

# Balanced View

Overcoming confirmation bias in social media



We have all been in contact with such posts online recently



## Marijuana Overdoses Kill 37 in Colorado On First Day of Legalization

Jan 02, 2014



Colorado is reconsidering legalize recreational pot f of dozens due to marijua

According to a report in t News, 37 people were ki on Jan. 1, the first day th for all adults to purchase

## GOOD NEWS FOR SMOKERS!

# New vitamin cigarettes will add years to your life!

SPODSBJERG, Denmark — A Danish horticulturalist turned cigarette manufaturer has become the toast of European tobacco users by creating the ultimate



A PACK a day will keep the doctor away, say experts.

BBC NEWS UK @BBCNewsUK

BREAKING: Buckingham Palace announces the death of Queen Elizabeth II at the age of 90. Circumstances are unknown. More to follow.



Donald J. Trump @realDonaldTrump

An 'extremely credible source' has called my office and told me that @BarackObama's birth certificate is a fraud.

RETWEETS 21,305

LIKES 16,255

11:23 PM - 6 Aug 2012



Abel Carlier

6 November 2018



JDREPORT.COM

5G experimenten in Den Haag: honderden vogels vallen massaal dood uit de bomen • JDreport.com

13

12 comments 1 share



# Fake news are part of a bigger problem encouraged by social networks



## Echo Chambers

*Birds of a feather flock together*

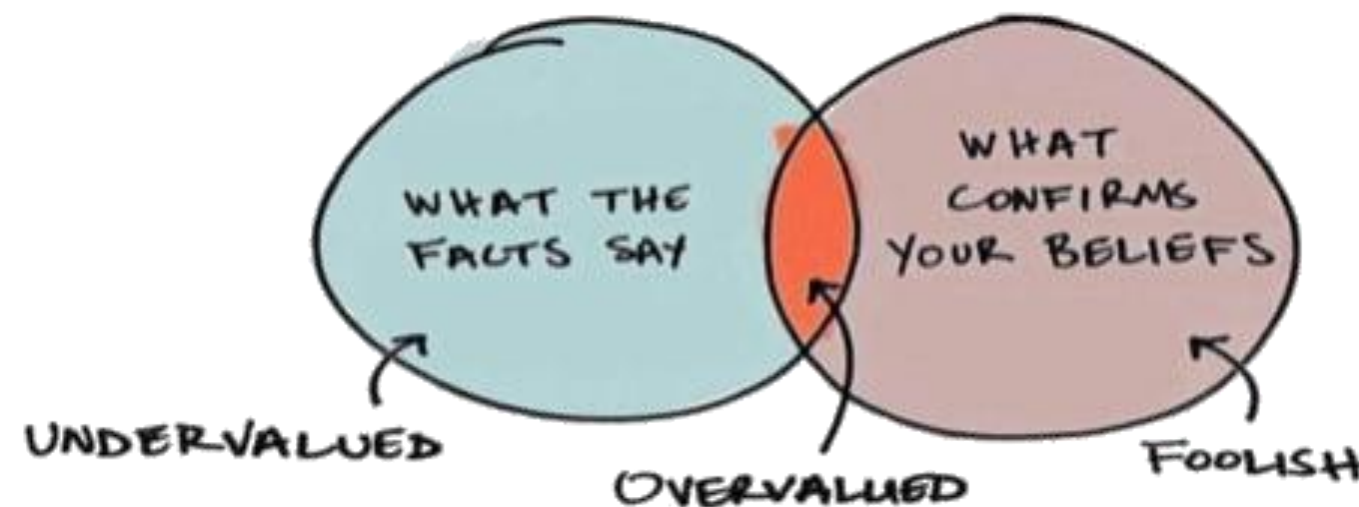
## Confirmation Bias

*We believe what we want to believe*



## Targeted Algorithms

*We believe what we want to believe*



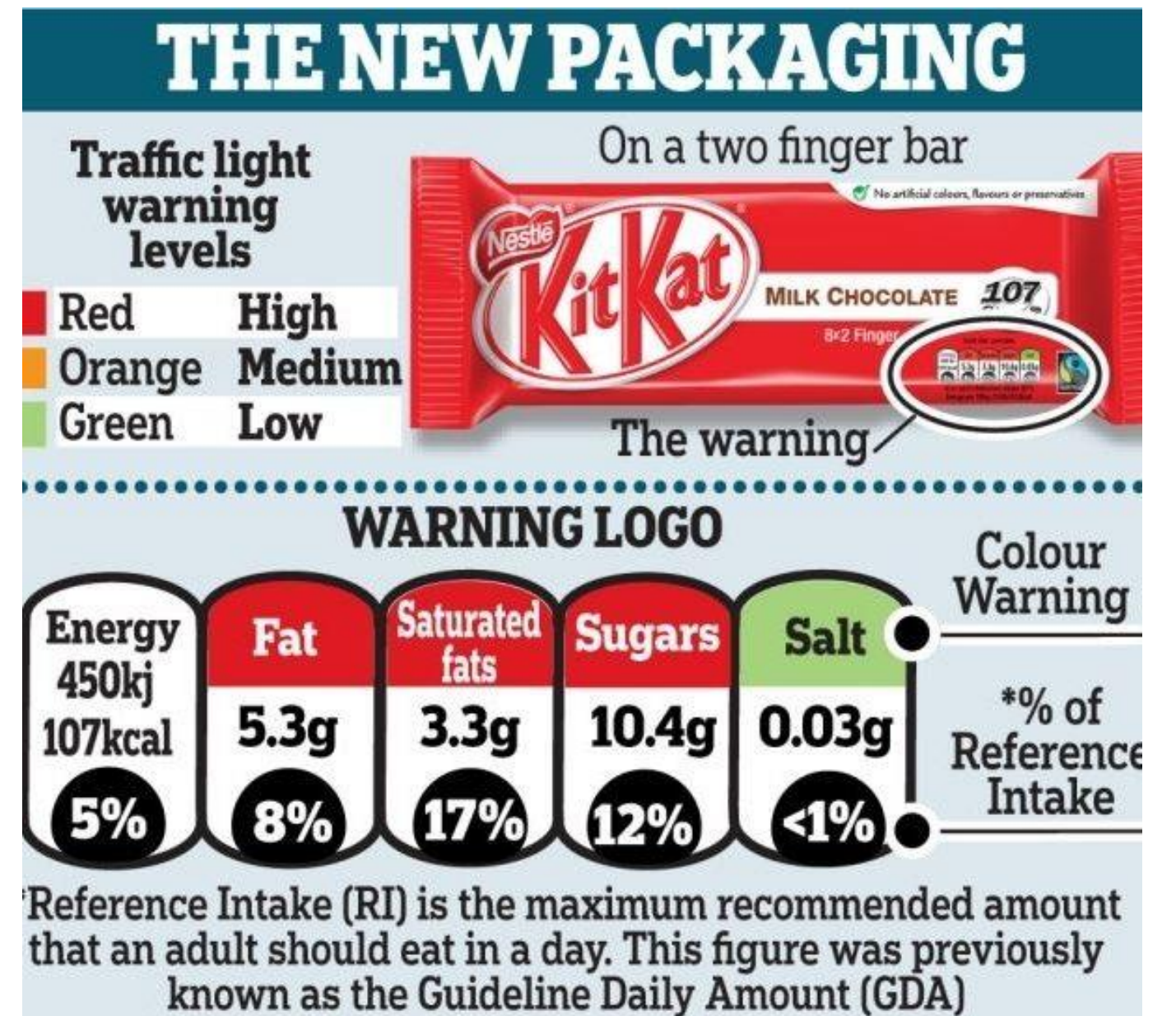


# Nudges may be part of the solution

## Nudging through presentation



## Nudging through information





# Apply this to tweets...

## Nudging through presentation




**Donald J. Trump** ✓  
@realDonaldTrump

Follow

The Mueller Witch Hunt is a total disgrace. They are looking at supposedly stolen Crooked Hillary Clinton Emails (even though they don't want to look at the DNC Server), but have no interest in the Emails that Hillary DELETED & acid washed AFTER getting a Congressional Subpoena!

4:31 PM - 27 Nov 2018

Trump's misguided crusade against the...



Trump is trying to convince the public to oppose the Mueller investigation for financial reasons. The trouble is, the probe is largely paying for itself.


2018-11-29T13:40:21Z

Trump defends Russia business links after ex-lawyer admits lying



The US president's dealings were thrown into focus after his ex-lawyer admitted lying to Congress.

Mueller faces new complications in final stretch, as targets balk and Trump turns up heat - Fox News



Fox News Mueller faces new complications in final stretch, as targets balk and Trump turns up heat Fox News Special Counsel Robert Mueller and his team are facing new complications in the final stretch of their investigation into Russian meddling and potentia...

30,695 Retweets 109,615 Likes



37K

31K

110K

## Nudging through information



**Chuck Woolery** ✓  
@chuckwoolery

Follow

Breaking: Mueller Withheld Exculpatory Evidence from Court to Exonerate Trump - Mueller LIED to the Court!... Will He Be Sent to Jail Too?  
[thegatewaypundit.com/2018/12/breaki](https://thegatewaypundit.com/2018/12/breaki) ... via @gatewaypundit



**Breaking: Mueller Withheld Exculpatory Evidence from Court to Exonerate 1**  
After another liberal media firestorm we are once again back to ground zero in th Mueller witch hunt. A new report by journalist Paul Sperry says conflicted Rober. thegatewaypundit.com

7:02 AM - 4 Dec 2018

1,276 Retweets 2,231 Likes





**Lou Dobbs** ✓  
@LouDobbs

Follow

#EndWitchHunt - @dbongino: Robert Mueller is conducting the biggest scam in modern American history. This witch hunt, this nonsensical garbage investigation is looking into a conspiracy that does not exist. #MAGA #TrumpTrain #Dobbs



4:59 PM - 3 Dec 2018

5,876 Retweets 13,471 Likes



1.3K


5.9K

13K

Demo

# To build the nudge, we extract key meaning from a text and build a query to a selected number of sources

## 1 INPUT

**Donald J. Trump**  
@realDonaldTrump

Follow

▼

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4:31 PM · 27 Nov 2018

## 2 TOKENS

- mueller

witch

hunt

total

disgrace

looking

supposedly

stolen
- crooked

hillary

clinton

emails

want

look

dnc

server
- deleted

acid

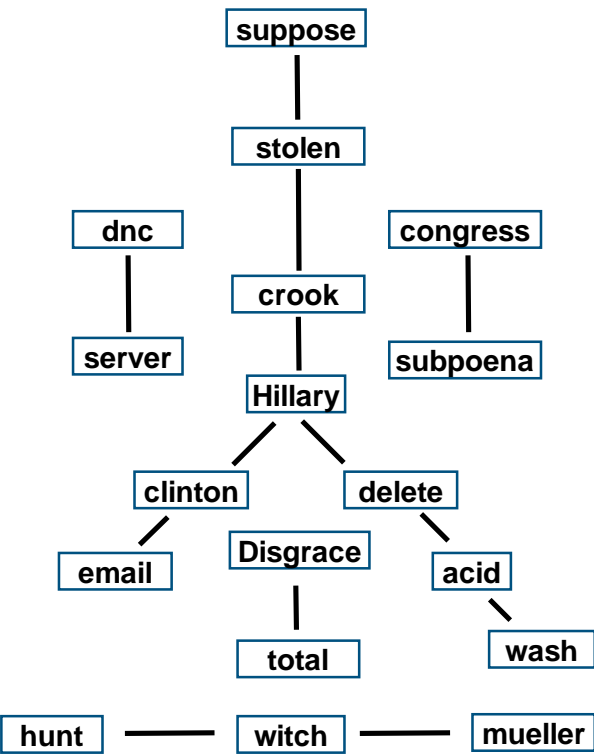
washed

getting

congressional

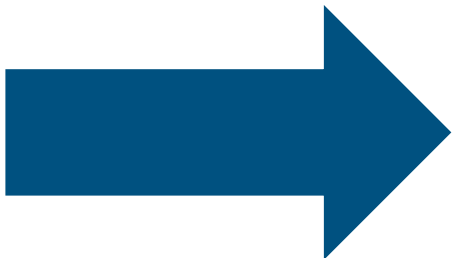
subpoena

## 3 GRAPH



## 4 SCORES


Tokens	Scores
witch	81.43%
hunt	40.72%
mueller	40.72%
server	4.75%
dnc	4.75%
hillary	1.29%
crook	0.86%
delete	0.86%
stolen	0.86%
acid	0.86%
clinton	0.86%
subpoena	0.80%
congress	0.80%
total	0.49%
disgrace	0.49%
suppose	0.43%
wash	0.43%
email	0.43%



Left

Politico

Trump accuses Mueller of ignoring 2016 staffers who 'want to be' questioned




&quot;So many campaign workers, people inside from the beginning, ask

Centre

BBC News

Trump defends Russia business links after ex-lawyer admits lying




The US president's dealings were thrown into focus after his ex-lawyer admitted lying to Congress.

2018-11-30T14:30:03Z

Right

Fox News

Manafort's plea blows up as he and Assange deny secret meeting - Fox News



Fox News Manafort's plea blows up as he and Assange deny secret

# Results

- 1) How relevant are the extracted results to the test text?
- 2) Does showing people additional information change their views?



# TextRank algorithm extracts relevant keywords that generally represent the story well, with some caveats



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## NLP is non-trivial

- Unexpected results can come up

## APIs are not free

- And those that are are limited

## All sources do not cover everything

- Leading to unbalanced results

# We gathered feedback on the effectiveness of different methods of nudging through a limited survey based experiment

## Questions of the format

- How much do you trust this source?
- How much do you think this author represents a balanced view of the story?
- How much do you trust the author?



# Limited testing shows that nudges can change how people think about a tweet

By Information

*Do people trust obviously  
untrustworthy news  
sources in the absence of  
a nudge by information?*

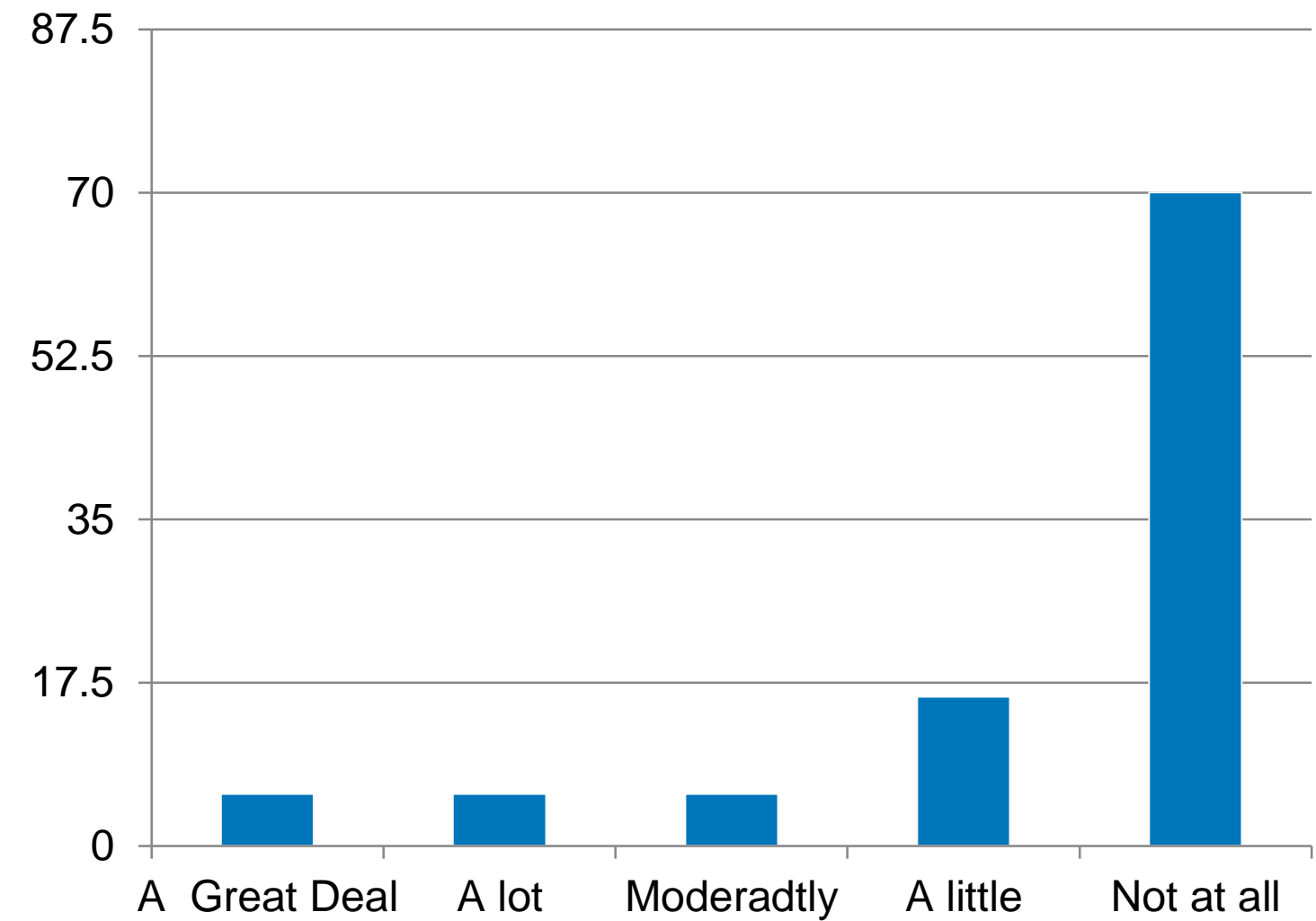
*Do people trust obviously  
reputable news sources in  
the presence of a nudge  
by information?*

By Presentation

*Do people consider  
politically bias information  
a fair representation of a  
view, given a nudge by  
presentation?*

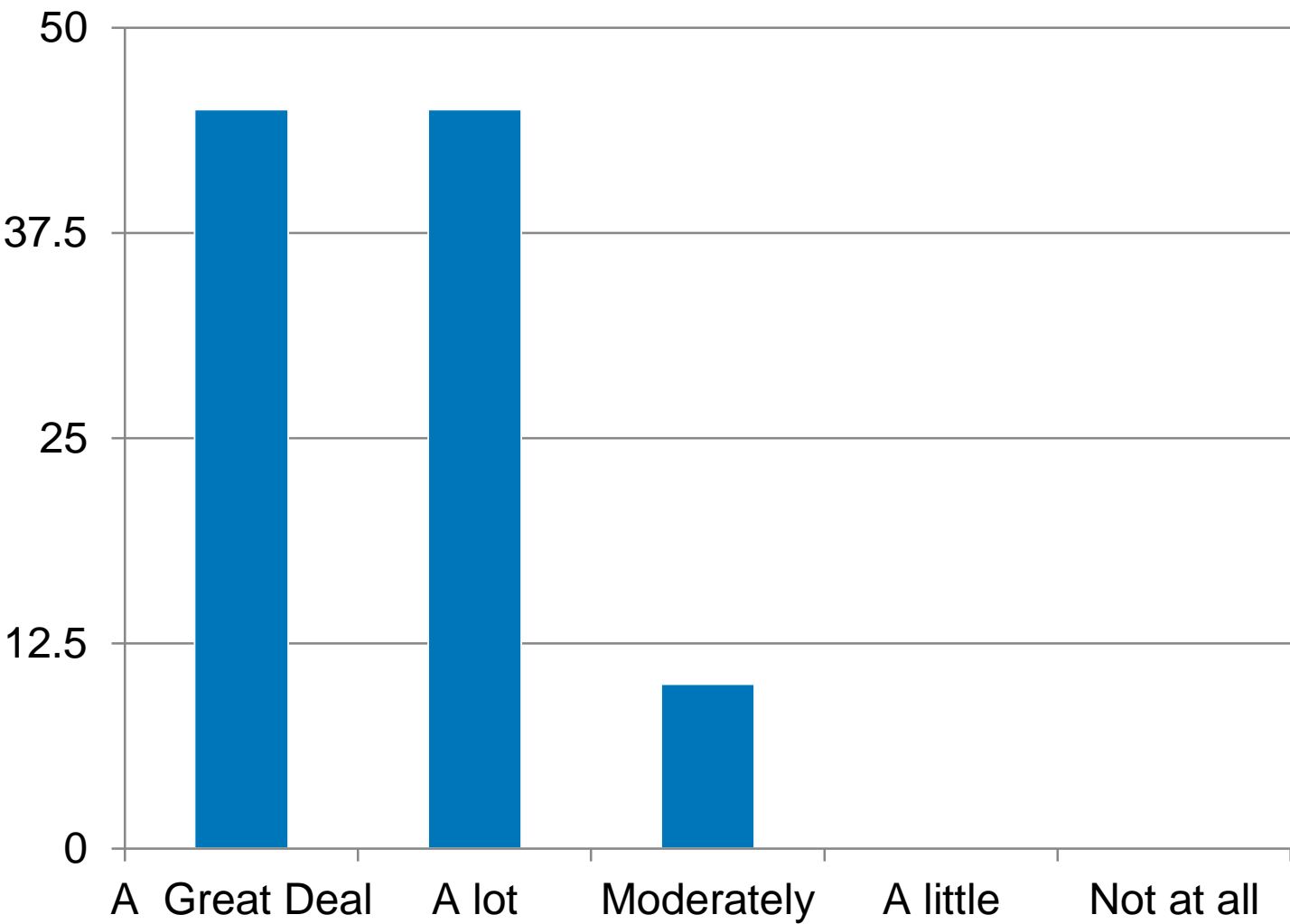
*Do people consider  
politically bias information  
a fair representation of a  
view, in the absence of a  
nudge by presentation?*

*Do people trust obviously untrustworthy news sources in the absence of a nudge by information?*





*Do people trust obviously reputable news sources in the presence of a nudge by information?*



*Do people consider politically bias information a fair representation of a view, in the absence of a nudge by presentation?*



**Ronna McDaniel**  @GOPChairwoman · Dec 13

As a result of [@realDonaldTrump](#)'s successful negotiations at [#G20Summit](#), China just made one of the largest purchases of U.S. soybeans – ever.

A HUGE win for America's farmers!



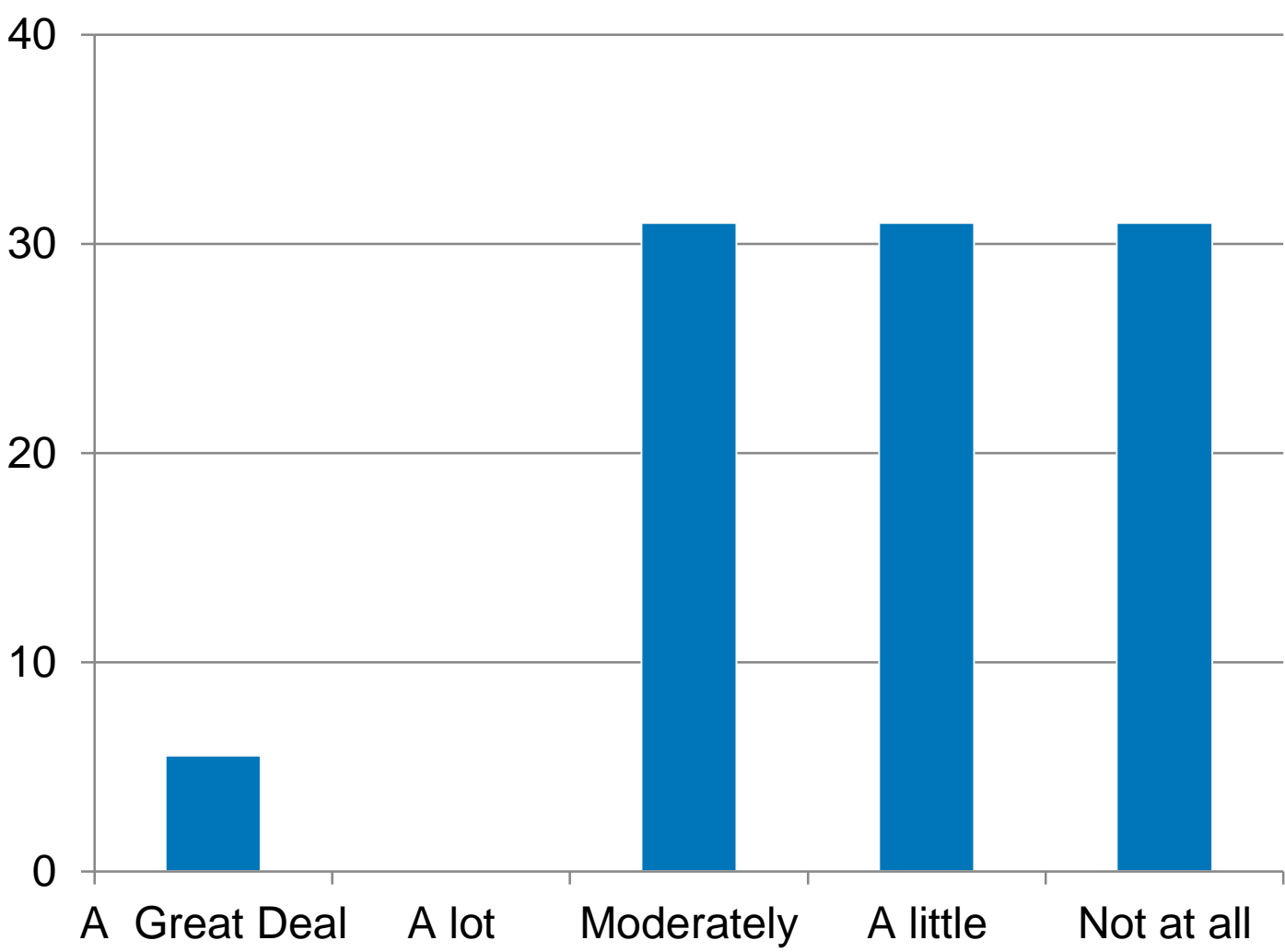
**In win for Trump, Beijing makes major U.S. soybean purchase**  
Sales of the commodity to China are still far below normal levels.

[politico.com](#)

 110

 1.2K

 2.3K





Do people consider politically bias information a fair representation of a view, given a nudge by presentation?



Ronna McDaniel

@GOPChairwoman · 15m

Chuck Schumer and Nancy Pelosi refuse to acknowledge the border crisis and the dangers it poses to our national security.

Attempted illegal border crossings are up nearly 90% compared to last year.

It's time for Democrats to work with [@realDonaldTrump](#) to address it.

69

150

336

Politico

Pelosi, Schumer to meet with Trump next week over wall funding



Trump has said he's willing to shut the government down.

The Wall Street Journal

Senate Republicans Wary of Shutdown Trump Has Threatened



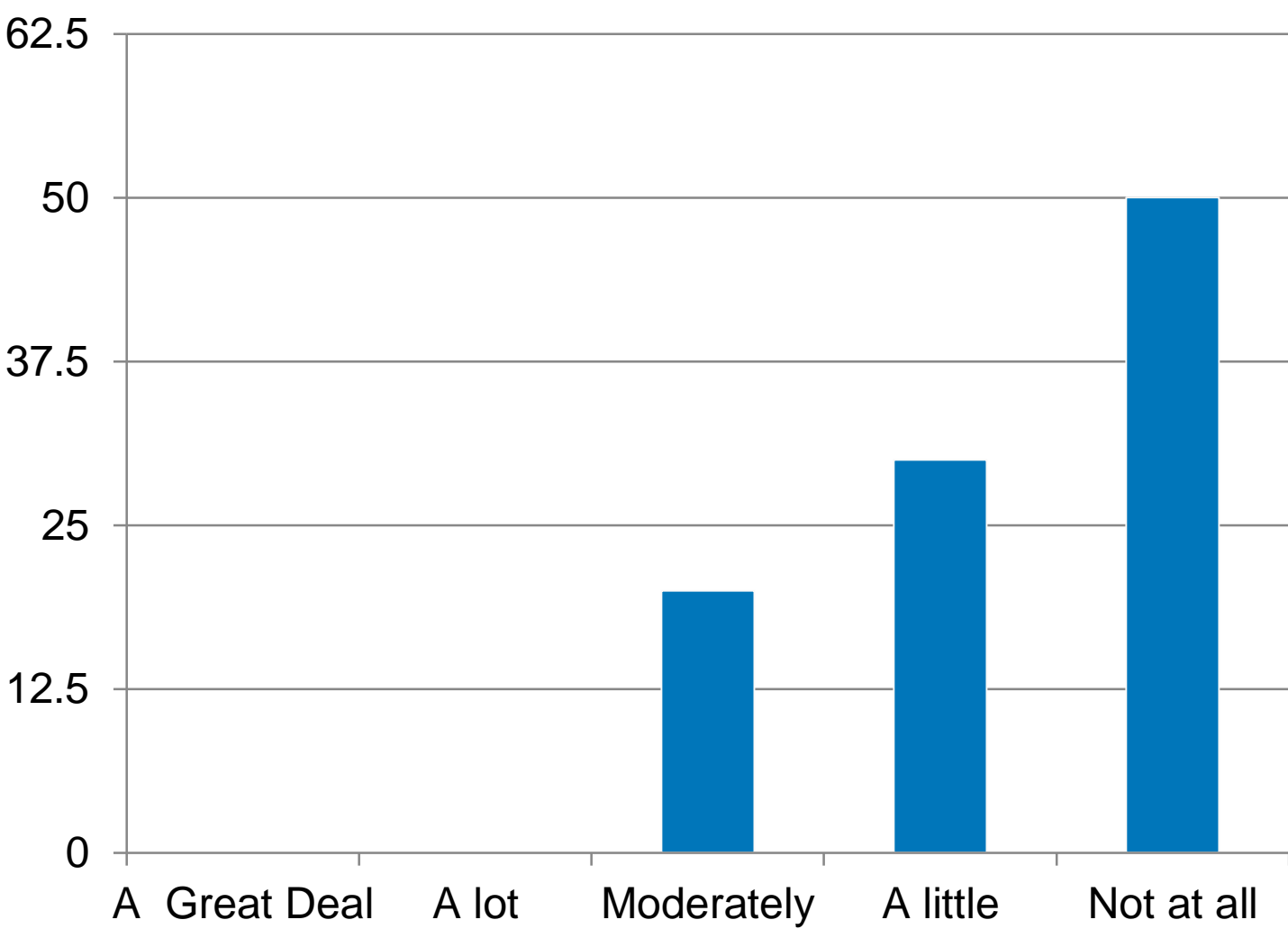
Senate Republicans spoke warily of the prospect of a partial government shutdown this month, highlighting the divisions

Fox News

Trump to meet with Democrats on border wall, possible partial shutdown - Fox News



Trump to meet with Democrats on border wall, possible partial shutdown Fox News Is Team Trump



## Concluding remarks

- Personalisation of content in social networks is a contributing factor to the spread of misinformation
- In order to prevent this, we have designed a tool that provides a balanced view of twitter content
- We aim to gather feedback on the impact of nudging through information and nudging by presentation