Gaining insights from addressing data

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National Audit Office

Introduction

- Role of the National Audit Office

- Role of the Mapping discipline

- Examples addressing in our work

  - What have we done
  - What are the challenges

- Looking forward

Role of the National Audit Office

The NAO scrutinises public spending for Parliament to help it hold government to account and improve public services.

Financial Audit

- Audited 370 accounts in 2017-18, representing all central government departments and many other public bodies.

Value for Money Studies

- Focuses on 'the effectiveness, efficiency and economy of government spending' not government policy.
- Around 60 publications annually.
- Split between Value for Money reports and Investigations.
- Our recommendations and reports help government improve public services, and our work led to audited savings of £741 million in 2017.
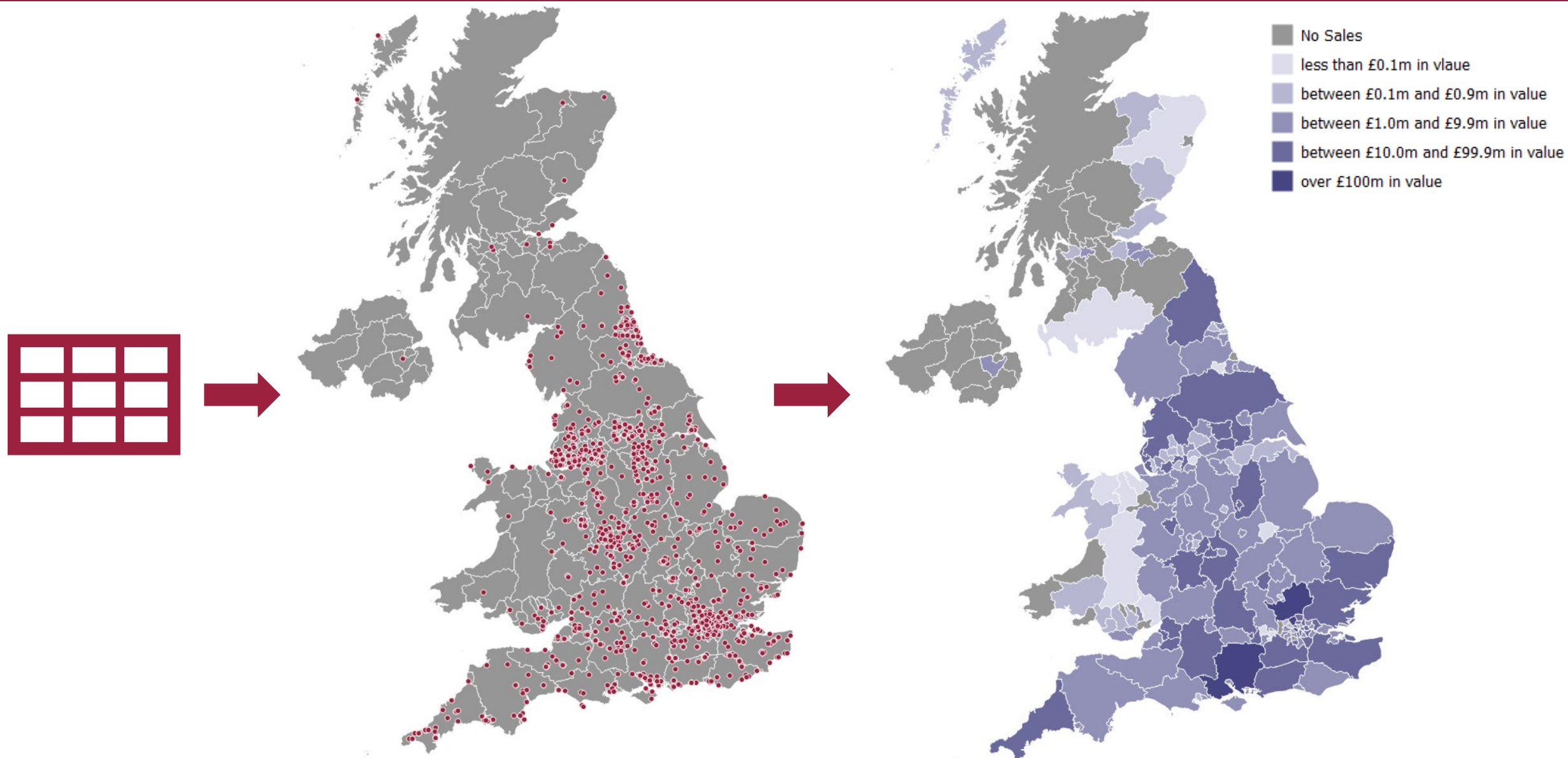
Role of the Mapping Discipline

- One of eight analytical disciplines that support study teams.

- Support our teams throughout the study cycle but in particular:
  - Scoping
  - Fieldwork and drafting of reports
  - Publication

- Use a range of software depending on the analysis/product: QGIS, R with Rshiny and Tableau.

- Other responsibilities:
  - Engaging with wider GI profession
  - Delivering and developing training
  - Expanding mapping capabilities
  - Developing and maintaining data presentation standards in relation to maps

Why is addressing data important to the NAO

- In auditing the economy efficiency and effectiveness of public service delivery it is important to remember that all public services are delivered somewhere.

- Depending on the context of the audit it is important to know some or all of the following:

  - What is being delivered where

  - To what level of service/quality/cost

  - Servicing which populations

  - Where there are changes in service delivery: what are the potential impacts

Using addressing data

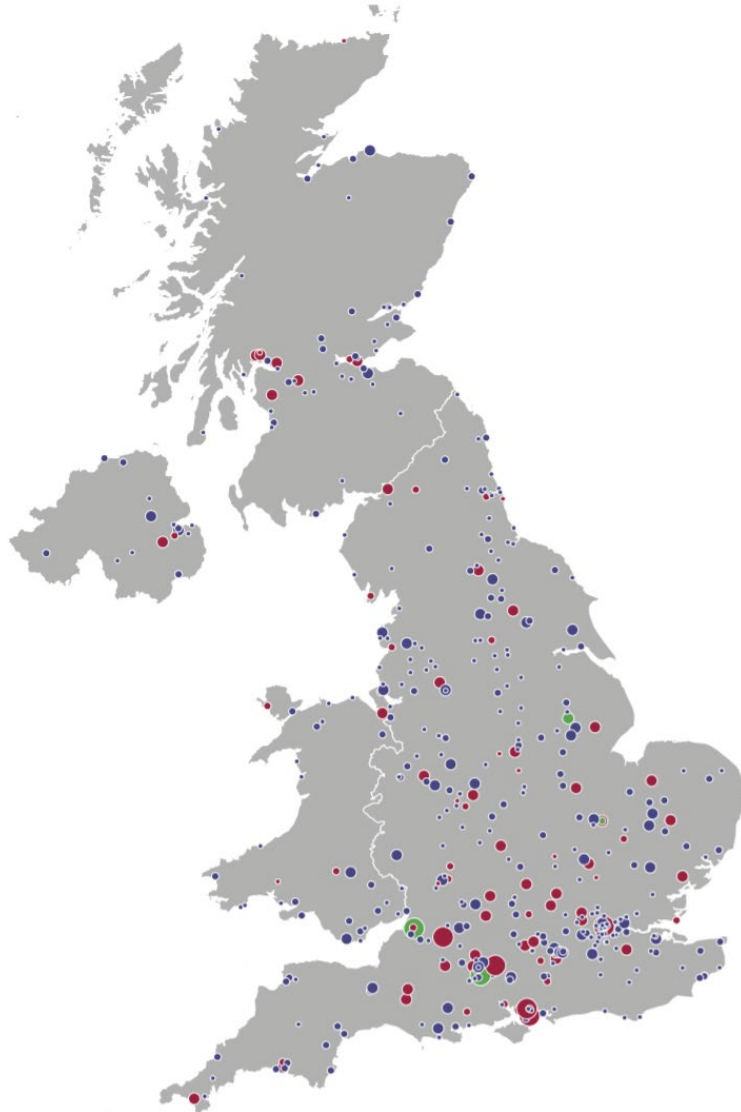Source: Investigation into HMG Land Disposal and Strategy, 2019

Legend:
- No Sales
- less than £0.1m in vlaue
- between £0.1m and £0.9m in value
- between £1.0m and £9.9m in value
- between £10.0m and £99.9m in value
- over £100m in value

Using addressing data

Figure 3

Distribution of the Ministry of Defence's civilian workforce in the United Kingdom

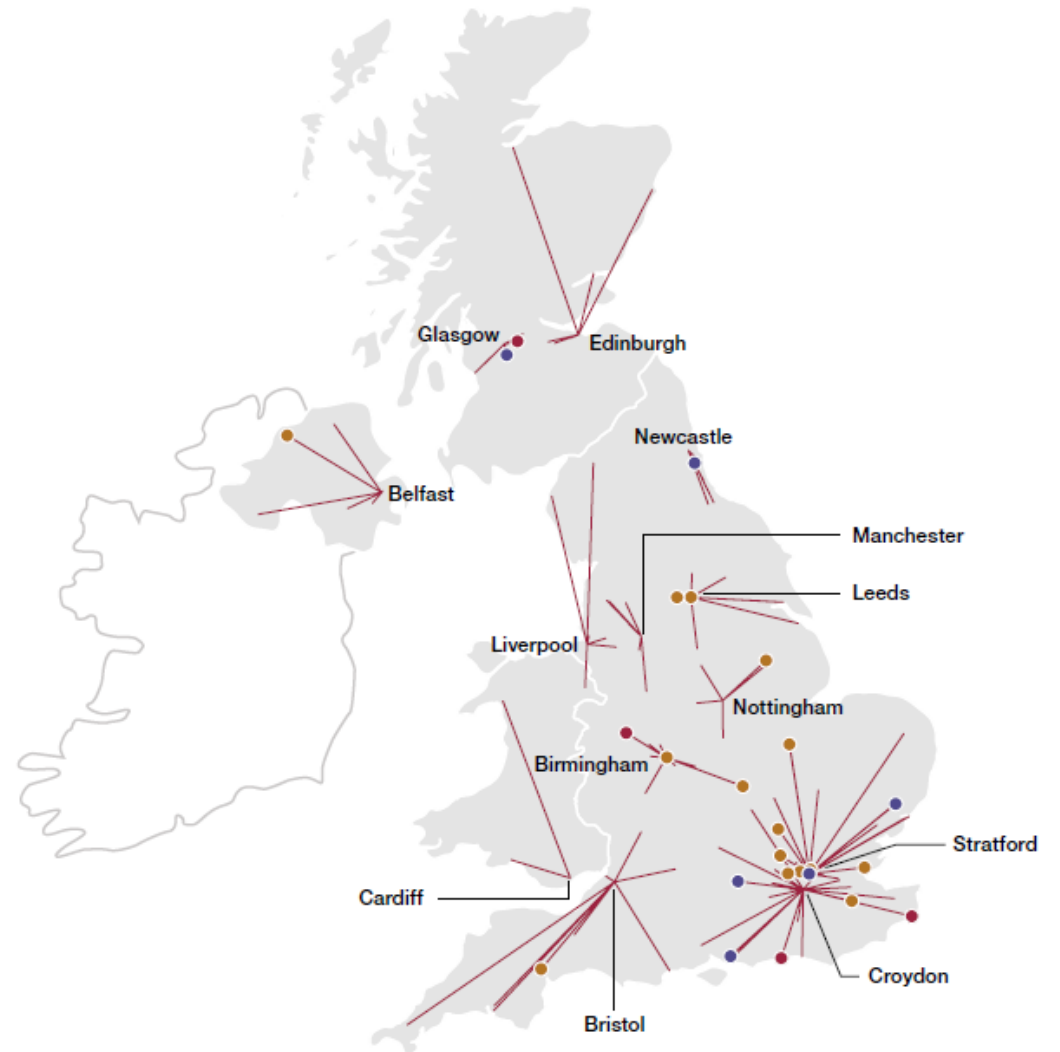The civilian workforce is spread across the Department's bases and sites

Size of site by headcount
- ◯ Over 1,000 staff
- ○ Less than 1,000 staff
- ○ Less than 100 staff
- ○ Less than 10 staff

- One defence organisation at site
- Two defence organisations at site
- Three or more defence organisations at site

Source: Reforming the Civilian Workforce, March 2019

Figure 9

HMRC regional centres and links to the current offices which will transfer work and staff to each regional centre

Glasgow, Edinburgh, Newcastle, Belfast, Manchester, Leeds, Liverpool, Nottingham, Birmingham, Cardiff, Stratford, Croydon, Bristol

Source: Managing the HMRC Estate, January 2017

Using addressing data

Figure 11

Availability of sponsors near underperforming maintained schools by local authority area, at January 2018

There are generally fewer sponsors near each underperforming maintained primary school than near each underperforming secondary school, particularly in the north of England

a) Sponsors near underperforming primary schools

Boundary type
- Regional schools commissioner boundary
- Local authority boundary

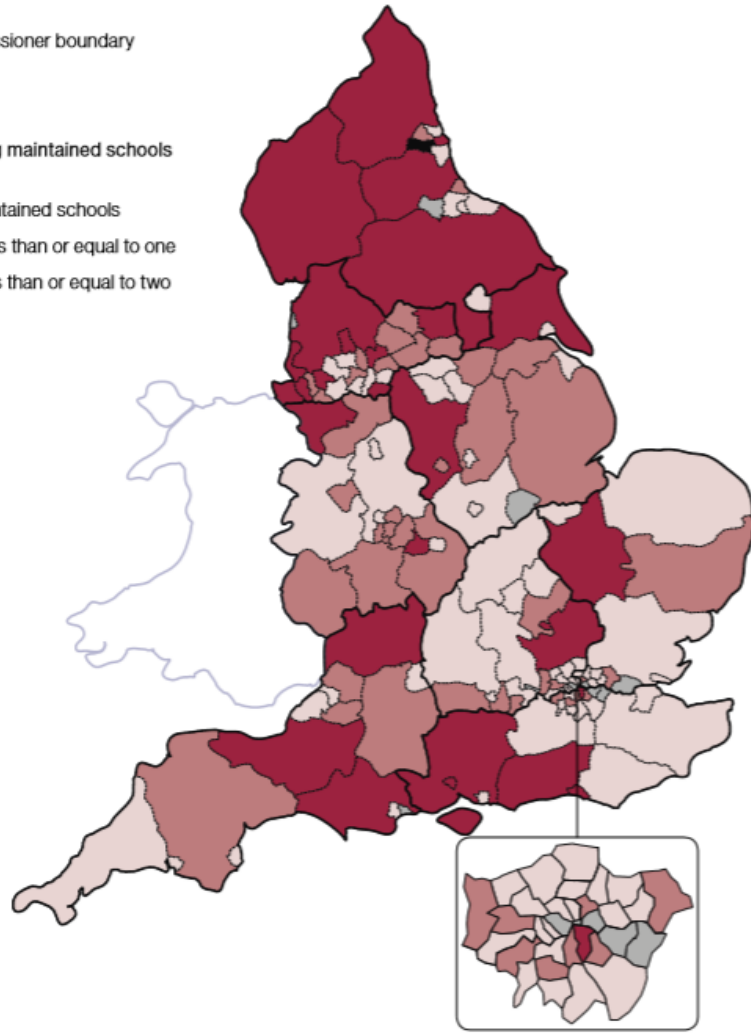Number of underperforming maintained schools for every sponsor
- No underperforming maintained schools
- Greater than zero and less than or equal to one
- Greater than one and less than or equal to two
- Greater than two
- No sponsors

"3.13: Our analysis also indicated that underperforming maintained schools in some parts of the country have less access to potential sponsors than in others (Figure 11 on pages 46 and 47). This suggests that the Department may find it difficult to identify appropriate sponsors for underperforming schools in some local areas."

Issues with addressing data

Example data	Issue
M3	Partial postcodes
XZ9 9XX	Incorrect postcode
The Laurels, East Street	No postcode
Southern Section of A1000 by Allentown	Not an addressable location
1 Rosebud Lane, Somewhereton, CR24 5AR 22 Rosebud Lane, Somewhereton, CR25 5AR	Genuine postcode but for the wrong location
21 Long Street Longwayton WE46 7AX Wiltshire	Postcode as part of an addressing string
Incomplete location information	Completeness of data received
*******	No postcode

Looking forward

- **Solutions to address matching:**

  - Automated checking using AddressBase
    - Developing an application for batch cleaning, processing and appending of plottable co-ordinates.
    - Checking address strings conformity to postcodes to provide analysts with a warning where there may not be a match.

- **Deeper location analysis:**

  - Accessibility of multiple services to locations.
  - Potential application of spatial interaction models.
  - Testing the use of spatial data in departmental operational planning and delivery where appropriate.

- **Last thoughts**