Online Data Sources

Lab 2

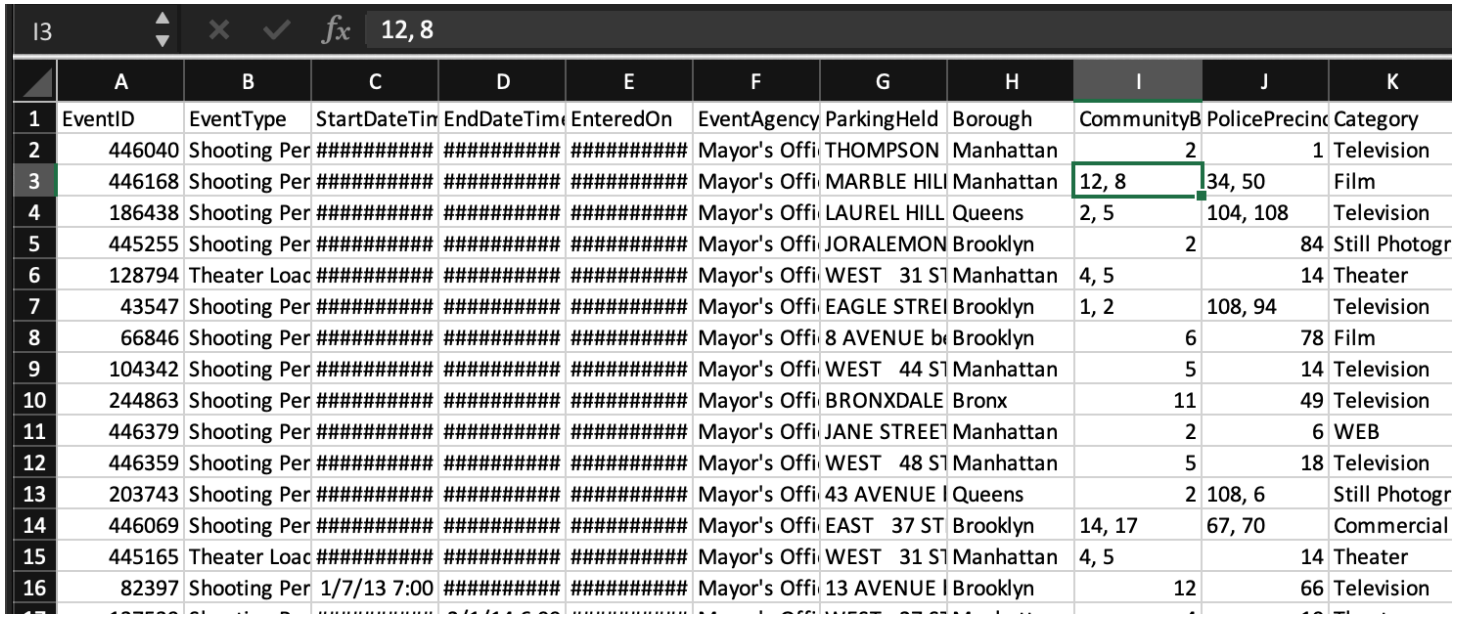
Agenda

- Publicly available tabular datasets
- Data from research papers, repositories
- Getting data with API’s
- Data within web pages

- R Markdown basics
- Downloading and parsing web pages with R
- Dealing with unstructured data: **regular expressions**

Publicly available tabular data

- 50 Amazing Free Data Sources You Should Know
- Data.gov
- NYC OpenData
- Google Dataset Search
- US Census Table viewer



I3 | fx | 12, 8

	A	B	C	D	E	F	G	H	I	J	K
1	EventID	EventType	StartDateTim	EndDateTim	EnteredOn	EventAgency	ParkingHeld	Borough	CommunityB	PolicePrecinc	Category
2	446040	Shooting Per	##########	##########	##########	Mayor's Offi	THOMPSON	Manhattan	2	1	Television
3	446168	Shooting Per	##########	##########	##########	Mayor's Offi	MARBLE HILL	Manhattan	12, 8	34, 50	Film
4	186438	Shooting Per	##########	##########	##########	Mayor's Offi	LAUREL HILL	Queens	2, 5	104, 108	Television
5	445255	Shooting Per	##########	##########	##########	Mayor's Offi	JORALEMON	Brooklyn	2	84	Still Photogr
6	128794	Theater Loac	##########	##########	##########	Mayor's Offi	WEST 31 ST	Manhattan	4, 5	14	Theater
7	43547	Shooting Per	##########	##########	##########	Mayor's Offi	EAGLE STREE	Brooklyn	1, 2	108, 94	Television
8	66846	Shooting Per	##########	##########	##########	Mayor's Offi	8 AVENUE be	Brooklyn	6	78	Film
9	104342	Shooting Per	##########	##########	##########	Mayor's Offi	WEST 44 ST	Manhattan	5	14	Television
10	244863	Shooting Per	##########	##########	##########	Mayor's Offi	BRONXDALE	Bronx	11	49	Television
11	446379	Shooting Per	##########	##########	##########	Mayor's Offi	JANE STREET	Manhattan	2	6	WEB
12	446359	Shooting Per	##########	##########	##########	Mayor's Offi	WEST 48 ST	Manhattan	5	18	Television
13	203743	Shooting Per	##########	##########	##########	Mayor's Offi	43 AVENUE I	Queens	2	108, 6	Still Photogr
14	446069	Shooting Per	##########	##########	##########	Mayor's Offi	EAST 37 ST	Brooklyn	14, 17	67, 70	Commercial
15	445165	Theater Loac	##########	##########	##########	Mayor's Offi	WEST 31 ST	Manhattan	4, 5	14	Theater
16	82397	Shooting Per	1/7/13 7:00	##########	##########	Mayor's Offi	13 AVENUE I	Brooklyn	12	66	Television

Data from research papers

- Nature repository guidelines
- Example: Harvard Dataverse

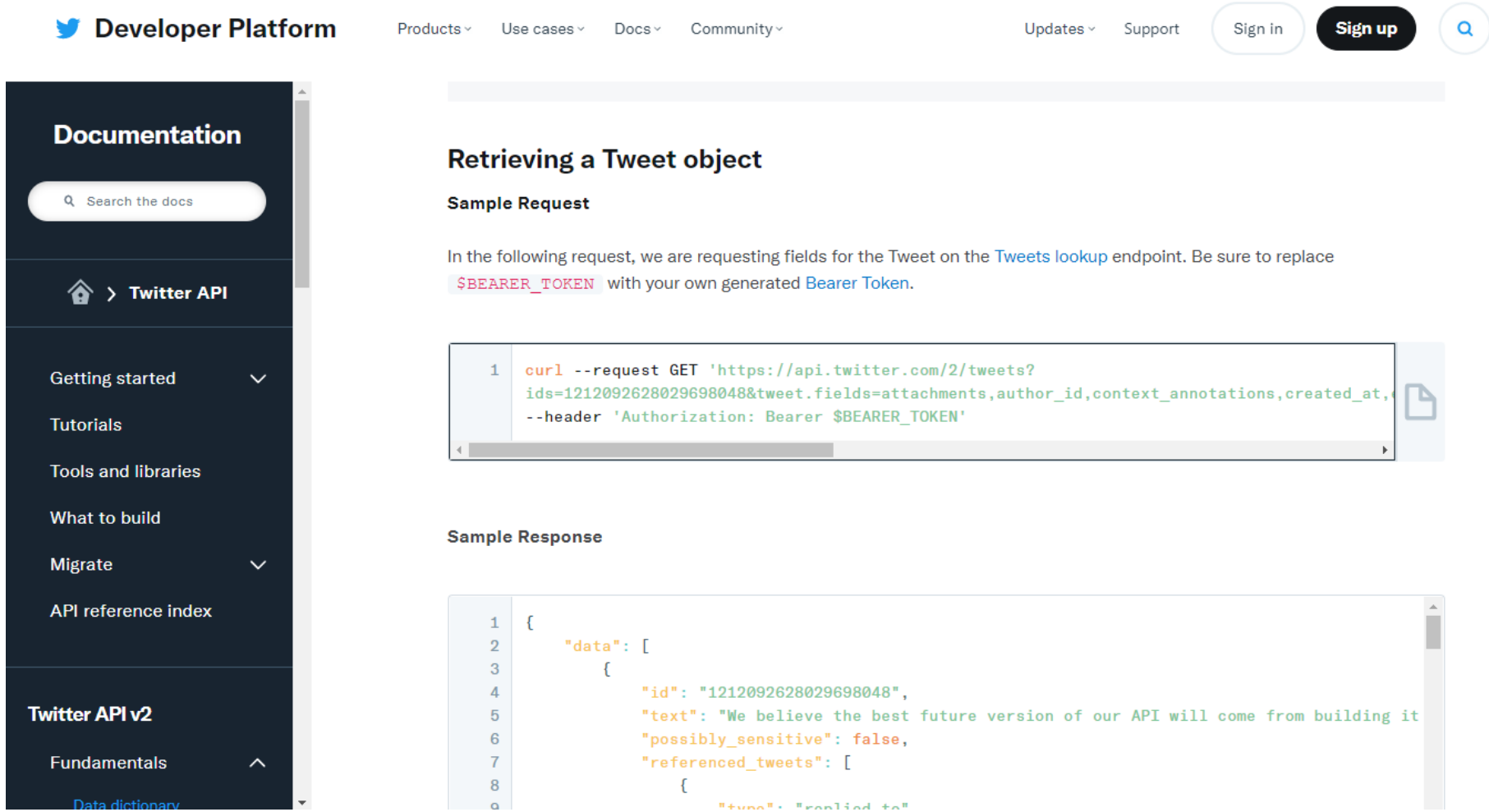
Ethics. Permits were obtained from the Bavarian government and the Bavarian regional office for forestry (LWF).

Data accessibility. Data available from the Dryad Digital Repository: https://doi.org/10.5061/dryad.rv15dv44s [65].

Authors' contributions. All authors conceived the idea and designed the study; B.K. conducted the paternity analyses; K.B.B. and D.R.F. analysed the data with input from B.K.; K.B.B., D.R.F. and B.K. wrote the manuscript.

Getting data with API's

Application Programming Interface



Getting data with API's

1. Start your query with the host name:
https://api.census.gov/data

2. Add the data year to the URL:
https://api.census.gov/data/**2019**

This is the year that the data were estimated.

3. Add the dataset name acronym:
https://api.census.gov/data/2019/**pep/charagegroups**

This is the base URL for this dataset. You can find dataset names by browsing the discovery tool: https://api.census.gov/data.html

4. Add **?get=** to the query
https://api.census.gov/data/2019/pep/charagegroups**?get=**

5. Add your variables:
https://api.census.gov/data/2019/pep/charagegroups?get=**NAME,POP**

Data within web pages

www.eFloras.org

Flora of North America

All Floras Advanced

FNA Vol. 7 Page 465, **483** Login | eFloras H

FNA | Family List | FNA Vol. 7 | Brassicaceae | Cardamine

37. **Cardamine rotundifolia** Michaux, Fl. Bor.-Amer. 2: 30. 1803.

Dentaria rotundifolia (Michaux) Greene

Perennials; glabrous throughout. **Rhizomes** slender, to 2 mm diam. **Stems** usually procumbent, sometimes
(not flexuous), unbranched or branched, (1-) 1.5-3(-5) dm. **Rhizomal leaves** absent. **Basal leaves** (soon wit
not rosulate. **Cauline leaves** simple, petiolate; petiole (0.3-)0.5-2.5(-4) cm, base not auriculate; blade oblong
suborbicular, or cordate, (0.5-) 1-4.5(-5.5) cm × (5-)10-40(-54) mm, base cordate, rounded, or truncate, marg
repand, or sinuate, (distally with shorter petiole, blade smaller). **Racemes** ebracteate. **Fruiting pedicels** diva
ascending, (6-)10-15(-20) mm. **Flowers:** sepals oblong, 2-3 × 1-1.7 mm, lateral pair not saccate basally; pet
broadly oblanceolate, spreading, 5-7(-8) × 2-3 mm, (not clawed, apex rounded); filaments: median pairs 3.5-
lateral pair 2.7-3.5 mm; anthers oblong, 0.8-1.2 mm. **Fruits** linear, (torulose), 1-1.5(-2) cm × 0.8-1.1 mm; ovu
per ovary; style 1.5-2.5 mm. **Seeds** brown, oblong to ovoid, 0.9-1.1 × 0.5-0.6 mm.

Flowering Apr-Jun. Stream banks, swamps, low woodland, wet rocky areas, seepage areas; 150-400 m; Del
Md., N.J., N.Y., N.C., Ohio, Pa., Tenn., Va., W.Va.

Related Objects

- Distribution Map Map

Related Links (opens in a new window)

Other Databases

- W³TROPICOS
- IPNI

| eFlora Home | People Search | Help | ActKey | Hu Cards | Glossary |

```
<!DOCTYPE html PUBLIC "-//W3C//DTD HTML 4.0 Transitional//EN">
<html>
  <!--%@ OutputCache Duration=60 VaryByParam="flora_id;taxon_id"  %-->
▶ <head>…</head>
  <!-- body onload="formMOMap.submit()" -->
▼ <body> == $0
  ▼ <table id="TableMain" cellspacing="1" cellpadding="1" width="640" border="0">
    ▼ <tbody>
      ▶ <tr>…</tr>
      ▶ <tr>…</tr>
      ▼ <tr>
        ▼ <td id="tdBody">
          ▼ <table id="tableBody" cellspacing="0" cellpadding="0" width="100%" border="0">
            ▼ <tbody>
              ▼ <tr>
                  <td id="tdLeftBar" valign="top" width="0"></td>
                ▼ <td id="tdContent" valign="top" width="1930">
                  ▼ <table width="100%" border="0">
                    ▼ <tbody>
                      ▼ <tr>
                        ▼ <td valign="top">
                          ▶ <table id="tableTaxonChain" cellspacing="0" cellpadding="1" width="100%" border="0">…</table>
                            <p></p>
                          ▼ <div id="panelTaxonTreatment">
                            ▼ <span id="lblTaxonDesc">
                                <!-- FNA Template -->
                                " 37. "
                                <b>Cardamine rotundifolia</b>
                                " Michaux, Fl. Bor.-Amer. 2: 30. 1803. "
                                <p> </p>
                                <p> </p>
                                <p> </p>
                              ▶ <p>…</p>
                              ▼ <p>
                                  <b>Perennials;</b>
                                  " glabrous throughout. "
                                  <b>Rhizomes</b>
                                  " slender, to 2 mm diam. "
                                  <b>Stems</b>
                                  " usually procumbent, sometimes erect, (not flexuous), unbranched or branched, (1-) 1.5-3(-5) dm. "
                                  <b>Rhizomal leaves</b>
                                  " absent. "
                                  <b>Basal leaves</b>
                                  " (soon withered), not rosulate. "
```

Managing text with regular expressions

search_person	search_vehicle
FALSE	FALSE
FALSE	FALSE
FALSE	FALSE
TRUE	TRUE
FALSE	FALSE
FALSE	FALSE
FALSE	FALSE
TRUE	TRUE
FALSE	FALSE
FALSE	FALSE
FALSE	FALSE
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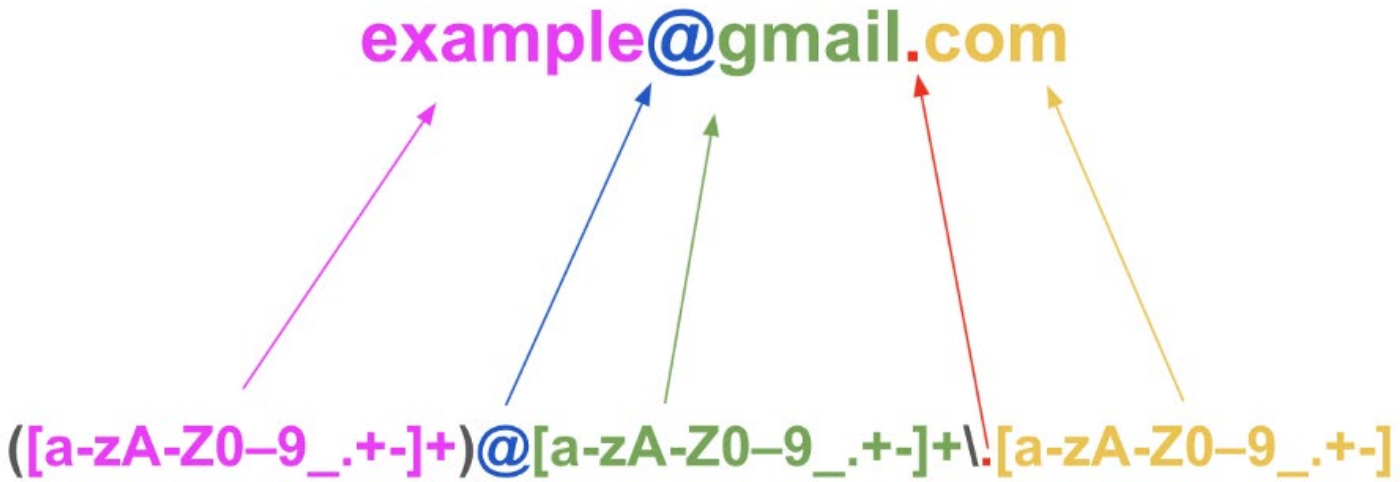
```
[39] "VIOLATION OF TRANSPORTATION/VEHICLE LAWS|WATER SAFETY ACT"
[40] "PRE-EXISTING KNOWLEDGE|VIOLATION OF CITY ORDINANCE"
[41] "CONSENSUAL CONTACT|PRE-EXISTING KNOWLEDGE"
[42] "PRE-EXISTING KNOWLEDGE|OTHER"
[43] "CALL FOR SERVICE|PRE-EXISTING KNOWLEDGE"
[44] "VIOLATION OF PENAL CODE|PRE-EXISTING KNOWLEDGE"
[45] "PRE-EXISTING KNOWLEDGE|MOTOR VEHICLE DRIVER"
[46] "VIOLATION OF CITY ORDINANCE|MOTOR VEHICLE DRIVER"
[47] "CALL FOR SERVICE|WATER SAFETY ACT"
[48] "CONSENSUAL CONTACT|SUSPICIOUS PERSON / VEHICLE|CALL FOR SERVICE"
[49] "VIOLATION OF TRANSPORTATION/VEHICLE LAWS|CALL FOR SERVICE|PRE-EXISTING KNOWLEDGE"
[50] "CONSENSUAL CONTACT|SUSPICIOUS PERSON / VEHICLE|PRE-EXISTING KNOWLEDGE"
[51] "CALL FOR SERVICE|MOTOR VEHICLE DRIVER"
[52] "SUSPICIOUS PERSON / VEHICLE|MOTOR VEHICLE DRIVER"
[53] NA
[54] "CALL FOR SERVICE|PRE-EXISTING KNOWLEDGE|MOTOR VEHICLE DRIVER"
[55] "CONSENSUAL CONTACT|MOTOR VEHICLE DRIVER"
[56] "NA|VIOLATION OF TRANSPORTATION/VEHICLE LAWS|NA|CONSENSUAL CONTACT|VIOLATION OF TR
[57] "VIOLATION OF TRANSPORTATION/VEHICLE LAWS|SUSPICIOUS PERSON / VEHICLE|PRE-EXISTING
[58] "OTHER|WATER SAFETY ACT"
[59] "CONSENSUAL CONTACT|CALL FOR SERVICE"
[60] "SUSPICIOUS PERSON / VEHICLE|PRE-EXISTING KNOWLEDGE|OTHER"
[61] "VIOLATION OF TRANSPORTATION/VEHICLE LAWS|CONSENSUAL CONTACT|CALL FOR SERVICE"
[62] "NA|VIOLATION OF PENAL CODE|VIOLATION OF TRANSPORTATION/VEHICLE LAWS|PRE-EXISTING
```

Managing text with regular expressions



- More about learning regular expressions (regex)
- Regex cheat sheet

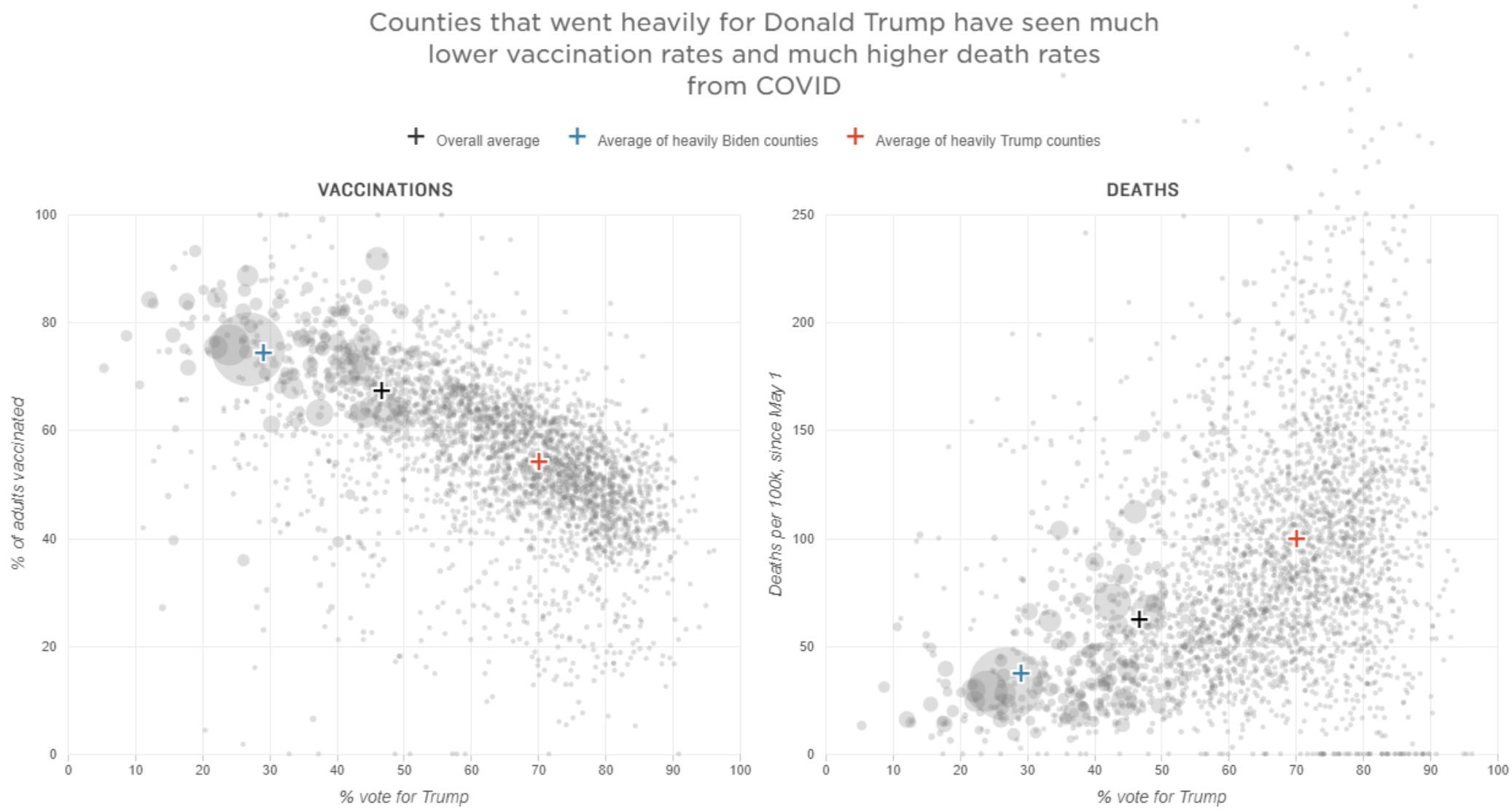
UNTANGLING DISINFORMATION

Pro-Tr
higher
Misinf

Updated Decembe
Heard on Morning

DANIEL WOOD

Counties that went heavily for Donald Trump have seen much lower vaccination rates and much higher death rates from COVID



Integrating data from multiple sources

Methodology

Vaccination rate data are the rate of vaccination among all people 18 years of age or older, as of Nov. 30. They are from the Centers for Disease Control and Prevention.

COVID-19 deaths per 100,000 residents are calculated by dividing the deaths from COVID-19 in a county since May 1 by the county's population. County population data come from the U.S. Census Bureau's 2020 decennial census. May 1 was chosen as the start date of our analysis because that is roughly the time when vaccines became universally available to adults ages 18 and older. COVID-19 death data is collected by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University and is current as of Nov. 30. COVID-19 death data for Florida and Utah are from the May 2 and December 1 editions of the COVID-19 Community Profile Report, produced by the White House COVID-19 Team.

2020 election result data are from MIT Election Data and Science Lab.

Integrating data from multiple sources

Adding variables (columns)
needs **same # rows**, and **a linking variable**

	A	B	**C**
1			
2			
3			
4			
5			
6			

+

C	D	E

Adding observations (rows)
needs **same # columns**

	A	B	C
1			
2			
3			

+

4			
5			
6			

Integrating data from multiple sources

What do we do here?