Data sources and risks

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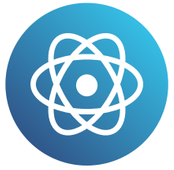

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Assessment Research Lead, DataCamp

Common sources of data

- Web events
- Customer data
- Logistics data
- Financial transactions

Web data

- Events
- Timestamps
- User information

user_id	event_name	timestamp
1234	homepage_visit	2019-01-01 12:01:01

Personally Identifiable Information (PII)

Name	Timestamp	Object Clicked
Jane Doe	2019-01-20 12:05:00	Like Button

"Jane Doe" = Personally Identifiable Information (PII)

Data pseudonymization

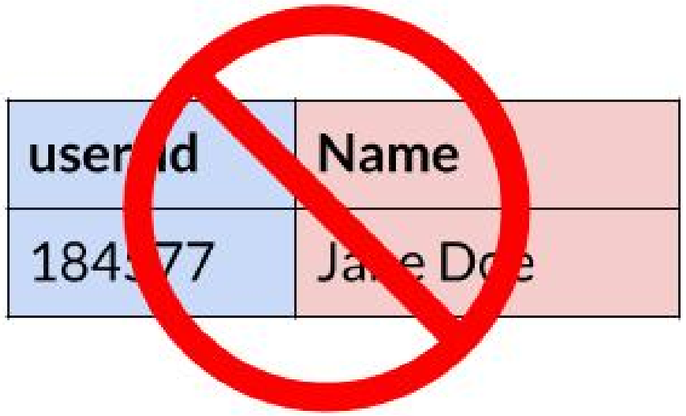
user_id	Timestamp	Object Clicked
184577	2019-01-20 12:05:00	Like Button

user_id	Name
184577	Jane Doe

- Restricted access
- Audit logs

Data anonymization

user_id	Timestamp	Object Clicked
184577	2019-01-20 12:05:00	Like Button



General Data Protection Regulation (GDPR)

- Applies to all data inside of the EU
- Give individuals control over their personal data
- Regulates how long data can be stored
- Mandates appropriate anonymization
- Disclose data collection and gain consent

Let's practice!

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Solicited data

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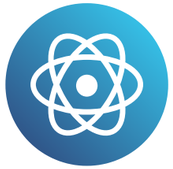

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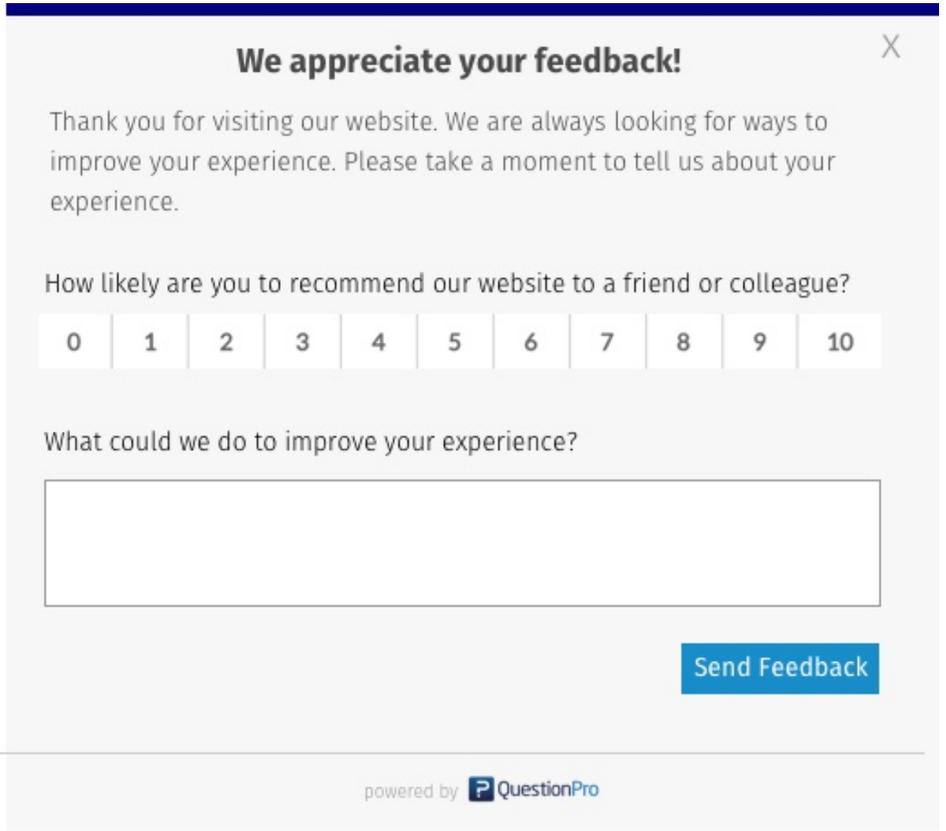
Why do we solicit data?

- Create marketing collateral
- De-risk decision making
- Monitor quality

Types of solicited data

- Surveys
- Customer reviews
- In-app questionnaires
- Focus groups



Types of solicited data

Qualitative

- Conversations
- Open-ended questions

Quantitative

- Multiple choice
- Rating scale

Revealed and stated preferences

Stated preference

- Hypothetical
- Subjective

Revealed preference

- Actions
- Purchasing decisions

Best practices

Be specific

Do this	Not that
On a scale of 1 - 5, how would you rate the **quality of content** on DataCamp?	How would you rate DataCamp?

Best practices

Be specific

Do this	Not that
On a scale of 1 - 5, how would you rate the **quality of content** on DataCamp?	How would you rate DataCamp?

Avoid loaded language

Do this	Not that
Which of the following political issues is most important to you?	Which of the following **controversial** political issues is most important to you?

Best practices

Calibrate

Do this	Not that
Rate your interest in each of the following products at DataCamp.	Are you interested in Skill Assessment at DataCamp?

Best practices

Calibrate

Do this	Not that
Are you interested in Skill Assessment at DataCamp?	Rate your interest in each of the following products at DataCamp.

Require actionable results

Do this	Not that
Have a hypothesis for each question	Ask a question just because it's interesting

Let's practice!

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Collecting additional data

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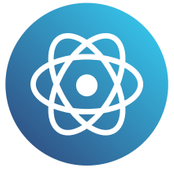

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Even more data

- APIs
- Public records
- Mechanical Turk

Data APIs

- **A**pplication **P**rogramming **I**nterface
- Request data over the internet

- Twitter
- Wikipedia
- Yahoo! Finance
- Google Maps
- Many more!

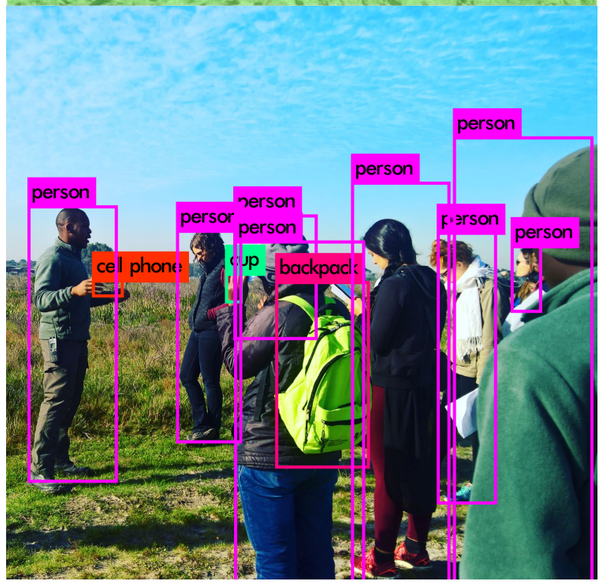
Tracking a hashtag

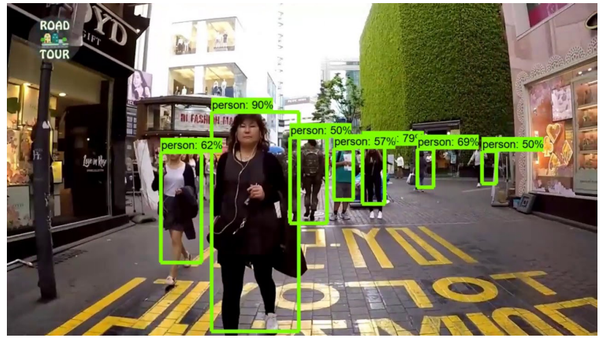
- All tweets with `#DataFramed` (DataCamp's podcast!)
- Use Twitter API

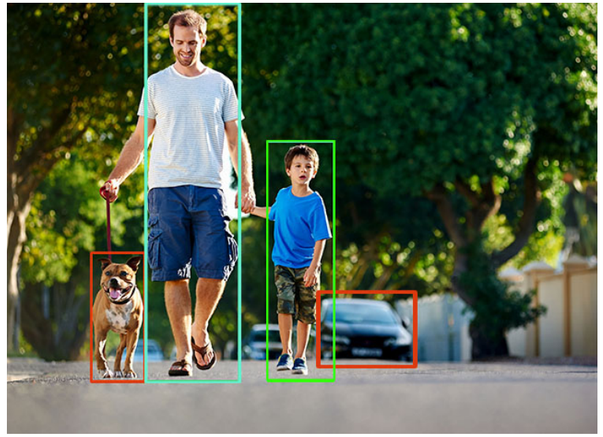
Public records

- For the US, **data.gov**
- For the EU, **data.europa.eu**

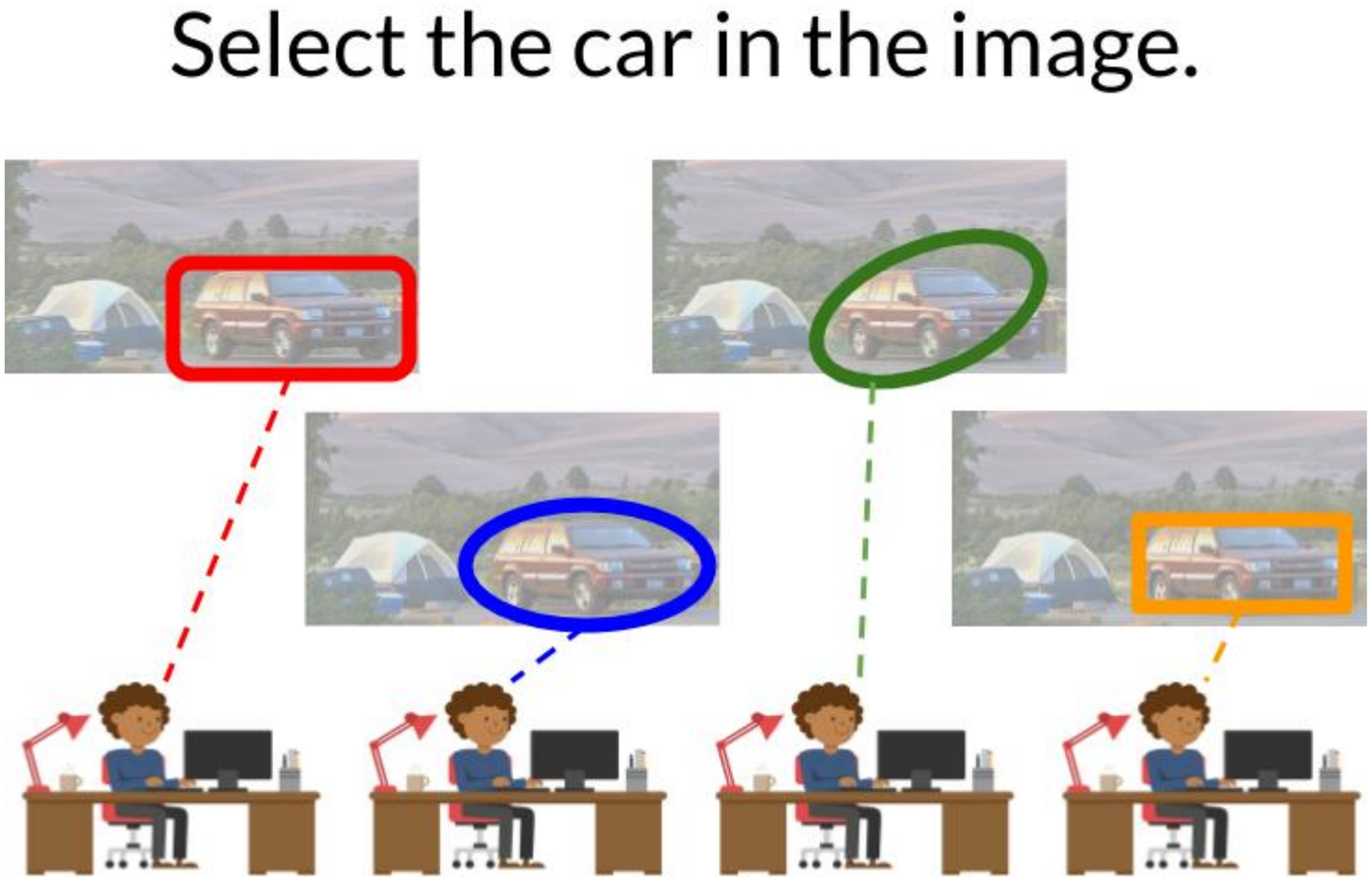
Building a training set





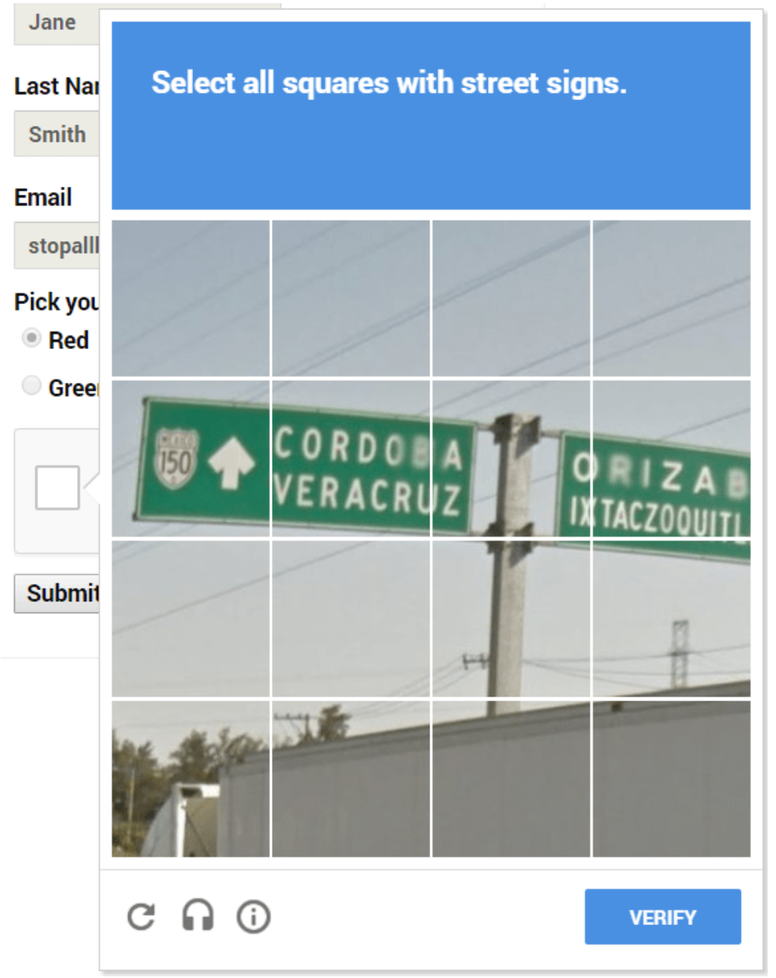


Mechanical Turk



Mechanical Turk

- Resource: AWS MTurk
- Label customer reviews
- Extract text from a form
- Highlight key words in a sentence



Let's practice!

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Data storage and retrieval

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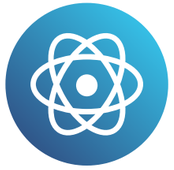

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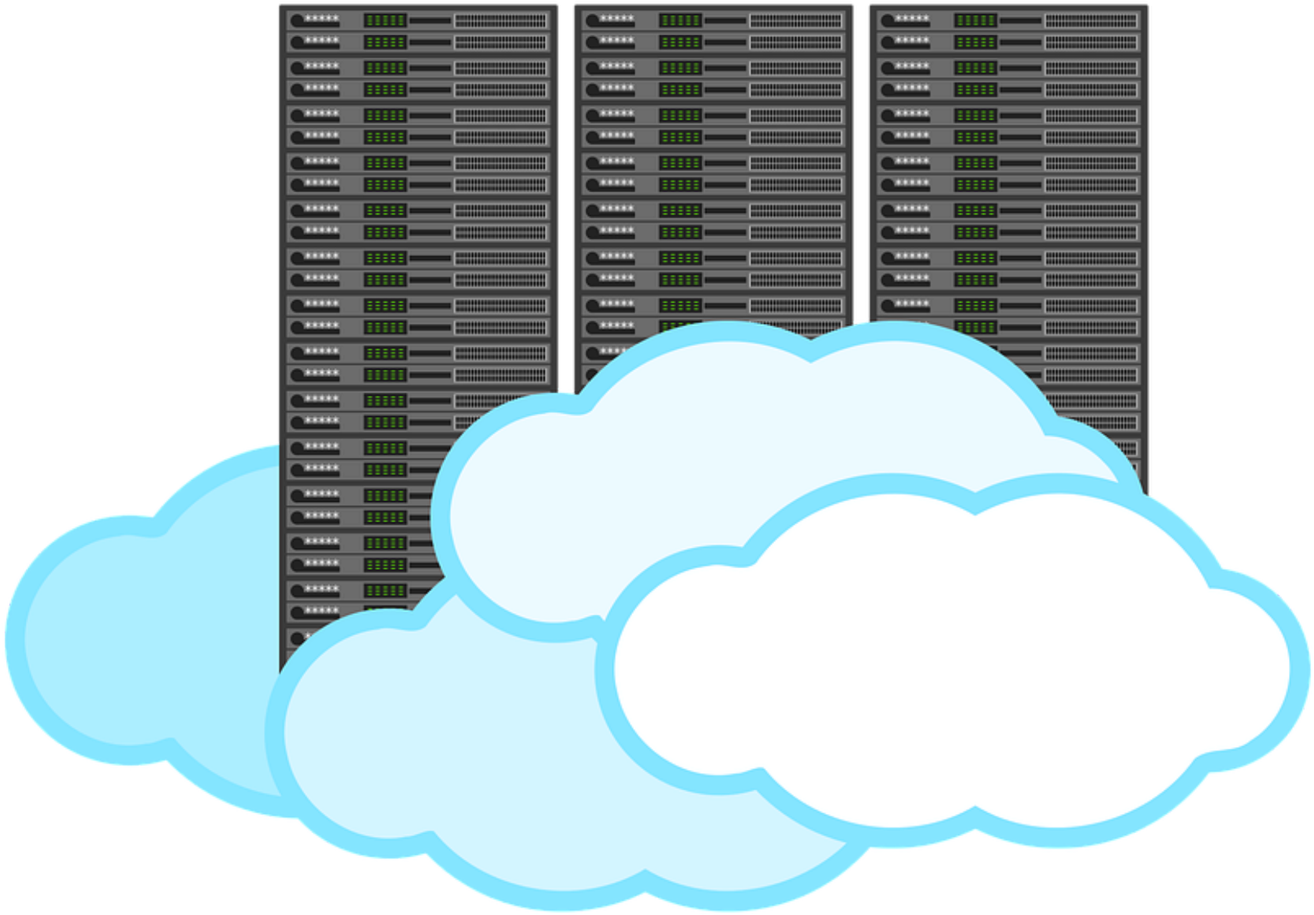
Parallel storage solutions

The cloud



Types of data storage

Unstructured

- Email
- Text
- Video and audio files
- Web pages
- Social media

Document Database

Types of data storage

Unstructured

- Email
- Text
- Video and audio files
- Web pages
- Social media

Document Database

Tabular

Customer Name	Customer Address	...
Jane Doe	123 Maple St.	...

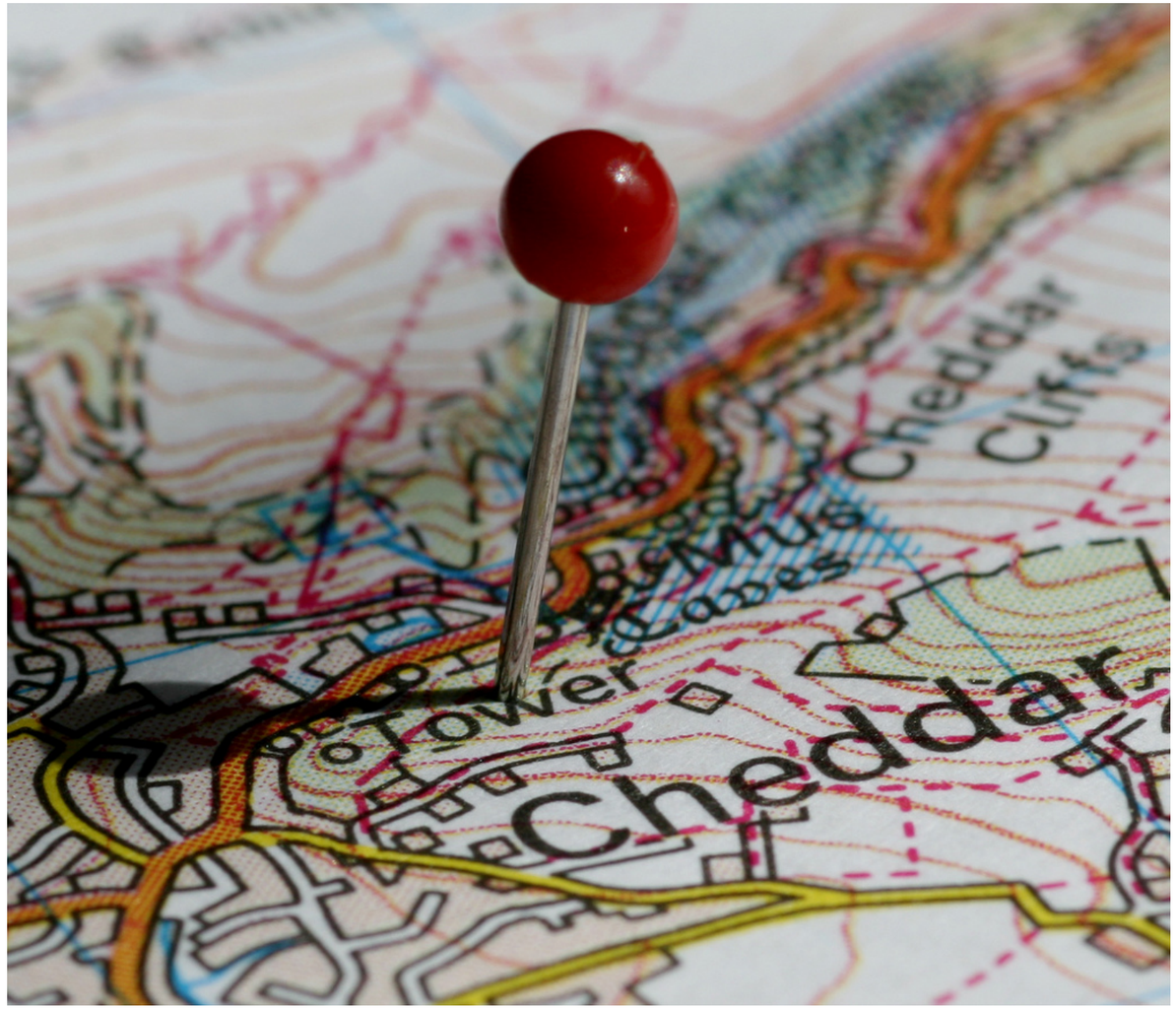
Relational Database

Data querying

Data querying

Data Type	Query Language
Document Database	NoSQL
Relational Database	SQL

Putting it all together: Location



- On-premises cluster
- Cloud provider:
  - Azure
  - AWS
  - Google Cloud

Putting it all together: Data type

Putting it all together: Data type

Data Type	Storage Solution
Unstructured	Document Database
Tabular	Relational Database

Putting it all together: Queries

Putting it all together: Queries

Data Type	Query Language
Document Database	NoSQL
Relational Database	SQL

Let's practice!

DATA SCIENCE FOR MANAGERS