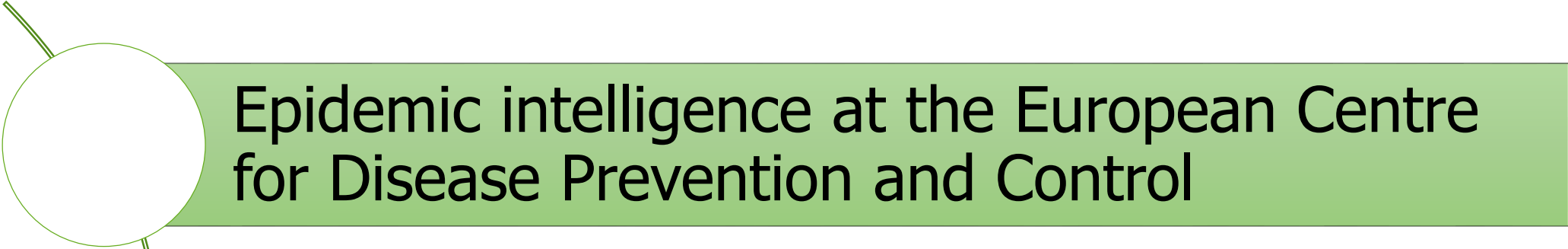


From manual to automated monitoring of Twitter data for early detection of public health threats

Laura Espinosa, Ariana Wijermans, Thomas Mollet
ESCAIDE side session, 24 November 2020

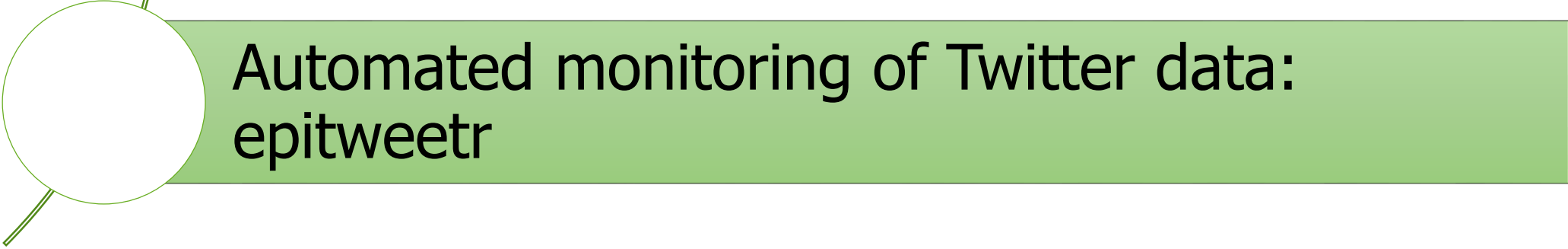
Outline of the presentation



Epidemic intelligence at the European Centre for Disease Prevention and Control



Manual monitoring of social media



Automated monitoring of Twitter data:
epitweetr

Epidemic intelligence at ECDC

“ **Epidemic intelligence (EI)** is the **early identification** of potential **health threats**, as well as their verification, assessment and investigation ”



Monitoring sources 24/7

- 24/7 duty officer
- Threat Detection Officer (TDO)



Daily Round Table (RT) meeting

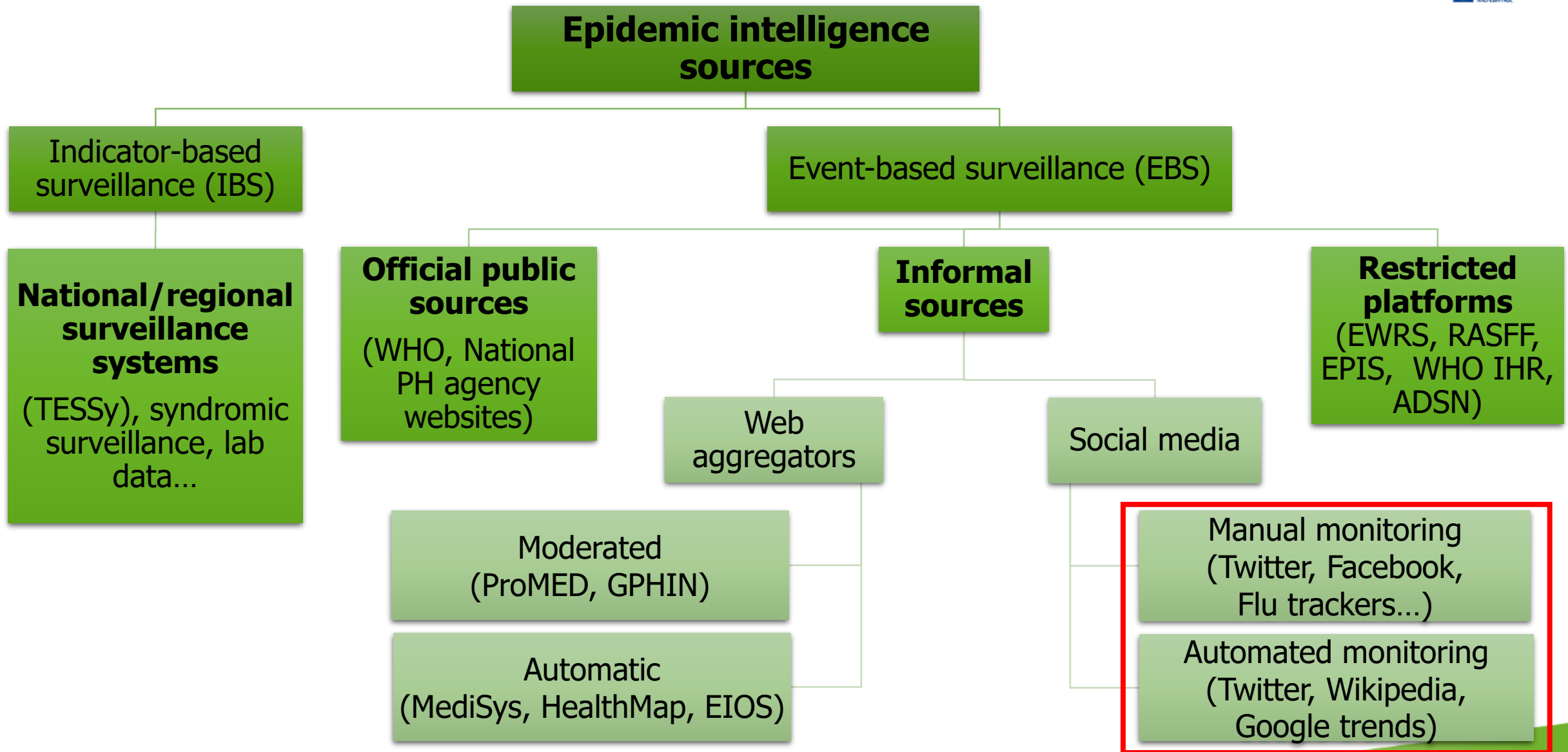
Monday-Friday at 11:30 AM



Outputs:

RT report, CDTR, RRA, epidemiological update, annual threat report, phone App...

Epidemic intelligence at ECDC



Manual monitoring of social media for epidemic intelligence activities at ECDC



Manual monitoring:



ECDC is following approx. 100 Twitter and 40 Facebook accounts



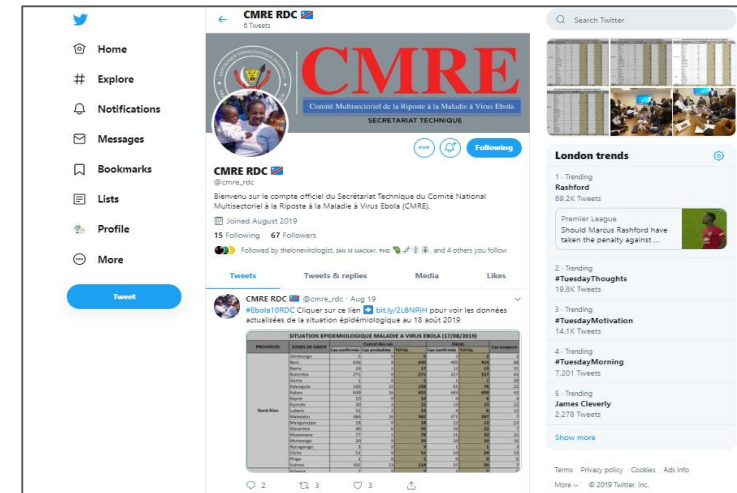
ECDC has mapped the main Twitter and Facebook accounts of interest



30-50% of signals from social media, mainly Twitter (30% of 500 sources for COVID-19)



Event validation through Facebook or Twitter



Why automated monitoring of Twitter for epidemic intelligence?

Increased sensitivity

- Detect low signals
- Detect signals from places with low media coverage

Reduces effort

- Reduce human intervention
- Tool will alert us, instead of us searching

Improved timeliness

- Near real-time signal detection
- Less time needed per day to search through Twitter

Topics

Anthrax

Countries & regions

Period

Last 7 days

Time unit

Days Weeks

Include retweets/quotes

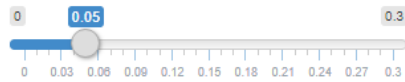
Location type

Tweet User Both

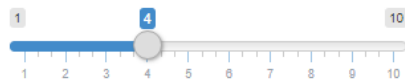
Signal false positive rate



Outlier false positive rate

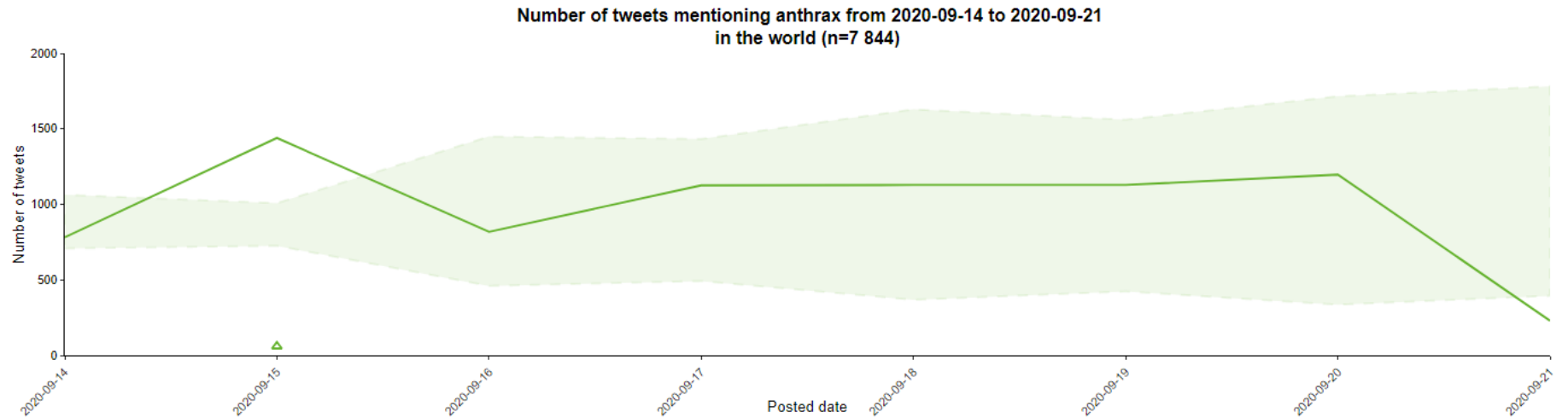


Outlier downweight strength



Data

image

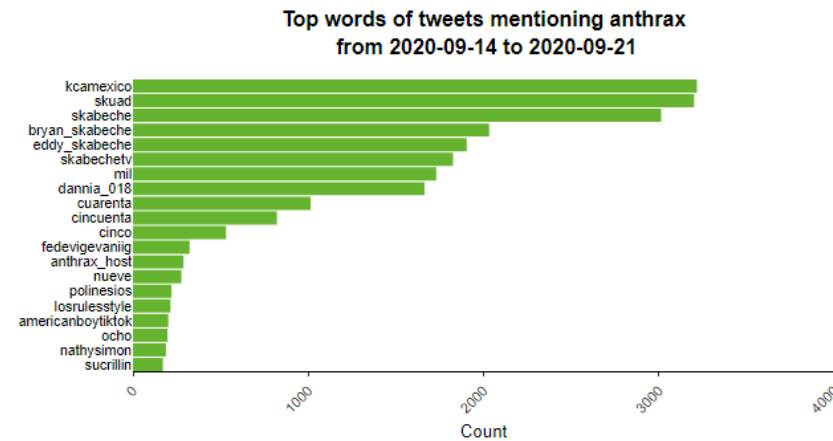


Data

image

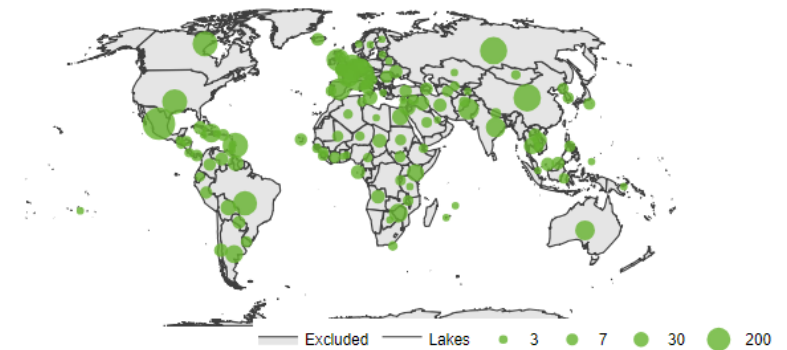
Data

image



Top words figure only considers tweet location, ignoring the location type parameter

Geographical distribution of tweets mentioning anthrax from 2020-09-14 to 2020-09-21 with tweet location (n=1 509)



Map disclaimer. Projection: +proj=robin

