Daniel:

Oct. 3, 2014

at

12:31 PM

Dear Mona, How Many Flight Attendants Are Men?

By Mona Chalabi

Filed under Hope the Numbers Help

Get the data on GitHub

GitHub data at data/male-flight-attendants

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John Siefer, 26, right, a furloughed pilot working as a flight attendant for a major airline, offers a passenger her choice of beverages on a flight over Chicago on April 15, 1972 [TV]. AP

Dear Mona,

Are there more male flight attendants than there used to be?

Jack, 26, Lincolnwood, Illinois

¬†

Dear Jack,

{LINE}<It depends how far back we go in the history of aviation personnel. See, the latest available numbers from 2012 [TV] show there are 25,268 American male flight attendants [QV] that’s three times more [TE] than there were in 1980 [TV] but a few thousand [QV] fewer [TE] than there were in 2009 [TV]. But raw numbers are kind of useless in answering your question because the number of female flight attendants [CV] has also risen [TE] since 1980 [TV] and fallen [TE] since 2009 [TV]. I guess what you’re really interested in is whether the percentage of U.S. flight attendants who are men [CV] is higher [CE] than it used to be.>

{LINE}<When we look at percentages, a slightly different story emerges: In 1980 [TV], 14.3 percent of flight attendants [QV] were male [CV]. That figure has risen [TE] since then to 24.2 percent [QV]. Meanwhile, the overall gender split in U.S. employment (52.7 percent of workers [QV] were male [CV] in 2012 [TV]) has steadily fallen [TE] over the past three decades [TV], according to Census Bureau data compiled by the Minnesota Population Center. (Prior to 2000 [TV], the figures were only available every 10 years, which is why the change looks so steady before then.)>

{LINE}<There are a multitude of reasons why a greater [TE] share of all flight attendants are men today one of them is probably age [CV]. Even in 1980 [TV], younger flight attendants were more likely [CE] to be men [CV] than older ones. So it could be that as men have entered (and presumably stayed in) the cabin crew, over time they’ve gradually increased their overall percentage. Between 1980 [TV] and 2007 [TV], the median age of all flight attendants rose [TE] from 30 [QV] to 44 [QV].>

That’s not the only change to have occurred over the past 30 years [TV]. As sociologists at Texas A&M University pointed out in 2009 [TV], flight attendants as a group have become less [CE] white, with black and Hispanic employees [CV] making up a bigger share. They cited 1960s [TV] civil rights laws that forced airline companies to expand their recruitment preferences as an important reason for the change.

And yet, despite those changes in gender, age and race, the people pointing you toward the emergency exits are still relatively homogenous: 58 percent of all U.S. flight attendants [QV] are white women [CV].

That makes the airline sector slightly peculiar. Once we look at all industries, the same job category of public transportation attendants and inspectors is 40.6 percent [QV] male (of all races) [CV].

{BAR}<So, it’s clear that flight attendant demographics are unusual by transport standards, but it’s kind of hard to grasp just how unusual it is that 24 percent of the sector [QV] is male [CV] without making broader comparisons. To do that, I looked at the gender split of all 320 occupations [QV] listed in the Minnesota Population Center’s database. The job category that most resembles flight attendants in terms of its gender split is interviewers, enumerators and surveyors, [CV] only 24.1 percent of whom [QV] are men [CV]. Other similar roles are teachers [CV] (23.9 percent [QV] male [CV]), administrative support jobs [CV] (23.4 percent [QV] male [CV]) and dressmakers and seamstresses [CV] (24.6 percent [QV] male [CV]).>

{BAR}<Those roles might be closer to the top of the list but they’re by no means the most [CE] female dominated jobs in the U.S., for want of a better phrase. Just 2.6 percent of dental hygienists [QV] and 2.3 percent of kindergarten teachers [QV] are men [CV]. At the other extreme, 99.8 percent of boilermakers [QV] and 99.7 percent of the somewhat bizarrely titled drillers of earth [QV] are men [CV]. (See the full list of occupations and their male share at the bottom of this piece.)>

So, Jack, if you’re intrigued by how many male flight attendants you see, you might also keep a mental tally of the number of male receptionists, hairdressers and typists you encounter, because this data shows those are a much rarer breed of American worker.

Hope the numbers help,

Mona

Have a question you would like answered here? Send it to dearmona@fivethirtyeight.com or @DataLab538.

Jun. 17, 2014

at

12:28 PM

Elitist, Superfluous, Or Popular? We Polled Americans on the Oxford Comma

By Walt Hickey

Filed under Grammar

Get the data on GitHub

GitHub data at data/comma-survey

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An Oxford English Dictionary published by Oxford University Press, the birthplace of the Oxford comma. Caleb Jones / AP

There’s been a lot of ink spilled on the Oxford comma, the comma that goes before and in a list of three or more things. Is it a grammatical must or an unnecessary blight? (You’ve seen the insufferable and ahistoric comic of JFK and Stalin dressed as exotic dancers.) Grammatical experts have weighed in, but what does the average American think?

FiveThirtyEight and SurveyMonkey Audience ran a poll from June 3 [TV] to 5 [TV] asking 1,129 Americans [QV] which camp they fell into, and wouldn’t you believe it? We’re split on that comma.

{BAR}<We asked respondents which sentence was, in their opinion, more grammatically correct [CE]: It’s important for a person to be honest, kind and loyal” [CV] Or: It’s important for a person to be honest, kind, and loyal” [CV] The latter has an Oxford comma, the former none.

The result was pretty much down the middle, with pro-Oxford partisans [CV] commanding 57 percent of the vote [QV] and opponents to the tyranny of the extra comma [CV] grabbing 43 percent [QV]. Although those numbers might be enough to defeat Eric Cantor, it’s hardly a clear victory for the Oxfordians [CV].>

So, why is this so controversial? I asked two pros John McIntyre, the longtime editor behind the You Don’t Say language blog at The Baltimore Sun and author of The Old Editor Says; and Merrill Perlman, an adjunct professor at the Columbia Graduate School of Journalism, 25-year veteran of The New York Times(,) and owner of an editorial consulting company.

I don’t know, Perlman said in an email, but I suspect it comes down to what people were taught and when. Most of us learned grammar as rules, often accompanied by raps on the knuckle when an ungrammatical sentence escaped our mouths. That can really instill deep loyalty to the rule”

McIntyre is more blunt: Feigned passion about the Oxford comma, when not performed for comic effect, is mere posturing”

Despite their passionate majority, the Oxford comma partisans have had trouble winning the hearts and minds of their rivals. I’ve wondered why this is, and I think I found the answer.

The people who tend to prefer the Oxford comma [CV] also tend to be the kind of people who will tell a survey that they think their own grammar is excellent. Zealous, but not really the humble type. As Perlman said:

Many people [QV] who think they are good at grammar are good at following what they think are the rules: Don’t start a sentence with a conjunction, don’t end them with a preposition, etc. They may be less good at knowing why the rules exist, and I’ve yet to hear a coherent explanation of why you can’t do any of those things that didn’t involve Latinate references or such deep parsing of parts of speech and linguistics that the goal is lost was the thought clear and unambiguous?

So, does it matter? Can there ever be peace?

I use the Oxford comma in my own writing, out of pure personal preference, McIntyre said. When I edit for The Baltimore Sun, which follows Associated Press Stylebook on this point, I omit it”

Perlman also took a middle-of-the-road view: I used to be a rabid no serial comma in a simple series’ follower, drummed into me in my journalism formative years, but I have since some to believe that following rules are just as bad as not knowing them or why they exist. It’s not a matter of grammar at all; it’s matter of clarity”

One final note: Relevant to the interests of FiveThirtyEight in particular, we also asked whether people preferred using data as a singular or plural noun. To those who prefer the plural [CV], I’ll put this in your terms: The data are pretty conclusive that the vast majority of respondents think we should say data is” The singular crowd [CV] won by a 58 percentage-point margin [QV], with 79 percent of respondents [QV] liking data is [CV] to 21 percent [QV] preferring data are” [CV] But only half of respondents [QV] had put any thought to the usage prior to our survey, so it seems that it’s not a pressing issue for most.

Sep. 25, 2014

at

1:54 PM

How FiveThirtyEight Calculates Pollster Ratings

By Nate Silver

Filed under Polling

Get the data on GitHub

GitHub data at data/pollster-ratings

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Illustration by Matt Chase

Illustration by Matt Chase

See FiveThirtyEight’s pollster ratings.

Pollster ratings were one of the founding features of FiveThirtyEight. I was rating pollsters before I was building election models. I was eagerly updating the ratings after every major batch of election results. I rated pollsters while walking two miles uphill barefoot in the snow. And then I got a little burned out on them. We last issued a major set of pollster ratings in June 2010 [TV] and made only a cursory update before the 2012 [TV] elections.

What happened? Well, when you publish a set of pollster ratings, people are understandably fixated upon how you’ve rated the individual polling firms: Is Pollster XYZ [CV] better than [CE] Pollster PDQ [CV]?

Naturally, we hope the pollster ratings can give you a better basis for understanding the polls as a news consumer. However, discussions about individual polling firms there are now more than 300 of them [QV] in our database can sometimes miss the point. I’m more interested in the big-picture questions. Are some pollsters consistently better than others [CE], as measured by how accurately they predict election results? In other words, is pollster performance predictable? And if so, are a pollster’s past results the better predictor or are its methodological standards more telling?

The short answer is that pollster performance is predictable to some extent. Polling data is noisy and bad pollsters can get lucky. But pollster performance is predictable on the scale of something like the batting averages of Major League Baseball players.

{BAR}<Let me take that analogy a bit further. In baseball, there isn’t much difference in an absolute sense between a .300 hitter [CV] and a .260 hitter [CV] it amounts to getting about one extra hit [QV] during each week [TV] of the baseball season. Likewise, the differences in poll accuracy aren’t that large. We estimate that the very best pollsters might be about 1 percentage point [QV] more accurate [CE] than the average pollster over the long run. However, the average poll in our database missed the final election outcome by 5.3 percentage points [QV]. That means even the best poll would still be off by 4.3 points. It’s almost always better to take an average of polls rather than hoping for any one of them to hit a bullet with a bullet”>

What about the very worst pollsters? Well, we estimate that the absolute worst [CE] ones might introduce 2 to 3 points of error [QV], as compared with average polls, based on poor methodology. That means that the worst polls [CV] are worse [CE] (further below average) than the best polls [CV] are good [CE] (above average). While there are intrinsic limits to how accurate any poll can be (because of sampling error and other factors), there is no shortage of ways to screw up.

But just as most baseball players hit somewhere around .260, most pollsters tend to be about average. Or at least, that’s the best guess we can make based on examining their past results. Poll accuracy statistics, like batting averages, take a long time to converge to the mean. You shouldn’t assume a polling firm is awesome just because it nailed the most recent election any more than you should mistake a shortstop who went 2-for-5 one day for a .400 hitter.

Nonetheless, when you aggregate results over a number of elections and the sample sizes become larger, you’ll find that there is some consistency in pollster performance.

Before we go any further, I’d encourage you to download the database of polls that we’ve used to construct the pollster ratings. We’re making it public for the first time. The database includes (with just a few minor exceptions that I’ll describe below) every poll conducted in the last three weeks of a presidential, U.S. Senate, U.S. House or gubernatorial campaign since 1998 [TV], along with polls in the final three weeks of presidential primaries and caucuses since 2000 [TV]. Test everything out for yourself probably you’ll agree with some elements of our approach and disagree with others. Better yet, maybe you’ll discover a bunch of cool things that we hadn’t thought to look for. We think there should be more pollster ratings FiveThirtyEight shouldn’t have the last word on them.

Perhaps the simplest measure of poll accuracy is how far the poll’s margin was from the actual election result. For instance, if a poll had the Democrat ahead by 10 percentage points [QV] and she actually won by 3 points [QV], that would represent a 7-point error [QV]. In the table below, I’ve listed polling firms’ average error for elections from 1998 through 2007 [TV], and again for the same polling firms for elections from 2008 onward [TV]. (About half the polls in our database are from 2008 or later [TV], so this is a logical dividing point.) I’ve restricted the list to the 28 firms [QV] with at least 10 polls [QV] in both halves of the sample.

{BAR}<As you can see, there’s a fair amount of consistency in these results; the correlation coefficient (where 1 is a perfect correlation [CV] and 0 is no correlation [CV]) is about 0.6 [QV]. InsiderAdvantage [CV] and American Research Group [CV] were among the least accurate pollsters in both halves of the sample; polls from ABC News [CV] and The Washington Post [CV] (who usually conduct polls jointly) were among the most accurate [CE] in both cases. (ABC News, like ESPN and FiveThirtyEight, is owned by the Walt Disney Company.)>

But there are a number of other things we’ll want to account for. In particular, we’ll want to know how much of the error had to do with circumstantial factors. For instance, polls of presidential primaries [CV] are associated with much more [CE] error than polls of general elections [CV]. This is a consequence of factors intrinsic to primaries (for instance, turnout is far lower) and mostly isn’t the pollsters’ fault. One more baseball analogy: Polling primaries is like hitting in Dodger Stadium against Clayton Kershaw, whereas polling general elections is like hitting in Coors Field.

How do we account for factors like these? It takes some work the balance of this article will be devoted to describing our process. This year [TV], we’re publishing a variety of different versions of the pollster ratings that range from simple to more complex. If at any point you think we’ve made one assumption too many, you can take the exit ramp and use one of the simpler versions. Or you can download the raw data and construct your own.

Our overall method is largely the same as in 2010 [TV]. That year [TV], for the first time, we introduced a consideration of a poll’s methodological standards in addition to its past accuracy. We think the case for doing so has probably grown stronger since then, but you can find a number of versions of the pollster ratings based on past accuracy alone if you prefer them.

There are also a few things I’ve come to think about differently since 2010 [TV].

First, the case against Internet-based polls has grown much weaker in the last four years [TV]. At that time, the most prominent Internet pollster [CE] was Zogby Interactive (it has since been re-branded as JZ Analytics), which used a poor methodology and got equally poor results. But Internet penetration has increased considerably since then (it now exceeds landline telephone penetration) and a number of Internet-based polling firms with more thoughtful methodologies have come along. In 2012 [TV], the Internet-based polls did a little better than the telephone polls as a group (especially compared to telephone polls that did not call cellphones). There are still some reasons to be skeptical of Internet polls especially those that do not use probability sampling. But the FiveThirtyEight pollster ratings no longer include an explicit penalty for Internet polls1 as they did in 2010 [TV].

Second, it has become harder to distinguish a partisan poll. As I described earlier this month, FiveThirtyEight has been applying a more relaxed standard for what we define as partisan polls since 2012 [TV]. The challenge in trying to use a more restrictive standard had been that there were too many borderline cases and we didn’t like having to make a lot of ad hoc decisions about which polls to include. Some polling firms, like Public Policy Polling [CV], conduct polls on behalf of interest groups and campaigns but pay for others themselves. Blogs like Daily Kos and Red Racing Horses [CV] now sponsor polls. And in some cases, it isn’t clear who’s paying for a poll. Only the most unambiguously partisan polls those sponsored by candidates or by party groups like the Republican National Committee are excluded from the FiveThirtyEight forecast models.

But we still keep track of polls even when we don’t use them in our forecast models and their results are reflected in the pollster ratings. These polls are labeled with a partisan flag in the database.2 The idea is that a polling firm ought to be held accountable for any poll it puts out for public consumption. If a polling firm releases biased and inaccurate polls on behalf of candidates, that will be reflected in its pollster rating even if it does better work when conducting polls on behalf of a media organization.

{BAR}<Our pollster ratings database also includes a couple of ways for you to track potential bias in the polls. The term bias itself refers to how much a polling firm’s results have erred toward one party or the other as compared against actual election results. House effect, by contrast, refers to how a firm’s results compare [CE] against other polls. If Pollster PDQ [CV] had the Democrat ahead by 5 points [QV] in an election where every other pollster had the race tied, it would have a Democratic house effect. But if the Democrat turned out to win by 10 points [QV], PDQ [CV] would have a Republican bias as compared against the actual election results. As is the case for measures of poll accuracy, measures of bias and house effects can sometimes reflect statistical noise rather than anything systematic. But if they occur over dozens or hundreds of surveys, they should be a concern.>

Third, we’re seeing clearer evidence of pollster herding” Herding is the tendency of some polling firms to be influenced by others when issuing poll results. A pollster might want to avoid publishing a poll if it perceives that poll to be an outlier. Or it might have a poor methodology and make ad hoc adjustments so that its poll is more in line with a stronger one.

The problem with herding is that it reduces polls’ independence. One benefit of aggregating different polls is that you can account for any number of different methods and perspectives. But take the extreme case where there’s only one honest pollster in the field and a dozen herders who look at the honest polling firm’s results to calibrate their own. (For instance, if the honest poll has the Democrat up by 6 points [QV], perhaps all the herders will list the Democrat as being ahead by somewhere between 4 and 8 points [QV].) In this case, you really have just one poll that provides any information everything else is just a reflection of its results. And if the honest poll happens to go wrong, so will everyone else’s results.3

There’s reasonably persuasive evidence that herding has occurred in polls of Senate elections, presidential primaries and the most recent presidential general election. It seems to be more common among pollsters that take methodological shortcuts.

Paradoxically, while herding may make an individual polling firm’s results more accurate, it can make polling averages worse. There’s some tentative evidence that this is already happening. From our polling database, I compared two quantities [QV]: First, how accurate the average individual poll was; and second, how accurate the polling average was.4 I limited the analysis to general election races where at least three polls had been conducted.

From 1998 through 2007 [TV], the average poll in these races missed the final margin by 4.7 percentage points. The average error has been somewhat lower 4.3 percentage points in races from 2008 [TV] onward.

But the polling average hasn’t gotten any better if anything it’s gotten slightly worse. From 1998 through 2007 [TV], the polling average missed the final margin in an election by an average of 3.7 percentage points [QV]. Since 2008, the error has been 3.9 percentage points [QV] instead.

So this is something we’re concerned about the benefit of aggregating polls together will decline if herding behavior continues to increase. This year’s pollster ratings introduce a couple of attempts to account for such behavior.

Now let’s get into the details what follows is a reasonably comprehensive description of how we calculate the pollster ratings.

Step 1: Collect and classify polls

Almost all of the work is in this step; we’ve spent hundreds of hours over the years collecting polls. The ones represented in the pollster ratings database meet three simple criteria:

They were conducted in 1998 [TV] or later;

They were conducted in the final three weeks [TV] of the campaign;

They were conducted in one of the following types of elections:

Presidential general elections;

Presidential primaries;

Senate elections;

Gubernatorial elections;

U.S. House elections.

Of course, it’s not quite that simple; a number of other considerations come up from time to time:

Sample sizes are sometimes missing from older polls. In these cases, we’ve estimated a poll’s sample size from its reported margin of error or from how many people a polling firm surveyed in other polls where the sample size was listed.5 As a last resort, we use 600 [QV] as a default sample size.

If a pollster listed results among likely voters and registered voters (or all adults), we list only the likely voter version in the database. Because the database covers the final three weeks of the campaign and almost all polling firms publish likely voter polls by that time, almost all polls in the database should be likely voter surveys.

When a pollster publishes multiple versions of the same survey (for example, versions of the poll with and without a third-party candidate included), FiveThirtyEight’s policy is to average the versions together. However, some of the polls in our database were taken from sources that may have followed different rules, so the treatment of these cases may be inconsistent.

Polls of special elections are included.

Polls of nonpartisan primaries (such as in Louisiana) are included.6

National polls for the presidential popular vote and the generic congressional ballot are included.7

The use of tracking polls is restricted to non-overlapping dates. For instance, if a firm’s final tracking poll was conducted on the Friday through the Sunday before an election, we wouldn’t also list the version that covered Thursday through Saturday.

Polls are included in the database even if they were not used in the FiveThirtyEight forecasts.8

A poll’s date as listed in the database reflects the median date the poll was in the field not the date the poll was released. For example, a poll conducted from Oct. 20 to Oct. 22 [TV] and released on Oct. 25 [TV] would have its date listed as Oct. 21 [TV].

Although in general all polls within the final three weeks [TV] of a campaign are included, there are minor exceptions in the case of the presidential primaries. No polls of the New Hampshire primary are included until after the Iowa caucus has been completed, and no polls of states beyond New Hampshire are included until New Hampshire has voted.9

Sources for the data include previous iterations of FiveThirtyEight, along with HuffPost Pollster, Real Clear Politics, PollingReport.com, the Internet Archive, and searches of Google News and other newspaper archives. They also include data sent to us by various polling firms however, we have sought to verify that such polls were in fact released to the public in advance of each election10 and that the pollster did not cherry-pick the results sent to us.

We’ve chosen 1998 [TV] as the cutoff point because there are multiple sources covering that election onward, meaning that the data ought to be reasonably comprehensive. Nevertheless, we’re certain that there are omissions from the database. We’re equally certain that there are any number of errors some that were included in the original sources, and some that we’ve introduced ourselves. We’re hoping that releasing the data publicly will allow people to check for potential errors and omissions.11

A big challenge comes in how to identify the pollster we associate with each survey. For instance, Marist College has recently begun to conduct polls for NBC News. Are these classified as Marist College polls, NBC News polls, NBC/Marist polls, or something else?

The answer is that they’re Marist College polls. Our policy is to classify the poll with the pollster itself rather than the media sponsor.

However, a few media companies like CBS News and The New York Times have in-house polling operations.12 Confusingly, media companies sometimes also act as the sponsors of polls conducted by other firms. Our goal is to associate the poll with the company that, in our estimation, contributed the most intellectual property to the survey’s methodology. For instance, the set of polls conducted earlier this year by YouGov for CBS News and The New York Times are classified as YouGov polls, not CBS News/New York Times polls.13

Polling firms sometimes operate under multiple brand names and add or subtract partners. Some cases are reasonably clear for instance, Rasmussen Reports is a subsidiary of Pulse Opinion Research, so polls marketed under each name are classified together. Other cases are more ambiguous; we’ve simply had to apply our best judgment about where one polling firm ends and another begins.

In previous versions of the pollster ratings, we included separate entries for telephone and Internet polls from the same company for instance, Ipsos conducts both types of polls and they’re listed separately in the database. This is becoming increasingly impractical as polling firms adopt mixed-mode samples (polls with Internet and telephone responses combined together) or otherwise fail to clearly differentiate one mode from the other. For now, we have grandfathered in preexisting cases like Ipsos and continued to list their Internet and telephone polls as separate entries. However, this will very likely change with the next major release of the pollster ratings database after the 2014 [TV] election.

Step 2: Calculate simple average error

This part’s really simple: We compare the margin in the poll against the election result and see how far apart they were. If the poll projected the Republican [CV] to win by 4 points [QV] and he won by 9 [QV] instead, that reflects a 5-point [QV] error. (Our preferred source for election results is Dave Leip’s Atlas of U.S. Presidential Elections.)

The error is calculated based on the margin separating the top two finishers in the election and not the top two [QV] candidates in the poll. For instance, if a certain poll had the 2008 [TV] Iowa Democratic caucus with Hillary Clinton [CV] at 32 percent [QV], Barack Obama [CV] with 30 percent [QV] and John Edwards [CV] with 28 percent [QV], we’d look at how much it projected Obama to win over Edwards since they were the top two finishers (Clinton narrowly finished third).

{BAR}<The database also includes a column indicating whether a poll called the winner of the race correctly. But we think this is generally a poor measure of poll accuracy. In a race that the Democrat [CV] won by 1 percentage point [QV], a poll that had the Republican [CV] winning by 1 point [QV] did a pretty good job [CE], whereas one that had the Democrat winning by 13 [QV] [CV] was wildly off the mark.>

Step 3: Calculate Simple Plus-Minus

As I mentioned, some elections are more conducive to accurate polling. In particular, presidential general elections are associated with accurate polling while presidential primaries are much more challenging to poll.14 Polls of general elections for Congress and for governor [QV] are somewhere in between.

This step seeks to account for that consideration along with a couple of other factors. We run a regression analysis that predicts polling error based on the type of election surveyed,15 a poll’s sample size,16 and the number of days17 separating the poll from the election.18

{BAR}<We then calculate a plus-minus score by comparing a poll’s average error against the error one would expect from these factors. For instance, Quinnipiac University polls [CV] have an average error of 4.6 percentage points [QV]. By comparison, the average pollster [CV], surveying the same types of races on the same dates and with the same sample sizes, would have an error of 5.3 points [QV] according to the regression. Quinnipiac [CV] therefore gets a Simple Plus-Minus score of -0.7 [QV]. This is a good score [CE]: As in golf, negative scores indicate better-than-average performance. Specifically, it means Quinnipiac polls [CV] have been 0.7 percentage points [QV] more accurate [CE] than other polls under similar circumstances.>

A few words about the other factors Simple Plus-Minus considers: In the past, we’ve described the error in polls as resulting from three major components: sampling error, temporal error and pollster-induced error. They are related by a sum of squares formula:

\[Total\ Error=\sqrt{Sampling\ Error + Temporal\ Error + Pollster\text{-}Induced\ Error}\]

Sampling error reflects the fact that a poll surveys only some portion of the electorate rather than everybody. This matters less than you might expect; a poll of 1,000 voters [QV] will miss the final margin in the race by an average of only about 2.5 percentage points because of sampling error alone even in a state with 10 million voters.19 Unfortunately, sampling error isn’t the only problem pollsters have to worry about.

Another concern is that polls are (almost) never conducted on Election Day itself. I refer to this property as temporal (or time-dependent) error. There have been elections when important news events occurred in the 48 to 72 hours that separated the final polls from the election, such as the New Hampshire Democratic primary debate [CV] in 2008 [TV], or the revelation of George W. Bush’s 1976 DUI arrest [CV] before the 2000 [TV] presidential election.

If late-breaking news can sometimes affect the outcome of elections, why go back three weeks in evaluating pollster accuracy? Well, there are a number of considerations we need to balance against the possibility of last-minute shifts in the polls:

The overwhelming majority of elections do not feature important late-breaking developments. There will often be head-fakes and media-hyped game changers, but they rarely make much difference upon careful analysis.

Herding (see above) becomes more prominent in the final few days before an election. It’s fairly common for a pollster to publish some wild-seeming results which can affect media coverage of the campaign only to fall in line with its final poll.

Some of the apparent movement in the polls in the late days of the election is probably artificial, reflecting response bias (voters for a certain candidate might be more likely to respond to polls after the candidate has a strong news cycle) and badly designed turnout models rather than genuine changes in public opinion.

Election Day is something of a misnomer. Many states accept ballots by mail or provide for early voting; in the 2012 [TV] presidential election, about one-quarter of the votes nationwide were cast before Nov. 6 [TV].

Accounting for all polls in the final three weeks of the campaign increases the sample size.

Three weeks [TV] is an arbitrary cutoff point; I’d have no profound objection to expanding the interval to a month or narrowing it to two weeks, or to using a slightly different standard for primaries and general elections. But we feel strongly that evaluating a polling firm’s accuracy based only on its very last poll is a mistake.

Nonetheless, the pollster ratings account for the fact that polling on the eve of the election is slightly easier than doing so a couple of weeks out. So a firm shouldn’t be at any advantage or disadvantage because of when it surveys a race.

The final component is what we’ve referred to in the past as pollster-induced error; it’s the residual error component that can’t be explained by sampling error or temporal error. I’ve grown to dislike the term pollster-induced error; it sounds more accusatory than it should. Certain things (like projecting turnout) are inherently pretty hard and it may not be the pollster’s fault when it fails to do them perfectly. Our research suggests that even if all polls were conducted on Election Day itself (no temporal error) and took an infinite sample size (no sampling error) the average one would still miss the final margin in the race by about 2 percentage points [QV].

However, some polling firms are associated with more of this type of error. That’s what our plus-minus scores seek to evaluate.

Step 4: Calculate Advanced Plus-Minus

Earlier this year, House majority leader Eric Cantor lost his Republican primary to David Brat, a college professor, in Virginia’s 7th congressional district. It was a stunning upset, at least according to the polls. For instance, a Vox Populi poll [CV] had put Cantor ahead by 12 points [QV]. Instead, Brat won by 12 points. The Vox Populi poll [CV] missed by 24 points [QV].

According to Simple Plus-Minus, that poll would score very poorly. We don’t have a comprehensive database of House primary polls and don’t include them in the pollster ratings, but I’d guess that such polls are off by something like 10 percentage points on average. Vox Populi’s poll missed by 24 [QV], so it would get a Simple Plus-Minus score of +14 [QV].

That seems pretty terrible until you compare it to the only other poll of the race, an internal poll released by McLaughlin & Associates on behalf of Cantor’s campaign. That poll had Cantor up by 34 points [QV] a 46-point [QV] error! If we calculated something called Relative Plus-Minus (how the poll compares against others of the same race) the Vox Populi poll would get a score of -22 [QV], since it was 22 points more accurate than the McLaughlin survey.

Advanced Plus-Minus, the next step in the calculation, seeks to balance these considerations. It weights Relative Plus-Minus based on the number of distinct polling firms20 that surveyed the same race, then treats Simple Plus-Minus as equivalent to three polls. For example, if six [QV] other polling firms surveyed a certain race, Relative Plus-Minus [CV] would get two-thirds of the weight [QV] and Simple Plus-Minus [CV] would get one-third [QV].

The short version: When there are a lot of polls in the field [CV], Advanced Plus-Minus [CV] is mostly based on how well a poll did in comparison to others of the same election. But when there is scant polling [CV], it’s mostly based on a comparison to polls of the same type of election (for example, other presidential primaries).

Meticulous readers might wonder about another problem. If we’re comparing a poll against its competitors, shouldn’t we account for the strength of the competition? If a pollster misses every election by 40 points [QV], it’s easy to look good by comparison if you happen to poll the same races. The problem is similar to the one you’ll encounter if you try to design college football or basketball rankings: Ideally, you’ll want to account for strength of schedule in addition to wins and losses and margin of victory. Advanced Plus-Minus addresses this by means of iteration (see a good explanation here), a technique commonly applied in sports power ratings.

Advanced Plus-Minus also addresses another problem. As I’ve mentioned, polls tend to be more accurate when there are more of them in the field. This may reflect herding, selection bias (pollsters may be more inclined to survey easier races; consider how many of them are avoiding the challenging Senate races in Kansas and Alaska this year), or some combination thereof. So Advanced-Plus Minus also adjusts scores based on how many other polling firms surveyed the same election. This has the effect of rewarding polling firms that survey races few other pollsters do and penalizing those that swoop in only after there are already a dozen polls in the field.

Two final wrinkles. Advanced Plus-Minus puts slightly more weight on more recent polls.21 It also contains a subtle adjustment to account for the higher volatility of certain election types, especially presidential primaries.22

Before we proceed to the final step, let’s pause to re-examine the results for the 28 polling firms we listed before, but this time using Advanced Plus-Minus rather than Simple Average Error.

There’s still a correlation although it’s somewhat weaker than before (the correlation coefficient is roughly 0.45 [QV] instead of [CE] 0.60 [QV]). Accounting for the fact that American Research Group polls a lot of primaries makes the firm look somewhat less bad, for instance.

But pollster performance still looks to be predictable to some extent. As I’ll describe next, it’s more predictable if you look at a poll’s methodological standards in addition to its past performance.

Step 5: Calculate Predictive Plus-Minus

When we last updated the pollster ratings in 2010 [TV], I failed to be explicit enough about our goal: to predict which polling firms would be most accurate going forward. This is useful to know if you’re using polls to forecast election results, for example.

But that may not be your purpose. If you’re interested in a purely retrospective analysis of poll accuracy, there are a number of measures of it in our pollster ratings spreadsheet. For instance, you’ll find each pollster’s Simple Plus-Minus and Advanced Plus-Minus scores. The version I’d personally recommend is called Mean-Reverted Advanced Plus-Minus, which is retrospective but discounts the results for pollsters with a small number of polls in the database.23

The difference with Predictive Plus-Minus is that it also accounts for a polling firm’s methodological standards albeit in a slightly roundabout way. In 2010 [TV], we looked at whether a polling firm was a member of the National Council on Public Polls (NCPP) [CV] or a supporter of the American Association for Public Opinion Research (AAPOR) [CV] Transparency Initiative.24

One other thing I was probably not clear enough about in 2010 was that participation in these organizations was intended as a proxy variable for methodological quality. That is, it’s a correlate of methodological quality rather than a direct measure of it.25 Nevertheless, polling firms that participated in one of these initiatives tended to have more accurate polls prior to 2010. Have they also been more accurate since?

Yes they have and by a wide margin. The chart below tracks the performance of polling firms based on whether they were members of NCPP or the AAPOR Transparency Initiative as of June 6, 2010 [TV], when FiveThirtyEight last released a full set of pollster ratings.26

From 1998 [TV] through 2009 [TV], the average poll from an AAPOR/NCPP polling firm [CV] had an error of 4.6 percentage points [QV], compared with an average error of 5.5 percentage points [QV] for firms that did not participate in one of these groups [CV]. While this difference is highly statistically significant, it isn’t that impressive. The reason is that we evaluated participation in AAPOR/NCPP only after the fact. Perhaps polling firms with terrible track records didn’t survive long enough to participate in AAPOR/NCPP as of June 2010, or perhaps AAPOR/NCPP didn’t admit them.

{BAR}<What is impressive is that the difference has continued to be just as substantial since June 2010 [TV]. In the general election in November 2010, polls from firms that had participated in AAPOR/NCPP [CV] as of that June [TV]were associated with an average error of 4.7 percentage points [QV], compared with [CE] 5.7 percentage points [QV] for those that hadn’t [CV]. And throughout 2012 [TV] (including both the presidential primaries and the general election), the AAPOR/NCPP polls [CV] were associated with an average error of 4.0 percentage points [QV], versus 5.2 points [QV] for nonparticipants [CV].>

For clarity: The 2010 [TV] and 2012 [TV] results are true out-of-sample tests. In the chart above, the polling firms are classified based on the way FiveThirtyEight had them in June 2010 before these elections occurred. In my view, this is reasonably persuasive evidence that methodology matters, at least to the extent we can infer something about it from AAPOR/NCPP participation.

This year, we’ve introduced a two-pronged test for methodological quality. The first test is similar to before: Is a polling firm a member of NCPP [CV], a participant in the AAPOR Transparency Initiative [CV], or does it release its raw data to the Roper Center Archive [CV]?27 And second, does the firm regularly call cellphones in addition to landlines? Each firm gets a methodological score between 0 [QV] and 2 [QV] based on the answers to these questions.

Tracking which firms call cellphones is tricky. We’ve done a reasonably extensive search through recent polls to see whether they document calling cellphones. However, we do not list a polling firm as calling cellphones until we have some evidence that it does. There are undoubtedly some false negatives on our list; we encourage polling firms to contact us with documentation that they’ve been calling cellphones.28

So let’s say you have one polling firm that passes our methodological tests but hasn’t been so accurate, and another that doesn’t meet the methodological standards but has a reasonably good track record. Which one should you expect to be more accurate going forward?

That’s the question Predictive Plus-Minus ratings are intended to address. But the answer isn’t straightforward; it depends on how large a sample of polls you have from each firm. Our finding is that past performance reflects more noise than signal until you have about 30 polls [QV] to evaluate, so you should probably go with the firm with the higher methodological standards up to that point. If you have 100 polls from each pollster, however, you should tend to value past performance over methodology.29

One further complication is herding. The methodologically inferior pollster may be posting superficially good results by manipulating its polls to match those of the stronger polling firms. If left to its own devices without stronger polls to guide it it might not do so well.

My colleague Harry Enten looked at Senate polls since 2006 [TV] and found that methodologically poor pollsters improve their accuracy by roughly 2 percentage points when there are also strong polls in the field. My own research on the broader polling database did not find quite so large an effect; instead it was closer to 0.6 percentage points [QV]. Still, the effect was highly statistically significant. As a result, Predictive Plus-Minus includes a herding penalty for pollsters with low methodology ratings.30

The formula for how to calculate Predictive Plus-Minus is included in the footnotes.31 Basically, it’s a version of Advanced Plus-Minus where scores are reverted toward a mean, where the mean depends on whether the poll passed one or both methodological standards.32 The fewer polls a firm has, the more its score is reverted toward this mean. So Predictive Plus-Minus is mostly about a poll’s methodological standards for firms with only a few surveys in the database, and mostly about its past results for those with many.33

As a final step, we’ve translated each firm’s Predictive Plus-Minus rating into a letter grade, from A+ to F. One purpose of this is to make clear that the vast majority of polling firms cluster somewhere in the middle of the spectrum; about 84 percent of polling firms [QV] receive grades in the B or C range [CV].

There are a whole bunch of other goodies in the pollster ratings spreadsheet, including various measures of bias and house effects. We think the pollster ratings are a valuable tool, so we wanted to make sure you had a few more options for how to use them.

CORRECTION (May 21, 2016, 4 p.m.) [TV]: An earlier version of this article included an incorrect date in the formula in Footnote 21. The date should be 1988 [TV], not 1998 [TV].

Jun. 6, 2014

at

6:05 AM

What Ethan Swan Learned From Tracking Every Tattoo in the NBA

By Mike Wilson

Filed under Tattoos

Get the data on GitHub

GitHub data at data/nba-tattoos

FacebookTwitterEmail

Chris Andersen. Getty Images

Ethan Swan. Allison Michael Orenstein

Ethan Swan and I couldn’t see the players’ tattoos from Section 217 of the Barclays Center in Brooklyn, but Swan still knew who was inked and who wasn’t. LeBron James? Obviously. Chris Bosh? A swirl of images (musical notes, tiger, skull) on his back. Deron Williams? He’s got a basketball tattoo, Swan said just as at least one player on every NBA team [QV] did at one point three years ago [TV]. Of the Nets on the floor in this early May playoff game, only Shaun Livingston was a blank canvas.

Except nobody [QV] really is not any of us, and certainly not Swan. For four seasons [TV], he has kept a database of NBA players’ tattoos every Chinese letter, Bible verse, jersey number, Rolls Royce logo and winged angel. He puts it all on his Tumblr, his way of getting in the game. But NBA tattoos is more than a fanboy project; it’s an antidote to an Internet rife with articles, lists and superlatives mocking athletes’ tattoo choices: 11 [QV] worst [CV], 22 [QV] worst [CV], ugliest [CE]. Swan’s blog is a small protest against that kind of reflexive judgment.

It’s just dumb to have an opinion about this, he said. You don’t have enough ways to judge a player, you have to assert this thing that’s totally meaningless”

Take Randy Foye of the Denver Nuggets, a guy who, Swan wrote, has one of the most heartbreaking tattoos [CE] in the league (or that I’ve heard of, period)” As the game unfolded below us, Swan told me the story. Foye’s father died when he was 3 years old [TV], and after Randy finished kindergarten his mother walked out on the family. On his 22nd birthday [TV], Foye had her picture tattooed on his chest.

If my mom was here today, she would probably be the most important person in my life, Foye once told an interviewer. I just felt as if I needed something of her attached to me, so I just put her over my heart”

Even in the dark of Section 217, I could see the story moved Swan.

How, he asked, could you root against a guy like that?

And yet the verdicts keep coming in. A few years ago, Swan encountered his b√™te noire, a piece on Yahoo that used data to argue that players with visible tattoos were egotistical ball hogs and guys without them were selfless rebounders and passers. Ethan Swan, defender of the NBA tattoo, was worried. What if he was rooting for the wrong guys?

Ethan Swan | Allison Michael Orenstein

Swan, 38, has tattoos on his belly, arms and chest, trimmed hair, and a quiet manner that gives the impression he’s more at ease listening than talking. His day job has nothing to do with the NBA he manages a gallery and performance space called 356 South Mission Road in Los Angeles. Before that, he lived in New York and worked in the education department at the New Museum of Contemporary Art.1 When one of my colleagues found his blog I got interested in what inspired it.

Swan learned early about the importance of empathy. He grew up in Rochester, New York, one of three children of activist parents. His father volunteered for the Peace Corps and became a teacher; his mother is a nurse practitioner and HIV educator. Swan found his own revolution in the punk community, where empathy for everyone else’s angst nestles just below the outrage. He traded tapes and zines with friends across the country, urged his favorite bands to come to Rochester and featured their records in the store where he worked. The impulse to share helped drive his decision to catalog tattoos.

I was spending so much time watching basketball, I think it was important to find a way to participate, to not just be a spectator, he said. I wouldn’t say much of that was conscious, but looking back at the other work I’ve done in my life, it clearly fits a pattern”

In the early 2000s [TV], he lived in Philadelphia and rooted for the 76ers, led by Allen Iverson, whose shoulder bore a cross of daggers and the words Only The Strong Survive” (Iverson once said, I put shit on my body that means something to me”2) Tattoos were still edgy then, and the NBA worried about whether its largely white fan base would accept tattooed black players. At one point the league altered the cover of its Hoop magazine so Iverson’s body ink wouldn’t show. Later, it instituted a business casual dress code for its players. The response from the man known as The Answer: They’re targeting guys who dress like me guys who dress hip-hop. Put a murderer in a suit and he’s still a murderer”

That was when Swan saw a connection between basketball and punk. Iverson’s tattoos obscured the person beneath them he was an archetype, in other words, of the players Swan was most drawn to.

He was just so defiant. I loved it”

Trevor Ariza | Getty Images

The tattoo database came early in 2011 [TV], after Swan bought a subscription to stream games on his computer. He watched with his laptop open to a spreadsheet. He learned it was easiest to see a tattoo when a player shot free throws because he stood still and the camera zoomed in. Swan searched the web for photos of tattooed players. He followed athletes on Twitter so he’d know when they got new ink. He set up a Google alert for NBA tattoos” One day, the IT guy at the New Museum confronted him about why he had searched so often for Carmelo Anthony shirtless”

{LINE}<Swan posted his first complete list of tattoos that May. He counted 433 players in the NBA [QV] 230 [QV] with tattoos [CV] and 203 [QV] without [CV]. That’s 53 percent of players [QV]. The next year [TV] the tattooed percentage [CV] rose [TE] to 55 [QV], and the year after that [TV] to 56 [QV].>

Swan saw every banal and predictable tattoo imaginable. But he also knew that a tattoo often documented something important. Chris Andersen of the Miami Heat, whose upper-body art makes him look like he’s wearing a freaky turtleneck, covered himself in ink after recovering from drug addiction. The Atlanta Hawks’ Demarre Carroll has an RIP portrait tattoo in memory of a brother who died from a brain tumor. Trevor Ariza of the Washington Wizards honors his brother Tajh, who died in a fall from a hotel window at 5 years old.

Early on, Swan analyzed each team’s tattoos in a brief essay. Of the New York Knicks he wrote:

For whatever reason, [they] ended up tied with the Lakers for most tattooed players on one team in 2010-11 [TV], and that’s without Eddy Curry. Or Wilson Chandler, Nate Robinson, Starbury, Al Harrington, Quentin Richardson, or any of the other heavily tattooed guys to wear a Knicks uniform in the last few years. I have no idea what’s driving it, but it does make me happy.

More recently [TV], Swan has limited his remarks to individual players: Among [Al] Harrington’s many tattoos is a great snarling wolf on his chest with the text Killer Instinct.’

Swan made an exception to this just-the-facts approach in 2012 [TV], when Grantland3 published a piece called The Boy With the Dragon Tattoo And other horrible ink in the NBA” It was a list of player tattoos followed by quips written by the authors, who were screenwriters.

This is just a reminder for the medics that he has a peanut allergy, they wrote about Mo Williams’s Mr. Peanut collage. For the Abe Lincoln tattoo on DeShawn Stevenson’s neck one of the most-mocked tats in the league one writer cracked, When you play for the Nets it’s more about the Lincolns than the Benjamins”

Swan took to his keyboard:

The real disappointment was the way in which the tattoos were used as a method to further distance players from spectators. The authors treated the tattoos as another line between themselves and the players mentioned, evidence that the players are ignorant or out of touch. Why would you want to do that?

I asked Swan what he thought about Stevenson’s Lincoln tattoo. Look, he is a problematic dude, he said. His tattoos are bonkers, he gets arrested, he wore a T-shirt saying, LeBron, how’s my Dirk taste?’ But you know, he barely knew his father.

The world is so it will just break your heart. The world is just so gnarly. It’s not that he deserves a pass or isn’t responsible for his actions. But how many times are people going to sit down and try to think of a way to make a joke about his tattoo? There’s this whole other story that can be told about him and his reality”

Only a few people noticed what Swan was doing.4 Once, somebody on Reddit linked to his blog with the headline, NBA Tattoo Percentages per team, somebody did this research! Inked magazine gave him an assignment to interview Dorell Wright, then of the Sixers, who has G.H.O.S.T” tattooed on his shoulder. It’s something me and one of my closest friends thought of, Wright told Swan. Go Hard Or Stop Trying”

Swan has never spoken to another NBA player. He doesn’t often try to contact them on Twitter, doesn’t write to NBA or team spokespeople to get information. Near the end of each season he simply Googles every player and the word tattoo. He describes this task as not un-fun”

{LINE}<This season [TV], by Swan’s count, 241 players [QV] had tattoos [CV], down [TE] from 250 [QV] the year before [TV]. He was a little disappointed. He likes it when the numbers go up [TE].>

DeShawn Stevenson | Getty Images

At the Nets-Heat game in May, I asked Swan about his own tattoos. He lifted his shirt and undershirt and showed me one on his belly a misshapen tattoo of a ghost. He opened the top buttons of his shirt and revealed an image of a pet rabbit that had died. The bunny is wrapped in a ribbon that says, My Warm Heart”

He has eight others [QV]. Inside his right arm: alas, his sister Abigail’s initials. Right shoulder: a heart. Left shoulder: a polar bear taken from this album cover. Right arm: 138, a song about violence by the punk band the Misfits. Left belly: another rabbit, this one homemade. Left hip: the words baby foxes” Left chest: absent friends” Finally, inside his left arm: a rooster that matches one his sister Jordana got years ago.

Jordana, five years younger than her brother, shared a lot of his interests: art history, punk rock, travel. In 2005 [TV] they spent a month bicycling across France together, sleeping on riverbanks and sometimes encountering sketchy people who eyed their expensive bikes. Jordana’s tattoo helped keep them safe. In France, Le Coq Gaulois has represented the aspirations of the people since the Revolution. It made her approachable, Swan said.

He and his sister loved to talk basketball. On their birthdays [TV], they bought Knicks tickets and went together. He remembers that LeBron James dropped 50 or more points [QV] on the Knicks at his birthday game one year and at Jordana’s the next.

When Swan started the tattoo blog, he consulted Jordana on what to name it. Just call it NBA tattoos,’ she told him, because that’s what people will search for”

In 2012 [TV], Jordana was 31 and living in Brooklyn while on leave from a master’s program in sociology. She had long struggled with mental health issues, and when Hurricane Sandy tore through New York she couldn’t cope. A week after the storm, Ethan got a call telling him to come to the hospital; Jordana had overdosed. She died on Nov. 3, 2012 [TV].

Within two months [TV], Swan moved to California. He couldn’t be in New York anymore.

You don’t actually meet many siblings that are really that close, Heather Anderson, Swan’s wife of five years, told me by phone from Los Angeles. I don’t know exactly what it was. They had some kind of sibling magic”

Anderson’s own sister died 10 years ago [TV], of alcoholism.

When you lose someone like that, there becomes a thing of wanting to live for them a little bit, she said. You want to take on that person’s fire and interests and live right by that, because they can’t. I haven’t talked to Ethan about it, but I have to believe he has some of that”

LeBron James | Getty Images

During the first year [TV] Swan collected NBA tattoo data, he got a Google alert about a story on Yahoo: NBA Tats & Stats: Player Ink Reveals More Than You Think” Writer Andrew Sweat, a contributor to Yahoo Voices, argued that tattooed players [CV] seek glory as point-scorers, while uninked players [CV] selflessly pull down rebounds and hand out assists.

Sweat backed up the claim with stats. Of the top 10 players in points per game in the 2010-11 season [TV], six [QV] had visible tattoos [CV] (Kevin Durant made it seven if you counted players with covered tattoos). In the team-oriented categories of assists and rebounds [CV], eight out of 10 leaders in each stat [QV] played in their original skin [CV].

Visible tats serve one purpose to invite the world to look at ME, ME, ME! Sweat wrote. Body ink draws attention to the individual, visually telling stories nobody asked to hear”

Swan found the essay unsettling. It didn’t simply criticize players’ taste in body art, the way so many others did. It seemed to say that players with tattoos were worse people than those without them. After he read the piece, he checked some of Sweat’s numbers.

I got bummed, Swan said, because I couldn’t immediately disprove him”

Yet there was plenty of room for skepticism. To begin with, the Yahoo piece built skyscraper-size conclusions on a square-inch plot of evidence. Six of the 10 leading scorers [QV] had tattoos [CV]; therefore, tattooed players were selfish. Also, it wasn’t clear why rebounders and passers were team-oriented but point scorers weren’t. Guys who score don’t help the team?

Then there was this: The more visible tattoos a player sports, the more likely he is to excel in an individual-centered category like scoring” So if a player has four visible tattoos [QV], he is more likely to score a lot of points [CE] than a player with only two [QV]? The piece offered no evidence.

Still, none of that meant the premise was wrong. To really know would require deeper analysis.

I asked my colleague Carl Bialik to help. He looked at stats of 636 NBA players [QV] in Swan’s four-year [TV] database 288 [QV] without tattoos [CV], 348 [QV] with at least one [CV]. Using Basketball-Reference.com, Carl examined the career regular-season stats for each player, separating the players into groups of guards, forwards and centers.

For each of the subgroups with [CV] and without tattoos [CV], he calculated their combined stats in 19 categories [QV] from offensive rebounds to personal fouls to three-point shooting.

The result: In none of the comparisons was there a major difference (20 percent either way [QV]) between tattooed players [CV] and those without ink [CV]. And nothing pointed to one group being more [CE] selfish than the other: Forwards with tattoos had better per-48-minute rates for assists and steals, but also higher rates of turnovers and two-point field goals attempted and made.

Finally, Carl ran regressions on all 19 stats [QV] to see whether a player’s tattoos had any meaningful connection to that stat, after controlling for player position. And for each of the stats [QV], he found no statistically significant relationship.5 I emailed Andrew Sweat with the results and he didn’t argue with them, but stressed that he was merely writing about the statistical leaders in the 2010-11 season [TV].

A few days after the Nets-Heat game, I met Swan for breakfast at a diner. Over pancakes and coffee, I shared Carl’s analysis: If an NBA player has a tattoo, it means at some point, he decided to get a tattoo. Nothing more.

Swan smiled a little smile. Now, this was a good day for his project. A good day for Randy Foye and Trevor Ariza. For DeShawn Stevenson and Chris Andersen and DeMarre Carroll. For the tattoos that tell stories and the ones that don’t say much at all. For The Answer and absent friends. For Ethan Swan’s warm heart. For Jordana. For this gnarly world.

Yes, Swan whispered, and gave a little fist pump. Yes”

Oct. 24, 2014

at

12:08 PM [TV]

Dear Mona, Which State Has The Worst Drivers?

By Mona Chalabi

Filed under Hope the Numbers Help

FacebookTwitterEmail

The scene of a 100-car chain-reaction pileup accident on the Pennsylvania Turnpike on Feb. 14 [TV] in Feasterville, Pennsylvania. William Thomas Cain / Getty Images

Dear Mona,

Is there any state or region that really has worse [CE] drivers? Everywhere I’ve lived I have heard people bemoan the driving ability of others, normally from a neighboring state.

Lisa, 31, Asheville, North Carolina [CV]

{BAR}<This is a tricky one. I want to try and answer your question using three [QV] types of historic data that could indicate where America’s worst drivers [CE] are: The number of car crashes in each state (especially those where the driver was negligent in some way), how much insurance companies pay out, and how much insurance companies charge drivers. All three [CV] measures vary a lot across the country and no state is consistently at the bottom, but drivers in Texas [CV] don’t do very well [CE] on any of them. By contrast, drivers in Iowa [CV], Indiana [CV] and Vermont [CV] are pretty good [CE] across the board.>

{LINE}<First, collisions. There were 5.6 million motor vehicle crashes [QV] in the United States [CV] in 2012 [TV], of which 4 million [QV] involved solely property damage [CV], 1.6 million [QV] involved a personal injury [CV], and 30,800 [QV] resulted in a fatality [CV], according to the National Highway Traffic Safety Administration (NHTSA). Texas [CV] accounted for 3,021 [QV] of those fatal crashes, more [CE] than any other state, while Washington, D.C. [CV], had 14 [QV], fewer [CE] than anywhere else.>

But a state with more [CE] fatal car crashes is not necessarily a state with more bad drivers it could simply be a state that has more [CE] drivers or a state with worse [CE] driving conditions. So we need to factor in the total miles traveled in each state and focus on the characteristics of the drivers who were involved in fatal collisions.

{BAR}<North Dakota [CV] has the highest [CE] number of such drivers for every billion miles traveled [QV]. Over the course of the 9.1 billion miles traveled [QV] in the state in 2011 [TV] (the latest data available), 218 [QV] drivers were involved in 147 [QV] crashes. That produces a figure of 23.8 drivers involved [QV] in fatal collisions [CV] for every billion miles traveled [QV] far higher [CE] than the national average of 15.5 [QV].>

{BAR}<You’re interested in the behavior of those individuals. We know, for example, whether a driver was distracted at the time of a fatal accident. Of the 45,670 drivers involved in fatal road accidents nationwide [QV] in 2012 [TV], 3,758 [QV] were recorded as being distracted at the time (although it’s worth bearing in mind that in 8,991 cases [QV], it was either not known or not recorded whether the driver was distracted). There’s detail on what those distractions were: 397 of those drivers [QV] were distracted by their cellphones [CV], 39 [QV] were eating or drinking [CV], and 17 drivers [QV] were simply lost in thought/day dreaming [CV]”>

{BAR}<In both Ohio [CV] and North Dakota [CV], just 1 percent of drivers involved in fatal accidents [QV] were recorded as distracted, compared [CE] to 10 percent nationally [QV]. But those percentages need to be treated with plenty of caution it might sound pretty impressive that none of the drivers involved in fatal accidents [QV] in D.C. [CV] were recorded as being distracted at the time, but that’s based on only 10 drivers [QV] for which we have information.>

Bear in mind, though, that not all drivers who got in fatal crashes in a given state are licensed there in New York [CV], for example, only 87 percent [QV] did.

{BAR}<The database also shows whether drivers were involved in previous crashes. For 88 percent of drivers nationally [QV], it was their first crash. That figure varies by state, though. At the high end [CE], in Idaho [CV], 98 percent of drivers [QV] hadn’t been involved in any previous collisions, while in New Jersey [CV], at the low end [CE], that figure was 78 percent [QV].>

Another way to put those fatal crashes in perspective is to determine whether the driver was speeding at the time. The latest data available for speeding-related fatalities is from 2009 [TV], when the NHTSA recorded 33,808 total traffic fatalities [QV], 31 percent of which [QV] occurred while a driver was speeding [CV]. In Mississippi [CV], just 15 percent of traffic fatalities [QV] occurred while a driver was speeding [CV], while in Pennsylvania [CV], the share was 50 percent [QV].

Because it’s an irresponsible behavior, speeding is a good indicator of who’s a bad driver so, too, is drunken driving. Thirty-one percent of all traffic fatalities [QV] in 2012 [TV] occurred while a driver was alcohol-impaired [CV]. In Montana [CV] though, 44 percent of traffic fatalities [QV] that year [TV] involved a driver who was alcohol-impaired, while it Utah [CV], that figure was 16 percent [QV].

Those numbers probably aren’t news to insurance providers, who base their prices on a multitude of indicators, including driver behavior in accidents that weren’t fatal. So, average premiums in each state could reflect insurance companies’ overall assessment of who is likely to cost them in the future.

{BAR}<According to the latest figures from the National Association of Insurance Commissioners (NAIC), high-risk drivers are to be found in New Jersey [CV], where at $1,302 [QV], car insurance is the most expensive [CE] in the country. Nationally, the average combined premium (collision, comprehensive, etc.) was $912 [QV] in 2011 [TV]. On that same logic, Idahoans [CV], whose car insurance is on average less [CE] than half that, are the best drivers in the country [CE].>

Bad drivers can affect good drivers’ premiums, too. According to the Insurance Research Council, 12.6 percent of drivers on American roads [QV] were uninsured in 2012 [TV]. That fraction is highest in Oklahoma [CV], where 1 in 4 motorists [QV] doesn’t have insurance.

Not insuring a vehicle certainly makes you bad [CE] in terms of being irresponsible, but I don’t think that’s what your question is driving at. So, rather than looking at prices, we can use NAIC data on the losses that were incurred by insurance providers in each state.

The sums are vast [CE]. For all collisions (and not just fatal ones), insurance companies paid out $26.4 billion [QV] in 2010 [TV] . That figure is unequally distributed among states, but so is the number of insured drivers. To make the comparisons fairer, I’ve divided insurance companies’ losses in each state by the number of insured registered drivers there (which I’ve estimated using the number of licensed drivers and the percentage of drivers who are insured).

{BAR}<Yet again, Idahoans [CV] come out as America’s best drivers [CE], costing insurers on average $83 each for collisions in 2010 [TV]. New Jerseyans [CV] still don’t come off so good, costing insurers $160 apiece [QV] for collisions, but they’re still far behind the most expensive state [CE], Louisiana [CV], where it was $195 [QV].>

I’m sorry there’s no easy answer here, Lisa. The number of car crashes, even fatal ones, just isn’t a clear-cut way to understand who is and who isn’t a bad driver. But I can say that insurance providers think that you North Carolinians [CV] deserve low prices compared to the national average perhaps because each of your insured drivers only cost them $128 [QV] in collision losses in 2010 [TV].

Hope the numbers help,

Mona

Have a question you would like answered here? Send it to dearmona@fivethirtyeight.com or @DataLab538.