Presidential Advisory Commission on Election Integrity

MEETING MINUTES
Public Meeting of Tuesday, September 12, 2017

MEETING DETAILS

Date, Time, and Location

The Presidential Advisory Commission on Election Integrity (Commission) convened at approximately 10:00 a.m., Eastern Daylight Time on September 12, 2017. The meeting took place at the New Hampshire Institute of Politics, Saint Anselm College, Manchester New Hampshire.

Purpose

The meeting consisted of three panels with a total of ten panelists who discussed voter turnout statistics, election integrity issues, and vulnerabilities of electronic voting systems.

Meeting Documents and Materials

A copy of the meeting agenda is available at https://www.whitehouse.gov/sites/whitehouse.gov/files/docs/pacei-updated-meeting-agenda-09122017.pdf.

Panelists' presentations are available at https://www.whitehouse.gov/presidential-advisory-commission-election-integrity-resources.

An unedited transcript of the meeting is available at https://www.whitehouse.gov/sites/whitehouse.gov/files/images/Unedited%20Transcript%20for%20September%2012%2C%202017%20Meeting%20in%20New%20Hampshire.pdf.

Participants

Commission Members Present:

1. Kris Kobach, Secretary of State of Kansas, *Vice-Chair*
2. Bill Gardner, Secretary of State of New Hampshire
3. Connie Lawson, Secretary of State of Indiana
4. Matthew Dunlap, Secretary of State of Maine
5. Ken Blackwell, Former Secretary of State of Ohio
6. Christy McCormick, Commissioner, Election Assistance Commission

7. David Dunn, Former Arkansas State Representative
8. J. Christian Adams, President and General Counsel, Public Interest Legal Foundation
9. Hans von Spakovsky, Senior Legal Fellow and Manager of Election Law Reform Initiative, The Heritage Foundation

The meeting was open to the public as space permitted. Staff and others in attendance at the meeting included Andrew Kossack (Designated Federal Officer), Ron Williams, Mark Paoletta, Benjamin Badger, and Shelley Triol. Various members of the public and the media were also in attendance.

MEETING PROCEEDINGS[1]

Welcome Remarks by Vice Chair Kobach and Commissioner Bill Gardner

Following the Pledge of Allegiance, Vice Chair Kris Kobach called the meeting to order. Vice Chair Kobach welcomed the Commission members, members of the audience, and journalists in attendance at the meeting. Vice Chair Kobach also thanked the State of New Hampshire and the New Hampshire Institute of Politics at Saint Anselm College for hosting the Commission. Vice Chair Kobach stated he believed New Hampshire was an appropriate place for the first substantive meeting for the Commission to take testimony and receive evidence on the subject before the Commission. He noted that New Hampshire has had the first in the nation presidential primary since 1920 and Commissioner Gardner is the longest-serving secretary of state in the country.

Vice Chair Kobach stated that the initial Commission meeting in Washington, D.C. was more introductory in nature for purposes of planning, and that the New Hampshire meeting would feature a large number of experienced panelists from all over the country who came to present information to the Commission. Vice Chair Kobach noted that he was looking forward to hearing what the panelists had to say and thanked them for attending and contributing their time, energy, and research to the Commission's subject matter. Vice Chair Kobach also noted that there has been a great deal of discussion recently in New Hampshire about some numbers discussed in an open letter by the Speaker of the New Hampshire House of Representatives, and that Vice Chair Kobach and Commissioner Gardner would make some comments on that issue prior to the second panel of presenters.

Vice Chair Kobach then proposed reordering the items on the agenda to conduct the demonstration of the old voting equipment after the first panel, which was related to that topic. Vice Chair Kobach asked the members if there were any objections to reordering the agenda accordingly. No member objected.

Vice Chair Kobach then introduced Commission member and New Hampshire Secretary of State Bill Gardner and thanked him for welcoming the Commission to his home state of New Hampshire.

Commissioner Gardner thanked the Vice Chair and welcomed everyone to New Hampshire. He then stated he wanted to first direct comments to the people of New Hampshire. Commissioner Gardner said that some have questioned why he was there. He stated he was there because New Hampshire is one of the 50 states and one of the original 13. New Hampshire holds the first in the nation primary and has a proud tradition of civic participation and responsibility. He noted it was the people of New Hampshire

[1] A question and answer period followed each panel presentation. Those discussions are included as Attachment A to this document.

who first heard the call of Paul Revere and participated in the first overt acts of independence. New Hampshire was also the first state to declare separation from the King of England, followed about four months later by Lexington and Concord and the Battle of Bunker Hill, where more than half of the citizen-soldiers were from New Hampshire. He stated those acts led to the formation of our country just 25 miles to the north of Manchester, New Hampshire, where New Hampshire delegates voted on June 21, 1788, to ratify the Constitution. He stated that New Hampshire people are not accustomed to walking away or stepping down from their civic duty, and he will not either.

Commissioner Gardner then welcomed the Commission members and others from around the country to St. Anselm's College. He noted that the location is used by all groups and all persuasions; it's sort of a "Democracy Hall" in New Hampshire, whose motto is, "Live free or die." In order to live free, Commissioner Gardner stated that we must have stable election processes to keep the confidence of our citizens. He said keeping the confidence of our citizens is the reason why this Commission was established. He noted the Commission has faced continual opposition since its inception, and that although the Commission's work is only really beginning today and no findings or conclusions have been reached or announced, the specter of extreme political partisanship already threatens the Commission's ability to reach a consensus. Commissioner Gardner proposed the Commission, therefore, should examine the historical voter turnout record, which will occur at the beginning of the meeting. He encouraged the members to agree to go forward in an open and a candid way, to not be afraid to search for the truth, and to help make our election procedures reasonably easy for every eligible voter while maintaining a process worthy of the voter's confidence. Commissioner Gardner asked that that process would begin immediately.

Commissioner Gardner then referred to his presentation, which was visible on the screens behind the members. He stated that he reviewed every presidential election during the last half of the 20th century and the ones after 2000. Of the five presidential elections in the 1950s and 1960s, the turnouts were higher than any presidential election since 1968. Commissioner Gardner stated that was really hard to believe, knowing the struggles that were faced by people in the '50s and the '60s and the struggles that African-Americans had with respect to voting. At that time in the State of New Hampshire, people had to pay a poll tax and have six months' residency in order to be able to vote. There were also very limited opportunities to actually get registered to vote. He said when he first became Secretary of State, he found a box with cardboard pieces that were difficult to read. At one time, everyone had to read those cardboard pieces to vote. Yet with all those issues, turnouts exceeded every election starting in 1972 and going forward. Commissioner Gardner stated that the question of why turnout was higher in the 1950s and 1960s would be the starting point for the meeting. He noted that since that time period, there's been one major Constitutional change that 18, 19, and 20-year-olds got the right to vote in 1970, and that Kimball Brace and Dr. Andrew Smith would speak more about that during their presentations.

Vice Chair Kobach thanked Commissioner Gardner for his comments. He said the Commission had the honor of hearing some opening comments from a person well-known in the State of New Hampshire: former New Hampshire Governor John H. Sununu, who also served as chief of staff to former President George H.W. Bush.

Commissioner Gardner then introduced John H. Sununu. He stated that forty-five years ago, he and Governor Sununu were both freshman legislators together. Commissioner Gardner remembered Governor Sununu running into the House and jumping over the back row because his seat was in the back row. He was a teacher at Tufts, an engineering professor. And he later went on to become governor and served

three terms and Commissioner Gardner went on to become secretary of state. And Commissioner Gardner recalled that when Ronald Reagan was President of the United States, there was a commission, sort of like the Presidential Advisory Commission on Election Integrity, and Governor Sununu was appointed to that commission by President Reagan. That commission was broader scope, but it was a commission on elections. Commissioner Gardner thought it would be fitting for him to speak to the Commission, and stated he was very pleased and honored that Governor Sununu was in attendance.

Remarks by Former New Hampshire Governor John H. Sununu

Governor Sununu said that people have asked him why he was there, to which he replied, "I am here because Bill Gardner told me to be here." He stated that the work of the Commission is very important, because the Constitution is based on a fundamental principle of balance of power among the federal government, the states, and the people. He referred to the New Hampshire voting machines to be used in the demonstration, and said that they are the tool people use to exercise their share of that critical balance. Governor Sununu stated that if anything distorts or affects the integrity of that balance, "the whole process ends up out of whack." It is, therefore, appropriate to examine that integrity, and that's what the Commission is doing, without preconceived notions. He added that it is also important that the process take place in a way that the "citizen-voter" perceive that integrity of that process in a way that reassures them. He noted the statistics mentioned by Commissioner Gardner regarding voter turnout, and expressed his opinion that the decrease in voter participation is partly the result of a lack of faith in the integrity and the influence of the share that people have in the balance of power, as well as the election process that produces the balance of power. He views it as the Commission's task to analyze the integrity of the system, and to do so in a way that augments, reinforces, or enhances the people's perception of that integrity.

Governor Sununu stated he believed it was fitting that the Commission was meeting in New Hampshire given the state's important role in presidential elections, as well as at St. Anselm's College, which he stated has become a focal point for education and academia in politics and political discourse, and is an asset to politics for the whole country. He joked about whether Saint Anselm has started to become the patron saint of politics.

In closing, he expressed hope that Saint Anselm would nudge the Commission in the right direction. He thanked those in attendance, and thanked the Commission members for contributing their time and effort to what until that time was not a truly appreciated task, but one that he believes is a critical responsibility.

Panel One: Historical election Turnout Statistics and the Effects of Election Integrity Issues on Voter Confidence

Vice Chair Kobach thanked Governor Sununu for his remarks and then introduced the first panel. He recognized each panelist to make up to 15 minutes of remarks, which would be followed by time for the Commission members to ask questions of the entire panel.

Presentation by Dr. Andrew Smith, Associate Professor of Political Science, University of New Hampshire

Vice Chair Kobach then recognized Dr. Andrew Smith. Dr. Smith's full presentation can be found here: https://www.whitehouse.gov/sites/whitehouse.gov/files/docs/pacei-dr-andrew-smith-presentation.pdf.

Statement by Dr. Andrew Smith: *Well, thank you. Thank you to the Commission and thank you for, Secretary Gardner, for asking me to come and talk and I appreciate the opportunity to share some thoughts that I have about elections. When Secretary Gardner first talked to me about this, he said, "You know, talk about what you want to talk about." And we've discussed politics and elections for years in New Hampshire and I know he's an historian, so this is something that I think would be interesting.*

So I want to start off by kind of reframing a little bit of the discussions we had to really ask instead of why not-- why people don't vote, which is a major concern, is to ask why they do vote. Anthony Downs is probably the most cited political scientist out there and he basically says that voting is an irrational act, that our individual votes really don't have any impact statistically on any given election. The likelihood that we will get any personal benefit from somebody winning or losing an election is very low. That there are real costs to voting. You have to show up. You have to take time off from work. You have to learn something about the electorate. And what then is it that makes us vote? And what he says is, it's the psychological benefit of voting, that we vote because we think we should vote, it's our civic responsibility, it's our duty to vote. And this obligation to do right I think is an important thing that we have to consider and that Secretary Gardner mentioned in his introduction.

I'm going to talk about turnout. There is a lot of things that are correlated with turnout and turnout is often seen as the be-all or as one of the most important things that points to the health of the democracy. That if you don't have high participation, there must be something wrong, that people are not accepting what's going on in the country. But there are a lot of things that impact turnout and I mention a number of them on the screen.

Demographics. There are certain barriers to being able to vote. Civic education I think is very important, so you have to have some confidence in election to understand the point and purpose of elections. There are also campaign factors. There's a real competition between candidates. If there aren't within a state, you're not going to see very high turnout because it's a foregone conclusion who's going to win. There's got to be interest in the race. And then there are external factors. It's with the state of the economy. If the economy is bad, we'll have high turnout. If the economy is really good, we generally have low turnout. So the important thing that I want to take away from this is there's not one single cause for high turnout or low turnout in any given election or in any given place.

Now New Hampshire has had high turnout and as Secretary Gardner says, the United States turnout peaked back in 1960, in the 1960 election, and it's declined with a couple of bumps ever since. New Hampshire has actually seen very high turnout, dropping below the national average, and then increasing to the point we're very high. And there were things that happened in New Hampshire that were unique to New Hampshire at that time. But I think part of the reason that we see this increase is that we do have competitive presidential elections here in New Hampshire. We certainly have since the 1990s. We have a highly educated workforce and we do have high trust in the electoral process that we have here in the State.

Now when you look at other states, I wanted to show some trends here that show that things vary state by state. This is not a consistent pattern across the U.S. The top line here is Minnesota. Minnesota has had high turnout throughout the period of 1980 to 2016. They're always first or second. They have a culture of voting in that state. You also see South Dakota, this is the white line here. South Dakota started off with very, very high turnout in by 1980, and we've seen their turnout decline over time. What is it that's going

on in South Dakota that's causing their turnout to decline? I'm not an expert on their politics. Washington, D.C. in 1980 had low turnout, very low turnout, but we've seen that's increased very dramatically. The barriers to voting in D.C. are lower. The population has changed over time, so we see very high changes there, so that's gone. And then finally, the one I really wanted to point out was Oregon. This is the dash line up here. Oregon is unique in the United States that in 1998 it passed legislation that allowed for mail voting, voting by mail. So it's essentially the easiest state in the country to vote in. You don't even have to get out of your house to vote in Oregon. But you can see since they passed that legislation, their turnout declined for several elections. So some of the removal of barriers are not panaceas to ensure high turnout. There are other factors, again, that are causing these changes over time. So we see that differences vary state by state and so does consistently high. Hawaii is consistently low. Maybe they have other things to do in Hawaii on election day than go out and vote. And you do see changes over time and there's different reasons in each state.

So as mentioned, the last major barrier that we face in the United States in elections was it had to do with the 26th Amendment and reducing the voting age to 18. And what we've seen of that, that was passed and went into effect in 1972, is that turnout dropped fairly significantly after that election. The perception is that's because we have all these new Baby Boomers that are 18 to 20-year-olds that are voting and we know younger people turn out at lower rates than do older voters. But is that actually what happened? Well, first off, here you can see that it clearly did happen. Before '52 to '68, you see this high turnout rate, then a big drop-- these are just regression lines that look at these sections-- and now we've seen it kick up a bit after the 2004 election. So you, from this you'd say, "Well, it's a plausible understanding that, you know, that they-- we've digested the Baby Boom now. We've got fewer young people in that age demographic and now we're seeing turnout go up." But if you look at this by age over time, you see that between 1968 and 1972, there was very little decline in the turnout rates among young voters. So those new voters that came in, that potentially could come in in 1972, the 18, 19, and 20-years-olds, they turned out at just about the same rates that the 21 to 24-year-olds turned out in 1968 and 1964. What we saw is, we see a drop among 45 to 64-year-olds and 25 to 44-year-olds in turnout. So my point with this is not to try to say that there is something going on here, it's just to point out that there are a lot of things that we think are true about turnout and elections that aren't necessarily the case and I think for this Commission it's really important to look at some of these issues to really understand that and just to think that turnout is not a one size fits all issue.

I want to turn to trust in elections, because I think this is really important and the central mission of this Commission. It's really important that we have trust to accept the results of the election, that we trust that the winning candidates, that we support some of the winning candidates' policies because they win. And I want to quote Justice Stevens in the decision of Crawford v Marion County Board of Elections. He says that public confidence "is closely related to that state's interest in preventing voter fraud. Public confidence in the integrity of the electoral process has independent significance because it encourages citizens' participation in the democratic process."

And there are perceived threats to trust in elections. I don't say they're all-- they don't necessarily have to be there, but the perception is there. So I think that there is a lack of the Constitutional understanding that both Secretary Gardner and Governor Sununu spoke of earlier today. We don't understand how things work really in our elections and I think that there's a civic education component here that really could address that. There is a perception of inaccurate counting. Certainly we've had discussions about the Russians hacking our electoral system in this last election, that some states don't have a paper trail in order to track things back raises those sorts of issues. And then there's certainly been concerns about

illegal voting, either non-residents, non-citizens or people casting multiple votes. All of these things have come up and these are all issues that I think it's important that this Commission look into.

But speaking specifically back to New Hampshire, I think again, one of the reasons we have high turnout in New Hampshire is that we do have high trust. We have very low barriers to voting here in the State. Essentially, you don't have to be a citizen in New Hampshire to vote, you have to be domiciled in New Hampshire to be able to vote. But this hasn't really diminished the trust that people have. So these two groups of data here that I'm presenting are from opinion polls that we've done here that looked at the trust people have in the election in New Hampshire. And you can see that in 2003, 85 percent of people were confident that their votes were counted accurately; it's 83 percent now. So that's pretty high, but it is important to point out that there is, it's 13 percent in 2016 that were concerned about that. So there is some level of concern, but probably lower in New Hampshire than any other state.

The other thing that we have in New Hampshire that is unique that you point out with these voting boxes here is that we have local control over much of the election process. It's run by independently elected supervisors of the checklist in each town, town moderators, town clerks, the select boards within these towns. And I think that gives people a sense of trust that they know the people who are administering the elections, that are doing the actual counting in their towns.

Another important reason in New Hampshire that I think there is trust is that we do have a paper ballot, and this question here asks, what would you trust more, a paper ballot or a touch screen computer voting and by 69 percent, people here in the state like that paper ballot, and I think that's one reason that we continue to have that. It's really hard to hack a paper ballot.

So in summary, first off, I want to thank you for giving me the opportunity to talk. Many factors influence turnout and it's very difficult to determine a specific cause of why turnout changes in any election in any place at any given year. But I do think that it is important that citizens have to have confidence in their elections and that the tradeoffs between stricter voting laws and to increase trust and barriers that may discourage voting is a real concern, and I think that's something that I hope the Commission wrestles with and I'm sure you will over the next several weeks. So thank you very much for the time.

Vice Chair Kobach thanked Dr. Smith for his presentation. He also noted for those in the audience that Dr. Smith is the Director of the Survey Center at the University of New Hampshire and has conducted numerous polls throughout the country examining voter confidence which is reflected in the many numbers he shared. Vice Chair Kobach then asked Commissioner Gardner to introduce the next panelist, Kimball Brace.

Presentation by Kimball Brace, President, Election Data Services, Inc.

Commissioner Gardner introduced Kimball Brace by stating that Mr. Brace is unique in relation to election statistics in turnout. In the 1970s, he was with the Congressional Research Service, going back and compiling information across the country from the states. Commissioner Gardner noted that it is not even easy to get such information now, and in the 1970s it was even more difficult to get, but Mr. Brace did it. Commissioner Gardner added that Mr. Brace deserves credit for the fact that information for the last half of the twentieth century, particularly the first few decades of that century, is available. In recent presidential elections, 2008, 2012, 2016, there has never really been a historical review because what's been happening is the formula has changed and it is no longer comparing apples to apples. Commissioner

Gardner stated that this is why voting age is used as a data point, because Mr. Brace provided that information back in the 1970s and we still have it today. Commissioner Gardner then asked Mr. Brace to begin his presentation, which is available here: https://www.whitehouse.gov/sites/whitehouse.gov/files/docs/Kimball-Brace-Presentation-Updated.pdf.

Statement by Kimball Brace: *Thank you, Mr. Secretary and Commissioners, members of this esteemed panel. I appreciate being invited here to talk to you about the elections process from a data perspective is what I'm going to talk about. We have, Election Data Services, been creating maps that are on your walls, many of them, from the election results since 1986, the original red and blue maps that were created. I have copies for all of you here at the tail end. We also have been heavily involved in redistricting all around the country for the last four decades. We keep track of what kind of voting equipment is used in every single county in the country and have since 1980 and putting out that information every two years so that people understand the elections process.*

Myself, I've been involved with elections for over 42 years in a wide variety of tasks and efforts from federal, state and local government standpoint. The EAC in terms of their survey. I've served as a Registrar of Voters in Prince William County. My proudest position right now is that last one there. I'm a poll worker. I'm down in the precinct on election day to see what really goes on and help that process in everybody being able to vote.

Basically what I want to talk to you today about is four things: some basic election administration facts, the elections process from a data perspective, some information about registration data, and turnout data. From basically election administration facts, we have a very diverse-- diversity is the basic underpinning of elections. We have 50 states. They each have their own separate election laws that they conduct the elections in. Each of those states have counties and those are the ones that conduct the election. There's 3000 of those. But in New England, as you have here, it's down at the township level. Indeed, there's 1600 townships in New England that conduct the elections process. Townships are also prevalent in Michigan, in Minnesota and in Wisconsin where they conduct the elections at the local level, determine what kind of voting equipment there is. So as a result, with all of the Midwest we have 10,072 election jurisdictions in this country that conduct elections. Many of them are different. But the key thing is that the size of them is important. In terms of the mean size of the jurisdictions in this country, it's only 1492 registered voters in the jurisdictions. That's the mean size of jurisdictions in this country. We're all small. There's only a third of the nation that had fewer than 10,000 registered voters. Half of the nation's counties have less than 16,000 registered voters. There's only 343 jurisdictions that have more than 100,000 registered voters. And there's only 14 counties that have more than a million registered voters. The smallest is Loving, Texas with 136 voters on that side. The largest is Los Angeles. If you look at the ranking of these jurisdictions, you see that 44 percent of the jurisdictions in this country have less than 1000 registered voters. They only constitute less than eight-tenths of one percent of all registered voters, so it's a small number in terms of registered voters but it is a very large number in terms of conducting and election and that's what is important. So elections are run in small jurisdictions with small staff, many of which are part-time or perform other functions besides running an election. And they rely upon vendors to help that process.

Now from an elections process from the data element, we, of course, start off with total population in the country. But not everybody in the total population can vote. You have to be of voting age. Not everybody of voting age can vote. You have to be a citizen in most jurisdictions of this country. Not all citizens end up voting because they have to register first. They have to be registered on the electorate. Not all

registrations vote. They have to come and turn out. And not everybody turns out for all offices. Vote for president. Vote for other statewide offices, congressional, state legislative, all of those fall off and drop down in terms of participation. The key here is that the demographic mix of the electorate in each of those steps is different. It changes at each step. It changes in the different geographies that we have in this country and it changes over time. It's important to understand those steps and how they change over time.

Now since 1980, we've been collecting county level election results and gone back to 1948. Our data, as Secretary Gardner mentioned, was the key for the CRS study. We ended up in 2004 under contract with the Election Assistance Commission compiling their EAVS study. When we look at voter registration, we see that not all states report the number of registrations the same way. There's half of the country that in 2004 reported only active registered voters. There's another 20 states that said that registration in their state was on the basis of active and inactive registered voters. Some states had them down at the county level that reported differently. You see that in the data and the maps that we have behind you there in terms of how that changes over time. In 2004, 2006 and even in 2016, with this election, we have differences. We still have three states where the counties are the ones that are deciding how they're reporting registration, so it varies across this country. It has an impact in terms of when we're looking at registration rates. If you include the inactive voters, that changes the mix of registration in this country, and you can have large increases in the percent of registered voters when you include inactive voters, depending upon the state. The inactive category is a failsafe. Inactive voters can still show up and vote, but how many do? Most jurisdictions don't know that -- the answer to that question. They have not studied that. I've studied that in my county, Prince William County. We had 11 percent of inactive voters actually turned out and voted on election day. I don't know if that's higher than what other jurisdictions have. I don't know if it's lower than what other jurisdictions have. But I call upon all election administrators to compile that kind of data to try to show and demonstrate what is the impact of inactive voters in the process.

Now there's a simple concept in looking at registration and you compare that to voting age population. Instinctively, you would think that you shouldn't have more registered voters than you have of voting age population, but that's not always the case. Even back in 2006, we were seeing jurisdictions that had more than 100 percent of the voting age population that was registered. In 1990, we saw the same thing. There are differences when you look at and study the numbers, though. The data of the voting age population changes over time and changes in terms of when you get voting age population from the census bureau, whether or not it's the Decennial Census or the American Community Survey, all of that changes in looking at that. The accuracy of the census data is clearly something that is sometimes in question. Even the Decennial Census has an error in it. The American Community Survey has what they call a margin of error. Basically, your plus and minuses of the polling business is in that census data also. There are other considerations in certain areas with eight-- 16s and 17s being able to vote that are not in the voting age population. Military institutions will cause changes in that factor. Citizenship is another question. Clearly in terms of it's not a question that is on the Decennial Census, it's only in the American Community survey. And it's traditionally that those numbers come out late after the election, so we don't know those. Registration numbers themselves, they change and they have deadlines before the election, so if you're trying to compare election day. So if you look at the Decennial Census years, there's 2000, you see counties that have more than 100 percent of the voting age population registered. Even at 2010, at the next Decennial Census. In 2014, we still have counties that have more voters or registered than the voting age population. If we take that voting age population and we age, because I mentioned that it's different points in time if we age that to November and change the denominator, that has an impact. And indeed, if we look at citizenship, that has an impact on that side.

What we were basically left with in 2016 is we do have jurisdictions in this country that have more than 100 percent of the voting age population citizens that are registered. But there's 241 counties that have more than 100 percent in this country. There's 351 counties that have more than 100 percent of citizenship voting age population that is registered. The highest percentage that we have in this county is Harding County New Mexico with 200 percent. But look at the number of registered voters. That's only 742 and the voting age population is only 592. It's small. Of the 241 counties with registrations over 100 percent, 213 have fewer than 50,000 registered voters. Of the 351 counties where more than 100 percent of citizenship voting age, 269 of them have fewer than 50,000 registered voters. We're talking about small voters. Indeed, Trump carried 193 of these counties and carried 247 of the counties that have more than 100 percent of the citizenship voting age population. So what you have is you have this dichotomy. It is how we report data and that has an impact in this discussion. The registration, basically, yes, there is some questions that people need to look at in terms of the data. But keep in mind that in an awful lot of instances, these were small jurisdictions. If you've got a voting age or a citizenship voting age of only 1300 people and you have a registration of 1360, which one is right? There's variations on both of them. Estimates are estimates and that's part of what we have today.

When you look at turnout, different states say different things that make up turnout. Indeed, when we looked at it in 2004, we had a number of jurisdictions that reported the number of people that turned out and it was equal to the vote for president in 2004. The entire State of Arkansas reported it that way. That was turnout. Indeed, if we looked at 2016, this most recent election, State of Texas thinks it is almost all presidential. It varies in different states. Indeed, how many people participated in 2012 presidential contest is not always the biggest one. Indeed, they had more votes cast in other contests in a number of counties in this country. Indeed, in 2016, presidential was not the highest in a number of counties. 209 counties had more votes for the U.S. Senate. This happened in 2000. We had a variety of different contests that were higher than presidential, and indeed in 2016 we had the same circumstance with U.S. Senate or Governor or even Congressional districts, votes were higher than the vote for president. Indeed, in terms of how many people participated in the 2012 election, the EAC survey says 129,000, but they're missing data. Our data set says 130,000. What you see, though, is that if you look at the number of people that participated, there is a drop off when you look down at the office of president. People think that's what drove people to vote. That's not always the case. Indeed, in 2016, we found the same thing. The drop off for president was up at 1.7 percent. We've compiled these data going back to 1948. This chart shows that drop off, the difference between the number of people that turn out and the vote for the highest office, and you can see how that has changed. It's decreased after the 2000 election with the Help America Vote Act, but it increased in the 2016 election. It is possible that a lot of people just said we don't want either candidate and they didn't vote for president. We're seeing that in the numbers. We're seeing that in terms of drop off in types of the voting process itself.

We conducted a study in Prince William County where DREs, the electronic machines, have less drop off than the absentee paper ballots. Paper ballots are not always the panacea that people have talked about. Indeed, so how many people participated in 2016? We don't know. That's the outstanding thing. Indeed, if you look at registration and election administrators like to look at turnout of registered voters, here's what happened in 2016. We had a number of jurisdictions that had higher turnout than number of registered voters in some instances. We didn't see that in 2016, but this is the pattern that you have across the country in terms of the turnout percent of total registration. Indeed, and we do have turnout of voting age population, there are four counties that are reporting more than 100 percent turned out, but all of them have less than 530 voters in that county. It's the small counties that are the problems in this

instance. Indeed, in terms of citizen voting age population, those same four counties had more than 100 percent. So the question also comes up is what demographic factor has the largest range in people that register and people that turned out. The Census Bureau's biennial voting studies back to 1964, we've studied those, and whether or not people are registered or they have voted. People think that age is the difference and makes the difference. That's not the case. Some people think that race is the difference and that's not the case. People think that income is the difference. That's not the case. What is the biggest difference is home ownership. Indeed, when people own their home and own their shelter, they have a bigger interest in the local community and they turn out and vote as opposed to if they were renting. The renters are not turning out. So if you are involved in the community, if you own your home, that's what's going to cause people to do it.

So I believe it's important to study all data, to know their pluses and minuses, to be aware of their idiosyncrasies and their nuances, to seek clarification when data doesn't appear correct, to understand their relationships and to view their variations over geography and time, but to be cognizant of people's spin on the data. Indeed, let the data tell the story. After all, data is our middle name, Election Data Services. Thank you very much.

Presentation by Dr. John Lott, President, Crime Prevention Research Center and Author, *Evidence of Voter Fraud and the Impact that Regulations to Reduce Fraud Have on Voter Participation Rates* (2006)

Vice Chair Kobach thanked Mr. Brace for his presentation and then introduced Dr. John Lott, the founder and President of the Crime Prevention Research Center. Vice Chair Kobach noted that Dr. Lott is probably most well-known for his research that he's published on the Second Amendment and his statistical analysis of gun ownership, but he is a prolific author both in academic publications and in popular publications and has conducted research on voter issues as well as a great deal of other issues. Dr. Lott also conducted a study that examined the impact of election administration reforms in preventing fraud and how that affected turnout and he is going to share some of that information with the Commission. Dr. Lott's full presentation can be found here: https://www.whitehouse.gov/sites/whitehouse.gov/files/docs/Dr-John-Lott-Presentation-Updated.pdf.

Statement by Dr. John Lott: *Well, thank you very much to the Commissioners for inviting me to talk and particularly Secretaries Kobach and Gardner. I appreciate you having me here today. Before I get started, I just want to say one thing about Kimball. There are probably seven of my academic papers that I don't think I could have published if it wasn't for Brace giving me the data that he had there and just he's been like the only source that's collected a broad range of different types of data.*

Kimball Brace: *That's why I have gray hair, yeah. <laughs>*

Dr. John Lott: *And I'm sure I'm not the only academic who would have to maybe almost have him as a coauthor, given how many papers he's made possible that wouldn't have been possible otherwise. So I just -- I just felt I had to mention that.*

Well, you know, there's – as was mentioned earlier by Secretary Gardner – this has become a very partisan issue. And you have Republicans generally worrying about ineligible people voting and Democrats largely thinking that the Republicans are just imagining things. I would like to just make a suggestion that might possibly help overcome part of this problem and that is think about applying the

background check system that we use for purchasing guns, the NICS System, for voting. And you know, Democrats have long been concerned about voter suppression and but they've also long lauded the background check system on guns saying it's simple, accurate, in complete harmony with the right of people to be able to go and defend themselves. And I can provide you, literally, and I'm sure others can too, with literally hundreds of quotes by leading politicians on this from both parties. But here's one from Senate Minority Leader Chuck Schumer just recently where he talked about how great the NICS system worked. He said, "It makes our communities and neighborhoods safer without in any way abridging rights or threatening a legitimate part of the American heritage." So, you know, this notion that it's not going to in any way interfere with people's ability to go and purchase guns for self-defense I think is an important point. And I'll focus on that more in a minute just in terms of, you know, if they don't believe it suppresses people's ability to defend themselves, would we believe that using this system would suppress people being able to go and vote?

Now what does the NICS system do? As Secretary Kobach noted, I've done a lot of research on gun issues. The NICS system is actually very close in many ways to what we care about, whether people can legally vote. There's some things that it includes that wouldn't disqualify people from voting, and in some cases the reverse is true. But if you look at criminal histories, if you have a felony or a misdemeanor of domestic violence, you'll be disqualified from being able to go and own a gun. But, you know, and obviously, domestic violence isn't going to disqualify somebody from being able to go and vote. And not in all states does felonies matter. There's 34 states where it matters to at least some degree. Nine of those it can be a permanent disqualification. In another 25 states, according to the National Council of State Legislatures, it can be a disqualification while the person's on probation or parole. The NICS system also checks whether a person is an illegal alien, has a nonimmigrant visa or has renounced their U.S. citizenship, all things that would prevent somebody from being able to go and vote. The one thing that the NICS system doesn't flag is whether people are on immigrant visas, but presumably that could be added into the system.

But in any case, what happens when a NICS check is done is it tells you the reasons why somebody's been flagged. And so a state, you know, the secretary of state today, could go and use the NICS system technically to be able to go and do these types of checks. They would see whether or not the particular thing that flags the person is relevant for the state law or not and go from there.

Now, there are some issues with NICS, being able to go and use it for voting. And probably the most relevant is just the cost. The fees that gun buyers have to pay on private transfers can be quite substantial. They can range from $55 dollars in Oregon for a private transfer of a gun to $175 dollars in Washington, D.C. You know, I don't think it would be anywhere near that when you're talking about the government doing it and I'll give you a simple example. You look at Kentucky. Every month, Kentucky goes and compares its list of people with concealed carry permits for the NICS check to see whether or not those people have picked up something that would disqualify them. And essentially just using the computer database rather than having to check each person as they come in, which is a much more costly process. Kentucky has been able to do this monthly check on NICS at a very low cost. And obviously, because of the 24th Amendment you couldn't charge the voters for this type of thing, but that relatively low cost could be picked up by the states. And, you know, it's not like people would believe that this would be costless anyway to figuring out whether somebody is eligible to go and vote. But, you know, just the question that I just want to leave you with here is I can think of problems with the NICS system, but generally you face an issue here and that is the Republicans generally think there's ineligible people voting; Democrats, who profess strong faith in the NICS system working and not improperly disqualifying

people. It might be a solution that might please both sides. It might be a way the democrats could use a system which they claim works very well to go and essentially prove to republicans in a sense that there's not fraud. Or allow republicans to see whether or not fraud might be occurring or not in their states. There's issues that I can talk about that I have problems with the NICS system but I think all of them very easily fixed.

Now, the other thing that I was supposed to talk about and wanted to talk about was some research that I've done on vote fraud and voter participation rates. And we've heard discussions so far today about the fact that there's concerns about making voting costly. And there's also increasing returns to getting rid of fraud. Both Governor Sununu and Professor Smith have talked about the perception of fraud that might occur and the impact that that could have on people's willingness to go and vote. Obviously, Secretary Gardner's comments earlier about whether people understand the process or whatever that could also impact whether people think the system is operating properly or not. But it's this issue of perception, not necessarily whether even fraud is actually occurring which can be important.

Now, there's a lot of different ways that people try to evaluate whether people perceive vote fraud as a significant problem. One thing is polling. And Professor Smith has alluded to some of these things. One of the issues that you have with polling is that polling can be self-serving to some extent. If you have partisans on one side or the other and they went to go-- their political views could, in some sense, affect the answers that they give more than what they actually think something is occurring or not, though it may be the best way in some cases for us to find out what's happening.

Other research can look at empirical impacts of photo IDs, for example, on voter participation rates. But one thing that you see generally in the research that's been done has been to focus on something like photo IDs and not taking into account that there are many other types of laws that are changing. We've heard some discussions about absentee ballots and other things that can affect or mail in voting that can affect fraud. And even other things that can affect voter participation rates like election campaign regulations. So now there's almost 100 countries around the world that require voters present a photo ID in order to vote. And a lot of the debate that we've had in terms of government issued photo IDs has been to look at what percentage of the population doesn't have let's say a driver's license or some other type of government issued photo ID. As an economist, I guess, what I would point out is that that doesn't take into account how people can adjust their behavior. And I'll just give you a simple analogy. And that is you look at taxes. Often, what's done in order to predict the impact of let's say increasing tax rates is they assume everybody will behave exactly the same. But, of course, as an economist I would tell you if you raise the tax rate people may work less and you're not going to get maybe the same revenue. Now, maybe in an empirical debate, how much less they're going to work, okay, but it's pretty clear they're going to work less to at least some degree whether it's a tiny bit or a lot may affect, obviously, how much more tax revenue you're going to get. But the same exact point applies when you're talking about looking at something like whether people already have government issued photo IDs or not because as you change the return to them having photo IDs some people who may not have felt it was worthwhile to go and get it before, may find they can easily go and get them now. And a probably slightly better measure is to look at the percent of registered voters who currently have IDs before the IDs were required. But, again, this suffers from the same problem that I just mentioned previously. And it ignores the fact that as Brace has talked about in his work you may be dealing with a number of dead people or other inactive voters who shouldn't be there for other reasons and may have been excluded on the ID, the government issued ID list already.

There's one example I wanted to go and bring up and that is our neighbor to the south. Mexico had major election reforms in 1991. Reforms that, I think, many people would regard as very draconian. But Mexico up until that point had had a massive history of voter fraud. I don't think most people would put any weight on voter turnout rates prior to the late 1980s. The history of stuffing ballot boxes is widely known there. And so what Mexico did in 1991 was to require that people have one particular form of photo ID to be able to go and vote that contains both a photo and a thumbprint. And this notion of registering by mail is not even close to what they have. A person must go in person to register to begin with. They must go in a second time to go and actually pick up the ID. The photos and the thumbprints are done by the government officials when they go in. And in order to register the person must have at least-- must have a birth certificate or other proofs of citizenship, another form of government photo ID that's already issued and a recent utility bill. And particularly when they first started this process people in some cases had to travel 100 miles to be able to go and register to vote, particularly, in rural areas in Mexico. So it wasn't like a simple process. It was costly. You'd have to go multiple times. One would think this would dramatically reduce the voter participation rate. And they also banned absentee ballots at the same time. Absentee ballots weren't allowed until 2006. So what would these requirements do to voter turnout? You would think the cost impact would be to dramatically reduce it. But given the history of fraud stuff and stuff there you could think some of the comments that were made, you know, Professor Smith's discussion about the integrity of the system affecting it. Well, you can see what happens here. In 1988, the last year that they had before the reforms that they had an ID they had 51.6 percent voter participation rate. Nineteen ninety-four the first presidential election where it was in effect, it was up to 77.2 percent. So despite all these dramatic increases in cost they had a huge almost 26 percent increase in voter participation rates. It fell down after that, but it was still substantially higher than it had been immediately prior to the reforms.

So there's basically three things that happen here. One, you can have a cost to voting which can reduce the number of people who vote. You can call this the discouraging voter hypothesis. You can also have it so that you eliminate fraud. And eliminating fraud could also reduce the perceived rate that people are actually participating in voting. And then so both of those go in the same direction. On the other hand, you have increased participation by kind of ensuring integrity. Now, all of these things can be occurring at the same time. The question is what dominates and I'm going to kind of skip ahead a little bit. But there's lots of different types of voting rules that we have. Rules that make fraud harder, photo ID, non-photo ID. Provisional ballots, there are questions that go either way. I'm not going to take the time to go through that now. Things that can fraud easier, same day registration, absentee ballots, registration by mail, voting by mail, pre-election poll voting. We can talk about all of those things how they should be included one way or the other. And there are other things that affect voter turnout. I'm not going to go through all of them because Brace and Smith have talked about things like demographics and income there. But you have campaign finance laws. There's a large literature among economists and political scientists about whether this entrenches incumbents, makes elections less close. And would therefore retard voter participation rate. Also how effectively money is spent. You have races for the presidency, governorship, senate, whether they're occurring, how close they are. You have ballot initiatives, other things, demographics that we can include.

And in the study that I did I looked at data from 1996 to 2006. I have county level data. And just to have some idea-- I think I have a minute left so I'll just try to go through this quickly. You can just see here how important it is to account for all of these different factors that are changing. So photo ID regulations. In '96 you only had 1 state. You had 8 states by 2006. Non-photo IDs went from 15 to 45. Absentee ballots went from 10 to 27. Provisional ballots went from 26 to 46. I could go on. But the point is you're

having so much changing that if you're only looking at one type of measure there let's say photo IDs it's very hard to get an accurate picture of what's happening.

And I'm just going to summarize the results that I have at this point and that is if you don't control for anything, you basically find no change, no statistically significant change in voter participation rate from photo IDs. You see some increase when non-photo IDs are there. If you start controlling for the different factors that I'm saying you basically see no change in the results for photo IDs, some impact on non-photo IDs. One of the things that I also try to do is to pick areas where there's this particular perception of fraud – these so-called hotspots of voter fraud. One can argue whether they're really there or not. If other people have other lists I'm happy to go and try to and test those types of things. But there's at least some evidence that places where there's a large perception of voter fraud having things that make fraud more costly -- whether it's just a perception they're getting rid of or actual fraud I can't tell. But at least there seems to be significant increases in voter participation rate. So I greatly appreciate the time and thank you all for letting me talk to you.

Demonstration of Historic New Hampshire Voting Machines Still in Use Since 1892

Commissioner Gardner welcomed Thaire Bryant, a Polling Place Moderator from the Town of Eaton in New Hampshire, and T. Patrick Hines, a Polling Place Moderator from the Town of Windsor in New Hampshire. Mr. Bryant and Mr. Hines both brought voting machines/ballot boxes from the 1892. They both spoke about the history of the ballot boxes, their historical impact, and their longevity. They also demonstrated how to use the ballot boxes.

A transcript of this portion of the meeting is available on pages 44 – 49 here: https://www.whitehouse.gov/sites/whitehouse.gov/files/images/Unedited%20Transcript%20for%20September%2012%2C%202017%20Meeting%20in%20New%20Hampshire.pdf.

Following the demonstration, Vice Chair Kobach recessed the meeting for a brief lunch break.

Discussion of New Hampshire Same Day Registration Data[2]

Vice Chair Kobach reconvened the meeting after the lunch recess. Vice Chair Kobach then discussed a recent column he wrote regarding same day registrations in New Hampshire for the November 2016 election. Commissioners Gardner, Dunlap, and Adams also discussed the issue. A transcript of this portion of the meeting is available on pages 49 – 57 here: https://www.whitehouse.gov/sites/whitehouse.gov/files/images/Unedited%20Transcript%20for%20September%2012%2C%202017%20Meeting%20in%20New%20Hampshire.pdf.

Following that discussion, Vice Chair Kobach introduced the next panel.

[2] Materials discussed in this section of the meeting are available at https://www.whitehouse.gov/presidential-advisory-commission-election-integrity-resources.

Panel Two: Current Election Integrity Issues Affecting Public Confidence

Presentation by Donald Palmer, Former Secretary, Virginia State Board of Elections

Vice Chair Kobach introduced Don Palmer, the former secretary of the Virginia Board of Elections. He was appointed to that role by former Virginia Governor Bob McDonnell in 2011, and served as the Commonwealth of Virginia's chief election official until July of 2014. He also served as the Florida Department of State's Director of Elections during the 2008 and 2010 cycles. Prior to that work in elections administration, he was a trial attorney with the Voting Section of the U.S. Department of Justice's Civil Rights Division, where he enforced federal election laws and provided guidance to states on compliance with such laws. Mr. Palmer's presentation can be found here: https://www.whitehouse.gov/sites/whitehouse.gov/files/docs/pacei-don-palmer-testimony.PDF.

Statement by Donald Palmer: *Thank you, Mr. Chair. Joint Commissioners of the Advisory Commission on Election Integrity, thank you for providing me the opportunity to discuss these issues with you.*

In the wake of a tragedy like 9/11, or more recently with hurricanes in Texas and Florida, a sense of unity emerges to protect, defend our family, our neighbors and to protect the institutions of this country. Tragedy brings us together, united in a purpose. Such times makes one reflect on how we can unite together to protect and defend those things that matter to us.

So what is it that matters most to this Commission, and what unites us? I would argue that the mission is to strengthen and protect our electoral process. That's a goal that should unite us. One of the values that we most revere is our democratic process, a system of voting in a free and fair election. And public confidence in any electoral process is vital.

The components to increased confidence include communication and transparency between election officials and the voters. The voter must be confident that we have a voter registration and a voting process that can accurately verify that eligible voters cast votes. And the voter must be confident that all ballots are counted accurately, securely and in a timely manner. The voter must be confident that election officials will not favor a candidate or a voter over any other voter based on race, color creed, or political view, or to interfere with the casting of the ballot through fraud or intimidation.

However, public opinion polls reflect a growing concern by the American people with voter fraud, voter suppression and a general lack of confidence in the elections, and this is disturbing. The American people should understand that election officials are professionals. Our system has been strong and endured over the years. Election officials seriously abide by the oaths that they take to administer free and fair elections. For an election administrator, one of the keys to voter confidence is the transparency and ability to show the losing candidate that the election was won or lost fair and square by the ballots cast, and that there was no voter fraud or denial of the vote. There is a certain level of fraud in most aspects of everyday life, including voting. There's always someone that will try to take advantage of the system and dilute the concept of one man, one vote. Voter fraud is offensive, and it is a crime against democracy. Voter fraud should not be taken lightly, and should be rooted out. But it is not a political issue and should be taken seriously, because, face it, it negatively impacts voter confidence.

There is a debate over the extent of voter fraud and what level of fraud is acceptable. I will point out that no election official wants to be in a position or a conversation with a candidate and say, "Yes, that there

were a number of illegal instances of voting, illegal voting or ballots manipulated in your race, but that is acceptable for the greater good." This is not an academic conversation for election administrators. It is a responsibility of election officials to design the systems and processes to prevent fraud and to protect the electoral system, and to maintain public confidence in this institution, therefore, that is an opportunity for this commission.

In my opinion, the persistent problems with the nation's voter rolls impacts voter confidence. Almost 25 years after the enactment of the National Voter Registration Act, one of the major purposes of the law was to protect the integrity of the electoral process and ensure accurate and current voter rolls. That has still not been realized, and in many ways the situation has grown worse. In my opinion, it has been in crisis for over a decade, and the states have failed to address the problem despite repeated warnings from past commissions and election officials. The time has come to find solutions to the problem, to recommend new technologies, new processes, new tools, and a means of coordination between the states to finally resolve the problem.

In the small amount of time here today, I hope to provide ideas and an attempt to provide new options, to maintain accurate registration lists. In my prepared comments I laid out how all the previous, some of the previous national level commissions identified the problem, the growing nature and how it left our system vulnerable to fraud and to declining public confidence. But there's no way to go through each of those, so I'll just go through a few.

The National Commission on Federal Election Reform, going back to 2001 was led by Former Presidents Ford and Carter. They released a report and they highlighted what they saw was quote, "A developing problem of inaccurate voter rolls-- voter lists. And the need for an accurate voter registration list of eligible citizens that are qualified to vote." Some notable quotes from that Commission, "Some," quote, "Some contend that the swollen voter rolls are harmless, since the individuals have moved or died and therefore do not vote. And since poll worker scrutiny and signature verification can prevent fraud. We disagree," unquote. Quote, "Significantly inaccurate voter lists add millions of dollars in unnecessary cost to already underfund election administrators and undermine public confidence. Significant inaccurate voter lists invite schemes that use empty names on voter lists for ballot box stuffing, ghost voting, or to solicit repeaters to use available names. Significant inaccurate voter lists penalize poor or ill-educated voters. They are the most mobile of citizens in our country."

Those are some of the quotes from that Commission. Those facts were true in 2001, and they're still true today. The report on the Commission of Federal Election Reform, otherwise known as Carter-Baker in 2005, also made very similar findings. They identified that, quote, "A limited information available on duplicate registrations indicates that a substantial number of Americans are registered to vote in two different states." They talk about "The interoperability between state databases as absolutely needed to identify and remove duplicate registrations of citizens who have registered in more than one state." These issues sound eerily familiar.

And just in 2014 the President's Commission on Election Administration ("PCEA") noted that, "Accurate voter lists are essential to the management of elections. The quality of the list can affect the ability of people to vote, of election offices to detect problems, and of courts and other monitoring elections to detect election fraud or irregularities. Election officials across the political spectrum recognize the value of accurate and manageable voter rolls. A list with inaccurate records can slow down the processing of voters at polling places, resulting in lines." The PCEA specifically recommended that states work

together voluntarily. States should participate in data-sharing programs like IVRC, which is the Interstate Voter Registration Crosscheck; or the Electronic Registration Information Center, which is ERIC.

Today, approximately 30 states participate in IVRC, sharing voter registration and voting history and at different levels of participation with those states; while 20 states and the District of Columbia participate in ERIC, which is a more regimented and uniform program with membership fees and mailing costs. While there is good news in the continuing existence and growth of these programs, not all states are participating. And many of the largest and most populated states, like Florida, California, Texas and New York are on the sidelines. They're not a part of these data-sharing programs. So over the next decade both of these programs will need significant growth and improvement to resolve the millions of duplicate registrations across the country.

I would like to point out that the failure to maintain accurate voter lists is not necessarily a state problem, it's a national problem as well. And I'll go back to the HAVA in 2000. That piece of legislation required counties to work with an official state voter registration system and maintain an official voter list. This reform required those counties to interact with the state. Because of the increased mobility of our citizens demanded a system where the county election officials could receive that information from the state when people move from jurisdiction to jurisdiction to resolve duplicates and update registrations. However, the mobility of voters across state lines is as significant as within the state -- let's just face it -- thus requiring the states to work together in coordination with each other to resolve the problem.

One recommendation I have is that online voter registration with verification should be expanded to all states. I continue to recommend and advance this bipartisan reform, including online voter registration. Over 30 states have now passed it. Florida's coming along on October 1st. And they have implemented online voter registration, and more states are coming on every day. OVR improves the integrity and accuracy of the voter registration system. And this reform should be expanded to all states with potential-- with future attention paid to the security of the system, the ability to verify registrants, the identity of those registrants, and features to increase the portability and continuity of voter registration by establishing formal lines of communication between voter registration systems in the states. OVR is accessible 24-hours-a-day, seven-days-a-week, it also improves the accuracy and currency of the voter rolls. It can be part of the solution. One additional way for OVR to improve the quality of the voter rolls is to have online systems require registrants to provide their previous address and county of registration in the online application. And then the new state of registration would provide a digital copy of the new voter record with appropriate affirmation or digital signature to the state and county of the previous registration. OVR systems would provide an electronic notification directly and promptly to the former election official. The bottom line is that online voter registration should be able to provide the most current and up-to-date registration information to other states who are trying to maintain the accuracy of the rolls.

Another recommendation I ask this Commission to look at is to upgrade the voter registration systems in accuracy and in security. One area of concern over the next decade is the obsolete nature of many of our voter registration systems that haven't been upgraded since 2005, and there is no federal money available at this time to replace those systems. These systems need to be upgraded to add capability, and be made more functionally accurate, more secure and better able to facilitate the sharing of data between states.

I've provided the Commission a series of best practices to conduct list maintenance and increase the accuracy of the rolls. But I want to highlight one right now that would be a significant new tool not being

utilized by many jurisdictions. This reform would improve the accuracy and efficiency in how we conduct address list maintenance, one of the reasons we find such inflated rolls today. The use of commercial vendors with current -- very current -- address information to supplement National Change of Address will ensure 100 percent coverage of voters who have moved from the county or from the state to another jurisdiction. Imagine that, a hundred percent coverage. Not all registered voters use NCOA when they move. In fact, only about 50 percent do, less than some urban and rural areas. And as we heard earlier today, a large number of our jurisdictions are very small and they don't use NCOA at all. But use of that information would provide a hundred percent coverage of everybody who moves. So the use of both NCOA and supplemental commercial data will provide timely and accurate information to counties of all the voters in their jurisdiction have moved. And what is the new correct, up-to-date address either in in-state, out-of-state and allows election officials to follow-up to the actual known address of the voter. It allows list maintenance mailings to be smart, highly accurate, using technology and the best data, so mailings are targeted only to those with a high probability of having moved, and do not require an expensive mass mailing sent to all voters who may not have any other indication that they have changed their residency. Studies have shown the use of commercial data will also save the counties a significant amount of money on eliminating wasteful mailings, sent to erroneous addresses multiple times, individuals no longer living at the residence, and provides a level of precision to the current NVRA process that all sides should be able to agree is a mutual goal.

I have provided some additional best practices in a report I've attached. I'm happy to explore with you, but one that I wanted to mention was one that would-- that has been legislation in the past at the federal level, it has not passed of yet, but it would require the state chief election official or the NVRA coordinator of each state to coordinate with the DMV to modify the paper or electronic voter registration application to provide a separate box for the applicant to affirm their intent to notify the previous state of registration that they are now registered in a new state. And then that would be timely transmitted to the previous state of registration. Seems like a very practical way of communication between the states and it requires coordination between the states and the DMVs. Thank you.

Presentation by Robert Popper, Director, Election Integrity Project, Judicial Watch

Vice Chair Kobach then introduced Robert Popper, noting that Mr. Popper also served in the Civil Rights Division of the Justice Department, including five years as the deputy chief of the Voting Section. Mr. Popper is now the director of the Election Integrity Project at Judicial Watch. In that role, he is conducting an ongoing study to examine the issue of over-registration or inflated voter rolls in all 50 states. Vice Chair Kobach noted that the project's preliminary findings identified approximately 3.5 million more people on voter rolls than are eligible to vote, but that he would allow Mr. Popper to explain those results in detail. Mr. Popper's presentation can be found here: https://www.whitehouse.gov/sites/whitehouse.gov/files/docs/pacei-written-statement-robert-popper.pdf.

Statement by Robert Popper: *Thank you, Mr. Commissioner. Thank you, Commissioners, for having me today. There's been a lot of talk so far today about a lack of confidence in the integrity of American elections, and it's easy to find polls that suggest that that's true. The one I'd like to focus on is a comparative Gallup poll. What they did was they asked countries around the world, citizens in those countries, "Do you have confidence in the integrity of the elections in your country?" And in 2016, before the political conventions that summer, Americans were asked this question, and 69 percent said no, they did not have confidence. Thirty percent said yes. Now, this number puts the United States 90th out of 112 countries that were polled, and in fact, in those countries that are identified as industrial*

democracies by Gallup, we are second to last only out of Mexico. And that number, moreover, has been negative for more than the current election cycle, for more than the current set of discussions about American election integrity. It has basically been negative since 2008 in the United States.

Americans uniquely in the world don't trust the integrity of their elections, uniquely in industrial democracies. In 2012, there was a groundbreaking study really by the Pew Center for the States that first brought to everyone's attention the poorist condition of our nation's voter rolls. That study indicated that one-eighth of all registrations had some sort of major inaccuracy, that there were 1.8 million deceased voters on the rolls, and that there were 2.8 million registrants who were registered in more than one state.

Now, Judicial Watch hired a demographer and a political scientist who analyzed the voter registration rates by county in the United States, and what he did was to compare the Election Assistance Commission's Biennial Report and registration data with the American Community Survey data on citizens over the age of 18. Now, the ACS survey is an enormous survey, 3.5 million surveys per year. You know, if you compare that to a standard poll, it's simply phenomenal, and it includes citizenship estimates. Now, this was in order to allow us to develop notice letters that we would send to states telling them we thought that they were failing to comply with the National Voter Registration Act ("NVRA"). This was the same process we followed when I was at the Department of Justice. This is how one identifies states that may be falling down in terms of their obligations. Federal courts have routinely recognized that high registration rates are a basis for sending a notice of violation letter under the NVRA. All of that being said, it's not the end of the story. You don't stop with high registration rates. You look beyond them. You understand what's happening. You ask the state to explain it, and you look at their explanation.

One example that I have since I've worked at Judicial Watch concerns a state that told us they had high registration rates because of their diligent enforcement of the NVRA, which we know requires putting people who have moved or may have moved and don't respond to a confirmation notice on an inactive list for two general federal elections. And they said, "Since we've done that so diligently, we have inflated voter rolls because we have large numbers of inactive registrations." Well, we got their database, which is-- and, again, people should understand, as someone previously said, how easy it is to get a voter list from a state-- I guess easy for anyone but a Presidential Advisory Commission-- and you obtain these rolls. You typically can purchase them. And when we made a comparison, we found that they had thousands of registrations that had been in an inactive status for more than 10 years. Those registrations simply cannot be explained by having to wait for two general federal election cycles to be completed. In our study, the most recent one for 2017, we found that 17 percent of the counties where we had enough data to make this comparison, responses to the Election Assistance Commission are not uniform. Some counties shirk that duty. It is a federal requirement pursuant to federal regulations, but some counties don't comply. But for the ones where we had data, 17 percent had registration rates exceeding 100 percent. That is, they had more registrations than they had eligible citizens over the age of 18. This is an increase from 11 percent from just two years ago. So we perceive that the problem is getting worse, and in a number of these jurisdictions, we contacted the jurisdiction directly to get their number if we had a question or even just if they were large enough.

For example, we contacted Los Angeles County directly, and they gave us a number of inactives that was twice what they gave to the Election Assistance Commission, meaning 1.5 to 2 million more inactives than they had reported, and Los Angeles County is obviously not a small county. Now, we heard some

testimony today and statements about whether you should count inactives when you look at a registration rate. You absolutely should. You absolutely should. Any registration that can be voted on election day should be counted as part of the state's registration list, and I note that Mr. Brace indicated that in one county-- we don't have the nationwide statistics, and we could use them-- but in one county, the rate of voting for inactive registrations was 11 percent in 2014. Well, the national turnout rate in 2014 was 36 percent. Eleven percent of a significant subpopulation matters. They should be counted. I also would point out a few other findings that we stumbled across in our study. One was that there are 157 US counties that had more active registrations than the comparator, which is citizens over the age of 18. And so that left out inactive registrations. There are still 157 counties in the red. And, finally, I would note that for those who argue that you shouldn't count inactive registrations, we're clean except for our inactive registrations. We hear this, particularly when we send out notice letters. Eighty-three percent of American counties managed to have registration rates that were less than 100 percent, and that's less than 100 percent including actives plus inactives. If you're one of the 17 percent, you're still an outlier. It's not explained by the fact that maybe inactive registrations shouldn't count.

One other finding, which doesn't have to do with active or inactive registrations, is we found that 15 percent of those who responded to the EAC did not list any confirmation notices being sent in the last two-year period. Now, those confirmation notices are how you find out that someone may have moved, and you're asking them their address, and you're asking them to get back to you. We don't know if this 15 percent were simply blowing off their federal obligation to report this data. We don't know if they didn't report it because the number was embarrassingly low, but they didn't report it. And when 11 percent of the population moves every year, reporting zero confirmation notices for two years does not indicate compliance with the NVRA.

Now, at Judicial Watch, it's our view that the Department of Justice has basically stopped enforcing the list maintenance provisions of Section 8 of the NVRA. When I was at the Department of Justice, we started five cases in which there was a claim under that statute, and we obtained three consent decrees and a settlement agreement out of that process. Since then, no cases have been started by the Department of Justice involving such a claim, none. From that date, from the last case that I brought when I was there until today, they have not sent out a notice letter saying that you, state, jurisdiction, county, you are in violation of the NVRA. And it's left to nonprofits, like Judicial Watch and a few other nonprofits around the country, to pursue these lawsuits, that the Department of Justice should be pursuing.

Now, I want to close by telling you that there are good, sound reasons to enforce the NVRA, and when I do this, I want to distinguish the NVRA from the debate over voter ID laws, okay? It's not good enough to just import all your talking points from voter ID laws. Let's talk about fraud-- is there or isn't there? That doesn't work because the NVRA is federal law now. This weighing has already been done by Congress. This law was passed as a compromise bill that guaranteed both access and integrity, and there is something dishonest about enforcing only half of a compromise bill that is contrary to the congressional intention of those who passed the bill. I would also point out that all kinds of fraud are prevented by complying with the accurate voter list maintenance provisions of the NVRA, that it is broader than voter ID. For example, if you get rid of inaccurate registrations, you put a dent in the ability to double vote. Now, bear in mind that with double voting, someone is who they say they are. Voter ID will not catch them if they move to Nevada and vote their California registration and also vote in Nevada. Also, the National Voter Registration Act has non-fraud advantages. One of these is for get out the vote efforts and voter education efforts. It costs money to send ballots and registration materials

and information to people who no longer live in a state because you got their names off a voter ID list--or, I'm sorry, off a voter registration list that has become invalid.

And, lastly, I do believe that there is fraud. I think that we have strong suggestive evidence of it. We don't know how much. We cannot right now establish the rate, I think, for most kinds of fraud. All right? But we also know that the information is out there and we ought to get it and we know that states don't record this data. There was an organization, News 21, that sent public records requests to states asking them, "What are your voter fraud rates?" and several states, not counties, not just counties, but states said they did not track this kind of fraud. You can understand why if you look into some of the penalties for voter fraud. They are typically light or lighter than a lot of other crimes. For example, in coming here, I looked up the statues in our neighboring state of Vermont, and what I discovered was that for double voting in a primary or general election, the fine was $1,000, no jail time. For double voting in a local election, the fine was $100, which is a moving violation, I've heard, <laughter> and no jail time. But that in Vermont, the penalty for selling maple syrup without a license is $5,000, or up to one year in prison.

Aside from the data on fraud, it's just a larger point that I'd like to make, and it's simply this. Elections should look clean. Enforcing the NVRA is part of making that true. Elections should look clean. For example, when I was at the Department of Justice, a man showed up with a club at a polling station in Philadelphia. That's against the law. When I was at the Department of Justice monitoring another election in Philadelphia in 2012, there was a floor-to-ceiling mural of President Obama with a quote from his campaign speech on the wall of a polling place at a school. There are laws against electioneering. Now, no one would say that a law against bringing weapons to a polling place should be analyzed in terms of how many people actually were frightened and didn't vote or had their minds changed because he was there. No one would say that a law against electioneering should be judged by how many people saw the mural of President Obama and decided to change their vote. That's not the point. It looks dirty. It suggests to you that your election officials are not going to be impartial because they put this on the wall or allowed it to be there. And you should look at enforcing the NVRA the same way. To the extent that we have 69 percent of the American people not trusting American elections, enforcing the NVRA, which is current federal law, would be one way to address that. Thank you.

Presentation by Ken Block, President, Simpatico Software Systems

Vice Chair Kobach then introduced Ken Block, the founder and president of Simpatico Software Solutions. Block is the founder of this firm, which is a data analytics firm that identifies patterns of inefficiencies, waste and fraud. Vice Chair Kobach noted that Mr. Block recently conducted a study for the Government Accountability Institute, which has been described in numerous publications, in which he examined voter roll data from 21 states and found over 8,000 high-confidence duplicate votes in the 2016 presidential election. Mr. Block's presentation can be found here: https://www.whitehouse.gov/sites/whitehouse.gov/files/docs/pacei-ken-block-presentation.pdf.

Statement by Ken Block: *Good afternoon. Thank you for the opportunity to come today. Some quick background about myself and about my company. I am New Hampshire educated. I'm a graduate of Dartmouth College. I have a degree in computer science. My company does data analytics. We do fraud analytics, data mining. As background, we helped build one of the first EBT systems in the country. Those are the food stamp systems. We ran for nearly a decade Texas's food stamp system. We're credited*

with helping the State of Texas identify and save about a billion dollars inside their food stamp program, and if the word "PolitiFact" is a verb, I've been PolitiFacted on that, and that came out as true.

So that's the background of what we do. We applied our analytics to voting data. We started this project in 2015, asking the basic question, can-- by simply looking at data, could we identify voter fraud simply by looking at data? So to get into this, the first question you have to ask is, well, does it exist? And in 2015, we used the precursor to the software we're running now, and we were able to identify with a high confidence several examples of voter fraud identified through data. What's interesting with the question about voter fraud is that most of the studies that discuss whether voter fraud exists or not themselves were not efforts to uncover voter fraud. They were descriptions of previous efforts to look at voter fraud or specific prosecutions of voter fraud. No government agency at any level of government is actively looking for voter fraud, especially when it comes to interstate voting fraud. And getting data from all 50 states is extremely difficult. If you don't search for it, you won't find it.

There are substantial challenges to looking at and looking for voter fraud. Some states deny access to data. Secretary Gardner, to your question, the State of Massachusetts will not provide its state data file to anybody but the political parties, and what you're told-- what we were told when we asked for the state's data was that we were free to go to every single Massachusetts city and town to acquire the data from each city and town. There are 351 cities and towns in Massachusetts, making it close to six times as difficult to get the data from Massachusetts as it is to get the data from the entire rest of the country. So to answer your question directly, yes, there are states that make access to this data not possible for people who are not political parties, in particular. The variability in access, quality, cost of the data, it impedes the ability to examine voter activity between states. And I talk about quality-- I think that's a very important issue-- New York State, for example, delivered us a voter file where in the voter history there were 700,000 votes that we could not identify what year those votes were cast in. In New York State, for the 2016 general election, they identified votes in that election no fewer than a dozen different ways. So the quality of the data can make a very large difference in the ability to uncover fraud.

This slide [Slide 4] talks about and speaks directly to the cost of data. All the way on the left, you see data that's effectively free, and more than half the states make their data effectively free. All the way out on the right at the far end is Massachusetts. I can't tell you how much it would cost to get Massachusetts's data because [neither] I, nor anyone I work with, has tried to contact all 351 cities and towns to figure that out. I will highlight Alabama and Arizona, though, who charge $1,000 per 100,000 voter records. To get Arizona's data, to get Alabama's data, you have to cough up close to $30,000 to each state to acquire the data. And what I ask everybody to consider is with Massachusetts's policy of making their data inaccessible, with Arizona and Alabama's policies of making their data unaffordable, what public purpose do those policies protect? And I argue they just do very little in terms of helping the integrity of our elections or the transparency of their elections.

We have found potential voter fraud. We took a look at the voting data from 21 states, and we looked to identify duplicate voters, voters who shared the same name, same birth date, and whether we could find where they were voting in one place and also in another place. We identified 8,500 high-confidence pairs of duplicate votes amongst those 21 states. Interestingly, we found 200 couples, usually husbands and wives, who voted together, committed felonies together in two different states at the same time. Had we access to all states' data, we can extrapolate that we would have 40,000 duplicate votes. Voting twice is a federal felony with up to five years in prison and up to a $10,000 fine. These pairs of duplicate votes are either a single person taking two bites of the electoral apple, one person voting properly and then the

matched vote being a case of voter impersonation, someone activated that person's voter registration in another state and voted on it, or some form of clerical error, which I think is unlikely in this case given the numbers of votes that we're talking about.

It's important to discuss the methodology of how we did this because we knew that any effort to discuss voter fraud in the environment that we have today would be looked at with especially critical eyes. The way we did this was we matched duplicate voters based on full first and last names. So we didn't do anything like Ken and Kenneth, for example. Both votes had to be Kenneth. And full dates of birth. We did not pull for this particular exercise any state's data who did not provide us a full date of birth. And then we did something called fuzzy matching, where we allowed for variabilities in the middle name. For example, if we had two people with a middle name of Ken and Kenneth, we would consider both of those names to be the same for the purposes of the match of what we were talking about. The problem with doing any sort of matching like this is it's not impossible for two people with two exact same names and two exact same birth dates to be different people. We found 70,000 potential duplicate votes in the data that we processed using the methodology that you see in front of you. We passed those duplicate pairs, those potential duplicate pairs, through a commercial database who has access to full social security numbers and they're given that access by the federal government specifically to conduct fraud investigations, of which this was one. The commercial database vendor only looked at the name and address and birth date that we supplied them, and they looked up to see if they could find a matching social security number, and only if the social security numbers matched for both sides of the potential pair did we report that as a high-confidence match. So the 70,000, it reduced down to 8,500. We left a lot of potential matches on the floor doing it-- doing things this way. This wasn't about trying to find inflated numbers. This was about trying to find, with the highest level of confidence we could, potential duplicate votes.

One of the criticisms that's come up fairly repeatedly about any effort to look at voter fraud is are the numbers meaningful. Can 8,500 duplicate votes have meaning inside a federal election where 130 million votes were cast? And Florida has plenty of problems right now, and obviously, when I did this, the hurricane was not a reality down there. However, we have found 2,200 duplicate votes cast in Florida in the year 2016. And I want to remind everybody who's listening and watching today that George Bush became president on the back of 537 votes that were cast in Florida in the 2000 election. In 2016, with only 21 states out of 50 states' data, we found 2,200 duplicate votes, four times George Bush's margin of victory in the year 2000. And when am I asked can a number that small have meaning, absolutely, it can. And we have to pay attention to something like this because there are a tremendous number of elections in our country at every level where the margin of victory can be measured in the dozens or hundreds or sometimes single votes. These votes can also impact state and local elections, and again, with apologies to Florida, more than 200 of the duplicate votes that we identified in Florida in 2016 were cast in the city of Orlando. There are 13 couples who pop out of that data who cast duplicate votes in Orlando and 200 votes in the context of a city-wide election or a city council election or any down-ticket races can be very meaningful indeed. I do believe with certainty that these duplicate votes impact Florida elections.

I'm going to move away quickly from duplicate voting into some of the other aspects that we looked at while we had everybody's data. Being a Rhode Island resident and as a computer science guy with an unhealthy interest in politics, I had a lot of conversations with Rhode Island's Secretary of State about how they conducted their elections, and it became apparent as we were discussing with Rhode Island that there were some gaps in the integrity of how Rhode Island conducts their elections. And we asked the

secretary of state's office in a written letter whether it was possible for John Jacob Jingleheimer Schmidt to send in a voter registration without a driver's license, without a social security number, with a made-up birth date, and with a residence listed as a commercial office park, and the secretary of state's office responded to us, yes, that would work. You could do that. And now Rhode Island has a voter ID law, and in that voter ID law, if you don't have a driver's license, if you don't have a social security number, you can procure a state-issued voter ID with nothing more than a utility bill or a laminated picture ID that says you belong to a gym, or in my case-- my theoretical case to the secretary of state was a laminated card that said I work for a non-existent company. And the answer that came back was, "You would be given a voter registration card with the scenario that you painted for us." My art skills stop at stick figures. However, what you see here [Slide 11] I did on my computer in about three minutes. I scanned my business's utility bill, and I simply changed the account numbers and the name on the utility bill to John Jacob Jingleheimer. I couldn't fit Schmidt, I'm sorry. This is acceptable form of ID to get a voter ID card in the state of Rhode Island.

Now, this leads to a very important question. Since the State admitted that it's possible to cast a ballot without a social security number and without a driver's license, how many voters in Rhode Island are casting ballots who don't have social security numbers and don't have driver's licenses in the voter registration database? And the answer was shocking-- 30.7 percent. More than 143,000 voters in the state of Rhode Island cast ballots in 2016 who did not have social security numbers and who did not have driver's licenses. It is not possible for the state of Rhode Island to maintain these voters in their voter registration database when they have no idea who they are. How do they curate that data? How do they remove deceased voters when they can't confirm who that voter is with their social security number? Now, Rhode Island does have a voter ID law. If we did not, 143,000 people would have cast ballots in the last election without providing any positive identification in order to cast their vote, including not having that identifying information in the voter registration database. I believe it's vitally important that we understand how many voters vote like this in every single state in the country because if any other state has numbers like Rhode Island's, it's a cause, in my opinion, for tremendous concern.

So our results from what we've done so far indicate a number of issues of concern, for sure. The data provided by states is not standardized. The quality can be very poor for a number of those states. There's an absolute lack of transparency. There are at least a half dozen states we cannot get data from as nonpolitical organization entities. We have very high confidence indicators of potentially fraudulent votes. We have examples of ineffective oversight in some states. And, most importantly for me, there's a lack of a mechanism to enforce federal election integrity. The fact that people can duplicate vote between states without any entity tasked with stopping that-- identifying it and stopping it is a large gap in the integrity of our elections. More analysis needs to be done. This is a jumping-off point. This is by no means exhaustive.

For starters, the other 29 states should be made part of the project that was done for the original 21 states. We should look for duplicate voting in federal primaries. We should determine votes that were made from nonresidential addresses. One of the things that we took a look at, we got a database of all the addresses of UPS stores across the country. In the 21 states that we looked at, every single state had voters registered to vote at a UPS store. There were more than 15,000 votes cast in 2016 from voters who listed a UPS store as their residence. We should take a look at any of the fraudulent votes-- or potentially fraudulent votes that we're discussing and look at what the registration types are for those votes. Is it possible that different registration types are more readily used for potentially fraudulent purposes than other voter registration types?

And, lastly, we should take a look at using federal databases to take a look-- to help determine eligibility to vote in different circumstances. Two more slides and I'm done. I really want to hammer this home. Our election's infrastructure is susceptible to hacking. That's been discussed in the media in a number of different ways. In my opinion as a technologist, this is the largest threat to our election integrity that we have. We've already learned that the counties run elections. I had a 3,000 number for the county, and what we learned in the first thing was that there's 10,000 local jurisdictions responsible for elections. I can assure you many of those jurisdictions do not have the technical skills necessary to secure those systems, and it's frightening. Voting machines had been hacked readily. At a hackers' conference in Las Vegas just a few months ago, every-- 30 machines were left out on the floor and turned on. Every one of them was hacked, many of them within minutes, by the professional hackers in attendance at this conference. In my opinion, state and county responses to this problem are not commensurate with the seriousness of the problem, and this issue can radically impact local, state, and federal elections.

There's a high likelihood of voter fraud based on what we've done so far with our analysis. There's likely a lot more to be found, and there's many different things to look at. Our results are verifiable and recreateable. Anybody who can get access to the data and has the technical abilities to process this data, I'll happily share how we did it and what we did, and you can come up with the same numbers that we did. In fact, I encourage folks to do that because it's important to get confirmation on what we've done. A comprehensive data-driven understanding of our country's voting integrity does not exist, and we need to put that together, and this effort is part of that. And in my opinion, lastly, this is not a partisan issue. This should not be considered red. This should not be considered blue. These are our elections. This is what defines our country, and we need to make sure we do everything that we can that these elections are fair, open, transparent, and have as much integrity as we can bring to them. Thank you.

Presentation by Hans von Spakovsky, Senior Legal Fellow, Heritage Foundation and member of the Commission

Vice Chair Kobach then introduced the final panelist on the second panel, Commission member Hans von Spakovsky. Commissioner von Spakovsky is also Senior Legal Fellow at the Center for Legal and Judicial Studies at The Heritage Foundation. Before joining the Foundation, he served for two years as a member of the Federal Election Commission, and he, too, worked at the Department of Justice as counsel to the Assistant Attorney General for Civil Rights with expertise in enforcing the Voting Rights Act and the Help America Vote Act. He's also a member of the Virginia Advisory Board to the US Commission on Civil Rights. Commissioner von Spakovsky's presentation can be found here: https://www.whitehouse.gov/sites/whitehouse.gov/files/docs/pacei-hans-von-spakovsky-election-presentation.pdf.

Statement by Commissioner Hans von Spakovsky: *Thank you, Secretary Kobach. I also want to point out that I served on two county election boards, one in Georgia and one in Virginia, so I actually also understand the practical problems that election officials have to deal with every day when they handle both voter registration and running polling places on election day.*

A couple of years ago, the Supreme Court issued a decision-- as was mentioned earlier-- Crawford versus Marion County, which was the voter ID case out of Indiana, and there was a very key remark in there by Justice John Paul Stevens, who wrote the majority opinion of the case, in which he pointed out that the United States has a long history of voter fraud, it's been documented by historians and journalists, and it

could make the difference in a close election. And as Ken Block said, we have a lot of close elections in this country, particularly down at the county, city, and township level. Now, obviously, it seems to me that the object of our entire election process should be to make sure that every American who's eligible is able to vote. But the second half of that is to make sure that their vote is not diluted or stolen by individuals either stealing votes or people voting who are ineligible to vote, like noncitizens.

Now, less than two years ago, we started a project at The Heritage Foundation, where I work. We started a voter fraud database. At the first meeting of this Commission, I gave everyone a printed-out copy of it. I brought another one today. And we were very, very conservative in putting together this database. It is not-- does not have any cases of potential fraud. It doesn't have any newspaper articles where individuals said that perhaps they believe something may have happened at a polling place. We decided we would only put in cases where someone was actually convicted in a court of law of engaging in voter fraud or election fraud, where a judge made a judicial finding, where civil penalties were imposed by a government body, such a state electoral board, for fraud, and a month ago, when we had our first meeting, we were up to 1,071 proven cases. That includes 938 criminal convictions, 43 civil penalties, 74 diversion programs, 8 judicial findings, and 8 official findings. We're about to add 19 more cases to this, and I think it's important for people to understand because this has been unfairly and wrongly criticized. This is not a comprehensive list. I don't even have a full-time person working on this. We work on this part-time, and all we are doing is putting in cases as we run across them. Now, some of them are older cases, the vast majority of them, however, last-- within the last 20 years. And we haven't even begun to search a fraction-- a fraction-- of the records that are potentially available out there.

The fact that this is the tip of the iceberg is shown by a number of things. First of all, I personally know of cases where it's pretty clear that some kind of fraud may have occurred, and yet these cases are not turned over to election officials, no investigation is done, no prosecution is done. And I'll give you two quick examples of that. Remember, we're up to 1,100 cases, almost 1,100. We're about to add 19 more. When I was a county election official in Virginia, we discovered almost 300 individuals, who, when they went to DMV to renew their driver's license, admitted they weren't US citizens. We contacted them, investigated it. We ended up removing them from the voter rolls because they were not US citizens. About half of them had actually voted in prior elections in Virginia. We did take them off the voter rolls, turned it over to both local county prosecutors and the U.S. Department of Justice, who did absolutely nothing about it.

Now, the Public Interest Legal Foundation, which is a nonprofit organization, recently released a report in which they got hold of official voter registration records in Virginia. Those official voter registration records showed over 5,000 individuals who were taken off the rolls because they were not U.S. citizens. They had cast, I think, over 7,000 ballots in prior elections, in multiple elections. There had been no publicity about this whatsoever in local newspapers or anywhere else. The only way it was discovered was because of the fact that the Public Interest Legal Foundation went after this information, had to sue some of the counties to get it, and the election officials not only didn't-- made no news about this, didn't release anything to the public about it; they did not turn any of these files over to law enforcement for investigation and prosecution. Now, it may be that many of these cases were individuals potentially not realizing what they were doing. We've seen cases of noncitizens who actually told election officials they were not U.S. citizens, and the election officials registered them anyway. But the point is you're not going to know the answer to that unless and until you actually investigate the problem. So there in Virginia alone are potentially hundreds, if not thousands of voter fraud cases that have never been investigated

and apparently aren't going to be investigated, and that's just an example of some of the kind of problems we have.

Now, mention has been made of the Pew Center for the States study that found 2.8 million people registered in two or more states, 1.8 million people deceased. This was a good study, but the study didn't do the second half of the problem. They didn't get the actual voter histories of these individuals and do the kind of matching program that Ken Block has talked about where you actually look at voter history to see. A lot of these are probably administrative errors. The communication between the states is not that good. Sometimes when individuals move to another state and reregister, they don't let the new state know they were registered in a prior state, so that's not the fault of election officials. But the second half of the problem should have been to look at the voter histories of these individuals and find out, well, how many of them actually took advantage of this and voted in more than one state? How many votes have come in in elections from people who were listed as dead? A CBS news station in Los Angeles last year did that prior to the election and found several hundred individuals who, when they checked social security records were shown as being dead who had voted in multiple elections. Most of these people were folks that the state automatically sent absentee ballots to, so it was pretty clear someone at the address where those were coming from was voting those ballots.

Now, I'm not going to go through this [Slide 4]. This is the study that Ken Block has talked about, so I'm not going to duplicate that, but I think it's important to point out one thing there about the fact that GAI found people officially registered. The rule in every state is you've got to be registered at your home address, the place you live. And yet they found people registered at gas stations, vacant lots, abandoned mill buildings, basketball courts, parks, warehouses, and office buildings. And yet that wasn't caught by election officials, and they haven't been investigated. There are many states that have many more registered voters, and the census shows they have citizens of voting age. We've talked about that.

We've also talked about the New Hampshire issue. The only thing I will add to that is this. There was a lot of discussion about residence versus domicile, but what hasn't been said and what obviously should be done, and I would suggest this is one of the things that needs to be done, is that all of these individuals used out-of-state driver's licenses to register to vote. For those who then did not get a New Hampshire driver's license, well, the obvious thing to do is to go to that other state where they had a driver's license and check to see whether they did what the vast majority of people do when they get a driver's license these days. They register to vote. Are they still registered in that other state, and more importantly, did they not only vote in New Hampshire, taking advantage of the same-day registration option, but did they also vote in that other state in the last election in November, like the 8,500 people that Ken Block found? And until you actually do that kind of investigation, you're not going to know what's going on. I don't think-- something else that didn't get mentioned today is-- my understanding is there's an additional 200 people not included in this group, I now find out, who are being investigated for having voted in New Hampshire and another state.

This is a breakdown of our database [Slide 7]. Again, I want to be clear, this is not a comprehensive database. It shouldn't be looked at that way. It's a sampling of election fraud cases, and we have cases from all of the states. There's so many different ways that fraud is committed. False registrations, for example. Here's a conviction in 2000 in California. Another big conviction in Washington State. You will see that this is a bipartisan problem. One of these convictions is for Republican individuals doing it; the other, for people on the Democratic side. I mentioned earlier that we were about to add 19 more cases. Two of those include an individual in Florida who was just convicted of altering mail-in ballots to

favor a Republican mayoral candidate. The other one was someone who was working with a Democratic group who was putting in false registrations. Again, a bipartisan problem.

Impersonation fraud at the polls-- people say that never happens. Of course, it's hard to detect that if you don't have a voter ID to show you that the person is not the person they say they are. Here are two convictions, one in 2002 in Alabama, one in 2009 in Texas. Duplicate voting-- we've heard a lot about that today from Ken Block. Here's a case from Wisconsin who is, I think, considered the worst multiple voter in Wisconsin history. And then another case that I actually want to highlight in Maryland. A woman named Wendy Rosen, who was convicted of voter fraud for voting in both Maryland and Florida, which Ken Block mentioned. What's important about this case is you'll see that she voted in Florida and Maryland in both 2006 and 2010. The key thing to know here is that this was not discovered by election officials. In fact, the only reason it was discovered was because she made what turned out to be the bad decision to run for public office, okay? She decided to run to be a Democratic primary candidate for Congress, and of course, what happens when you run for office? All of your opponents do what? Opposition research on you. So apparently it was opposition researchers who discovered that she was not only registered in Maryland and Florida but had voted in both states. And if she had not run for office, the chances of that being discovered were pretty much nil because the election officials were not doing the kind of checks needed to do that.

Absentee ballot fraud. You know, absentee ballot fraud, the Florida Department of Law Enforcement some years ago in a report they did on many different absentee ballot cases in Florida said that it's the tool of choice of people who want to steal elections. Two thousand fourteen, a recent conviction in Kentucky. The 1994 conviction is older in Alabama, but I mention that case for a very specific reason. In 1994, the US Department of Justice, during the Clinton administration, conducted a very big investigation in Green County, Alabama. Green County is one of the poorest counties in the country. I think it may have been one of the first counties in the country to actually file for bankruptcy. It is, I think, 80 percent African American. And the FBI got into the case because a young African American Democrat who wanted to challenge some incumbents in the county-- he was a reformer. He wanted to clean up the county government-- called the FBI because he believed his election had been stolen. FBI conducted investigation. They eventually convicted 11 individuals, many of them local county commissioners, and a city councilman. And what was clear in the case was that the people who were being victimized were poor African American voters, and that is the case in so many of these voter fraud cases. Often, the people who are targeted are the poor, they're African Americans and others who the people doing the stealing believe are the people who are the easiest targets. Some years ago, there was-- 2011, I believe-- there was a convict-- several convictions in Troy, New York. Four individuals were convicted of engaging in absentee ballot fraud there, including two political operatives. They forged numerous signatures on absentee ballots. They cast votes in names of registered individuals without their knowledge. And they targeted a particular very poor neighborhood in that city. And one of those operatives who was convicted, when asked by investigators about this, said that this kind of voter fraud was an ongoing scheme-- this is a quote-- and it occurs on both sides of the aisle. The people who are targeted live in low-income housing, and there is a sense that they are a lot less likely to ask any questions. That's why they were targeted. And those are the people, unfortunately, who bear the burden of the kind of fraud that occurs and that no one seems to want to do anything about.

Illegal assistance at the poll-- that's another kind of fraud that occurs. Every voter has a right under federal law to get assistance if they are disabled, can't speak English, but there often are cases where individuals aren't going in to assist those people to vote but to intimidate them and force them in a

particular way to vote, and these are all cases where 2016, 2006 where people were convicted for doing this.

Buying votes-- unfortunately, that still occurs. There are certain states-- I won't name that state because I don't want to embarrass it-- where it's a long tradition and there have been many prosecutions by the U.S. Justice Department. I actually had to laugh recently because there was an article just published, criticizing our Voter Fraud Database, and one of the criticisms was that we included vote buying in our list of election fraud cases because the article said that, well, that's not a situation where somebody who's not eligible to vote actually voted, so it shouldn't be included. Well, I think most people would believe that vote buying, which is a federal felony, should be included in any kind of case about election integrity. And, of course, noncitizen voting. We have evidence of that occurring in many different parts of the country.

Again, in these different cases, particularly the two in Illinois, it's important to note that both of the individuals who were found to be noncitizens, who had not only registered to vote but who had illegally voted in American elections, this fraud was not discovered by election officials because election officials don't do anything to verify citizenship. This was only detected because both of them applied to Department of Homeland Security for a change of status as noncitizens, and in investigating it, DHS discovered that they had registered and voted. Again, election officials did not discover this. And, of course, felon voting. Forty-eight states do not allow you to vote if you are in prison. We have many cases in the database of individuals who voted anyway. So the point is there is evidence of voter fraud. This is just a fraction of the cases that we have, and it's something that I think everyone should be interested in doing something about. Thank you.

Panel Three: Electronic Voting Systems and Election Integrity – A Primer

Commissioner Gardner introduced the third panel, which included three recognized experts who have done extensive research on electronic voting systems. He noted that the National Science Foundation for a number of years gave grants to computer scientists who were willing to do work and papers on technology and elections. It was during a period of time when technology was becoming more and more connected to elections. Each year, those computer scientists would meet and discuss these papers, and Commissioner Gardner attended a number of those meetings and got to know all three of the panelists. He recognized that all three were clearly were the people to whom others deferred in the computer science field; when they spoke the others listened. Commissioner Gardner then introduced the first panelist.

Presentation by Dr. Andrew Appel, Professor of Computer Science, Princeton University

Commissioner Gardner introduced Dr. Andrew Appel, who is a professor of computer science at Princeton University and has been chair of the computer science department. His research and expertise includes software verification, applied computer security and technology policy. Since 2003, after HAVA, a significant part of Dr. Appel's research has been on the technology and security of voting machines and election administration systems and computers. Last year, Dr. Appel testified before the U.S. House of Representatives subcommittee hearing on cybersecurity and talked about ensuring the integrity of the ballot box. Dr. Appel's presentation to the Commission can be found here: https://www.whitehouse.gov/sites/whitehouse.gov/files/docs/pacei-dr-andrew-appel-report.pdf.

Statement by Dr. Andrew Appel: *All right. So let me talk about how to record votes in a trustworthy way, how to count them, how to add them up. What do you need in an election system? You want each person to vote just once. You want to accurately record the votes. Accurately count the votes. You want the voter to be sure that her vote is counted even though the election may be run by an official of the other party. And you need privacy of the ballot because before we had privacy of the ballot in the late nineteenth century there were enormous problems with voter coercion and bribery.*

So in the Nineteenth Century election integrity was just as big an issue as it is today. There was widespread election fraud. And towards around 1890, there were great reform efforts. Before 1890 you would vote by bringing a ballot with you that was maybe preprinted or handwritten with the candidates and you would stick it in the ballot box. So why not bring six, right? And the idea that you would be handed a ballot as illustrated here this is a ballot with names of all of the candidates preprinted and you just marked some with an X. That had to be invented because the election administrators handing you one ballot you don't have the opportunity to put six in the ballot box. And that's-- let's talk about marking that ballot and how the ballot is laid out because what we want to do is allow the voter to accurately mark their intent so it can be counted. And if you had badly designed ballot, I apologize, for the blurry thing here but what I've circled here is a ballot from Wisconsin in 2002 where the governor's race had to be split among two columns because it didn't all fit in the column there. And so many voters, hundreds of voters thought that there were two races and they should vote for one in the lower column over there. And one in the upper column there. And that effectively over voted those ballots and disenfranchised hundreds of voters. So a better layout for that ballot would have been something like this where you can fit the governor's race all in one column and put other races in other columns. So the point is that the design of the ballot is also important in the integrity of the elections to allow the voters to communicate their intent.

It's not only optical scan paper ballots that can be badly designed. Here was a badly designed touch screen ballot where in Florida in 2006 there was basically one contest per page of the touchscreen except this page had two contests on it, the lower one with only one with only two candidates and hundreds of voters missed that it was there and didn't vote that contest. More voters didn't vote that contest than was the margin of victory in that election. So good ballot design is very important. Most good election administrators know that and pay attention to ballot design. But all election administrators should avail themselves of the many good studies and booklets available for good ballot design that allows the voters to communicate their intent.

Now, it's not just a ballot. It's the whole set up of the election. Here's a voting polling place set up as of 1890. Right? And this you notice at right the voter is going in and signing the poll book. There's two people there behind the desk where he's singing the poll book. And why is that? Well, there's probably one from each party. And if you didn't trust the election administrator of the other party you could trust the one from your own party. They're keeping an eye on each other. And you see the voting booths, an innovation in 1890. It allows the secret ballot. Nobody is looking over your shoulder while you're voting. And you see a ballot box with a crank and a number in front. It's one of those ballot boxes. You only get to put one ballot in the ballot box because of the way technology works. And when you turn that crank to put the ballot in a bell rings so everybody in the room knows that a ballot went in there. It prevents ballot box stuffing. Right? And look how many people are right by that ballot box because you don't want to trust somebody from the other party. Right? This allows transparency and accountability but it also allows the privacy of the ballot. It's actually difficult to design an election system that gives you all of those things.

Okay. So that works pretty well except that hand counted paper ballots are difficult to run in the U.S. In other countries it works pretty well but that's because there's only one contest in the ballot in a parliamentary system. Here we have a federal system. You vote for president and senator and congressman and legislature and governor and dog catcher and mayor. And counting all of those contests on the same ballot by hand is impractical to do accurately and efficiently on election night in a large jurisdiction. So we mechanically count the votes. Here's an example. Precinct count optical scan. You mark the paper ballot. You fill in the oval right next to the name your candidate. You feed that to the optical scanner right there in the polling place. It drops into the ballot box.

Here's another technology, the touchscreen or direct recording electronic voting machines. These began to be introduced in the late Twentieth Century and widely adopted in the early Twenty-First Century. Now, for the voting machine whether it's the ops scanner or the DRE to know what to display to the voter or where to look on the paper for the candidates, you need a ballot definition file that indicates who is in this election and where does the ballot definition file come from? There's some computer that the election administrator runs to enter in the ballot. And the election administrator prepares the ballot definition. Transfers it to a removable media cartridge as shown here. And then the removable of the media cartridge goes from the election administration computer and it's loaded into a slot in the voting machine. So now the voting machine knows what candidates to present to the voter or where to look on the ops scan form for the bubbles. All right. Now, here's a fundamental flaw of direct recording electronic voting machines of computers. Whoever programs the computer decides how to count up the votes, whether to count them up accurately and honestly. Or whether to report something else. It's a computer program. It takes inputs from the touchscreen or from the ops scan bubbles. It does some computations. Prints some outputs. We rely on those to be the accurate computations of how many candidates-- how many votes each candidate got. But the computer program can do whatever somebody did that installed that program.

So here's how to commit election fraud with a computer program in the voting machine. You write a computer program that cheats. It transfers votes from one candidate to another just before the polls close. It doesn't cheat except on election day because somebody might be testing the machine. If you do logic and accuracy testing before election day you won't catch it cheating because that voting machine has a clock in it. It knows whether it's election day or not and it won't cheat except on election day. It won't cheat unless there are enough votes cast to make it look like, oh - this is not a test. The voters won't see anything amiss. The touchscreen will light up the right squares for the voters. The pre-election logic and accuracy testing won't catch this. Now, you've got to take your fraudulent program and load it into the voting machines. You could do this at the factory. You could do it in the warehouse where the voting machines sit in between elections. You could do it in the field. These voting machines get delivered to schools and firehouses and church basements a few days before the election. You could do it there. So I did a study in connection with a court case in New Jersey in 2008. And I found that understanding the voting machine-- the voting program that's in there already if you have the source code it takes only one week really of studying that program and seeing how it works so you can make it cheat. If you don't have the program then it takes about 25 person weeks to reverse engineer it. And then writing a program that cheats, modifying the existing program and making it cheat takes a couple of days of writing 122 lines of source code. And then I install it in the voting machine. So here I am installing fraudulent firmware in a voting machine. This is the kind of voting machine that's still used in New Jersey and Louisiana and I'm prying out one of the computer chips there and I'm going to replace it with the fraudulent program. And now that machine would cheat for election after election.

Now in a more modern machine you don't have to get a screwdriver and pry out a chip to install new software. How do you install new software in your computer? You put in a CD-ROM or a USB drive or you download it from the Internet. Okay. And on a voting machine, the new computer voting machines need new software from time to time too. You install new firmware because the manufacturer says oh we had to adjust the firmware to account for this new kind of election you're running. So a new firmware gets installed in voting machines from time to time. And nowadays a typical way that's done is it's put on the same cartridge you would out a ballot definition file. And you slide it in there and now you've installed a new vote counting program in the voting machine, either a new legitimate one or if you're new fraudulent one. Okay. So anyone with physical access to a voting machine can hack it to replace the software in it. It adds up the votes. And now that voting machine will cheat in election after election for years to come. Or you might choose to install software that cheats in one election and then erases itself and modified itself to look like legitimate software. And now you're not cheating in more than one election, but you've made the forensics much more difficult to catch you. Well, you might think my voting machine is not connected to the Internet so therefore, it can't be hacked from the Internet. But that's not actually true. The election administration computers are on networks and sometimes those are connected to the Internet, if only so that election administrators can report results. And so a hacker than can break into the computer network of the election administrators at the county or the state can get access to those same computers that are creating ballot definition files which will be written to these removable media. So there's a pathway through the Internet and through the removable media to hack voting machines even from outside the country. Even though those voting machines are never directly connected to any network. So computers connected to the network even indirectly can be vulnerable to hacking.

Election administration officials should, of course, use better cybersecurity practices to make their computers less vulnerable. But you cannot make them invulnerable. And, therefore, we should run our elections in a way that can detect and correct for computer hacking without having to put all of our trust in computers. So therefore, do not use paperless touchscreen voting machines. They are a fatally flawed technology and pretty much everyone knows this by now. Only a few states still use them. One by one states are switching to optical scan voting that is paper ballots counted by computer. And those states are switching to paperless voting. Right? So these are the states that used a significant number of paperless touchscreen machines in 2016. It's only about ten states. And most states vote on paper ballots. Okay. So here's your precinct based optical scan paper balloting. Right? The voter marks the ops scan ballot. The voter feeds the ballot to the scanner. Well, you can hack that scanner. It's just a computer too. It's just as easy to hack those ops scan scanners as is it to hack a direct recording electronic touchscreen machine. So aren't we just as bad off as we were before? Well, the point is the paper ballots drops into the ballot box under the ops scan computer. That's a sealed ballot box. Those ballots can be recounted by hand.

Now, you might ask if we have to recount the ballots by hand then what's the point of having the computer to count them? And so here's the point. You don't always have to recount all of the ballots. You can do a statistical audit. You can recount a random sample of the precincts. And what that will mean is if there is widespread enough computer fraud in enough precincts to affect the result of a large election then sampling a random sample of those ballot boxes and recounting those and matching them up against what the ops scanner claimed is a statistically effective way of gaining confidence that your election was run without fraud. That if somebody had hacked some voting machines you would catch it. So these random audits are very important. Some states do random audits. The leaders, right now, are Colorado and New Mexico that have sort of excellence statistical audits of their computer-counted paper ballots. Where the random audit is done by looking at those ballots with human eyes in the presence of witnesses so that no computer is claiming to you what it said on there. And several states have audit laws and audit

practices that are okay but need improvement to be sort of statistically sound enough to really have the chance you need to catch fraud if it existed. And many states have no audits at all. And, of course, the ten states that don't use paper ballots at all cannot possibly be audited.

All right. So in conclusion, computers susceptible to fraud by replacement of the program in them that counts up the votes. This is true, whether they're directly connected to the Internet or not. And therefore, we can rely on computers to accurately and quickly count the votes unless they've been hacked but we should have an audit to check the actual paper ballots that the voters marked. We should do this audit before the certification of results. And this will give the citizens of our country the trust need that their vote is accurately recorded and accurately counted. Now, let me talk about adding up the different precincts. That's also done by computers. You know, you phone the results or you carry cartridges or you carry result tapes to county central where that election administration computer adds up the totals from the different precincts. This is called the canvas or the vote aggregation process. What if there is a bad computer program in there? Well, you know in addition to an electronic record of the vote totals produced by the voting machine, the machine prints out a cash register tape with the totals from that precinct right there on election night. And this tape is signed by the witnesses in the polling place, the poll workers and the challengers. So the public is invited in most states to observe that process. They can see what totals are printed by those voting machines and write them down and take down their party's victory party for that evening. Okay. And then the county clerk typically will publish the precinct by precinct vote results. So the witnesses who saw those results in the precincts can look at the county clerk's list and add them up themselves. First, they can check that it matches what they saw in the precincts and a well-organized political party or a candidate will have challengers in all of the precincts to observe that process. And then you can add them up yourself in a spreadsheet and see if they add up the county clerk said. This allows the public to do a kind of citizen audit of the canvas and aggregation process. And I think that's very valuable for trust and elections in our democracy. I will say that when you have things like early vote centers or early voting or vote centers where you can vote not in your own precinct but anywhere else, these are good things but they do make it more complicated to attribute the votes to the precincts. Right? So it gives the election administrator an extra challenge in how to make the aggregation process transparent enough that its citizens feel confident they understand what's presented in that spreadsheet and how it corresponds to the results they saw in the polling place.

What about voting on the Internet? Well, this would be a complete disaster right? Because those servers can be hacked just the same way that the voting machines can be hacked. Your phone you're using as the interface to connect to the server can be hacked. So that what you think is the ballot you're sending is not the ballot you're really sending. As a technological and scientific matter, we computer scientists know of no secure or trustworthy to do paperless Internet voting. And there are good scientists working on this and they might get results in five or ten or twenty years or so. But right now there's no method you could possibly use and trust.

So in conclusion members of the public should be empowered to observe, verify and therefore trust what's recorded on their own ballot. Right? That's a paper ballot, in other words. And the process of adding the ballots-- adding up the ballots in the precinct, you can't observe every part of that process because of the secret ballot. But you can observe the election audit that does that and then adding up the precincts. And they way to do this is with voter verified paper ballots, perhaps optically scanned in the precinct, random audits before the results are certified and transparency in reporting.

Presentation by Dr. Ronald Rivest, Professor of Computer Science, Massachusetts Institute of Technology

Commissioner Gardner then introduced the next panelist, Dr. Ronald Rivest. Dr. Rivest is a professor of computer science at Massachusetts Institute of Technology whose current research include cryptography, computer network security, voting systems and algorithms. His textbook on algorithms is used all across the country. Dr. Rivest is a member of the Caltech-MIT voting technology project. He served on the technical guidelines development committee, advisor to the election assistance commission, developing recommendations for voting systems certification standards. Dr. Rivest also serves on the Advisory Board of Verified Voting Foundation, and is a member of the Scantegrity team developing and testing voting systems that are verifiable end to end. Dr. Rivest's presentation can be found here: https://www.whitehouse.gov/sites/whitehouse.gov/files/docs/pacei-dr-ron-rivest.pdf.

Ronald Rivest: *Thank you. It's a pleasure to be here. I'd like to thank you and the vice chairs of this committee for inviting me to testify today. My remarks-- Andrew that was a wonderful talk. And my talk will be largely emphasis for what you said, I think. But let's begin. I got two slideshows. I got the ones on my laptop and the ones on my screen here. Okay, here we go. So I've organized my remarks into five sections goals, challenges, principles, myths and tools for the final section illustrating a hypothetical New Hampshire post-election audit of the sort that Andrew mentioned. I'll have to click both here. I'm reading my notes. There we go.*

Let's start with the four goals. The first one is improving security. At the highest level, we wish to improve security of our voting system. Security means, among other things that every eligible voter is able to vote, is able to cast a vote as intended and that election outcomes are accurate. I take a process view of voting. Voting is not a problem to be solved but a process to be continually improved. The way that the FAA manages airline security as a possible role model since security against attack is a major concern in both cases. But voting is different. Unlike air flight, a major voting disaster might be silent. The wrong person might be elected and no one knows. Our goal is thus to ensure that there are no such silent disasters.

So let's focus in on getting outcomes that are correct. Suppose we had a magic trained gorilla who given a pile of ballots would pick out the one with the majority winner. We'd more or less always be getting the right answer but would this continue to happen? Would we have confidence in the outcome? Computers are a lot like this magic trained gorilla. Stalin said, "The people who cast the votes decide nothing. The people who count the votes decide everything." That's also attributed to a lot of other people but Stalin among them. Do we have to trust a gorilla or the computer?

So let's move on to goal three. I guess I've got to click both of them here. I've got to learn my two-handed-- I got it. Do you want track me? Good. That would be great. Thank you. So the third goal is we focus more as outcomes that are perceived to be correct. For democracy to work elections must not only be correct but must also be perceived to be correct. In particular, the loser and his or her supporters have to be convinced that they lost fair and square. That was said earlier. A gorilla isn't very convincing and neither is a computer. Folks often trust that election outcomes are correct because they trust the election officials, their procedures, and the vendors of voting computers. But such trust may be hard to come by and in many cases generic rather than specific to a particular election outcome. So we can focus in more and ask for election outcomes that are verifiably correct. The idea would be to allow each particular election outcome to be verified by anyone including the losing candidates. Such verification requires credible evidence. Thus an election must produce not only correct outcomes but also convincing evidence

that those outcomes are correct. Let me say that again because it's perhaps my most important point. An election must produce not only correct outcomes, but also convincing evidence that those outcomes are correct. One form of credible evidence is a carefully counted paper trail-- carefully curated paper trail consisting of voter verified paper ballots.

Let's look at four challenges for achieving those goals. The first the secret ballots, surprisingly. It's sensible to run an election so that no one can tell how a voter voted even if the voter wishes it. This prevents vote buying. Most countries have had secret ballot elections. The U.S. has had them since 1890s. But once ballots are decoupled from the identities of the voters, they are subject to manipulation and even wholesale replacement. The secret ballot thus distinguishes voting from say banking where they identities of the parties to a transaction are always recorded in the audit trail.

Challenge two is the diversity of voters and elections we have. U.S. elections are incredibly ambitious. Elections are complex due to lots of factors including poll sight voting, vote my mail, provisional ballots, support for voters with disabilities, large ballots, complex voting methods such as IVR, early voting, voter registration databases and so on. Election integrity methods must produce evidence for correct election outcomes for all of these complexities.

Challenge number three is adversaries. We've always had adversaries, mostly insiders trying to stuff the ballot box. Today, our voting systems are also under attack from foreign states and foreign actors. Moreover, these adversaries may be exceptionally well staffed, well-funded and persistent. Bob Morris Sr. of NSA said, "You will always underestimate the amount of time and effort and adversary will devote to breaking your system." We should think of an adversary not as a couple of guys in a garage but as an army of thousands of well-trained military folks who work 24/7 for years to disrupt and destroy American democracy. We can put a man on the moon if no one is shooting at us. We can elect a president but only if our election systems can withstand attack. Moreover, no individual should be assumed to be above suspicion. The evidence should still show that the election outcome is correct without having to trust any particular individuals or computers.

Challenge four is that there's no free lunches here. Election integrity doesn't come for free. Evidence must be generated, collected, and evaluated. Improved integrity may incur greater cost, may yield slower results and may impact usability. Additional mechanisms for security will increase overall system complexity. Tradeoffs are inherent in any voting system. In the end, we still though want our lunch, but as we want verifiably correct election outcomes, research will help us guide the way for doing so with minimal negative impact.

Moving on to principles, what principles might we keep in mind as we try to resolve these conflicts and achieve our goals? First is that election integrity should be nonpartisan. That was said already today. Democracy is a blessing we all enjoy independent of party. The party that is in one year may be out on the next election. Adversaries may favor one side or the other, and that may change. I wouldn't be terribly surprised to hear that Putin is now supporting the Democrats. We need to ensure that the mechanics of democracy run well and run fairly without manipulation by anyone, no matter which party is running the country.

Principle 2: It takes a thief to catch a thief. As I tell my students, to achieve security, you must learn to think like an adversary. Harri Hursti and Professor Appel on this panel are among the best in the world at doing so. Events such as the recent DefCon Voting Village and the 2007 California top-to-bottom

review show how quickly and effectively some recent voting systems can be compromised. Thinking like an adversary involves lots of things, considering the chance of success, chance of detection and cost. An adversary may favor wholesale fraud, changing thousands of votes on a computer over retail fraud, buying or changing votes one at a time.

Principle 3 is that adversaries will attack at the weakest link. An adversary is most likely to find a weakest link and exploit it. It may be easier to corrupt a vendor than to corrupt eight thousand election jurisdictions. It may be easier to corrupt a voter registration database than to corrupt a tabulation system. Software is notoriously fragile. A voting system may have millions of lines of code, more lines of code than there are voters, many of which of these lines may be weak links. Commercial code routinely has several bugs per thousand lines of code in spite of best efforts. That is why we might think of software as the gorilla and aim for voting systems that are software independent, where we don't have to trust the gorilla.

Principle 4 is detect and recover. Security mechanisms come in two forms: There are prevention mechanisms and detection mechanisms. Prevention mechanisms try to keep bad things from happening. Detection mechanisms try to detect when something bad has happened. Both mechanisms are good and may be used together, but prevention methods frequently fail silently. A detection mechanism can tell you something has gone wrong and allow you to invoke an associated recovery method. As we shall see, a post-election audit is an excellent and simple election detection mechanism with a full hand count serving as the associated recovery method.

Moving on to myths, let me describe four myths. Myth 1: Federal certification ensures security. I was chair of the TGDC Security and Privacy Subcommittee from 2004 to 2009 and I have some understanding of the certification process. The current certification process is certainly better than nothing, but it's hardly an assurance of security, any more than a military parade inspection ensures that an army is ready for battle. Furthermore, there is little or nothing done to check that the voting system software running is even the voting system that was certified. You can't trust a voting system just because it's certified.

Myth 2. Professor Appel already mentioned this: Logic and accuracy testing doesn't ensure security. Let me just pass on that. It was already well described, I think. Myth 3: "Not connected to the internet" ensures security. That's actually perhaps the most dangerous myth. First of all, folks often don't realize their services such as fax and phone are now done over the internet. Second, it's not only what happens on election day that's important; you have to check if any of these machines were ever connected to the internet on other days, perhaps to update their software. What about other computers of election officials or vendors? And the Stuxnet attack on Iranian nuclear sites demonstrates that even disconnected computers may be attacked successfully.

And Myth 4 is that decentralization ensures security. It's often said that U.S. voting is hard to attack because it is so decentralized. Yes, there are many jurisdictions but only a few of them account for two-thirds of the voters. Moreover, an adversary may have good polling data just like the parties do and may be able to target attacks on key swing states and jurisdictions. Also a large well-funded adversary with thousands of staff may be able to devote two or three attackers per jurisdiction. Finally, every election, even the small ones, deserve protection.

What tools do we have to work on improved election security? Fighting fraud requires systems that generate evidence when fraud occurs and procedures that use such evidence to detect fraud and recover from it. Tool 1 is public verification of almost everything. To maximize public confidence that election outcomes are correct, almost all the evidence generated during an election should be available for public review. The only exception is for evidence that shows how individual voters voted. We must preserve the secret ballot. Evidence should not be withheld as proprietary or available only in opaque formats. When the evidence is tangible, as it is with paper ballots, it may be that not every voter will be able to review the evidence but that proxies and representatives of the parties and candidates may do so.

Tool 2 is an important one: Voter verification of their own paper ballots. The public can't verify everything. In particular, only the voter knows how he or she intended to vote. The best way to allow voters to verify that their intentions are correctly captured is to use a paper ballot that the voter reviews before casting it. By contrast, DREs only provide a software interface to the actual vote storage, and such an interface may say it is recording the voters' choices, while it is actually recording something else. I note that within the last few days, Virginia decided to scrap its DREs in favor of voter-verified paper ballots. That's a good move.

Tool number 3 is compliance audit. As we've seen, election integrity is all about the evidence. The purpose of a compliance audit is to provide assurance that evidence is credible-- the number of cast ballots is correct, the secure chain of custody has been maintained, and so on.

Tool 4 is a risk-limiting post-election audit. That's perhaps my favorite tool. A risk-limiting audit is designed to provide assurance that a reported election outcome is supported by the evidence, where the evidence is a collection of voter-verified paper ballots. The audit uses statistics, looking at randomly sampled ballots until the desired level of assurance is achieved. The specified risk limit, say 5 percent, bounds the chance that an incorrect reported election outcome won't be detected and corrected by a full hand count. A risk-limiting audit can be incredibly efficient, examining only a handful of randomly selected ballots before terminating, if the reported outcome is correct and the margin of victory is not terribly tiny.

Let's look at an example of a hypothetical post-election audit in New Hampshire. Let's take the 2016 race for the governor of New Hampshire. John Sununu-- congratulations John, if he's still here-- reportedly had roughly 354,000 votes; Chris Van Ostern had 338,000 roughly, and others had about 33 thousand. The margin of victory was 2.4 percent. Suppose we had wished to audit this race using a comparison risk-limiting audit, where each randomly chosen paper ballot-- and you take random ballots across the whole state-- and compare that with its corresponding electronic record produced by the optical scan machine. We do that until our target risk limit of 5 percent is met. What would that look like? We start sampling, we count errors we see, discrepancies between the paper ballots and the electronic records for them, and we measure the risk that an incorrect reported outcome wouldn't have been detected. We look at 100 ballots, we see no discrepancies, but we see that's not enough. At this point we still have a one-third chance, a 33 percent chance, that an incorrect election outcome might not have been caught by this audit. So we continue. We draw another 200 ballots. We still see no errors. The risk that we measure has gone down to 10 percent. That's higher than our goal of 5 percent, so we keep going. We draw another 300 ballots. We've drawn a total of 300 ballots from all across the state; we've seen no discrepancies. Our measured risk drops down to 4 percent. That's less than the 5 percent risk limit. We can stop the audit. Congratulations, John, you've won. We see that a risk-limiting audit can be astonishingly efficient. Here we looked at only 300 ballots, which is less than one out of every thousand

ballots cast. Surprisingly, with the same margin of victory, we would expect to examine the same number of ballots-- that's 300 of them-- of randomly selected ballots, even for an audit of an entire U.S. election. The size of the audit doesn't scale with the number of cast votes, surprisingly. That's the way the statistics work. It does scale inversely with the margin of victory, so a very close election requires more work, as one would expect, to confirm the reported election outcome.

So that pretty much concludes my remarks. Here's a couple of references on evidence-based elections and risk-limiting audits that I can recommend to this committee where you can find more details. So that concludes my remarks. Let me just summarize by saying it's all about the evidence. A voting system should not only produce the correct result but should produce evidence capable of revealing fraud when fraud has occurred. Voter-verified paper ballots coupled with post-election audits are today's best practice. Thanks for your attention.

Presentation by Harri Hursti, Co-Founder of Nordic Innovation Labs

Commissioner Gardner thanked Dr. Rivest for his presentation, and then introduced Harri Hursti. Commissioner Gardner explained that Hursti is not an academic, but the computer scientists and professors who meet every year recognize his genius and always invite him to participate. He is a recognized data security expert and is one of the world's foremost authorities on electronic voting security and critical problems and vulnerabilities in electronic voting systems worldwide. Over the past ten years, Mr. Hursti has conducted ethical hacking research into electronic voting systems. Commissioner Gardner noted that Hursti is known for his successful attempt to demonstrate how the Diebold election system voting machines could be hacked. Recently he attended and had a lot to do with the July 2017 DefCon hacker convention in Las Vegas, Nevada, where he demonstrated security vulnerabilities in electronic poll books and voter registration databases. Mr. Hursti's presentation can be found here: https://www.whitehouse.gov/sites/whitehouse.gov/files/docs/pacei-harri-hursti-presentation.pdf.

Statement by Harri Hursti: *Commission, thank you for having me here, and I will have a quick remark. Actually, thank you, your point of I'm not a professor; actually, only degree I have is high school. And it's a very good point because a lot of time in U.S. government, the security people are required to have a university degree, five years relevant work experience, etcetera, etcetera. Do you think the hackers will have these same requirements? Probably not. So it takes a thief to catch a thief. <laughs>*

My presentation is not about any specific hack. It's more about the fundamentally, how the attack vectors work, what are the adversaries thinking, what is the cost, and it's very important to understand how low the cost is. This is really an industry. This computer here is a full attack computer in transparent case for USB, commercials available. This particular one is designed and made in Italy. I have a website where people are selling similar stuff, made in U.S., sold with a credit card to anyone who cares to buy those. Also, it's all about the criminal mind. This is not an intellectual test. This is not the smartest one to win. When you're a criminal, you have a goal. Whatever the goal is, you try to achieve that goal, and there's no style points. There's also no bragging rights. If you get caught, that's because it's known that the crime happened. If nobody knows there was a crime, who will come after you? So this is all about how the attacks can work. Sometimes you want to cause a false perception of an attack. Nothing happened, but you want to undermine the confidence by making compelling case that an attack happened when nothing took place. So this is all about low cost, what is the possible ways the attacker thinks about these things.

Also, we have to understand that right now a lot of attention is driven towards the voting machines, but that is really only the customer interface. Behind is a humungously complex environment and infrastructure, which is the whole election infrastructure, and if you look what are the sweet spots of today's attacks, they are really an old-school, 30-year-old approaches where somebody's sending a phishing attack or similar mechanisms to try to get to the back-end systems and influence those. We have yet to see what well-documented and existing ten-year-old vulnerabilities, known over ten years in the voting systems, can be done and utilized in the hands of attacker. So really, are we thinking about the attacker the right way? Traditionally it has been always the dishonest candidate trying to win. Right now we are finally getting in the place where it's not anymore deniable, it's not anymore insane conspiracy theory that foreign adversaries might be in this field. And again, now we are coming to completely different field, because they don't necessarily prefer any candidate; they might prefer; they might not. Such might be that they want to undermine the confidence and very fundamentals of democracy. That is the whole [inaudible] for certain attackers.

DefCon, I was the co-organizer of the hacking election machine-- voting machine hacking village. What is important about that was people didn't know what kind of machines they are going to see. Most of the people had never seen a voting machine in their life because they came overseas. They had no tools, because they didn't know what kind of tools they would need, and they started from scratch when the doors opened. When the introduction to the machines were scheduled to happen, one hour after opening the doors, before we even had the introduction, a first gentleman-- and he was from Denmark-- came to me, "I think I have something." I said, "Well, can you prove it?" I said, "Well, I will go to hear one speech, and I will come back and start working on that." After the introduction was done, which was two hours after opening the door, he already had a proof of concept of wireless hack into voting machine. That particular voting machine was decertified 2014, but as we all know, that's not full guarantee that it's not anymore in use because some smaller jurisdiction might still continue to use them for a grace period or so. At the same time, another team-- and they were a team from Northern California-- had completely penetrated a voting-- a voter roll computer, so an e-pollbook system. So those both things happened in the first two hours with people who had no whatsoever prior expertise, prior knowledge, know nothing about these machines. That is very scary about how quickly you can get into the game. And again, as previously said very well, there is a lot of false sense of security by making a claim, "These are not network connected." We will get back to that later.

We are going to have some attack surfaces we are exploring-- USB, Wi-Fi, and barcodes. Barcodes because in the U.S., you use a barcode in behind of the driving license. However, if you look at the recent news, in the recent news, Estonia is right now considering whether they allow 750 thousand vulnerable ID cards which have microchips over there, smartcards, to be used in their future election, next election coming this year. We did flag in security study in 2014 that the ID card system is vulnerable, but that-- at the time the Estonia chose to deny the vulnerability. Now they came open I think this last week. Also, when we exploit the e-pollbook, one of the sad instances was that we discovered, from one of the e-pollbooks we had acquired from eBay, real data of 654 thousand real voters, and our current investigation by the Bureau of Investigation in Tennessee about that incident. So that was real data, accidentally in a machine sold in eBay. Not very good for confidence.

So USB is everywhere. This is the same device you have seen in the television show "Blacklist". A lot of people thought this device is fictional. It's not. But what is USB? USB really is everywhere. Every single device we use have a USB in one form or another. In election technology, it's used by different vendors for different purposes. It's to store encryption keys; it's to transfer the election results from the

central tabulator to reporting system; it's for reading the proprietary or non-proprietary election information cartridges; it's to connect a printer; it's everywhere. So USB is everywhere. But it's not commonly understood how dangerous USB is. USB is always a miniature computer. So even the normal USB stick you buy from Best Buy or whatever to use your storage, it actually is a miniature computer. Your charger, when you charge your mobile phone, that is a computer too. It actually needs to talk with your mobile phone to find out what kind of current that mobile phone will access. The problem here is that seven out of eight of these computers are hackable. Don't use somebody else's charger, is the lesson, or don't use somebody else's power pack unless you know that person very well. It really is that dangerous. Also, it's very stealthy. People, all the time we are sharing the charging cable. Even more scary, we let people to charge their mobile phones from our computer. There is an open source software proof of concept software in GitHub. It's attack software for Android phones which uses the Android phone's computer to attack the host computer when you are asking to charge the computer. How often people actually charge their mobile phone without even thinking? Well, they don't even know about this vulnerability, but when you don't even think it's normal part of your daily routine, that is where the vulnerability comes. Now, the USB device may at any point of time decide to be any device. It can decide to be keyboard, [inaudible] in your storage, it can decide to be keyboard, it can decide to be display, it can decide to be mouse, and it can delay-- can choose its functionality later.

Now, we have one thing here recurring, which is television. One thing what most people don't understand is the television cable, the HDMI cable, is actually a network cable too. It provides you hundred megabits Ethernet capability. It's very common that the central tabulator, which is in secure room-- whether it's secure or not, we don't go there-- has another display. There is a room which is publicly accessible where we can follow the count, which is HDMI cable. Now, anyone who gets to that television, which is in a public space, can affect directly that central tabulator. Very scary. So also, when we look at the computer, at the USB can done, again, it can delay, it can wait for 12 hours before it executes its attack code, and after that it takes over the machine. It also can always tell, "I'm your second screen," which means it gets a copy of everything on your screen; it can read over your shoulder; it can understand what you're doing; and, again, it can register itself to be keyboard and type over your shoulder, or move the mouse over your shoulder. So USB is unlimited in the capabilities it can take over the computer, and since it's fully programmable, it can be doing whatever it wants, and also because it's a storage unit, it can have a hidden storage and while it sees that the computer has not been used, it runs a program from the USB stick itself, from hidden partition, installs a malware, off you go. Again, since this technology is used commonly in both voting machines and in central tabulators, in e-pollbooks and registration systems, currently this is a technology which you cannot disable without disabling the whole system to work. And it's the intelligence is also that it can anytime affect the way you do communication. If a USB stick-- and you are trying to take the honest upgrade in from the system, from internet, it can divert all the traffic. So it's really there.

Now, the bigger problem in the side is what we previously heard, which is you use the vendors and rely on vendors and service companies, because a lot of these functionalities which are critical for election security is nowadays done for smallest jurisdiction in the service company. The service company is completely invisible. You don't know how connected the computer is where your election is going to be programmed, where USB sticks are programmed, because that all happens in the service company. The service company provides you the memory cards <inaudible>, but you don't know how safe they are because you don't know what happens in the service company. If you are in the-- a jurisdiction where service company is providing you the ballot definition, the programming of the election machines and maintenance, you have no control over your own elections. Full stop. Again, the pricing. The rubber

duck, 44 dollars 99. The LAN turtle, 49 dollars 99, both made in U.S., and the LAN turtle is very invisible way of affecting any system. You can claim that the system is closed network as many times it's meant, but the closed system very commonly in the U.S. means that the closed-- no internet means that you have two firewalls and after that you are in secure system. With this kind of small device, there's always a backdoor. This is a fully blown attack computer, $99.99, made in California. It has all the software ready. You don't need any skills. You just need to read the manual and have a little bit of imagination.

Barcodes. Again, we know that nobody ever has made a fraudulent driving license in order to prove they're 21, but that happens. When you read barcode, the problem is that barcode readers are usually a keyboard. So anything you can do with a keyboard you can do with a barcode. Barcode readers also have a bad habit of reading more standards than the standard you are using, and some of these barcodes can have a thousand, two thousand characters, and they can emulate the keyboard very effectively, so they can make those keyboard signs which are not-printable. Again, when you're reading a barcode, you can get an injection code into the system with that, and this is one thing which we found in the voting machine hacking village is how you can inject in some of these machines a SQL inject from the barcode. So these capabilities are very dangerous and we have to be very careful with the technology; unintended consequences of using driving license is the use of barcode. Again, this is more explanation how you actually can use the attack. Very, very effective, and also very effective in a point-of-sale system. It's very interesting that this vulnerability-- similar vulnerability and same vulnerability-- is in most of the cash register systems. We don't really know how much it's in use. All right.

The last point is Wi-Fi. I said before we don't know what happens in the service company. That is completely an unknown. What we know-- and my company, we are helping number of secretary of state security systems. We find rogue access points everywhere. People are carrying-- they are buying from Best Buy, they are putting it in election office. We find them all the time. Saying there's no Wi-Fi is a denial. But even if you are in a situation where you actually have a completely Wi-Fi-free network, you still have Wi-Fi there because everybody brings their mobile phones with them, and this has Wi-Fi. So now I can start to compromise the mobile phones, which are the people's personal property, and you use that as a stepping point as an attacker-- minimum gain intelligence, but more, gaining an attack point, a leverage point, where I can start my attack. So Wi-Fi is always there. Wi-Fi has no security in practical terms, because the actual management structure of that is unauthenticated and unencrypted, and it's very trusted. So even if you have a hidden network, actually radios are very noisy - that's what they are for. So when you have a hidden network, the hidden network still talks with someone, so attacker can always find there's a discussion going on, and with a directional antenna, you don't need to be in the building; you can be half mile away. You can half-mile-away listen it, you can half-mile-away attack it. There's no way of hiding. And really, it is-- your devices are constantly looking for anything to connect. They are broadcasting a list of your home network, your office network, the hotel lobby you have been and pair your computer, and they trust. If the device ask, "I want to talk with Foo," and you say, "I'm Foo," it says, "Well, fine." And this is really how the evil access point works. It's faster and more loud. It attempts to say yes to everything. "Whatever you want me to be, I'm that." And obviously your mobile phone thinks whatever it connects, that's internet. So it wants to go to Facebook, it wants to go to your email, and it shares your credentials in order to get in, and that means you are immediately man-in-the-middle. That's scaringly, scaringly simple.

This is a company funded by U.S. government partly in Boston. They make Pwn Phone. This is a fully-- it's a normal phone with attack software. You can carry out very complex attacks with touchscreen. You don't need to know how it's programmed. It's sold to you with 1100 dollars. They have a very much

funnier [inaudible] which is Power Pwn. Everything is built into the extension cord. So you just walk down to anybody's office; it has the wireless capability; it has the capability of using mobile phone network to call home. Wonderful. It's a little bit more expensive at 2000 dollars, so no attacker will ever have money for that, but if somebody had 2000 dollars, that'd be nice. But more budget option, this is a VoCore. The size of that is one inch by one inch by one-seventh of the inch, because you only need the top board. It's full-blown Linux computer. It's everything you need. It's wireless. It can talk with a wire line. It can carry out any attack you want. It costs 4 dollars. Those are my remarks. Thank you for having me.

Vice Chair Kobach thanked the third panel's presenters.

Discussion and Other Business

Vice Chair Kobach asked the Commission whether there were any other comments or questions.

Commissioner Adams thanked Commissioner Gardner for hosting the meeting and for the fantastic facility, panels, witnesses, and voting machines. He expressed hopes that the Commission's future meetings could match the quality of the New Hampshire meeting.

There were no additional comments or questions from the members.

Closing Remarks by Vice Chair Kobach and Secretary Gardner

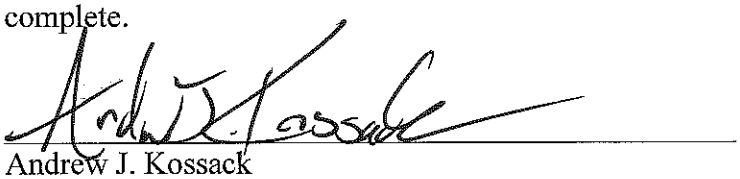
Vice Chair Kobach stated he was hopeful the Commission would have the same level of content and quality in future meetings. He stated that this meeting was a great start in the Commission's quest to put together as much data and information as they can to look at the issue of voter integrity. He noted that it was interesting how the Commission saw how voter integrity can be affected in a number of ways, and that security of the devices, voter fraud, and voter participation are all directly related to voter integrity. He stated there was a unifying thread through all the panels. Lastly, he gave thanks to Commissioner Gardner for hosting the meeting.

Commissioner Gardner again thanked the panels and said the Commission may call on the third panel's participants again in the future.

Vice Chair Kobach asked for a motion to adjourn the meeting. The meeting adjourned at approximately 4:38 p.m.

CERTIFICATION[3]

I hereby certify that, to the best of my knowledge, the foregoing minutes are accurate and complete.



Andrew J. Kossack
Designated Federal Officer
Presidential Advisory Commission on Election Integrity

[3] The Commission's Chair has delegated to the Designated Federal Officer the authority to certify the accuracy of Commission meeting minutes on the Chair's behalf.

Questions and Answers for Panel One

Kris Kobach: Thank you very much. We now have, I hope, a significant period of time to ask some questions. I'll go ahead and get the ball rolling by asking the first question which is actually really directed at all three of you. And it goes to something that Dr. Lott was just talking about. So we see lots of polling data-- well, some polling data on why people vote. I'm wondering if any of you have seen data on why people don't vote? In the state of Kansas, we are defending our proof of citizenship requirement. We're one of four states that have that. And one of the things we did in the process of discovery for the litigation is we conducted a poll and asked people who hadn't registered the reasons why they didn't register. And it was an open-ended question and none of them gave the response, "I didn't register because I didn't have a citizenship document," which was really one of the essential questions we were wondering about. I wonder has there been any polling of that question, not for registration but for voting? Why didn't you vote? And what are the reasons that people give for not voting? And then specifically, is there a significant percentage that say, "I didn't vote because I thought the election was going to be conducted unfairly." Any sort of fear, fraud or integrity related reason given for not voting.

Andrew Smith: The U.S. Census has conducted post-election studies going back quite some time. And the major reason that they see that people don't vote in a similar sort of question is that they just didn't bother. They weren't interested. They forgot. It was basically issues of convenience and non-interest were the major reasons. I can't recall whether or not concerns about fraud were mentioned. And as since it was an open-ended comment I'm sure there were probably some people that said that but it would be in the other bucket.

John Lott: I don't have anything to add.

Kimball Brace: I can tell you that the Census Bureau's numbers for 2016 are actually going to be coming out in another month. So it's some information that I think would be useful for you and the commission to take a look at because I think they're going to get into those kinds of questions with the newest data from 2016.

Kris Kobach: Okay. Thank you. Ken.

Ken Blackwell: Thank you. <clears throat> Let me first thank all three of you all for very thoughtful presentations. My first round of questions will deal with election administration, therefore, Mr. Brace, I want to start with you. One of the big issues across the last several elections is the whole notion of voter suppression. And one of the, I think, misconceptions out there in play is that some central authority within a state as opposed to local boards of elections or townships make the decision about placement of voting machines. Secondly, there's this conception or misconception that these local authorities have shelves full of voting machines so that they should be able to anticipate changes in voting patterns or turnout from one election to another. And I will just set this up for you by saying that in Ohio, in 2004, a very successful strategy that was implemented was to talk to students at Ohio State University with a population of 58,000 to say vote in Ohio as opposed to voting at home, which was legal. So that what happened was that there was a flood of voters in the precincts that really broke turnout records. And as

a consequence, there were long lines. The misconception is that those long lines reflected a deliberate voter suppression as opposed to looking at the realities that it actually was a good strategy based on the fiscal constraints and the availability of voting machines by local boards of elections. So how do we sort of right this record? Am I wrong? Are most voting machine decisions at the county board of elections level or local level? And how do they deal with those problems?

Kimball Brace: In most jurisdictions around the country it is at the county level or at the township level as you have here in New Hampshire where they make the decisions in terms of the allocation of machines. Now, in many instances they're governed by how many registered voters there can be a precinct and that determines under state law whether or not they need two machines or four machines or that sort of thing. So there's that variation. I was a member of the long lines commission in my county in 2013 looking at what we had the problems in Prince William County. And what we found is that indeed there was a problem of too many registered voters in a precinct. Their precincts were too large. And as a result, it was governed by how many machines they had at that point in time. But as a result we added fourteen more precincts to the county so that each of the precincts could be smaller in size. That improved things immensely so that by the time we got to 2014 and 2016 we didn't have those long lines. The other thing that we've been encouraging in my county, Prince William County, is to absentee vote. Absentee vote ahead of time. We are a suburb of Washington D.C. people spend a lot of time coming from our county to get into D.C. to their workplace. Under Virginia law, if you're going to be away from the county for eleven hours you can vote absentee. And so we encouraged people this time to vote absentee and we've seen a bigger increase. The absentee rate varies across the country, varies by jurisdiction. Basically, you see in New England and the upper northeast absentee rates tend to be lower. Absentee rates are better when you go further west in this country. But that has a big impact on whether or not you've got the long lines.

Ken Blackwell: And I wanted to make sure we understood what-- so the fix was for the next election.

Kimball Brace: That's correct.

Ken Blackwell: There's very little you can do in the moment.

Kimball Brace: It is. In the moment, it's very, very difficult. I mean basically we were allocating machines in June for the November election. Now, one of the problems that we had in 2012 is that in June we had x-number of registered of voters, whichever it was. But we had a big increase in September. And that wasn't taken into account in terms of the allocation of machines because they had done it in June. And so that was another problem that we had. Again, we solved that by changing the number of registered voters and increasing the number of precincts in the county.

Ken Blackwell: And let me just say for my colleagues, the reason I'm asking this question is because control of the narrative is so important. And the narrative has to be steeped in facts. So if the question is is the purpose of this commission to advocate things that would actually suppress votes, it would seem to me that we need to start off with the fact that things occur in elections that are impacted by the financial constraints on election administration, the fact that these are locally controlled operations that in large measure are impacted by the financial status of the local authority. And secondly, impacted by

the strategies conducted by the campaigns so that long lines can, in fact, reflect political success in the execution of a campaign strategy versus the intentional creation of long lines to discourage voters from sticking around and voting.

Kimball Brace: Right. I think the financial consideration that you've outlined is very much key in this country. We don't provide enough money for the conduct of elections. And we don't know how much money is spent in the administration of election. It is a project that I would love to get into.

Ken Blackwell: Thank you.

Kris Kobach: Secretary Dunlap.

Matthew Dunlap: Thank you, Mr. Speaker Vice-Chairman. Thank again-- as former secretary of state, Ken Blackwell, I want to echo his thanks for you coming here and making these presentations today. I found them all fascinating. Mr. Brace, you said something that caught my ear which is that home ownership is the number one driver to turnout. Would it also follow that those would constitute the easiest demographic to identify?

Kimball Brace: Certainly. Certainly, it does. I mean the Census data gives you the demographics down at the very small level of what percent are homeowners versus what percent are renters. And, indeed, you can see that variation. If one-- and I always encourage election officials, administrators to take a look at their own county and take that data down at the precinct level to see how that varies in your own jurisdiction. We see in Prince William County immense changes in terms of down at Woodbridge versus up in the northern part of the county. You can see that but it is governed an awful lot by that home ownership question.

Matthew Dunlap: Thank you. And Dr. Smith, you made a-- your presentation was wonderful. You did say something about in New Hampshire those who are domiciled versus citizens. Can you clarify that?

Andrew Smith: I can. I think Secretary Gardner could probably do a better job at this than I can.

Matthew Dunlap: I rely on academics. <laughter>

John Lott: That's a mistake.

Andrew Smith: The court rulings in New Hampshire say that the requirement for voting is that you are domiciled here which has been interpreted to mean that you spend most of your nights in the state. So this is a question that comes up routinely in election years. I live in Durham where the University of New Hampshire is, a big college town. We often get complaints that there are college students who are out of state students who are voting. But it is legal in New Hampshire for you to have a Massachusetts's driver's license and have Massachusetts's plates on your cars and pay out of state tuition to the university and still be eligible to vote because you are domiciled in New Hampshire, meaning that you spend most of your nights here. So there is a distinction in the law between citizenship and domicility [ph?] in New Hampshire.

Matthew Dunlap: And I find the point fascinating because we did a study in the state of Maine some years ago when we were looking at establishing a residency requirement to get a driver's license. And we found in the 38 titles of Maine law there's got to be at least 25 categories of definitions for what constitutes a resident. And it does seem to cast a pretty board net. And interestingly enough probably the most serious qualifications for citizenship would be to get a resident hunting or fishing license, mostly to keep people from New Hampshire from shooting all of our deer I would imagine. <laughter>

Andrew Smith: We got plenty of our own.

Matthew Dunlap: So I think along that line that's something for us, I think, to bear in mind is that among the several states these are questions that have great variety. But the issue of where's your pillow seems to be a key question here in terms of your ability to vote versus having-- being a homeowner is different. I mean I know I was having this conversation this morning before I settled in Old Town for one academic year as a graduate student, which was 28 years ago which is reflective probably more of my inertia than it is my academic abilities as a graduate student. It's not been that long of a year. I didn't plan on staying there but I did. And what we find is that, you know, in my life I mean I think I've lived in about eight different places. I moved six times in five years. And I think that's fairly typical for young professionals and students and others who move around a lot and that's something that makes it harder to track if they don't own that home and stay put and they're reliable.

Kimball Brace: It is another interesting fact coming from the Census Bureau is that basically about seventeen percent of the American public moves every year. That's phenomenal. Now, that has come down since the 2008 problem with the recession and that sort of thing. It dropped down to about eleven percent. But that's the amount of change that they see every year.

Andrew Smith: Could I just emphasize that specifically to New Hampshire. Between 2000 and 2008 about one-third of our potential voters were different people and that was similar. It was 30 percent between 2008 and 2016 where about a third of the potential voters were different people than they were prior. So looking for trends and trying to figure out what's going on is a very difficult thing when you do have that kind of mobility.

John Lott: It's the same people who are moving.

Matthew Dunlap: And I'll conclude, Mr. Vice-Chairman, I think the thing that serves as something of a touchstone for all of us here is that regardless of whether or not people move six times in five years or they live in the same house their whole lives, you have to be very careful when we're talking about things like additional security layers or additional integrity measures is that we are talking about citizens who have a fundamental right to vote and we need to be mindful of that.

Kris Kobach: Secretary Gardner had a follow up question to Secretary Dunlap's and then we'll go to Commissioner McCormick after that.

Bill Gardner: Thank you. This is directed to you, Kim.

Kimball Brace: Okay.

Bill Gardner: This commission had requested public information. It asked for only what is actually legally public in each state in the country. With all of the work you've done over the years, are you aware of any state that does not provide the public in that state information like who voted in the election, whether someone did or not, a list of the names of those who were registered and able to vote, so that the request that the commission made was that even if a state only made public the name and address of a person, that if that state sent that information that was in compliance with the request that this commission made. So are you aware that there are any states that do not allow the public to see the actual document of the election itself that shows who was eligible and who voted and who didn't?

Kimball Brace: It does vary across the states with different state laws in what is allowed to be available and not allowed to be available. But it's generally the case that one can get access to that kind of information. The kicker is that sometimes it's the candidates that have access to it, or the state parties that have access to it for a campaign purpose but not necessarily some academics or other kinds of people. It varies, though, in terms of different states in how they put on those restrictions.

Bill Gardner: So there are some states that don't make it public. They don't let their citizens see…

Kimball Brace: They'll make it public but it's in what form…

John Lott: And to whom.

Kimball Brace: And to whom.

Bill Gardner: But I mean public. I mean for any person. Like in New Hampshire we have the right to know law. Anything that is a government document, any person has the right to come in and ask for that and get it. And so voting being a public act, the process can be secret how they actually vote but the process is a public process. And that process creates a public document. And that document is a governmental record. Are there states that don't allow that kind of governmental record to be available to anyone who wishes it?

Kimball Brace: I don't believe there is on that side.

Kris Kobach: Commissioner McCormick.

Christy McCormick: Yes. Thank you all to the panelists. I have a few questions. As a commissioner on the EAC I understand the problems with data collection, of course, with our EAVS survey and the differences in interpretation of the questions that we ask and the data that is submitted, for example, what is actually early voting? Does it include absentee voting? You know, the issues. I know IEEE and some others are working on common data format. What are your thoughts on a common data format

for reporting election data? Is it feasible? What are the downsides to it? Is this something we should be pursuing?

Kimball Brace: I have been a member of the common data format team under NIST and participate in their weekly conversations and conference calls that we talk about that common data format. So I've been intricately involved in that process. It is possible if it's produced correctly that you can have that kind of information. And part of the goal, I know the goal of the EAC is to make that common data format something that everybody can then share. And it can also improve your data collection effort on the EAVS survey to get the information. It's still going to take some time, though. There's still different interpretations. Each of you interpret different ways of saying what turnout is or what is registration as I showed there. So it varies across the board. But it's clear that we need to have a central locality where we can collect that information and get it into a common format so that everybody can make use of it.

Christy McCormick: Thank you. Do you know if the Census Bureau has worked on that issue at all?

Kimball Brace: Because I do so much work with the Census Bureau in addition to election administration I've tried to bring them into the process also.

Christy McCormick: Okay. Dr. Lott, I am unfamiliar with the NICS database, could you let me know, who maintains that database and where do they get their information from?

John Lott: Yes. Well, the NICS system is run by the Bureau of Alcohol, Tobacco and Firearms within the Department of Justice. And they have reporting requirements for law enforcement from around the country. And there's also been some recent changes with regard to mental health and other things that wouldn't be relevant for this commission. But it's basically requirements that law enforcement around the country required to keep an updated database and to report that information constantly to NICS. There's information required from the state department and other places with regard to citizenship information where the people are here on a Visa, for example. It's interesting, but as I said, a lot of the same rules that determine whether you can vote, determine whether or not people are legally able to own a gun.

Christy McCormick: It's interesting. Dr. Smith, regarding trust in paper ballots versus machine cast ballots, do you think part of the reason for the mistrust of the machines is a lack of understanding of the technology in that? I mean it's very simple to understand a paper ballot. It's not so simple to understand the complexities of how the DRE machines work. Has that been studied at all?

Andrew Smith: I'm not aware specifically of that getting down to that level, but it's certainly a plausible explanation. And I think with a paper ballot to be able to point to something that you can physically hold in your hand I think is more comforting to most people than knowing that it sits on a chip some place.

Christy McCormick: Yeah. And, of course, the accessibility community has issues with paper ballots. And I think that's something that we need to keep in mind to be able to vote privately is an issue there, as well. Do any of you know whether there have been studies on the lack of civics education? I mean in the early sixties, as your graph pointed out, we had more turnout. And I think there's kind of a

correlation in the drop in civics education across the country with turnout. I don't know if anybody has done any of that study.

Andrew Smith: As a professor in political science I hate to say that there probably has been a decline in the number of hours that are being taught. The primary and secondary schools are required to teach a lot more things now than they were say 30 or 40 years ago. But as I pointed out, I don't know if we can point to one single thing like civics education as being a cause of decline. It's certainly one factor that could be in play. But I would be hesitant to say that that is the reason that we've seen a decline. As a political scientist, I would like to see greater civic education.

Christy McCormick: Thank you.

John Lott: They can make up it up in your classes in college.

Kris Kobach: We're going to go now to Secretary Lawson, and then you'll go to Commissioner von Spakovsky.

Connie Lawson: Well, thank you panelists for being here today. I enjoyed your presentations. I have a couple of questions about what influences an infrequent voter. I've been reading some studies, recently, and what I've been reading is that the ability to vote on election day anywhere like the vote center concept would influence an infrequent voter to get an urge on election day and show up. Versus the availability of increased early absentee ability. So have you seen any studies on that? And have you determined for yourself what that might be to influence that infrequent voter?

Kimball Brace: Well, certainly from the standpoint of election administrators they're very much interested in what is potential with the vote center concept. It is a concept that has come into being in probably the last twenty years to try to see what can be done. In many ways, it is like an absentee location. We have in my county we have four absentee locations that you can go to before the election day and cast an absentee vote. You can cast it on a machine, on a paper ballot, whatever the case may be. It's all available there. They're strategically placed within the county to help people get to a relatively central location from their standpoint. So it's that kind of convenience to the voters that a lot of election administrators are experimenting with to try to improve that process to get more people to turn out.

Kimball Brace: Have you seen any studies about the infrequent voter? And did they take more advantage of an opportunity to vote early? Or do they take more advantage of the opportunity to vote any place in a county on election day?

Kimball Brace: I don't know that there's been specific studies on that. Unless, you've seen…

John Lott: Yeah, I've done work on that. I mean that's-- I mean essentially just looking at the overall participation rate and to see how that changes, as you see change these different rules. And I can just kind of go through some of these things. Probably, the biggest things are like registration by mail changes. Same day registration has a big impact. A little bit further down you have things like vote by mail provisional ballots, absentee ballot, has about a five-percentage point increase there. I could tell

you the different amounts. But when it's trying to account for all of these different factors at the same time that's kind of the relative ranking that you see in terms of changes. Now, whether that's real legitimate people doing it or some increase in fraud that you might see for some of those things, that I can't tell you the distinction.

Connie Lawson: Okay. Thank you.

Kris Kobach: Commissioner von Sapkovsky.

Hans von Sapkovsky: Dr. Smith and Kim if you want to answer on this too. The study that you showed and a lot of folks in this area say there's been this general decline in turnout after the 1960 election. But as you probably know there are a number of statisticians and other social scientists who say that those numbers are not correct. And the reason they say is the 1960s numbers are based on voting age population. And since that time, of course, we've had a much larger increase of non-citizens in the country which are included in the VAP numbers even though they can't vote. And the prison population has gotten much larger. And in 48 states in the country, of course, you can't vote when you are in prison. And these other statisticians say that when you actually take that into account and instead of using VAP you use citizen eligible voting age population that there actually has not been a steady decline. That it has kind of leveled off and stayed, I think, pretty much the same. What do you say about those numbers and that analysis of the statistics you used in this area?

Andrew Smith: Voting age population does have a series of weaknesses as you point out. Voting eligible, I think, is a better measure to use. As Mr. Brace would tell you that's a more difficult challenge to get that information over time, historically. And that's one of the reasons in historical analysis it's usually voting age population that's pointed to. I think that you're probably right that the turnout figures once you adjust for those factors are better than are reflected in the voting age population numbers. But I think that the decline still is there since the 1950s and 1960s. It just may not be as dramatic given the increase in the population of people that aren't eligible.

Hans von Sapkovsky: Kim, I can call you Kim. We've known each other for more than two decades. I had a question for you because you keep track of voting equipment. So you know the voting equipment that's used in every county and township in the country and in the states. I have a question for you, I just saw in the news that Virginia has de-certified DRE or direct recording equipment. Now, my understanding of Virginia is that they overwhelmingly use OptiScan paper ballots for voting. But in order to comply with the Help America Vote Act passed by Congress in 2002 which required that at least one voting machine in each precinct be one that people who are disabled can use. For example, people who are blind can vote independently, the only equipment that allows you to do that is a DRE. So I guess my question is, it's two months before their election I'm assuming from what you know of the voting equipment in that state they're not going to be in compliance with that requirement.

Kimball Brace: It is a possibility. There are, I believe, it's 22 counties in the state of Virginia that are suddenly scrambling since the Friday decision of the state board. And certainly one of the considerations they've got to take into account is the handicapped voting. There are some devices that could be available from that side to make that a little bit easier and to allow you to at least have that kind of a

capability. I know in my precinct in Prince William County we have, in essence, a DRE that produces a paper, that produces the optical scan ballot. And that is then read like all other optical scan ballots so that you get that capability of the voter being able to see on a screen what is the variation and the benefits of those kind of screens as you can get them with different languages in different size type. You can assist the voter in a lot more ways by having that kind of an electronic capability if it's coupled with the paper ballot. Unfortunately, if you look at vote history in this country the American public knows how to foul up a paper ballot. That is one of the unfortunate facts that we have. So the question is how to help the American voter mark the ballot properly. That's the key. And education, I think, is critical to that.

John Lott: Yeah, I just want to make a quick comment addressing what Professor Smith just said and that is you mentioned two things that are happening, one kind of foreign born population increase but also prison population. Prison population can't explain the change. I mean you've had an increase in prison population but it's been much more than offset by the changing voting rules in terms of allowing people who are felons to be able to go and vote. From 2000 on you've had major changes across the states. And that kind of stock of people who now can vote who were felons dramatically much more than offsets the-- any change that you've had in the number of people who are in prison.

Hans von Sapkovsky: Thanks.

Kris Kobach: Go ahead.

Matthew Dunlap: Thank you, Mr. Vice-Chairman. Dr. Lott, I wasn't going to follow up on this but Commission McCormick's questions kind of reignited my interest in your presentation about the instant checks system. Now, my understanding since it's been a few years since I've run one of these checks but I used to do it, that somebody fills out their form. It used to be the form 4417. I think it's 4473 now. And they put all of their proprietary information on there. And you make the call. And you specify long gun, handgun. And you give them the information and they come back with one of three responses which is either proceed, deny or delay. And our ATF agent told me that delay usually the most common demographic to get caught up in a delay are law enforcement officers because they tend to buy and sell a lot of guns and it raises a flag in the system. But in my experience they never tell you why someone is delayed or denied. It's just denied.

John Lott: But that information is there. It's easy to access. There's no reason why it can't be provided. There's no law that says that they can't provide it. They just have streamlined the system to basically give what's necessary for the store or the FFL who is handling it. There's no reason why the FFL has to know why the person has been denied being able to go and purchase the gun.

Matthew Dunlap: I guess I was sort of under the impression you're making a comparative analysis. But are you suggesting that we use the NICS system for elections?

John Lott: Sure, I don't see why not. You have the same-- I mean there may be alternatives and we can talk about alternatives, but here you have something that many people who would be involved in this debate are on the record, whether they think this is a good system or not. It seems like it would solve a

lot of the political divisions that are there. And it has in the database the types of things that you would want to look at in terms of whether or not somebody would be qualified for voting.

Matthew Dunlap: I would think ATF would have some concerns about that.

John Lott: Well, I'm not sure why. I mean they go-- for example, as I mentioned, the state of Kentucky every month they use the database to go and see all the concealed carry permit holders in the state, whether or not they've been flagged. A lot of states do it once a year. It's completely their choice, whether they use it once every month or once a year or they do could do it once a day. The ATF just provides the services when it's requested. Now, maybe if all of the states went there would be increased demand for their services and Congress would have to allocate some more money to them. But it's not like this is a technically sophisticated problem there. These states constantly compare their lists of concealed carry permit holders to the database that they're in. It's a relatively simple process. My understanding is for Kentucky to run this you're talking about something that takes minutes for them to do.

Matthew Dunlap: Well, I would observe Mr. Vice Chairman, if implemented, we'd be witnessing a sterling example of the laws of unintended consequences in public policy.

John Lott: In what way?

Matthew Dunlap: The NICS system wasn't designed for elections. It was designed for doing background checks in firearms sales.

John Lott: No, but it's the same things that disqualify you from being able to own a gun that would disqualify somebody from voting.

Matthew Dunlap: Well, when I would make those background check calls I wasn't talking to a live person. It wasn't punching in data.

John Lott: No, but you don't have to. I mean, obviously, that's one reason why these checks are so costly when you privately transfer a gun. You have somebody…

Matthew Dunlap: But ATF didn't charge us for that.

John Lott: Right. But when you're talking about an FFL doing it, the FFL has to take time. Sometimes there are delays. They have to charge an average cost in order to overcome it. One of the reasons why places like New York City and Washington D.C. have these incredibly high costs is just, you know, you have other regulations that are imposed by localities that are there that don't have anything to do with how the NICS system actually functions. But you can just see -- I mean I haven't gotten access to the cost per individual states that compared their CCW's, their permit holders to it but my guess is it's a pretty trivial cost for them to go and do that, if they do it in that type of batch data set there.

Matthew Dunlap: Well, I mentioned the unintended consequences. I mean we started issuing driver's licenses in 1920s to show that someone was qualified to operate a motor vehicle and now it's become this global identity document. It was never intended to do that. We started putting pictures on driver's licenses to keep kids from using their big brother's driver's license to buy beer. That was the public policy purpose behind that. And now you see us skating around all of the complications of the Real ID Act. We've talked about voter ID and other issue. That was never what that document was intended for just like NICS was never intended to be used as an elections tool. So it's just something that I find a rather strident departure from how we use technology.

Christy McCormick: Mr. Vice-Chair, can I follow up on that?

Kris Kobach: Go ahead, follow-up yeah.

Christy McCormick: Are you suggesting that we completely replace other databases? Or is this just another data set that we can run lists against? I mean we already use a lot of different databases, NCOA, and driver's licenses.

John Lott: Sure. But this one has kind of one-stop shopping in terms of covering all of the different aspects and citizenship and whether somebody has a criminal record for the places that it matters whether you have a criminal record. And one reason for using this is that it's been hashed out in the political debates lots and lots of times. People who might normally object to having these types of checks done have been on the record many times over about how they think the NICS system works. And so if this is a system that they have honestly believed over time is a fair and accurate way of determining whether or not somebody is legally able to go and own a gun, presumably they would also think that it's not going to suppress voter turnout.

Kris Kobach: Let me ask a question on a slightly different topic. Although, I would like Dr. Lott to respond first, and then the others as well. You mentioned that you've made some effort to track what is a central issue in this whole debate about photo ID and that is the-- any affect that it may have-- that change may have on subsequent voter participation rates. There was a study that the GAO did a couple of years ago attempting to derive some conclusions. My impression as being someone whose degree is not in statistics is that it was a rather rudimentary calculation that the GAO did. They took a handful of states that made the change to photo ID including Kansas and Tennessee. And then they took a handful of states that did not make the change to photo ID over the same time period including among other states Maine, I think, was on the list. And then they said, here is the change in participation rates from the presidential election in '08 to the presidential election in '12 in the two states that adopted photo ID here's the change, the delta in the states that did not adopt photo ID. Here's our conclusion. And here are the differences. And when I read that I was struck that it was a complete apples to oranges question. I looked at Matt's state, Maine, and saw that they had all kinds of amazingly interesting things on the ballot including a public initiative in 2012 whereas in Kansas 2012 was something that happens every twelve years in our cycle where there's no presidential race, no U.S. Senate race, and no statewide officers so you had nobody running a statewide campaign and so '12 was one of our very low political activity years. And the GAO didn't account for any of that.

John Lott: Right. Even how close it was with regard to the presidential races it may have been closer in one state in 2012 than it was-- or the first year than it was in the second year.

Kris Kobach: So my question to you is did you see similar flaws in the GAO study? And you also mention that you need to control for certain things if you want to try to accurately measure the effect of photo ID law. Could you elaborate? Did you look at the GAO study? And what are the factors you need to control for?

John Lott: No, no, I think you did a good job of characterizing GAO study. Look, when I look at data I look at all of the data that's available for all of the years its available when I'm doing the study. And there's so many things that can affect voter turnout. You mentioned some things. And so I would want to look at not only whether there happened to be a senate race in one year and not in another year, but how close the race was. Those things as Brace was mentioning sometimes you'll have a higher turnout because of the senate race may be particularly tough. And you have other laws that are changing at the same time. You know, it's not just photo IDs. But you have things like absentee ballot rules can change, how you can register, lots of things, as I was showing. You have massive changes over this period of time and lots of different rules. And just to focus on one rule and not realize that a lot of rules got changed at the same time in different states. That there's really no way that you can know that it's just-- even if you had controlled properly for the closeness of elections and what have you, that you could pick that up. And initiatives what I try to do in my work is I have information on what types of ballot initiatives are going on in each state because those can be very hot topics in some places.

Kris Kobach: So is it your answer that no matter how hard you try to control for the variables, you're never going to be able to control for all of the variables and get a clear answer? Or what?

John Lott: Well, I mean you do your best on the things. But hopefully, we have some objective measure of whether somebody even tries to control for the things or not control for them. And what I can say is at least in the range of things that I've looked at what the results are fairly consistent. And so whether you-- I look at many different types of laws that deal with vote fraud. I deal with initiatives. I deal with presidential, Senate, gubernatorial elections, how close they are. I have extensive demographic information and other types of things that are there for precisely the reasons that you're bringing up, the points that you're raising are exactly the reasons why you've got to control for other things.

Kris Kobach: And just finally, was it your conclusion-- because you were kind of rushing to finish your presentation that if you make the change to photo ID requirements it has no significant effect on turnout?

John Lott: Yeah. Right. I mean basically except when you look at places which are considered hotspots for voter fraud, there you actually see a statistically significant increase in turnout. But generally, when you're looking across the whole country you just never see statistically significant results. Sometimes it's a slight drop that's not statistically significant. Sometimes it's a slight increase that's not statistically significant. But it's really not different from zero. And one of the interesting things I didn't have time to go through is you can break it down by race and gender and age of the different voters. And it's like completely random. You can't say it's so you look at blacks, for example, maybe it increases it for black

males, 20 to 40 causes it to go down slightly for 40 to 60 and then up again for 60 to 80. It's not-- so there's no systematic effect across races or gender or age that's there. And so it just seems like-- and these are virtually always statistically insignificant differences themselves. But there's no pattern that you can look there that says that there's a particular group in the population that seems to have been disadvantaged as a result of these rules.

Kris Kobach: Do either of you want to comment on that?

Andrew Smith: I agree. It's a very complicated issue because there are so many different factors that you have to take into account and the data on all of those factors aren't necessarily consistent from place to place and time to time.

Kris Kobach: Secretary Blackwell.

Ken Blackwell: This is my day for election administration.

Kris Kobach: All right, good!

Ken Blackwell: Provisional ballots. You used some figures that would suggest that 46/47 states use provisional ballots?

Kimball Brace: No, I did not put in things in terms of provisional ballots. The EAC, in their study, they have information in terms of that. But it varies across the states in terms of how provisional ballots are implemented. Sometimes they're a high percentage, sometimes they're a low percentage. And so you've really got to understand what's going on to figure out, "Is provisional ballots having an impact or not having an impact?" I know in my state, in my jurisdiction in Prince William County, we have a relatively low number of provisional ballots in the state. But other states, they have a high rate of provisional ballots. So it varies across the--

Ken Blackwell: From a just pure management standpoint, in Ohio, you must vote in the precinct in which you're registered.

Kimball Brace: Right.

Ken Blackwell: Because there are local issues that differ from precinct to precinct. And therefore, provisional ballots are used when you don't pop up in your right precinct. But, you know, they can correct for that.

Kimball Brace: Sometimes.

Ken Blackwell: Sometimes.

Kimball Brace: Some states don't allow to correct for that. Other states do say that that portion of the ballot--

Ken Blackwell: That's right.

Kimball Brace: -- that you are eligible for, you could have that portion counted. While in other states, they knock out the entire ballot.

Ken Blackwell: But given the diversity of our system, and the, you know, in that case, the disintegration of our system, that is a position that is generally accepted as an acceptable practice based on the state, based on the state reaching that conclusion that this is the way they want to manage their elections.
Kimball Brace: It is governed by the state law that does that, yes.

Ken Blackwell: Okay. The second point of this, Dr. Smith, what have seen in terms of early voting? I know that in 2002 we were looking at it in Ohio. I'll just use Ohio, a week. Then all of a sudden it was two weeks, and now it is 30 days. Which puts added financial burden on strapped local boards of elections. Apart from that financial burden, what have we seen in terms of early voting? Is there a higher chance of manipulation, or error, or-- what's been our learnings from the 30-day window versus the two-week window, versus the week window?

Andrew Smith: I'm going to punt to these guys. Because they've looked at this more carefully than I have.

Ken Blackwell: Oh, okay.

Andrew Smith: I think Kimball probably has done more on this.

Kimball Brace: We have taken a look at that kind of a circumstance. I know in my own county, we have a relatively long period of time where you can come in and vote an absentee ballot. In my county, we don't staff all four sites for absentee ballots for the entire time period. We only have two of those open for the first two weeks, and then we open all four for the two weeks closest to the election. We found that that is a lot better use of management and time and cost to be able to facilitate the voters. They're not always interested that far out. Some of them are. So you make the opportunity, but you certainly kind of compact that area into a set period of time, closer to the election.

John Lott: In my work, I find that basically once it's more than a week that you have for this pre-voting, it has a small, but very small effect in terms of the increased participation that you're going to be having.

Kris Kobach: Commissioner Adams?

J. Christian Adams: Mr. Brace, you said you found approximately just over ten percent of inactive voters in Prince William County voted in 2016. Is that about right?

Kimball Brace: Actually, it was in 2014--

J. Christian Adams: 2014.

Kimball Brace: -- when we did that study, yes.

J. Christian Adams: Is what separates an active from an inactive voter essentially just filling out a form in the polling place, and then being able to vote?

Kimball Brace: In Virginia, yes, you basically state that you are a resident. There was no reason for me to not get that piece of mail or whatever, and you can end up voting in that case.

J. Christian Adams: When you worked on the EAC survey, was there any thought given to collapsing these two categories together? Or otherwise treating active and inactive as-- you testified that some inactive states don't report that. Shouldn't they be reporting the number of inactives if they're eligible to vote just by filling out a form?

Kimball Brace: I believe that really you should have both sets of numbers, but you should keep them apart, so you can understand the differences between them. Indeed, if we have inactive numbers in a state where it's a low percentage that is inactive, then you can end up having a different impact. But clearly when you look at the data across the board, by adding in the inactive in many instances, you get some of those instances that I explained that are more than 100 percent of the voting age, or the citizenship voting age.

J. Christian Adams: Let me come back to that in a second. Election Data Services, you testified about some of the public information. Some states you can get voter lists and so forth like the Commission has asked for, like the commission has asked for. Has Election Data Services had the occasion to compile voter lists and receive this information?

Kimball Brace: We only do that when we're under consulting contract with the jurisdiction. So we're an extension of the jurisdiction, we were working with them. We do a lot of work with re-precincting, and helping the jurisdiction reassign the polling places and that sort of thing. And in that instance, we're taking the voter file and geocoding it so that we have the proper location of where each of these voters are to help us redesign the precinct. But in those instances, that's the only reason why we have a voter file. It's to do internal work for their purposes, not for campaigns or anything like that.

J. Christian Adams: Understood. Last question. You testified about the 100 percent figure, and you also testified about error in the census decennial in ACS.

Kimball Brace: Right.

J. Christian Adams: Can you ascribe a quantitative value to the error rate for both of those? Do you have one that you assume or infer or incorporate?

Kimball Brace: I don't think you could come up with one single number. I know that in the 2010 census that they did have an overcount and an undercount. It was in the very low percentages, but it was still there. It varied by demographics, by different geographies, that sort of thing. So that's important to

understand the variation on that side. On the ACS, the American Community Survey, they have that margin of error, the MOE, so that you can calculate that. it does show you that when you get down to smaller levels of geography, smaller numbers of people, that MOE becomes very large. And so it becomes a problem to have accurate numbers there. And indeed, as I was showing you, in terms of the registration numbers, we've got so many small jurisdictions that those MOEs really go beyond the span of what the numbers are showing.

Questions and Answers for Panel Two

Kris Kobach: Thank you. And now we have some time for questions. Try to keep things moving along. Might take a little bit less time for questions on this panel since we want to try to get done by as close to four as we can. But I'll ask the first question mainly for Ken Block, but the other panelists can certainly weigh in on it. Talking about the issue of double voting, people being found to cast votes in two different states, Kansas is involved intimately in tracking this problem because we host the Interstate Cross Check System, and that does yield leads, that it appears that the person of the same name and date of birth has voted. Of course, you don't bring a prosecution until you then investigate that lead and you have matching signatures in both states, and that's usually the point at which you can conclude that you probably have the same person. My office obtained prosecutorial authority two years ago, and in those two years, we've obtained eight convictions for double voting, and that's not because there aren't more cases; it's just that we have a very small legal staff, and so we're cranking those out at about five or so a year. There are two more not double-voting cases, but there are two more prosecutions in the hopper right now. But one of the interesting things is-- well, a couple things. One is your-- you pointed out the 200 married couples. One of our eight cases is-- does involve a married couple who voted in Arkansas and Kansas. One of the other things we see are serial double voters. It appears to me that once people figure out they can get away with it and that no one's going to track it, no one's going to prosecute them, they keep doing it. And so we've had a number of serial double voters that we have prosecuted, and so as we prioritize our cases, we usually go for the lowest hanging fruit because we have such a small legal staff, the cases that we can dispose of most quickly because the evidence is already right there, or the serial double voters because that's obviously a person who's probably going to keep on doing it until they get prosecuted. And one other point I would note, it is a bipartisan problem, as Mr. von Spakovsky was just pointing out. Interestingly, in Kansas, Republicans outnumber Democrats on the registration rolls, not surprisingly. The prosecutions, Republicans outnumber Democrats, and the prosecutions are brought without any knowledge of the person's voter registration usually until at the very end stage, but that doesn't figure in to the prosecution. So I guess my question for you is are there any other patterns you see in terms of this double voting problem? My sense of it is that it's an opportunistic crime in the sense that people may not set out to register in two states and think, "Okay, I'm going to keep my registration in my old state with the intention of voting twice," but that they at some point realize they can do it, they're tempted, and they say, "I think I can get away with this," and they go ahead and do it. Do you have-- and, again, it's hard to-- I'm looking at it from the eight cases that I know in great detail, but I'm curious if from your global point of view looking at these numbers, if there are any other patterns that you see with this problem of people casting ballots in multiple states?

Ken Block: Yes, so that's a great question, and I can't through the data necessarily determine what someone's intent was, but there's some interesting patterns that I think can give you hints to it. So there were five individuals from the twenty-one states that we found who voted in three different states. So I think once you start getting into that, for sure, you can make some assumptions of that, that there's some intent there to take advantage of a system that can be taken advantage of. An interesting pattern that we found within the 8,500 pairs of votes, when we take a look at out-of-state mailing addresses, inside those 8,500 sets of votes, we looked at the out-of-state mailing address in one state,

and we look to see if we can match that up to the residential address of the matched pair, and we had about 600 instances where the out-of-state mailing address from one voter registration was linked to the residential address of the other voter registration. That's probably real close to being able to convict on, not all the way, obviously, but that's a really great indicator that there's something going on there and that the nexus, right, the address from one place is directly linked to the address of the other place. So there's a number of different ways that you can look at this data and use the data that's there. If we had had mail ballot applications, I would have loved to have double checked where those mail ballots were being sent. If the mail ballots were being sent to the address of the other vote, I think that's a very clear indication of what's happening with that particular vote. So yeah, there's a lot of different things yet to be done that we haven't taken a look at. I mean you could spend years and years doing this. I mean we're two years into this project and we try to jam it all down into a fifteen-minute presentation. There's a lot more to talk about.

Kris Kobach: Christian.

J. Christian Adams: Question Mr. Palmer, if you might. My organization released this report part of the materials about 616 citizens in New Jersey called Garden State Got You [ph?] that were found to have been on the voter rolls of New Jersey and took themselves out because they were in an immigration process. Could you describe some of the sources of data this commission should look at that local election officials might have regarding non-citizens who have been on the rolls removed? Your experiences in Florida or Virginia about what sort of information is just sitting there in election offices related to non-citizens on the roles like the kind that Mr. von Sapkovsky talked about?

Donald Palmer: I haven't read the full report but I think some of the ways that states and counties can verify citizenship is, I think, states primarily have a responsibility to try to work with the federal government. DHS has a program called SAVE. But my advice to this commission would be to if there was a way for the federal government to provide information in an accessible manner to facilitate that transfer of information that would actually work for state and local election officials that would be something that the states could use as sort of a database for that. Most states, at least the ones that I've worked with and have knowledge of, the DMV database is a good source of non-citizen data because they have categories under the Real ID Act. And if there's interaction between the DMV and the state and the localities that information should be flowing to the county so they can do that process. The problem that we face sometimes it's an individual thing is that there's really not a great verification process for citizenship. Let's just face it. There's little to none. And so what happens is because we find out after the fact then at that point there's a process to identify to confirm that and then remove them from the rolls. And so that's a struggle, that's a problem that states have.

J. Christian Adams: What is jury recusal data that election officials have available? And also what about self-reporting instances like the kind that you've probably seen before?

Donald Palmer: Well, I think that-- and that's one reason why I support that there should be in counties, there should be a transmittal of information between the clerks and the county offices or the local offices. Because folks will respond with their new address. They'll also respond to whether or not they're citizens or not. And that information for the most part is legitimate. There's some that may mislead because they don't want to be on a jury. But for the most part it's very accurate the fact that I'm not a citizen. And so that information is a very valuable source for localities. But it's sort of intermittent

across the country both on the state and the county level but it's something that is a good source of information.

Kris Kobach: Secretary Dunlap.

Matthew Dunlap: Thank you very much. And thank you gentlemen for coming forward and bringing forward some pretty compelling information. And fascinating discussion. I do have a couple of questions. All of you gave great presentations. One of the questions I had and this is probably more of a global question because I could probably take up a lot of time with particular questions for each of you, but, you know, there is this great blurry line and that's the Help America Vote Act. And some of the discussion sort of bridges pre-HAVA and post-HAVA. And I think there is a distinction. And Mr. Block, you're talking in detail about Rhode Island. And Rhode Island was ahead of Maine. They had a much better developed voter system. We had 503 different voter files. And this is, I think, speaks to the importance of HAVA as an incredible development in election administration. We had many of our larger communities had pretty sophisticated electronic lists that were kept more or less up to date. Some were typed out. Some were handwritten. And I knew a couple of small plantations where the clerk just knew everybody and that was the voter file. And they were maintained about as inconsistently as they were created. But one of the-- and we went through something similar not with elections but actually with motor vehicle licensure with old data. And what happened with us is that whenever we interact with a motorist whether they actually have a driver's license or not we create a history number for them. And if they don't apply for a license, then we don't have their social security number. So we would put in this is before the sophistication of the post-COBAL world we put in a real value as a placeholder, all nines for a social security number which led to the charge that we were allowing thousands of illegal immigrants to get driver's license in the state of Maine which wasn't true. We had one kid who was fourteen years old stole a school bus. He didn't have a license. We had to give him a history number. He had to have a place holder in there. And likewise, I know with the Rhode Island situation they were-- a lot of their data, that 30 percent that you described many of them had registered to vote long prior to HAVA when that information wasn't required. So I think I guess my question is does HAVA make a difference here? Because if it doesn't then why did we pass it? I think it's made a tremendous difference in making information better. I would agree because of all of the discussion that's been going on and partly helped spur the creation of this commission. One of the missing elements in HAVA was no provision for an interaction between states. States had to go out and build their own voter files and come up with an accessible voter solution and now you've got 90 percent of what HAVA was. But I also operate under the premise that most people are law abiding. I used to chair the fish and wildlife committee in the main legislature and we did a quick review. We have 5000 bodies of water. We have 3000 miles of streams and brooks. And right now as I speak I bet there's about 40 game wardens on duty in the state of Maine which is the size of the rest of New England. You are more likely to be hit by a meteor than see a game warden in a remote trout pond to check your license. And yet, what we found is that the compliance rate for buying a fishing license was about 98.5 percent. People tend to be law abiding. And I think when we have issues, what we've discovered as we've done some of these exact same inquiries that you do is that people check off the wrong box. They make a mistake. The clerk gets confused. Nobody-- and to get to-- and this is a point I'd like to raise with you Mr. Block, you talk about how the data doesn't show intent, well a prosecutor has to show intent to prosecute for a felony and that's a real gulf there. How do we bridge that?

Ken Block: Well, that's the role of law enforcement takes the data and moves forward with it from there. You take depositions. You have to look any applications for mail ballots or any other extenuating circumstances in that particular-- for that particular vote to build a case and see where you go. Regarding HAVA and the 30 percent of Rhode Island voters who are voting without social or a driver's license, that's happening now what 13, 14 years post HAVA. So an awful lot of time has gone by and that data hasn't been cleaned up. I would argue a shortfall of HAVA was not requiring states to backfill that important data.

Matthew Dunlap: So it didn't require it because that would mean that that's a lapse of some kind? If we're following the law.

Ken Block: Well, I've talked to other states where the percentage is less than one percent.

Matthew Dunlap: Well, like us because we had to build it form whole cloth we weren't working with an old database.

Ken Block: Right. So Rhode Island should remain at 30 percent of its voters without personally identifying information in its voter registration system until they pass on? I mean at some point, isn't the responsibility of state government, for integrity purposes, if nothing else, to go get that data and make their data more strong than it is now? To me with all of that time having gone by without filling in the gaps in that data I think that's a lapse.

Matthew Dunlap: Well, I don't disagree but I think that's also a separate argument than the status of the data. And the implication I would have gotten if I hadn't known their situation is that there were people that were just-- you might as well just hand out Sears Roebuck catalogs as register people to vote. I don't think it was quite that wanton.

Ken Block: I'm not going to attempt to paint the elections officials with intent nor am I going to try and paint potential duplicate voters with intent. All I can tell you is what the data looks like right now in Rhode Island is not particularly good especially in light of the fact that a brand-new voter can register to vote and vote today without a social security number and without a driver's license and that's in contravention of HAVA. So there's a number of issues at play there. All of them pick away at the overall strength of voting integrity in Rhode Island.

Matthew Dunlap: Thank you for the clarification. I won't speak for the Rhode Island secretary of state. I know her well. She can fight her own battles.

Kris Kobach: I would just comment on Secretary Dunlap's comment, as far as intent goes, since we do prosecute these cases usually in the cases we've prosecuted it's very clear that there is intent because of the timing of the two votes. Often times, you'll have a person vote in person in state A and vote by mail by in state B within the same week. So that's one of the factors we have looked at and our prosecutors look at to say this person didn't vote 30 days in advance and then somehow forget. The other thing is when you have the married couples you usually have a pretty clear indication of intent. There's a conspiracy of sorts between the two individuals. And then with the serial double voters you tend to have a very clear intent because they're doing it again and again. And I just would add this for the public consumption, when we started prosecuting these cases there were some editorials that were maybe these are just old senile people who forgot that they voted and voted again. And that's not the case either unless someone in his sixties or her sixties is senile I think the median age for these cases was in

the high fifties or low sixties and no one was above the age of, I think, 72 or something like that. So it's pretty clear in these cases of double voting at least the ones that we've looked at that there's no question of intent. If there were a question of intent we wouldn't prosecute the case. Yeah.

Christy McCormick: Thank you. Thank you to all of the panelists for being here. I appreciated your presentations. Mr. Palmer, the NVRA requires a mailing before someone can be taken off of a voter registration list. I think ERIC also requires a mailing. How effective are these confirmation mailings? What kind of response rates do we get? And is this an effective way to determine whether somebody should remain on a registration list or no?

Donald Palmer: Effect is difficult to define. I would say that it's a very expensive and probably not very efficient way of removing voters through this process. And that's why I suggest some different ways to get enough information so an election official can remove-- like if you have someone registering and say I'd like to remove myself from the previous roles, most people are going to say yes, that's one thing I want to do. Thank you for allowing me to be part of the solution rather than the problem. It's not very efficient. And that's why I suggest-- I had some suggestions on how we streamline that process if we work inside the NVRA. How do we use the available information and technology to say we want to know what the best and the correct address is of all of our voters instead of mailing to that best address, not sort of the scattered sort of reflexive action of a lot of election officials find themselves in that I'm going to spend a lot of money. I'm going to spend a lot of mailings because that's really the only way within the process right now to do effectiveness maintenance. I there are better ways, the use of technology. We're moving away from paper. People don't read their postcards or their mail as much. I mean we have an entire generation of folks that really have not put a stamp-- and I'm starting to lose the ability to do it as well. But that's our major way of list maintenance and keeping the rolls clean. So the search for a new way is I have open ears and I'm hopeful.

Robert Popper: Let add just one example of a place where it was an impediment. There was a state that was-- we've had extensive discussions with them so I'll just say that they're a state but they had a law that prevented their membership in Crosscheck or ERIC from being the basis for sending a confirmation notice to someone who may have moved. So they would tout the fact that they were members of these organizations but it meant absolutely nothing because under state law you couldn't send an NVRA 8(d)2 [ph?] notice. So it was actually an impediment.

Christy McCormick: Interesting.

Hans von Sapkovsky: Could I add something? Just one thing I want to be sure that everyone is clear on because there's a lot of confusion, often, particularly, in the public and unfortunately there's some groups that try to add to this confusion people get this wrong impression that if state election officials are doing data comparisons, they're running the state voter registration list, for example, against DMV records. And they discover that the DMV records say that someone is a non-citizen will people complain about that saying well, if the data records are inaccurate you're making a big mistake, immediately dropping them off the rolls. But they should understand that no election officials automatically drop anybody off the voter rolls because they had an indication back when they're doing a data comparison from different databases that there may be a problem. They take that as an indicator that there may be a problem. And then they mount an investigation. That usually means contacting the particular voter whether by phone, through letter to find out if the information they've gotten is correct. And only after they do an investigation that confirms that, for example, the people, the person is not a citizen or

perhaps a person has moved to another state that's when they take them off the rolls. And I think it's important for people to understand that. When we're talking about doing data comparisons with available databases we're not talking about automatically deleting anybody off the voter rolls.

Christy McCormick: So when we hear, for example, Georgia eliminating a million voters off their rolls after some amount of time, we don't know how long they've gone, first of all, without doing some sort of a cleaning of their rolls. And it isn't an automatic process?

Hans von Spakovsky: No, that's right. And one other correction about the NVRA which, again, I think election officials have gotten confused about. The rules about taking someone off the rolls deal with people who have moved out of state. If you discover-- if an election official discovers that someone is deceased because the state department of vital records produces a death record for that particular voter and it's that person the NVRA rules don't apply. You can immediately take that person off the rolls.

Christy McCormick: You can't send them a mailing.

Hans von Spakovsky: Right. You obviously can't send them a mailing. Similarly, if an election gets evidence that somebody is a non-citizen and therefore was never eligible to vote in the first place, again, the NVRA rule doesn't apply. You can take it-- as long as you've got confirmation the persons is not a U.S. citizen you can immediately take them off the rolls.

Robert Popper: I'd like to amend that. I mean in the eleventh circuit there was a case there, the [inaudible] case, in fact, the last justice department supported this litigation. And the upshot there was that there's a 90-day freeze period in removing people who may have moved elsewhere immediately prior to an election and that makes a ton of sense. You don't want to be removing people at the last minute because you can't spot where they live. They may still live there. And so there's a 90-day freeze period. Well, this litigation supported by the United States Department of Justice argued that that freeze period should apply to non-citizens. Now, there were two district court cases. They lost in both. It was appealed to the eleventh circuit by one set of plaintiffs and they won a two to one split decision. And then Governor Scott chose not to appeal it to the United States Supreme Court so it is now the law in the eleventh circuit, contrary Hans to what you were saying and I think frankly contrary to common sense, that you cannot remove a non-citizen in the 90-days right before an election. And it's true they were never eligible to register or to vote. They only got on that list by an accident or by an error or by fraud. So there is at least in the eleventh circuit that emendation to the rule.

Hans von Spakovsky: You're absolutely right about that. I should have mentioned that case. But remember that only applies to the 90 days in a general program prior to the election. Any other time, they can be removed immediately.

Christy McCormick: A number of you have mentioned the Pew [ph?] study, and putting aside the results of that study which I think are very important any of you have an opinion on why Pew undertook that study in the first place? I mean, obviously, it takes some time and money to do that kind of a study.

Donald Palmer: I think Pew had a series of meetings, if I recall, on I think it was actually post- HAVA if my memory serves. And this was a major issue that came out of the Carter-Baker commission. So sort of the result of that was how can the states work together to compare lists and sort of synchronize lists to try to identify duplicate registrations. There was lots of money spent. And ERIC was a creation of that. A lot of states invested a lot of time and energy, I'm sure over millions of dollars of investment, into how

that organization runs. And that is a result to try to resolve this problem, to try to get the states to work together. And obviously it's an important issue, it's a bipartisan issue. And so I think that reflects by the actions not just the words in the report.

Christy McCormick: So ERIC and IVRC are obviously good-- we're working towards that but have not solved the problem is that what I'm hearing?

Donald Palmer: Well, I'm trying to do my math in my head. I mean ERIC and Crosscheck has been around-- Crosscheck particularly has been around for a while, for over a decade. And ERIC is almost a decade, perhaps less a full operational use. I'm not sure we're there. I mean it's unfortunate. I think some of it has to do with the fact that you have not all of the states participating. The material-- and Virginia was a participant of both and I was amazed at the data that I was being-- that was coming into me and that's worth a number of duplications in the state from both programs. But it showed me that if we're all working together-- if all 50 states were participating it would be significant-- even more significant and we could be making a lot more progress. But the fact of the matter is not all states are participating and some don't participate in any, some in one, some in very few participate in both. So it's a mishmash. And for me it's not ideal.

Christy McCormick: Mr. Block, you mentioned the duplicate voters that you found in Florida, how far have you tracked that geographically? I mean are you down to congressional districts where you can identify where those are or lower jurisdictions?

Ken Block: We have all of the data to any level of granularity that you'd like that's supplied with the Florida voter records which goes all the way down to, I believe city and town council districts and school districts and all sorts of things like that. So we haven't looked with that level of granularity but we certainly can.

Christy McCormick: I think it would be interesting to see whether there's a pattern and where these duplicate votes are happening or where these nonlegal votes are being cast.

Ken Block: I think it's more driven, in my opinion, and this is supposition. This is not fact. It's my belief that a great many of these duplicate votes are made possible through second homeownership. And we see the concentration of votes not so much with regard to specific districts and wanting to impact a specific election so much as that's a really nice place to have a house. So I think that's what really drives us to a large extent.

Christy McCormick: Mr. Palmer.

Donald Palmer: My only point and this is also Secretary Kobach's is my analysis is that the pattern is usually a regional area, tristate or border states. So you find most duplicates on a border state area or with commuters who may live in one state but work in another state and have an interest in another state, a reason to vote in two states. So we've seen that with some prosecutions. And if you make that analysis that was one of the recommendations that if you're going to start sharing data, some of the states have started with their bordering states, the region because that's where a lot of the sort of commuting or living across the border takes place.

Matthew Dunlap: I have one last thing and then we have to move on.

Kris Kobach: Okay. Secretary Dunlap and the Commissioner Adams and then we'll move on.

Matthew Dunlap: Okay. I think one of the things, I think, that's interesting, I mean, obviously, voting twice in one election is a crime regardless of whether it's between two different states or within the same state. But being registered in two different places is often, as you intimated Mr. Palmer, that's something that happens. Either the voter doesn't reach back and have their previous address taken off or the election official does not. But, you know, when were talking internally about the voter data request and what we would make available is very, very high level, you know, our publicly available lists for qualified NCs [ph?], includes the name, the physical address, the year of birth, legislative districts and then whether or not they voted in the last two federal cycles. Isn't there a possibility I mean given the spectrum of information that's available to you doesn't it heighten the possibility of a possible false positives. I mean there's a lot of Matthew Dunlap's out there, believe it or not. When you think of me I prefer you picture the model out in Seattle who does voiceovers for radio ads. He seems to be a great guy. But there's probably a lot of Matthew Dunlap's that are born the same year I was. And getting into those lower layers of information to see that if that person actually is the same person that's registered in multiple jurisdictions is that information that's available to you? It doesn't seem to be through our data sets. I know no two states actually do it exactly the same way. But, you know, like Mr. Popper, you said, we know there's voter fraud, we just don't know how much. Now, if you know that it's out there you should be able to determine how much. And that's just my own personal view.

Robert Popper: Not when several states just don't report it.

Matthew Dunlap: But I think, you know, my question here is as we talk about data sets and what they reveal to us is different layers of data that may indicate a correlation without a necessary causation.

Robert Popper: Oh sure, but you do the best-- first off, remember that at the end of this project what you're doing is sending a letter to someone forwardable mail do you still live there? They're not being thrown off the rolls. So good data, bad data, you're sure, you're not sure, that's all that's happening. But to get there, there are several searches that are quite robust. First name, last name, house number, date of birth, will give you very good matches. There are a number of counties that use that. I know that Los Angeles County uses that or at least suggests that that's the proper one. And I think in that respect, they're correct. And then if you use that sort of a match with fuzzy logic on the first name you're going to have pretty good idea of who to send these mailings to. And then remember, you send a mailing, it's to the wrong person. All right, you've sent it to the wrong person and they missed the mail. Okay. Then they need to not vote or have any contact with the state for two general federal elections. It can be years before they're removed and then even if the worst happens and that is what happens, all of they have to do is reregister. And county officials, in my experience, are very sensitive. I mean I met people who work for you and I'm sorry that at the Department of Justice you and I were once on opposite sides of…

Matthew Dunlap: Oh, I don't believe that for a second.

<group laughter>

Robert Popper: But, you know, they want to do the right thing is my sense. And when someone has been improperly removed from the rolls they will bend over backwards to either not remove them beforehand or to get them back on the rolls.

Ken Block: Just talking about the names, so my name Ken Block shows up 62 times in the 21 states data that we have.

Matthew Dunlap: I think hope they're not all juniors.

Ken Block: No. None of them are juniors that I saw. One of them is a famous racecar driver. Another one was the lead singer for Sister Hazel. And in tiny little Rhode Island and I've run for governor in Rhode Island there's another poor Ken Block who lives in the next town over. And I feel really bad for this guy because he deals with a lot of my hate mail every once in a while. But so names are common. They're much more common than you would think. And what we certainly learned from matching was even with full names and full birthdates our positive match rate was twelve percent. Right? So we had an 88 percent false positive when we just matched on names and birthdates. So for me, I think, what we did was very important using external data sources to really narrow down and remove as many of the false positives as we could.

Kris Kobach: I have one quick follow up on that. When you did the-- when you attached using the commercial vendors social security numbers to those names what's your level of confidence then at that point that you have a correct positive match?

Ken Block: Nearly 100 percent. This is number-- this is data that comes pretty much directly from the social security administration.

Kris Kobach: Commissioner Adams.

J. Christian Adams: We're essentially out of time so very quick answer from each of the four of you. Is it your belief that you can improve list maintenance practices to cut down on voter fraud as part of this commission's recommendation without taking legitimate voters off the rolls? What is the view of each of you on that score?

Hans von Spakovsky: Absolutely. Yes.

Ken Block: I believe yes, for no other reason because HAVA mandates provisional balloting. And with provisional voting it's very, very difficult to improperly deny someone the vote because they can always cast a provisional ballot.

J. Christian Adams: Thanks.

Robert Popper: Yes, you could.

Donald Palmer: Yes.

Kris Kobach: All right. Well, that concludes this panel. Rather than taking a quick break since we're kind of running over time, we're going to go ahead and push straight through to the next panel. So if the panels could come forward. And then if members of the commission or members of the audiences have to take a break to go use the bathroom or get a drink just feel free to quietly leave and come back. We will try to conclude this final panel by fourth thirty if possible.

Question and Answer Period for Panel Three

Bill Gardner: Thank all of you with--

Ken Blackwell: Mr. Chairman, I'm sufficiently shaken.

Kris Kobach: Yeah. Well, we do have a couple commissioners who have to leave to catch a plane, but we're going to keep on going with questions. Thank you for that heartwarming presentation. I'm sure we're all feeling great now. <laughs> I want to lead with one question, and that is, just to make sure I understand-- so let's assume that-- explain to me how a hack would work if a jurisdiction secured the programming of its-- assume it's a paper ballot with one of the machines that does an optical scan at the site, but the jurisdiction has very good security of the programming of the optical scanner, so there was never any opportunity for somebody to touch who's not a trusted insider, and very good security of the-- and the vendor is trusted, and also at the polling place there's no opportunity for someone to touch the optical scanning machine or to insert-- maybe they're watching it very carefully-- no one's going to be able to insert a USB. Are you indicating that if somebody has a telephone-- people will be holding telephones inside it-- would it be possible to use Wi-Fi? And explain to me, someone who doesn't have specific knowledge here, could you still get into the programming of the optical scanner without any physical contact with it and it's not connected to the internet, and how?

Harry Hursti: Thank you for bringing up the optical scan machines, because in the recent recount effort, one of the discoveries we lead [ph?] is that a voting machine, DS-200, has built-in wireless, and it's told to be a wireless modem which goes to Spring or Verizon network, so it's actually built-in mobile phone. There you go. That's everything an attacker needs, and now the attacker can be across the world.

Kris Kobach: And if the optical scan machine did not have a built-in wireless, would you still need to have that actual physical contact with the machine to hit it with a USB to insert the malware?

Andrew Appel: Let me answer that question. So suppose it's some machine that has no radio at all, although the DS-200 was sort of advertised to have no radio at all. The attack is not so much a person walking by in the polling place. The premise that you knew what was installed in this machine and you've had someone continually watching it for the last 10 years that it's been in service, in and out of warehouses, that's one problem; it's really hard to achieve that. And the second is, you download software into that machine all the time. Before every election, you have to insert the removable media that you think has only the ballot definition on it, and identify your lucky it has only the ballot definition. If you're not lucky, your election administration computer has been hacked or your vendor's network has been hacked, so that on those ballot definition media that you're shoving into the side of the machine before each election, you also got malware piggybacking and replacing the vote-counting software. So this perfect chain of custody from the time the thing was manufactured till ten years later when it's used in this election is sort of unrealistic to trust.

Kris Kobach: But certainly something that an election jurisdiction should try to do, and I know that many of our jurisdictions do actually keep the machines locked up and do try to maintain the highest

degree of confidence with the vendor or whoever is updating the programming, but obviously-- I guess my question is: If the machine doesn't have it already, do you need physical contact with the tabulator to actually put in the malware or put in whatever programming it's going to do, that's going to take it?

Ron Rivest: The vendor may have been infected before things happen. As Adi Shamir, my colleague, likes to say, there's no perfect security; there's only degrees of insecurity. And so this optical scan machine is this magic trained gorilla who works right most of the time and helps things get done efficiently, but you can't trust him absolutely. You've got to have evidence and you've got to have a protocol for checking that the work is done properties. So these machines can be attacked, maybe-- with good procedures, like you're suggesting, the probability of attack goes down, but you don't want to rest the election of the president on the fact that maybe the Wi-Fi was turned on when it shouldn't have been or vice versa or something like that. You want to be able to check the election, recount the paper ballots, recount random samples of them, to know that you've got the right result.

Harri Hursti: Also I would like to point out that certain vendors include barcodes into the ballots, and proper studies in my knowledge have not been made. With the recent understanding how to use barcode as an attack vector, are those barcodes safe? And now you have absentee ballots with the barcodes.

J. Christian Adams: Thank you very much for that presentation. It was quite an eye-opener, very enjoyable. I want to ask you a question about the difference between hackable and hacked. Now, Mr. Hursti, you testified about one of the reasons somebody might want to do this is to reduce confidence in the election by creating a situation where something is hacked. Are any of you aware of any instance where a live American election in the last 15 years has been hacked? I know you testified about hackable. My question is hacked. And if the goal was to diminish confidence, wouldn't one way to do it is to leave fingerprints that you were hacked?

Harri Hursti: So, my answer to that is I was part of the former Secretary of Ohio, Jennifer Brunner's study EVEREST, and she asked the same question, and I told her, "If you continue to use these machines, I don't think there will be proper evidence or even doubt that the machine has been hacked, because these machines have no capability of preserving forensic evidence whatsoever." The only reason you will find that there's evidence of it being hacked is if somebody wants to leave the evidence.

Andrew Appel: I mean, explaining that a little further, the vote counting program in the machine is in changeable memory. Just like you can download new software from the removable media into the memory of the computer, the memory of the computer can rewrite itself. That's how you store new data in your computer each day. That's how you install new programs. So it's very easy to write a program that cheats in the election and then as soon as the polls have closed and it's reported as fraudulent data, it replaces itself with a legitimate program. So I'm not aware of any specific incidents where an election is known to have been hacked but, first of all, almost no forensic examinations of this kind have ever been done, and such forensic examinations would not be easy or reliable because of the ability of the computer program to erase itself after the hack.

J. Christian Adams: Well, then it sounds like you're describing a solution that's unfixable, if it can't be discovered after the hack.

Andrew Appel: So what we propose as the solution to trust in our elections is the ability to recount those paper ballots that the voters actually marked themselves and that are kept in the ballot box under the op-scan, and because it's expensive and time-consuming to recount every single one of those paper ballots after every single election, to use statistical audit methods to sample the paper ballots to see that, "Oh, we picked these 300 different paper ballots at random, and every single one of them agreed with what the computer claimed, so that's really good evidence that in this election, the computer was not hacked."

Matthew Dunlap: Thank you Mr. Vice Chair. I think Mr. Adams' question is a great one, because this is what we were jumping up and down about this fall when the federal government was giving some indication that our elections were at risk. And to this day, I don't know what that was based on, but it was, in our view, in the state of Maine, a reckless assertion to make because you talk about voter confidence-- it's like, we have paper ballots, okay? We have the DS-200 tabulating machines. We don't have audits. However, we do do a number of recounts, for any election, and we do a front-to-back recount; we don't do sampling. We did a congressional recount a while back in a congressional district. We did a statewide recount on a citizen initiative that went right to the eleventh hour and they took just about all the material, and I don't think more than a dozen votes changed throughout the entire recount. And by the way, we're not a statewide scanner. We have about-- I think just over 50 percent of our towns now are on optical scan; the rest are hand-count. So you have towns with fewer than 500 voters, they tend to count by hand, using the same general ballot technology. So I guess to the question about what the intent of making it look like you've attacked a system is, is it to diminish voter confidence in the upcoming election? So they say-- and this is something that I feel a little bit strongly about, simply because-- like our last election in Maine was actually a fairly complicated one. We had the presidential race, we had the two congressional races, of course the legislative elections. We had five citizen initiatives that were really all over the place. They were not, "Do you want to make purple the official state color?" I mean, we talked about raising the minimum wage in a scaled way, legalizing marijuana, expanded background checks in firearms, rank choice voting-- love to hear your thoughts about rank choice voting in this climate-- and raising taxes to fund education. So I guess my concern was that having that discussion out there with really no solid evidence that anything was being attacked, at least not supplied to us by the federal government-- Homeland Security, FBI, whoever. There's just somebody out sort of making blanket statements that our systems were vulnerable. Is that for the voter who wants to do the right thing-- and when I say wants to do the right thing, they want to vote in a way that makes a brighter future for them and their children and they're confused by these issues-- they get the information that the systems are at risk and say, "Well, what's the point?" and they stay home. Is that the risk, or is it really the technology? Kind of a multipart, open-ended question, which I apologize for.

Andrew Appel: I think there's a severe risk with the technology. I think it's excellent that 40 states are already voting on paper that is recountable, and in those states that have audits, or at least have a very

high rate of recount, those states can assure the voters that, "Here's how you can tell that our elections are trustworthy." But to ignore the fact that the computers are completely hackable and to try and run elections, as some states do, where they entirely rely on the word of some computer program about who won, I think is irresponsible, and I don't think it's crying wolf to point out what might be possible.

Matthew Dunlap: Well, I'm not saying that you were crying wolf. What I'm asking is part of an attack-- is it a feint? Is a feint the same as an attack? And that's not a technological question; that's a sociological question.

Andrew Appel: Five or ten years ago, or fifteen years ago, when I started working on this, we would think about that threat model of that the candidate or more likely the sort of criminal associate of the candidate that the candidate didn't even know was doing anything was sort of hacking voting machines to steal votes, and the idea that the Russians might do something just to cast doubt on our democracy without even caring who won wasn't in our picture of the threat model. But no matter what the threat model is, the media and the citizens pay a lot more attention to these issues in years that are multiple of four, and maybe in this odd-numbered year we can have a more responsible discussion of this without being in the middle of an election, and I think that's a good thing.

Harri Hursti: I fully agree that voter apathy is as dangerous as anything for democracy, so maybe the solution is to bring citizen participation up. Humboldt County tried a method where they published all-- they used a third-party, commercial off-the-shelf scanner to scan all the ballots and publish those images, allowing the general public and anyone who was concerned to use open source software and do their own recount.

Bill Gardner: Do you agree on open source? Ron, do you have--

Ron Rivest: Open source is often a useful tool for getting better security. I have no problems with those open source-- it's helpful, but it's not the panacea that many think it is. I mean, I think you need to have-- I mean, the question I raised in my remarks is one of evidence. Open source is a way of constructing software. What we care about in the election integrity business is evidence that that outcomes are correct. So open source software by itself is not evidence, but it's helpful to understand how the systems work.

Harri Hursti: I would like to point out that when I started hacking machines, 2005, at the time a number of jurisdictions-- for example, California-- believed that source code review is the way to ensure that the machine is honest, and my proof was to show it's not because the attack can happen on a hardware level. Open source are definitely [inaudible]. For example, it brings demonstrable cost down and it breaks the vendor lock. It allows you to have a confidence through transparency, but it is not the whole solution.

Andrew Appel: I think open source is useful, or something short of open source is called published source, where the vendor says, "Here's our program. You can see what it does." But it doesn't solve the whole program because you don't know that that program is actually installed in the machine on

election day. It could be the attacker's program that's installed in the machine on election day. So open source is not the whole solution to the problem.

Hans von Sapkovsky: Well, someone said earlier, gentlemen, I think you scared everyone in this room from using their iPhones and their chargers and everything else.

Matthew Dunlap: Here, take it.

<laughter>

Hans von Sapkovsky: Right. And obviously what you said about internet voting, I mean, every group that's looked at it, from the National Science Foundation to the first taskforce, which California Secretary of State started as-- recommended against it too-- and you've made a good case on DREs. The one issue I don't think you really addressed that I'd like your opinions on is, as you know, the growing trend across the country-- and there's upwards of 30 states now that have done it-- is online voter registration, and my question to you is: Does putting voter registration online, is that a dangerous thing, because does that help give hackers a route into voter registration databases where, if they can hack into it, they could do all kinds of things, such as plant a program that selects voters in particular precincts that might favor their particular party based on their voting history and completely erase all traces that they ever registered to vote or ever voted. So how dangerous is putting voter registration online?

Ron Rivest: I can respond to that. I think probably my colleagues have remarks too. But the kind of scenarios you're talking about are absolutely a concern and one does need to be very concerned about putting systems online, voter-facing systems. The difference between a voter registration system and a tabulation system, however, is the secret ballot. So the tabulation system is worried about tabulating ballots that have to remain secret, and the origin of those ballots have to be decoupled from the identity of the voters and you start losing the ability to have audit trails that can be effective you're not careful. With voter registration database, every transaction can be carefully logged, publicly logged in a write-only database or something. People even talk about putting things on the blockchain or whatever and so on too. So you can have a transaction log that's much more reliable and public and secure. That said, online voter registration databases make me very nervous.

Andrew Appel: I would agree. There are things to worry about with online voter registration, but the ability to back up the database, to log every change to the database-- it could be that the benefits of online voter registration outweigh the risks, and so I've nothing against online voter registration.

Hans von Sapkovsky: Well, my question about the logging procedure is this: Do you think election officials have good enough cybersecurity in place to actually detect that? And I would give you the example I'm sure you all know about, about how the District of Columbia some years ago put out an internet voting project and then challenged hackers all over the country to try to get into it, and a professor I think at University of Michigan assigned it to his class as a project, and I think within 48 hours they had gotten into it, but what made it even more dangerous was that the election officials were

unable to detect that they had made it into the system and the only reason they finally found out was because they put in a piece of software so that when you completed your vote on the mock election it played the University of Michigan fight song.

<laughter>

Ron Rivest: You're absolutely right that the level of cybersecurity expertise in many jurisdictions needs to be greatly raised if we want to seriously consider things such as online voter registration databases. It takes a level of--

Andrew Appel: But in the end, if you listened to the previous panel, explaining that we need communication among the states about that database, somehow that database is going to be connected to the internet one way or another, and there are good reasons for it. I think it's unavoidable. So we need to improve the cybersecurity of the voter registration database. But it can't be changed undetectably. If a voter is disenfranchised by being thrown off the voter registration database, that voter will notice, whereas the changing of votes inside a touchscreen voting machine, because of the secret ballot, can't be noticed. And so there's this difference in detectability and correctability that favors-- that's in the favor of voter registration systems, but there's no way to correct the change of a vote inside the electronics of a DRE voting machine.

Kris Kobach: I have another question. I was a fan of post-election audits before hearing this panel. Now I'm a jumping-up-and-down fan of post-election audits. Unfortunately my state on the map is one of the states that doesn't have them, and I've drafted a bill to bring post-election audits into the laws of Kansas, and so far it hasn't passed, I don't think because of opposition of a partisan nature, but simply lack of interest and other factors that cause legislatures sometimes not to act on every bill. The question I have is this though. The one thing we do have in every state is a sort of audit, which is a recount. Essentially recounts, depending on the state statures, will happen if the election is within a certain threshold of narrowness, whether it be 0.5 percent or whatever, or if the candidate requests it and is willing to pay for the recount. So you do get election audits which are truly audits. You'll get full hand recounts, and we recently had one in Kansas City where thankfully the tabulator vote was exactly the same as the hand recount vote in a very large jurisdiction. But my question is this: Knowing that, it would seem that a hacker who was smart and was trying to actually do what you all are positing, and that is a hack of the election tabulating machinery, would therefore try to make a big a hack as possible so that it's not a narrow margin, but that would be a very large margin so that there would be no recount. I'm sure I'm not the first person to think of this. Is that sort of the M.O. of these various--

Ron Rivest: Well, you're following exactly the advice I gave, which is think like an adversary. You're thinking perfectly like an adversary. That's what I would do if I were an adversary, just make the margin big enough so that a recount wouldn't happen.

Kris Kobach: And then with respect to the one flaw I see in some of the audit legislation, including the audit legislation we've drafted, is you're only doing audits at certain precincts-- well, randomly selected precincts within each county. If you're trying to hack a smaller election, like a county commission race

or a state legislature race, the probability of an audit finding the hack seems to be relatively low, or is that incorrect?

Ron Rivest: Yeah. No, there's issues with these sampling-- if you're sampling individual ballots, which is the recommended procedure, then even with a small race you're going to be sampling a couple from this precinct, a couple from that precinct, and so on, and you're likely to detect it no matter where it occurs. If you're doing the sampling on a precinct level-- so you're doing a recount of a whole precinct at a time-- you have a greater chance of missing things altogether, as you suggested.

Andrew Appel: Let me talk about-- there's been an advance in the sort of technology, so to speak, of audit methods. Ten years we would talk about taking a random sample of the ballot boxes and recounting the votes in that ballot box to make sure it came out exactly what the op-scanner said. But if you can sort of print a serial number on each ballot as it's cast and have the op-scanner make an electronic claim about what each ballot says by number, then you don't have to recount a whole ballot box; you can just pick one ballot at random and see if it matches what the computer said. So I won't go into all the statistics of it, but it leads to much more efficient methods of doing these random audits than were dreamed of even ten years ago. So as far as a state like Kansas is concerned, where there's some interest in it but it costs money and it's time-consuming and people have enough work to do already, I would say there are several things that could help. One is federal money for this kind of thing always helps. Two is watch what some other states are doing, such as Colorado, maybe New York, New Mexico, that are sort of pioneers in trying to make it really work as a logistical thing. And don't be complacent about, "It can't happen here."

Pat Hines: And bring these three right to your legislature.

Kris Kobach: Yeah, to the legislature. Yeah.

<laughter>

Harri Hursti: Also on the realm of think like a criminal, I like to always point out that money is down in the ballot. Money is in the proposals, which are massively undervoted and usually not that interesting to audit. That's where the money is. So I would say that a criminal who likes money would go there. And again, the solution there is scan the ballots, and verify that your ballot population which is in digital form matches the ballot population in the physical form, and then use open-source software to recount it. Then you count every single race.

Kris Kobach: One follow-up question to Dr. Appel. The idea of putting a number on a ballot and then you see whether the tabulator correctly counted that numbered ballot, obviously one worry there would be that you compromise the secrecy of the ballot once you start--

Andrew Appel: Absolutely. You're thinking like the attacker. And there are issues.

Kris Kobach: So how do you that without compromising the secrecy?

Andrew Appel: Right. So this is not a trivial question you asked, and it doesn't have super easy answers. You don't have to print numbers on the ballot necessarily in numerical order. Right? You could print them in random order, so that you can't-- so let's say the corrupt politician in the polling place who's been watching the voters vote in order can't correlate it to the order the voters voted. So there are solutions to this problem, but it's very perceptive of you to sort of zoom in on that right away. There are issues here, and they deserve further study and sort of working out the logistics of it.

Ron Rivest: Just another detail on that point, a fine point. I mean, the number could be added by the scanner after it's scanned, not when the voter has the ballot in hand. So the voter never sees the number, and the voter can't sell their vote in any way to anybody. So you have the number imprinted after it's scanned and then the number goes on the electric record as well, and as Andrew said, the--

Andrew Appel: Right. Now we're thinking again like the adversary. You'd want to make sure that the printer that's printing that number can only print on the right-hand inch of the ballot so that it can't be filling in ovals too.

<laughter>

Bill Gardner: What did you all think about these machines here? Will there be a machine today that will, 125 years from now, still be able to be used?

Andrew Appel: I doubt it. We'd have to throw out our computers.

Ron Rivest: Yeah. Who knows?

Andrew Appel: But those lever machines, for all their faults, did last for 40 years, and it would be nice to be able to build a voting machine that lasts for a little bit longer than some of the technology we see now.

Bill Gardner: I'd like to get a picture with you guys there with the two moderators before you leave, okay?

Harri Hursti: We actually, next year in the voting machine hacking, we will have old level machines and do retro-hacking, because they are hackable by matches. So people can have fun and see how old-school-- how your grandpa did that.

<laughter>

Andrew Appel: There are all sorts of ways to hack those lever machines. There's the pencil-shaving trick, there's the grease trick, there's-- don't get me started.

<laughter>

Kris Kobach: Well, thank you very much for your presentation. It was very illuminating. Appreciate it.

<applause>