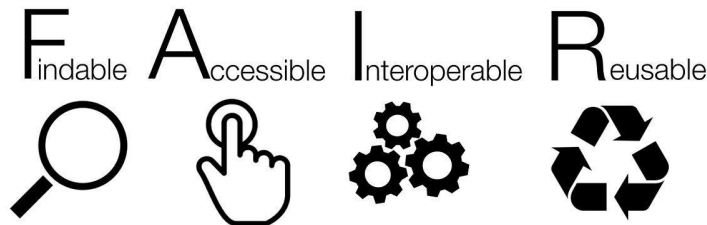




Archaeology  
Data Service



# Data reuse, digital literacy and the Roman Rural Settlement Project: Structured deposition in Roman Britain

*Dr Nicky Garland*

*Training and Communications Manager, Archaeology Data Service*

*TRAC Webinar Series - 7th March 2023*

# Survey

[https://york.qualtrics.com/jfe/form/SV\\_9n7ML6qwlIXpbKu](https://york.qualtrics.com/jfe/form/SV_9n7ML6qwlIXpbKu)

'To better understand the level of data literacy of the audience for this webinar and ascertain their level of engagement with the Roman Rural Settlement Project archive.'

- Anonymised information.
- All personal information kept in line with the [ADS Privacy Policy](#) and will be destroyed after a period of 12 months.
- None of the questions are mandatory.



Our survey says...



## FAIR Data

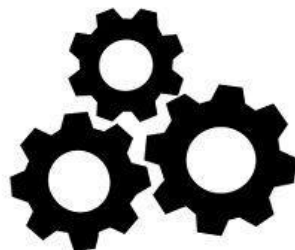
**F**  
Findable



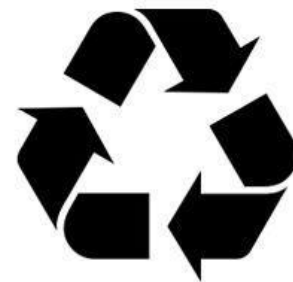
**A**  
Accessible



**I**  
Interoperable



**R**  
Reusable



## FAIR Data in (archaeological) practice

**Findable** Use of persistent identifiers (e.g. DOI, ORCID), Appropriate metadata, data available via searchable resources.

**Accessible** Free and open access, long term preservation.

**Interoperable** Use of standardized vocabularies (e.g. FISH, Getty Thesaurus), References with and between publications.

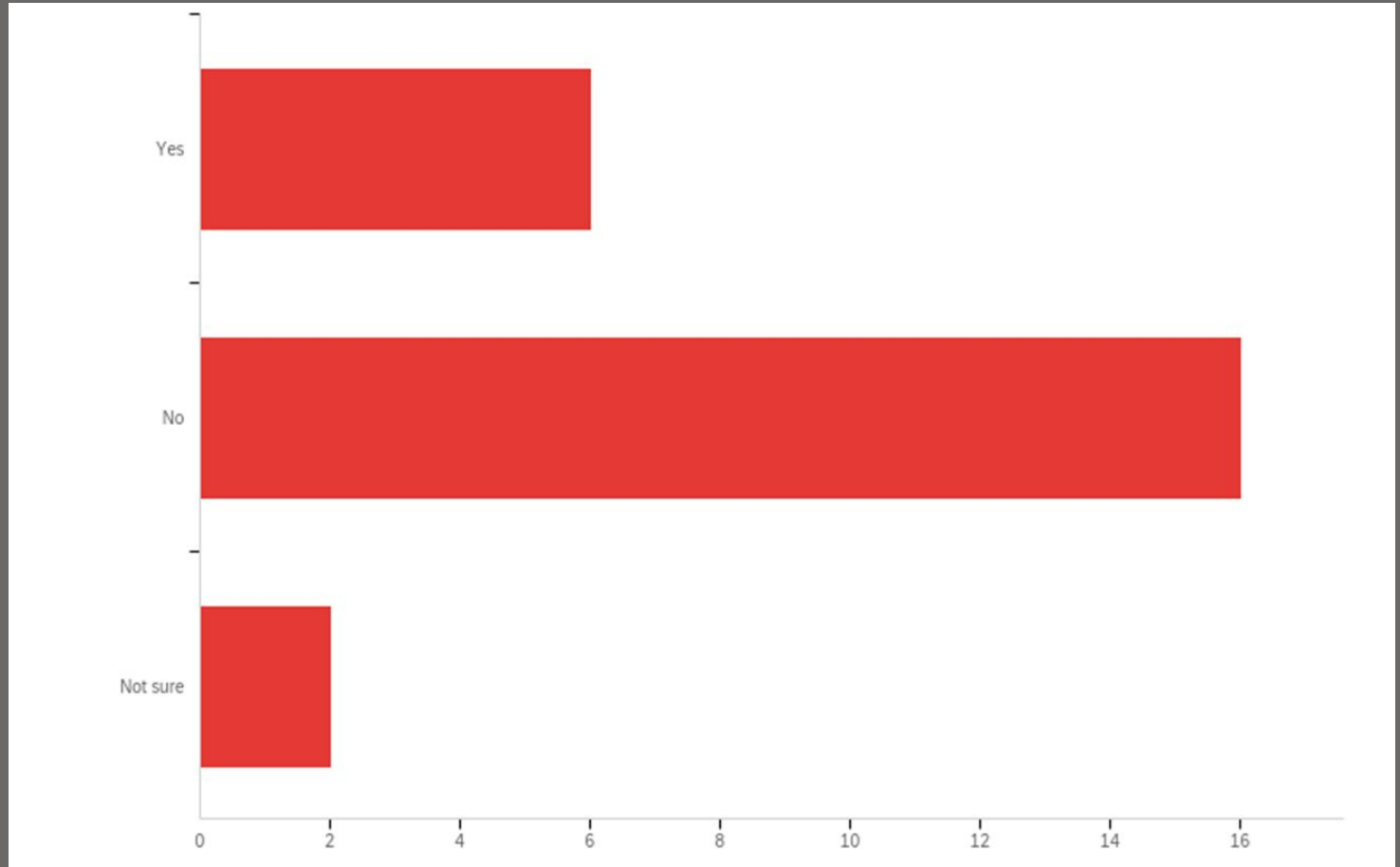
**Reusable** Issued with a data licence, necessary descriptive and contextual information for reuse.

## Digital archive / Data repository

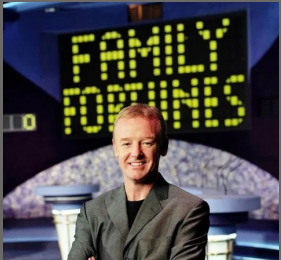
- To collect, store and preserve digital data.
- Ensure that each archive is accompanied by rich metadata (data that provides info on data).
- Catalogue archives using provide persistent identifiers.
- Standardised practices for collection, preservation, etc.
- Different repositories for different usage, geographic location, data type (i.e. [ADS](#), [tDAR](#), [Zenodo](#)).

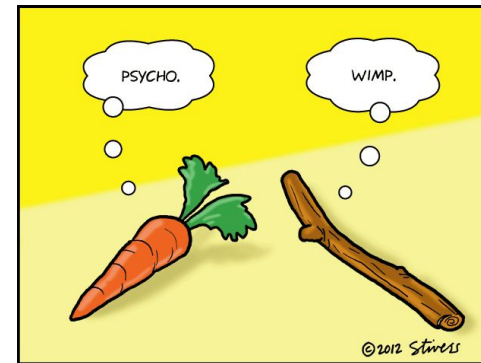


As part of your own research have you ever deposited data in an online repository?



Our survey says...



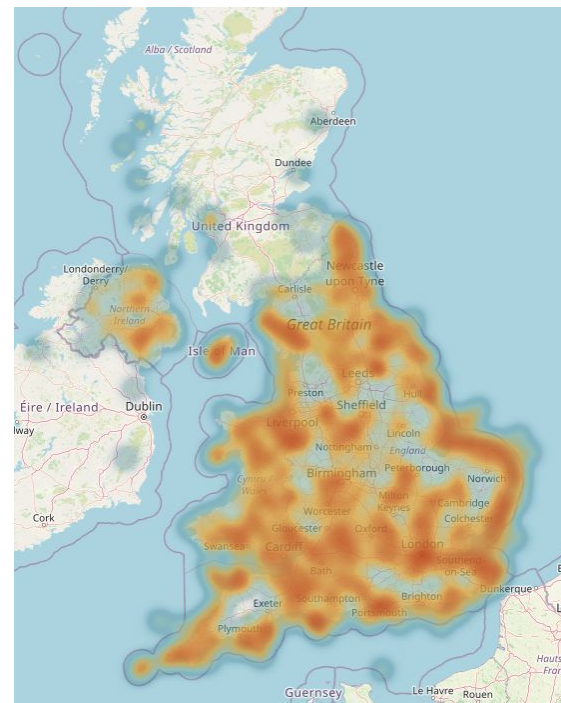


## Why share and archive data?

- Professional standards (CifA)
- Publicly funded research – ethical responsibility to archive data in open access format [archaeology is destructive!]
- Its increasing becoming a requirement for grant funders (including UKRI and ERC)!
- Reproducibility – the ability to test archaeological arguments and explanations.
- Avoids duplication of effort – saves time and money.
- Advances research and innovation.
- Encourages collaboration.

## The Archaeology Data Service

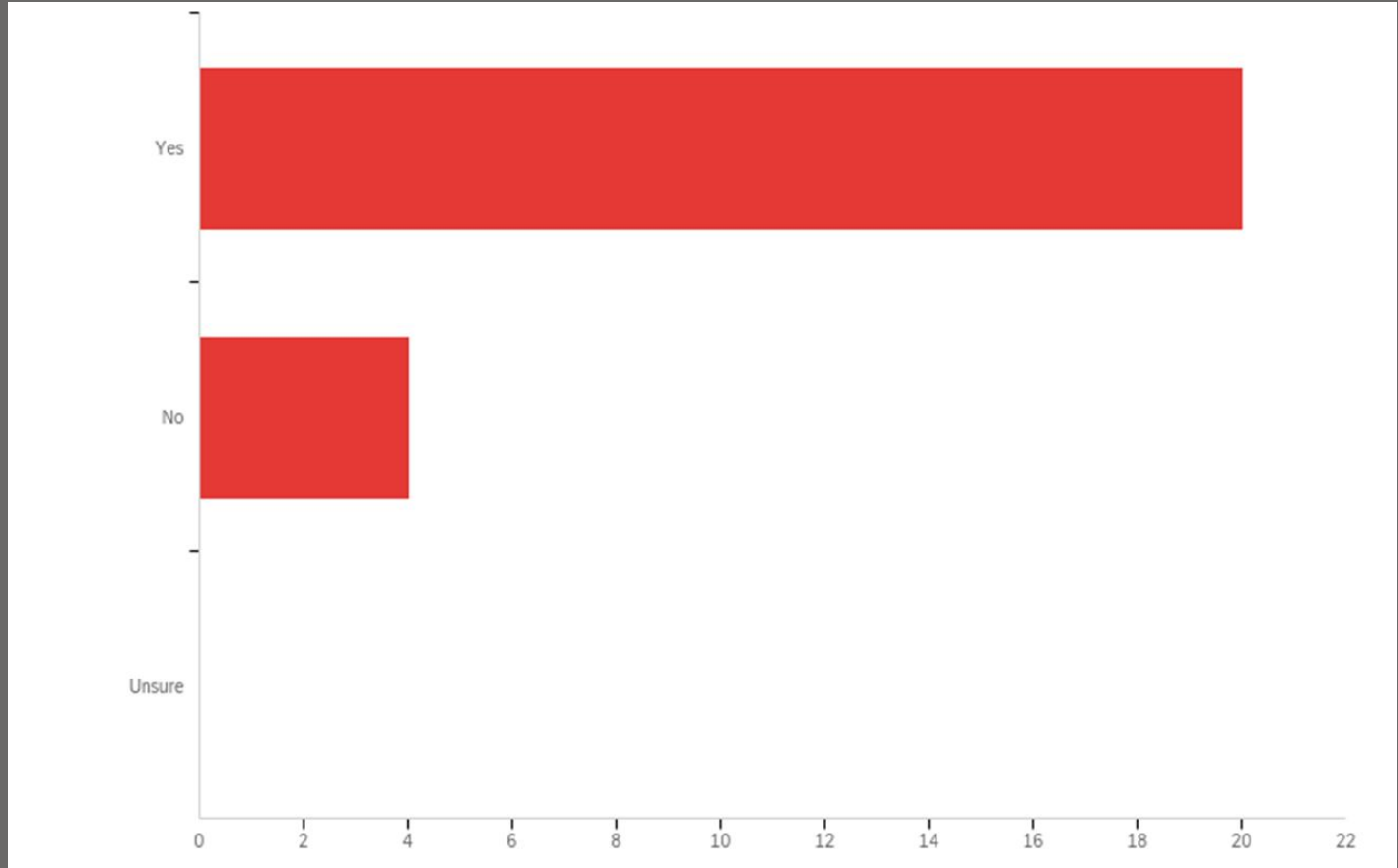
- Accredited digital archive for UK heritage data
- Founded in 1996 – 27 years of experience
- Based at the University of York
- Data from UK-based projects
- Data from Industry and Higher Education.
- Archive over 3.5 million unique digital objects
- ...In 312 unique formats
- Linked open data – Ariadne Portal
- For more information see our [Annual Reports](#)



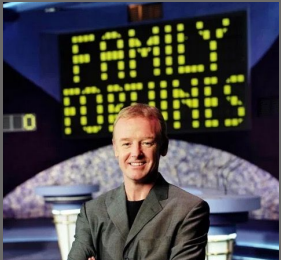
Heat map of ADS records from the [Ariadne Portal](#)



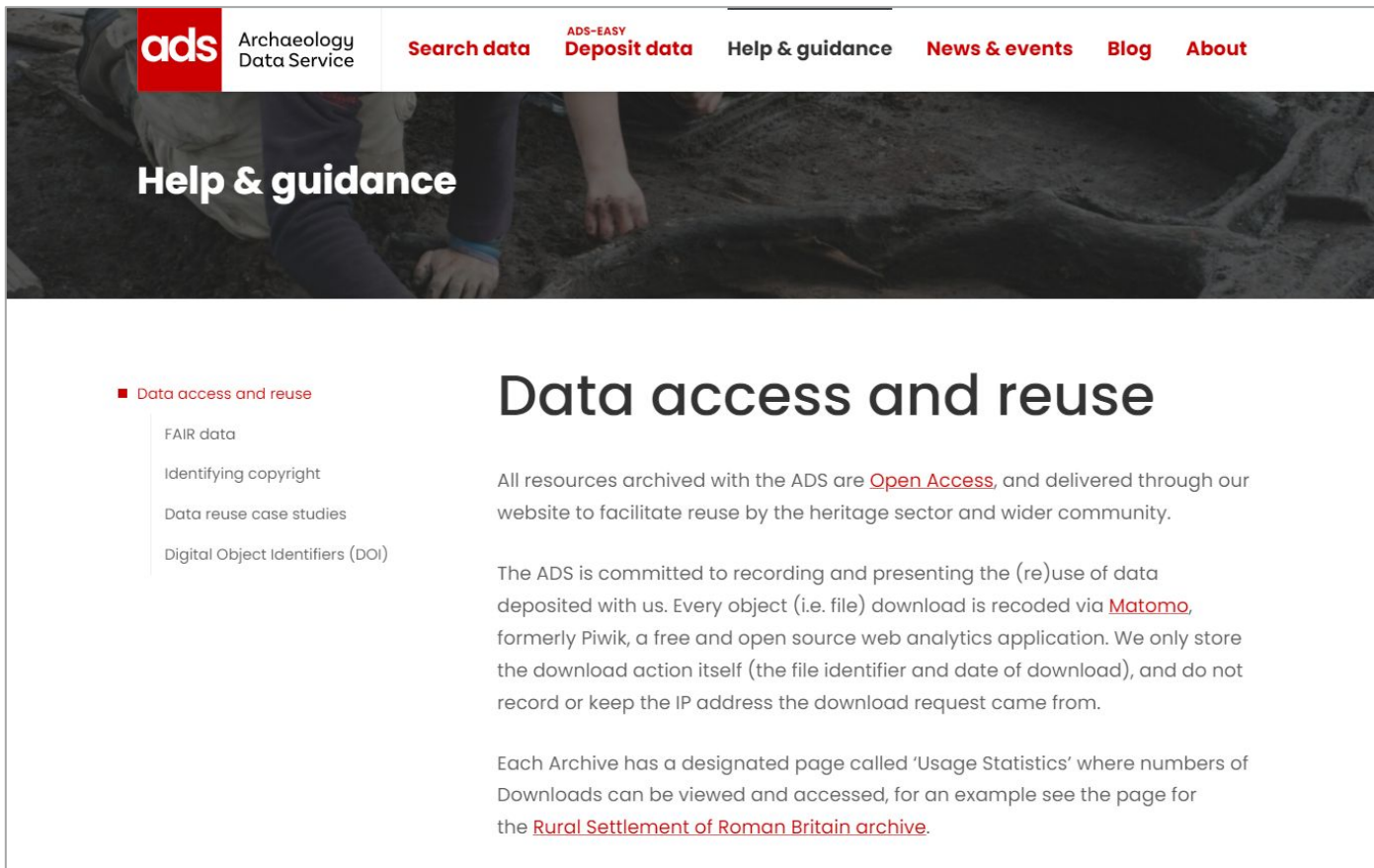
Have you ever used any resources offered by the Archaeology Data Service?



Our survey says...



# ADS: Data Access and Reuse



The screenshot shows the top navigation bar of the ADS website with links for 'Search data', 'Deposit data', 'Help & guidance', 'News & events', 'Blog', and 'About'. Below the navigation is a large banner image of an archaeological excavation with the text 'Help & guidance'. The main content area features a sidebar with a list of links under the heading 'Data access and reuse', including 'FAIR data', 'Identifying copyright', 'Data reuse case studies', and 'Digital Object Identifiers (DOI)'. The main text area contains a large heading 'Data access and reuse' followed by three paragraphs of text explaining the service's commitment to open access, data recording, and usage statistics.

**ads** Archaeology  
Data Service

[Search data](#) [Deposit data](#) [Help & guidance](#) [News & events](#) [Blog](#) [About](#)

## Help & guidance

■ [Data access and reuse](#)

- [FAIR data](#)
- [Identifying copyright](#)
- [Data reuse case studies](#)
- [Digital Object Identifiers \(DOI\)](#)

# Data access and reuse

All resources archived with the ADS are [Open Access](#), and delivered through our website to facilitate reuse by the heritage sector and wider community.

The ADS is committed to recording and presenting the (re)use of data deposited with us. Every object (i.e. file) download is recoded via [Matomo](#), formerly Piwik, a free and open source web analytics application. We only store the download action itself (the file identifier and date of download), and do not record or keep the IP address the download request came from.

Each Archive has a designated page called 'Usage Statistics' where numbers of Downloads can be viewed and accessed, for an example see the page for the [Rural Settlement of Roman Britain archive](#).

So everyone will reuse the data we hold, right?

IF YOU BUILD IT, THEY WILL COME

....RIGHT?

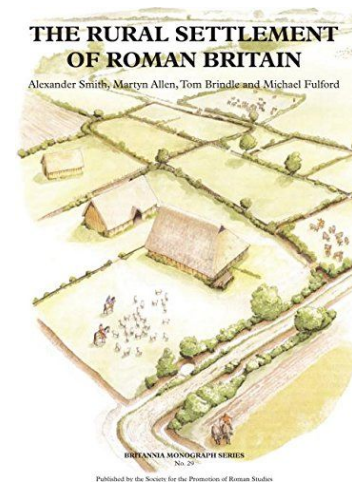


## Data reuse

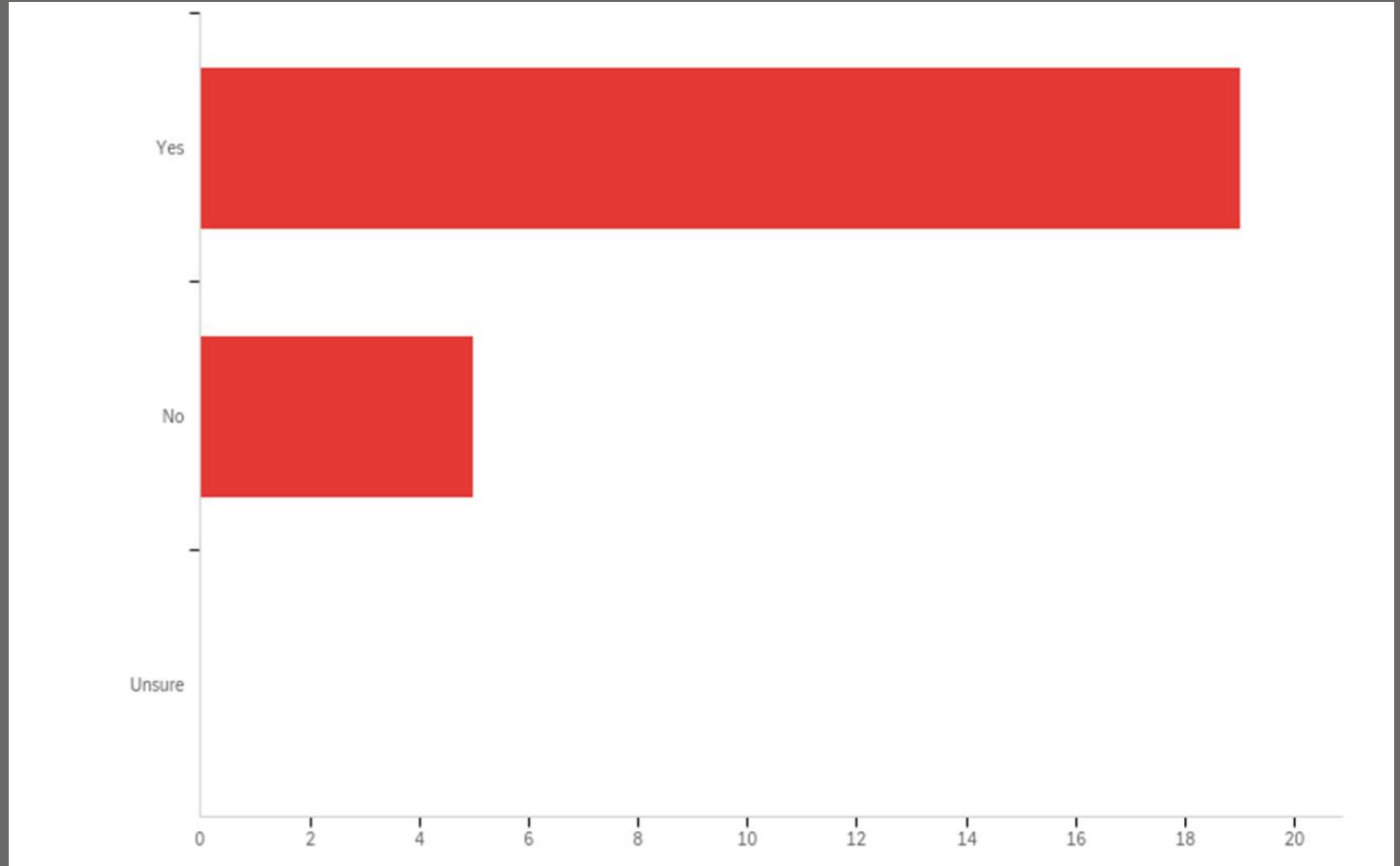
- Research suggests low levels of data sharing and low levels of data reuse (Huggett [2016](#), [2017](#), [2019](#), Sobotkova [2018](#))
  - Has closely examined archives held by the ADS
  - Ethical and legal obligation to archive archaeological data but no one taking it out!
  - Physical archives and non-archaeological archives suffer similar reuse problems.
  - Key question - what are we using this data for? (education, research)
  
- ADS Digital Data Reuse Awards 2015 - [found it difficult to attract entries](#)
- Reuse cases difficult to find - use of Digital Object Identifiers [Note: PLEASE USE DOI's]
- Example - The Rural Settlement of Roman Britain

## The Rural Settlement of Roman Britain

- Collaborative project between University of Reading, Cotswold Archaeology and Archaeology Data Service from 2012–18.
- Funded by The Leverhulme Trust and Historic England.
- Database for the excavated evidence for the rural settlement of Roman Britain.
- Both traditional publications and unpublished 'grey literature' from developer-funded excavations.
- Outputs: 3 x volumes (now open access) and interface and datasets available via ADS ([Britannia Monograph Series](#))



Have you ever viewed the Roman Rural Settlement Project online resource?



Our survey says...





- Special map interface
- Filter by site type, date, evidence (incl small finds, coins, animal bone, environmental remains)
- Links to grey literature reports held on ADS (through OASIS)



**Export**

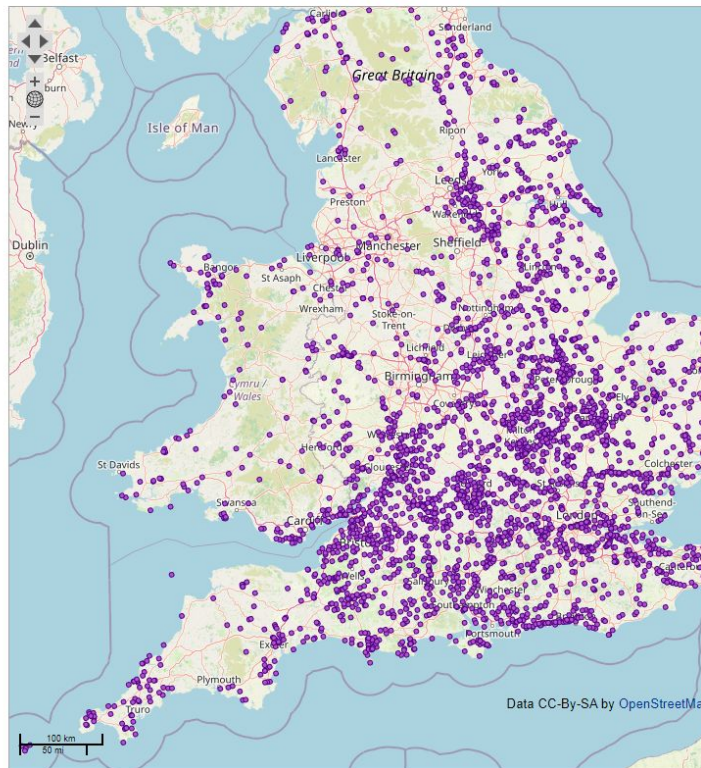
Use the Export button below to create a PNG of your current map view (note: Internet Explorer does not support this function)

Export Map

To save the map, right click on the image and select 'Save image as'

**Tips:**

- Click on the icon to return to the original extent
- Click on a point to view site name and link to the full record
- To zoom in on a specific area: hold down the left-mouse button and the SHIFT key, and draw a rectangle using your mouse



**Legend and Layer control**

Click on the [Key](#) icon to see information and symbols for base mapping layers used in this project

**Base Layer**

- OpenStreetMap
- OS Terrain: 50m grid resolution

**Overlays**

- All sites
- Farms
- Farms: complex
- Farms: enclosed
- Farms: unenclosed
- Field system
- Roadside settlement
- Funerary site
- Romano-Celtic temple
- Shrine
- Iron production site
- Other industry site
- Pottery production site
- Salt production site
- Tile production site
- Vicus
- Villa
- Village
- Samian pottery
- Amphora
- Mortaria
- 1 Coins
  - 1-10
  - 10-50
  - 50-100

**Filter Sites by date**

Use the search box to filter rural sites by a specific date, for example 43 or 410

Year:



## Data Download

- All database tables (csv format)
- All accompanying metadata
- Database relationship diagram (how each database tables relates to one another)

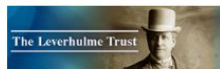
### The Rural Settlement of Roman Britain: an online resource

Martyn Allen, Nathan Blick, Tom Brindle, Tim Evans, Michael Fulford, Neil Holbrook, Lisa Lodwick, Julian D Richards, Alex Smith, 2015. (updated 2018) <https://doi.org/10.5284/1030449>. How to cite using this DOI

Introduction  
Overview  
Downloads  
Query  
Map  
Metadata  
Usage Statistics

Data copyright © University of Reading unless otherwise stated

This work is licensed under the ADS Terms of Use and Access.



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[Send e-mail enquiry](#)


#### Resource identifiers

ADS Collection: 1352  
DOI: <https://doi.org/10.5284/1030449>  
How to cite using this DOI



#### Downloads

Database metadata (ddl)	CSV	31 Kb
Database metadata (faunal ageing conversion tables)	CSV	1 Kb

	Database entity relationship diagram	PNG	101 Kb
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#### Rural settlement of Roman Britain - database

_lkup_general_environment	CSV	1 Kb
_lkup_non-domestic_structures	CSV	1 Kb
_lkup_site_type_minor	CSV	1 Kb
_lkup_site_type_mjor	CSV	1 Kb
rrs_associd	CSV	131 Kb
rrs_brooch_data	CSV	273 Kb
rrs_burial_data	CSV	802 Kb
rrs_coins_data	CSV	355 Kb
rrs_core_data	CSV	415 Kb
rrs_faunal_ageing_data	CSV	377 Kb
rrs_faunal_ageing_data_phase	CSV	20 Kb
rrs_general_environment	CSV	10 Kb
rrs_geology	CSV	127 Kb
rrs_grey_literature	CSV	386 Kb
rrs_non_domestic_structures	CSV	31 Kb
rrs_other_finds	CSV	1.44 Mb
rrs_plans	CSV	116 Kb
rrs_plant_data	CSV	661 Kb
rrs_plant_data_phase	CSV	24 Kb
rrs_pottery_data	CSV	1.03 Mb
rrs_publications	CSV	518 Kb
rrs_site_data	CSV	3.48 Mb
rrs_site_t_major	CSV	124 Kb
rrs_site_t_minor	CSV	126 Kb
rrs_zooarch_data	CSV	838 Kb
rrs_zooarch_data_phase	CSV	71 Kb

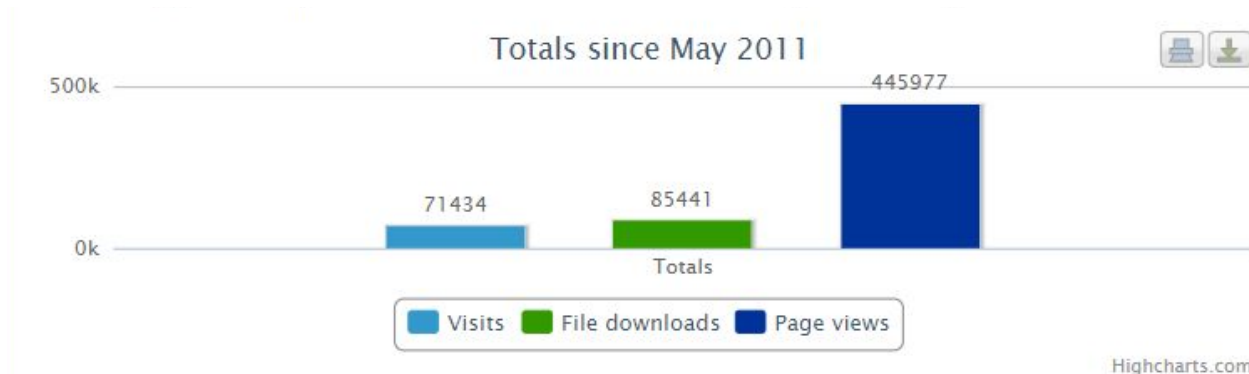
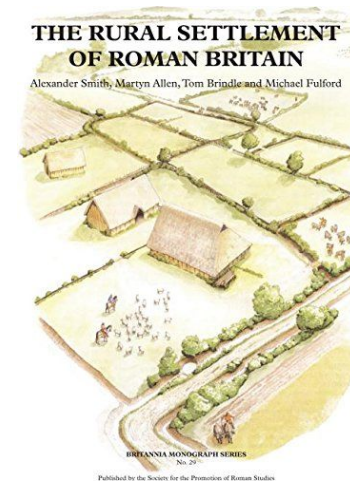
Martyn Allen, Nathan Blick, Tom Brindle, Tim Evans, Michael Fulford, Neil Holbrook, Lisa Lodwick, Julian D Richards, Alex Smith (2018)  
The Rural Settlement of Roman Britain: an online resource [data-set]. York: Archaeology Data Service [distributor]

<https://doi.org/10.5284/1030449>



## Data Reuse – The Roman Rural Settlement Project

### Usage Statistics



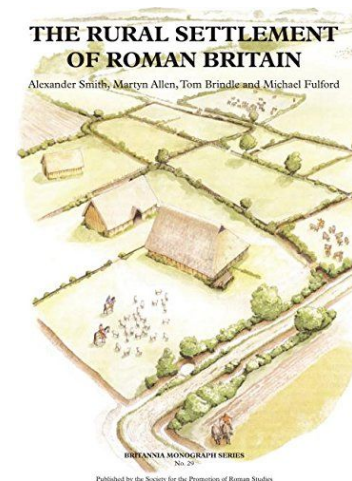
Statistics start from May 2011 but if the values are zero to start with they are not shown. Zero values after the start of use for the archive are shown.

## Data Reuse – The Roman Rural Settlement Project

### Citation Statistics [dataset]

Searched multiple datasets – Google Scholar, Web of Science

- Total number of citations = **29**
- Unknown (couldn't access publications) = 2
- False citations (not relevant/misuse of DOI) = 2
- Citations for project (general) = 10
- Citations from authors of project = 5
- Citations for reuse of data = **10** (3 from doctoral research)



**Not all projects are visible.....**

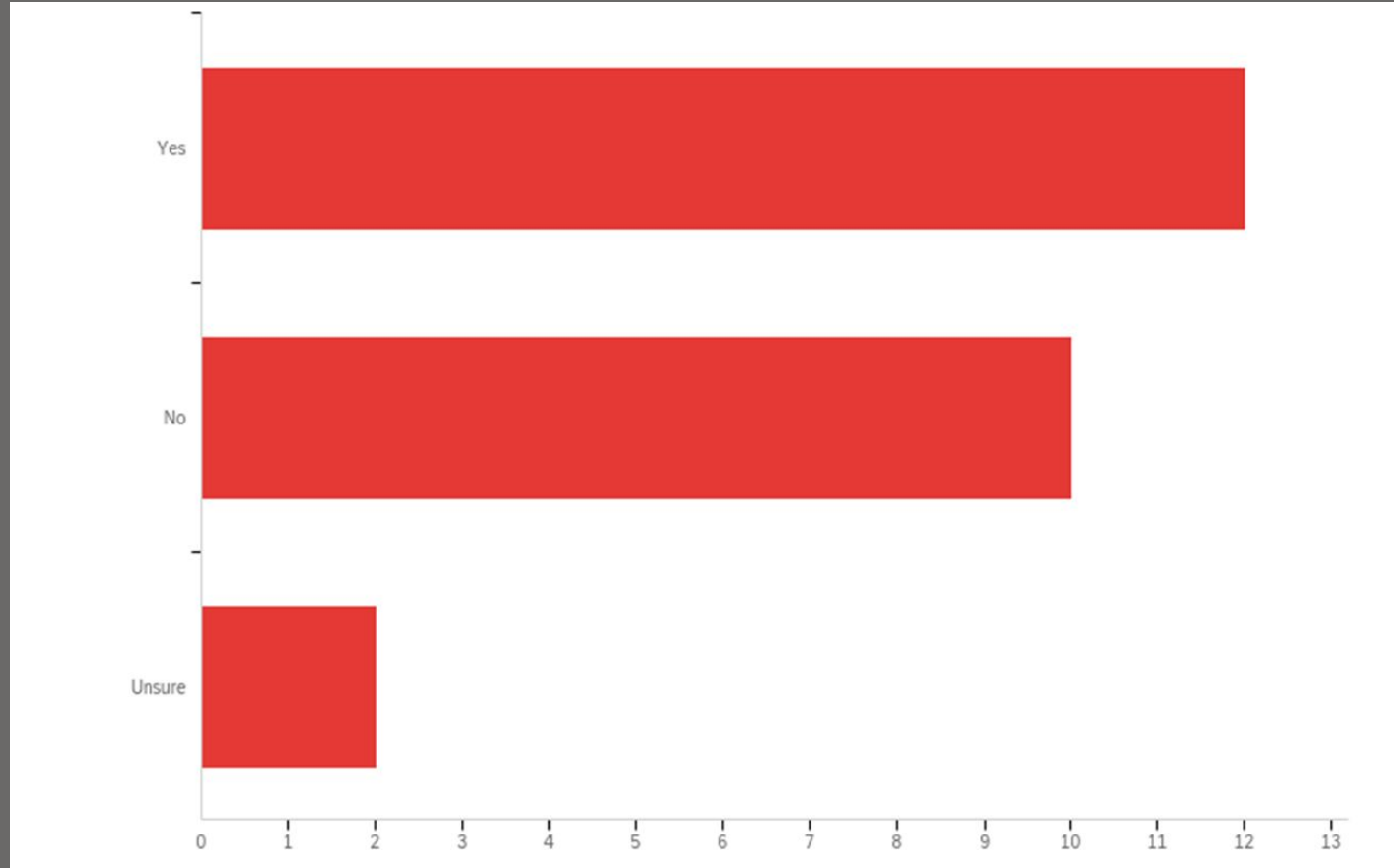


## **Data Reuse – The Roman Rural Settlement Project**

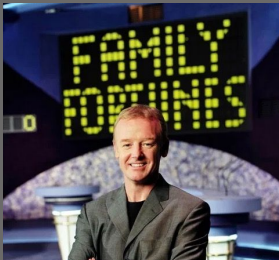
### **Latin Now**

- Dr Alex Mullen (PI) – University of Nottingham
- European Research Council (ERC) funded project – 2017 to present
- Interdisciplinary project linking sociolinguistics, epigraphy and archaeology to write social history
- Collates data from multiple projects (RIB online, PAS) including Roman Rural Settlement Project – Beta version available

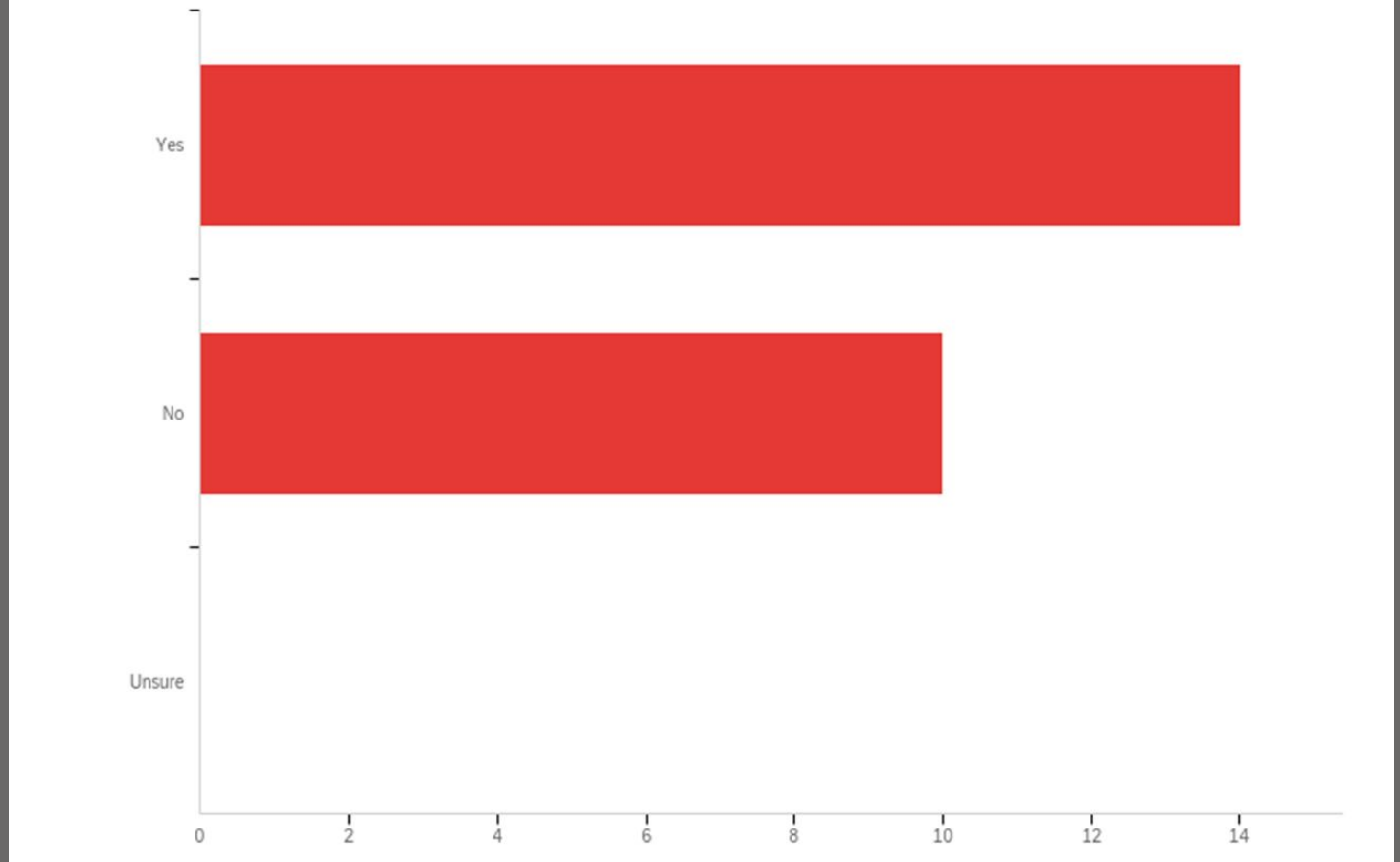
Have you ever downloaded data from the Roman Rural Settlement Project online resource?



Our survey says...



Have you ever used data from the Roman Rural Settlement Project as part of your own research?



Our survey says...

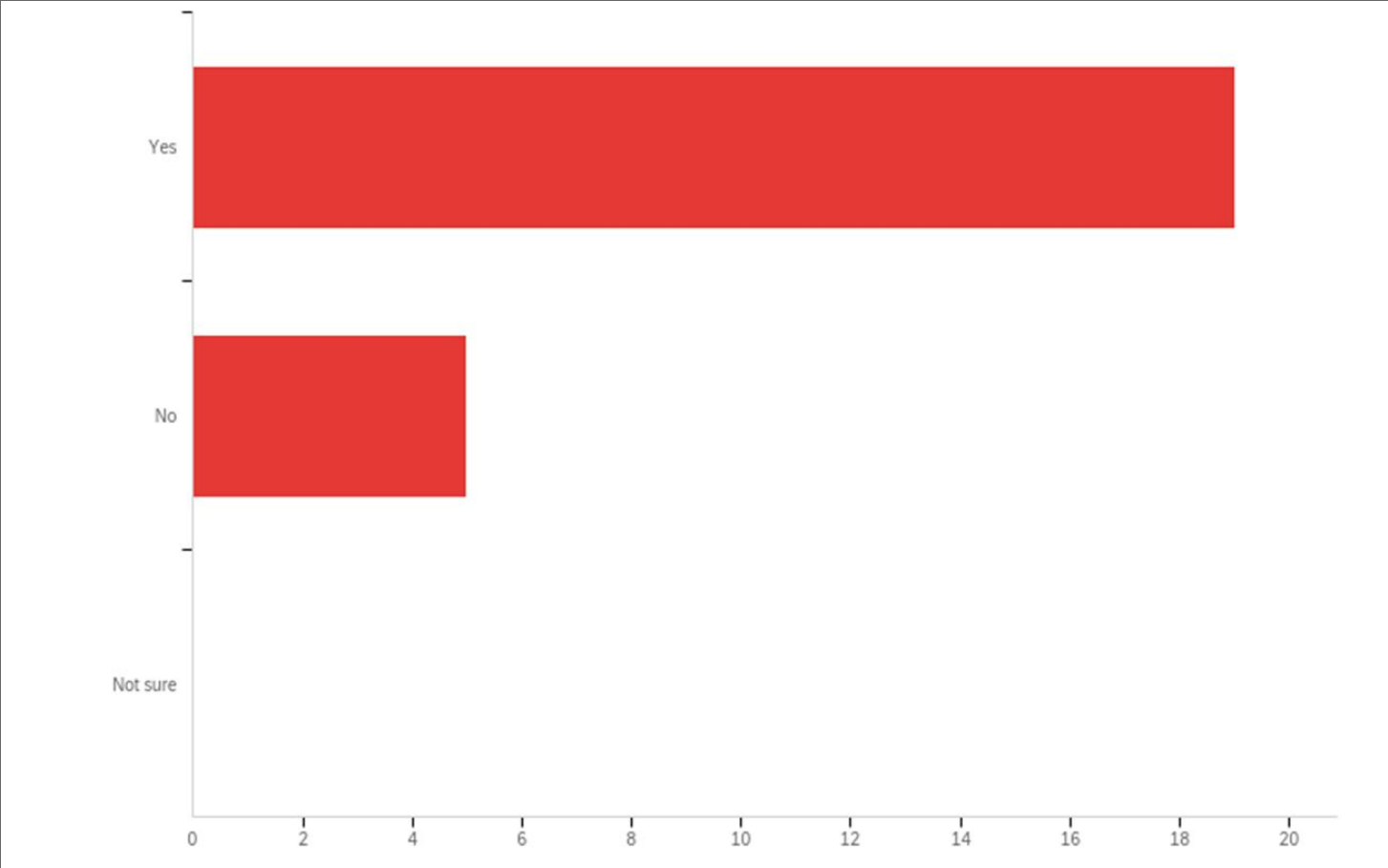


## Why Reuse data?

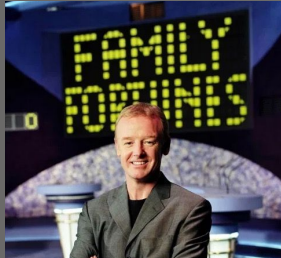


- Archaeological investigation is inherently destructive.
- Data collection is time consuming, costly and (sometimes) boring!
- To provide a baseline or context for your own research.
- To improve your own skills through exposure to other data collection methods, tools and analysis.
- Reusing past datasets can help focus research on gaps.
- Greater ability to draw from multiple sources will enable researchers to answer more complex questions.

In your own research work, have you used secondary research data from an online repository that was collected by other researchers?

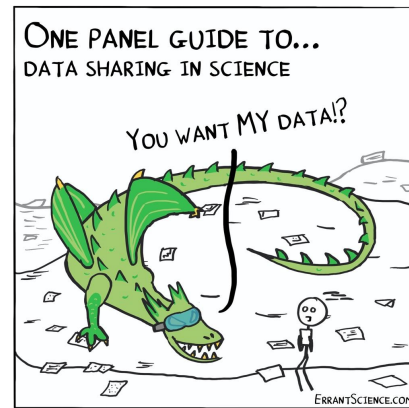


Our survey says...



## Barriers to Data Reuse

- Extent to which data reuse is accepted as legitimate research (primary vs secondary data collection)
- Not explicitly stated how data was collected or what research assumptions/definitions were made (Trust!)
- Data reuse may take longer than data creation (Sobotkova 2018)
- Communicating existence of datasets
- Communicating benefits of data reuse
- Digital literacy – skills to reuse data for alternative purposes (Garstki 2018)





## Addressing Data Reuse

### TEtrARCHs: Transforming data rE-use in **ARCH**aeology

“will experiment with approaches to collecting archaeological data and using that data for storytelling in ways that are meaningful for diverse audiences. Our experiments will help both those who preserve our heritage and the huge range of citizens across Europe who value it.”

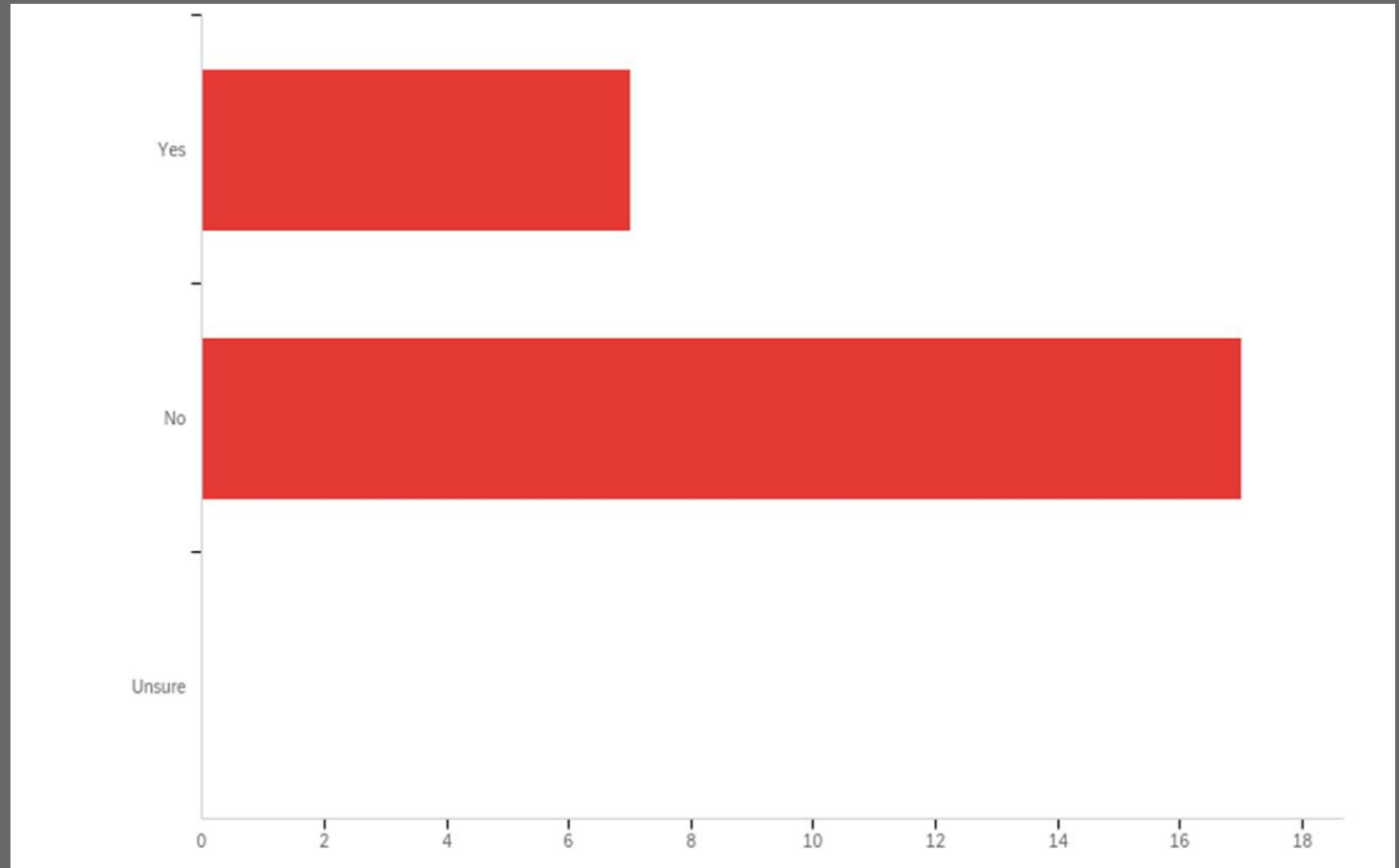


<https://www.tetrarchs.org/>

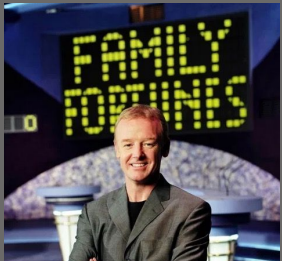
## Digital literacy

- Defined as “the ability to communicate about, understand and use digital tools”
- Crucial to expanding use of open access data in archaeology (Cook et al 2018)
- Technological change occurs too quickly - Training programmes need to be designed to address deficit in normal curricula
- Training needs: communicate location of useful datasets, instruct how to use archived data, instruct how to use specific software, provide training resources for others to use.
- Gartski 2022: Appendices - lots of useful training resources and information.

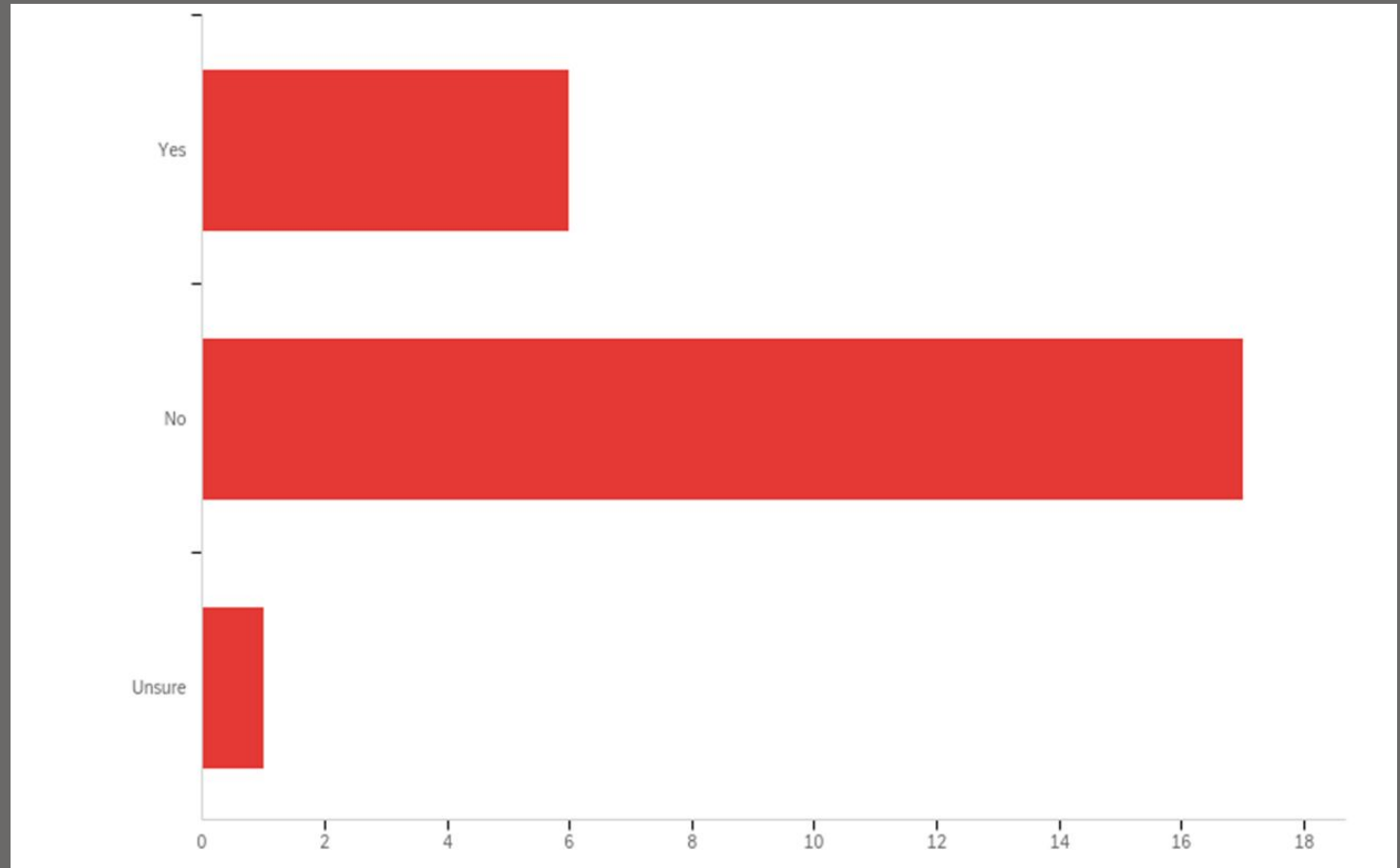
As part of your undergraduate or postgraduate degree have you ever undertaken any formal training for database creation and/or data management?



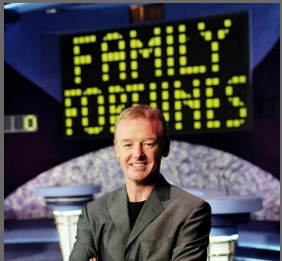
Our survey says...



Have you ever undertaken any formal training in how to navigate data repositories and/or to how to access or use archived data?



**Our survey says...**



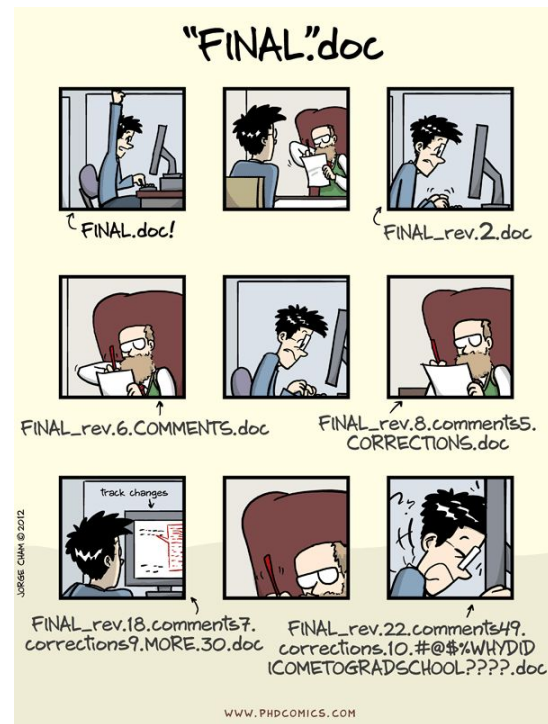


## Method: Excel or R....

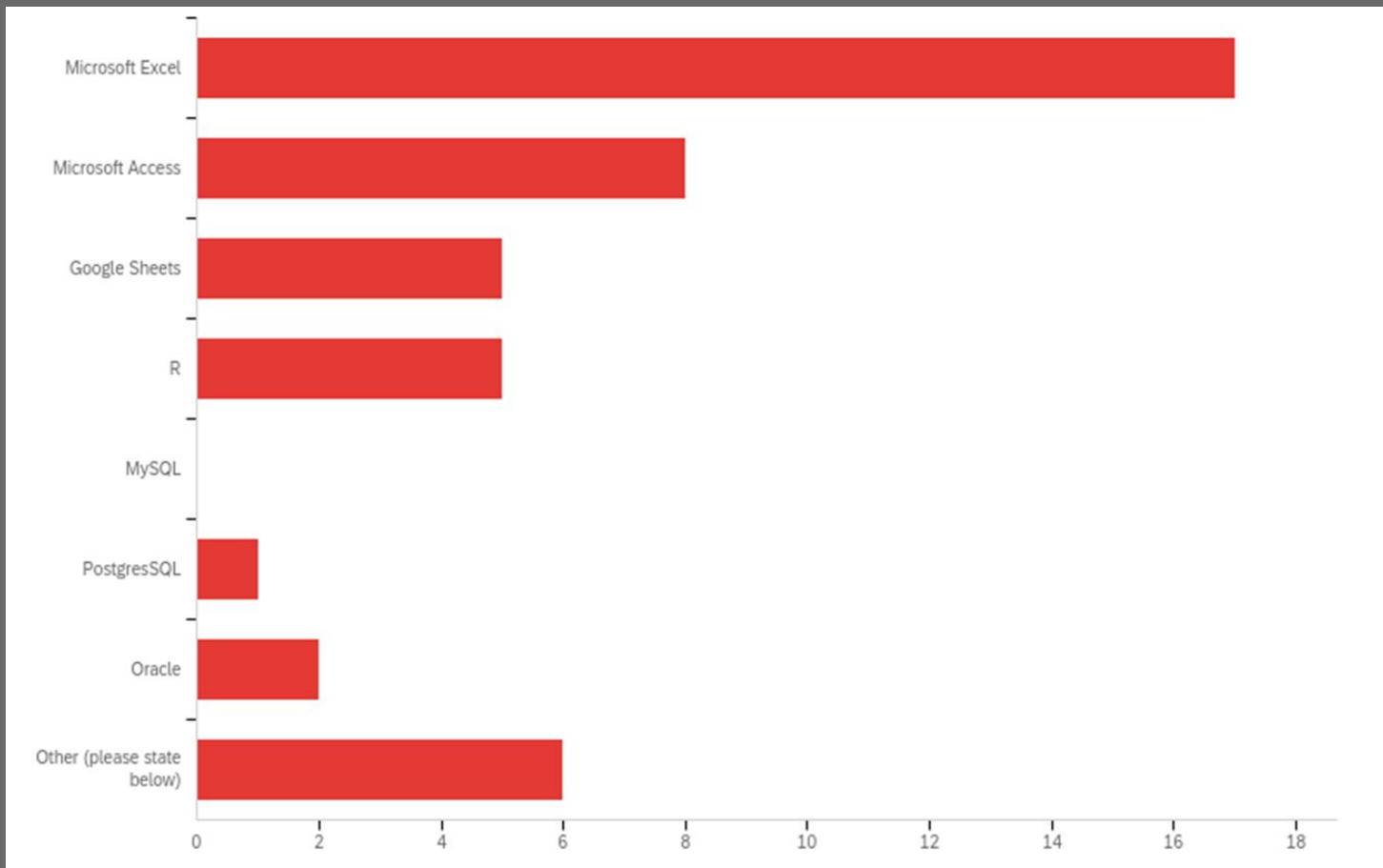
- Better tool for data wrangling
- R - reproducible workflow and version control, especially when combined with Github.
- Higher citation rate for publications with code as supplementary data

<https://www.jumpingrivers.com/blog/comparing-r-excel-data-wrangling/>

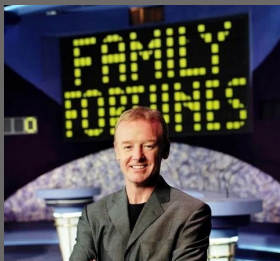
Schmidt, S.C. and Marwick, B., 2020. Tool-Driven Revolutions in Archaeological Science. *Journal of Computer Applications in Archaeology*, 3(1), pp.18–32. DOI: <http://doi.org/10.5334/jcaa.29>



# What software do you usually use to create and analyse research databases?

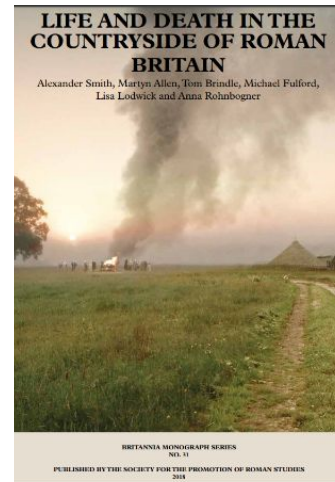


Our survey says...



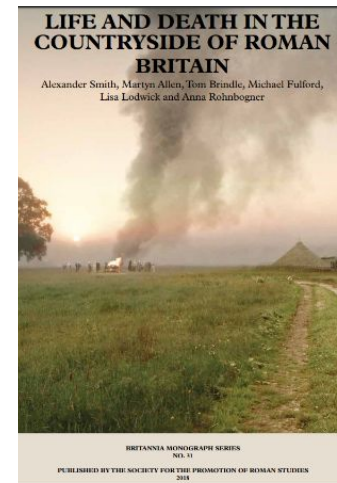
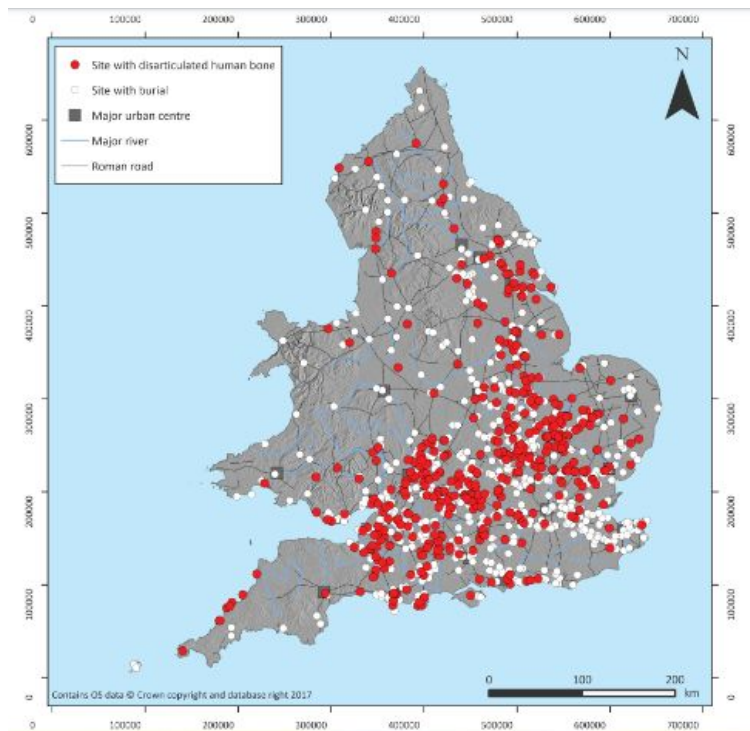
## Structured deposition in Rural Roman Settlement

- Gap analysis – what was analysed/published in original research?
- Limited investigation as part of original project (p275-277)
- Concentration of disarticulated human remains in Central Belt (area defined by RRSP)
- Evidence of cont burial tradition from Late Iron Age (excarnation).
- Evidence sub-divided by phase – even distribution from LIA to Late Roman period.
- In contrast to conventional view is that disarticulated remains less abundant after conquest.
- **WARNING** – Demonstrable purposes only! Not fully completed or fledged research at this stage!



## Structured deposition in Rural Roman Settlement

Distribution of excavated sites with evidence for disarticulated human bone



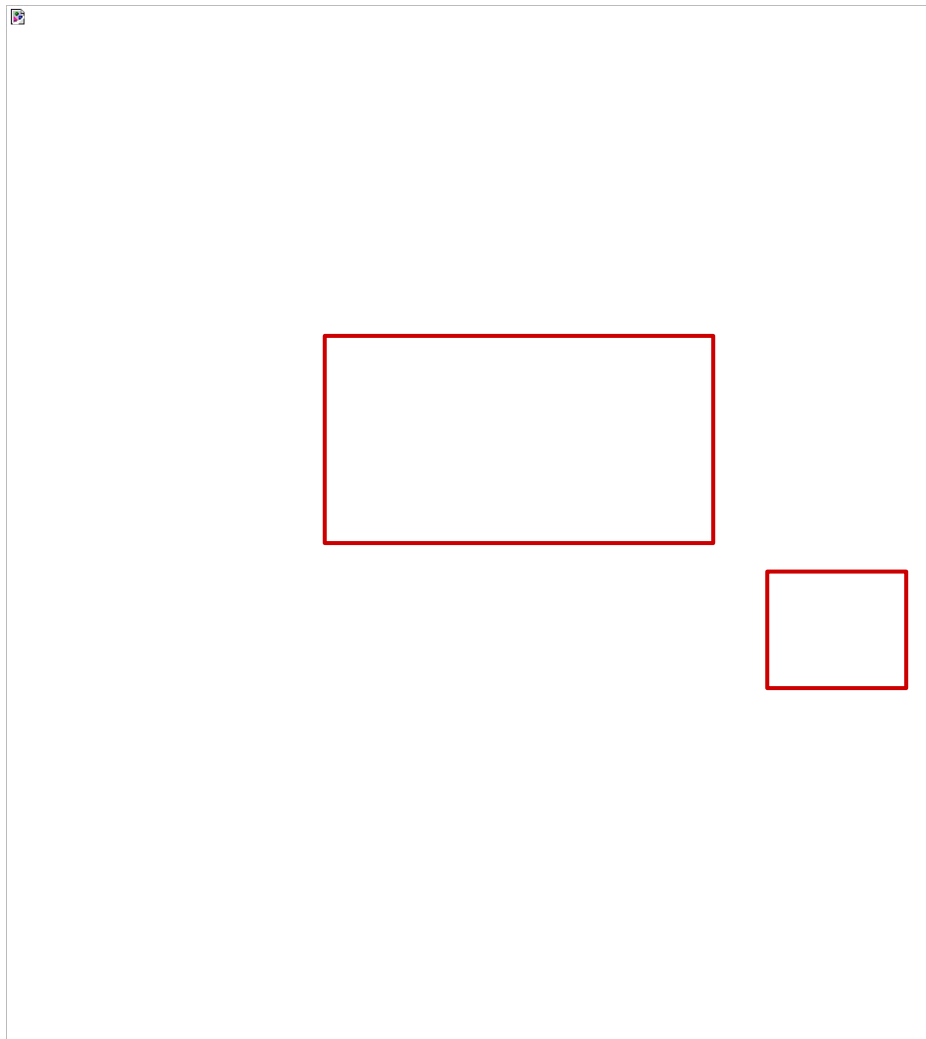


# Structured deposition in Rural Roman Settlement

Database entity relationship diagram

Instructions for use:

<https://doi.org/10.5281/zenodo.7704647>



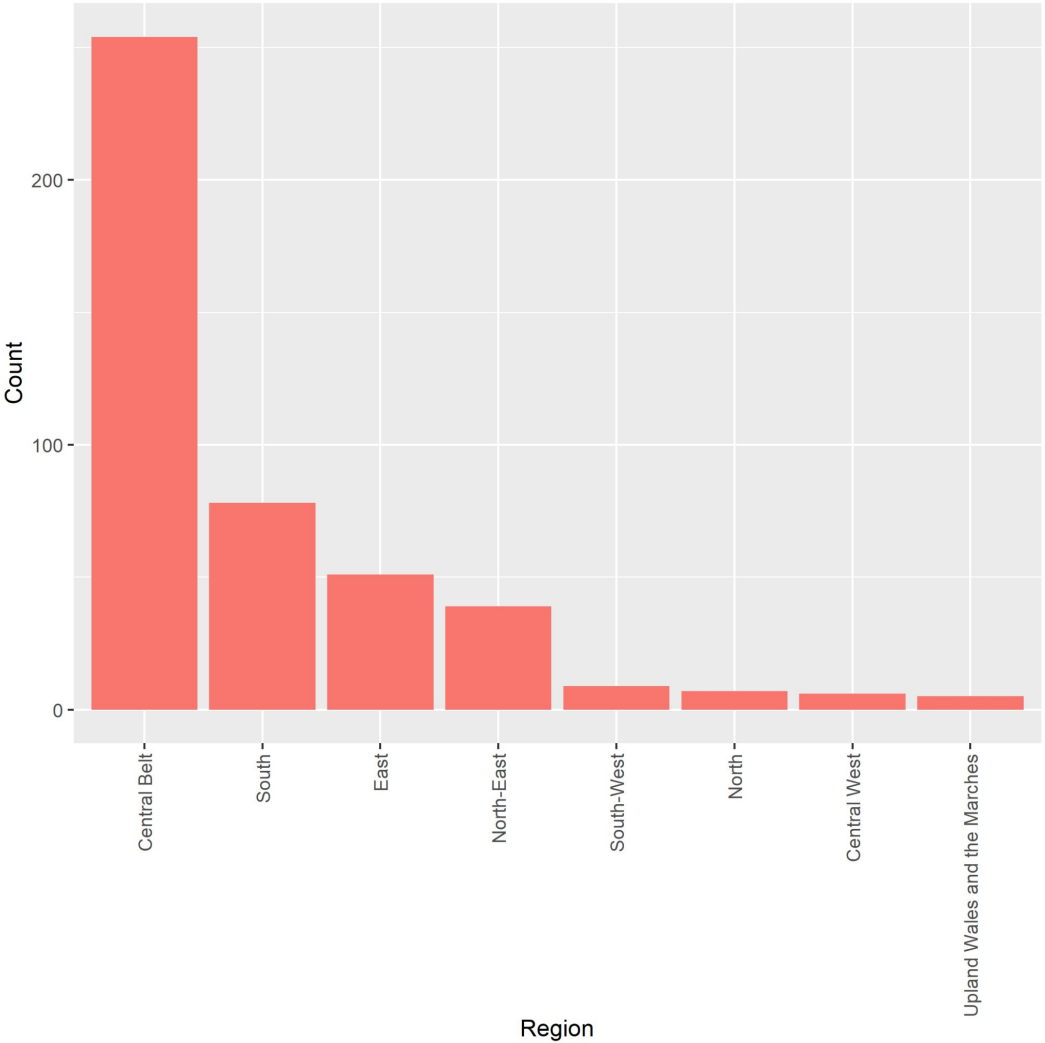
## Structured deposition in Rural Roman Settlement

```
rrsp_join.R* reuse_presentation.Rmd*
File Edit Code View Plots Session Build Debug Profile Tools Help
Go to file/function Addins
rrsp_join.R* reuse_presentation.Rmd*
Source on Save Run Source
1 #set dependencies
2 library(dplyr)
3
4 #import data
5 burial<-read.csv("data/rrs_burial_data.csv")
6 core<-read.csv("data/rrs_core_data.csv")
7 site<-read.csv("data/rrs_site_data.csv")
8
9 #join data and filter out non-burial data
10 rrsp_burial<-full_join(core, site) %>% full_join(., burial) %>%
11   filter(!BURIALS_SUMMARY %in% c("No data"))
12
13 #number of entries
14 nrow(rrsp_burial)
15
16 #export data
17 write.csv(rrsp_burial, "data/rrsp_burial.csv")
18
```

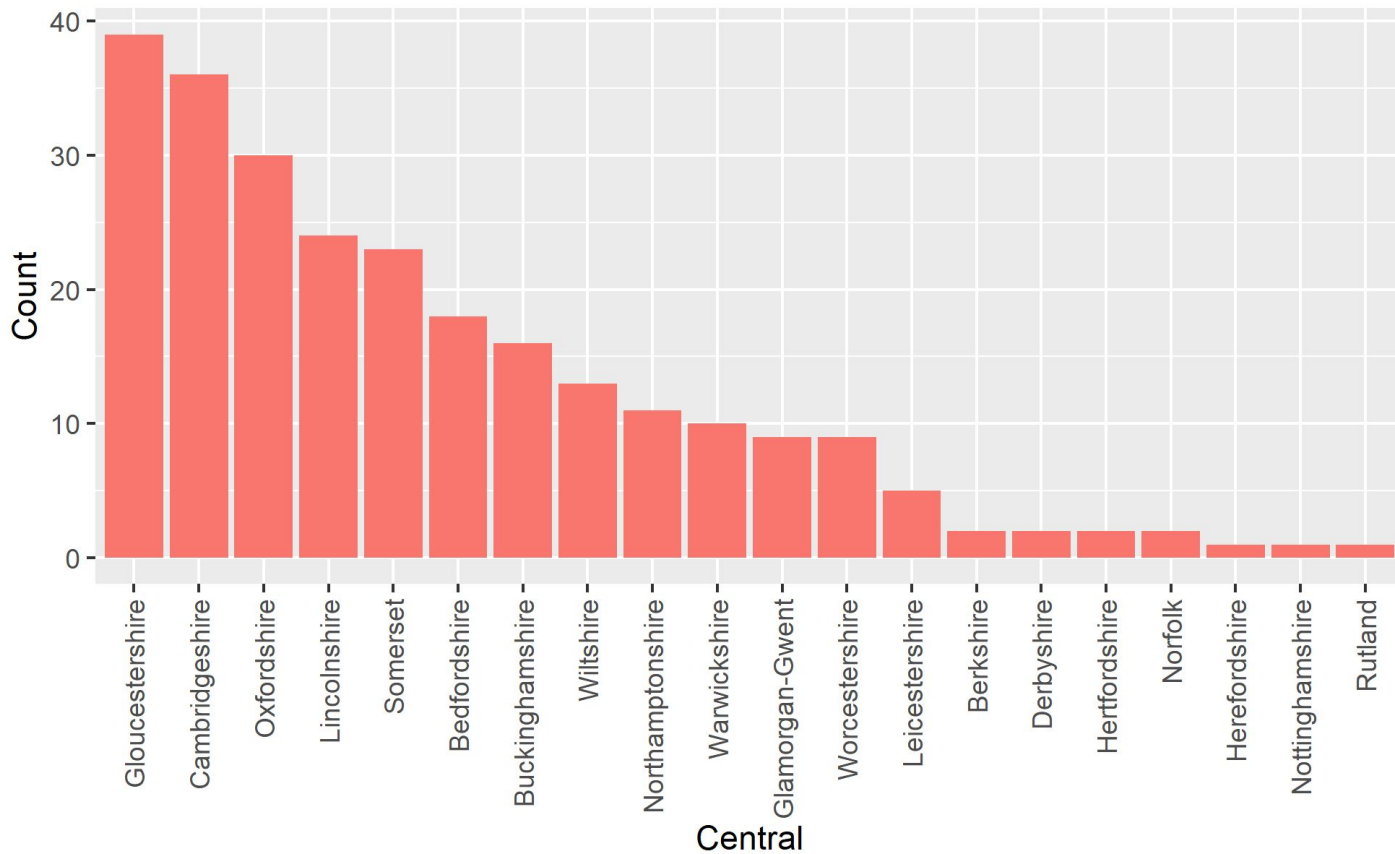
R code to import and join RRSP data

- Straightforward to rejoin data.
- Using dplyr and ggplot packages to produce visualisations.
- Use R-Markdown to create reproducible framework.
- Burial - n=1484
- Disarticulated - n=449

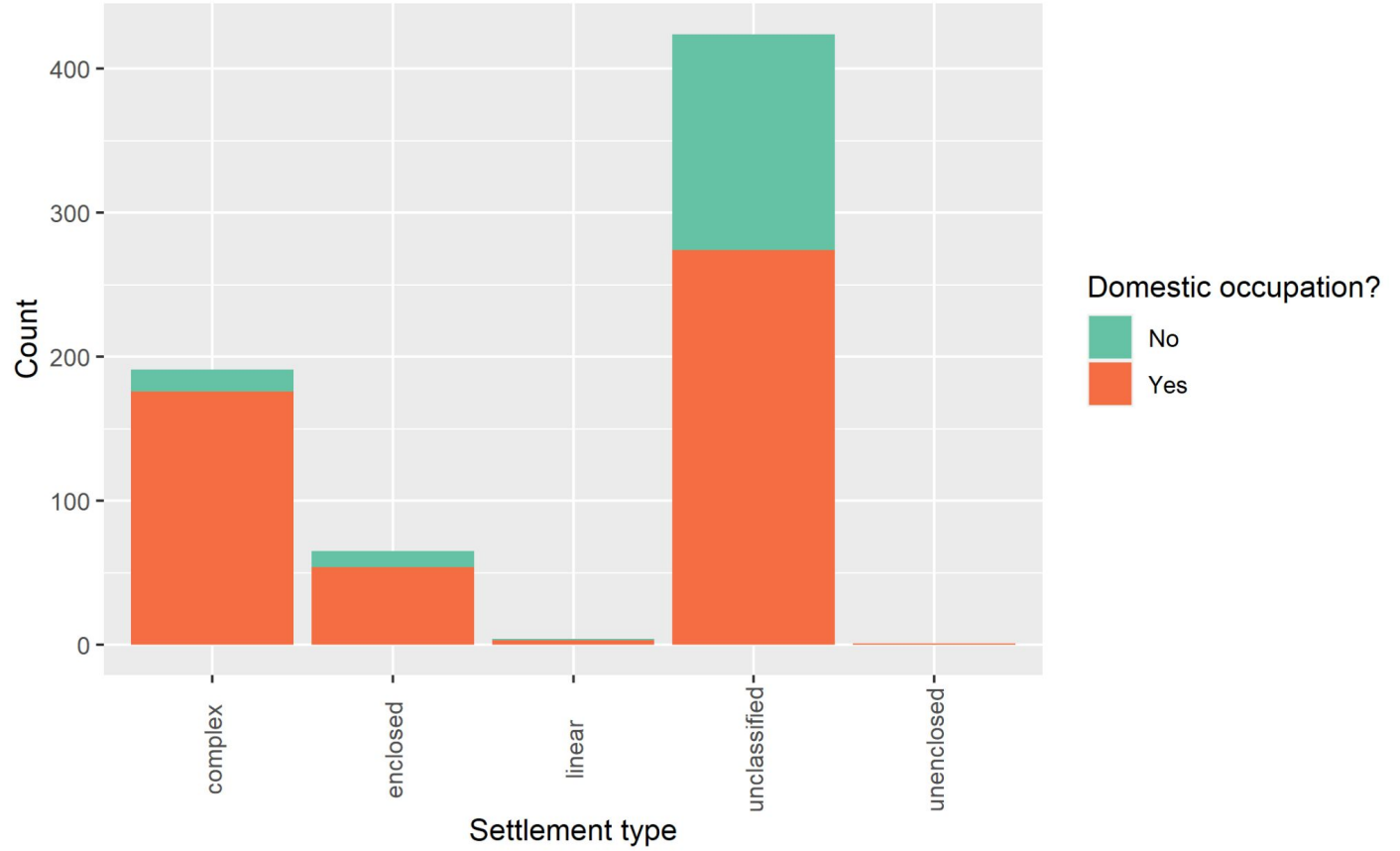
Disarticulated  
remains per  
region



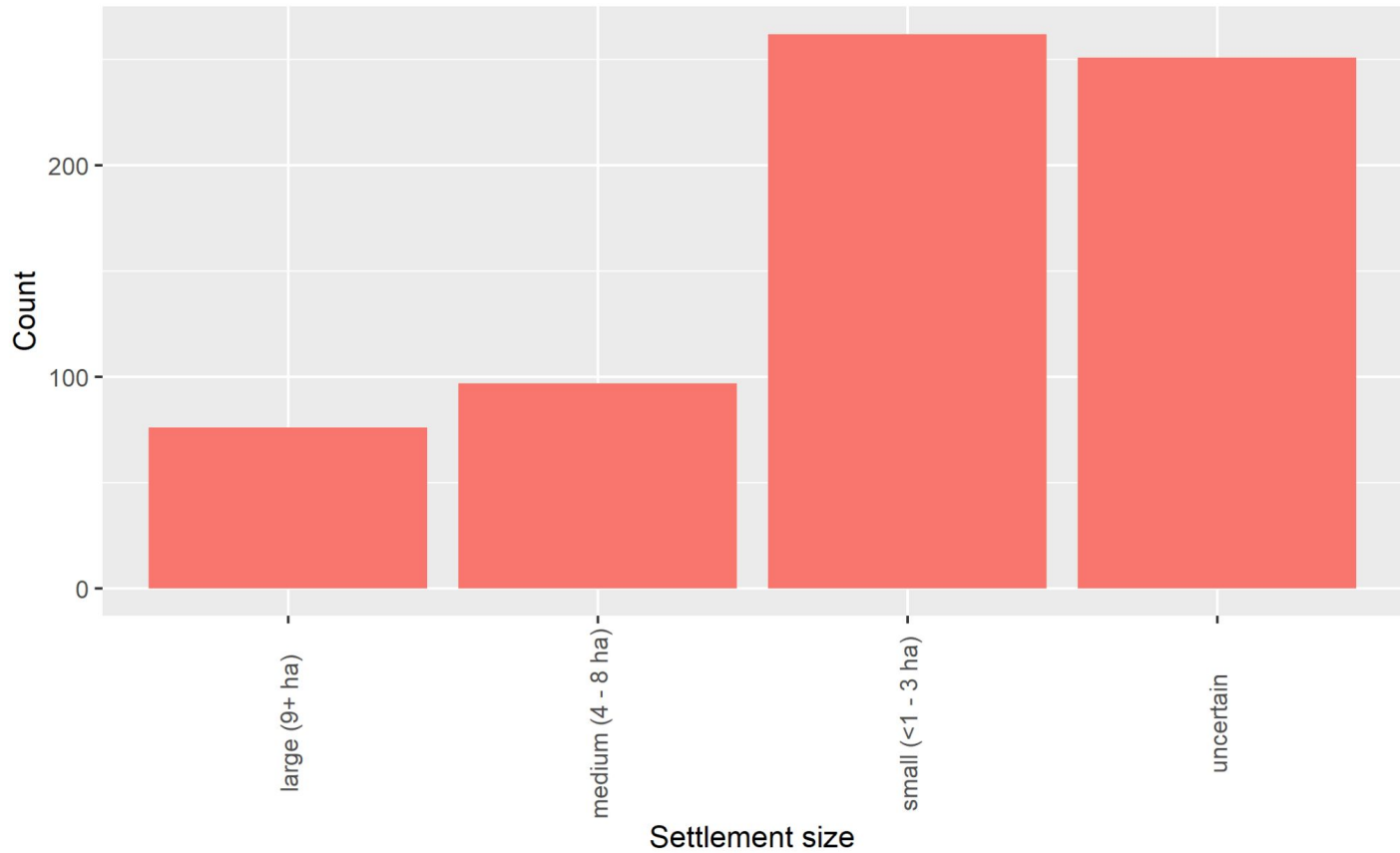
Disarticulated  
remains per  
county in Central  
Belt



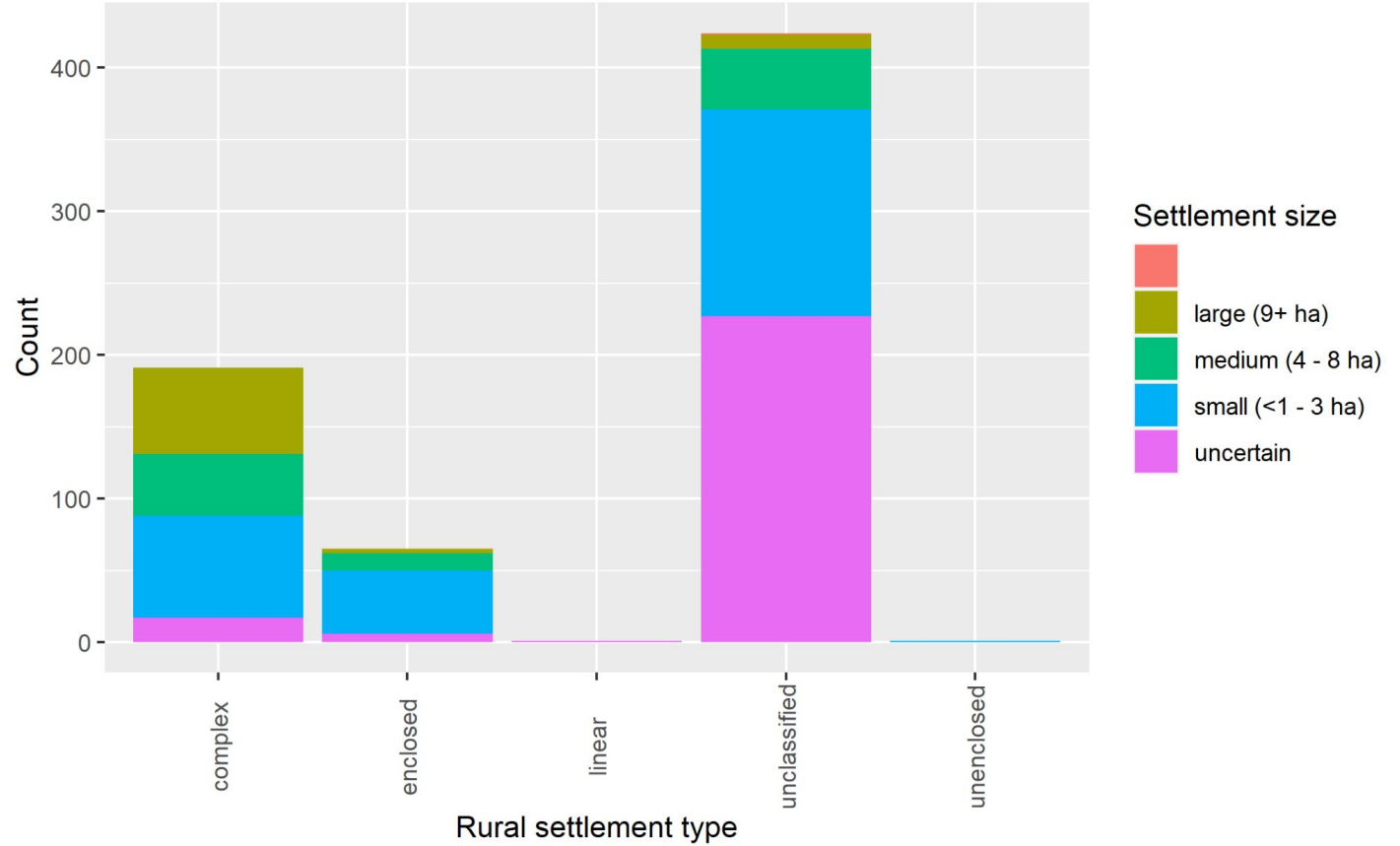
Disarticulated  
remains per  
settlement type



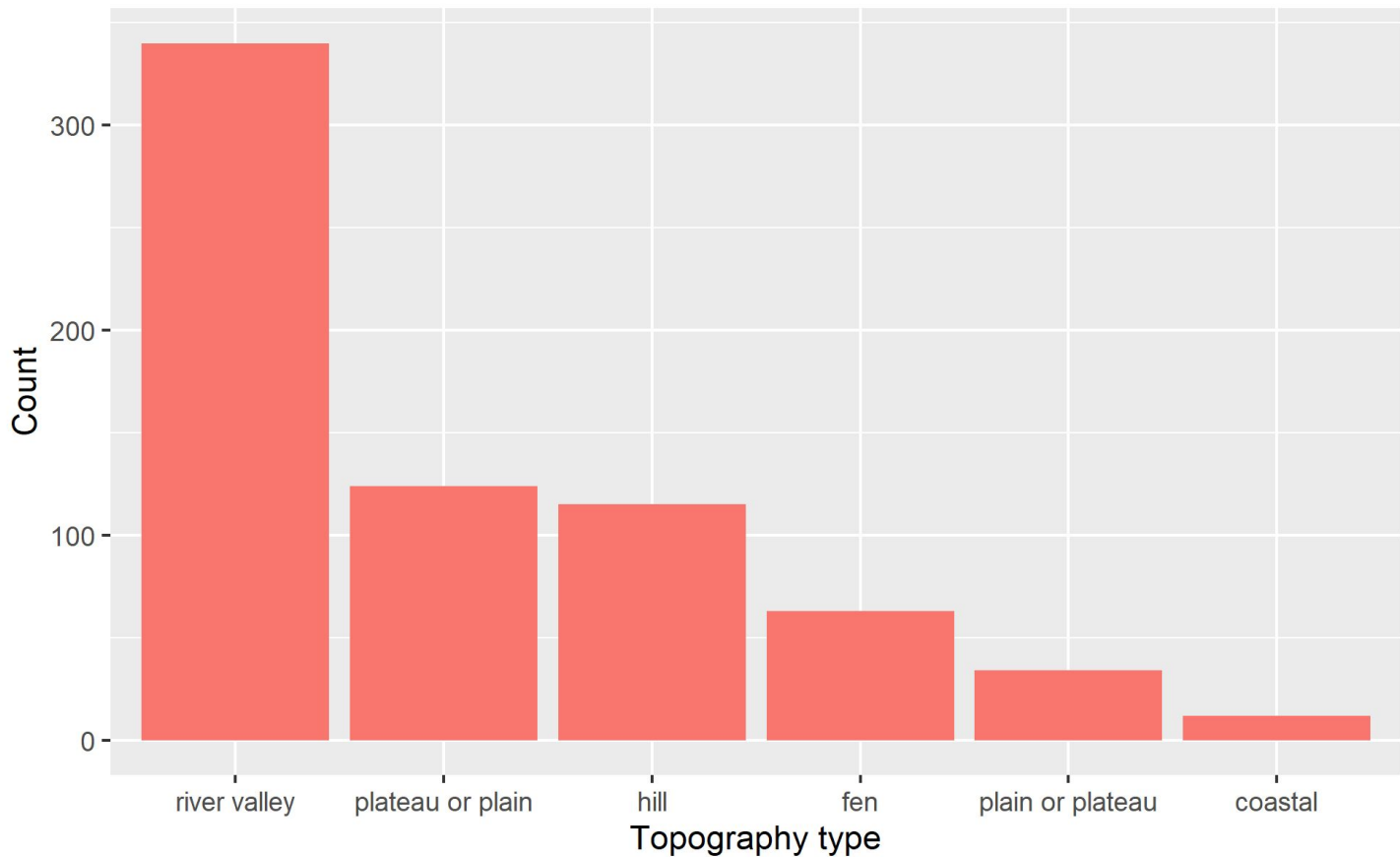
Disarticulated  
remains per  
settlement size



Disarticulated  
remains per  
settlement type  
and size

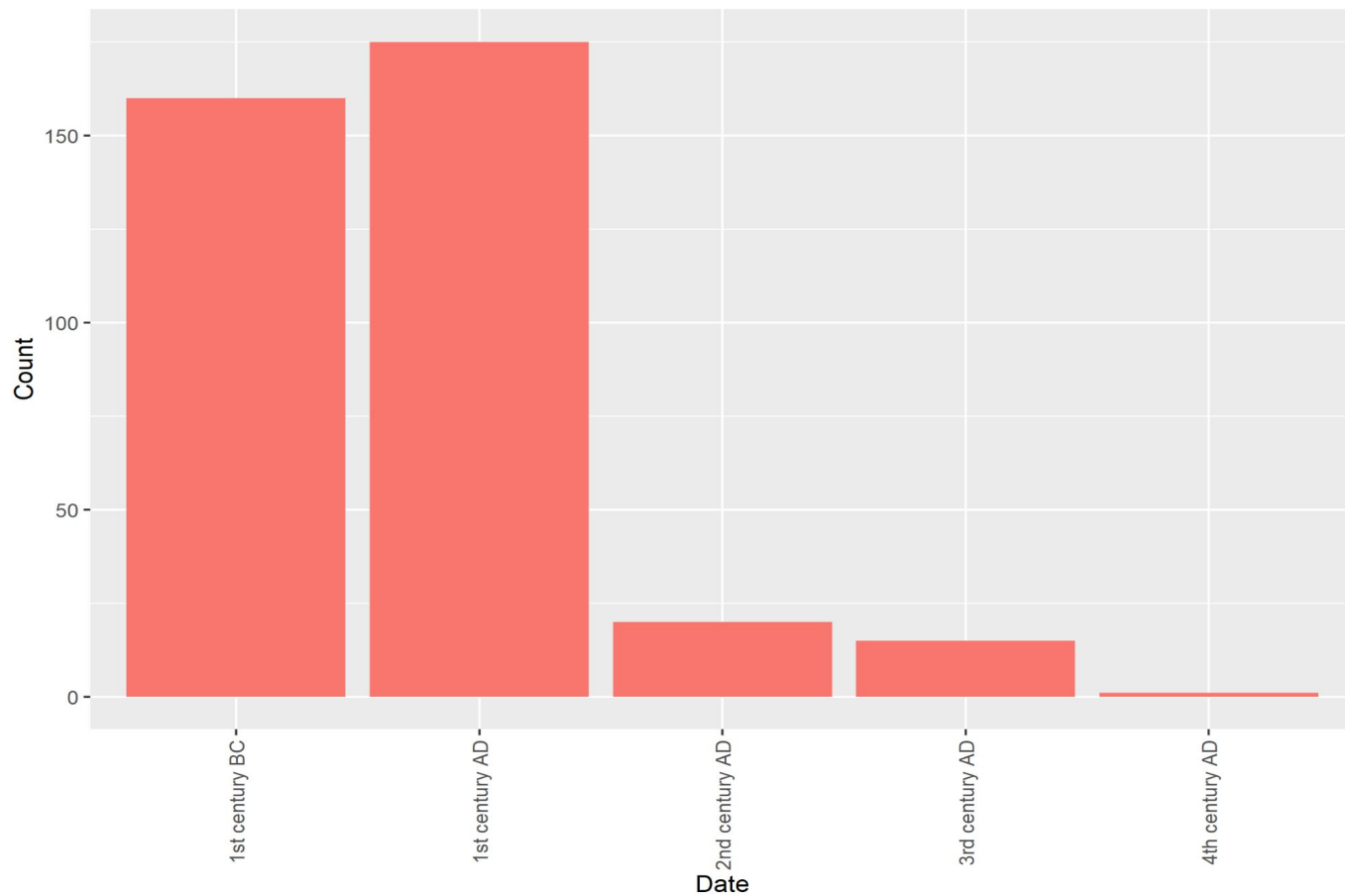


Disarticulated  
remains per  
topographic  
position

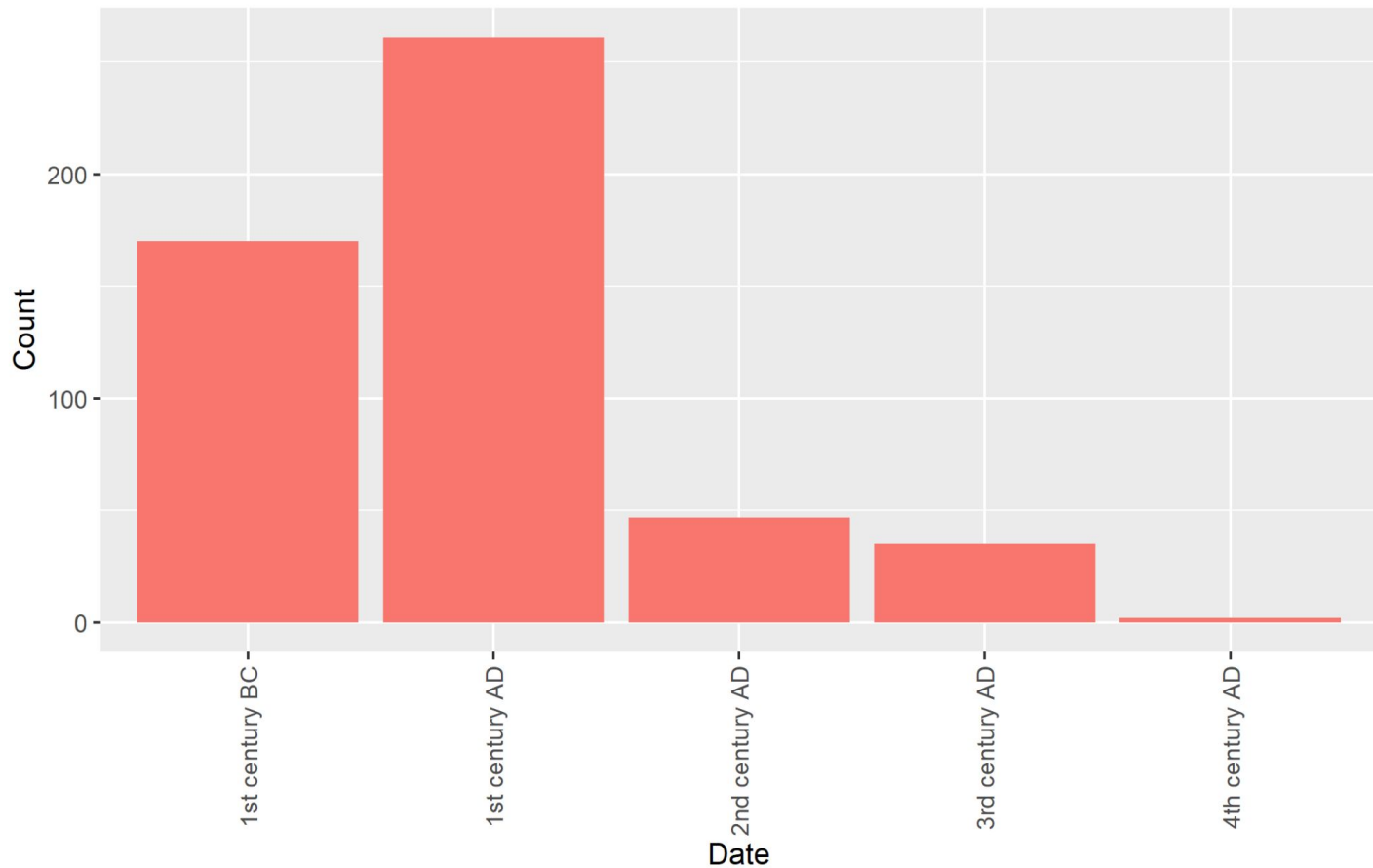




Date of site per  
century for sites  
with disarticulated  
remains

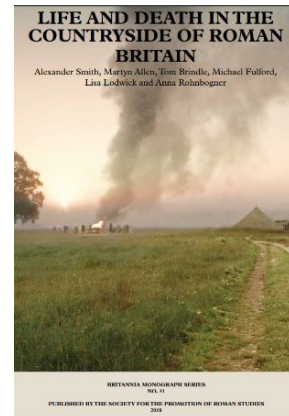


Date of site per  
century for sites  
with disarticulated  
remains



# Structured deposition in Rural Roman Settlement

## Summary and future research

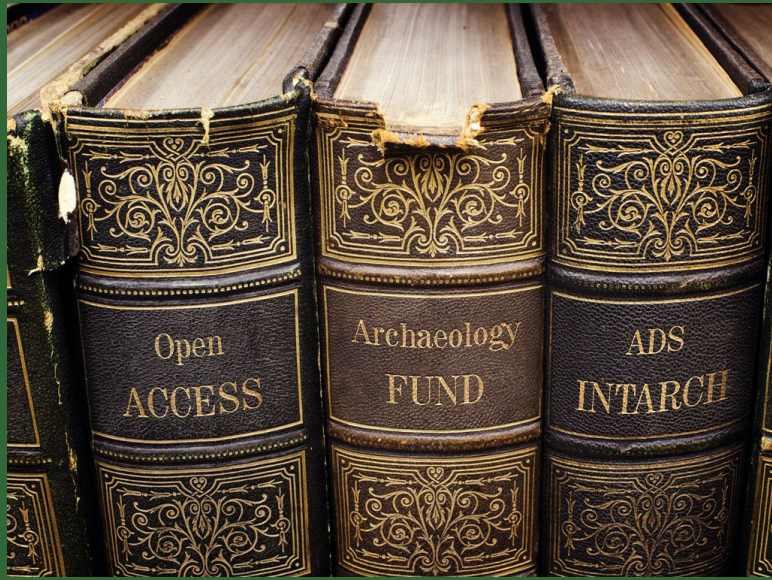


- Preliminary analysis but demonstrates untapped potential for dataset.
- Clear geographic differences in distribution.
- Possible preference in location of remains (river valley) - association with watery contexts.
- Early date for many sites that containing disarticulated remains.
- Future work:
  - Deeper analysis of settlement form and size
  - Compare results with other regions (including those areas where possible tradition is under represented).
  - Compare disarticulated remains against other evidence for structured deposition (pottery, animal remains etc).



## Call to Action

- Consider archiving your datasets with suitable depository (such as the ADS)
- Examine opportunities for reusing data archives held by the ADS.
- Tell us if you have reused ADS data!
- Undertake training in data management and data analysis.



# Open Access Archaeology Fund

Set up in our shared 20th anniversary year, ADS and Internet Archaeology launched the Open Access Archaeology Fund, with the specific aim of supporting the publishing and archiving costs of researchers who have no means of institutional support.

<https://archaeologydataservice.ac.uk/about/the-open-access-fund/>

# Other ADS archives for the Roman period

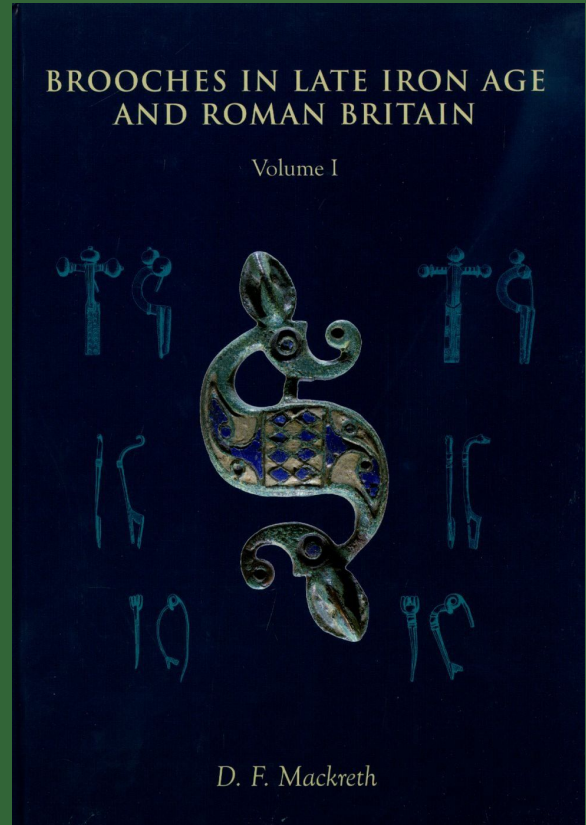
## Small finds

Brooches in Iron Age and Roman Britain Database  
(<https://doi.org/10.5284/1101996>) funded by Oxbow Books

Contains details of all Iron age and Roman Brooches examined by the late Don Macreth, synthesised in his seminal publication *Brooches in Iron Age and Roman Britain*, published in 2011 by Oxbow Books.

Downloads available:

- All data from Iron Age and Roman brooches database.
- NGR data from the Brooches database.
- Text serial list.
- Abbreviations document.



# Other ADS archives for the Roman period

## Pottery

Kay Hartley Mortarium Archive Project  
(<https://doi.org/10.5284/1090785>) funded by Historic England

The preserved data of an archive compiled, since 1956, by Kay Hartley, a leading international scholar in mortarium studies, covering all aspects of her mortarium studies.

Downloads available:

- Potter distribution and potter stamp die datasets.
- Scanned stamp rubbings of potter dies.
- Query interface of all data.
- Bibliography.



# Other ADS archives for the Roman period

[Geospatial / geophysical survey](#)

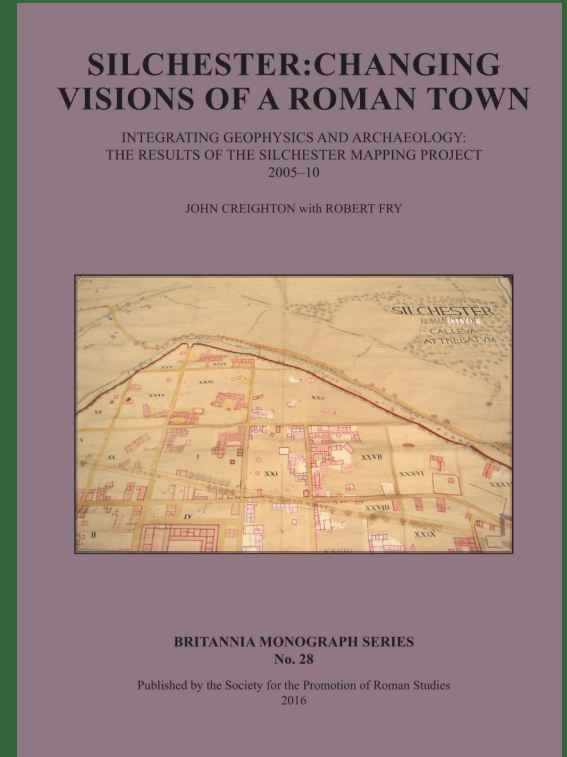
Silchester Mapping Project 2005-10

(<https://doi.org/10.5284/1038434>) funded by University of Reading.

Archive for a project that draws together all fieldwork undertaken from 18th century to 2013 as well as new extensive geophysical survey.

Downloads available:

- GIS data (shapefiles) for different features of the Roman town (e.g town walls, upstanding earthworks).
- Data from geophysical survey of town (gradiometry, interpretation of results).
- Introduction to the archive.



<https://doi.org/10.5284/1090308>



# Training in data management digital archives, FAIR data, digital skills



**DATA CARPENTRY**

BUILDING COMMUNITIES TEACHING UNIVERSAL DATA LITERACY

<https://datacarpentry.org/>

Archaeological publications  
with accompanying R code

<https://github.com/benmarwick/ctv-archaeology#publications-that-include-r-code>

<https://archaeologydataservice.ac.uk/help-guidance/continuing-professional-development/>

# Github repository

[https://github.com/nickyjgarland/trac\\_data\\_reuse](https://github.com/nickyjgarland/trac_data_reuse)

DOI: <https://doi.org/10.5281/zenodo.7704647>



**Available via Creative Commons licence - modification and reuse**

## Contents:

- Presentation (recording available via Youtube - will link to repo too)
- R code for data analysis - structured deposition
- Instructions for using Roman Rural Settlement Project data from the ADS archives
- Survey questions
- Summary of survey results (To be added)



Archaeology  
Data Service

**Thank you!**

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