

# Politics in the Facebook Era

## Evidence from the 2016 US Presidential Elections

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**TiSEM's Seminar**  
19 November 2019

# Motivation

- ▶ The way we access news and, with it, political communication have radically changed since the advent of social media.
- ▶ Social media allow candidates to :
  - ▶ tailor messages ([political micro-targeting](#)) ◀ example
  - ▶ conduct campaigns with *no* regulation constraint
  - ▶ and much more (networks, real time feedback, ...)
- ▶ Facebook growing source of political information:
  - ▶ 2012 ⇒ 12% of Americans read political news on FCBK
  - ▶ 2016 ⇒ this up to 62% and FCBK ranked as the third-most-cited “main source” of political information ([PEW](#))
  - ▶ 2016 ⇒ 40% of Europeans use social media daily, for 16 % the main source of information ([Eurobarometer](#)) .

# Background/1

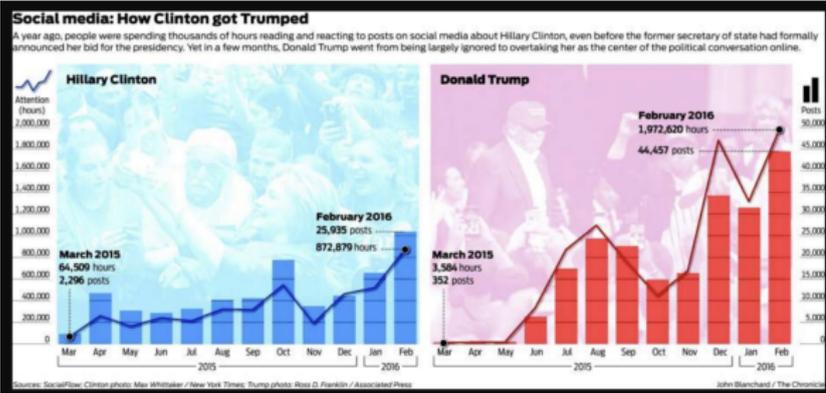
- ▶ Debate on role of social media in shaping political views (*echo-chambers*)



- ▶ Many fear that this new way of campaigning may:
  - ▶ facilitate political polarisation, populism and extremism;
  - ▶ undermine democracy (e.g. [Cambridge Analytica](#) and [Russian fake news](#) scandals);
  - ▶ affect elections:(e.g. [Brexit](#), [Catalonia](#), [Italy](#), [Trump victory](#) )

# Background/2

- ▶ Many think FCBK and Twitter had a significant impact on Trump's victory in the 2016 elections. (Independent, Wired, Guardian, WashPost, ... )
- ▶ In few months Trump went from being largely ignored to overtaking Clinton as the centre of the online political conversation.



## Background/3

- ▶ Donald Trump campaign's heavy relied on social media (Facebook and Twitter).
  - ▶ Spending 44 million on Facebook and running 175,000 variations of political adverts.
  
- ▶ Hillary Clinton relied more heavily on traditional media (TV, press)
  - ▶ Spending 28 million dollars on social media.

# Literature : effect of media (campaign) on voting

Three effects of media political campaigning:

- ▶ **Participation:**

Internet access negative effect (*Falck et al., 2014*); TV ads strong effect (*Gerber et al., 2010*); no effect (*Krasno & Green, 2008*); no effect (*Huber and Arceneaux, 2007*); Fox News positive effect (*DellaVigna & Kaplan, 2007*).

- ▶ **Persuasion:**

TV ads strong (short lived) effect (*Freedman, Franz, Goldstein, 2004*); persuasive effect (*Huber and Arceneaux, 2007*); Fox News positive effect for Republican (*DellaVigna & Kaplan, 2007*).

- ▶ **Polarisation:**

Internet and social media contribute to voters' political polarization (*Sunstein, 2001, 2009 and 2017; Pariser, 2011; Gabler, 2016*); no effect (*Boxell, Gentzkow, and Shapiro, 2017*) .

Literature on **Social Media and Politics** is recent and very limited (*Bond et al. 2012, Petrova et al. 2016, Allcott et al. 2017, Müller and Schwarz 2018*)

# This paper: Research Questions

## What is the role played by social media in shaping recent political campaigns and election outcomes?

Two (empirical) contributions:

1. measure the **intensity** of political micro-targeted campaigning conducted on FCBK and identify effective targeting dimensions (gender, age, race, education);
2. estimate the **effect** of these campaigns on the behaviour of voters who relied on FCBK to gather political information.

Our study applies to the 2016 US Presidential elections (but, time permitting, we will also show a related study based on a online experiment conducted during the 2018 US Mid-term elections)

# Research Design

**GOAL**→ Estimate the effect of social media campaigning on voting behaviour (participation and persuasion).

Ideally we would compare decisions taken by the same individual when exposed and not exposed to social media campaigns, while suppressing exposure to other media.

**Issue 1, MEASURABILITY:** social media campaigns are not observed (externally), there is no measure for their distribution among internet users and for their intensity.

**Issue 2, IDENTIFICATION:** at best, a quasi-experimental approach is possible, because individuals vote only once. Moreover, they are exposed to multiple campaigns distributed via different media.

# MEASURABILITY: 2-Step Approach

We need two different measures:

**INTENSITY**: how intensely/aggressively an **audience** was *micro-targeted* by political campaigns during the electoral period

→ propose a measure based on **daily prices (CPM) of FCBK ads micro-targeted at US audiences** (by political ideology, gender, age, race, education level and location).

→ build similar indicators for TV, Newspapers and Radio campaigns (Nielsen Ad Data)

**EXPOSURE**: how great the exposure to social media campaign was across **individuals** belonging to a given political audience,

→ use **self-reported media and FCBK usage** for respondents of the 2016 American National Election Survey (ANES).

# IDENTIFICATION

Match ANES respondents to a political audience by **demographics** (gender, age, race, education), **location** (US state) and **political ideology**.

For all **individuals** belonging to the **same political audience** exploit variation across

- **intensity** of Social Media Political Campaign  
(**randomly assigned interview date**)
- **exposure** to Social Media Usage  
(**predetermined and time invariant**)

to estimate model of turnout and candidate preferences ...

while controlling for exposure to all media types and trend in CPM of politically aligned programs .

1.

A new Measure for the Intensity  
of social media Political Campaigning

# Measuring the Intensity of Political Campaign

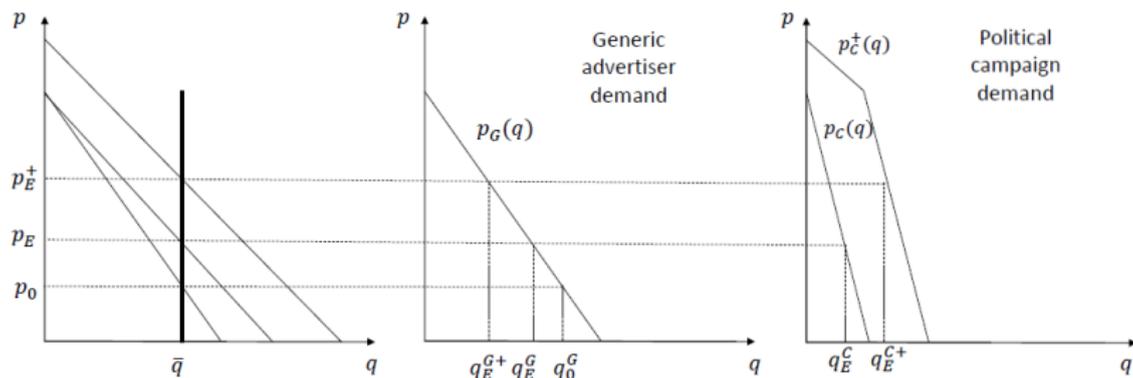
**We argue that variations in prices across audiences with different political ideologies are due to Political micro-targeting.**

→ Political Candidates (temporarily) enter online ad auctions during campaign periods. Price they are willing to pay reflects the impact selected audiences can have on their winning probability (Moshary, 2017).

→ Prices convey information about candidates' strategies, and about the intensity of the competition to reach different types of voters in different states at different points in time.

# Graphical illustration

The platform supplies an **inelastic** quantity of ads ( $\bar{q}$ ). Evidence  
Two States of the World  $i = \{0, E\}$ , depending on Elections ( $E$ ).



- In state 0 ads are demanded only by Generic ( $G$ ) Advertisers.
- In state  $E$ , Political Advertisers ( $P$ ) enter the auction determined to win a piece of the pie. **The equilibrium price ( $p_E$ ) increases and the quantity assigned to generic advertiser ( $q_E^G$ ) decreases.**

# Metrics for the Intensity of Social Media Campaign

## Intensity by audience type

(defined by State,  $s$ , Characteristics,  $c$ , and Political Ideology,  $p$ )

**Relative CPM:**  $p_{scp} = P_{scp}/P_{sc}$

**Relative CPM Ratio:**  $r_{scp,w} = p_{scp,e}/p_{scp,w}$



# Test II: Prices and Election Winning Probabilities

CPM Fluctuations proportional to distance in candidates winning probability

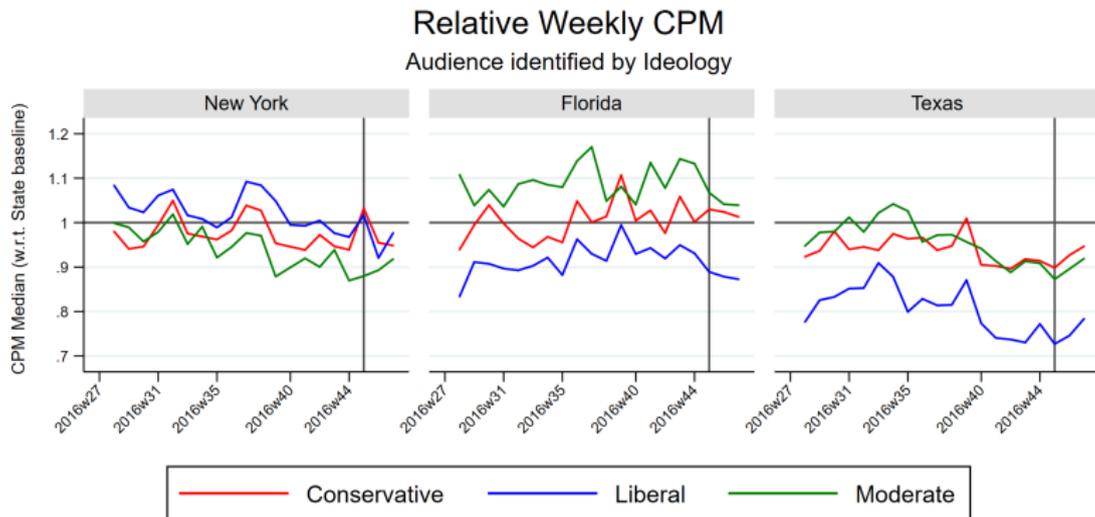
Daily State-specific Facebook Ad prices respond to variations in **Daily State-specific winning probability**<sup>1</sup>, during the three months preceding the elections (8th August - 8th of November 2016).

Dep. Variable: State CPM Median	Republican Partisan States	Democrat Partisan States	Swing States
Lag of CPM median	0.533** (0.031)	0.545** (0.026)	0.502** (0.042)
Abs. Value of Difference in Winning Prob	-2.887** (0.640)	5.814** (0.907)	1.687** (0.508)
Abs. Value of Difference in Winning Prob $\times 1[T > C]$			-2.390** (0.921)

Model is  $cpm_{s,t} = \alpha cpm_{s,t-1} + \beta_1 PDIFF_{s,t-1} + \beta_2 (PDIFF_{s,t-1} \times TADV_{s,t-1}) + e_{s,t}$ , with  $PDIFF_{s,t} = |(P_{s,t}^T - P_{s,t}^C)|$ , and  $P_{s,t}^T$  and  $P_{s,t}^C$  indicate the winning probability of Trump and Clinton, respectively.  $TADV_{s,t}$  is an indicator variable with value 1 for all cases where Trump has the lead on the election forecast. Model also controls for cyclical fluctuations in Internet usage (day of the week dummies) and for a time trend (week of the year dummies).

<sup>1</sup>Source: **FiveThirtyEight 2016 Election Forecast**, Chance of Winning estimated using the "Polls-plus forecast" model, which combines polls, the economy and historical data.

# Intensity of Political Campaign - example



2.  
Estimating the effects  
of political campaigning on social media on voting outcomes

# Effect of FCBK campaigns on Voters Behaviour

Combining FCBK price data with the ANES 2016 Survey

For the effect of FCBK campaigns on voters behaviour, we observe:

- **individual exposure to the political campaign:**

match ANES' individual respondents to a Facebook Audience, use their media and FCBK habits to proxy for individual exposure;

- **individual ideology and voting decisions:**

use ANES political ideology and participation in 2012 and 2016 Elections as individuals preferences and voting decisions.

- **trend of political campaigns on other media:**

use CPM for TV programs, Newspapers, Radio, major US internet sites and favorite TV shows

**Identification:** the intensity assigned to two individuals, within same audience, differs according to their random assignment into two different interview dates, and to their pre-determined individual exposure.

# Effect of FCBK campaigns on Voters Behaviour

For the 2,426 respondents of the 2016 ANES, estimate

$$Y_{iat} = \alpha EXP_i + \beta INT_{at} + \gamma EXP_i \times INT_{at} + \delta_1 X_i + \delta_2 TrM_i \times TrCPM_{it} + D_s + D_p + DOW_t + MOY_t + \epsilon_{iat}$$

with  $Y_{iat} =$  (Turnout, Trump Vote, Clinton Vote, Vote Change).

- ▶ Respondent  $i$  matched to FCBK Audience ( $a$ ) based on State ( $s$ ), Political Ideology ( $p$ ) and demographic characteristics.
- ▶ **Intensity of Political Campaign** ( $INT_{at}$ ) at audience-day level, and **Exposure to social media** ( $EXP_i$ ) at individual level.<sup>2</sup>
- ▶ Exposure to traditional media ( $TrM_i$ ) and CPM for their (generic) advertising campaigns ( $TrCPM_{it}$ ).

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<sup>2</sup>(1) if uses Facebook frequently, and (0) if he has no Facebook account.

# Effect of FCBK campaigns on Voters Behaviour

An example: Political Microtargeting by State/Ideology/Gender

Price Ratio between Interview and Election		
Political Ideology	Male	Female
Liberal - very strong	0.988	0.990
Liberal - strong	0.978	0.986
Liberal - mild	0.977	0.978
Moderate	1.041	1.004
Conservative - mild	1.024	1.001
Conservative - strong	1.029	1.004
Conservative - very strong	1.013	1.003

# Results: Political Micro-Targeting

We find two general results:

1. Political Micro-Targeting has significant effects when based on geographical location, ideology and *gender* or *education*, but not on *age* or *race*.
2. Social-Media Political Campaigns have strong significant effects on those ANES respondents for whom the *intensity of the campaign was the highest* (relative  $CPM > 1.2$ )

# Results: US Elections

1. Effects on Vote Turnout ◀ Turnout
2. Effects on Trump Support ◀ Trump
3. Effects on Clinton Support ◀ Clinton
4. Effects on change of Vote Intentions ◀ VChange

# Effect of FCBK campaigns on Voter Behaviour: Turnout

The effect of FCBK on **Voter Turnout**: among those who read political news on Facebook, those who are object of *gender*-political targeting are more likely to vote. LPM estimates

Dep. Var.: 1[Voted in 2016 Election]	Political Ideology only (1)	Political Ideology & Gender (2)	Political Ideology & Age (3)	Political Ideology & Race (4)	Political Ideology & Education (5)
News Access on FCBK (Exposure)	0.0251 (0.108)	-0.237** (0.107)	0.0628 (0.0873)	-0.0454 (0.108)	0.0468 (0.220)
Relative CPM (Intensity 1 )	-0.0945 (0.0881)	-0.209** (0.0834)	-0.0623 (0.0563)	-0.131 (0.0858)	0.00858 (0.151)
News Access on FCBK x Relative CPM	-0.0331 (0.0994)	0.209** (0.0986)	-0.0686 (0.0792)	0.0324 (0.0998)	-0.0562 (0.205)
Internet Access	0.0238 (0.0430)	0.0210 (0.0427)	0.0245 (0.0428)	0.0235 (0.0429)	0.0531 (0.0663)
Observations	2,422	2,422	2,422	2,422	1,059
R <sup>2</sup>	0.176	0.178	0.177	0.177	0.228

Note: All specifications include Income Class FE, State FE, Day of Week FE and Weekly FE. News Access on FCBK is a dummy taking value 1 when political news are accessed on Facebook for more than 3 days a week. They also control for Political Ideology, Turnout at the 2012 Elections, Vote at the 2012 Election, party registration, vote at the Primary, gender, religion, age, marital status, education, race, children, employment status, home ownership, gun ownership and consumption of alternative MEDIA.

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# Effect of FCBK campaigns on Voter Behaviour: Turnout

Heterogeneous effects of FCBK on **Voter Turnout**: Men, Republican supporters and political uninterested/uninformed voters who read political news on FCBK are more likely to vote. LPM estimates based on *gender-political targeting*

	All All	Female Voters	Male Voters	Democrat Voters	Uninterested & Moderate Voters	Republican Voters	2012 Democrat Voters	2012 Republican Voters
News Access on FCBK (Exposure)	-0.237** (0.107)	-0.0704 (0.137)	-0.416** (0.186)	-0.156 (0.190)	-0.300 (0.227)	-0.281* (0.159)	-0.256 (0.167)	-0.167 (0.158)
Relative CPM (Intensity 1)	-0.209** (0.0834)	-0.227 (0.141)	-0.405*** (0.157)	-0.0511 (0.158)	-0.296* (0.175)	-0.191 (0.126)	-0.295** (0.130)	-0.0371 (0.125)
News Access on FCBK x Relative CPM	0.209** (0.0986)	0.0847 (0.124)	0.349** (0.173)	0.146 (0.183)	0.243 (0.209)	0.279** (0.138)	0.227 (0.160)	0.127 (0.137)
Internet Access	0.0210 (0.0427)	0.00537 (0.0541)	0.0131 (0.0743)	0.138 (0.111)	-0.0519 (0.0596)	0.118 (0.0864)	0.0291 (0.0567)	0.106 (0.0764)
Observations	2,422	1,284	1,138	691	917	807	1,166	784
R-squared	0.178	0.210	0.222	0.251	0.236	0.239	0.175	0.205

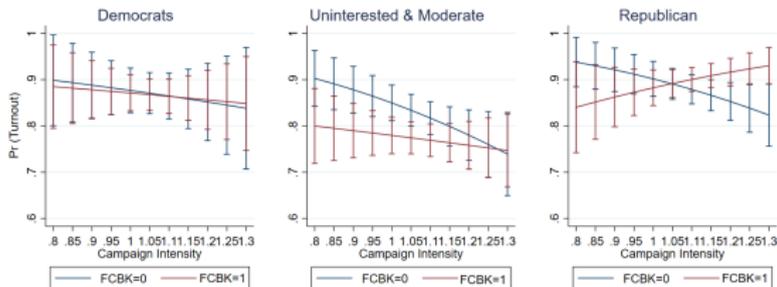
Note: Intensity is measured as Ratio of Relative CPM during Election Week to Relative CPM during Interview Week. All specifications include Income Class FE, State FE, Day of Week FE and Weekly FE. They also control for Political Ideology, Turnout at the 2012 Elections, Vote at the 2012 Election, party registration, vote at the Primary, gender, religion, age, marital status, education, race, children, employment status, home ownership and gun ownership.

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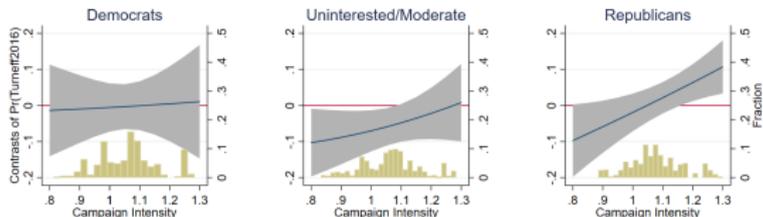
# Effect of FCBK campaigns on Turnout: Ideology

## Ideology Differences in the Effects of Campaign Intensity of Vote Turnout



Notes. Predicted Probability of Turnout, conditional on Exposure and Campaign Intensity

## Ideology Differences in the Effects of Campaign Intensity of Vote Turnout



Notes. Average Marginal Effects of Exposure, conditional on Campaign Intensity

# Effect of FCBK campaigns on Voter Behaviour: Trump Vote

The effect of FCBK on **Trump Vote**: among those who read political news on Facebook, those who are object of *gender-political* targeting are more likely to vote for Trump. LPM estimates

Targeting Type:	Political Ideology only (1)	Political Ideology & Gender (2)	Political Ideology & Age (3)	Political Ideology & Race (4)	Political Ideology & Education (5)
News Access on FCBK (Exposure)	-0.169 (0.171)	-0.378** (0.186)	0.0518 (0.141)	-0.172 (0.182)	-0.775** (0.346)
CPM Price Ratio (Intensity 2)	-0.218* (0.127)	-0.284** (0.128)	-0.0164 (0.0830)	-0.173 (0.131)	-0.590** (0.259)
News Access on FCBK x CPM Price Ratio	0.182 (0.157)	0.379** (0.174)	-0.0219 (0.129)	0.186 (0.169)	0.729** (0.319)
Internet Access	0.0269 (0.0435)	0.0253 (0.0431)	0.0235 (0.0436)	0.0256 (0.0434)	0.0253 (0.0635)
Observations	2,417	2,417	2,417	2,417	1,057
R-squared	0.537	0.537	0.536	0.537	0.560

Note: model estimates use Ratio of Relative CPM during Election Week to Relative CPM during Interview Week. All specifications include Income Class FE, State FE, Day of Week FE and Weekly FE. They also control for Political Ideology, Turnout at the 2012 Elections, Vote at the 2012 Election, party registration, vote at the Primary, gender, religion, age, marital status, education, race, children, employment status, home ownership and gun ownership.

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# Heterogeneous effect of political campaign

The effect of FCBK on **Trump Vote**: Men and political uninterested/uninformed voters who read political news on FCBK are more likely to vote for Trump. LPM estimates based on *gender-political targeting*

	All All	Female Voters	Male Voters	Democrat Voters	Uninterested & Moderate Voters	Republican Voters	Low Education	High Education
News Access on FCBK (Exposure)	-0.378** (0.186)	-0.287 (0.268)	-0.508* (0.281)	0.0503 (0.162)	-0.715** (0.351)	0.0551 (0.375)	-1.953** (0.780)	-0.457 (0.432)
Relative CPM (Intensity 1 )	-0.284** (0.128)	-0.353 (0.224)	-0.182 (0.207)	-0.0598 (0.116)	-0.496** (0.218)	-0.0498 (0.271)	-0.653 (0.465)	-0.667* (0.341)
News Access on FCBK x Relative CPM	0.379** (0.174)	0.320 (0.249)	0.475* (0.264)	-0.0425 (0.153)	0.707** (0.328)	-0.0186 (0.344)	1.847** (0.723)	0.430 (0.399)
Internet Access	0.0253 (0.0431)	0.0157 (0.0523)	0.00153 (0.0748)	0.0209 (0.0311)	-0.0241 (0.0613)	0.136 (0.0933)	0.00751 (0.0961)	0.0221 (0.106)
Observations	2,417	1,282	1,135	691	914	806	275	782
R-squared	0.537	0.576	0.536	0.279	0.428	0.382	0.642	0.588

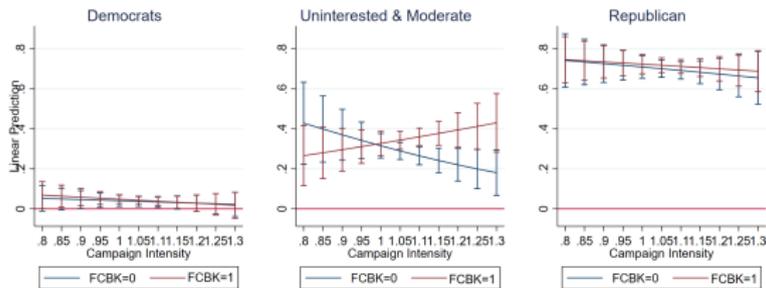
Note: Intensity is measured as Ratio of Relative CPM during Election Week to Relative CPM during Interview Week. All specifications include Income Class FE, State FE, Day of Week FE and Weekly FE. They also control for Political Ideology, Turnout at the 2012 Elections, Vote at the 2012 Election, party registration, vote at the Primary, gender, religion, age, marital status, education, race, children, employment status, home ownership and gun ownership.

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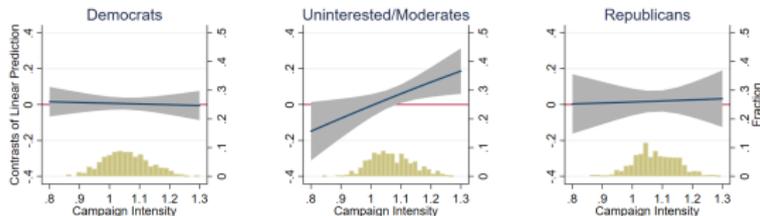
# Effect of Ideology Targeting on Trump Vote

Ideology Differences in the Effects of Campaign Intensity of Trump Vote



Notes. Predicted Probabilities of Trump Vote, conditional on Exposure and Campaign Intensity

Ideology Differences in the Effects of Campaign Intensity of Trump Vote



Notes. Average Marginal Effects of Exposure, conditional on Campaign Intensity



# Effect of FCBK campaigns on Voter Behaviour: Clinton Vote

The effect of FCBK on Effective Clinton Vote, LPM estimates

Targeting Type:	Political Ideology only (1)	Political Ideology & Gender (2)	Political Ideology & Age (3)	Political Ideology & Race (4)	Political Ideology & Education (5)
News Access on FCBK (Exposure)	-0.0337 (0.175)	0.183 (0.180)	0.174 (0.149)	-0.162 (0.177)	0.626* (0.347)
CPM Price Ratio (Intensity 2)	0.291** (0.129)	0.0763 (0.131)	-0.0699 (0.0883)	0.152 (0.127)	0.450* (0.251)
News Access on FCBK x CPM Price Ratio	0.00127 (0.161)	-0.201 (0.167)	-0.189 (0.135)	0.120 (0.163)	-0.599* (0.319)
Internet Access	0.0475 (0.0417)	0.0528 (0.0415)	0.0557 (0.0415)	0.0514 (0.0416)	0.105* (0.0594)
R2	0.558	0.557	0.558	0.557	0.586
Observations	2,417	2,417	2,417	2,417	1,057

Note: Top panel uses Relative CPM, as measured during the week of the Interview. Bottom Panel uses Ratio of Relative CPM during Election Week to Relative CPM during Interview Week. All specifications include Income Class FE, State FE, Day of Week FE and Weekly FE. They also control for Political Ideology, Turnout at the 2012 Elections, Vote at the 2012 Election, party registration, vote at the Primary, gender, religion, age, marital status, education, race, children, employment status, home ownership and gun ownership.

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# Measuring the effect of political campaign: Change in the behavior between pre and post elections interviews

The effect of FCBK on Change in Voting Behaviour: among those who read political news on Facebook, those who are object of *age-* or *gender-*political targeting are less likely to be persuaded to change vote against their preferred candidate.

Targeting Type:	Political Ideology only (1)	Political Ideology & Gender (2)	Political Ideology & Age (3)	Political Ideology & Race (4)	Political Ideology & Education (5)
News Access on FCBK (Exposure)	0.0430 (0.0652)	0.227** (0.0889)	0.0646 (0.0598)	-0.0250 (0.0686)	0.340*** (0.128)
CPM Price Ratio (Intensity 2)	-0.0246 (0.0465)	0.140** (0.0578)	0.0447 (0.0482)	-0.0284 (0.0511)	0.140 (0.0992)
News Access on FCBK x CPM Price Ratio	-0.0379 (0.0595)	-0.210** (0.0834)	-0.0575 (0.0555)	0.0251 (0.0642)	-0.317*** (0.120)
Internet Access	-0.0480* (0.0246)	-0.0494** (0.0246)	-0.0485** (0.0247)	-0.0481* (0.0246)	-0.0755** (0.0383)
R-squared	0.068	0.071	0.068	0.068	0.150
Observations	2,422	2,422	2,422	2,422	1,059

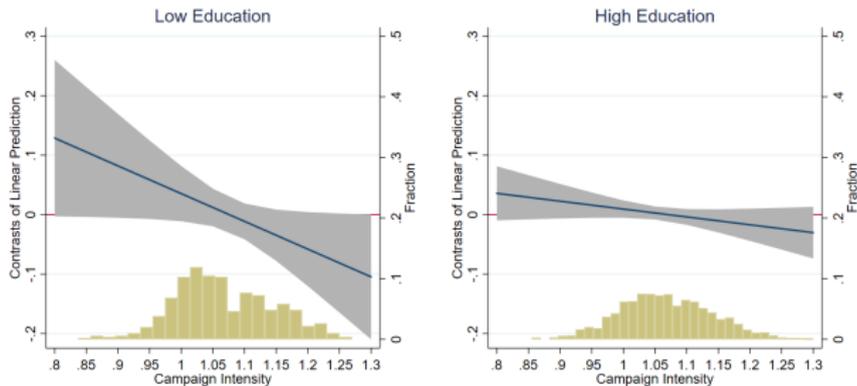
Note: Top panel uses Relative CPM, as measured during the week of the Interview. Bottom Panel uses Ratio of Relative CPM during Election Week to Relative CPM during Interview Week. All specifications include Income Class FE, State FE, Day of Week FE and Weekly FE. They also control for Political Ideology, Turnout at the 2012 Elections, Vote at the 2012 Election, party registration, vote at the Primary, gender, religion, age, marital status, education, race, children, employment status, home ownership and gun ownership.

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# Polarization: Ideology-Education Targeting

## Education Differences in the Effects of Campaign Intensity on Vote Change

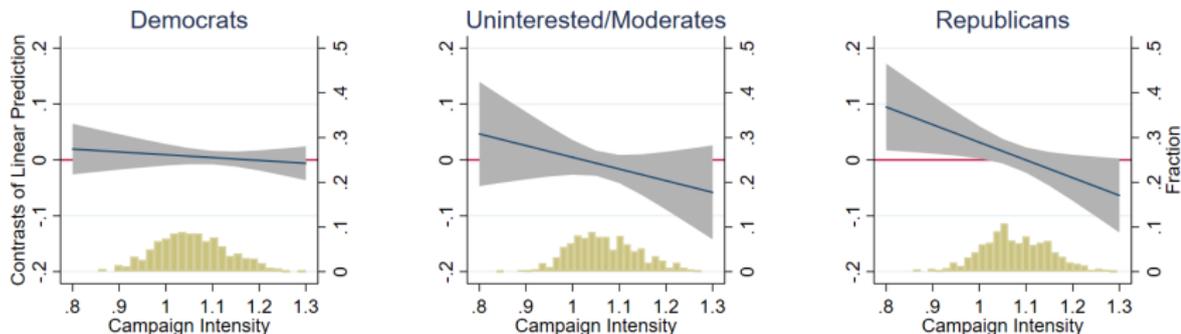


Notes: Average Marginal Effects of Exposure, conditional on Campaign Intensity

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# Polarization: Ideology- Targeting

## Ideology Differences in the Effects of Campaign Intensity of Vote Change



Notes. Predicted Probabilities of Trump Vote, conditional on Exposure and Campaign Intensity

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# Measuring the effect of political campaign

The effect of FCBK on **Information**: among those who read political news on Facebook do not improve their information level compared to other means

	(1) None	(2) Political Ideology Only	(3) Political Ideology & Gender	(4) Political Ideology & Race	(5) Political Ideology & Age	(6) Political Ideology & Education
News Access on FCBK (Exposure)	0.00996* (0.00592)	0.0249 (0.0659)	0.0295 (0.0640)	-0.0805* (0.0484)	-0.0120 (0.0682)	-0.0450 (0.131)
Relative CPM (Intensity 1 )		0.372 (0.290)	0.00297 (0.284)	-0.251 (0.182)	0.436 (0.304)	0.330 (0.681)
<b>News Access on FCBK x Relative CPM</b>		<b>-0.0208 (0.0610)</b>	<b>-0.0255 (0.0597)</b>	<b>0.0759* (0.0438)</b>	<b>0.0133 (0.0634)</b>	<b>0.0448 (0.120)</b>
TV	0.0313 (0.0508)	0.0152 (0.0467)	0.0161 (0.0467)	0.0166 (0.0467)	0.0154 (0.0467)	0.0631 (0.0770)
Newspapers	0.00873 (0.0359)	0.0570* (0.0324)	0.0548* (0.0324)	0.0551* (0.0324)	0.0561* (0.0324)	0.0975* (0.0549)
TalkShows	0.00193 (0.0399)	0.0273 (0.0363)	0.0282 (0.0363)	0.0273 (0.0364)	0.0269 (0.0363)	-0.00579 (0.0614)
Internet	0.0967** (0.0419)	0.138*** (0.0381)	0.135*** (0.0382)	0.137*** (0.0381)	0.137*** (0.0381)	0.0418 (0.0611)
Radio	-0.0202 (0.0376)	-0.00338 (0.0335)	-0.00491 (0.0334)	-0.00275 (0.0335)	-0.00338 (0.0335)	0.0493 (0.0569)
Observations	2,191	2,191	2,191	2,191	2,191	938

Note: Top panel uses Relative CPM, as measured during the week of the Interview. Bottom Panel uses Ratio of Relative CPM during Election Week to Relative CPM during Interview Week. All specifications include Income Class FE, State FE, Day of Week FE and Weekly FE. They also control for Political Ideology, Turnout at the 2012 Elections, Vote at the 2012 Election, party registration, vote at the Primary, gender, religion, age, marital status, education, race, children, employment status, home ownership and gun ownership.

# Summary

- ▶ Online advertising prices for politically relevant audiences can be used to proxy for the intensity of micro-targeted political campaigns conducted on social-media.
- ▶ Political micro-targeting based on users Gender/Education, Geographical Location and Political Ideology is effective on Turnout, Trump's Vote and Vote Change, but not on Clinton's Vote.
- ▶ The effect of political micro-targeting on Trump's Vote is most effective among moderate voters and voters with low educational level.

### 3. Positive vs Negative Political Ads on Social Media

# Discussion

- ▶ We do observe: (i)(relative) ads prices by audience type, location, time, (ii) outcomes (i.e. voting, turnout, changes) ⇒ we can estimate the effect of **intensity**.
- ▶ We do not observe: (i) the identity of the advertisers or (ii) the actual ads ⇒ we cannot estimate the effect of **content**.



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# Political Ad Framing on Social Media - an Experiment

Online experiment on targeted political ads with biased framing.

- ▶ **1,000 US citizens** recruited on MTurk
- ▶ **2018 Mid-Term Elections.**
- ▶ Interview subjects both pre- and post- election
- ▶ Ask subjects to complete **two simple tasks**, consisting in reading online ads on socially and politically relevant topics (*immigration* and *environment*)
- ▶ Test the ability of subjects to **recollect the content of the online ads**, conditional on their framing.

Over the duration of the experiment, we also collect daily Facebook data (CPM) at the **state-ideology-gender-interest level**.

# 2018 US Midterm Elections

## Map

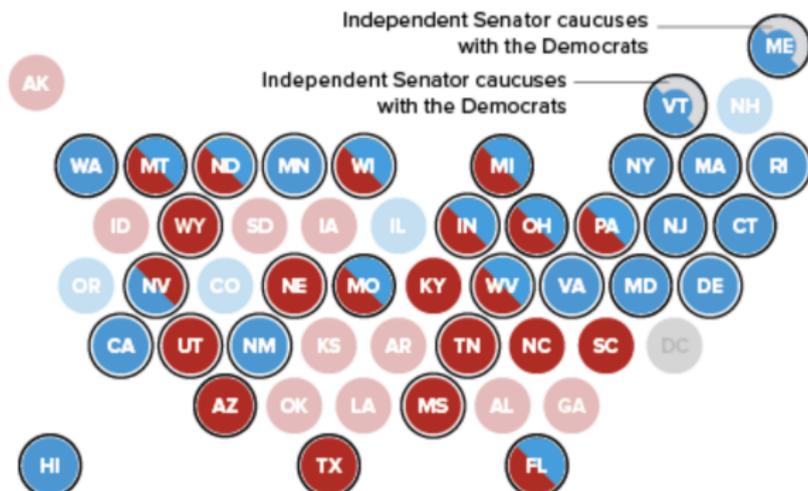
### Senate races, 2018

#### 2016 Presidential elections

-  Voted for Donald Trump
-  Voted for Hillary Clinton

#### 2018 Senatorial elections

-  2018 Senatorial election state
-  Republican currently holds seat up for election in a state that voted for Clinton
-  Democrat currently holds seat up for election in a state that voted for Trump



NOTE: The Senate race for AK, ID, OR, SD, IA, CO, OK, KS, AR, LA, AL, GA, DC and NH were previously held in 2016

# Recruitment

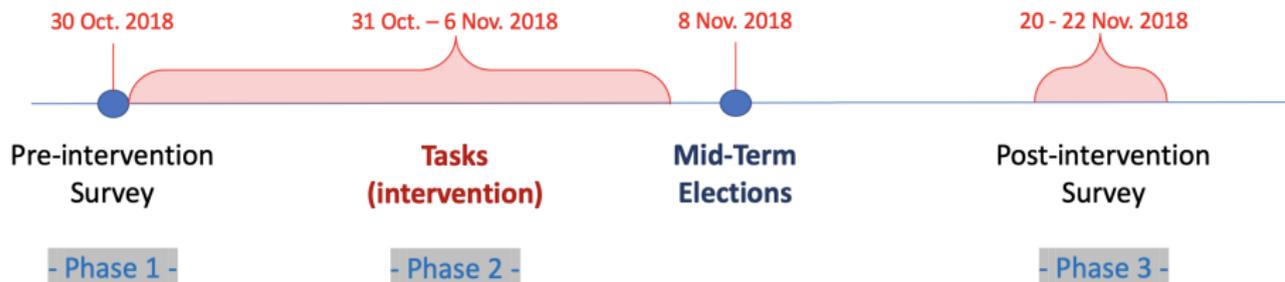
- The **1,000 US Citizens** are recruited on the MTurk platform.
- They are asked to participate in a **3-phase experiment** involving three short survey.
- Upon completion of the survey, they receive a **monetary compensation of 1.45USD**. They do not receive any compensation if they withdraw or do not complete the survey.

---

**Disclosed aim of the study:** *"to evaluate the response to political advertising on social media"* .

**Disclosed content of the experiment:** *"two (mock-up) online advertisements, presented in a similar format to that of online ads that run on widely used social media networks"* .

# Experiment Timeline



# PHASE 1: Pre-Intervention Interview

The pre-intervention interview allows us to collect **demographic** and **ideological characteristics** of the test subjects:

- ▶ State, Gender, Age, Race, Employment, Education
- ▶ Facebook usage
- ▶ Media usage
- ▶ Political News Exposure (Time spent reading/viewing)
- ▶ Position on Federal Spending Programs (Social Security, Education, Health, Border Control, HiTech, Welfare, Childcare, Poverty, Environment)
- ▶ Political Ideology
- ▶ Voting Choices (2016 Presidential & (intention) 2018 Mid-Term)
- ▶ Alignment to no-profit organization

## PHASE 2: Intervention

In Phase 2, each subject is asked to read **two different (mock) social media ads** (displayed in random order): one on **IMMIGRATION**, and the other on **ENVIRONMENT**.

The ads include:

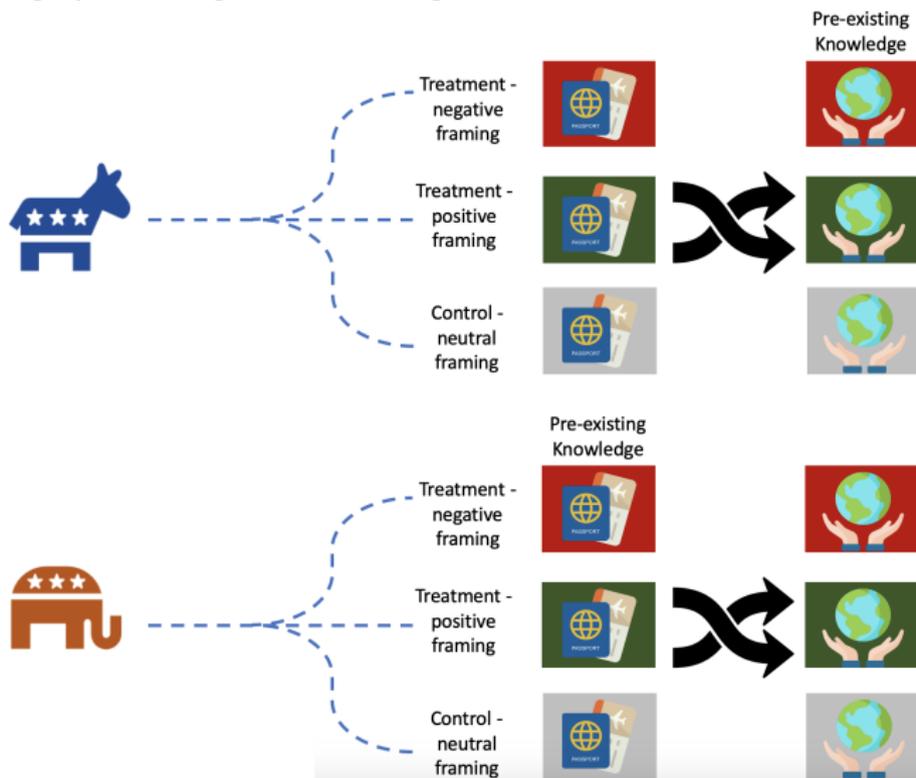
- ▶ A factual information with a quantitative figure.
- ▶ A statement that adds neutral, positive or negative framing.
- ▶ A neutral image.

After reading the ad, the subjects are distracted by a 1-minute personality test.

Finally, they are asked to answer a question regarding each of the factual information provided in the ads.

## PHASE 2: Intervention (Randomization)

Subjects are randomly assigned to the versions of the ad that are negatively, positively, or neutrally framed.



# PHASE 2: Intervention

## Task 2: Immigration Debate

### Neutral

 **News Today**  
Sponsored Like Page

As of January 2014, it was estimated that over 12 million immigrants were living in the US illegally. There is much concern about the inflow of unauthorised immigrants in the US. Some people feel the government should make all unauthorised immigrants felons and send them back to their home country. Other feel the government should allow unauthorised immigrants to remain in the United States and eventually qualify for U.S. citizenship. This is the core of the debate on unauthorised immigrants.



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The Role of the US Government

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### Positive

 **News Today**  
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As of January 2014, it was estimated that over 12 million immigrants were living in the US illegally. There is much concern about the inflow of unauthorised immigrants in the US. Some people feel the government should make all unauthorised immigrants felons and send them back to their home country. Other feel the government should allow unauthorised immigrants to remain in the United States and eventually qualify for U.S. citizenship. Immigrants contribute to the economy, by taking jobs Americans would not take.



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### Negative

 **News Today**  
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As of January 2014, it was estimated that over 12 million immigrants were living in the US illegally. There is much concern about the inflow of unauthorised immigrants in the US. Some people feel the government should make all unauthorised immigrants felons and send them back to their home country. Other feel the government should allow unauthorised immigrants to remain in the United States and eventually qualify for U.S. citizenship. Immigrants destroy the economy, because they steal American jobs.



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## PHASE 2: Intervention

Which statement regarding the news on the immigration debate is correct?

- As of January 2014 estimates, over 12 million immigrants enter US every year.
- As of January 2014 estimates, there are 12.000.000 of illegal immigrants in the US.**
- As of January 2014 estimates, there are 120 millions of illegal immigrants in the US.
- None of the above

# PHASE 2: Intervention

## Task 2: Environment Debate

### Neutral

 **News Today**  
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The overall cost of environmental regulation in the United States is estimated to be about 2% of the gross domestic product—similar to many other countries. There is much concern about the effect of environmental regulation on the US economy. Some people think the federal government needs to regulate business to protect the environment. Others think that the federal government should not regulate business to protect the environment. Environmental policies are generally based on the introduction of new technologies.



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### Positive

 **News Today**  
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The overall cost of environmental regulation in the United States is estimated to be about 2% of the gross domestic product—similar to many other countries. There is much concern about the effect of environmental regulation on the US economy. Some people think the federal government needs to regulate business to protect the environment. Others think that the federal government should not regulate business to protect the environment. Environmental policies prompt the adoption of new technologies that will create many jobs.



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### Negative

 **News Today**  
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The overall cost of environmental regulation in the United States is estimated to be about 2% of the gross domestic product—similar to many other countries. There is much concern about the effect of environmental regulation on the US economy. Some people think the federal government needs to regulate business to protect the environment. Others think that the federal government should not regulate business to protect the environment. Environmental policies restrain the adoption of new technologies and will cost us many jobs.



**Environmental Debate**  
The Role of the US Government

WHICH IS BEST?

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## PHASE 2: Intervention

Which statement regarding the news on the environmental debate is correct?

- US spends 2 % of public spending on environmental regulations
- US spends 20 % of gross domestic product on environmental regulations
- US spends 2 % of gross domestic product on environmental regulations**
- None of the above

## PHASE 3: Post-intervention

The post-intervention interview allows us to record:

- ▶ Changes in test subjects' initial political positions;
- ▶ Media usage;
- ▶ Media exposure on specific issues;
- ▶ Actual voting;
- ▶ Alignment to no-profit organization.

# Preliminary results

## Immigration

	Overall	Liberal	Moderate	Conservative	FCBK users	FCBK non users	Elections	No-Elections
ATE								
Positive vs Neutral	-0.029 [0.048]	-0.042 [0.057]	-0.155* [0.091]	0.075 [0.094]	-0.029 [0.053]	-0.043 [0.067]	-0.035 [0.047]	-0.051 [0.093]
Negative vs Neutral	-0.093** [0.042]	-0.165*** [0.059]	-0.091 [0.088]	0.088 [0.082]	-0.075 [0.052]	-0.092 [0.069]	-0.095** [0.046]	-0.011 [0.101]
P.O. Means								
Neutral	0.647 [0.029]	0.691 [0.039]	0.629 [0.063]	0.567 [0.062]	0.58 [0.038]	0.755 [0.045]	0.648 [0.032]	0.669 [0.068]
N	772	386	182	204	496	274	639	131

# Preliminary results

## Environment

	Overall	Liberal	Moderate	Conservative	FCBK users	FCBK non users	Elections	No-Elections
ATE								
Positive vs Neutral	-0.017 [0.0389]	-0.020 [0.056]	-0.120 [0.083]	0.050 [0.071]	-0.079 [0.046]	0.090 [0.067]	-0.027 [0.043]	0.046 [0.098]
Negative vs Neutral	-0.017 [0.0393]	-0.047 [0.056]	-0.019 [0.080]	-0.015 [0.078]	-0.066 [0.048]	0.061 [0.066]	-0.012 [0.043]	0.078 [0.123]
P.O. Means								
Neutral	0.731 [0.027]	0.718 [0.037]	0.754 [0.057]	0.745 [0.053]	0.765 [0.031]	0.681 [0.049]	0.736 [0.030]	0.665 0.063
N	772	386	182	204	496	274	639	131

# Alternative Instruments - why an experiment?

Facebook Inc. has recently released the “**Ad Library**”, a searchable database of ads about social issues, elections or politics.

Advantages:

- ▶ Transparency of Content
- ▶ Info on Advertiser
- ▶ Total Spending Figures

Limitations:

- ▶ Geography (only U.S.A., U.K. and Brazil). Recently expanded.
- ▶ Unknown campaign duration
- ▶ Aggregated Spending & Audience info
- ▶ Aggregated Platforms

THANK YOU!

# Measuring the intensity of political campaigns

## Targeting Political Audience on Facebook

We scrape **Daily Prices** for **State/Ideology specific Audiences**. We extract both CPM (Cost per Mille Impressions) and CPC (Cost per Click). We further do this for Age, Gender, Race and Education State/Ideology specific audiences.

The image shows a screenshot of the Facebook Ads targeting interface with three numbered callouts:

- 1**: A red circle highlights "Texas" on a map of the United States.
- 2**: A red circle highlights "Age" (18-65+) and "Gender" (All, Men, Women) in the "Detailed targeting" section.
- 3**: A red circle highlights the "Bid amount" section, showing a current bid of \$2.20 per post engagement and a "Suggested bid" of \$2.96 USD (\$2.43-\$3.82).

The "Detailed targeting" section includes the following options:

- INCLUDE people who match at least ONE of the following
- Self reported: 39,743,933 people
- US politics (conservative) [checked]
- US politics (liberal)
- US politics (moderate)
- US politics (very conservative)
- US politics (very liberal)

"The bid range shows a spectrum of bids that are currently winning auctions to reach the same audience you're targeting."

# Inelastic Ads Supply - Evidence

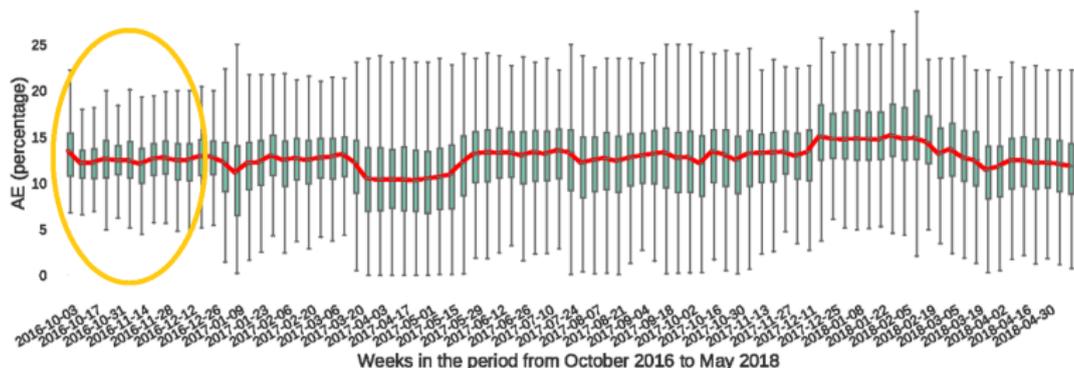


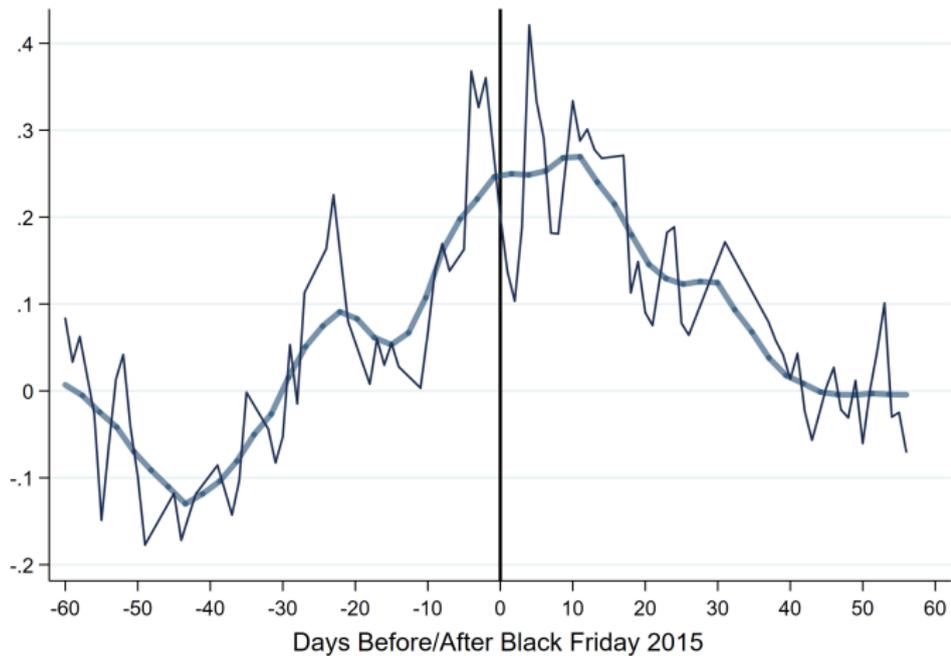
Fig. 5: Evolution of the metric  $AE = \frac{\#ads}{\#posts + \#ads}$  in the period October 2016 - May 2018 per week. Each week presents a boxplot of the metric that includes the distribution of the  $AE$  across all the users with active sessions in each week. Note  $AE$  is represented as percentage rather than portion in this figure.

Source: Arrate et al. (arXiv:1811.10921)

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# Test I - Robustness

## Price Fluctuations around the 2015 Black Friday



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