Training session: Collecting Twitter Data

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materials: github.com/NetDem-USC/training

Collecting Social Media Data

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Potential issues

1. Rate limits: restrictions on number of API calls by user and period of time (APIs are expensive!)
2. Ongoing debate on replication of social science research using social media data

Connecting with an API

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Authentication

- Most common is an open standard called OAuth
- Connections without sharing username and password, only temporary tokens that can be refreshed
- httr package in R implements most cases (examples)

Interacting with social media APIs

R packages

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- Facebook: Rfacebook

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Other APIs: CRAN Task View for Web Technologies and Services

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Equivalent libraries for python, java, ruby... whatever works for you!

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Important limitation: tweets can only be downloaded in real time (exception: user timelines, $\sim$ 3,200 most recent tweets are available)

Anatomy of a tweet

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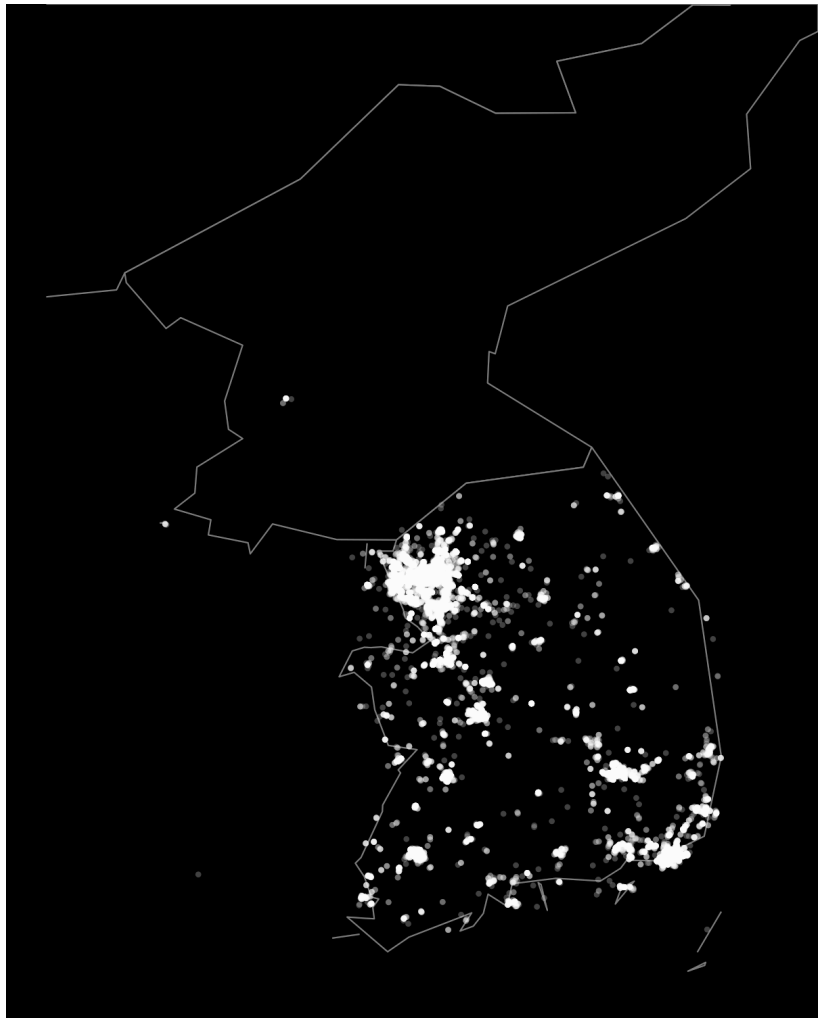
Tweets are stored in JSON format:


```
{ ”created_at”: ”Wed Nov 07 04:16:18 +0000 2012”,
  ”id”: 266031293945503744,
  ”text”: ”Four more years. http://t.co/bAJE6Vom”,
  ”source”: ”web”,
  ”user”: {
    ”id”: 813286,
    ”name”: ”Barack Obama”,
    ”screen_name”: ”BarackObama”,
    ”location”: ”Washington, DC”,
    ”description”: ”This account is run by Organizing for Action staff.
       Tweets from the President are signed -bo.”,
    ”url”: ”http://t.co/8aJ56Jcemr”,
    ”protected”: false,
    ”followers_count”: 54873124,
    ”friends_count”: 654580,
    ”listed_count”: 202495,
    ”created_at”: ”Mon Mar 05 22:08:25 +0000 2007”,
    ”time_zone”: ”Eastern Time (US & Canada)”,
    ”statuses_count”: 10687,
    ”lang”: ”en” },
  ”coordinates”: null,
  ”retweet_count”: 756411,
  ”favorite_count”: 288867,
  ”lang”: ”en”
}
```

Streaming API

- Recommended method to collect tweets
- Potential issues:
  - Filter streams have same rate limit as spritzer (1% of all tweets)
  - Stream connections tend to die spontaneously. Restart regularly.
  - Lots of invalid content in stream. If it can't be parsed, drop it.
- My workflow:
  - Amazon EC2, cloud computing
  - Cron jobs to restart R scripts every hour.
  - Save tweets in .json files or in MongoDB.
  - For large .json files, preprocess with python (see: github.com/pablobarbera/pytwools)

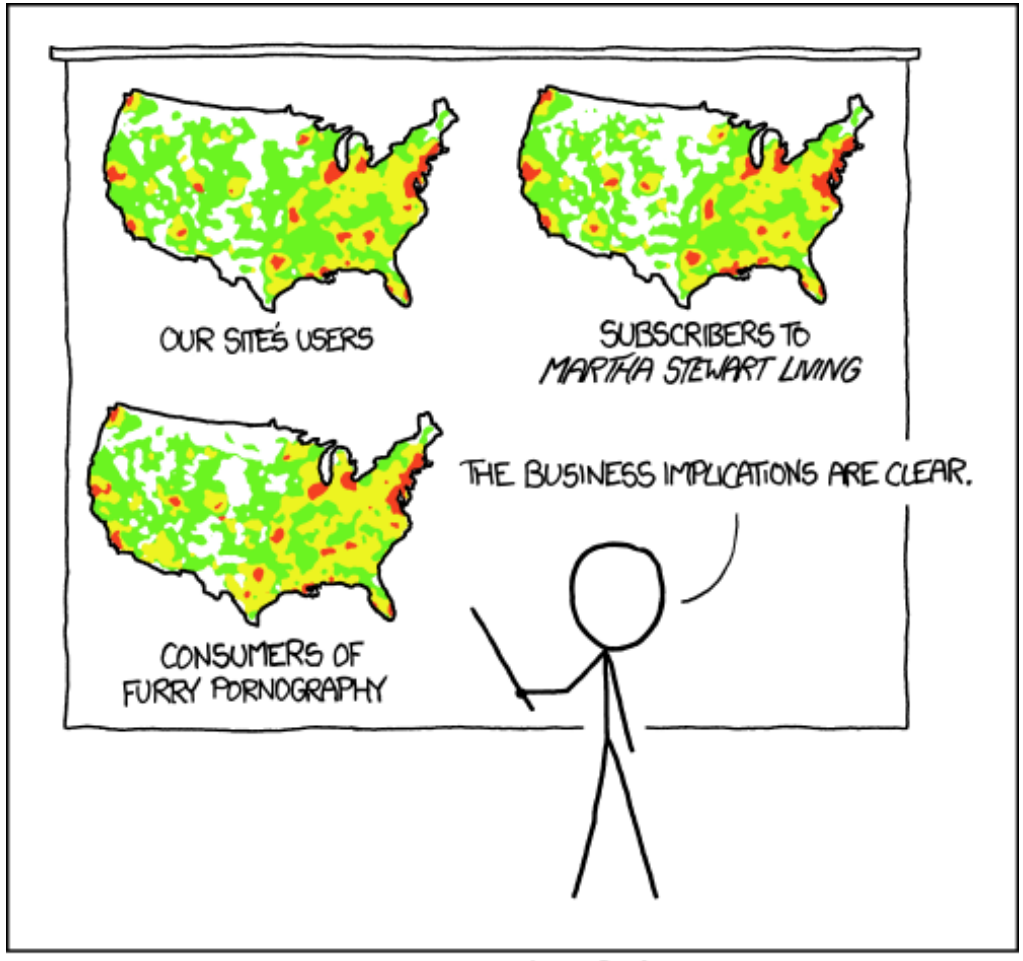


Tweets from Korea: 40k tweets collected in 2014 (left)
Korean peninsula at night, 2003 (right). Source: NASA.

Who is tweeting from North Korea?

Twitter user: @uriminzok_engl

But remember...



PET PEEVE #208:
GEOGRAPHIC PROFILE MAPS WHICH ARE BASICALLY JUST POPULATION MAPS