



Measuring the Effect of Political Leaning on Dating App Matches

Greg Rosen, Martin Lim, Javier Rondon, and Danny Collins

UC Berkeley MIDS

W241 WBL-002

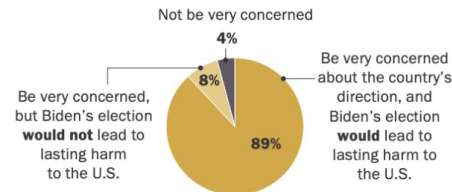
6 December, 2022

The American Divide

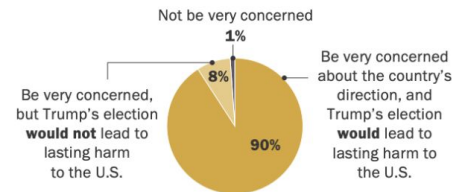
- America is exceptional with regards to its political divide
- The 2020 presidential election highlighted this divide more than ever
- Registered voters in either political party said ([Dimock and Wike 2020](#)):
 - Differences about American values, not just politics (8 in 10 voters)
 - A victory by opposing party means “lasting harm” in the US (9 in 10 voters)
- How pervasive are these views in acute social choices?
 - Only 4% of US marriages are between Democrats and Republicans ([Institute for Family Studies 2020](#))
 - Experimenting causal effect of political view on romantic desirability

Both Trump and Biden supporters say if the other wins, it would result in lasting harm to the country

% of **Trump supporters** who say they would ____ about the direction of the country if Joe Biden was elected president



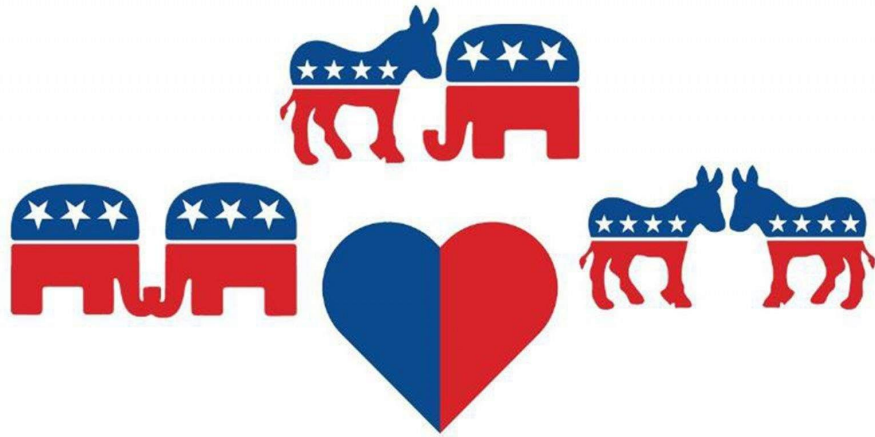
% of **Biden supporters** who say they would ____ about the direction of the country if Donald Trump was reelected president



Note: Based on registered voters. No answer responses not shown.
Source: Survey of U.S. adults conducted Sept. 30-Oct. 5, 2020.

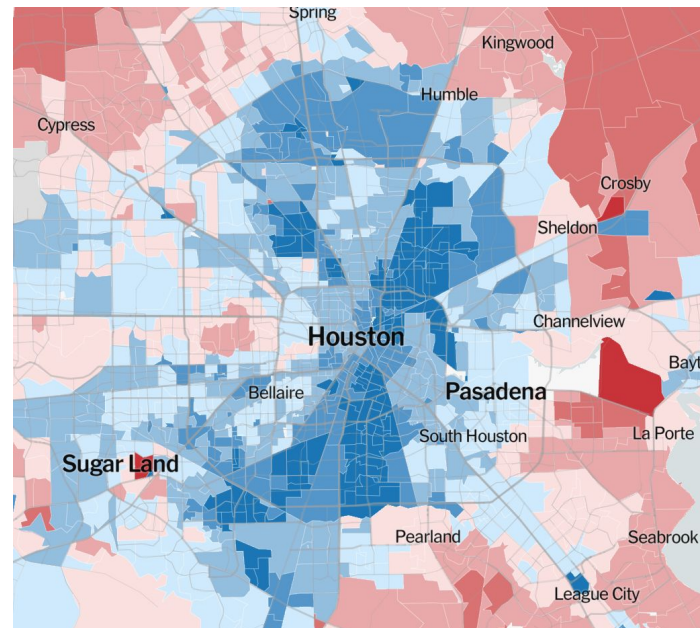
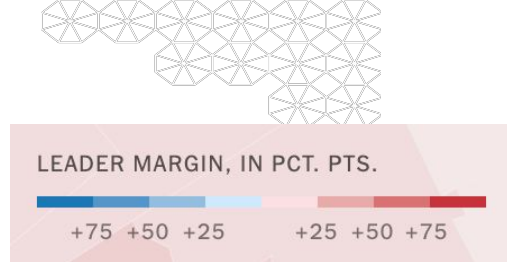
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Does including one's political leaning in a dating application biography affect the number of matches?



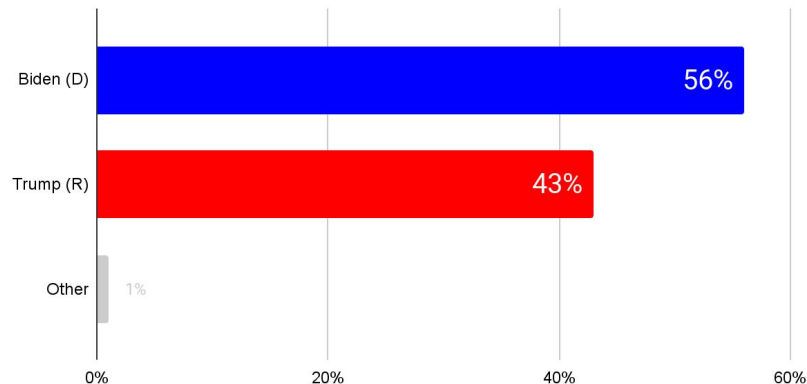
Houston Political Demographics

Houston (Harris County) is relatively evenly split versus most metro areas, with ~13% bias towards Liberal voters. We increased geographic range to 50 miles to balance for more Republicans.



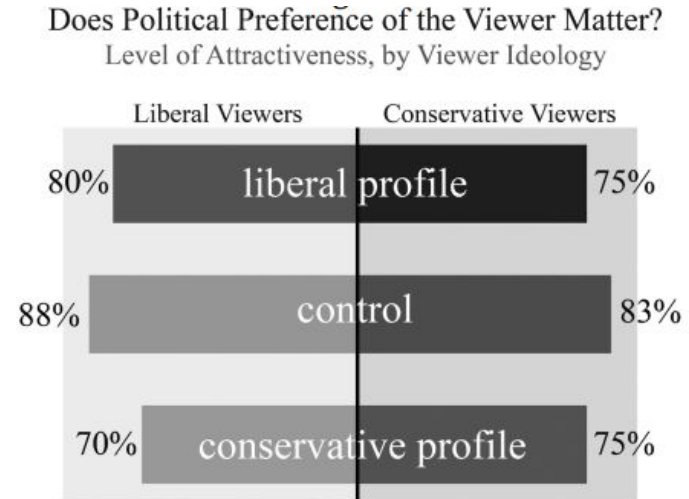
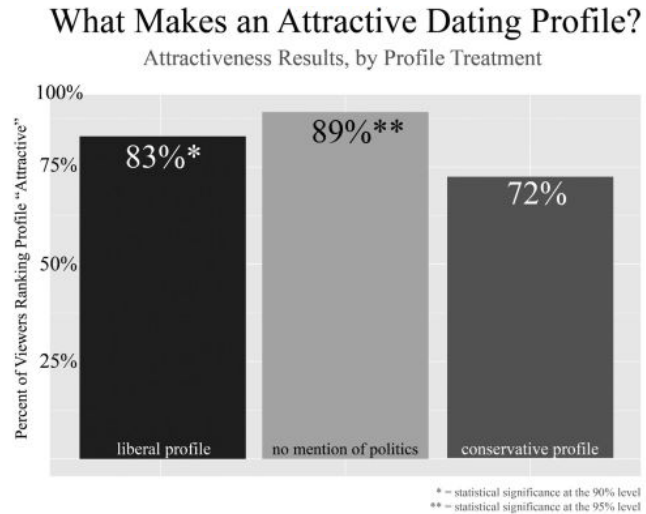
2020 Election Results

Harris County

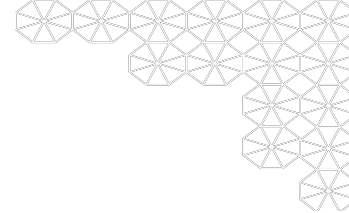


Hypotheses

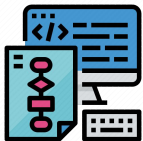
- Control will have higher match rates than both treatments.
- Liberal treatment will have higher match rates than conservative.



Measurement Units & Outcomes



WHAT: Match rate = (Number of Matches) / (Number of Likes given)



WHO: Users exposed to the profiles through by the algorithm



WHERE: Within 50 miles from the city center of Houston, Texas

2 Genders x

2 Platforms x

3 Leanings

1 City



Hinge
Profile

I'M LOOKING FOR

Someone to challenge me intellectually, physically, professionally, etc etc...but really, someone who can beat me in movie trivia.



Hinge

Liberal

Conservative

Control

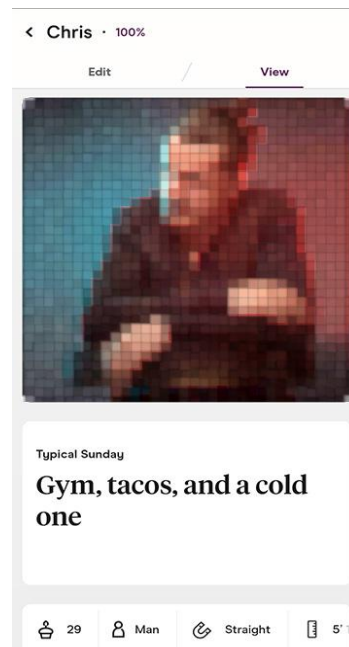


Treatment Variants

Control Biography: Love for food 🍷 travel ✈️
and good times 🌴 looking for an adventure 🏔️



Topic	Liberal	Conservative
Political Leaning	<i>Liberal</i>	<i>Conservative</i>
Abortion	<i>"My body, my choice!"</i>	<i>"Pro-Life"</i>
Social Justice	<i>"Support BLM / LGBTQ+"</i>	<i>"Traditional family values"</i>
Elections	<i>"Biden 2024!"</i>	<i>"Trump 2024!"</i>



Control



Conservative
Treatment

Randomization Strategy & Flow

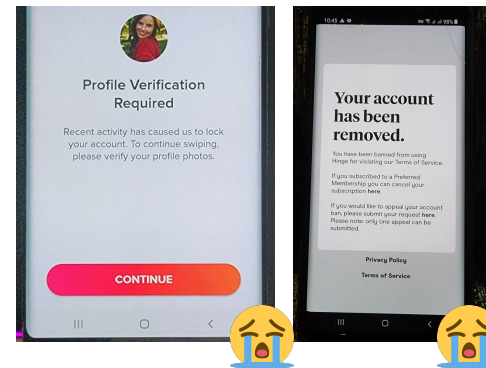
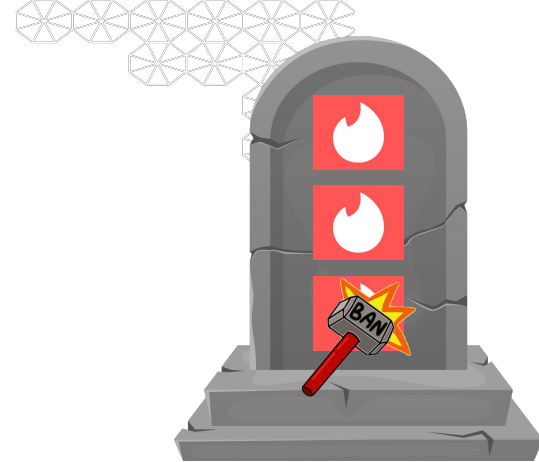
- Treatment and control split 1 week at a time
 - Day of week: full week per treatment/control
 - Seasonality: staggered treatment and control across profiles
- Randomization assumption that the algorithm delivers random match candidates across time

"Name"	Gender	Platform	Week 0 (Pretreatment)	Week 1	Week 2	Week 3
DAVE	MALE	HINGE	CONTROL	LIBERAL	CONTROL	CONSERVATIVE
SAMANTHA	FEMALE	HINGE	CONTROL	LIBERAL	CONTROL	CONSERVATIVE
JESSICA	FEMALE	TINDER	CONTROL	LIBERAL	CONTROL	CONSERVATIVE
ASHLEY	FEMALE	HINGE	CONTROL	CONTROL	LIBERAL	CONSERVATIVE
JOHN	MALE	TINDER	CONTROL	CONTROL	LIBERAL	CONSERVATIVE
ASHLEY	FEMALE	TINDER	CONTROL	LIBERAL	CONSERVATIVE	CONTROL
CHRIS	MALE	TINDER	CONTROL	LIBERAL	CONSERVATIVE	CONTROL
JOHN	MALE	HINGE	CONTROL	CONSERVATIVE	LIBERAL	CONTROL
DAVE	MALE	TINDER	CONTROL	CONSERVATIVE	LIBERAL	CONTROL
SAMANTHA	FEMALE	TINDER	CONTROL	CONSERVATIVE	LIBERAL	CONTROL
CHRIS	MALE	HINGE	CONTROL	CONTROL	CONSERVATIVE	LIBERAL
JESSICA	FEMALE	HINGE	CONTROL	CONTROL	CONSERVATIVE	LIBERAL
MATT	MALE	TINDER	CONTROL	CONTROL	CONSERVATIVE	LIBERAL
SARAH	FEMALE	TINDER	CONTROL	CONTROL	CONSERVATIVE	LIBERAL
MATT	MALE	HINGE	CONTROL	CONSERVATIVE	CONTROL	LIBERAL
SARAH	FEMALE	HINGE	CONTROL	CONSERVATIVE	CONTROL	LIBERAL

Samples & Attrition by Bans

A number of our profiles were banned resulting in an imbalanced dataset.

	Male			Female		
	Remaining Profiles	Group	N_{swipe}	Remaining Profiles	Group	N_{swipe}
Hinge	4/4	Control	1,200	3/4	Control	450
		Liberal	1,200		Liberal	450
		Conservative	1,200		Conservative	450
Tinder	4/4	Control	1,200	1/4	Control	150
		Liberal	1,200		Liberal	150
		Conservative	1,200		Conservative	300

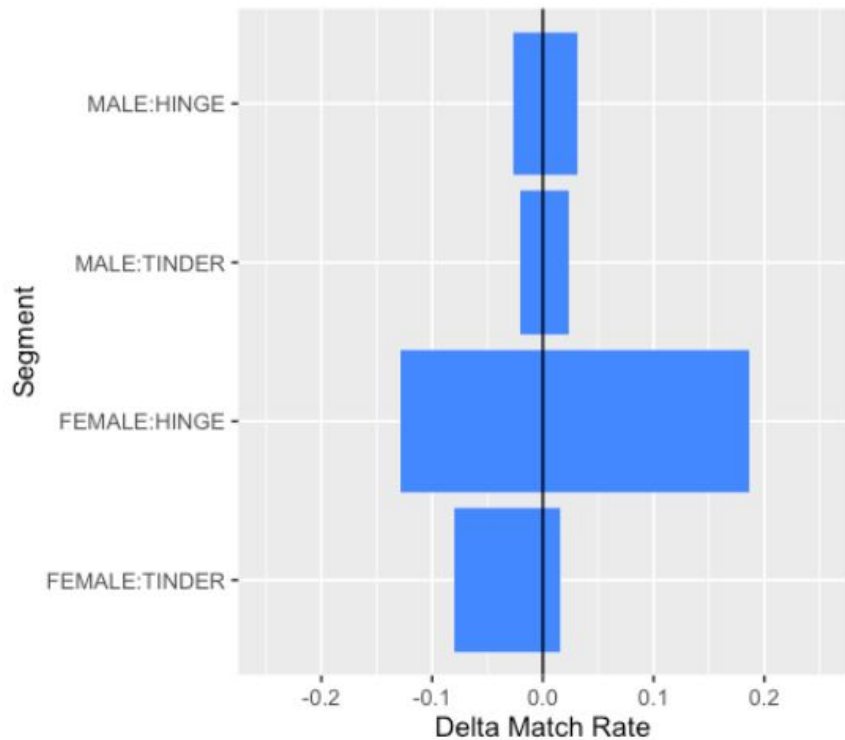


Models, Analysis, & Outcome

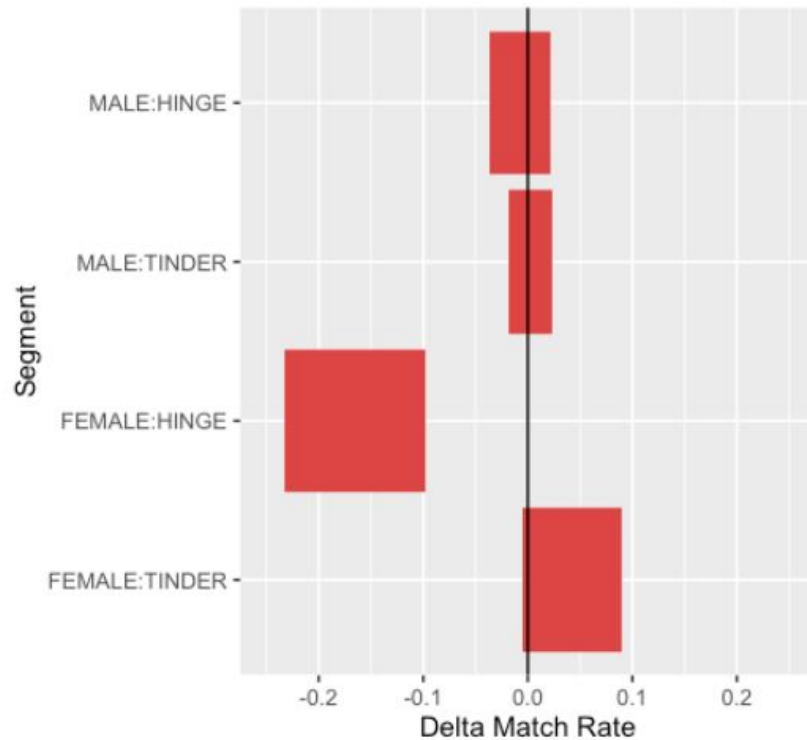
3 models built using treatment, gender & platform segments, and additional controls.

Model	Equation
Naive	matched ~ factor(treatment)
W/ Segments	matched ~ factor(treatment)*factor(gender)*factor(platform)
W/ Segments & Controls	matched ~ factor(treatment)*factor(gender)*factor(platform) + week*factor(gender)*factor(platform) + profile_desirability

Liberal Treatment Effect



Conservative Treatment Effect



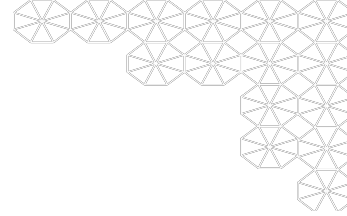
Concerns

- Unknown Compliance, Spillover, & Bots
- Fighting the Algorithm
- Participant Overlap
- Heterogeneous Treatment Effect
- Accurate Match Counts
- Demand, Scarcity, and Ulterior Motives
- Bans (as previously discussed)

Future Recommendations

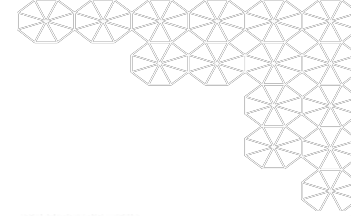
We recommend working directly in partnership with dating apps for future experiments to address algorithmic concerns, bots, bans, and additional concerns mentioned.





Questions?

Appendix A: Model Coefficients



	Naive (1)	Segmented (2)	w/controls (3)
factor(treatment)CONSERVATIVE	0.002 (0.053)	-0.003 (0.025)	-0.007 (0.015)
factor(treatment)LIBERAL	-0.013 (0.046)	-0.002 (0.027)	0.002 (0.015)
factor(gender)FEMALE:factor(treatment)LIBERAL		-0.041 (0.105)	0.027 (0.082)
factor(gender)FEMALE:factor(treatment)CONSERVATIVE		-0.132* (0.076)	-0.159*** (0.037)
factor(platform)TINDER:factor(treatment)LIBERAL		0.003 (0.027)	-0.0003 (0.019)
factor(platform)TINDER:factor(treatment)CONSERVATIVE		0.006 (0.025)	0.009 (0.018)
factor(gender)FEMALE:factor(platform)TINDER:factor(treatment)LIBERAL		-0.088 (0.105)	-0.061 (0.073)
factor(gender)FEMALE:factor(platform)TINDER:factor(treatment)CONSERVATIVE		0.266*** (0.076)	0.199*** (0.031)
factor(gender)FEMALE		0.318*** (0.067)	0.467*** (0.062)
factor(platform)TINDER		-0.048** (0.021)	-0.074*** (0.022)
factor(gender)FEMALE:factor(platform)TINDER		-0.056 (0.067)	-0.021 (0.029)
profile_desirability			0.030*** (0.008)
week			-0.014** (0.006)
factor(platform)TINDER:week			0.013 (0.008)
factor(gender)FEMALE:week			-0.092*** (0.024)
factor(gender)FEMALE:factor(platform)TINDER:week			
Constant	0.092*** (0.035)	0.053** (0.021)	0.082*** (0.018)
Observations	9,150	9,150	9,150
R ²	0.001	0.183	0.197
Adjusted R ²	0.0003	0.182	0.195
Residual Std. Error	0.284 (df = 9147)	0.257 (df = 9138)	0.255 (df = 9134)
F Statistic	2.299 (df = 2; 9147)	186.628*** (df = 11; 9138)	148.997*** (df = 15; 9134)

*p<0.1; **p<0.05; ***p<0.01