

# **Changes in Societal Prejudices Following the 2016 U.S. Presidential Election Cycle**

## **Abstract:**

The 2016 U.S. Presidential Election cycle represented a relatively unique event in recent American history, whereby a presidential candidate, Donald Trump, made multiple controversial remarks about minority groups and yet nonetheless gained widespread public support. Trump's comments constituted a stark departure from the egalitarian norms that have increasingly come to characterize American political discourse. We predicted that these high-profile norm violations have reshaped the personal prejudices and intergroup attitudes of the American people. In 12 studies with a combined sample of over 3 million participants, we tested this prediction, providing one of the largest-scale tests to date of the power of social norms to reshape societal prejudices. We found that explicit racial and religious prejudice has significantly increased among many of Trump's supporters. Further, we find evidence of an increase in implicit (automatic, uncontrollable) bias among Americans regardless of their support for Donald Trump. These results suggest that Trump's political rise has substantially reshaped the topography of prejudice in the United States.

Over the past several decades, people in the United States have exhibited substantial declines in explicit prejudice against racial and religious minority groups<sup>1-5</sup>. This decline in prejudice is clearly reflected in both survey data<sup>1,2,5</sup> and broader cultural norms<sup>2-4</sup>, and has been interpreted as a pivotal cultural shift with myriad implications for people's daily life experiences, public policy, and beyond<sup>1,2</sup>. However, recent events have raised the question of whether this trend towards decreasing prejudice continues, or whether it may have abated or even reversed course. Social scientific analyses of the 2016 U.S. Presidential Election suggest that racial and religious prejudice played a key role in Donald Trump's victory<sup>6-8</sup>, which raises the possibility that prejudice may be exerting an increasingly powerful influence in American politics. Furthermore, since the election, reports of hate crimes have increased<sup>9,10</sup>, supporters of White supremacist movements have become more vocal<sup>10,11</sup>, and racial and religious minorities have reported experiencing greater discrimination<sup>12,13</sup>. These trends have led some commentators to suggest that Trump's political ascent may have amplified or emboldened racial and religious prejudice among the American people<sup>11,14,15</sup>.

However, there is no direct empirical evidence to support the claim of general societal increases in prejudice. Other commentators have also questioned the source of these apparent increases in hate crime and other forms of discrimination, suggesting that they may simply be the result of increased national attention to issues of prejudice<sup>16-18</sup>. That is, they argue that as Americans have become increasingly conscious of racial and religious prejudice, there has been greater reporting of acts of discrimination against members of minority groups, and police have become more likely to officially categorize crimes as hate crimes, which together have artificially created the appearance of increasing discrimination. Similarly, other commentators – from both the political right and left – have argued that even if instances of discrimination have increased, this only represents the acts of an emboldened extremist fringe, rather than changes in prejudice among broad swaths of Americans<sup>19-21</sup>. Providing some support for this argument, the only study to examine changes in Americans' prejudice since Donald Trump's election found no increases in prejudice – and actually found that prejudice against some minority groups had *decreased* in the week following (vs. the week before) the election<sup>15</sup>. However, the small sample size ( $N = 169$ ) and limited timespan of this study may limit its generalizability.

Thus, although these questions have received considerable attention in the media and in public discourse, there is no decisive social scientific evidence regarding whether or how prejudice in the U.S. may have changed since the 2016 election cycle. In the current research, we examine these questions. Building on social psychological research on social norms<sup>22-24</sup>, we derived a set of predictions regarding whether, how, and why Donald Trump's political ascent would have affected the intergroup attitudes of the American people.

During his campaign and presidency, Donald Trump has made many remarks that have been widely interpreted as derogatory towards minority groups<sup>25,26</sup>. Regardless of his motivations for making these comments (e.g., whether they reflect his personal attitudes or a political strategy), these remarks nonetheless constitute a highly salient violation of the social norms (i.e., standards) of tolerance and egalitarianism that have come to characterize American public and political discourse in recent decades<sup>27</sup>. Because social norms have powerful effects on human behavior<sup>28</sup> – including the expression of prejudicial attitudes<sup>29</sup> – these changes in norms should have implications for Americans' personal expressions of prejudice. However, research has also shown that social norms do not exert a uniform effect on people's attitudes. Rather, adherence to social norms occurs largely along group boundaries: people primarily assimilate to norms that are held by "social reference groups" – that is, individuals and groups that they

personally respect and admire<sup>22,24</sup>. In the highly polarized political landscape of the United States, this translates into the prediction that Trump's counter-normative behavior should not have uniformly affected the attitudes of all Americans; rather, it should have increased expressions of prejudice primarily among those who view him positively: his supporters.

And yet, although there are theoretical reasons to predict that Trump's political ascent may have increased prejudice among his followers, the findings on which these theories are based come almost exclusively from small laboratory-based studies that examined attitudes over very short spans of time, usually during a single study session<sup>29</sup>. Research suggests that real-world intergroup attitudes are complex and shaped by many different factors<sup>4</sup>, raising the question of whether an event like Trump's political rise would lead to lasting changes in societal prejudice. Indeed, past research casts doubt on the prediction that Trump's political ascent has affected Americans' intergroup attitudes. For example, recent work has shown that even when a real-world sociopolitical event (a Supreme Court decision legalizing same-sex marriage) successfully changed perceived social norms, people's personal prejudices did not follow suit<sup>23</sup>. Moreover, other research has shown that even watershed events in race relations – such as the election of the first Black president in the U.S. – have not led to changes in societal prejudice<sup>30,31</sup>. To our knowledge, in the more than 60 years of research on intergroup attitudes, there is no evidence that a single salient political event has created widespread changes in societal prejudices.

The election of Donald Trump therefore provides a unique opportunity for examining whether a single counter-normative public figure – and, more importantly, his widespread acceptance by the American people – can lead to large-scale changes in social norms and societal prejudices. In a series of 12 studies with a combined sample of over 3 million Americans, we tested these predictions: 1) that racial and religious prejudice has significantly increased among supporters of Donald Trump, but *not* among other Americans, and 2) that these increases in prejudice are a consequence of changing social norms regarding the perceived acceptability of expressing prejudice. First, we assessed our central prediction that supporters of Donald Trump have increased in prejudice since Trump's political ascent. To do so, we conducted eight in-depth, multi-year longitudinal studies involving over 1,000 participants, examining the breadth and depth of changes in prejudice across various target groups and measure types. In a ninth study, we then confirmed and extended these findings using an open dataset with a longitudinal, nationally representative sample of over 7,500 Americans. In Studies 10 and 11, we then test our proposed mechanism – that Trump's political rise has changed social norms, such that his supporters feel that the expression of prejudice has become more acceptable. Finally, in our twelfth study, we examined a dataset of over 2.9 million Americans in order to determine the exact time course over which prejudice changed during the 2016 election cycle and the presidency of Donald Trump. All materials, data, syntax, and preregistration documentation are available at <https://osf.io/9syz8/>.

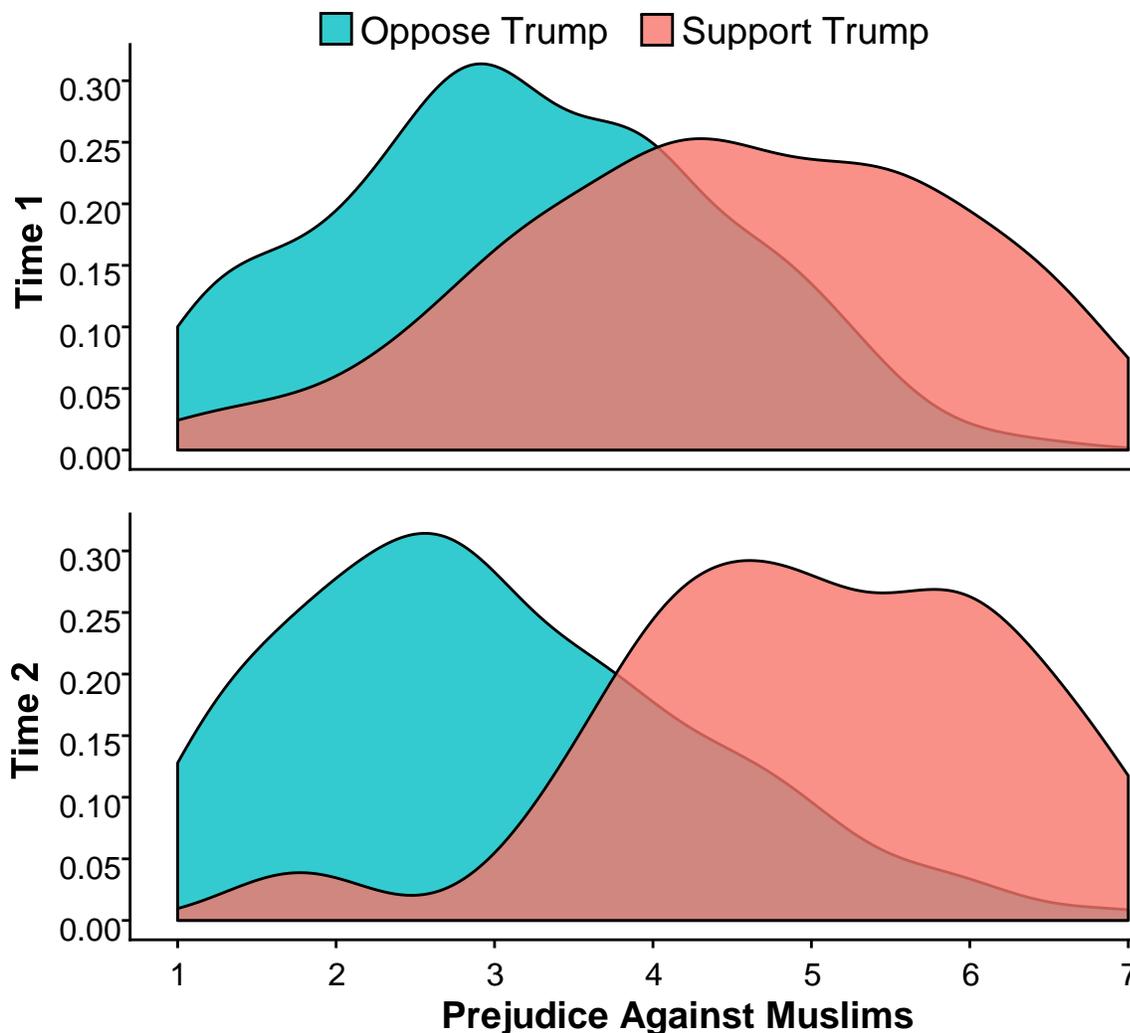
### **Has Prejudice Changed During the Trump Era?**

We first tested whether Trump's political ascent has been accompanied by large-scale increases in racial and religious prejudice among his supporters. To do so, we conducted eight multi-year longitudinal studies involving over 1,000 participants. In these studies, we tested whether Trump supporters have exhibited changes in prejudice over time. We also assessed the nature and scope of changes in attitudes across a range of different target groups and measures.

We first examined changes in prejudice against Muslims (Studies 1-3). To do so, we re-contacted participants who had participated in studies that we conducted several years ago (between December 2014 and February 2015), before the political ascent of Donald Trump. In these initial studies, we assessed participants' explicit prejudice against Muslims using an established measure<sup>32</sup> that includes items such as "Compared to other religious and philosophical approaches, Islam is quite primitive." Approximately two years later, between February and June of 2017, we followed up with a subset of these same participants ( $N = 384$ ) and re-assessed their explicit prejudice. We also collected detailed information about political views, voting habits, geographic location, and demographics (full measures available in the Supplementary Information; SI).

We first tested for overall changes in prejudice among our sample, in order to determine whether participants as a whole may have increased or decreased in their prejudice during this time period. However, there were no aggregate-level changes in prejudice from Time 1 to Time 2 ( $p = .89$ ). We next examined our central prediction that supporters of Donald Trump specifically would have increased in their prejudice during this time period. Consistent with previous work<sup>6-8</sup>, we found that greater support for Donald Trump (measured by four items assessing support, opposition, positivity, and negativity towards Trump;  $\alpha = .96$ ) was associated with greater prejudice against Muslims at Time 1 ( $\beta = .51$ ,  $t(382) = 11.47$ ,  $p < .001$ ). Furthermore, in line with our predictions, we also found that support for Trump significantly predicted *increases* in prejudice over this time period ( $\beta = .33$ ,  $t(382) = 6.74$ ,  $p < .001$ ).

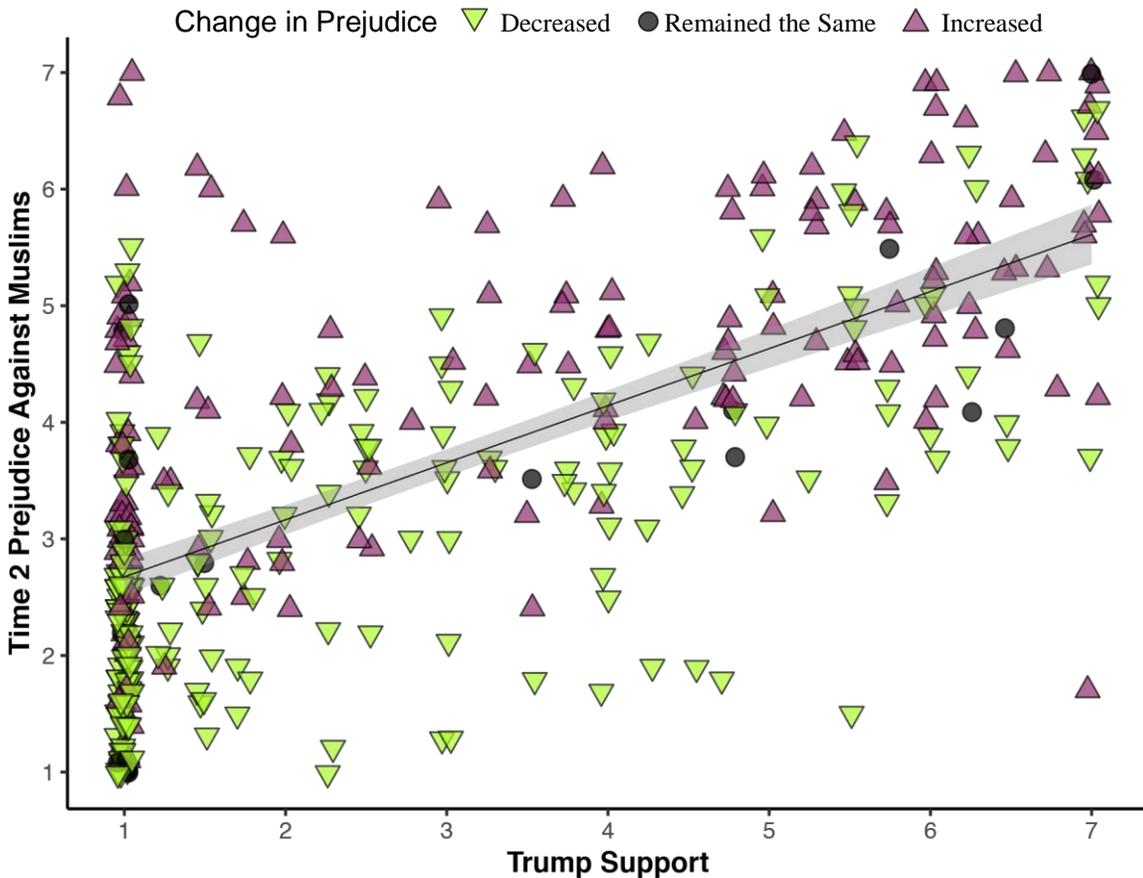
Closer inspection of this effect revealed that individuals who were opposed to Trump (those below the midpoint of the scale) showed significant decreases in negativity towards Muslims over this time period ( $F(1,253) = 18.41$ ,  $p < .001$ ), demonstrating a continuation of the decades-long trend of declining prejudice that has been widely observed in other research<sup>1-5</sup>. Conversely, as predicted, Trump supporters (those above the midpoint of the scale) exhibited a clear reversal of this pattern, not only deviating from the historical trend towards decreasing prejudice, but showing a significant *increase* in prejudice over this time period ( $F(1,112) = 20.96$ ,  $p < .001$ , Fig. 1).



**Fig. 1 | Density plots illustrating changes in prejudice against Muslims among those who support versus oppose Donald Trump.**

Importantly, this increase in prejudice was not predicted by general political conservatism, but rather was specific to support for Donald Trump: When both Trump support and conservatism were included as predictors in the regression model, Trump support remained a significant predictor of increases in prejudice ( $\beta = .35, t(381) = 4.96, p < .001$ ), while conservatism did not ( $\beta = -.04, t(381) = 0.54, p = .59$ ).

Because these are correlational data, we examined whether the relationship between Trump support and increases in prejudice was explained by other factors, focusing on factors that have been identified as predictors of support for Trump, such as economic hardship<sup>7</sup>. We examined 39 different factors in total (Supplementary Table 1), including demographic factors (e.g., income, education, age, gender), geographic factors (e.g., county-level measures of income inequality, median income, and unemployment rate), and ideological factors (e.g., political party identification, pride/identification as an American), but none of these variables explained the observed relationship: regardless of what we controlled for, Trump support remained a robust predictor of increases in prejudice.



**Fig. 2 | Plot depicting the relationship between Trump support and prejudice against Muslims at Time 2 ( $\beta = .66$ ). Shape and color indicate whether each participant’s prejudice score increased, decreased, or remained the same from Time 1.**

We next tested whether this increase in prejudice also manifested in Trump supporters’ feelings towards an individual Muslim person (Study 3). In February of 2015, participants read a short story describing a Muslim man who is arrested by U.S. forces while on vacation with his family, harshly interrogated, and held in a military prison for 5 years without being charged with a crime, before being released without compensation or apology<sup>33</sup>. Participants rated the degree of shame, anger, guilt, and compassion that they felt on behalf of the man. More than two years later, in June of 2017, a subset of these same participants ( $N = 136$ ) again provided their feelings about this scenario. As predicted, we found that Trump support predicted a significant decrease in reported concern for the wrongly punished Muslim man ( $\beta = -.22$ ,  $t(134) = 2.63$ ,  $p = .01$ ). Once again, we found that the effects of Trump support held when controlling for political conservatism ( $\beta = -.38$ ,  $t(131) = 3.56$ ,  $p = .001$ ), further demonstrating that these increases in prejudice were uniquely associated with support for Trump. (To test the boundary conditions of this effect, we also included a scale assessing blatant dehumanization of Muslims<sup>33</sup>. However, we did not find significant effects using this scale,  $p = .43$ ).

In our next study (Study 4), we examined whether this increase in prejudice was limited to attitudes towards Muslims – a group that has been explicitly targeted in controversial remarks by Trump<sup>25,26</sup> – or whether it would also extend to other minority groups. To test this question,

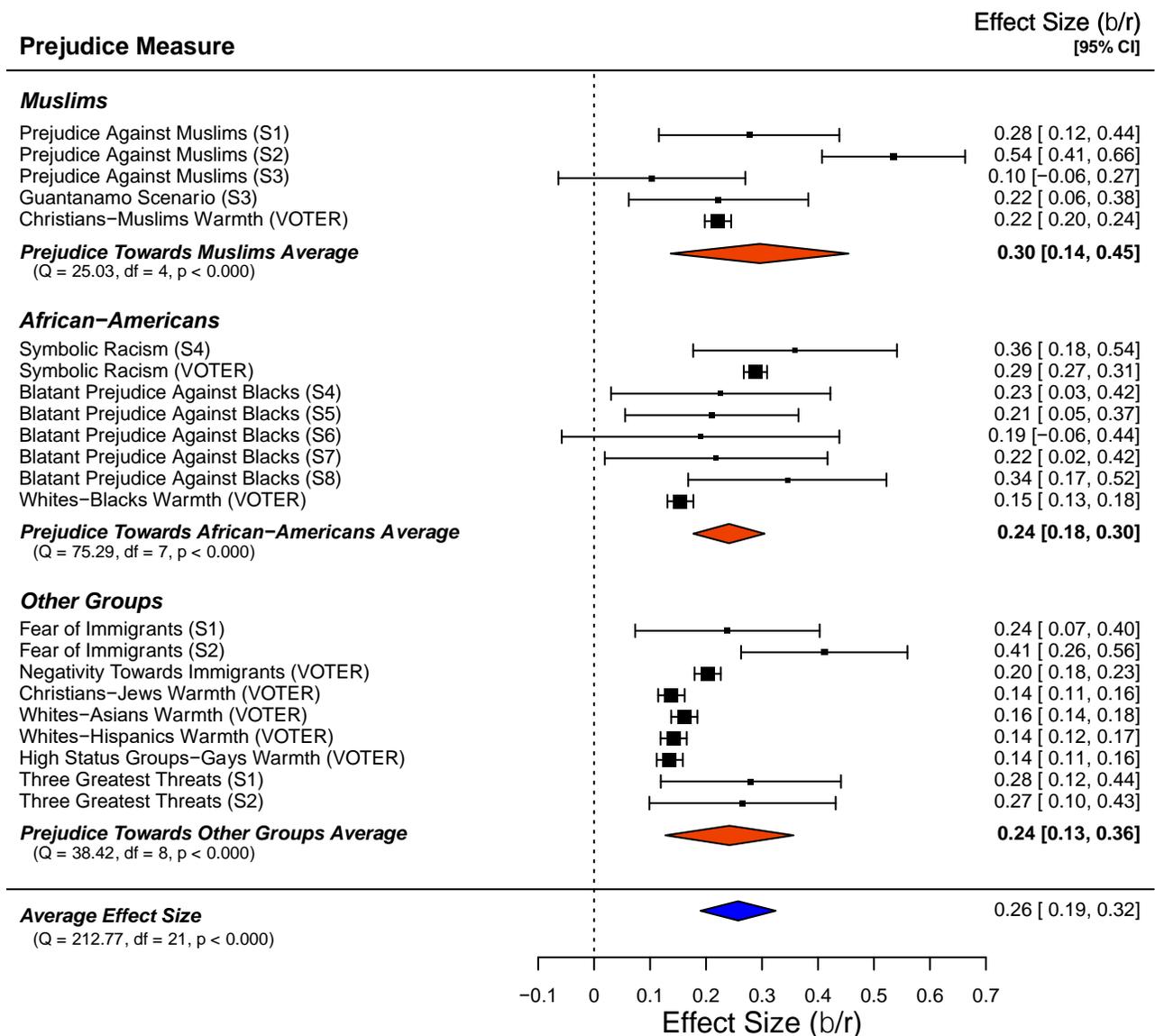
we examined prejudice against African-Americans. We first used a more subtle measure of prejudice<sup>34</sup>, in which negative attitudes towards Black people are expressed in the terms of principled conservatism (e.g., “It’s really a matter of some people not trying hard enough; if Blacks would only try harder they could be just as well off as Whites.”). We first assessed participants’ attitudes in September 2015, and then followed up with these same participants over a year and a half later in June 2017. We found that Trump support predicted an increase in prejudice towards African-Americans over the observed time period ( $N = 89$ ;  $\beta = .36$ ,  $t(87) = 3.59$ ,  $p = .001$ ; controlling for conservatism:  $\beta = .56$ ,  $t(86) = 4.75$ ,  $p < .001$ ).

We next examined whether Trump support also predicted changes in more blatant forms of prejudice (Studies 4-8). To do so, we used a measure assessing explicit racial animus toward Black people<sup>35</sup> (e.g., “Generally, Blacks are not as smart as Whites are.”). Notably, we found that Trump support predicted increases even in this more blatant form of racism ( $N = 478$ ;  $\beta = .23$ ,  $t(480) = 5.19$ ,  $p < .001$ ; controlling for conservatism:  $\beta = .2$ ,  $t(479) = 3.16$ ,  $p = .002$ ).

In Study 9, we examined an open dataset from the *Views Of The Electorate Research* survey (VOTER)<sup>36</sup>, a longitudinal, nationally representative sample of 7,666 Americans, in order to replicate and extend our findings from Studies 1-8. These data were collected at two time points, one in 2011 and one following Trump’s election in 2016. The study contained measures of prejudice towards several minority groups and assessed a wide range of other political, non-political, and demographic factors.

On the measures of prejudice against Muslims and African-Americans, we again found that Trump support (measured by a 4-point scale assessing general positivity towards Trump) significantly predicted increases in prejudice over time ( $\beta$ s: .15-.29,  $ps < .001$ ; Fig. 3). Additionally, the size of these effects did not differ from those obtained in our previous studies ( $p = .21$ ; see meta-analysis in Methods, below), demonstrating that this rising prejudice effect was not limited to our own studies, but generalized to a nationally representative sample of Trump supporters as well.

To further examine the generality of this effect, we also examined attitudes towards other minority groups. We found that Trump support also predicted changes in prejudice towards Latino/Hispanic people, Jewish people, Gay people, Asian people, and immigrants ( $\beta$ s: .14-.41,  $ps < .001$ , Fig. 3 and Supplementary Table 2). These results demonstrate that the previously observed changes in prejudice toward Muslims and Black people extend to a range of minority groups. Again, we examined whether other variables (82 different factors in total) explained this relationship. No other variable – or combination of variables – accounted for this effect. In all cases, Trump support remained a significant predictor of increases in prejudice (all  $ps < .001$ , Supplementary Table 3).



**Fig. 3 | Forest plot of effect sizes for longitudinal study prejudice measures.** Standardized beta weight ( $\beta$ ) indicates the strength of the relationship between Trump support and increases in prejudice. Average effect size based on a meta-analysis with nested effects for group, observation, and sample (see Methods).

But do the increases in prejudice observed on these measures have implications for real-world policy support? Using this same dataset, we examined this question. We assessed participants' support for the 13 policies relating to the restriction of minority group rights that were included in the VOTER dataset (e.g., banning Muslims from entering the U.S., opposition to affirmative action and gay marriage). We found that participants' scores on these prejudice measures predicted their endorsement of all 13 of these policies (average  $r = .61$ , 95% CI [.60, .61], Supplementary Fig. 1). Furthermore, this was true *even when controlling for Time 1 prejudice* (Supplementary Table 4), suggesting that the observed changes in prejudice over this

time period may have implications for participants' endorsement of real-world policies concerning minority group rights.

### **Why Has Prejudiced Increased Among Trump's Supporters?**

These nine studies demonstrate that prejudice in the U.S. has changed since the political ascent of Donald Trump. However, these increases in prejudice were specifically and uniquely predicted by support for Trump. Indeed, we find that Trump supporters have not only deviated from the widely documented societal trend towards decreasing prejudice<sup>1-5</sup>, they show significant increases in prejudice towards a range of minority groups.

We next turned to examining the mechanism behind these effects. We predicted that Trump's political ascent had changed the social norms (i.e., standards) for expressing prejudice, leading his supporters to feel that prejudice against minority groups had become more acceptable. Although our previous studies included no Time 1 measures of perceived norms (preventing longitudinal analysis), we conducted two additional studies to test whether changing social norms explained the rising prejudice among Trump's supporters.

Because people are motivated to seek praise and avoid censure from others, social norms exert a powerful effect on human behavior<sup>28</sup>. The domain of prejudice is no exception. In fact, perceived norms regarding the acceptability of expressing prejudice are argued to be one of the strongest influences on an individual's own prejudiced behavior<sup>29</sup>. Importantly, however, the influence of social norms is not uniform; rather, people typically assimilate only to norms held by valued "social reference groups" (i.e., people they respect and admire)<sup>22,24</sup>. As a leader and salient exemplar, Trump's behavior should have an outsized effect on the perceived social norms among his supporters<sup>37</sup>. Therefore, his controversial remarks regarding minority groups should have made these attitudes seem more acceptable among his supporters.

One previous study showed that Donald Trump's election created at least a temporary change in perceived norms, with people reporting that expressing prejudice towards certain minority groups was more acceptable in the week following (vs. the week before) the election<sup>15</sup>. In our next study (Study 10) – conducted over a year into Trump's presidency – we tested whether Trump's election created a lasting perception that expressing prejudice had become more normative.

Although our previous studies specifically identified Trump support as the most important predictor of increases in prejudice, for this initial test of our proposed mechanism we nonetheless avoided any mention of Trump or the election until after the dependent variables had been collected. Instead, we simply asked people how they felt things had changed "in recent months and years." This allowed us to collect a more naturalistic assessment of whether a change in social norms had occurred, while preventing people's responses from being colored by their beliefs about what Trump's election may have represented for American race relations<sup>cf. 38</sup>.

In this study ( $N = 300$  from Mechanical Turk), we again examined attitudes towards Muslims. We had two primary aims. First, we tested whether people perceived that there had been a change in Americans' attitudes towards Muslims, such that expressing negativity towards Muslims had become more "descriptively normative" (i.e., more common) among the U.S. population. We predicted that all participants – both those who support Donald Trump and those who do not – would perceive that Americans had recently become more negative in their attitudes towards Muslims. To assess this question, we asked participants to rate the degree to which they felt that other Americans had recently changed in their criticism towards

Islam/Muslims (on a 9-point scale ranging from “Have become much less critical” to “Have become much more critical,” with the midpoint labeled “Are the same as the past”).

Our second aim was to examine whether people felt that the norms of expressing prejudice had changed among their social reference groups (i.e., other people they personally respect and admire). To test this question, we asked participants to indicate the degree to which they felt that people that they respect and admire had recently become more critical towards Muslims/Islam, on the same scale described above. Because we anticipated that Trump’s political rhetoric would be most influential in changing the norms among individuals who viewed him positively, we predicted that Trump supporters, specifically, would believe that the attitudes of their social reference groups had changed. Given that research has shown that people primarily assimilate to norms held by valued others<sup>22,24</sup>, finding this effect among Trump supporters would suggest a possible mechanism for why prejudice has increased only among supporters of Donald Trump.

The results of this study supported both of our predictions. First, we found that participants believed that Americans had recently become more critical of Muslims/Islam (scores were significantly higher than the midpoint of the scale; Cohen’s  $d = .62$ ,  $t(299) = 10.80$ ,  $p < .001$ ). This belief was held by both Trump supporters and non-Trump supporters, with no significant difference between the two groups ( $p = .53$ ). Thus, even over a year into Trump’s presidency, people believe that there has been a lasting shift in Americans’ negativity towards Muslims.

People’s beliefs about changes in norms among their personal social reference groups also supported our predictions. Participants who more strongly supported Donald Trump were more likely to report that the norms among their social reference groups had changed ( $\beta = .2$ ,  $t(298) = 3.54$ ,  $p < .001$ ). Specifically, whereas Trump supporters reported that people they respect and admire had recently become more critical of Muslims (Cohen’s  $d = .5$ ,  $t(72) = 4.24$ ,  $p < .001$ ), this same belief was not held by people who did not support Trump ( $t(205) = .56$ ,  $p = .57$ ).

In sum, in Study 10 we found that both Trump supporters and non-supporters believed that Americans in general had recently become more negative toward Muslims. But only Trump supporters felt that people that they personally admire and respect had become more negative toward Muslims. This finding supports our prediction that Trump may have changed the norms of expressing prejudice specifically among his supporters, and suggests a possible social reference group-based mechanism for why Trump supporters – and only Trump supporters – have increased in prejudice.

In Study 11, we built on these findings in two ways. First, we assessed whether people felt that norms had changed *specifically among Trump’s supporters*. We predicted that all participants – both Trump supporters and non-Trump supporters – would believe that prejudice had become more normative (i.e., more common and more acceptable) among Trump’s supporters. This effect would be in line with our previous findings showing that Trump supporters have indeed increased in prejudice, and would demonstrate that people (regardless of their personal support for Trump) have recognized this increase.

Second, we tested the implications of these beliefs about changing norms for people’s own personal prejudice (using the same scale of prejudice against Muslims from Studies 1-3<sup>32</sup>). We predicted that Trump supporters who perceived that prejudice had become more normative among their fellow Trump supporters (a social reference group) would express greater personal prejudice. However, we expected that the same relationship would not emerge among non-

Trump supporters. That is, because non-Trump supporters should not view Trump supporters as a social reference group, beliefs regarding the norms among this group should not lead them to express greater personal prejudice.

The results of this study confirmed our predictions. First, people believed that prejudice has become more normative among Trump's supporters ( $t(298) = 12.3, p < .001$ ). This belief was held by both Trump supporters ( $N = 120, t(119) = 4.19, p < .001$ ) and non-Trump supporters ( $N = 165, t(164) = 12.94, p < .001$ ), and was true for both descriptive and prescriptive norms, with people believing that Trump supporters had both become more negative towards Muslims ( $t(298) = 11.36, p < .001$ ) and more accepting of other people expressing negativity towards Muslims ( $t(298) = 11.17, p < .001$ ). These findings suggest that people have indeed perceived the increase in prejudice among Trump supporters that we documented in our first 9 studies.

Our prediction regarding the relationship between perceived changes in norms and participants' personal expressions of prejudice was also confirmed. We found a significant interaction between perceptions of Trump-supporter norms and participants' personal support for Trump in predicting prejudice ( $\beta = .7, t(295) = 4.08, p < .001$ ). Among Trump supporters, the belief that prejudice had become more acceptable among other Trump supporters (a social reference group) predicted greater personal explicit prejudice against Muslims ( $\beta = .24, t(119) = 2.72, p = .007$ ). However, as predicted, this effect did not emerge among non-Trump supporters (and in fact, this belief predicted *less* personal prejudice for non-Trump supporters;  $\beta = -.24, t(163) = 3.2, p = .002$ ).

The results of Study 11 revealed that both Trump supporters and non-Trump supporters believe that prejudice has become more normative among supporters of Donald Trump. However, these perceived changes in norms only predicted personal prejudice among individuals who themselves supported Trump. In line with social psychological theory on social norms<sup>22,24</sup>, these results support our prediction that perceived changes in norms will only affect prejudice among individuals who have positive views of the people and groups that hold those norms. These findings further support the possibility that changing social norms may be responsible for the increases in prejudice observed among Trump supporters in Studies 1-9.

### **Implicit Bias and the Time Course of Change**

The results of these eleven studies demonstrate that there have been large-scale increases in prejudice among Trump's supporters and suggest that changing social norms may explain these effects. In the final section of this paper (Study 12), we sought to answer three remaining questions. First, we tested whether this heightened prejudice among Trump supporters would emerge only when they are asked to reflect on their personal attitudes towards minority groups, or whether it might also emerge in their more spontaneous and uncontrolled reactions to outgroup members. To test this, we used an "implicit" measure of bias, which relies on more automatic responses and is less subject to conscious control<sup>39</sup>. Based on research that has shown a tight connection between social norms and personal attitudes<sup>40</sup>, as well as recent work that has argued that even implicit bias can be shaped by changing social norms<sup>41</sup>, we predicted that Trump supporters would exhibit increases in implicit bias as well.

Second, the uncontrollable nature of implicit bias also allows us to better understand how the attitudes of *non*-Trump supporters may have changed since Trump's political ascent. Our previous studies showed that non-Trump supporters have decreased in explicit prejudice, in line with the trend toward decreasing prejudice over the last several decades<sup>1-5</sup>. However, past work

has argued that implicit bias is shaped by factors beyond an individual's personal prejudices, such as societal norms and shared cultural stereotypes<sup>41-43</sup>. This therefore raises the intriguing possibility that non-Trump supporters' *implicit* bias might have also increased, even while they have decreased in explicit prejudice.

Third, we wished to examine exactly when these increases in prejudice occurred. If this increase in prejudice is truly a consequence of Trump's political rise, then it should have emerged around the time that he began his political ascent. Although suggestive, our previous longitudinal studies cannot answer this question, as they consisted of only two time points (Time 1 measures between 2011 and 2015; Time 2 measures beginning shortly after Trump's election). Without a finer-grained view, we cannot rule out the possibility that this increase in prejudice occurred before Trump's political rise.

Importantly, examining the exact time course of these increases in prejudice allows us to test a unique prediction of our proposed social-reference-group-norms mechanism. According to this account, the increases in prejudice observed among Trump's supporters are not a direct consequence of Trump's counter-normative behavior; rather, they are a consequence of the *social acceptance of this behavior* among admired and respected others<sup>22,24</sup>. Therefore, these increases in prejudice should be predicted by signals of social-reference-group support for Trump, rather than by Trump's behavior itself<sup>37</sup>. In other words, our theoretical model predicts that these increases in prejudice should not necessarily have occurred at the point when Trump made his controversial remarks, but rather at the point when support for Trump most visibly increased among Republicans/conservatives – e.g., when he was chosen as the Republican Presidential Nominee or when he was elected president.

To answer these questions, we examined an open dataset of over 2.9 million participants who completed a measure of implicit bias, the Black/White Implicit Association Test (IAT)<sup>44</sup>, at [projectimplicit.net](http://projectimplicit.net)<sup>45</sup>. Although these are cross-sectional data, the huge number of participants (average  $N = 17,848$  per month) allows us to infer longitudinal trends in prejudice in the underlying population (for other research examining societal changes in prejudice using related datasets, see <sup>30,31,46</sup>). These data – covering a timespan of 14 years – allowed us to examine the exact time course of these changes in prejudice.

The IAT is a reaction time-based categorization task that assesses the strength of an individual's associations between the racial categories of White/European-American and Black/African-American, and the concepts of “good” and “bad.” The relative strength of an individual's association between White (vs. Black) and good (vs. bad) is generally interpreted as a measure of implicit bias against Black people<sup>44,47</sup>. We examined the Black/White IAT because it is the most well-validated and widely used measure of implicit bias<sup>45,47</sup>. \* Although no direct measure of Trump support was included, participants' degree of political liberalism/conservatism was assessed. Given the high correlation between Trump support and conservatism observed in our own studies and other research<sup>48</sup>, we use conservatism as a proxy for Trump support. Using these data, we examined how IAT scores changed among liberals and conservatives over the 14-year period during which these measures were collected (January 2004 – December 2017). We examined the data at two levels of analysis, first looking at aggregate changes across years, and

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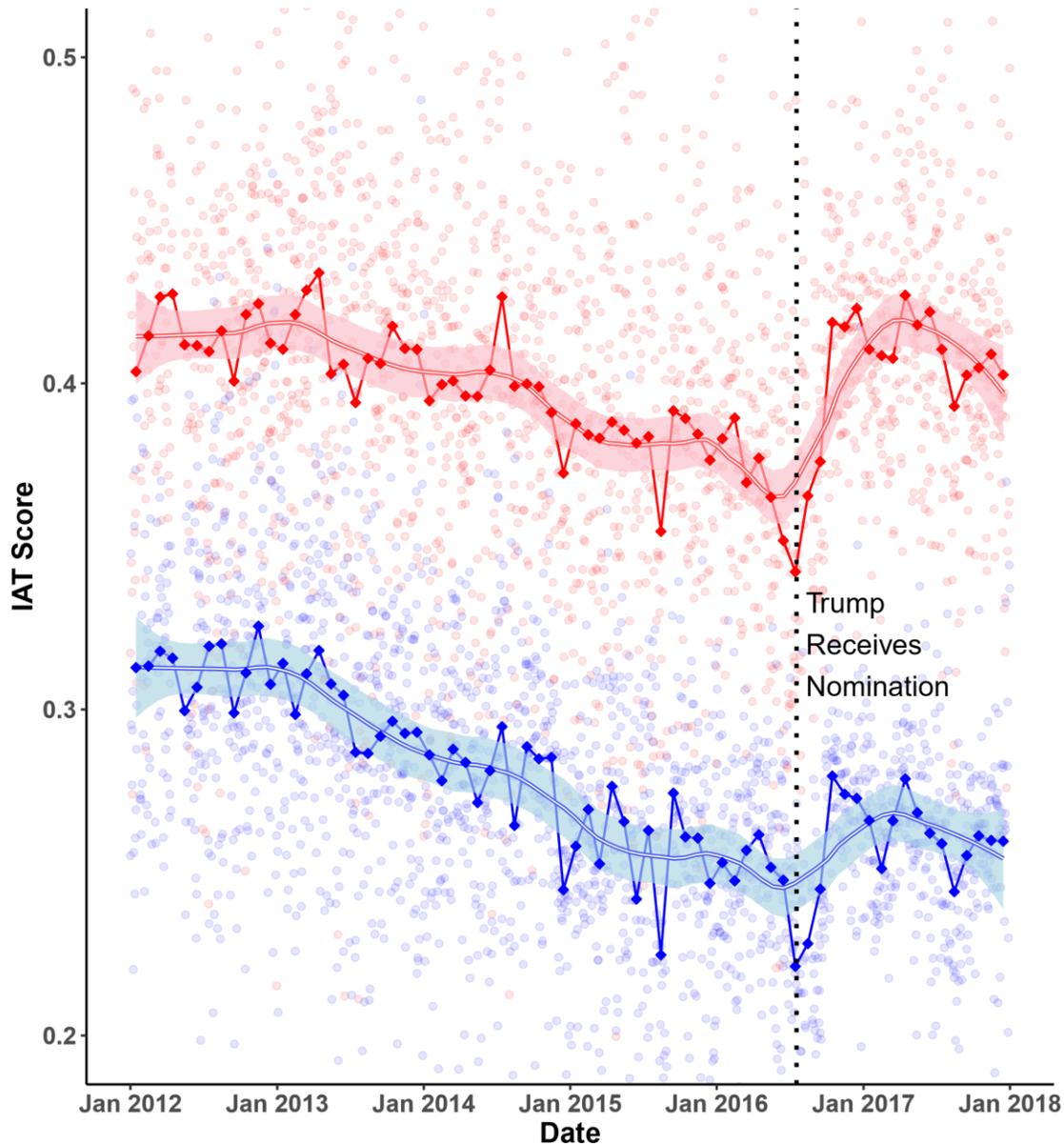
\*The Project Implicit website also has an IAT assessing implicit bias against Arab-Muslims. However, this IAT compares attitudes towards Arab-Muslims with attitudes towards *other foreign racial/ethnic groups* (rather than comparing attitudes towards minority and majority groups, as is the case with the Black/White IAT). Because we predicted that prejudice towards all foreign racial/ethnic groups would have increased, this IAT was not suitable to test our hypotheses.

then conducting more fine-grained analyses looking at changes in implicit bias from month to month.

Examining the patterns of change in yearly mean IAT scores, we found that after some fluctuations in the early years of the test, implicit bias among both conservatives and liberals begins to show a consistent decline beginning in 2012, in keeping with the decline in explicit prejudice that has been widely documented elsewhere<sup>1-5, 46</sup> (though see also <sup>30</sup>). Among liberals, there is no statistically significant increase in bias during the 2012-2017 period ( $ps > .05$ ). Conversely, among conservatives this trend shows a clear reversal from 2016 to 2017: during this time, conservatives exhibit a significant *increase* in implicit bias (mean difference: .02,  $p < .001$ , 95% CI [.012, .026]) – which constitutes the largest single-year increase in bias observed during this 14-year time period.

For a more fine-grained view of the time course of this increase in bias, we next examined the trends in monthly mean IAT scores. At this level of analysis, we see that the decline in implicit bias among conservatives that began in 2012 continued generally unabated through July 2016, the month in which Trump officially became the Republican nominee for president. At this point – in the months immediately surrounding the 2016 election (Aug.-Dec. 2016) – conservatives exhibited a substantial spike in implicit bias (Fig. 4, Supplementary Figs. 2-4). This change represents a 24% increase in conservatives' implicit preference for White over Black people (Cohen's  $d = .2$ ). This increase in implicit bias is unparalleled within this dataset, constituting the most rapid and substantial increase in implicit bias observed during this 14-year period. Importantly, it also was not fleeting: conservatives' implicit bias scores during the subsequent 12-month period (Jan.-Dec. 2017, the remainder of the period for which data are available) remained 20% higher than the levels of implicit bias documented immediately prior, in July of 2016. Thus, these data show that the increase in prejudice among Trump's supporters did not occur during his early candidacy, a period during which he made many of his most controversial remarks<sup>25,26</sup>. Rather, consistent with our proposed social-reference-groups-norms mechanism<sup>22,24,37</sup>, they began following one of Republicans' clearest expressions of their support for him: when they awarded him the presidential nomination.

Interestingly, at this more fine-grained level of analysis, there is also evidence of a change in implicit bias among political liberals. During this same time period, liberals also exhibited a significant increase in their levels of implicit bias. Although the size of this increase in bias was smaller than that which occurred among conservatives, both in the period immediately surrounding the election (36% smaller) and in the longer-term trends over the following year (41% smaller), it was nonetheless substantial, representing a 23% increase in implicit preference for White vs. Black people. This effect suggests that changing social norms may have exerted a divergent influence on implicit and explicit prejudice among liberals. Such an interpretation would be in keeping with the large body of work demonstrating that implicit associations are less controllable and therefore less subject to social desirability motivations – such as, e.g., wanting to assimilate or differentiate oneself from a social (or political) group<sup>42</sup>. More generally, these results also suggest that changing social norms in the wake of Trump's election may have had a wider impact than explicit attitudes alone would suggest.



**Fig. 4 | Black/White IAT score changes since January 2012.** Higher IAT scores indicate greater implicit preference for White (vs. Black) people. Blue and red lines display weighted monthly means for liberals (in blue) and conservatives (in red), with Loess smoothing. Scatterplot points represent weighted daily means.

## Conclusion

In a series of 12 studies, using a variety of methods and with a combined sample of over 3 million participants, we show that prejudice in the United States has changed since Donald Trump's political ascent. Indeed, among Trump's supporters we documented not just a tempering of the decline in prejudice that has been observed in historical trends, but a significant increase in prejudice towards a range of social, racial, and religious minority groups (Studies 1-

9). Our results also suggest that these changes in prejudice may stem from shifting social norms: Trump supporters perceive that it has become more acceptable to express prejudice since Trump's election (Study 10), and the perception that prejudice is more acceptable predicts greater personal prejudice among Trump supporters (Study 11). These results also show that this increase in prejudice is not limited to explicit endorsement of prejudiced statements, but also manifests on more automatic and indirect measures of bias, with conservatives exhibiting an unparalleled increase in implicit bias in the months surrounding the 2016 election (Study 12). These increases in prejudice appear to have begun precisely following Trump's designation as presidential nominee. Furthermore, a similar (though smaller) increase in bias among political liberals suggests that the effects of Trump's political rise may be broader than explicit attitudes alone would suggest. Together, this research suggests that the campaign and election of Donald Trump has substantially reshaped the topography of prejudice in the United States, disrupting the trend towards decreasing prejudice that has characterized the American social and political landscape for the last 50 years.

## **Methods**

All of our studies were approved by the university's institutional review board, and all subjects provided informed consent using an online consent form. All other data are publicly available (VOTER survey data: <https://www.voterstudygroup.org/publications/2016-elections/data>; Project Implicit Black/White IAT data: <https://osf.io/52qxl/>). We preregistered our primary predictions for all of our studies save for two preliminary studies (Studies 2 and 5), of which we later conducted preregistered replications (documentation can be viewed at <https://osf.io/9syz8/>). Data were analyzed with R 3.4.1 and SPSS 20.0. Given the large number of studies described in this manuscript, we provide only a brief overview of our methods below. Additional information regarding procedure and analyses, as well as a full list of the materials and measures for all studies, can be found in the Supplementary Information.

### **Longitudinal Studies (Studies 1-9)**

#### *Procedure*

*Studies 1-8, General Procedure:* Participants were recruited through Amazon's Mechanical Turk, an online platform where workers complete short tasks in exchange for payment<sup>49</sup>. At Time 1, participants completed one or more measures of prejudice and answered questions regarding their views on social and political issues, their political orientation, and demographics. At Time 2, they completed many of the same measures and rated their support for Donald Trump. Time 1 and Time 2 surveys were nearly identical in format and content, to help ensure that no extraneous factors could influence results. In addition to the measures described in the main text, we also collected eight other dependent measures. Although the results on these measures were consistent with those described above (see meta-analyses below), we nonetheless omit these measures from the main text for brevity (for a full description of all additional measures and results, see SI).

Though our primary predictions in these longitudinal studies were relatively straightforward, we also wished to explore a wide range of potential mediators and moderators,

in order to determine whether the relationship between Trump support and increases in prejudice might be explained by other factors. To this end, we included an extensive array of other measures, assessing factors such as political ideology, political party identification, perceptions of the state of the U.S. economy, perceptions of conflict between the U.S. and other nations, perceived threat from terrorists, political knowledge/sophistication, and news following habits, as well as a number of questions about demographic characteristics such as age, gender, race, education, and income. We also examined a number of “regional factors” such as indices of income inequality, racial diversity, and voter turnout in participants’ home counties. To do so, we first extracted information about the state and zip code in which participants were located using Qualtrics’s built-in “GeoIP” functions. We then transformed these zip codes into U.S. counties and cross-referenced this information with various online databases (from, e.g., the U.S. Census Bureau’s American Fact Finder website<sup>50</sup>) in order to obtain the relevant indices for each participant’s home county. Below is a brief description of the procedure for each study.

*Studies 1 and 2:* The Time 1 data for Studies 1 and 2 were taken from a single study with a large sample ( $N = 600$ ). We divided this sample into two separate subsamples, with which we conducted an initial exploratory test of our hypothesis, and a subsequent preregistered direct replication. At Time 1, participants first completed the Islamophobia scale<sup>32</sup>. They then answered several questions about their social and political attitudes and completed a scale assessing their perceptions of threat from illegal immigrants. They then completed a political knowledge questionnaire, answered questions about their news following habits, and provided demographic information (e.g., age, gender, income, education).

At Time 2, participants first completed the same Islamophobia scale and answered many of the same questions about their social and political attitudes and news watching habits. They then indicated their support for Donald Trump and provided demographic information. In Study 2, participants also completed some exploratory questions about how they felt about Donald Trump’s election, and whether they felt that their own attitudes towards Muslims had changed (i.e., become more negative or more positive) over time.

*Study 3:* At Time 1, participants completed three prejudice measures, which were presented in random order: the Islamophobia scale<sup>32</sup>, the Guantanamo scenario<sup>33</sup>, and the measure of blatant dehumanization of Muslims<sup>33</sup>. Afterwards, they answered some questions about their social and political attitudes, and then completed a novel IAT intended to assess their associations between the concepts of “America” (vs. “Foreign”) and “Safety” (vs. “Danger”). They then provided demographic information.

At Time 2, participants completed the same three prejudice measures. These were presented to each participant in the same order that s/he had seen them at Time 1. Afterwards, participants provided demographic information and indicated their support for Donald Trump.

*Study 4:* At Time 1, participants first completed a task intended to measure racial bias in punishment, in which they read a short vignette about a (Black or White) criminal suspect and made a recommendation for how that individual should be punished (see SI). They then answered two questions about their perceptions of the police, and then were randomly assigned to complete one of three prejudice measures: the less blatant measure of prejudice against Blacks discussed above (the Symbolic Racism scale<sup>34</sup>), the more blatant prejudice measure discussed above (the Attitudes Towards Blacks scale<sup>35</sup>) or the Internal/External Motivation to Respond

Without Prejudice scale<sup>51</sup> (see SI). They then answered some demographic questions.

At Time 2, participants read the same vignette and completed the same punishment task. They then completed the same prejudice measure that they completed at Time 1, provided demographic information, and indicated their support for Donald Trump.

*Studies 5 and 6:* At Time 1, participants first completed the Attitudes Towards Blacks scale<sup>35</sup>. They then answered questions about their social and political views and provided demographic information. Participants in Study 6 also completed a task in which they rated three applicants to Cornell University (this task was not included at Time 2).

At Time 2, participants completed the same prejudice measure, answered questions about their social and political views, provided demographic information, and rated their level of Trump support. In Study 6, participants also completed the Black/White IAT<sup>44</sup> at both time points.

*Studies 7 and 8:* At Time 1, participants first completed a short “Geography and Daylight” task in which they were asked to view photographs of six buildings and to guess the time of day when the photo was taken. They then completed the Attitudes Towards Blacks scale<sup>35</sup> and answered some questions about their social and political attitudes. Afterwards, they completed the American=White IAT<sup>52</sup>.

At Time 2, participants first completed the Geography and Daylight task and then filled out the same measure of prejudice against Blacks. They then completed the same IAT, answered questions about their social and political attitudes, provided demographic information, and indicated their support for Donald Trump.

*Studies 1-8 Procedure, Continued:* The Time 1 survey for Studies 3 and 5-8 also contained a manipulation not of interest for the present project: half of participants were randomly assigned to a condition in which two small American flags were placed in the banner at the top of the survey (in Studies 7 and 8, participants in the flag condition also viewed “Geography and Daylight” photos containing small images of U.S. flags). There were no significant differences in prejudice scores between individuals in these two conditions (all  $ps > .08$ ), so we collapsed across condition for all analyses (controlling for flag condition does not change our results). At Time 2, no flags were presented.

*Response Rates, Studies 1-8:* Many individuals on Mechanical Turk work only temporarily, or cycle on and off of the site<sup>53,54</sup>. Accordingly, some of our longitudinal studies had high attrition rates (see Supplementary Table 5). However, because attrition rates in the nationally representative VOTER data were considerably lower, replicating our results with that dataset served to verify our findings and ensure that attrition rates did not create any systematic biases in our data. Additionally, we took several steps to ensure that there were no systematic differences between participants who returned (vs. did not return) for Session 2 of our studies, in order to ensure the generalizability of our findings: 1) In the study ad (or “HIT”), we provided no information about the content of the survey, so participants could not decide whether to participate based on survey content; 2) we offered very high pay rates (~10 times higher than standard rates on Mechanical Turk, see SI) to incentivize completion; 3) we examined the data for incomplete responses (i.e., drop-out) and verified that drop-out rates could not have biased our conclusions (for a discussion, see <sup>55</sup>). We found that drop-out rates were very low, with only

9 participants out of 1,065 (.8%) dropping out after beginning the survey.

Further, we also analyzed the data to understand the causes of the observed attrition rates and to ensure that they were in keeping with those typically observed on Mechanical Turk. Our longitudinal Mechanical Turk studies varied substantially in their inter-session intervals (i.e., the length of time between the Time 1 and Time 2 surveys), ranging from 1.77 to 3.42 years (Supplementary Table 5). There was a strong negative correlation between the length of this inter-session interval and the response rate for each study ( $N = 8$ ,  $r = -.877$ ,  $p = .004$ ), such that the more time that elapsed between Session 1 and Session 2, the fewer participants responded to the second survey. There was also a strong negative correlation between the expected duration of the study (which was provided to people before they decided whether to participate) and response rate ( $N = 8$ ,  $r = .882$ ,  $p = .004$ ). Together, these factors explained 90% of the variance in participant response rates ( $R^2 = .895$ ), suggesting that inter-study interval and study length were the primary determinants of how many participants returned for Session 2. These associations suggest that general attrition rates in use of Mechanical Turk<sup>53,54</sup> explain the response rates that we observed, rather than features of our particular studies. Additionally – and most importantly – the effect size observed in each study was not associated with the response rate for that study ( $r = -.146$ ,  $p = .73$ ; based on the relationship between Trump support and prejudice against Muslims in Studies 1-3, and between Trump support and blatant prejudice against African-Americans in Studies 4-8). These results further suggest that attrition did not systematically bias our findings.

In addition to these analyses, we also carefully examined the data to ensure that there were no meaningful differences between individuals who did and did not return for Session 2. In general, Responders and Non-Responders looked very similar: in none of our eight studies were there Time 1 differences between these two groups in key demographic variables such as gender, education, income, proportion born in the U.S., percent who identified as White, political identification, or political party identification. Out of the 13 unique observations of scale measures of prejudice discussed in the main text, only two showed significant differences between individuals who did and did not return for Session 2. Excluding these studies does not change the pattern of results. (The full results of these analyses can be found in Supplementary Tables 6 and 7.)

*VOTER Survey (Study 9)*: The 2016 VOTER survey (Study 9) is a multi-session longitudinal survey of 8,000 Americans conducted by the Democracy Fund Voter Study Group and YouGov<sup>36</sup>. Participants in the 2016 survey (conducted between November 29<sup>th</sup> and December 29<sup>th</sup> of 2016) were selected from a stratified sample of 45,000 people who had completed another survey in December 2011. At both time points, extensive information was collected about participants' voting history, social and political attitudes, daily lives and habits, social group memberships, health history, and demographic characteristics. The dataset and additional information about the methodology can be found here:

<https://www.voterstudygroup.org/publications/2016-elections/data>.

The sample was weighted by both demographic and non-demographic factors to approximate the U.S. population, following YouGov's proprietary algorithm. The reported margin of error is +/- 2.2%. All analyses with this dataset were conducted using the weighted data. However, the results obtained using the unweighted data are not substantially different. Supplementary Table 8 contains information about key demographic variables for this sample.

## *Statistical Information*

*Sample:* In order to conduct a more conservative test of our hypotheses, we did not exclude any participants from our analyses. However, there were nine participants from our longitudinal studies who did not respond to our Trump support scale (our independent variable for all studies), and who therefore could not be included in analyses. Additionally, in Study 3, three participants who did not provide complete responses to our Time 1 dependent measures were inadvertently invited to participate in the Time 2 survey. Because of these incomplete data, we did not include these participants in analyses.

*Hypothesis Testing:* Several of our longitudinal studies contained identical measures of prejudice. A meta-analysis (detailed below) showed no systematic differences between these studies that could explain our effects. Therefore, for brevity, and to present a more accurate estimate of effect sizes<sup>56</sup>, in the main text we have chosen to present the data by measure, collapsing across individual studies/samples (however, the effect sizes for each individual study can be found in Fig. 3).

Our primary hypothesis in these studies was that Trump support would be associated with changes in prejudice over time. We tested this hypothesis using linear regression. In each analysis, Trump support was entered as the independent variable, and participants' prejudice difference score (Time 2 minus Time 1) was entered as the dependent variable. We considered our hypothesis to be supported if the relationship between Trump support and change in prejudice was positive (such that greater Trump support was associated with greater increases in prejudice) and significant at  $p < .05$ .

For these studies, we also conducted alternative sets of analyses in which we (where possible): 1) excluded participants who belonged to the target racial or religious group under investigation (e.g., excluding Muslim participants from the studies on prejudice against Muslims; excluding African-American participants from the studies on prejudice against African-Americans) and 2) excluded all non-White participants. In neither case are the findings of our studies substantively altered.

*Meta-Analyses:* Following the recommendations of<sup>57</sup>, we conducted an internal, “within-paper” meta-analysis in order to determine the mean effect size of our longitudinal studies (Studies 1-9) and to identify potential moderators of these effects. We used a random-effects model to better extrapolate these effects beyond the current studies and to the general population<sup>58</sup>. For our primary analyses, we had a total of 22 unique observations with 13 different prejudice measures across 9 studies (see Supplementary Table 2). Because we had a nested structure, with some individual studies having multiple distinct groups of participants (Study 4), and some studies collecting multiple observations (i.e., multiple measures of prejudice) from a single group of participants (Studies 1-4, VOTER data), we fit a multi-level meta-analysis model, specifying nested random effects for study, participant group, and observation (see<sup>59</sup>). The average effect size across these studies was  $\beta = .26$  (se = .034,  $z = 7.50$ ,  $p < .0001$ ), and the 95% confidence interval for the true effect size was  $\beta = .19-.32$  (we also conducted a separate meta-analysis including the three preregistered scale measures of prejudice not discussed in the main text: the Ascent of Man dehumanization scale, and the Internal and External Motivation to Control Prejudice scales. This analysis yielded a nearly identical estimated effect size:  $\beta = .25$ ,  $p < .0001$ , 95% CI[.18,.31]).

Cochran's Q-test suggested that there was substantial heterogeneity in our observed effect sizes ( $Q(21) = 212.77, p < .0001$ ; see Fig. 3, Supplementary Fig. 5), so we examined potential moderators. We first tested whether target group type moderated these effects. We divided our observed effects into three categories: 1) prejudice against Muslims, 2) prejudice against African-Americans, and 3) prejudice against other minority groups (there were not enough distinct observations to subdivide the latter group any further). We then fit a second model with group type added as a moderator. The effect was directional but non-significant ( $QM(2) = 4.90, p = .086$ ). Examining the effects for each of these target groups separately revealed significant estimates for all three subgroups (prejudice against Muslims:  $\beta = .30, se = .08, z = 3.64, p = .0003, 95\% CI [.14, .45]$ ; prejudice against African-Americans:  $\beta = .24, se = .03, z = 7.43, p < .0001, 95\% CI [.18, .30]$ ; prejudice against other minority groups:  $\beta = .24, se = .06, z = 4.14, p < .0001, 95\% CI [.13, .36]$ ). Descriptively, the relationship between Trump support and increases in prejudice against Muslims was the strongest, while the relationships with prejudice against Blacks and prejudice against other groups were slightly weaker. However, none of these differences were significant ( $ps > .069$ ).

We also examined whether sample type (Mechanical Turk studies vs. VOTER sample) moderated effects, but these differences were not significant ( $p = .21$ ). Importantly, we also found that response rates did not moderate effect sizes ( $p = .26$ ), further verifying that our results were not shaped by attrition rates. Given the relatively small number of studies, we lacked the statistical power for more fine-grained analyses, such as examining other potential moderators (e.g., individual prejudice measures).

## **Mechanism Studies** (Studies 10 and 11)

### *Procedure*

Participants were recruited through Mechanical Turk. The ad (or "HIT") for the study did not provide any detailed information about the content of the study, and there was no mention of politics, prejudice, or minority groups in the study description. Because there are fewer political conservatives (and thus fewer Trump supporters) on Mechanical Turk, for Study 11 we used Turkprime.com<sup>60</sup> in order to recruit a larger sample of conservatives.

*Study 10:* Participants first answered two questions assessing their perceptions of changing norms, which were presented in random order: 1) general American norms: "To what degree have **Americans** become less or more critical of Islam/Muslims in recent months and years?" 2) social reference group-specific norms: "To what degree have **people that you respect and admire** become less or more critical of Islam/Muslims in recent months and years?" They then rated their support for Donald Trump on a single item (Item #1 from Studies 1-8) assessing positivity towards Trump.

*Study 11:* Participants first completed the full 20-item Differentiating Islamophobia scale<sup>32</sup> (as preregistered, our predictions concerned only the explicit prejudice, or "Islamoprejudice," subscale). Afterwards, participants answered two questions about their perceptions of how norms had changed among supporters of Donald Trump: 1) descriptive norms: "Since Trump's election, have **Trump supporters** become more or less negative in their feelings towards Muslims/Islam?" 2) prescriptive norms: "Since Trump's election, have **Trump**

**supporters** seen it as more or less acceptable to express negativity towards Muslims/Islam? Participants then answered some exploratory questions relating to how they believed their friends and family felt about Muslims, rated their degree of liberalism/conservatism, and rated their support for Donald Trump on the four-item scale from Studies 1 through 8.

### *Statistical Information*

In all analyses, individuals who scored above the midpoint on our Trump support measure (indicating generally favorable views of Donald Trump) are categorized as Trump supporters, and individuals who scored below the midpoint of our Trump support measure (indicating generally unfavorable views of Donald Trump) are categorized as non-Trump supporters. Our hypotheses relating to changing norms in Studies 10 and 11 were tested using one-sample t-tests, to determine whether mean scores were significantly above the “no change” midpoint of the scale. In Study 11, we used linear regression to test for an interaction between Trump support and perceived norms. Both predictor variables were entered into a linear regression model along with their interaction term. As preregistered, we considered our hypothesis to have been supported if the interaction term was significant at  $p = .05$  or below, and if the pattern of results was in the predicted direction.

### **Project Implicit IAT Data (Study 12):**

#### *Procedure*

Project Implicit is a non-profit organization founded in 1998 by Anthony G. Greenwald, Mahzarin R. Banaji, and Brian A. Nosek. They maintain a website ([projectimplicit.net](http://projectimplicit.net)) where people can complete one of a range of implicit association tests, as well as learn about the IAT and its meaning.

Visitors to [projectimplicit.net](http://projectimplicit.net) had the opportunity to complete the Black/White IAT<sup>44,45</sup>. If they chose to participate, they were asked to provide informed consent and then completed the IAT. In the task, participants used two keys on their computer keyboard to categorize Black faces, White faces, positive words (e.g., “Joy,” “Happy,” “Love”), and negative words (e.g., “Evil,” “Terrible,” “Nasty”) into their appropriate categories (labeled “Black people,” “White people,” “Good,” and “Bad”). In the critical trials, each racial category was paired with a valence category, such that participants sorted both onto the same side of their computer screen (e.g., sorting Black faces and negative words to the left). Participants’ IAT scores were calculated from the relative speed with which they categorized Black (vs. White) faces with bad (vs. good) words. After the task, participants were asked to complete various self-report questions and to provide demographic information. As in past work<sup>30,31</sup>, our analyses included all U.S. residents who provided full demographic information and passed the standard attention and data quality checks (error rates < 40% for all blocks, overall error rate < 30%, and latencies of under 400ms on < 10% of trials). The final dataset consisted of 2,998,402 participants.

Our primary independent variable was political conservatism. From January 2004 to September 2006, conservatism was measured on a 6-point scale ranging from “strongly conservative” to “strongly liberal.” Beginning September 15<sup>th</sup>, 2006, a midpoint was added, and conservatism was measured on a 7-point scale. For our primary analyses, we categorize participants as either liberals or conservatives based on their response on this scale. For the 7-

point scale, participants who rated themselves at the midpoint of the scale (labeled “neutral”) were excluded from our analyses.

### *Statistical Information*

To control for demographic changes in the sample over time, we used raking (aka iterative proportional fitting; raking ratio estimation) to weight the data, following the recommendations of Battaglia et al.<sup>61</sup>. (Raking is a statistical post-stratification sampling adjustment process by which a sample is made to resemble a specified population on key demographic variables.) Specifically, we weighted the subsample of participants from each month to the overall sample distributions (that is, the distributions for the full 14-year sample) on the demographic variables of age, gender, education, and race. Because our primary analyses involved comparing changes in mean IAT scores among liberals and conservatives, we constructed weights separately for these two subgroups (see Supplementary Table 9 for a full list of demographic variable strata and distributions). This process effectively holds these demographic variables constant to help ensure that any possible changes in the relative demographic makeup of these two groups over time cannot explain the changes in each group’s mean IAT score<sup>61</sup>. In addition to the demographic variables listed above, we also weighted each month’s subsample to the overall sample distribution of ideological extremity, effectively equating the percentage of weak, moderate, and strongly identified liberals and conservatives that constituted the sample at each time point. Following the recommendations of Liu et al.<sup>62</sup>, we truncated extreme (> 8.0) weights.

After constructing these sampling weights, we calculated weighted yearly and monthly means for liberals and conservatives, and used these weighted means in our analyses. However, based on the warnings and recommendations of Franco et al.<sup>63</sup>, we also replicated all analyses using the untruncated weights, as well as using the unweighted data, and found similar – and, in fact, slightly larger – effect sizes. Because statistical significance can be misleading with such large samples<sup>64</sup>, we focus on effect sizes in our discussion of these results.

### **Data Availability**

All data, syntax, materials, and preregistration documentation are available on the Open Science Framework at <https://osf.io/9syz8/>

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