

Designing a Knowledge Base to Research the History and Geography of the UK Museums Sector

www.mappingmuseums.org

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Arts & Humanities
Research Council

Knowledge Lab



Mapping Museums: the history and geography of the UK independent sector 1960-2020 (AHRC, 2016-2020)

- Mapping Museums is providing the first evidence-based history of the development of the UK's independent museums sector and the links to wider cultural, social, and political concerns
- As such, it aims to contribute to scholarly understanding of British culture, be useful for policy makers and arts funders, and also be of interest to the general public

Mapping Museums

- During the first two years of the project, the research team gathered and codified data on over 4000 UK museums
- A major part of the project has been the design of a Knowledge Base to store the data and metadata relating to these museums and also a Web Application allowing scholars to browse, search and visualise the data in order to investigate their research questions
- The project is the first to produce an authoritative database of museums opening and closing during a period of rapid expansion and change in the sector

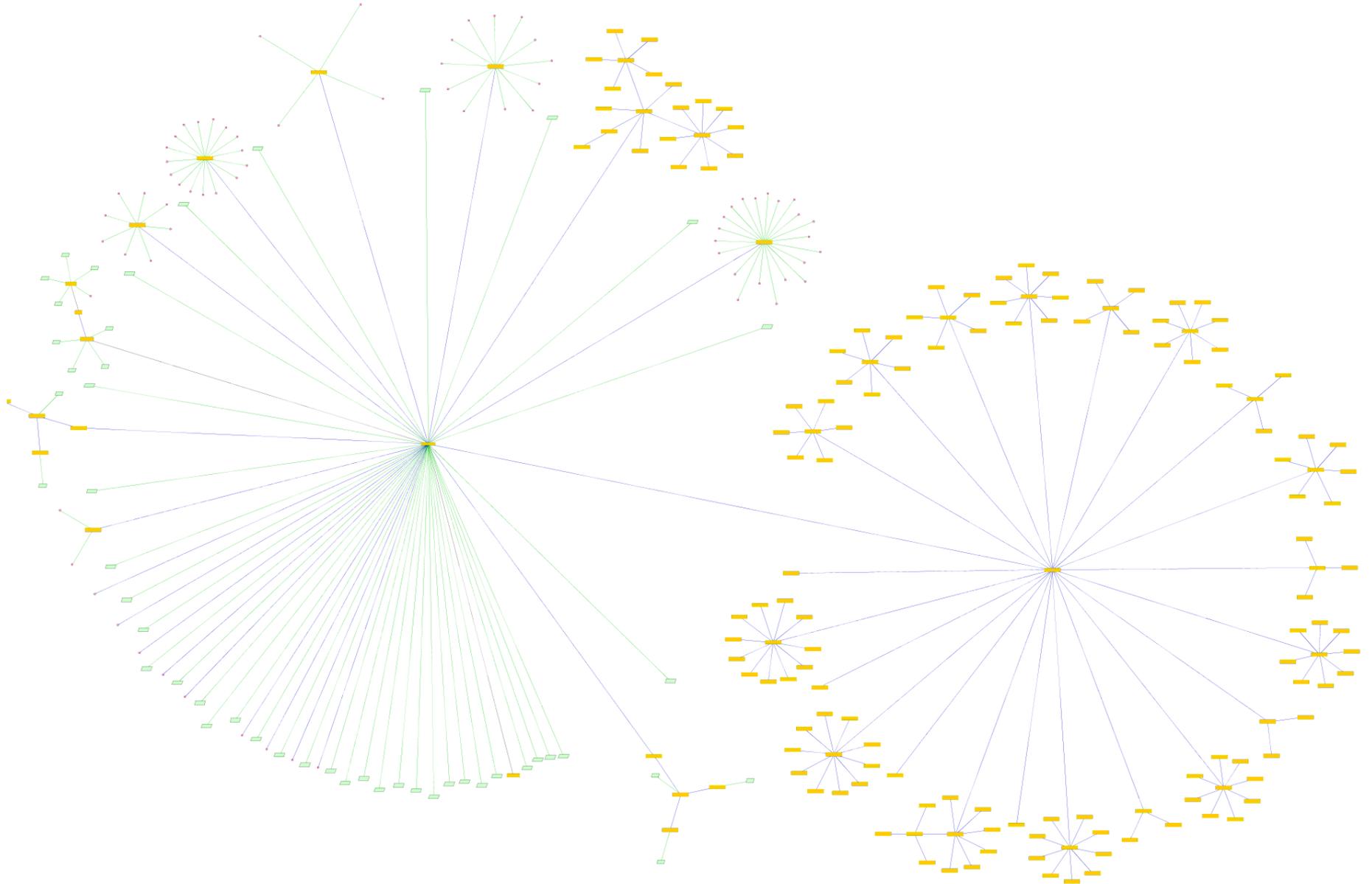
Data Collection Challenges

- No directly usable digital datasets, all data had to be collected manually into an evolving "master" spreadsheet, plus additional auxiliary sheets
- The Digest of Museum Statistics (DOMUS), 1994-1999, was used as the starting point (around 1,800 museums)
- Additional contemporary and historical datasets from various organisations (e.g. Arts Council England, Museums and Galleries Scotland, Association for Independent Museums) were then incorporated
- OCR techniques were used to process photographs from the Association of Independent Museums archive (housed at the University of Leicester)
- Use of online resources such as museums' websites and Wikipedia resulted in a wider spread of entities that are considered as being "museums" by the public

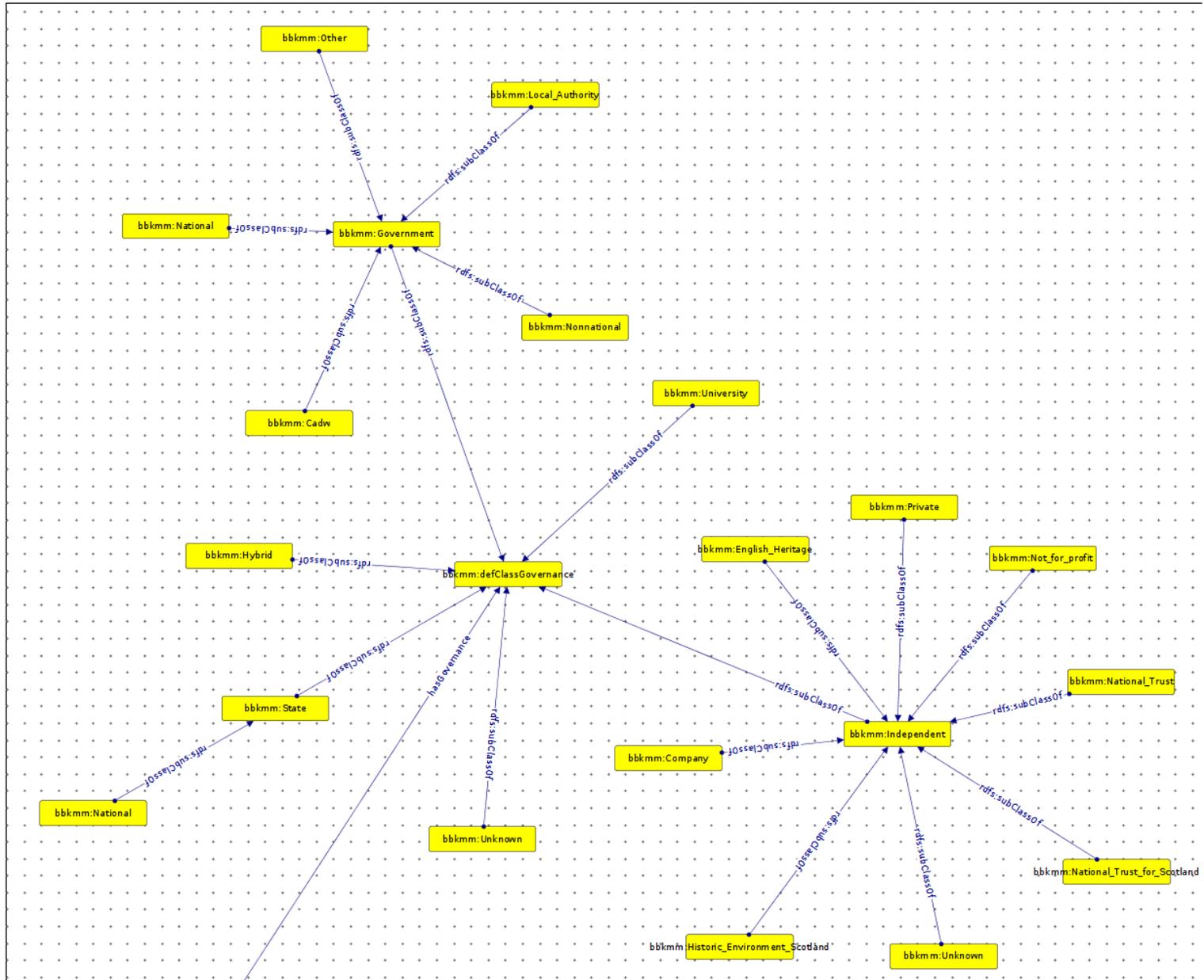
KB and Web App Development

- Evident from the outset that the gradual collection of diverse data and gradual development of understanding about the required functionality of the KB and Web App would require an **iterative, agile** methodology to be adopted
- Also pointed to the need to adopt **semantic technologies** in order to develop the KB and search facilities:
 - the different relationships between entities can be described in fine detail
 - both the conceptual model and the data can be extended with new triples as new knowledge/data accrue
 - possible to integrate the evolving MM ontology with other existing taxonomies, e.g. for UK geographical regions (ONS)

MM Ontology



Zooming in on: Governance



Browse

Inbox (12) - alexpoulov@gmail.com London - BBC Weather Simmonds, Liam - Department Browse

museweb.dcs.bbk.ac.uk/browseproperties

Home Browse Search Visualisation v8

Map List Details

- Museums [3942]
 - Accreditation [3942]
 - Governance [3942]
 - Location [3882]
 - Size [3941]
 - Subject Matter [3942]
 - Year opened [3942]
 - Year closed [3942]
 - Governance Change [13]

The map displays museum locations across Europe, marked with green circles containing numbers. The markers are distributed across the British Isles, France, and the Benelux region. A blue location pin is placed on the west coast of Ireland. A zoom control with '+' and '-' buttons is visible in the top-left corner of the map area.

Toggle marker Change clustersize

Leaflet | Map data © OpenStreetMap

Museums that opened in 1980

Browser tabs: Inbox (12) - alexpoulou@gmail.com, London - BBC Weather, Simmonds, Liam - Department, Browse

Address bar: museweb.dcs.bbk.ac.uk/browseproperties

Navigation: Home Browse Search Visualisation v8

Map | List | Details

Museums [3942]

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 - 1972 [60]
 - 1973 [44]
 - 1974 [86]
 - 1975 [67]
 - 1976 [82]
 - 1977 [66]
 - 1978 [64]
 - 1979 [64]
 - 1980 [930]
 - 1980 [69]
 - 1981 [95]
 - 1982 [58]
 - 1983 [65]
 - 1984 [92]
 - 1985 [68]
 - 1986 [87]
 - 1987 [57]
 - 1988 [269]

Map controls: +, -

Buttons: Toggle marker, Change clustersize

Museums that opened in 1980

Inbox (12) - alexpoulov@gmail.com × London - BBC Weather × Simmonds, Liam - Department × Browse

museweb.dcs.bbk.ac.uk/browseproperties

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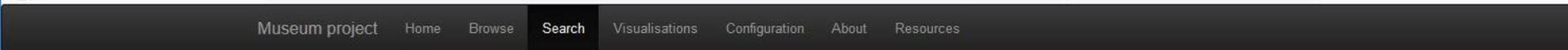
Map List Details

1980 [69]

18 STAFFORD TERRACE Subject: <i>Unknown</i>
ARLEY HALL Subject: <i>Unknown</i>
AUTOMOBILIA MOTOR MUSEUM Subject: <i>Unknown</i>
AUTOMOBILIA TRANSPORT MUSEUM Subject: <i>Transport: Cars and motorbikes</i>
AYCLIFFE AND DISTRICT BUS PRESERVATION SOCIETY Subject: <i>Transport: Buses and trams</i>
BANCROFT ENGINE MILL TRUST Subject: <i>Industry and manufacture: Textiles</i>
BANWELL MUSEUM Subject: <i>Archaeology: Mixed</i>
BODEILIO WEAVING CENTRE Subject: <i>Arts: Costume and textiles</i>
BONESS & KINNEIL RAILWAY Subject: <i>Transport: Trains and railways</i>
BROADFIELD HOUSE GLASS MUSEUM Subject: <i>Unknown</i>
BUXTON MOTOR MUSEUM Subject: <i>Unknown</i>
CLYDEBANK MUSEUM Subject: <i>Unknown</i>
COLDSTREAM MUSEUM Subject: <i>Unknown</i>
CORRIGALL FARM MUSEUM Subject: <i>Unknown</i>
COULTERSHAW HERITAGE SITE AND BEAM PUMP Subject: <i>Utilities: Water and waste</i>

Search

Admin Area = Aberdeen
Accreditation = Accredited



Add Filter

Filter 1

Select column for filtering

- Admin Area
- Country
- England Regions
- England Counties UAs and CAs
- England Boroughs and Districts
- Northern Ireland Districts
- Scotland Council Areas
- Wales Unitary Authorities
- Name of museum
- Town or City
- Admin Area
- Postcode
- Accreditation
- Governance
- Classification 2018
- Classification 1998
- Year opened
- Year closed
- AIM size designation
- ACE size designation
- MM size

Select filter

Enter filter criteria

Submit

Search

Add Filter

Results (15)

Table Map Details

Filter 1 Filter 2x

Select column for condition: Accreditation

Select filter: Matches

Enter filter criteria: Accredited

Default output columns

- Filter 1 : Admin Area Matches Aberdeen City (Scottish Council Area)
- Filter 2 : Accreditation Matches Accredited

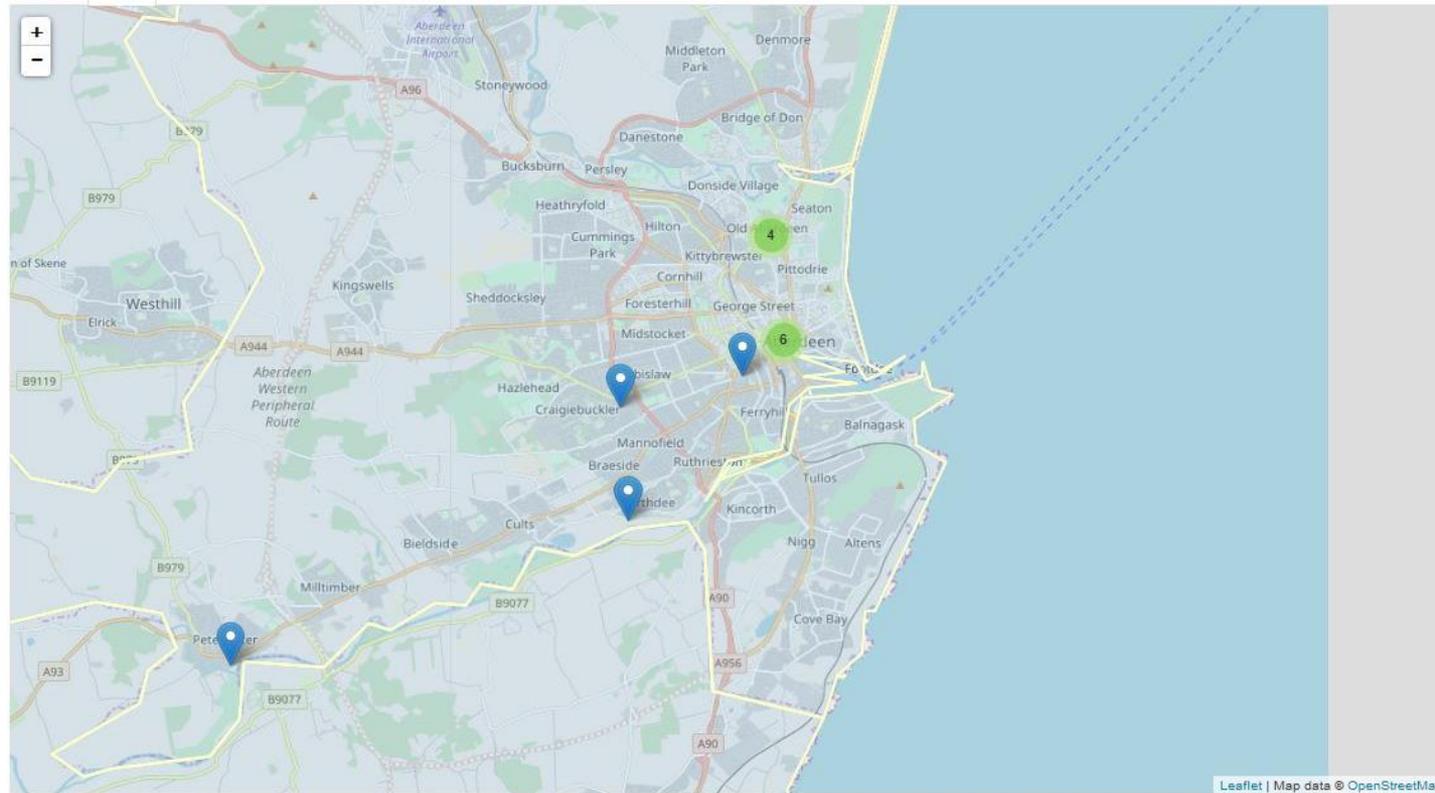
Submit

NameOfMuseum	County	Classification 2018	Year opened	Year closed	Governance	Admin Area	Accreditation	Classification 1998
ABERDEEN ART GALLERY		Arts:Fine and decorative arts	1884	Still open	State:Local Authority	Scottish_Council_Area	Accredited	mixed collection
ABERDEEN MARITIME MUSEUM		Sea and seafaring:Mixed	1984	Still open	State:Local Authority	Scottish_Council_Area	Accredited	maritime
ABERDEEN SCIENCE CENTRE	Aberdeen City	Science and technology:Other	1988	Still open	Independent.Trust or Foundation	Scottish_Council_Area	Unaccredited	science and industry
ANATOMY MUSEUM, UNIVERSITY OF ABERDEEN	City of Aberdeen	Medicine and health:Other	1860	Still open	University	Scottish_Council_Area	Accredited	
GORDON HIGHLANDERS MUSEUM		War and conflict:Regiment	1935	Still open	Independent.Trust or Foundation	Scottish_Council_Area	Accredited	military
HERBARIUM, UNIVERSITY OF ABERDEEN		Natural world:Herbaria and gardening	1860	Still open	University	Scottish_Council_Area	Accredited	
JAMES DUNS HOUSE	City of Aberdeen	Local Histories	1975	2001	State:Local Authority	Scottish_Council_Area	Unaccredited	
MARISCHAL MUSEUM, UNIVERSITY OF ABERDEEN	City of Aberdeen	Mixed	1907	2008	University	Scottish_Council_Area	Accredited	ethnography
PROVOST SKENES HOUSE		Buildings:House:Large	1953	Still open	State:Local Authority	Scottish_Council_Area	Accredited	decorative and applied arts
ROBERT GORDON UNIVERSITY		Mixed	[1960..2017]	Still open	University	Scottish_Council_Area	Accredited	
ST PETERS HERITAGE CENTRE		Local Histories	1999	Still open	Independent.Trust or Foundation	Scottish_Council_Area	Unaccredited	

Search

Results (15)

Table Map Details



Add Filter

Filter 1 Filter 2x

Select column for condition Accreditation

Select filter Matches

Enter filter criteria Accredited

Default output columns

- Filter 1 : Admin Area Matches Aberdeen City (Scottish Council Area)
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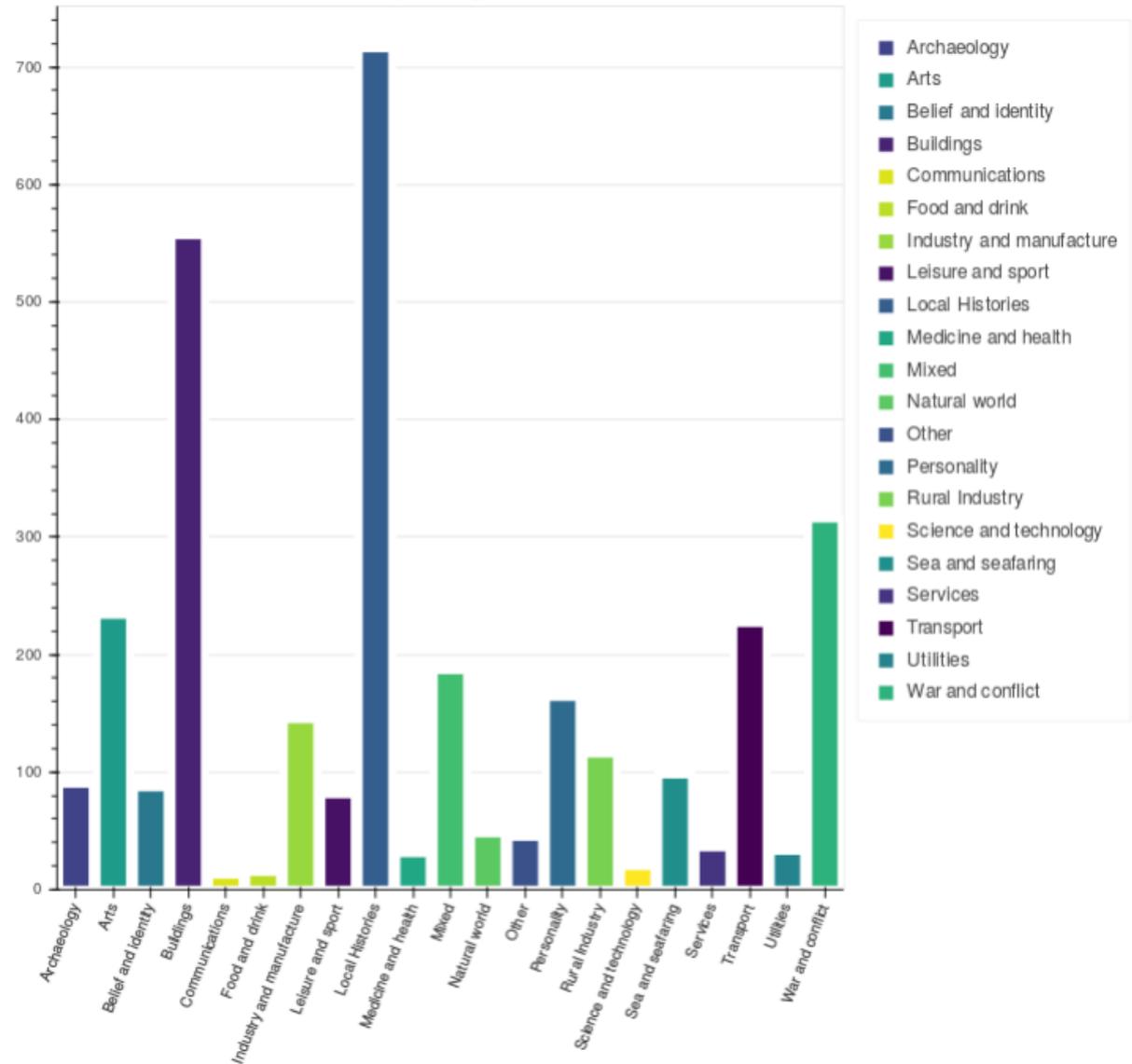
Submit

Visualise

Number of museums by Subject Classification

- Visualisations
 - Number of museums
 - open at a given time
 - All
 - Governance
 - Classification 2018
 - Archaeology
 - Arts
 - Belief and identity
 - Buildings
 - Communications
 - Industry and manufacture
 - Leisure and sport
 - Medicine and health
 - Natural world
 - Personality
 - Rural Industry
 - Science and technology
 - Sea and seafaring
 - Services
 - Transport
 - Utilities
 - War and conflict
 - MM size
 - Location
 - that opened up to given time
 - open over time
 - openings over time
 - closings over time
 - openings and closings over time
 - Plot
 - X
 - Y

/Visualisations/Number of museums/open at a given time/Classification 2018



Year: 2017

Visualise

Number of museums opening over time

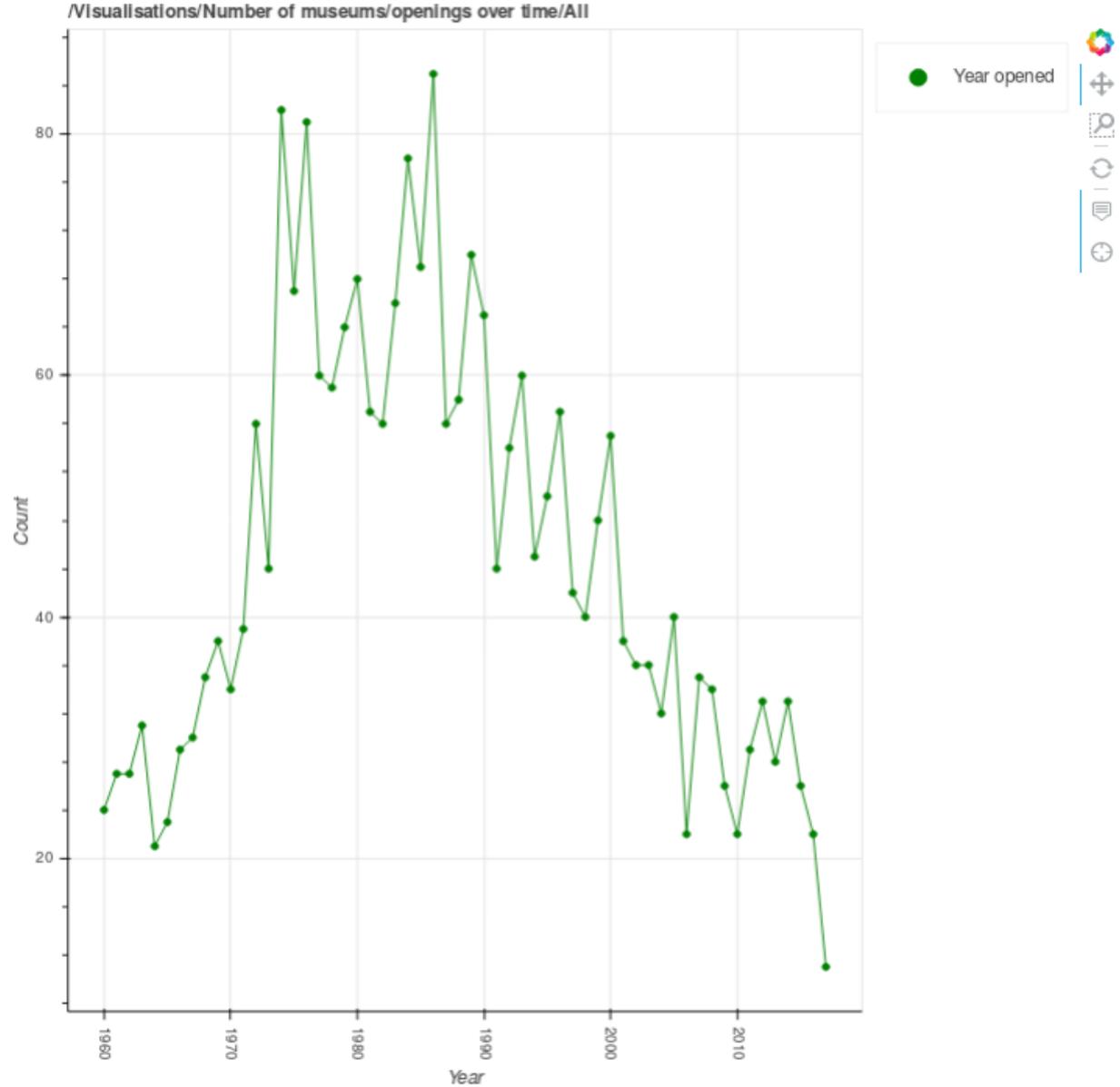
Visualisations

Number of museums

- open at a given time
- that opened up to given time
- open over time
- openings over time
 - All
 - Governance
 - Classification 2018
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 - Location
- closings over time
- openings and closings over time

Plot

- X
- Y

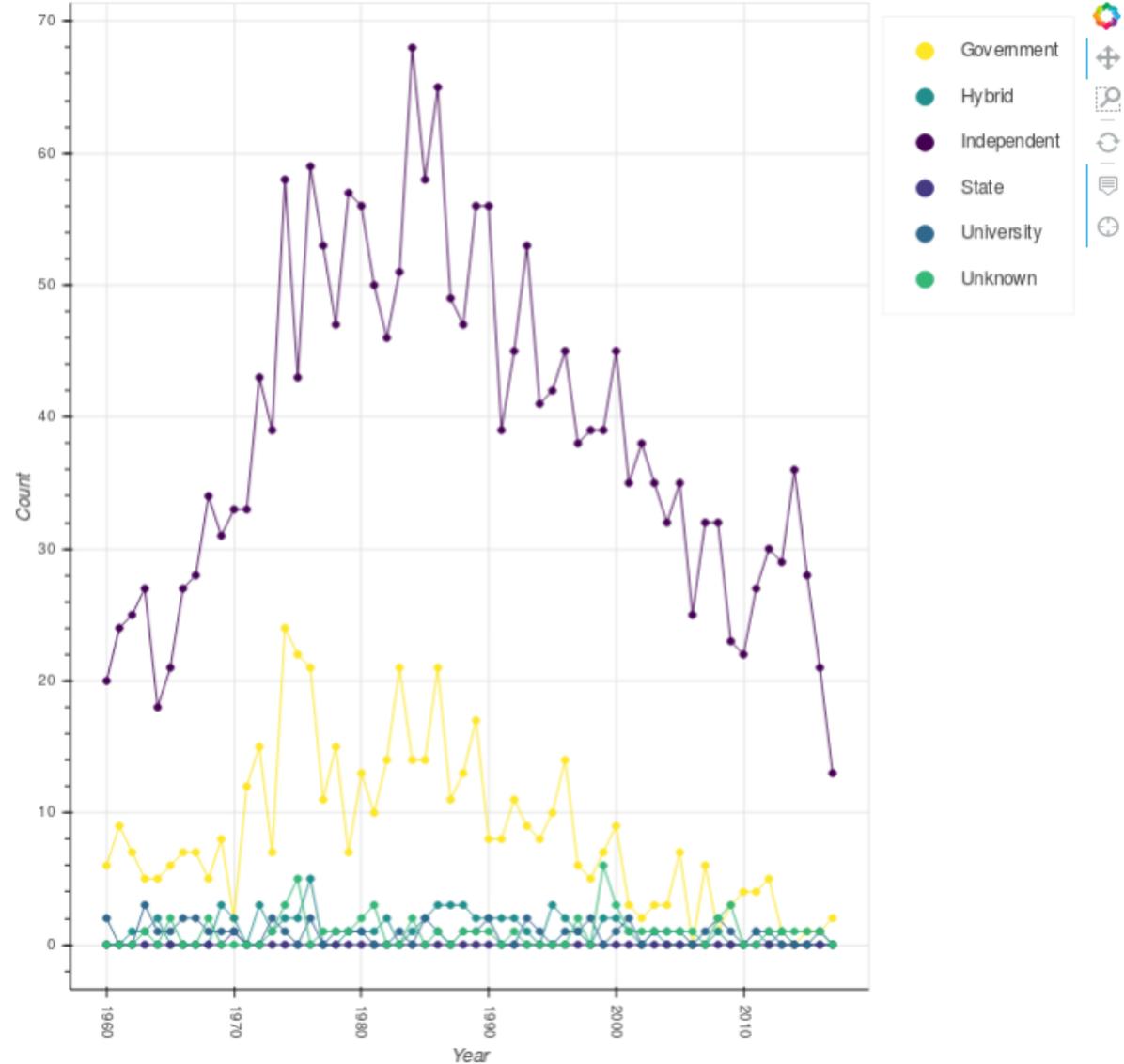


Visualise

Number of museums opening over time, by Governance type

- Visualisations
 - Number of museums
 - open at a given time
 - that opened up to given time
 - open over time
 - openings over time
 - All
 - Governance
 - Government
 - Independent
 - State
 - Classification 2018
 - MM size
 - Location
 - closings over time
 - openings and closings over time
- Plot
 - X
 - Y

/Visualisations/Number of museums/openings over time/Governance



Visualise

Number of museums closing over time

Visualisations

Number of museums

- open at a given time
- that opened up to given time
- open over time
- openings over time
- closings over time

All

Governance

- Government
- Independent
- State

Classification 2018

- Archaeology
- Arts
- Belief and identity
- Buildings
 - House
- Communications
- Industry and manufacture
- Leisure and sport
- Medicine and health
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- Personality
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- Science and technology
- Sea and seafaring
- Services
- Transport
- Utilities
- War and conflict

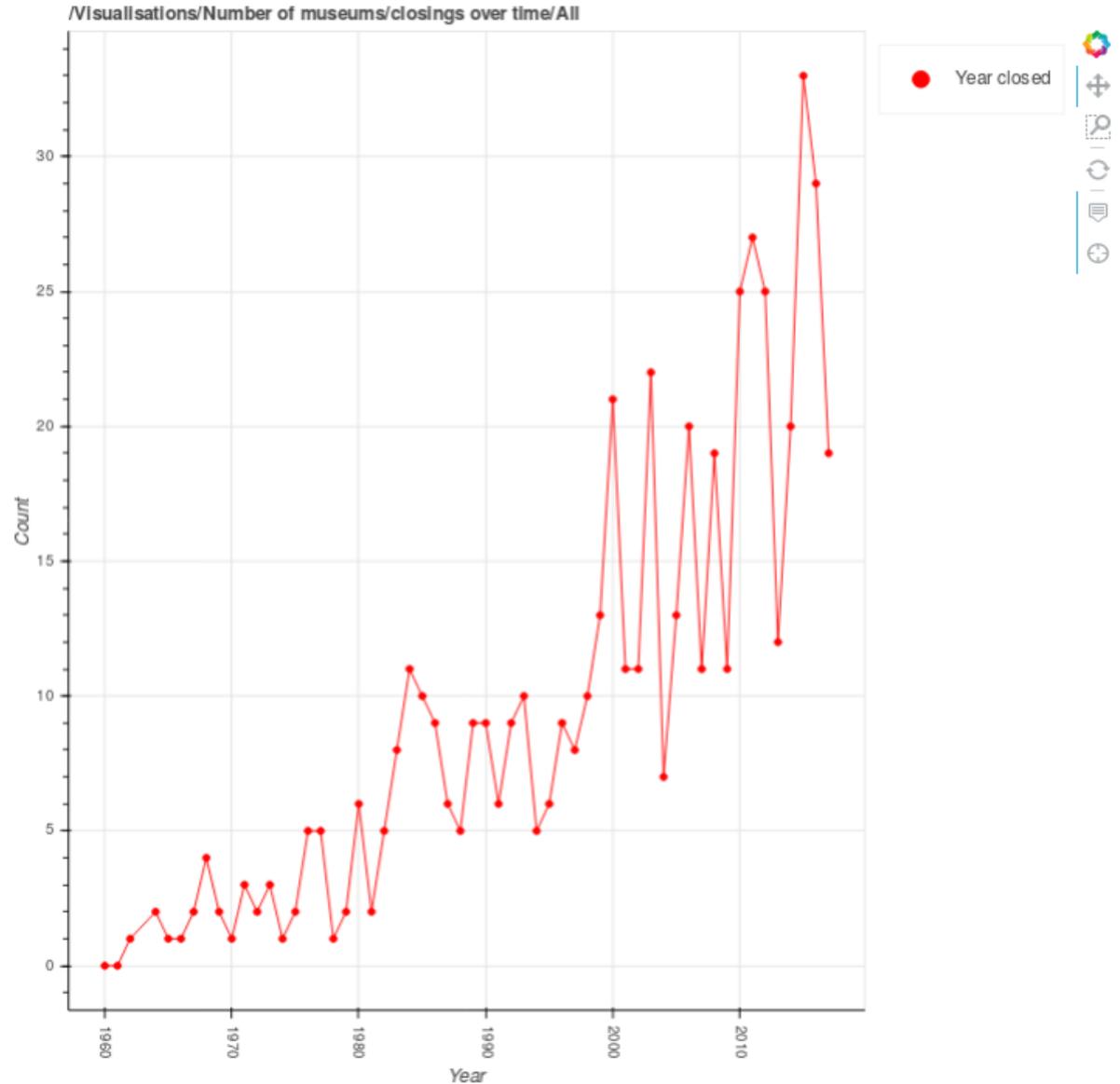
MM size

Location

- openings and closings over time

Plot

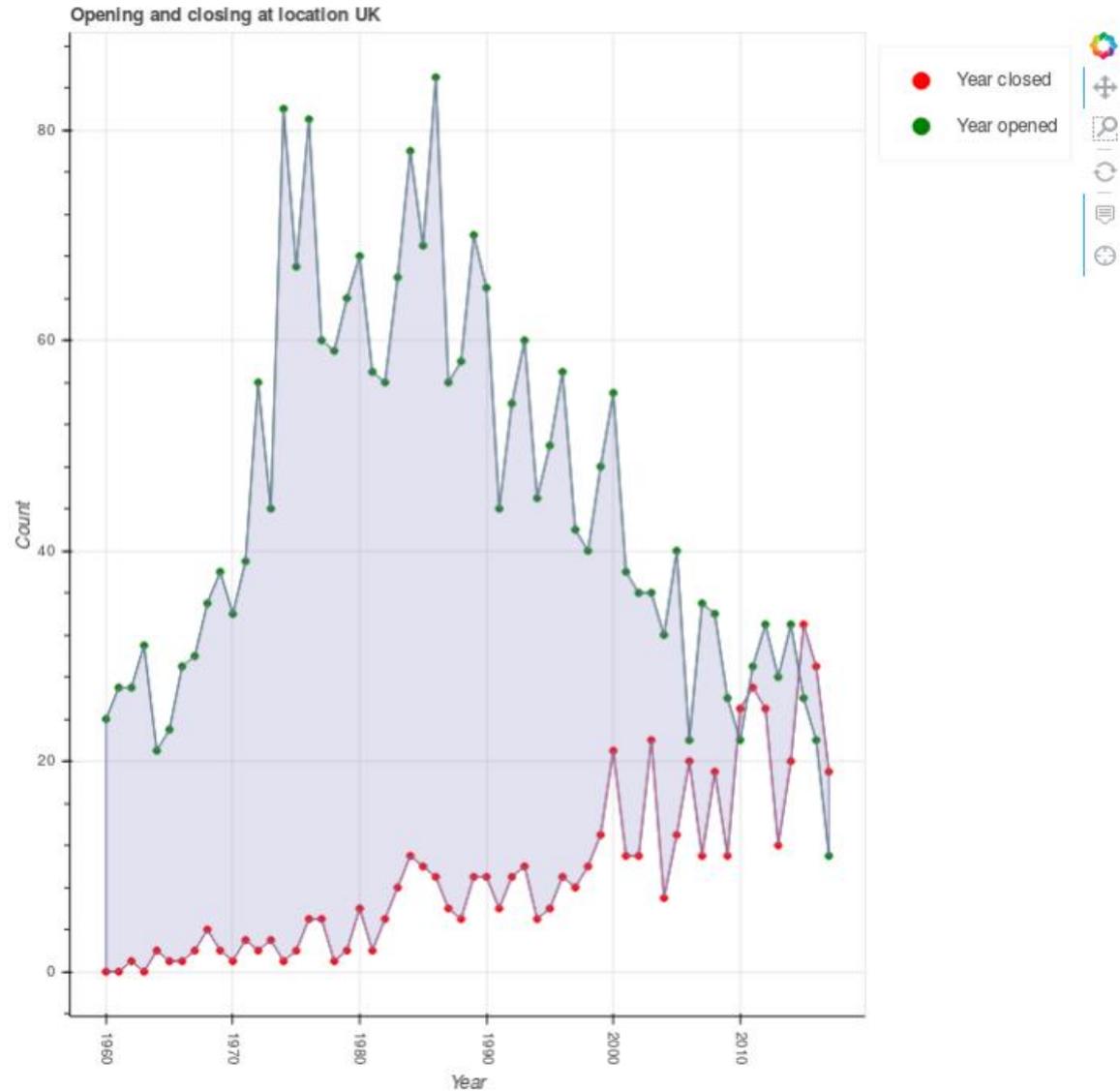
- X
- Y



Visualise

Number of museums opening and closing over time

- Visualisations
 - Number of museums
 - open at a given time
 - that opened up to given time
 - open over time
 - openings over time
 - closings over time
 - openings and closings over time
 - All
- Plot
 - X
 - Governance
 - Classification 2018
 - MM size
 - Location
 - Y
 - Governance
 - Classification 2018
 - MM size



Visualise

Plotting Subject Classification vs Governance

Visualisations

Number of museums

- open at a given time
- that opened up to given time
- open over time
- openings over time
- closings over time
- openings and closings over time

Plot

X

- Governance
- Classification 2018
 - Archaeology
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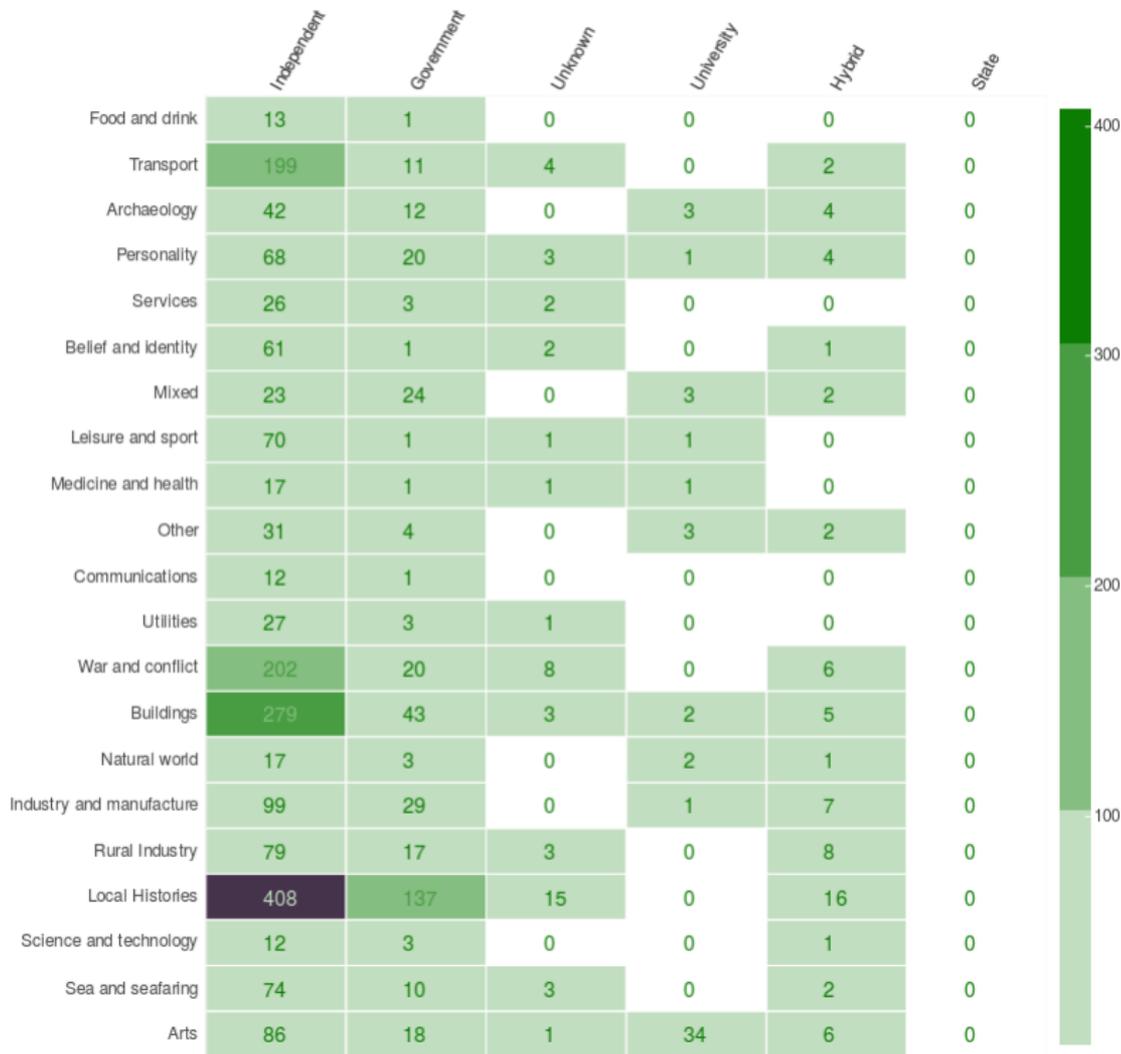
MM size

Location

Y

- Governance
 - Government
 - Independent
 - State
- Classification 2018
- MM size

Heat map by count, Classification 2018 by Governance, max=408, n=2881, location=UK



Year: 2017



Publication of KB and Web App

- KB and Web Application will be freely accessible on a dedicated website by end 2019
- Dataset will be published and freely available as Linked Open Data
- Project software is open-source and GPL licenced
- Hard copies of the dataset will be archived in the Micromuseums Archive at the Bishopsgate Institute

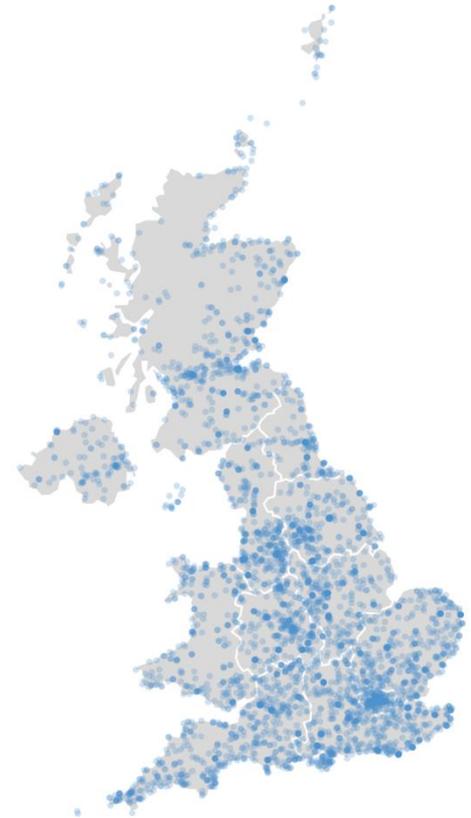
Ongoing Work

- Formative evaluation has been undertaken with 15 independent domain experts from the UK museums sector
- Additional user testing is planned for Autumn 2019
- A full project website is being developed
- Quantitative, interview-based, and archival research is being conducted to establish correlations between museum openings/closings and attributes such as governance, location, size, subject matter
- Additional data on Output Area classification and Deprivation Index is enabling new analyses into the demographic context of museum openings/closings

Towards Museum Analytics

blogs.bbk.ac.uk/mapping-museums

Andrea Ballatore
Department of Geography
Birkbeck, University of London

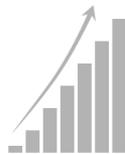


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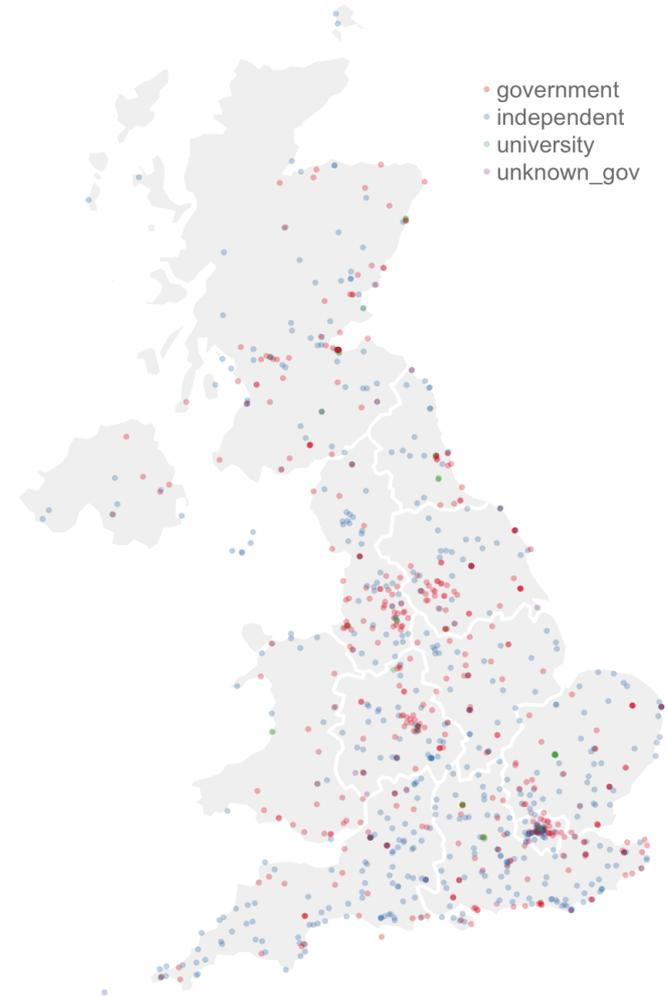


Museums in place

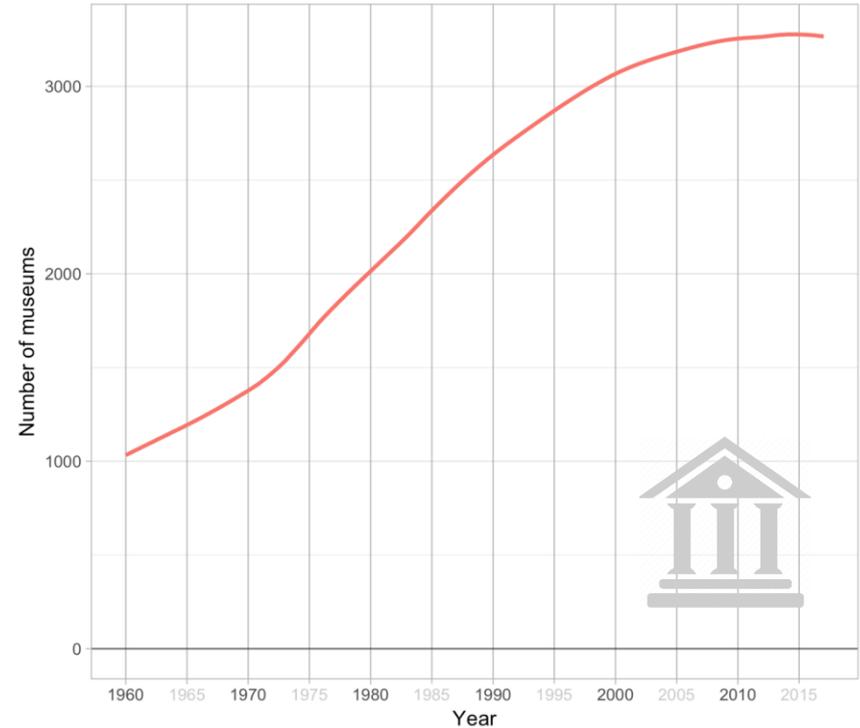
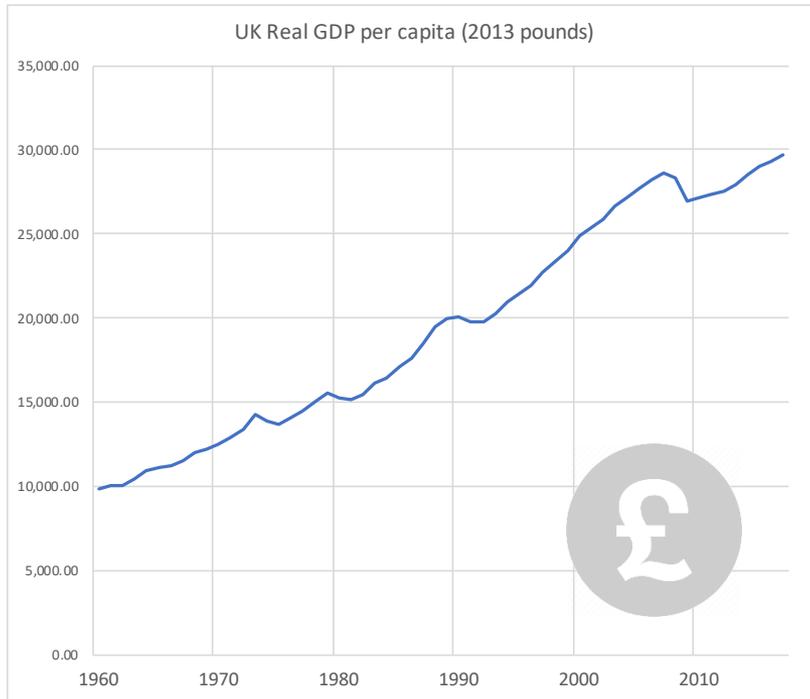
- Why do museums open and close?
- National and Regional funding, economic growth, tourism, deindustrialization, peace
- Geo-demographic context
- Charting new geographies of UK museums



Museums in the UK
(1960)

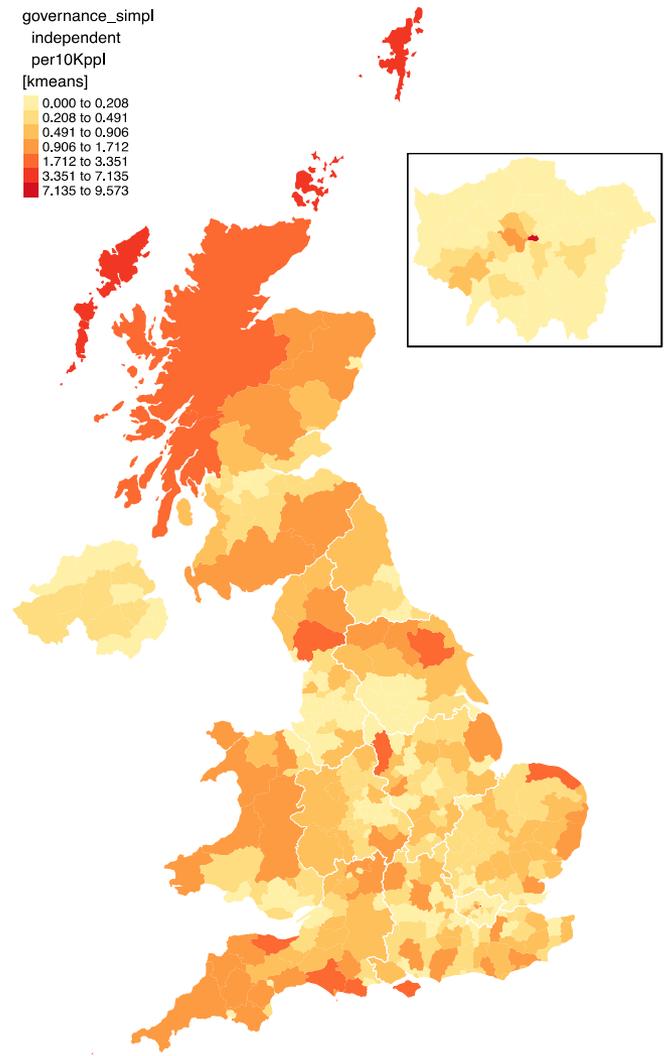
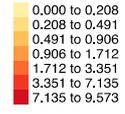


Per capita GDP vs number of museums

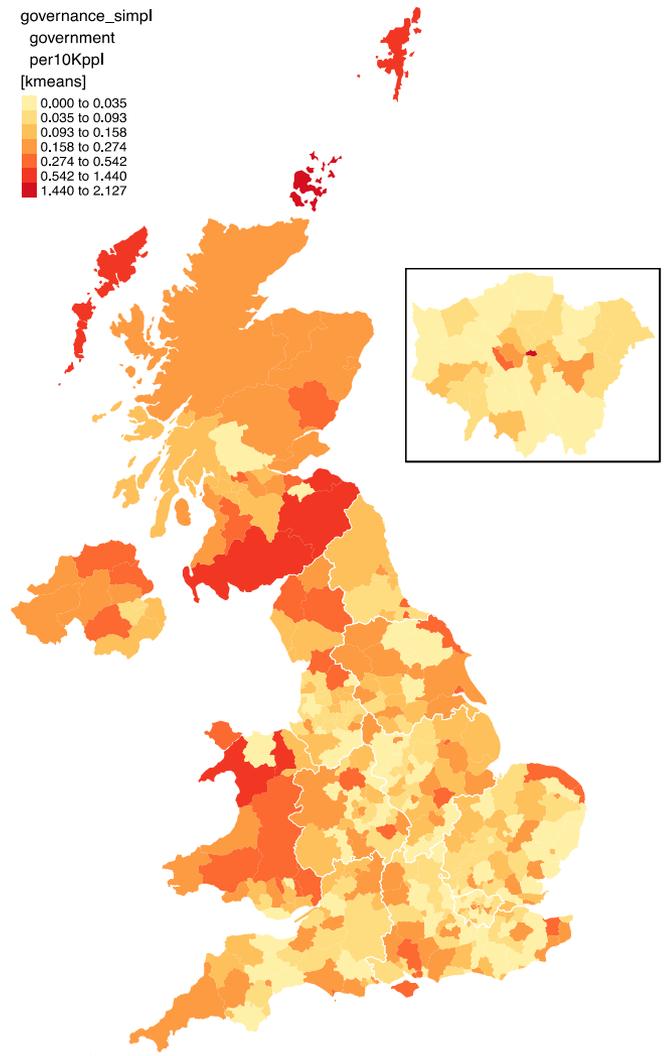
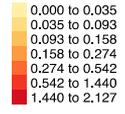


(UK, 1960-2017)

governance_simpl
independent
per10Kppl
[kmeans]

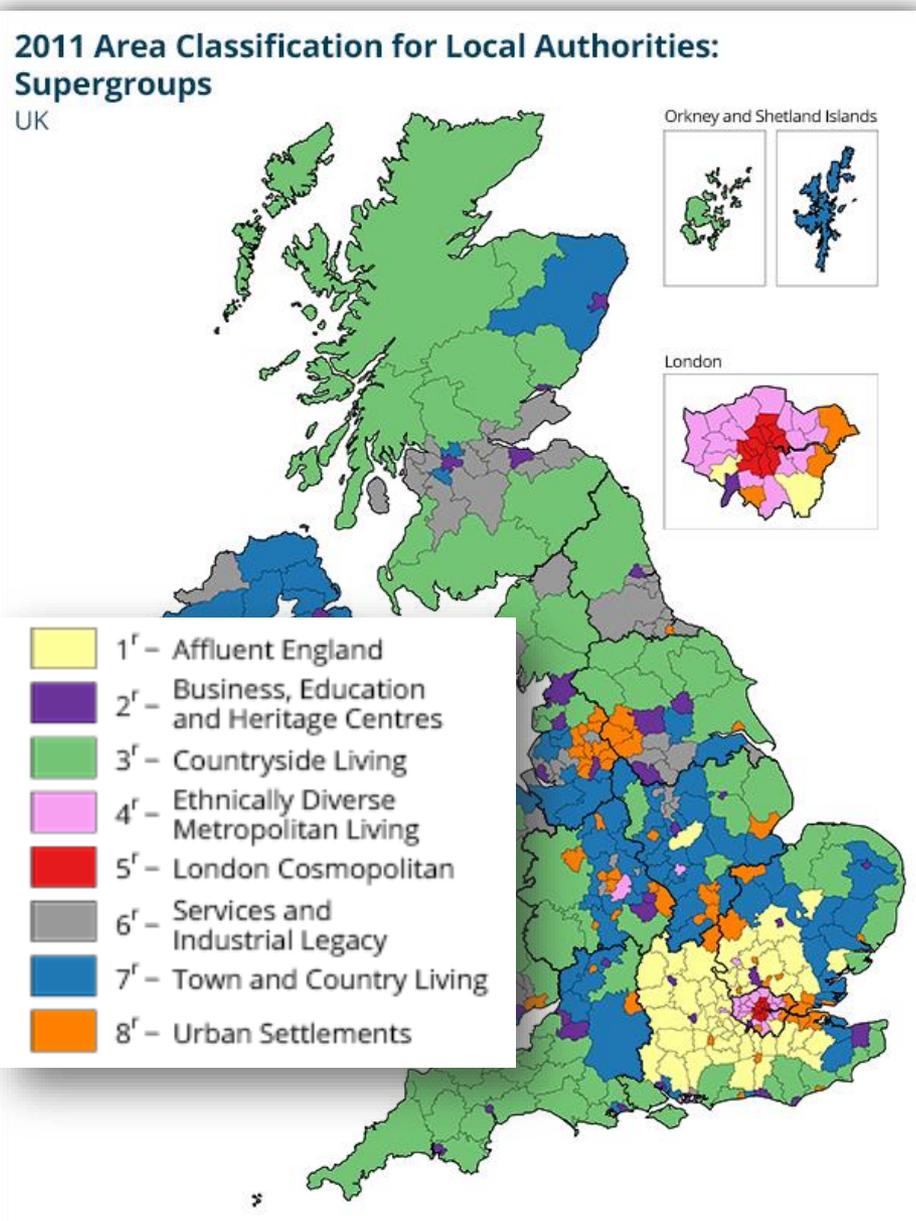


governance_simpl
government
per10Kppl
[kmeans]



The geodemography of places

- The population of a geographic area can be understood across multiple variables (age, ethnicity, income, etc).
- **Geo-demographic classifications** summarise these characteristics into categories



Geodemographic categories



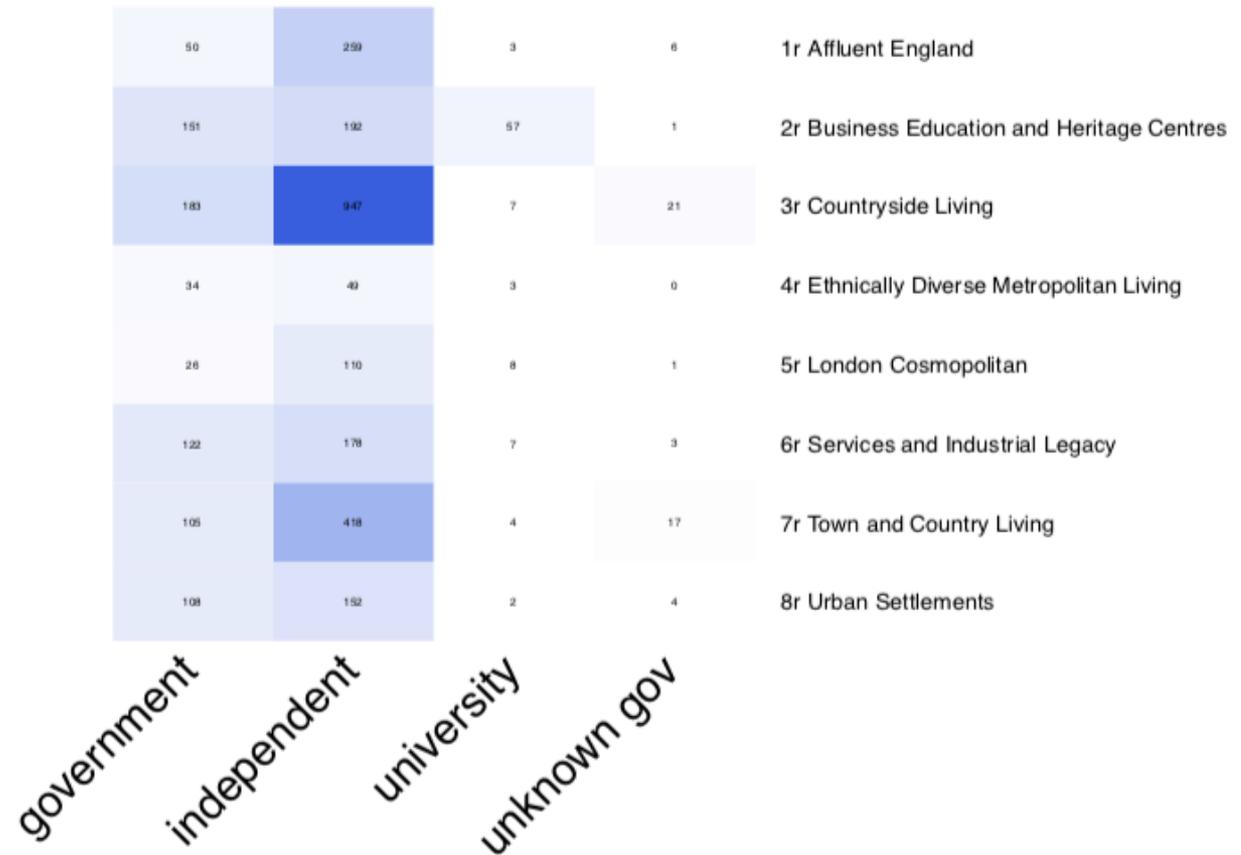
- **Countryside living:** The population for this supergroup are characterised by living in rural areas with a low population density and a much higher median age (46). Residents are more likely to own their own home Unemployment and qualification levels are below the national average. ...
- **Ethnically diverse metropolitan living:** The major characteristic of these areas is that they have a high proportion of residents from non-White ethnic groups. Population density is high, as is overcrowding There is a relatively young population age structure. Households are more likely to reside in terrace housing or flats

(ONS 2011 residential-based area classifications)

Output area classification (Census 2011)

What is the **demographic context** of museums?

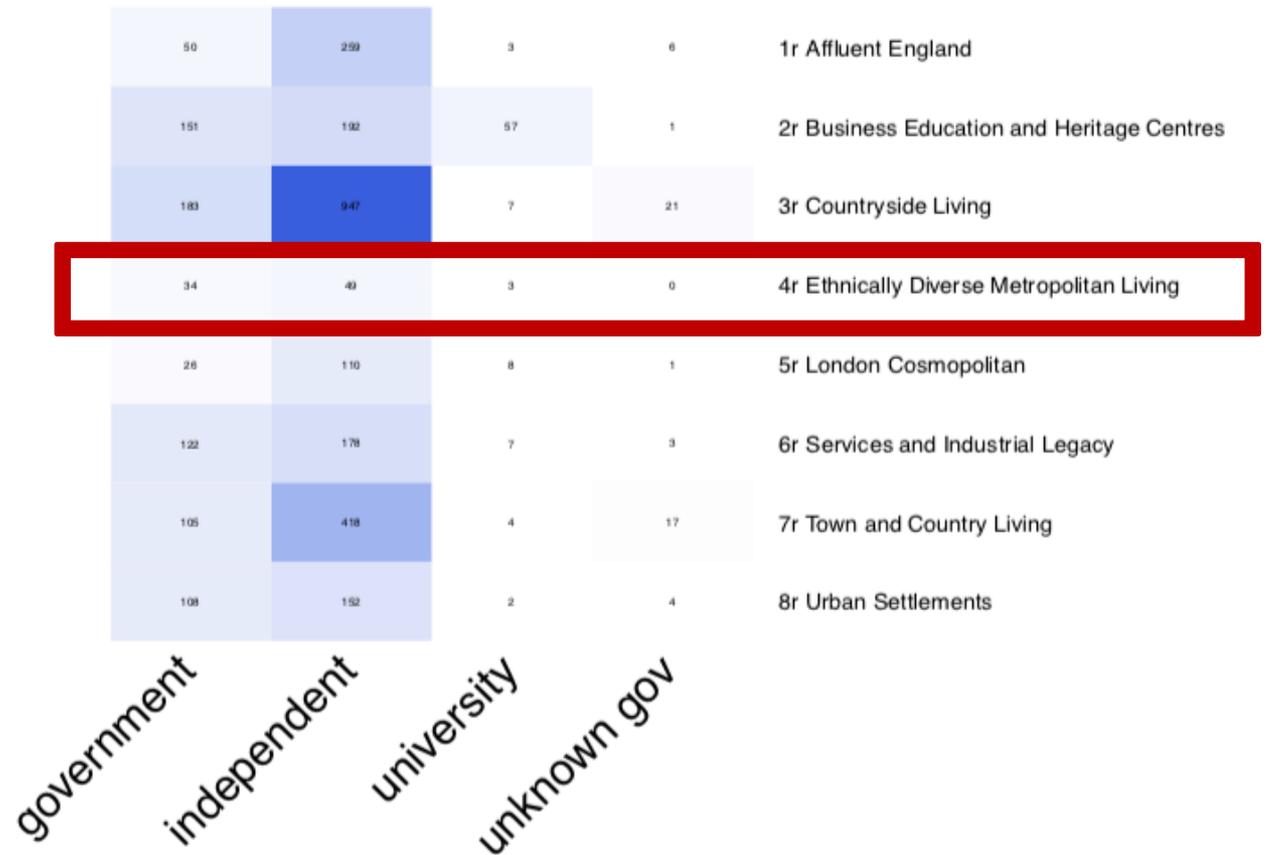
Where do museums tend to be opened (and closed)?



Output area classification (Census 2011)

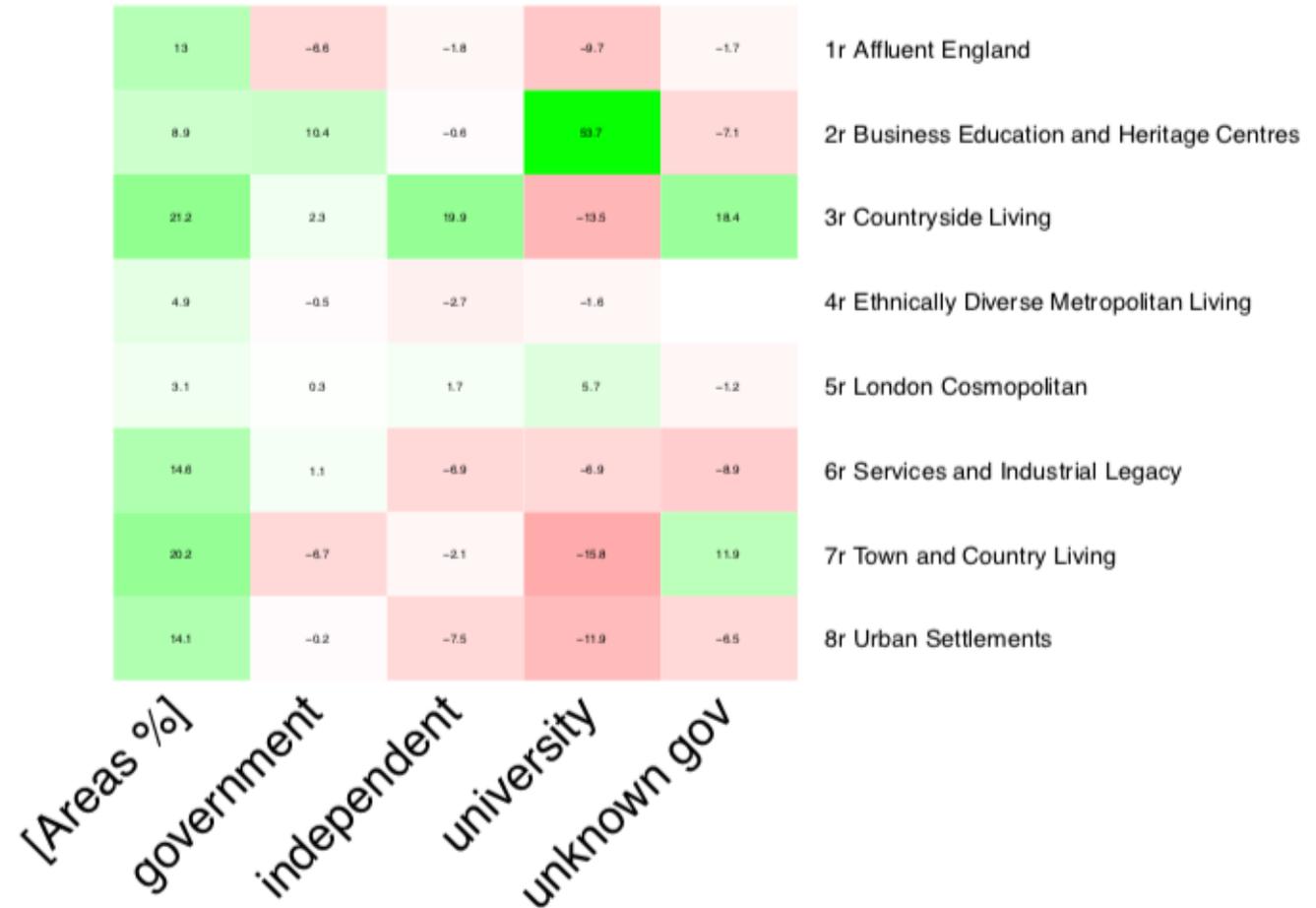
What is the demographic context of museums?

Where do museums tend to be opened (and closed)?



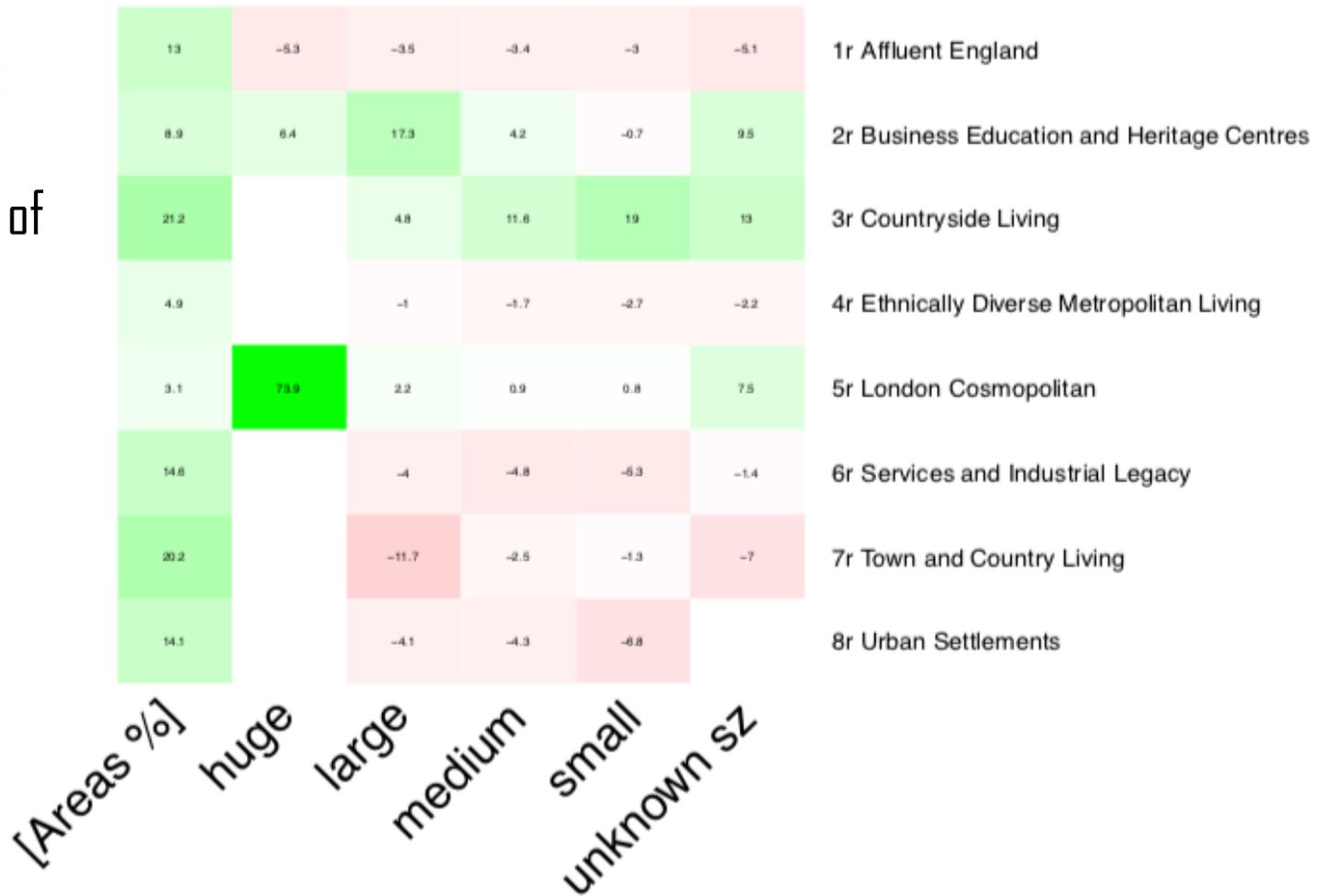
Over- and under-representation for governance

What categories
attract more or
fewer museums of
a given
governance?



Over- and under-representation for size

What categories
attract more or
fewer museums of
a given size?



Museums & deprivation

Are museums a public service with a catchment area?

How do museums relate to deprivation?

The English Index of Multiple Deprivation (IMD) 2015

The official measure of relative deprivation for small areas

The IMD ranks each small area in England from:

1st

most deprived area



32,844th

least deprived area

32,844 small areas (called Lower-layer Super Output Areas) in England with an average of 1,500 residents each

*Supplementary index -
Income Deprivation Affecting
Children Index (IDAC)*

7 domains of deprivation

included in the Index:



Income
22.5%



Employment
22.5%



Education
13.5%



Health
13.5%



Crime
9.3%



Barriers to housing & services
9.3%

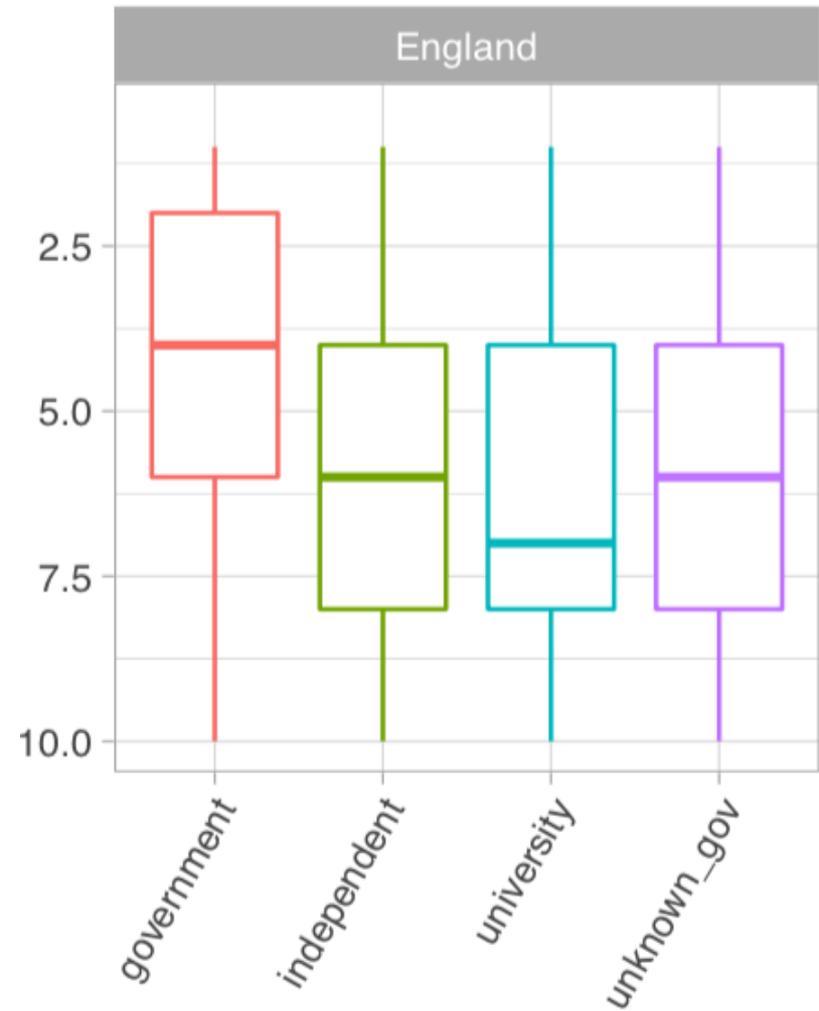


Living environment
9.3%

*Supplementary index -
Income Deprivation Affecting
Older People Index (IDAOPI)*

Deprivation and governance

How do museums relate to deprivation in each country by governance?



Museum analytics



- Broad vision
- Applying **data science** to the sector
- Integration of data collection in a single format and repository
- Cross-reference with other data sources
- Inform practitioners and policy-makers

Possible directions



- What factors predict the **survival** of a museum?
- Are there museums that are located in **deprived** areas that nonetheless survive?
- Can those museums provide **models** for museum practice more generally?
- Is the geography of museums' location congruent with that of its visitors? How to study the **two geographies**?