

Falcon9 rockets built and launched by SpaceX carry cargo to the International Space Station.

Dreier will be watching whether the new Congress cuts government spending. "If that's the case, NASA will be impacted by that along with every federal agency," he says.

## **IMMIGRATION**

Trump reinvigorated the national debate on immigration with his campaign pledges to build a wall along the US border with Mexico and to temporarily ban Muslims from entering the United States.

"Our hope is that the rhetoric of the election was only a façade for something hopeful that's going to be more pragmatic and engaging communities," says Carl Saab, a neuroscientist at Brown University in Providence, Rhode Island, and the former president of the Society for Arab Neuroscientists.

Trump has variously said that the ban would apply to all Muslims and to anyone from "nations tied to Islamic terror", drawing vigorous criticism from civil-liberties groups that say such a policy would violate the US Constitution. He has also proposed deporting more people who are in the United States illegally, which could include those who came to the country as children.

Some researchers worry that such policies would threaten US research dominance. About 5% of US university students come from other countries, including more than 380,000 people studying science, engineering, technology or mathematics.

"The rhetoric that Mr Trump ran under has frightened lots of immigrants," says Benjamin Corb, director of public affairs for the American Society for Biochemistry and Molecular Biology in Rockville, Maryland. "I certainly hope that we don't end up losing some brilliant minds as a result of some near-sighted policies."

**POLITICS** 

## Why the polls missed Trump

Pollsters lament failure to foresee outcome of US election.

BY RAMIN SKIBBA

hat went wrong? That's the question many political pollsters in the United States are asking themselves in the aftermath of the 8 November presidential election. Republican candidate Donald Trump won in an electoral landslide, but for months most polls forecast a victory for his Democratic opponent, Hillary Clinton.

Many types of poll, including randomized telephone polls and online polls that people opt into, indicated a tightening of the gap between the two candidates in the weeks leading up to the election — but still pointed to a Clinton win. "The industry is definitely going to be spending a lot of time doing some soulsearching about what happened," says Chris Jackson, head of US public polling at Ipsos, a global market-research and polling firm based in Paris.

The most recent national polls — including those conducted by ABC News/*Washington Post*, Ipsos, YouGov and Fox News — all esti-

mated a Clinton lead of 3–4% over Trump. Yet as the last votes are being counted, Clinton leads the popular vote by a razorthin margin: just 0.2%. The majority of states have tipped for Trump, giving him their valuable electoral-college votes and ensuring his

"It seems like Trump voters were more enthusiastic about turnout and less enthusiastic about responding to polls."

victory. These include several Midwestern states that Clinton was expected to win.

Poll aggregators such as FiveThirtyEight nonetheless forecast Clinton's chances of victory at 71% or higher. This dramatic polling failure could have been due to poorly assessed voters, people misreporting their voting intentions, or pollsters inadequately surveying some segments of the population.

"It's a big surprise that such a wide variety of polls using such a wide variety of methodologies have all the errors fall in the same direction," says Claudia Deane, vice-president of research at the Pew Research Center in Washington DC.

The University of Southern California Dornsife/Los Angeles Times presidential

election poll, which included an online panel of nearly 3,000 people, was the only major national poll to forecast a Trump lead days before the election. "But we're not sure we were right either," says Jill Darling, survey director at the university's Center for Economic and Social Research in Los Angeles. She notes that Trump did not defeat Clinton by 3%, as her group's most recent poll predicted.

With each election, pollsters have a harder time reaching people. Now that Americans have fewer landlines and more mobile phones with caller ID, they don't respond to calls from unfamiliar numbers. Online surveys also struggle to recruit participants. A poll generally needs at least 1,000 participants who are representative of the general population with respect to gender, race, education, income level and geographic distribution to produce statistically significant results.

Pollsters strive to assess not just who supports whom, but also who will be likely to vote. This year, 119 million people cast ballots, accounting for 55.6% of registered voters, according to Michael McDonald, a political scientist at the University of Florida in Gainesville. That is the lowest percentage since 2000.

There were also more undecided voters this year than in previous presidential elections. Such voters may be under-represented in polls, yet tilt towards one candidate, Darling says. Only 53% of poll respondents disclosed who they would vote for, lower than the 70% in earlier elections, she adds. And people overestimate their own likelihood of voting.

"It seems like Trump voters were more enthusiastic about turnout and less enthusiastic about responding to polls. That's a deadly combination," says Andrew Gelman, a statistician and political scientist at Columbia University in New York City.

Polling experts in Britain conducted a formal inquiry following polling failures in last year's general election, when polls underestimated the turnout of older, Conservative voters. Now, in the United States, the American Association for Public Opinion Research has already named an ad-hoc committee to dig into the data and conduct a post-mortem on the election polls. They aim to produce findings by next May, Deane says.

See go.nature.com/2f9hpeo for a longer version of this story.