



LAMIA airlines charter, Colombia, 29 November 2016

RAUL ARBOLEDA/AFP/Getty Images

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Memory Remains:

Understanding Collective Memory in the Digital Age



Anders Mollgaard

Ruth Garcia

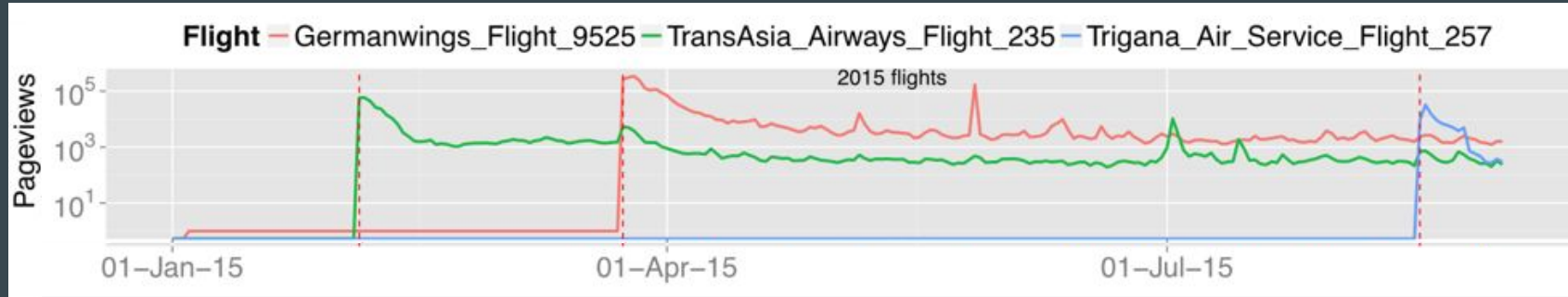
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Taha Yasseri

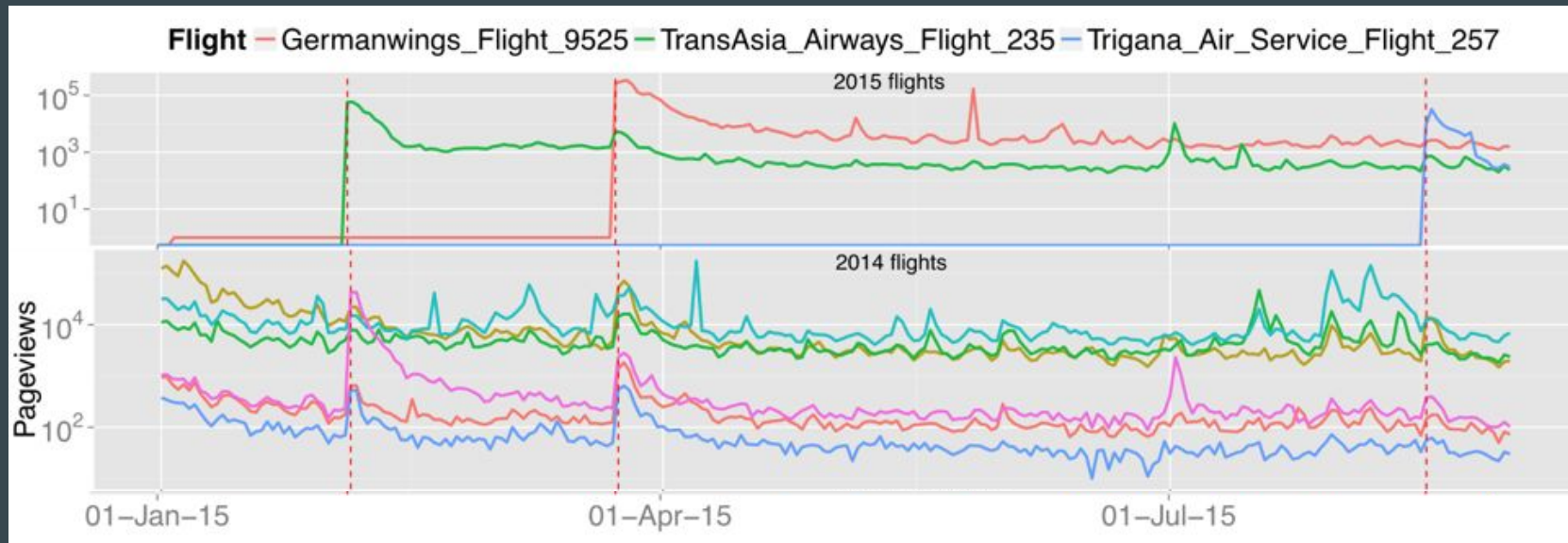
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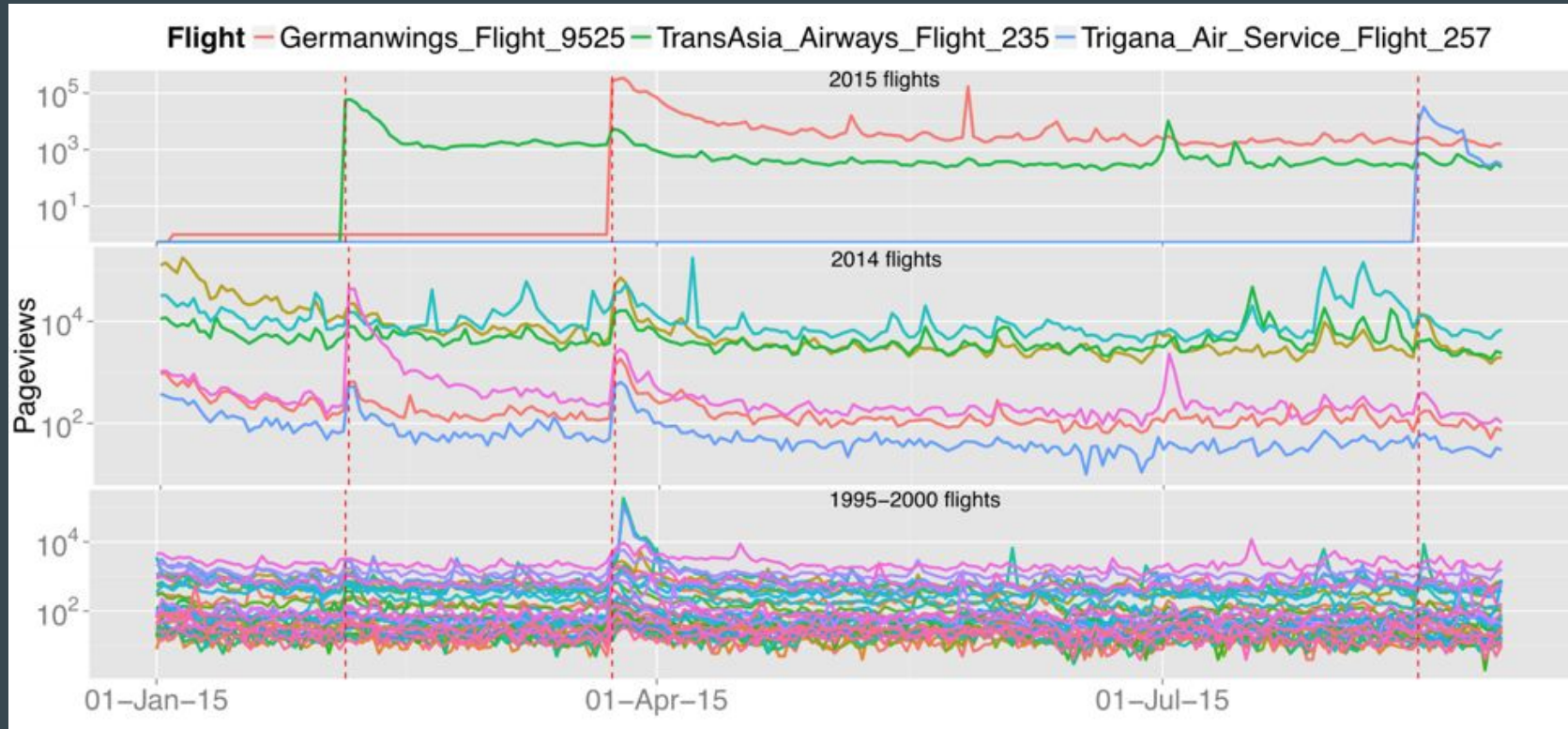
Wikipedia page views of articles on aviation incidents



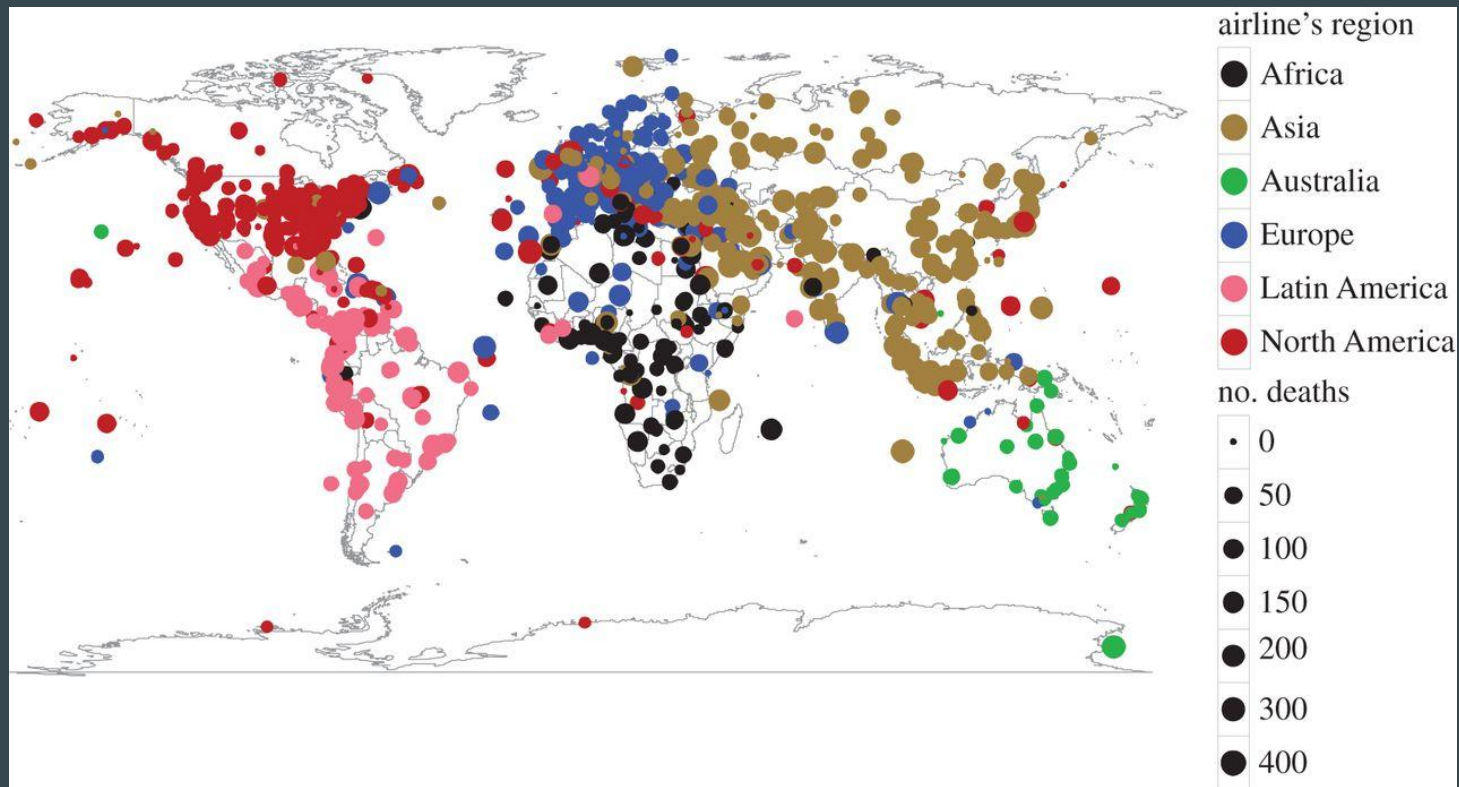
Wikipedia page views of articles on aviation incidents



Wikipedia page views of articles on aviation incidents

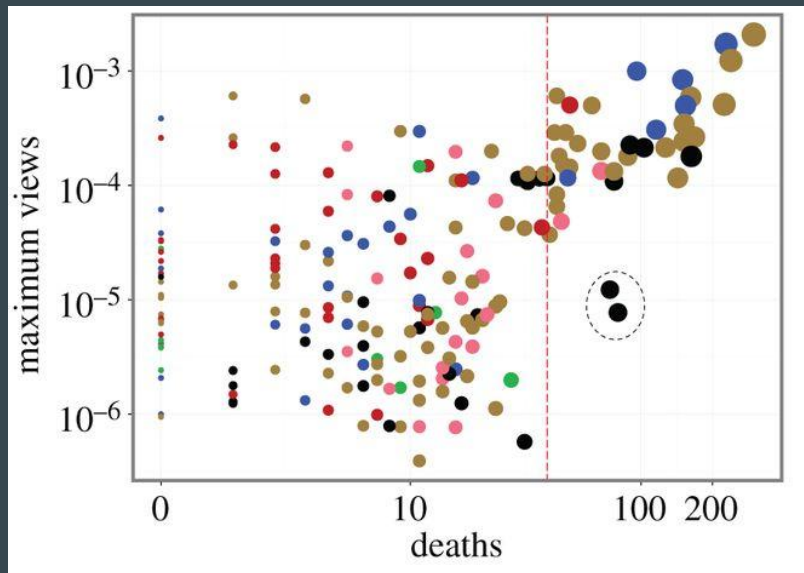


Wikipedia articles on aviation incidents

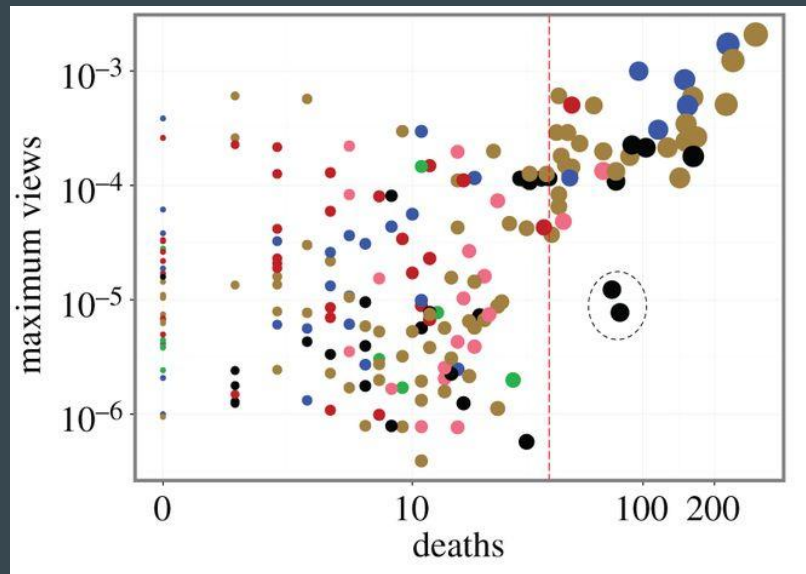


1496 geolocated incidents and accidents since 1897

Maximum attention vs Number of deaths



Maximum attention vs Number of deaths

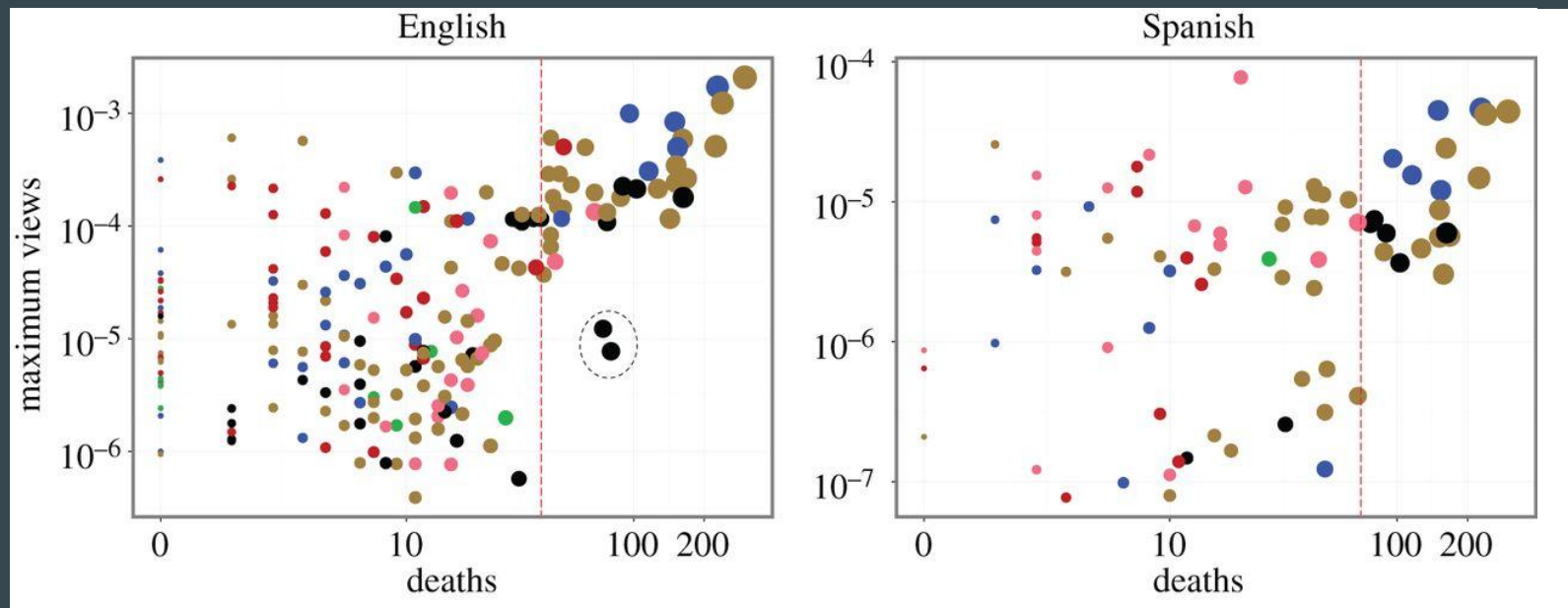


airline's region

● Africa	● Australia	● Latin America
● Asia	● Europe	● North America

On average
a European death receives **26** times
more attention than an African death

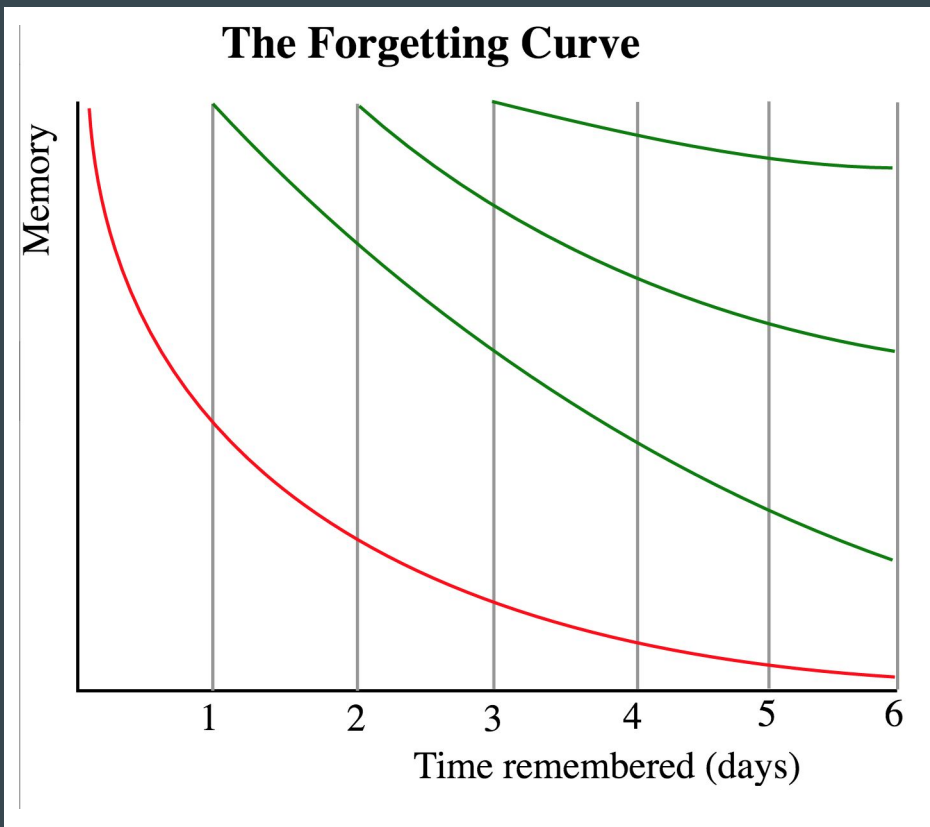
Maximum attention vs Number of deaths



airline's region

● Africa	● Australia	● Latin America
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Dynamics of Attention



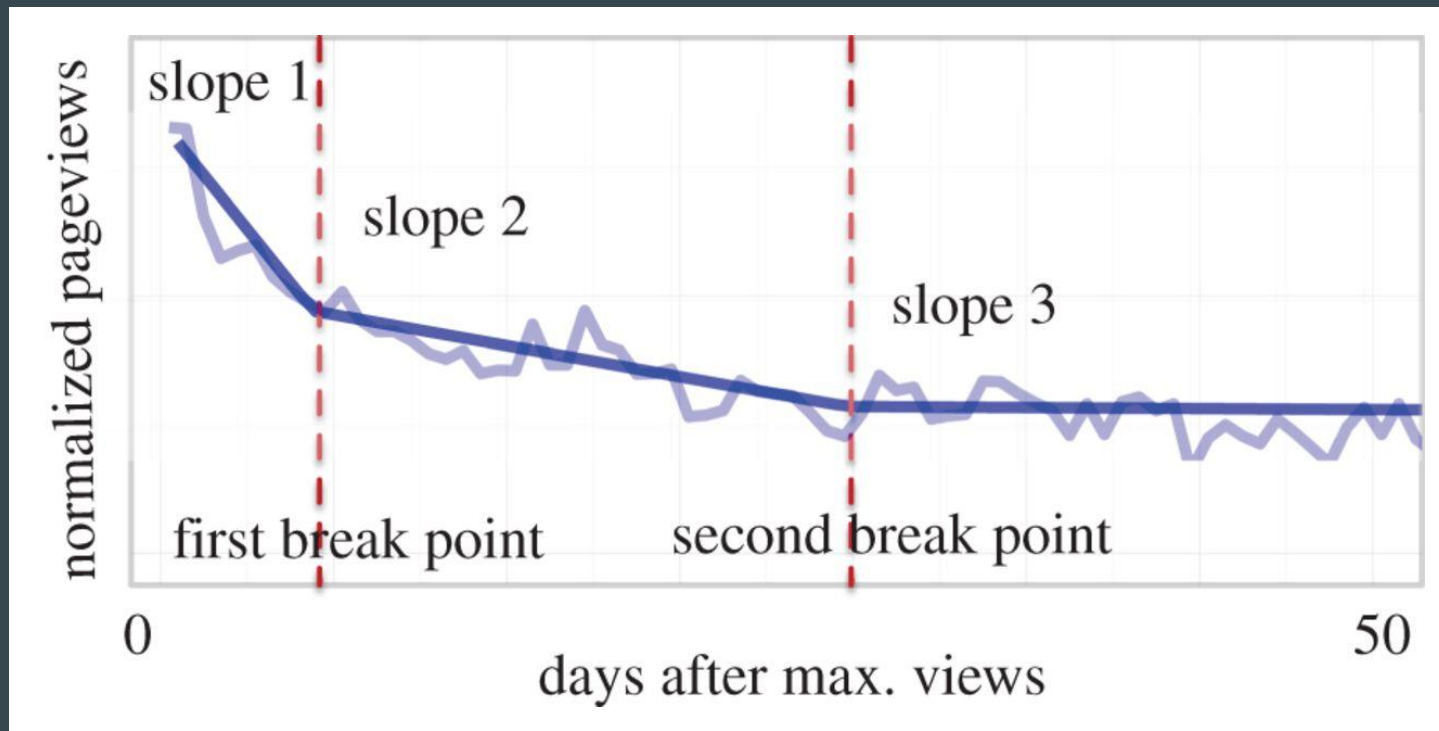
Hermann Ebbinghaus



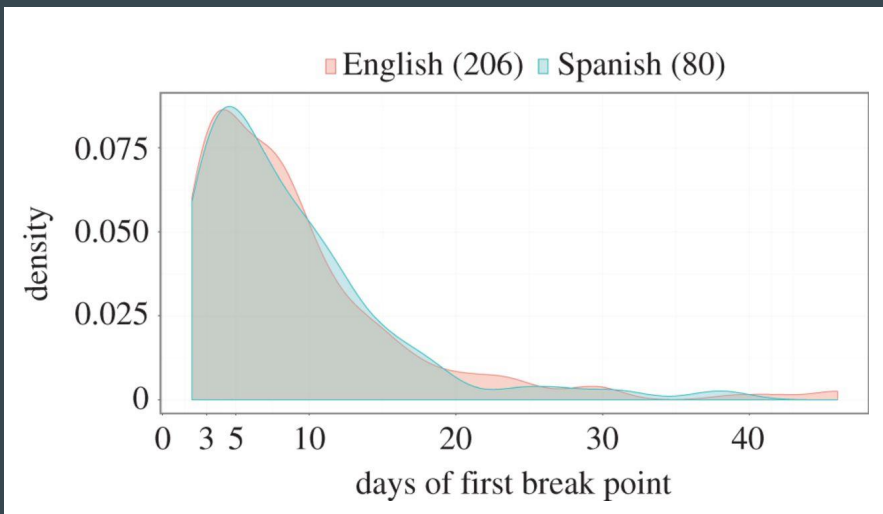
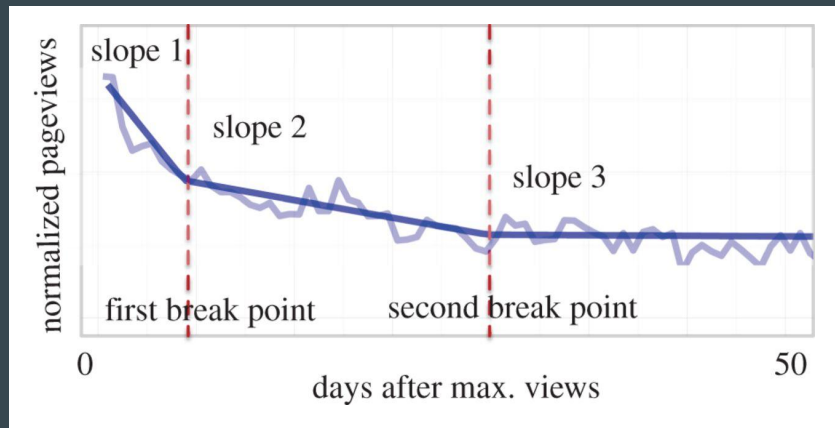
1850-1909

$$R = e^{-\frac{t}{s}}$$

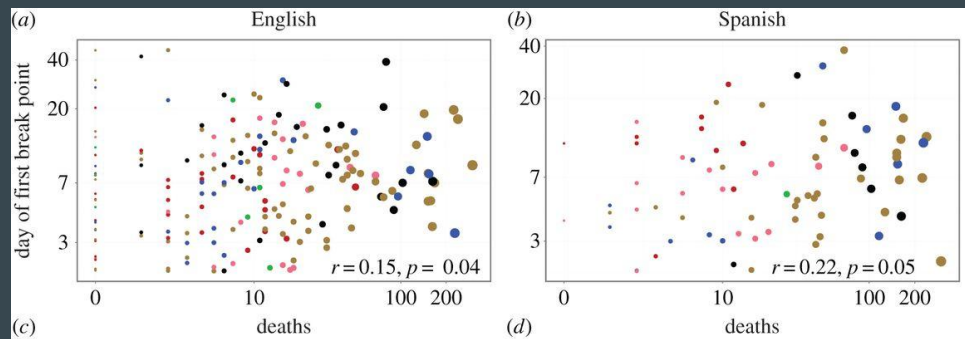
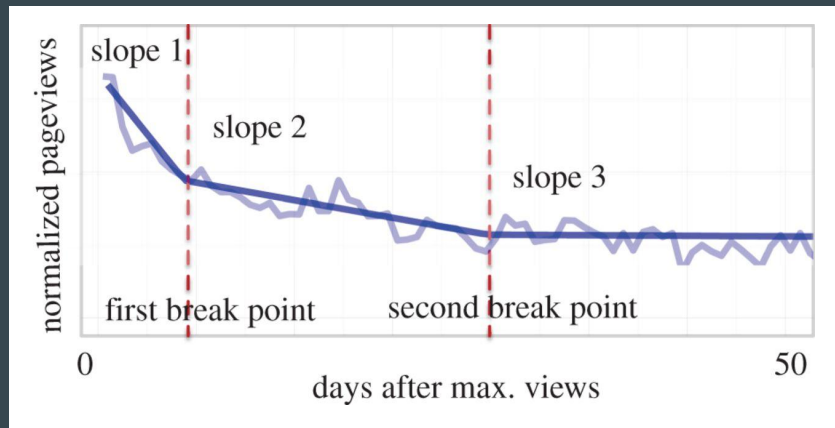
Dynamics of Attention



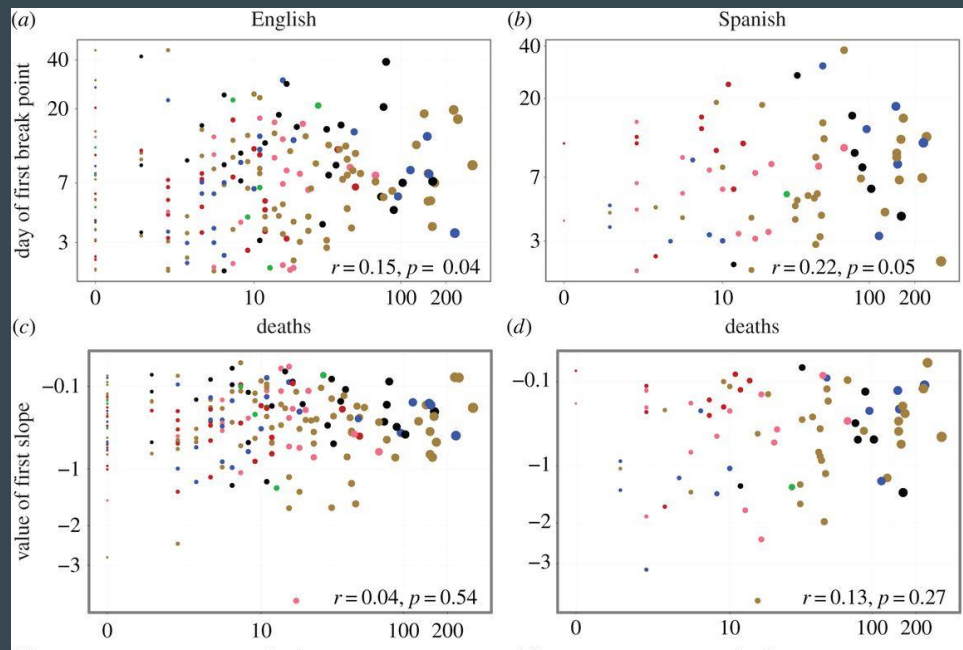
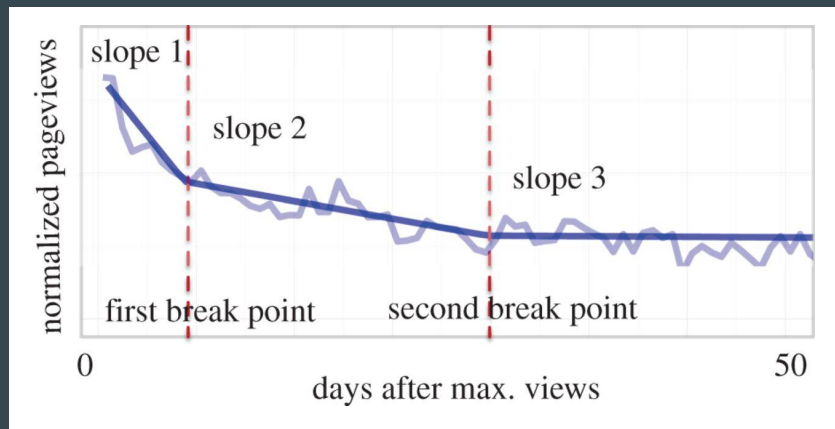
Dynamics of Attention



Dynamics of Attention

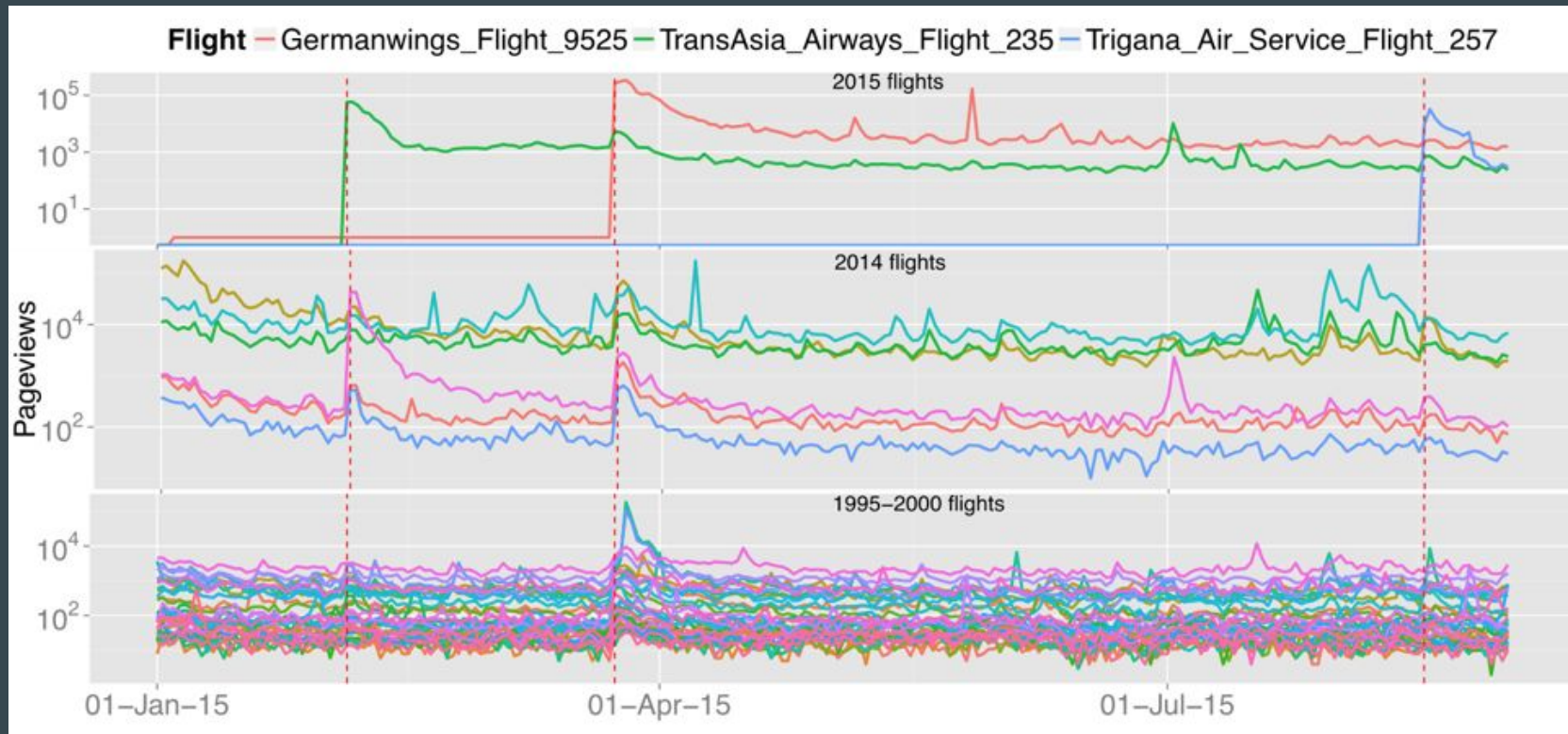


Dynamics of Attention

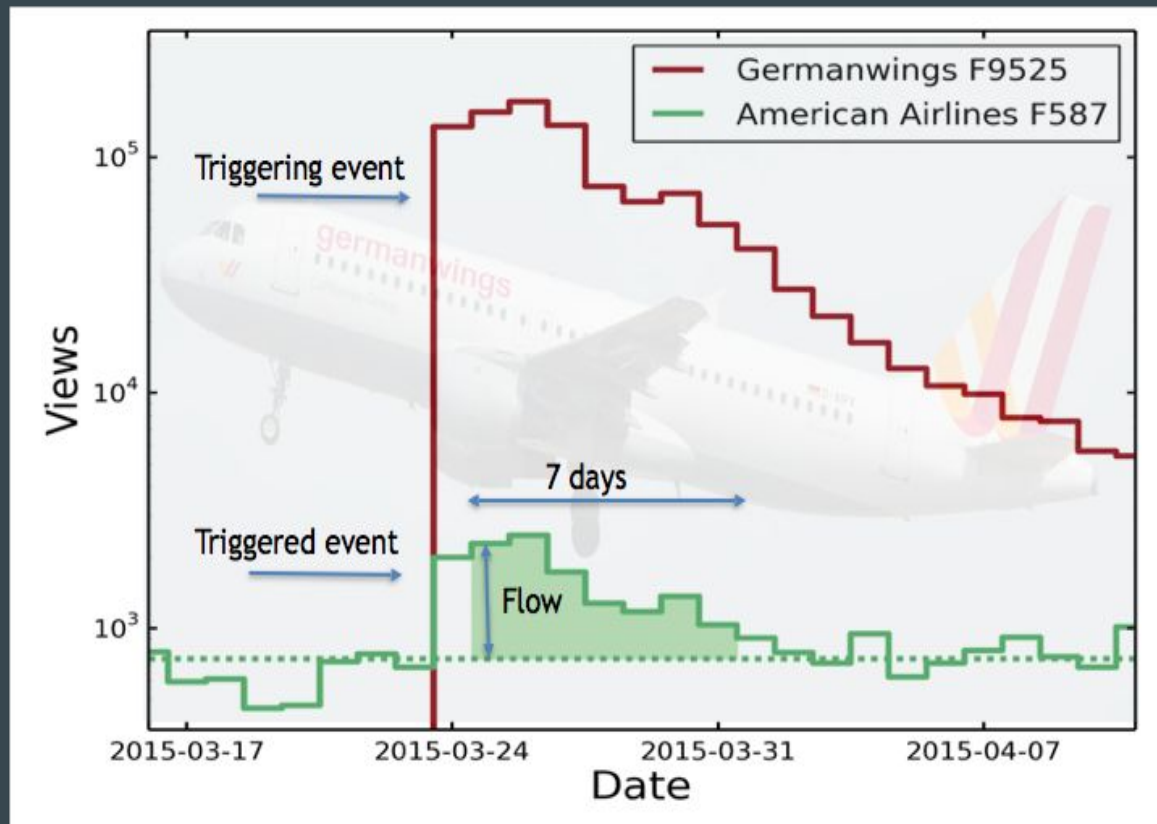


half-life \sim 4-5 days

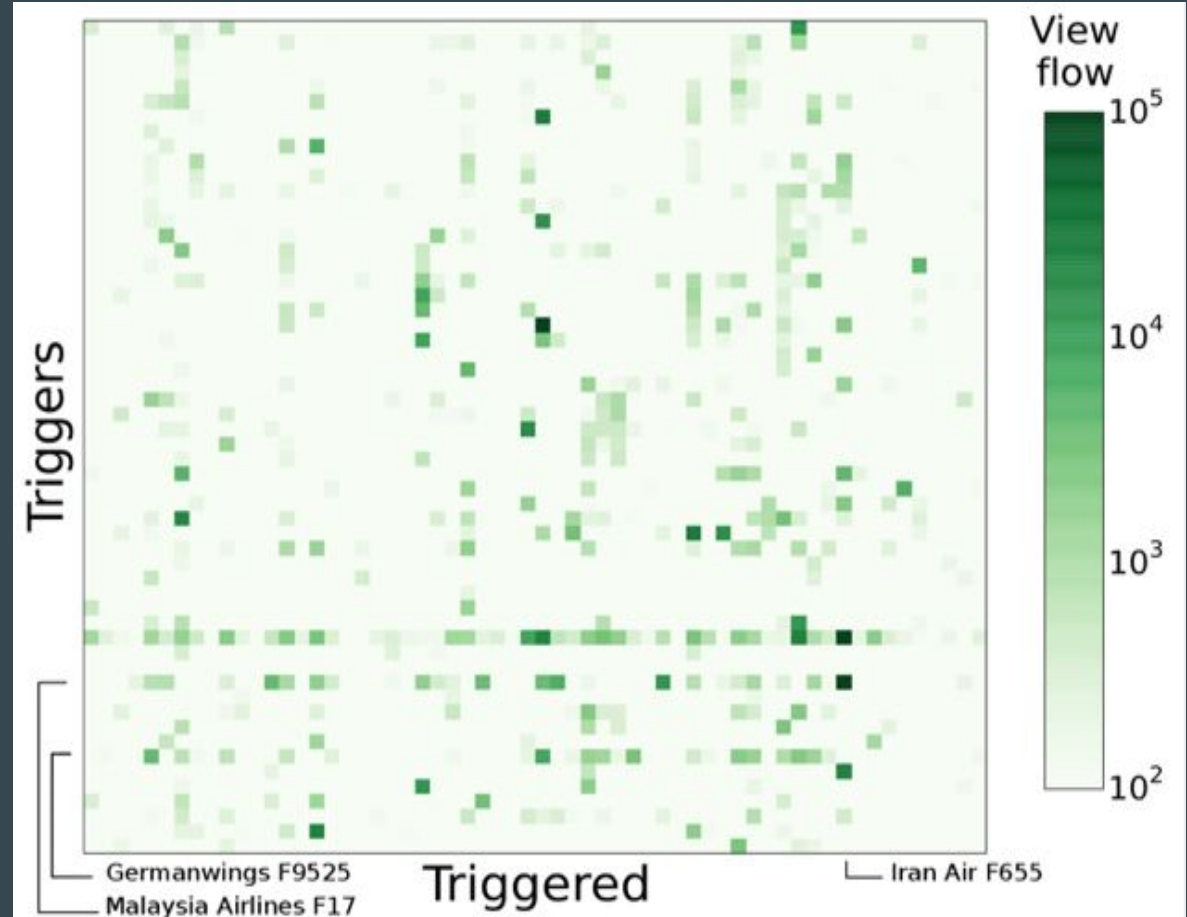
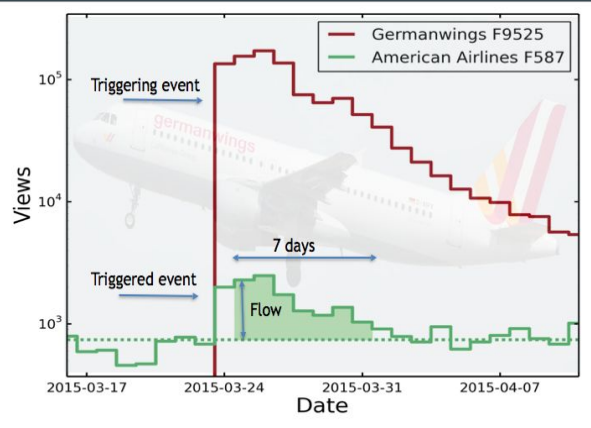
How do current events remind us of the past events?



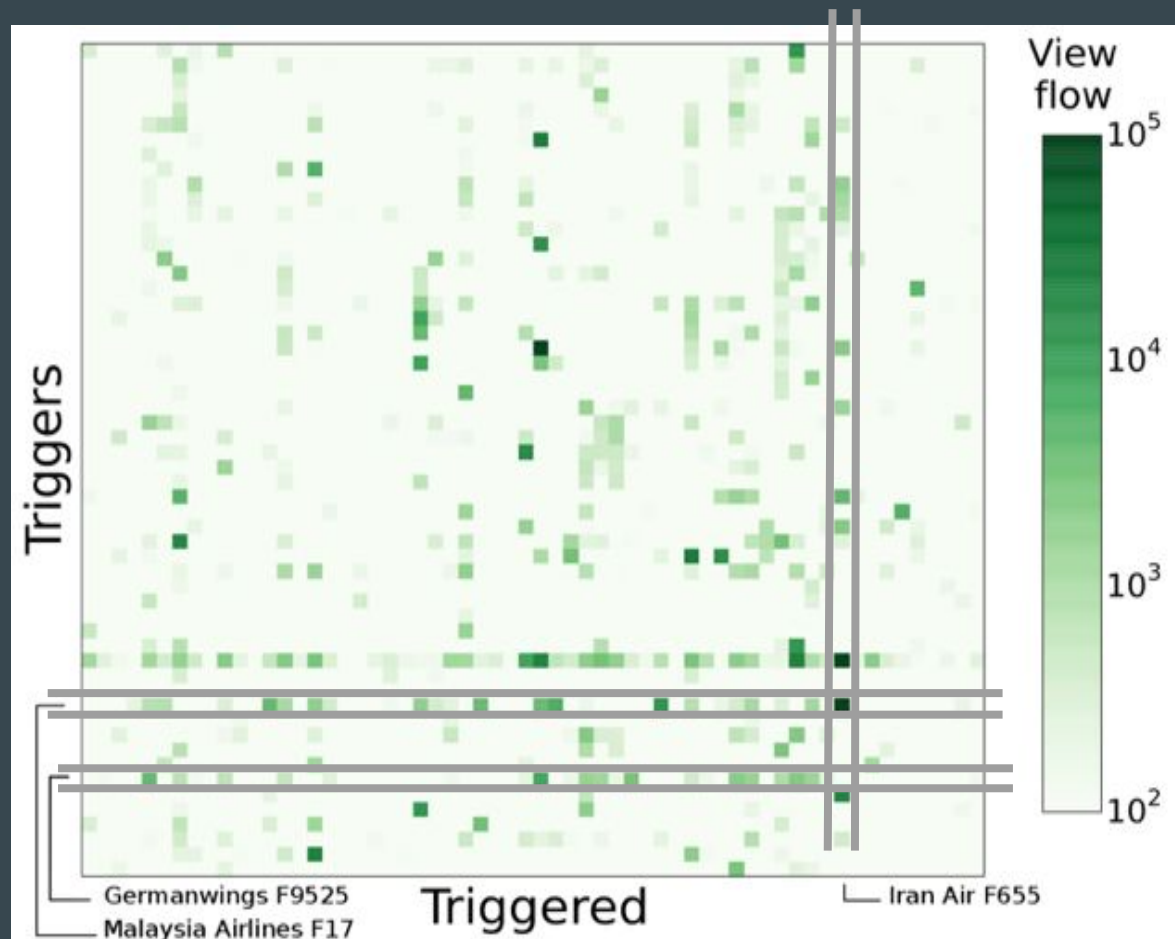
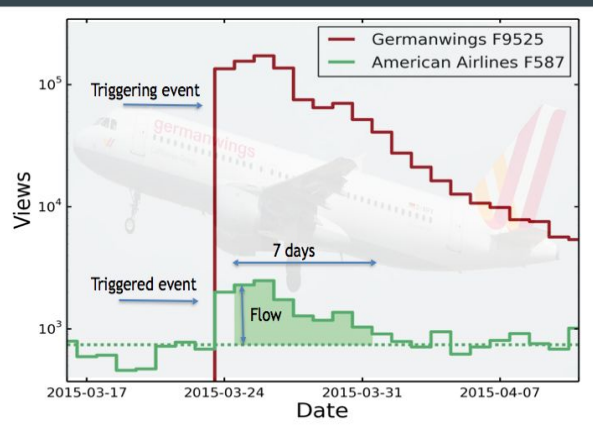
Flow of attention from a current event to a past event



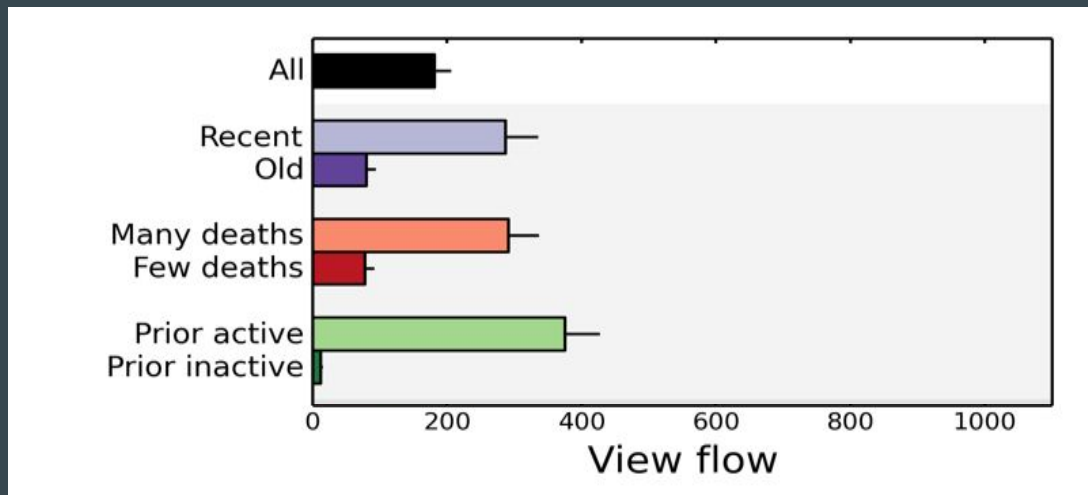
46,732 pairs of events



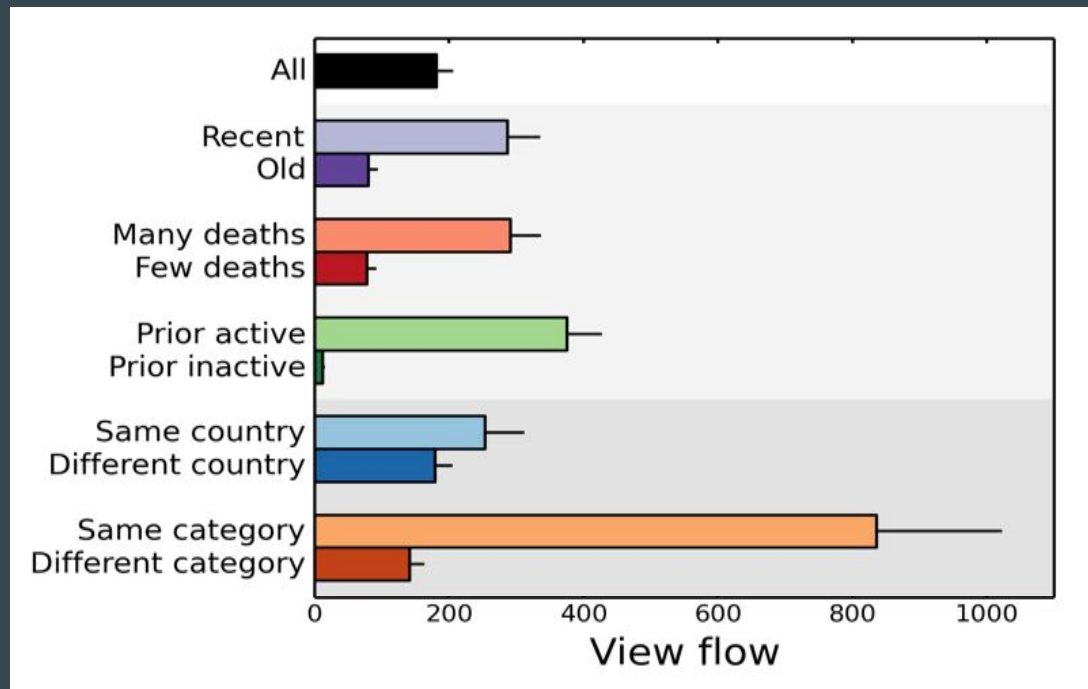
46,732 pairs of events



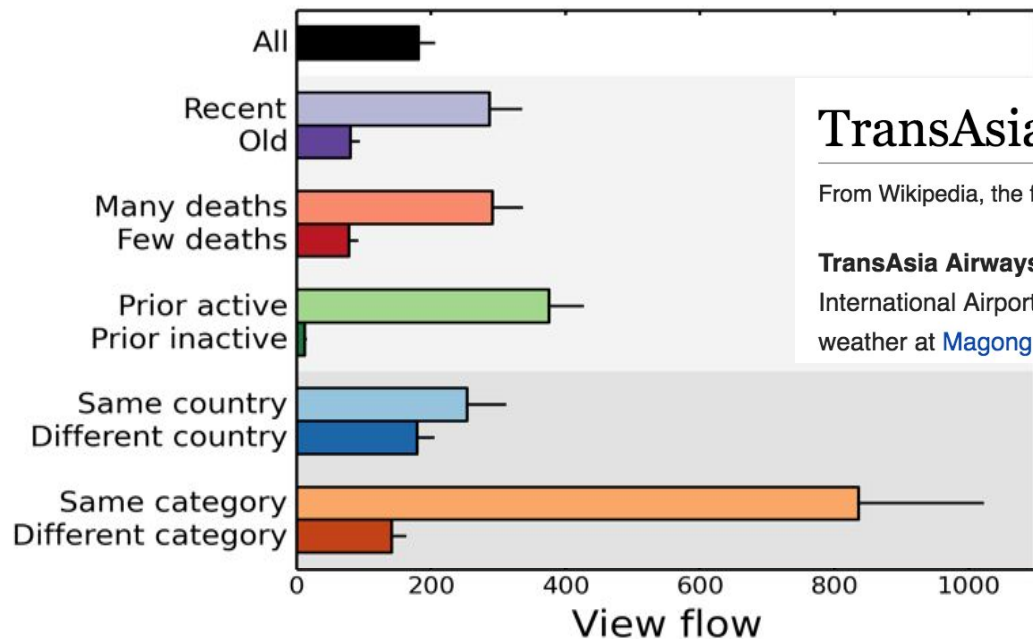
Dependence of flow on different features



Dependence of flow on different features



Dependence of flow on different features



TransAsia Airways Flight 222

From Wikipedia, the free encyclopedia

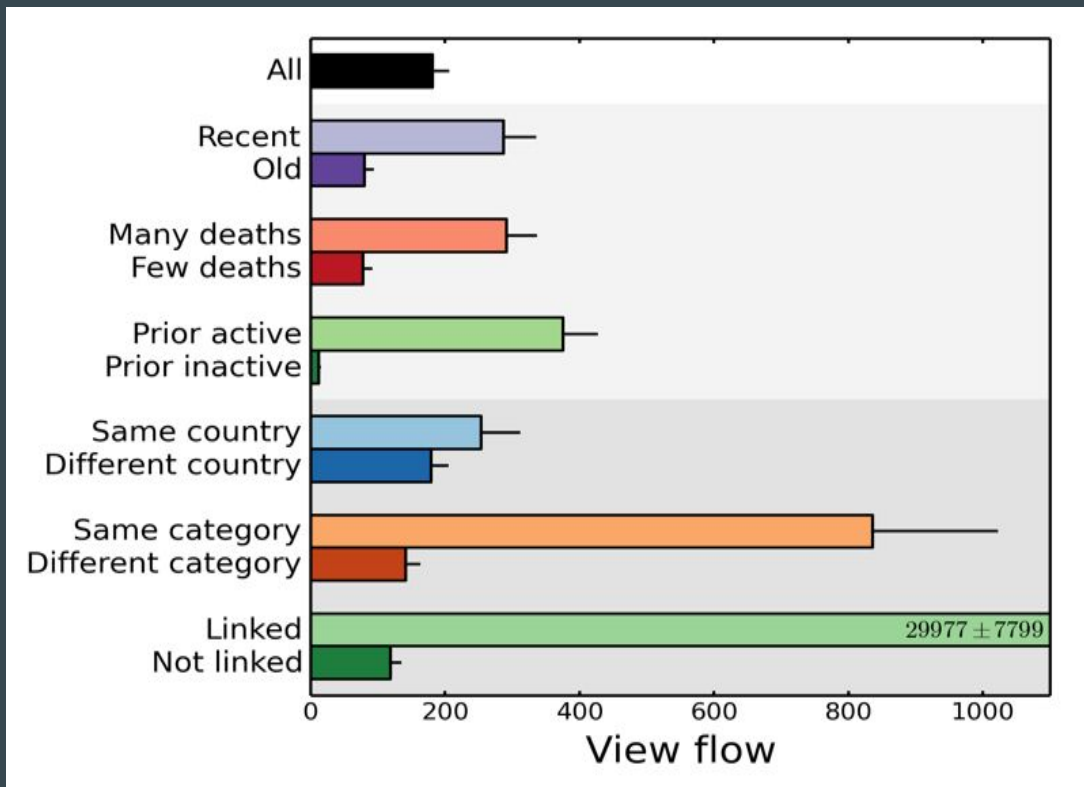
TransAsia Airways Flight 222 (GE222/TNA222) was a scheduled domestic passenger flight from [Taoyuan International Airport](#) in Kaohsiung to [Magong Airport](#) in Magong, Penghu Island. The aircraft crashed into the sea on 23 July 2014. The weather at [Magong Airport](#), [Penghu Island](#), Taiwan, on 23 July 2014. The [ATR 72-500](#)

See also [\[edit \]](#)

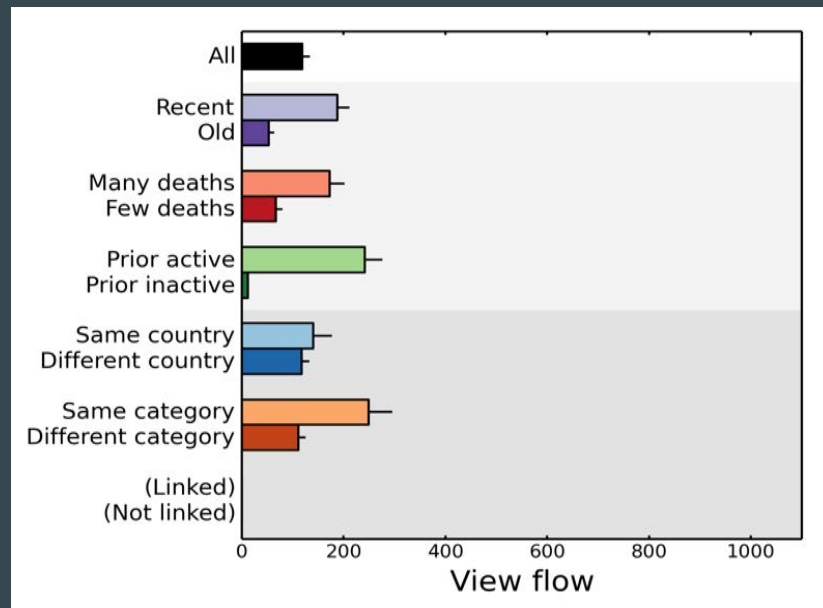
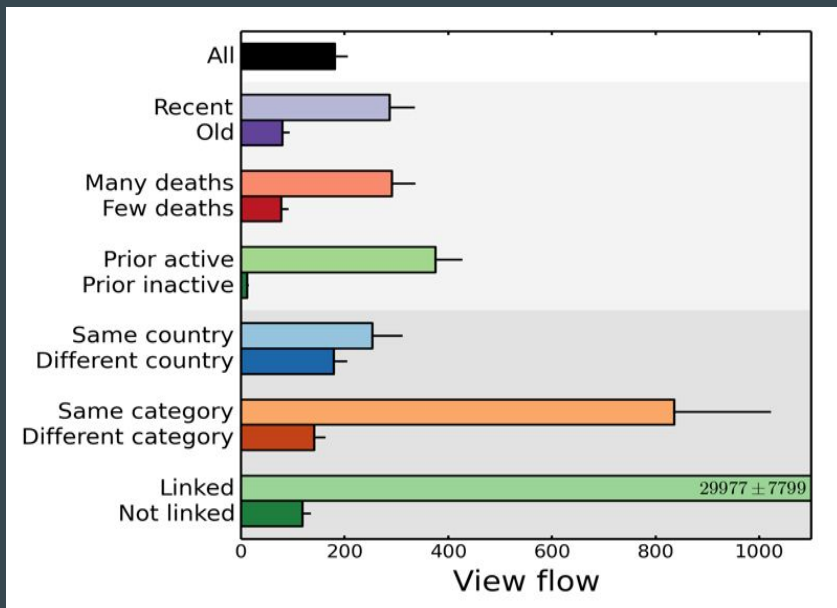
- [Aviation Safety Council](#)
- [Flydubai Flight 981](#)
- [TransAsia Airways Flight 235](#)

role of **hyperlinks**?

Dependence of flow on different features

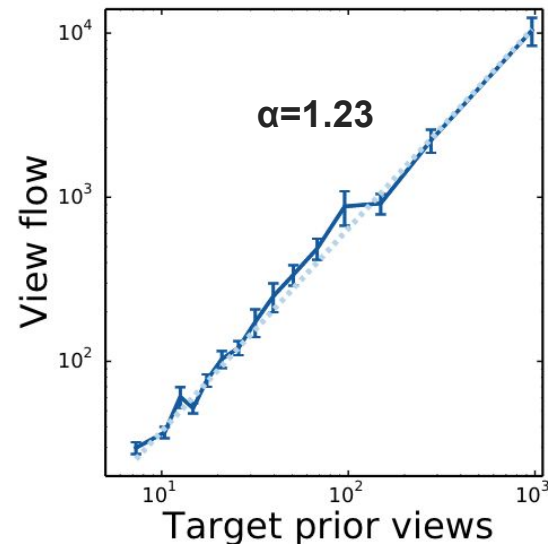
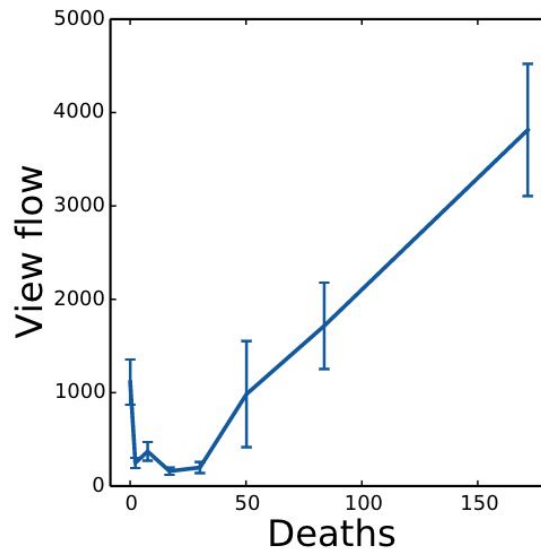
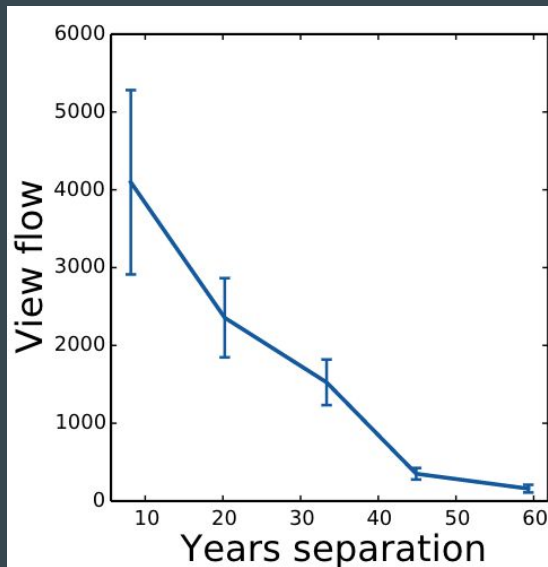


Dependence of flow on different features



pairs **without** a hyperlink

Dependence of flow on different features



Modelling the flow

$$y_{\text{triggered}} = x \times y_{\text{history}} \times \alpha.$$

$$\alpha = \sum_i a_i z_i$$

coupling features

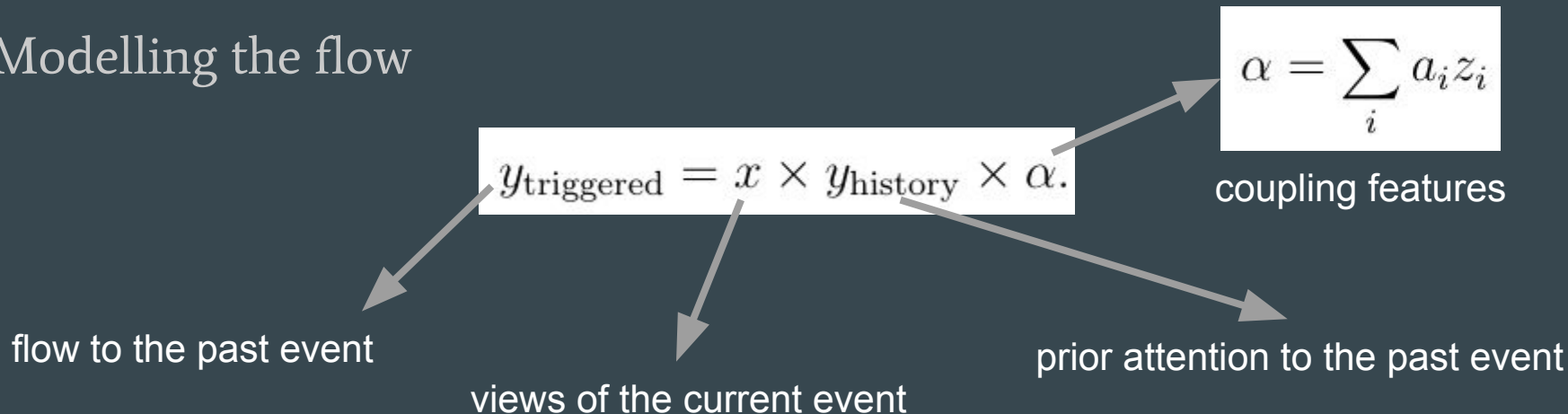
flow to the past event

views of the current event

prior attention to the past event

$R=0.59$

Modelling the flow



$R=0.59$

The sum of all the triggered attention to the past events is on average 140% of the attention to the current event.

The Bigger Picture

- The level of attention is complex!
- The dynamics of attention is complex!
- We have a short attention span
- The attention span and decay rate are independent of the impact

However

- We have a long term memory
 - It is possible to predict memory patterns
-
- Role of the digital?

References

García-Gavilanes R, Tsvetkova M, & Yasseri T. "Dynamics and biases of online attention: the case of aircraft crashes." *Royal Society Open Science* 3.10 (2016): 160460.

García-Gavilanes R, Mollgaard A, Tsvetkova M, & Yasseri T. "Memory Remains: Understanding Collective Memory in the Digital Age." under review in *Science Advances*, *arXiv preprint: 1609.02621* (2016).

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