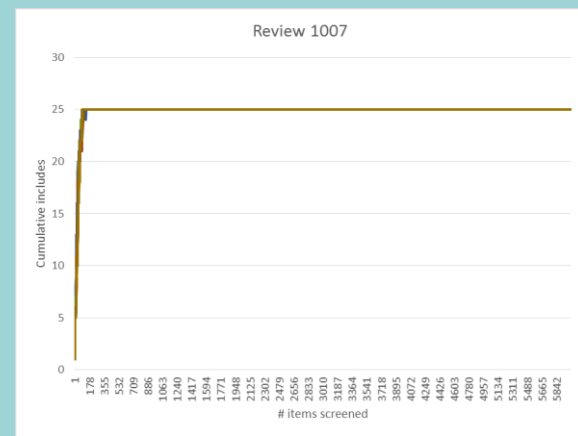
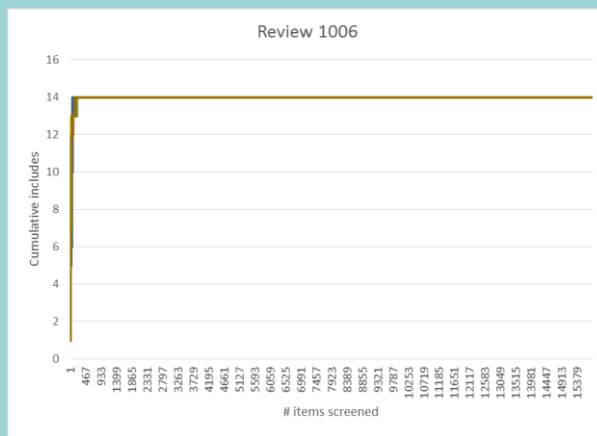
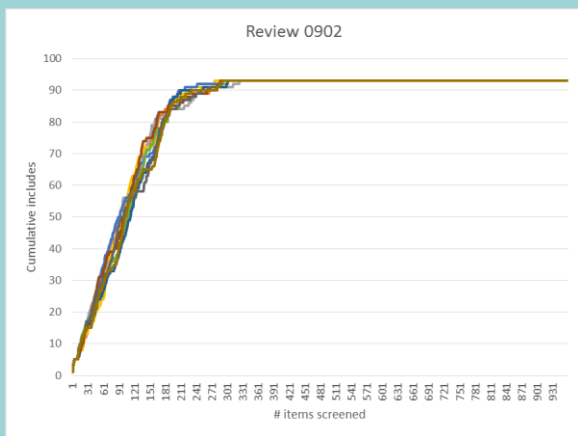
- The result is an ordered list of titles and abstracts
- Those that are *most similar* to the ones already marked as 'include' are at the top
- The person screening continues to screen as usual, but behind the scenes the titles and abstracts remaining are re-ordered regularly (e.g. every 25 items)



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Automatic classification  
**Does it work?**

# e.g. reviews from Cochrane Heart Group



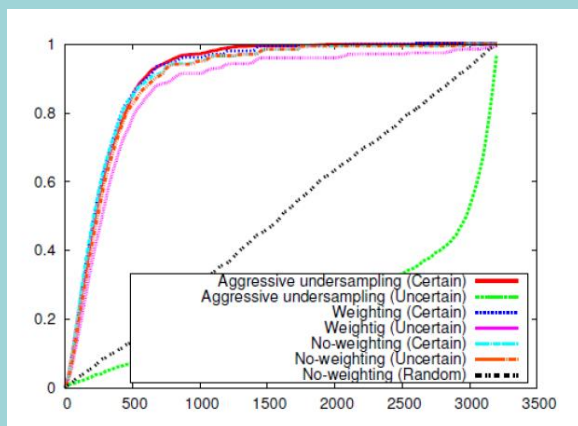
# Comparison of clinical vs public health

- Miwa M, Thomas J, O'Mara-Eves A, Ananiadou S (2014) Reducing the screening burden in systematic reviews through active learning on imbalanced data sets. *Journal of Biomedical Informatics*



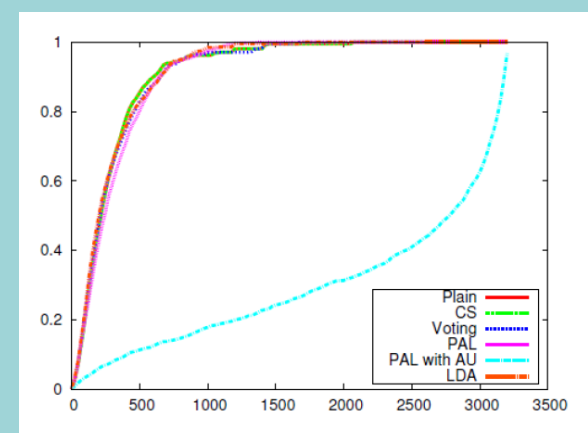
# Comparison: two reviews

## ‘Basic’ methods

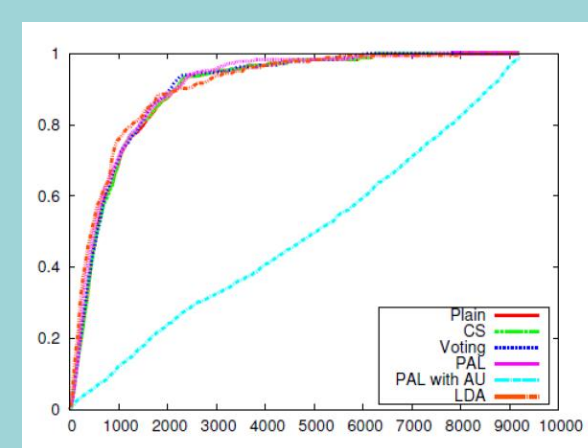
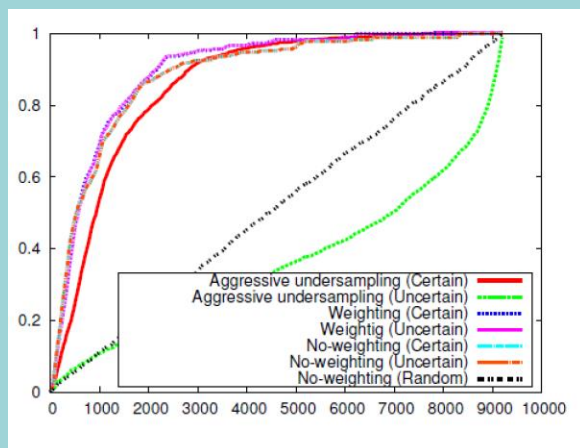


“Micro nutrients”

## With enhancements



“Cooking skills”

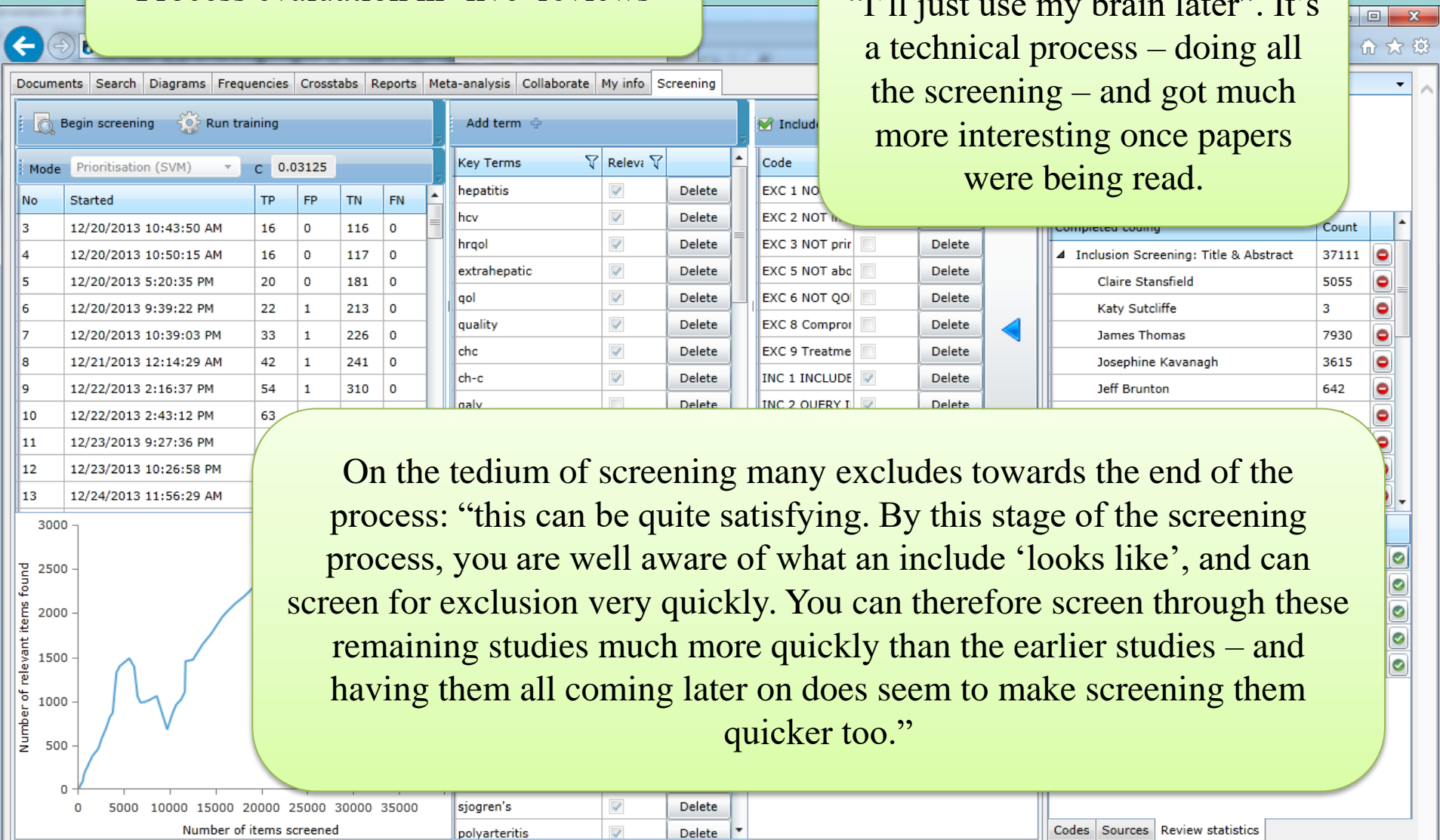




Process evaluation in 'live' reviews

"I'll just use my brain later". It's a technical process – doing all the screening – and got much more interesting once papers were being read.

On the tedium of screening many excludes towards the end of the process: "this can be quite satisfying. By this stage of the screening process, you are well aware of what an include 'looks like', and can screen for exclusion very quickly. You can therefore screen through these remaining studies much more quickly than the earlier studies – and having them all coming later on does seem to make screening them quicker too."

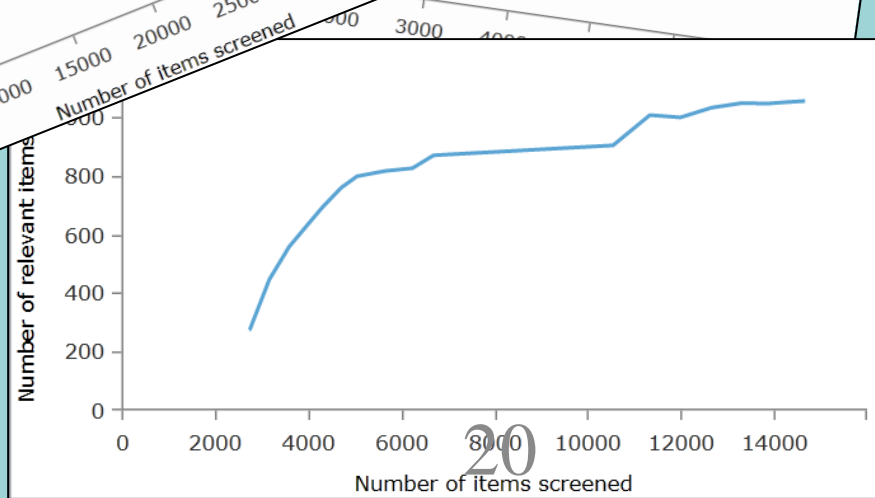
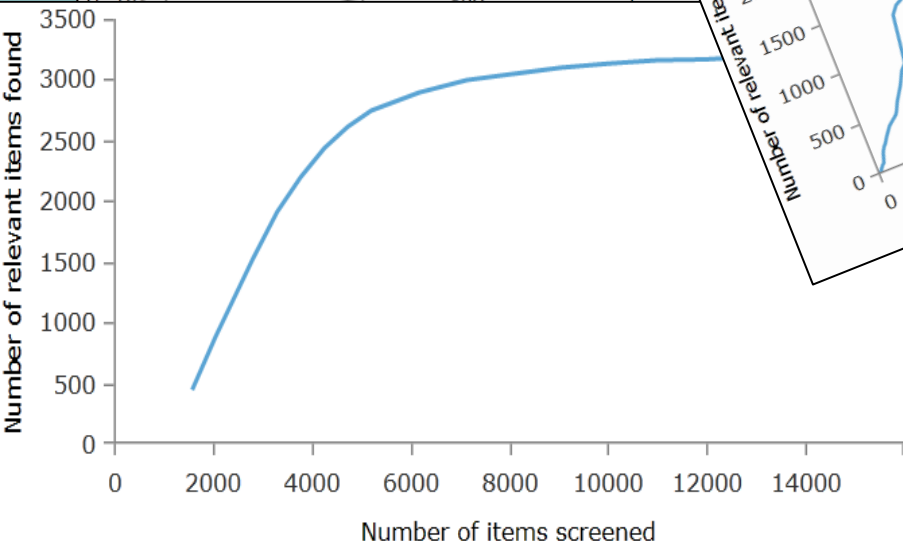
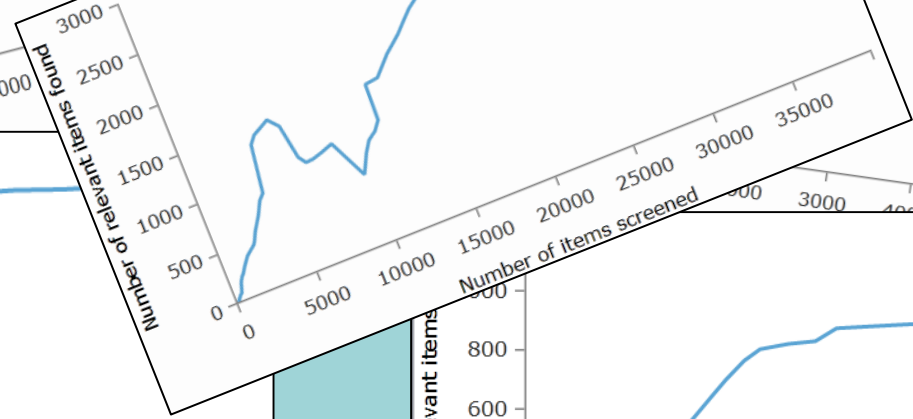
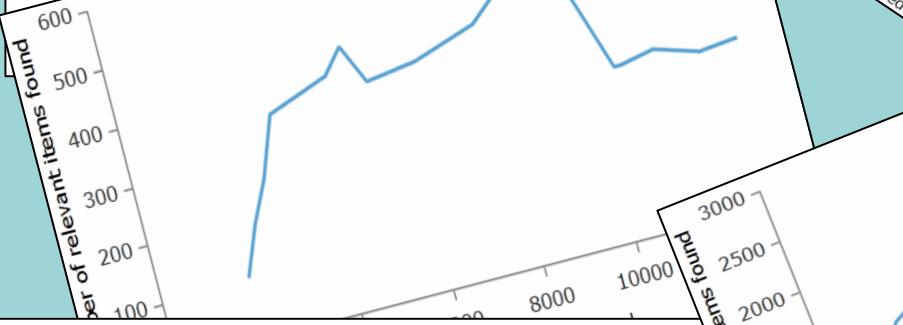
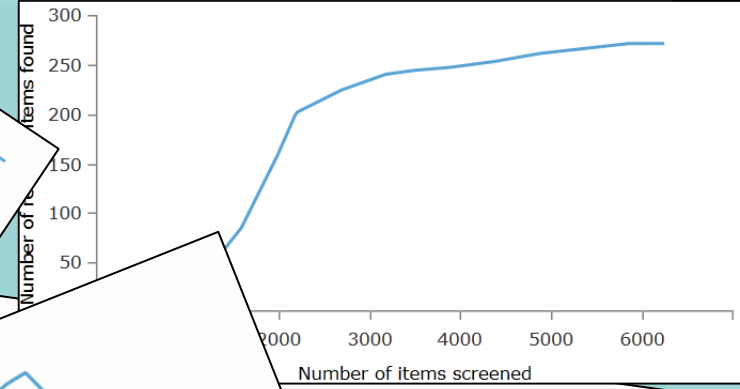
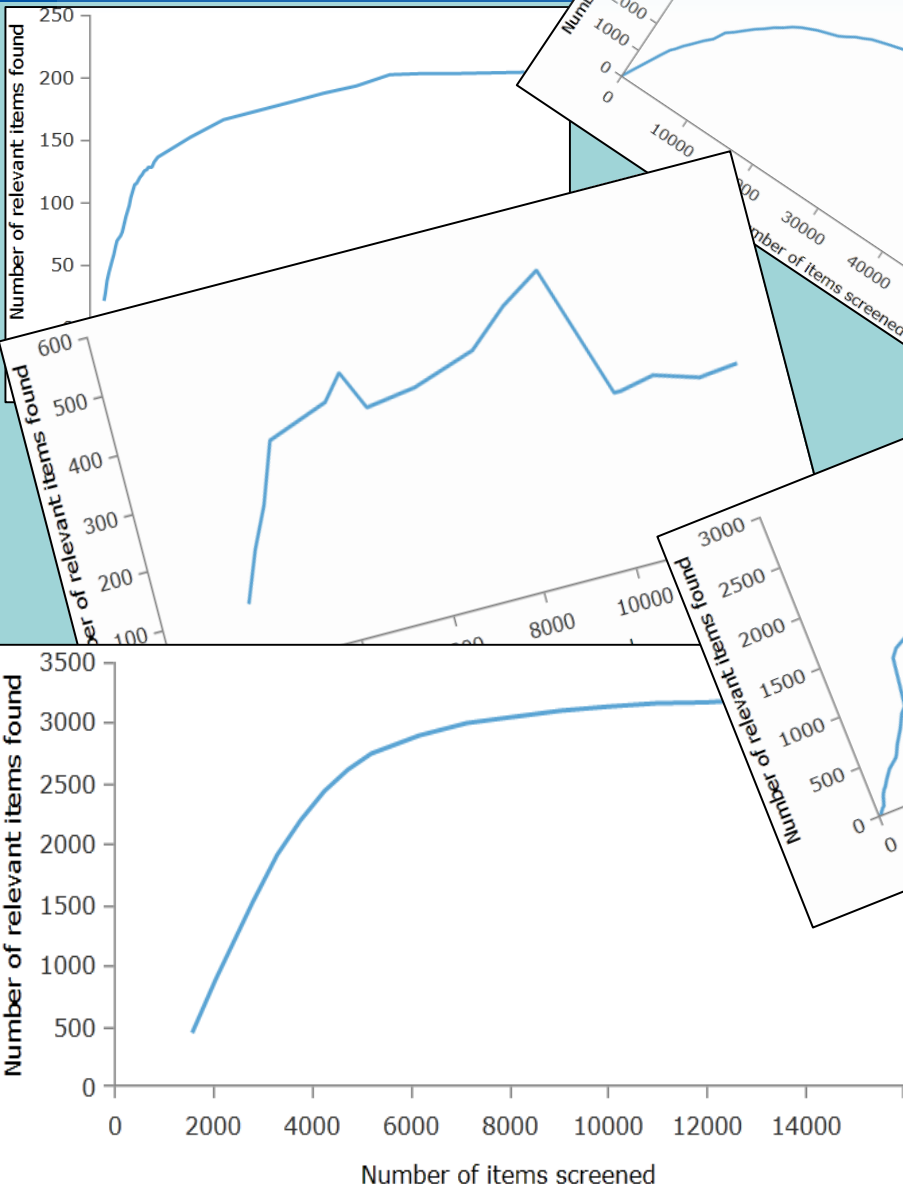


# Using the technology in live reviews: not all textbook graphs!

EPPI-Centre



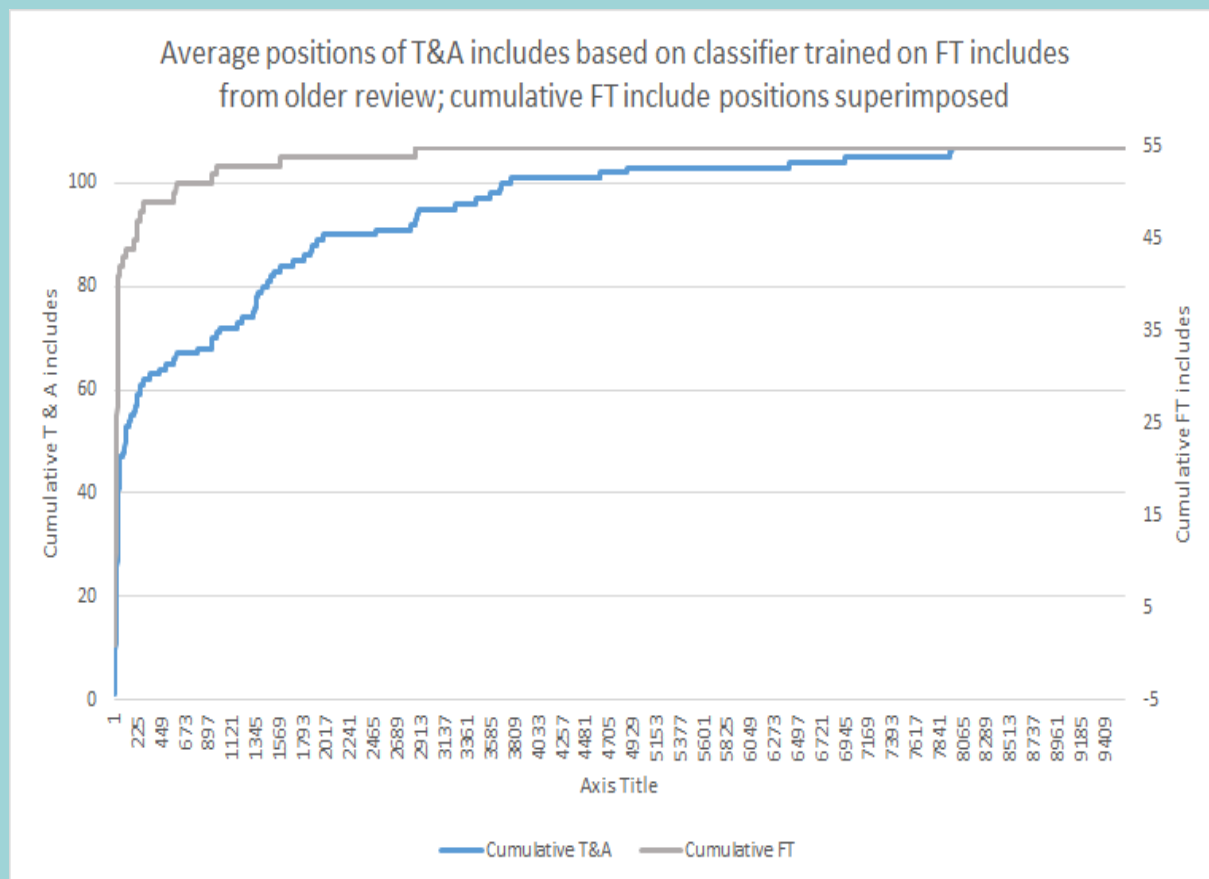
UCL





# ... and for updating existing reviews

Weightman A,  
 Thomas J, Baker P,  
 Lovie-Toon Y,  
 Francis D, O'Mara-  
 Eves A (2014) Text  
 mining for screening  
 efficiency? Testing  
 within a Cochrane  
 public health review.  
 Poster presented at  
 Cochrane  
 Colloquium 2014,  
 Hyderabad

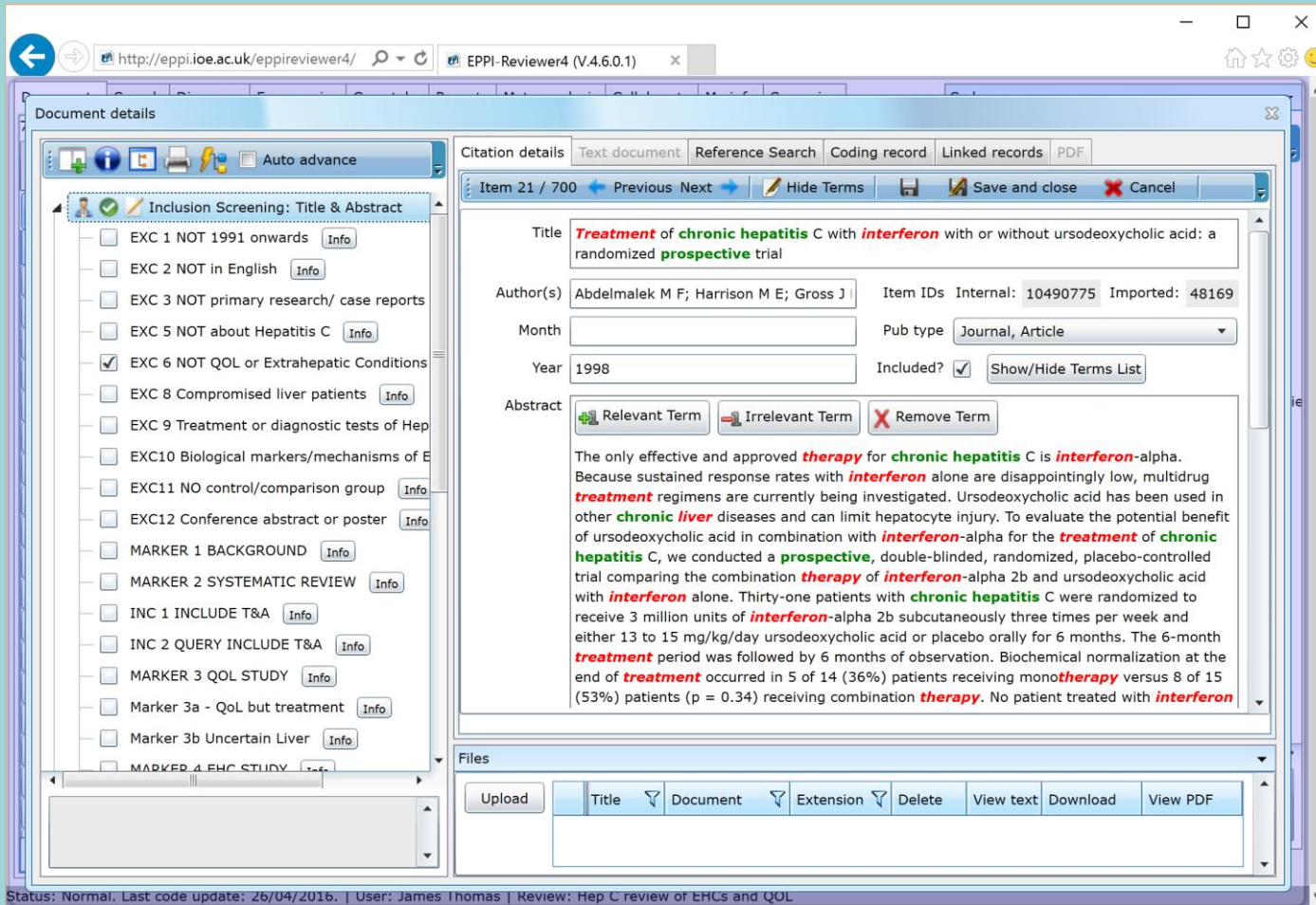


A vibrant, sunlit park scene with lush green trees and a well-maintained lawn. In the foreground, several pigeons are scattered on the grass. A low stone wall separates the foreground from a central area where people are sitting on benches. A fountain with a single jet of water is visible on the right. In the background, a large, light-colored building with arched windows is partially visible through the trees.

Active learning:  
**Screening in  
EPPI-Reviewer**



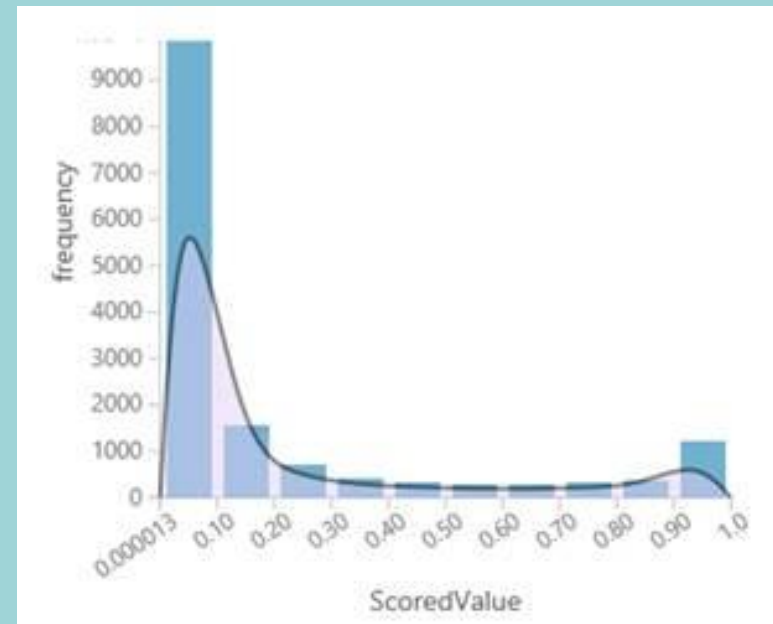
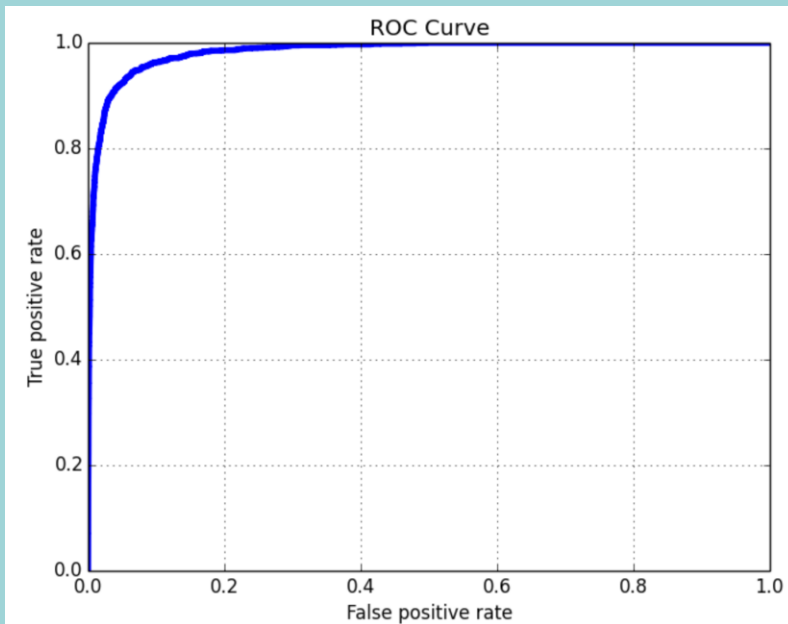
# Citation screening in EPPI-Reviewer



The screenshot displays the EPPI-Reviewer4 (V.4.6.0.1) interface. On the left, a 'Document details' sidebar lists various exclusion (EXC) and inclusion (INC) criteria. The 'Inclusion Screening: Title & Abstract' section is active, with 'EXC 6 NOT QOL or Extrahepatic Conditions' checked. The main window shows 'Citation details' for 'Item 21 / 700'. The title is 'Treatment of chronic hepatitis C with interferon with or without ursodeoxycholic acid: a randomized prospective trial'. The authors are Abdelmalek M F, Harrison M E, and Gross J. The document is from 1998, published in a 'Journal, Article'. The abstract text is visible, discussing the effectiveness of interferon-alpha for chronic hepatitis C. At the bottom, a 'Files' section includes buttons for 'Upload', 'Title', 'Document', 'Extension', 'Delete', 'View text', 'Download', and 'View PDF'. The status bar at the very bottom indicates 'Status: Normal. Last code update: 26/04/2016. | User: James Thomas | Review: Hep C review of EHCs and QOL'.



# Identifying RCTs automatically – coming soon



# Acknowledgements

- Many people... including: Sergio Graziosi, Jeff Brunton, Alison O'Mara-Eves, Ian Shemilt, Claire Stansfield (EPPI-Centre / EPPI-Reviewer and text mining / automation / information science)

# Quality assessment / data extraction





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# Meta-analysis





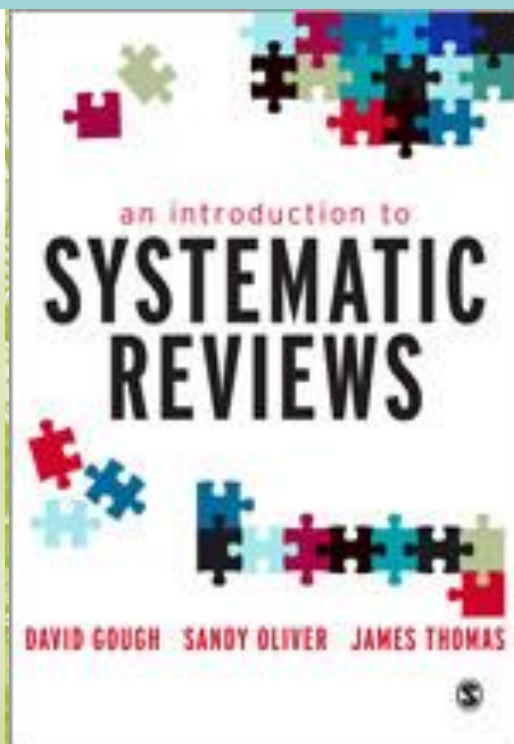
## Thank you

SSRU website: <http://www.ioe.ac.uk/ssru/>  
SSRU's EPPI website: <http://eppi.ioe.ac.uk>

Email  
[j.thomas@ioe.ac.uk](mailto:j.thomas@ioe.ac.uk)



The EPPI-Centre is part of the Social Science Research Unit at the UCL Institute of Education, University College London



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