Exhibit 2

December 2, 2020

***King et al. v. Whitmer et al.*, Case No. 2:20-CV-13134**

United States District Court for Eastern District of Michigan

Expert Report of Jonathan Rodden, PhD

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I. INTRODUCTION AND SUMMARY

On Tuesday, December 1, 2020, I received declarations from Dr. Eric Quinnell and Mr. James Ramsland, Jr. Each of these declarations makes rather strong claims to have demonstrated "anomalies" or "irregularities" in the results of the presidential election in Michigan on November 3, 2020. I have been asked by Counsel to assess the validity of their claims. Unfortunately, these reports do not meet basic standards for scientific inquiry. For the most part, they are not based on discernable logical arguments. Without any citations to relevant scientific literature about statistics or elections, the authors identify common and easily explained patterns in the 2020 election results, and without explanation, assert that they are somehow "anomalous." These reports lacks a basic level of clarity or transparency about research methods or data sources that would be expected in a scientific communication. In any event, neither report contains evidence of "anomalies" or fraud.

II. QUALIFICATIONS

I am currently a tenured Professor of Political Science at Stanford University and the founder and director of the Stanford Spatial Social Science Lab ("the Lab")—a center for research and teaching with a focus on the analysis of geo-spatial data in the social sciences. In my affiliation with the Lab, I am engaged in a variety

of research projects involving large, fine-grained geo-spatial data sets including ballots and election results at the level of polling places, individual records of registered voters, census data, and survey responses. I am also a senior fellow at the Stanford Institute for Economic Policy Research and the Hoover Institution. Prior to my employment at Stanford, I was the Ford Professor of Political Science at the Massachusetts Institute of Technology. I received my Ph.D. from Yale University and my B.A. from the University of Michigan, Ann Arbor, both in political science. A copy of my current C.V. is included as an Appendix to this report.

In my current academic work, I conduct research on the relationship between the patterns of political representation, geographic location of demographic and partisan groups, and the drawing of electoral districts. I have published papers using statistical methods to assess political geography, balloting, and representation in a variety of academic journals including *Statistics and Public Policy*, *Proceedings of the National Academy of Science*, *American Economic Review Papers and Proceedings*, the *Journal of Economic Perspectives*, the *Virginia Law Review*, the *American Journal of Political Science*, the *British Journal of Political Science*, the *Annual Review of Political Science*, and the *Journal of Politics*. One of these papers was recently selected by the American Political Science Association as the winner of the Michael Wallerstein Award for the best paper on political economy published

in the last year, and another received an award from the American Political Science Association section on social networks.

I have recently written a series of papers, along with my co-authors, using automated redistricting algorithms to assess partisan gerrymandering. This work has been published in the *Quarterly Journal of Political Science*, *Election Law Journal*, and *Political Analysis*, and it has been featured in more popular publications like the *Wall Street Journal*, the *New York Times*, and *Boston Review*. I have recently completed a book, published by *Basic Books* in June of 2019, on the relationship between political districts, the residential geography of social groups, and their political representation in the United States and other countries that use winner-take-all electoral districts. The book was reviewed in *The New York Times*, *The New York Review of Books*, *Wall Street Journal*, *The Economist*, and *The Atlantic*, among others.

I have expertise in the use of large data sets and geographic information systems (GIS), and conduct research and teaching in the area of applied statistics related to elections. My PhD students frequently take academic and private sector jobs as statisticians and data scientists. I frequently work with geo-coded voter files and other large administrative data sets, including in recent paper published in the *Annals of Internal Medicine* and *The New England Journal of Medicine.* I have developed a national data set of geo-coded precinct-level election results that has

been used extensively in policy-oriented research related to redistricting and representation.[1]

I have been accepted and testified as an expert witness in six recent election law cases: *Romo v. Detzner*, No. 2012-CA-000412 (Fla. Cir. Ct. 2012); *Mo. State Conference of the NAACP* v. *Ferguson-Florissant Sch. Dist.*, No. 4:2014-CV-02077 (E.D. Mo. 2014); *Lee v. Va. State Bd. of Elections*, No. 3:15-CV-00357 (E.D. Va. 2015); *Democratic Nat'l Committee et al. v. Hobbs et al.*, No. 16-1065-PHX-DLR (D. Ariz. 2016); *Bethune-Hill v. Virginia State Board of Elections*, No. 3:14-cv-00852-REP-AWA-BMK (E.D. Va. 2014); and *Jacobson et al. v. Lee*, No. 4:18-cv-00262 (N.D. Fla. 2018). I also worked with a coalition of academics to file Amicus Briefs in the Supreme Court in *Gill v. Whitford*, No. 16-1161, and *Rucho v. Common Cause*, No. 18-422. Much of the testimony in these cases had to do with geography, voting, ballots, and election administration. I am being compensated at the rate of $500/hour for my work in this case. My compensation is not dependent upon my conclusions in any way.

III. DATA SOURCES

I have collected 2016 geospatial precinct-level data on Michigan from the Metric Geometry and Gerrymandering Group at Tufts University. I obtained digitized 2020 Michigan precinct boundary files from the Michigan Geographic

[1] The dataset can be downloaded at http://projects.iq.harvard.edu/eda/home.

Information Systems Department. I obtained precinct-level data on 2020 election results from the Wayne County Clerk's office. I created a national county-level dataset on election results, including those in Michigan, using information assembled from county election administrators by the New York Times and Associated Press. I have also collected yearly county-level population estimates for Michigan from the U.S. Census Department.

IV. QUINNELL REPORT

Dr. Quinnell's report uses a two-step process to document what are purported to be "anomalies" in Michigan's election results. The first step is to make a bivariate scatterplot of county size against Biden's vote share. Dr. Quinnell discovers that Wayne and Oakland Counties are relatively large and tend to vote for Democrats. He believes this to be somehow anomalous and worthy of further investigation. Next, he examines precinct-level data from those two counties, from which he ascertains that relative to places like Detroit, Biden's improvement over Hillary Clinton's 2016 performance was concentrated in middle-class and relatively affluent, suburban, majority-white communities like Livonia and Grosse Pointe. For reasons that are unclear, even though the same pattern was visible in virtually every suburb in the United States, Dr. Quinnell opines that these increased Democratic suburban vote shares in Michigan are "excessive" and somehow suspicious. I respond to each of these claims in turn.

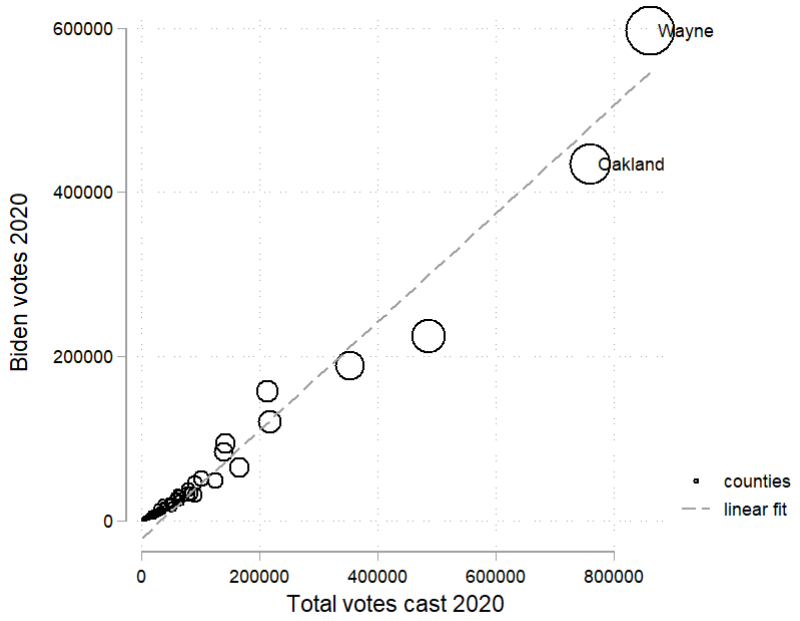
Are Wayne and Oakland Counties Anomalous?

First, Dr. Quinnell presents a pair of county-level scatterplots. On the horizontal axis, he appears to plot the total number of votes cast in a county in the 2020 election. On the vertical axis, he evidently plots the number of votes cast for Joseph Biden. The second graph does the same thing for Trump votes. Of course, as the number of votes cast increases, the number of votes cast for both candidates increases. But Dr. Quinnell asserts that there is something anomalous about Oakland and Wayne counties, which are by far the largest counties in Michigan in terms of population. They are also relatively urban counties, and in the United States, urban counties tend to vote disproportionately for Democratic candidates.

To demonstrate that the Democratic vote shares in these two counties are "anomalous," Dr. Quinnell fits a linear model from the *other* counties—excluding Wayne and Oakland—and extends it throughout the graph. It is not clear what purpose this serves. Evidently, Dr. Quinnell believes that if a larger, more urban county is more Democratic, given its size, than other counties, we should be suspicious of its vote share. This is an odd claim, since urbanization and population density are perhaps the strongest county-level predictors of voting behavior in the United States. In Figure 1, I present essentially the same graph as Dr. Quinnell, but I display a linear fit based on all of the observations, rather than a subset. I also use

data markers that are sized according to the population size of the county. In this graph, it is difficult to see what is anomalous about Oakland or Wayne County.

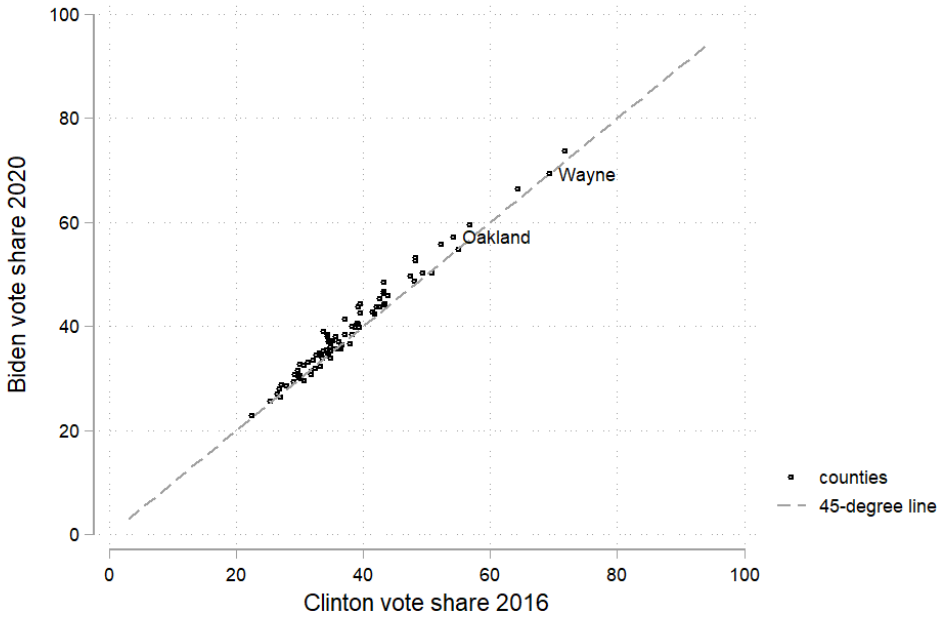
Figure 1: Total Votes Cast and Biden Votes, Michigan Counties, 2020



In any case, it is not clear why it makes sense to plot votes for candidates against total votes cast as the basis for an "anomaly" search. It is simply not surprising, for instance, that Wayne County has a high Democratic vote share than other counties. Later in his report, Dr. Quinnell works with a definition of "anomaly" in which we should be suspicious of geographic units where one of the candidates gains an unusual vote share vis-à-vis the previous election. In Figure 2, I take this approach, plotting Hillary Clinton's vote share in 2016 on the horizontal axis, and Joseph Biden's vote share in 2020 on the vertical axis. I also include a 45-degree line, so that counties above the line are those where Biden out-performed Clinton,

and those below the line are counties where Trump improved on his 2016 performance.

Table 2: Biden Vote Share in 2020 and Clinton Vote Share in 2016, Michigan Counties



This graph demonstrates, once again, that there is nothing anomalous about Wayne or Oakland counties. Biden's vote share in 2020 is very similar to Clinton's vote share in 2016. In Oakland County, it is only slightly higher. In fact, Biden's largest gains were in more suburban counties in the middle of the graph, where the Democratic vote share is typically around 50 percent or slightly lower. In short, it is quite puzzling to argue that the 2020 election results in Wayne and Oakland counties were anomalous as a general matter, especially if one is concerned about fraud that might have benefited the Democratic candidate. These counties were relative

laggards relative to other counties in the statewide shift toward the Democratic presidential candidate. But let us now turn to the precinct-level data.

Are there Anomalies in the Precinct Vote Tallies in Wayne County?

Dr. Quinnell appears to have collected precinct-level election data from Wayne County, Michigan, and merged them together with data from the 2016 election. He appears to have done the same for Oakland County. I have been unable to locate precinct-level results for 2020 in Oakland County, but for Wayne County, I have collected precinct-level election results for 2020 and 2016. I have consulted precinct boundary maps for both elections, and determined which precincts had similar geography in the two elections. For those precincts (the vast majority), I merged the data sets together, so as to examine changes in support for the parties over time.

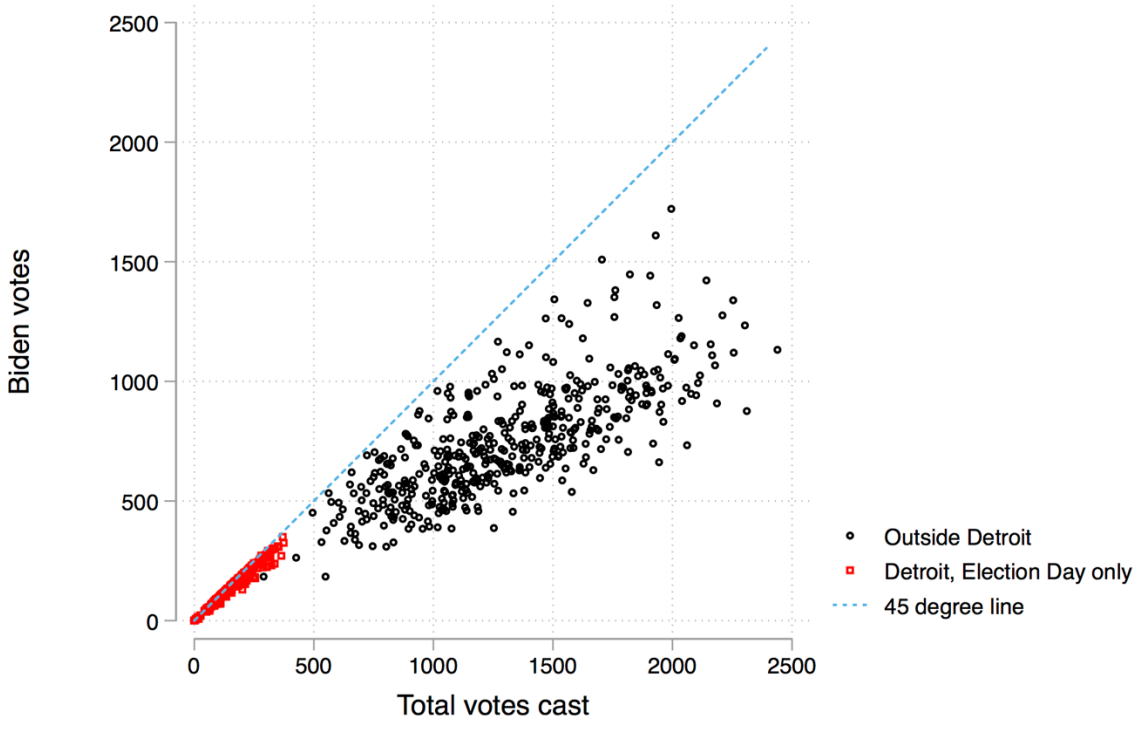
Dr. Quinnell begins his discussion of Wayne County with a pair of scatterplots using data from the 2020 election. Once again, he appears that he plots total votes cast by precinct on the horizontal axis, and total votes for Biden on the vertical axis. He then does the same for Trump votes. He does not explain the purpose of these graphs, or what he expects the reader to learn from them. In the city of Detroit, absentee ballots are not attributed to the voter's assigned geographic precinct, but rather, to special, larger geographic units that are used for tabulation: Absent Voter

Counting Board (AVCB) districts. These units are not at all comparable to geographic precincts. For this reason, one can only conduct precinct-level analysis in the city of Detroit by focusing on *Election Day* votes. Yet for some reason, when making his plots, Dr. Quinnell puts the Detroit AVCB districts into the same dataset with *total votes* (Election-Day and absentee) at the level of geographic precincts from all around Wayne County.

This mixing of "apples and oranges" makes little sense, and is responsible for manufacturing what Dr. Quinnell calls an "anomaly." Since the AVCB units are larger aerial units used for counting, they are much larger than typical precincts. Moreover, as was true in states all around the United States, absentee ballots in Michigan were overwhelmingly Democratic in 2020. This is in large part because the incumbent president exhorted his followers not to make use of absentee ballots, and vote instead on Election Day. Dr. Quinnell appears to have plotted precincts and AVCB districts on the same graph, and made a trendline based only on the (much smaller) precincts. He plots the AVCB districts with darker data markers, and notes that they are above the precinct-based trendline in the Biden graph. This is not the least bit surprising. It is merely a way of visualizing the well-known fact that absentee ballots, in Detroit as elsewhere in the United States, favored Democratic candidates in 2020.

In Figure 3 below, I make a plot like Dr. Quinnell's—with total votes on the horizontal axis and Biden votes on the vertical axis—but I exclude the Detroit AVCB districts. For comparison, I include the Detroit Election-Day totals (in red), but note that these are not strictly comparable to the rest of Wayne County (black data markers), for which I plot totals including both Election Day and absentee. I include a 45-degree line as well. As the data markers get closer to the 45-degree line, precincts get closer to 100 percent Biden vote share. That is to say, the 45-degree line is the point where the number of votes cast, and the number of votes cast for Biden, are identical.

Figure 3: Ballots Cast and Biden Votes, Wayne County Precincts



There is nothing the least bit anomalous about Figure 3. The red data markers—Detroit's Election-Day precincts—are quite close to the 45-degee line, indicating that Biden's vote share was often above 90 percent. This is extremely common in urban core precincts in almost every U.S. city other than Miami or Salt Lake City.[2] In fact, in the 2008 election, there were thousands of urban core precincts around the United States where President Obama received 100 percent of the vote. As we move to the right on the graph, precincts get larger, and their political behavior becomes more heterogeneous. In Wayne County, given its history of dramatic urban population loss, the smaller precincts on the left side of the graph are more urban, and have higher minority populations, and as we move to the right on the graph, the precincts become larger, more suburban, and have larger white populations. Since minorities, renters, and urban dwellers tend to vote for Democrats, precinct size is negatively correlated with Democratic voting in Wayne County. That is, the data markers get further from the 45-degree line. As we can see in Figure 1, however, the political behavior of Wayne County's suburban precincts is heterogeneous, and as we shall see below, much more amenable to change over time.

Next, Dr. Quinnell turns his attention to *changes* in voting from the 2016 to the 2020 election. He seems to believe that voting behavior should be strictly the

[2] Jonathan Rodden. 2019. *Why Cities Lose: The Deep Roots of the Urban-Rural Divide*. New York: Basic Books.

same from one election to another, and that if some neighborhoods change their voting behavior from one election to the next, this is evidence of fraud. In 25 years of election research, I have never encountered this claim before. Dr. Quinnell defends this claim by suggesting that "voting totals of precincts may presume to follow a semi-normal distribution with enough data points" (page 4).

There is simply not true. Raw vote totals will not follow a normal distribution if some precincts are much larger than others. As can be seen in Figure 1, due to large population shifts in the presence of a relatively stable precinct structure, Wayne County's precincts vary greatly in size, and the distribution of registered voters across precincts departs substantially from a normal distribution. The same is true for the distribution of voting-age population. Thus, it would be quite strange if the distribution of total votes cast, or votes cast for a particular candidate across precincts, *did* follow a normal a normal distribution.

Perhaps Dr. Quinnell means to claim that the distribution of vote *shares* should approximate a normal distribution. This is also quite mistaken. A very large literature dating back to the earliest mathematical analyses of elections has explained, and demonstrated using high-quality data analysis, that distributions of vote shares across districts, counties, or precincts in two-party systems are very frequently non-normal. In their classic 1979 book, Graham Gudgin and Peter Taylor argue that if the partisan divide in a country with two political parties is correlated

with some social characteristic—for instance race or social class—that is not uniformly distributed in space, but rather, is concentrated in certain districts, the distribution of vote shares will be skewed. They presented evidence that because working-class voters were concentrated in neighborhoods near factories, the distribution of support across electoral districts for Labor parties in Britain and Australia was highly skewed for much of 20th century.[3] More recently, I have demonstrated that support for the Democratic Party in the United States typically has a pronounced right skew across districts, counties, and often precincts—meaning that Democrats are highly concentrated in urban core areas like Detroit.[4] The fact that the Labour Party consistently wins by extremely large margins in urban districts in London, or that the Democrats win by extremely large margins in urban Detroit or Lansing, has nothing to do with fraud.

Perhaps Dr. Quinnell actually means to say, instead, that the distribution of the *change from one election to the next* in votes or vote shares across geographic units should always have a normal distribution. But this argument would make no more sense than an argument about levels. Members of politically relevant groups—for instance young people, racial minorities, or college graduates—are typically not

[3] See Graham Gudgin and Peter Taylor, 1979, *Seats, Votes, and the Spatial Organisation of Elections*. London: Pion. For a literature review, see Jonathan Rodden, 2010, "The Geographic Distribution of Political Preferences." *Annual Review of Political Science* 13,55.
[4] Jonathan Rodden. 2019. *Why Cities Lose: The Deep Roots of the Urban-Rural Divide*. New York: Basic Books.

uniformly or randomly distributed across geographic units, especially in the United States. If an incumbent candidate pursues policies and rhetoric that attract or repel a geographically clustered group, we can expect to see a non-normal distribution of changes in vote shares.

For instance, it appears that Donald Trump's appeals in the 2020 election resonated with Cuban and Venezuelan Americans in South Florida, and with *Tejano* voters in Texas. As a result, Trump experienced surprisingly large increases in vote shares in counties where those groups made up a large share of the population. This translated into a highly skewed (that is to say, non-normal) distribution of *changes* in the Republican vote share from 2016 to 2020. Dr. Quinnell appears to believe that when a geographically concentrated group, like Hispanics in a given community, changes its voting behavior more than other groups from one election to another, this is evidence of fraud. In this view, one must conclude that the elections in Texas and Florida were fraudulent. A far more reasonable explanation is that different groups responded differently to the incumbent's record and the candidates' campaigns.

Dr. Quinnell's claims about Wayne and Oakland counties are difficult to follow. He appears not to be concerned with very high Democratic vote shares in Detroit, and more densely populated parts of Oakland county. Rather, he believes that vote *gains* for Biden vis-à-vis Hillary Clinton in relatively affluent, whiter parts

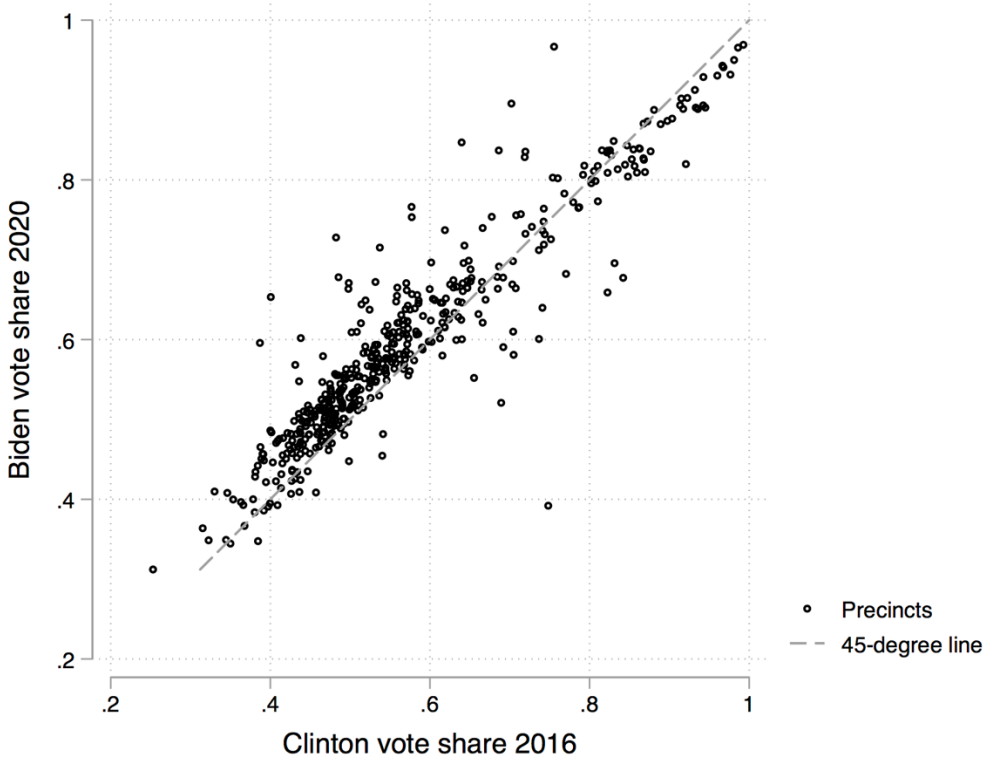
of Wayne County, such as Grosse Pointe, Northville Township, and Livonia were "excessive" (page 4). He does not explain his methods, but seems to estimate predicted voting behavior based on past voting behavior, and refers to votes as "excessive," and hence evidently suspicious, if they are higher than predicted in a particular precinct. This is simply another way of saying that we should be suspicious if some segment of a distinct group of geographically proximate voters—Hispanic voters in South Florida or affluent suburban whites in Michigan—change their voting behavior in response to an incumbent's policies or behavior or the campaign promises of the candidates. Most observers would view such change as a fundamental feature to be anticipated in a democracy.

Is there reason to believe that shifts toward the Democratic candidate in relatively affluent white precincts are outside the norm in Wayne County? Figure 4 plots Joseph Biden's 2020 vote share against Hillary Clinton's 2016 vote share in Wayne County (excluding Detroit), including a 45-degree line, such that data markers above the line indicate precincts where Biden's vote share exceed Clinton's, and those below the line indicate precincts where Biden underperformed relative to Clinton.

Most of the data markers are above the line, especially on the left and in the middle of the graph, indicating that Biden outperformed Clinton in more Republican areas. This is a typical pattern associated with the 2020 election that we have seen

throughout the United States. While Senate, U.S. House, and state legislative votes were more stable, the Democratic *presidential* vote increased in white, relatively educated suburban areas, like those above the 45-degree line in Figure 4. It should also be noted that some of the precincts experiencing the largest increases in Democratic vote share were in Redford township—an area where the African-American population is rapidly increasing, more than tripling between the last two decennial censuses.

Figure 4: Biden 2020 Vote Share and Clinton 2016 Vote Share, Wayne County, Excluding the City of Detroit



As we move to the right on the graph, the observations begin to fall below the line, indicating that Biden slightly under-performed Clinton in many of the very

Democratic, urban majority-minority precincts. This is also a pattern that can be seen in many other metro areas.

Figure 5: Increase in Democratic Vote Share in Presidential Election, 2016 to 2020, Wayne County Precincts

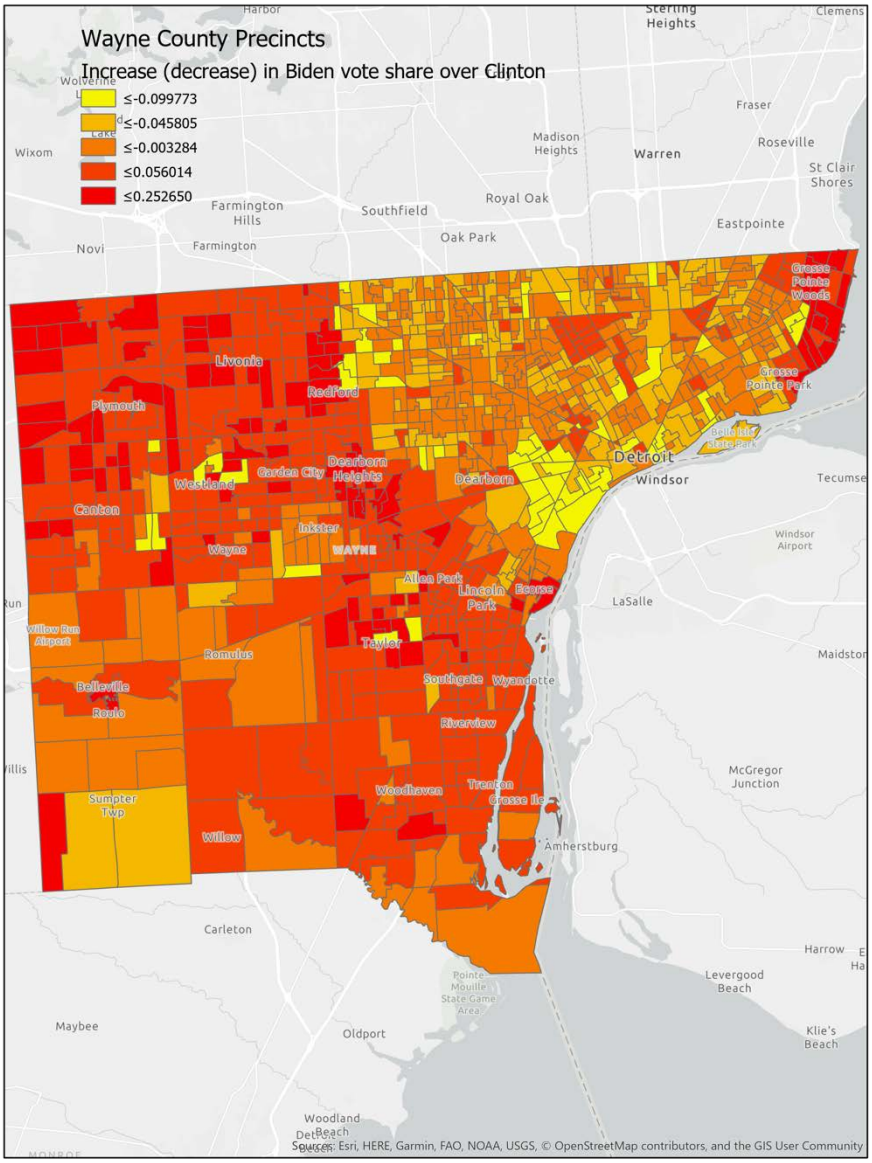


Figure 5 provides another way to visualize the changes in vote shares that Dr. Quinnell views as suspicious. Yellow is associated with slight gains for Trump, or

very small gains for Biden. As the colors get darker, Biden's gains increase. We can see that Biden did not make significant gains in much of Detroit. Rather, his improvements were largely concentrated in more sparsely populated, suburban, white parts of Wayne County, like Livonia, Plymouth, and Grosse Pointe. The same pattern repeats itself in metro areas throughout the United States. In short, Figures 4 and 5 provide no hint of anything anomalous. If anything, Wayne County is something of a microcosm of metropolitan areas around the United States in the 2020 election.

Dr. Quinnell claims to have identified an unusual pattern involving "new" voters. These claims are difficult to understand. The ballot is secret in the United States, and there is no way to identify the votes of first-time voters vis-à-vis habitual voters. He seems to be concerned that some of the precincts that experienced relatively large increases in total votes cast from 2016 to 2020 also experienced large increases in votes for Biden. This is also not surprising. In Wayne County, it is clearly the case that Biden's gains were largest in precincts where turnout was higher in 2020 than in 2016. While Trump made gains in communities where turnout was increasing in rural America, Biden's gains came largely in suburban communities where turnout was increasing. In much of the urban core, both turnout and the Democratic vote share were relatively flat or decreasing. Again, Wayne County

appears to be a microcosm of metropolitan America. Nothing in the data provided by Dr. Quinnell is indicative or suggestive of fraud.

V. RAMSLAND REPORT

On page three of his report, Mr. Ramsland presents some very odd turnout numbers for selected municipalities and precincts in Michigan. For instance, he states that the turnout in the City of North Muskegon was 782 percent. He does not explain where he obtained these strange numbers, and no citations are provided. Precinct level election results as well as counts of registered voters are readily available on the web pages of county election administrators for the relevant counties. I found the data for each of the relevant precincts, and include it in Table 1 below. The sources for the data in Table 1 are listed in the appendix to this report. There is nothing remarkable at all about these turnout numbers. Most of these are rural townships, and turnout has been quite high in rural Michigan in recent years—especially in the era of Donald Trump. Perhaps one might raise an eyebrow at the fact that 30 of 31 registered voters turned out on Grand Island, a tiny island off the Upper Peninsula in Lake Superior, but very high turnout is not so unusual in a small, tight-knit community.

Table 1: Turnout in Select Michigan Precincts

Precinct	Turnout
City of North Muskegon 1	73.53%
City of North Muskegon 2	82.20%
Zeeland Charter Township 1	74.46%
Zeeland Charter Township 2	80.35%
Zeeland Charter Township 3	80.84%
Zeeland Charter Township 4	84.40%
City of Muskegon 1	52.65%
City of Muskegon 2	60.24%
City of Muskegon 3	50.97%
City of Muskegon 4	51.66%
City of Muskegon 5	45.97%
City of Muskegon 6	44.69%
City of Muskegon 7	53.73%
City of Muskegon 8	44.15%
City of Muskegon 9	42.77%
City of Muskegon 10	57.02%
City of Muskegon 11	60.19%
City of Muskegon 12	70.94%
City of Muskegon 13	68.14%
City of Muskegon 14	83.72%
Spring Lake Township 1	72.65%
Spring Lake Township 2	82.18%
Spring Lake Township 3	77.03%
Spring Lake Township 4	81.91%
Spring Lake Township 5	84.15%
Spring Lake Township 6	66.74%
Greenwood Township	76.47%
Hart Township	68.50%
Leavitt Township	60.77%
Newfield Township	64.46%
Otto Township	70.28%
Pentwater Township	86.00%
Shelby Township 1	60.22%
Shelby Township 2	29.85%
Weare Township	71.68%
City of Hart	86.40%
Grand Island Township	96.77%

Tallmadge Charter Township 1	76.44%
Tallmadge Charter Township 2	80.38%
Tallmadge Charter Township 3	81.25%
City of Fenton 1	73.00%
City of Fenton 2	76.81%
City of Fenton 3	75.22%
City of Fenton 4	63.66%
Bohemia Township	66.28%

Next, Mr. Ramsland makes a rather inscrutable claim that election results may have been altered in Michigan because voting machines were set to perform ranked choice voting, which Mr. Ramsland refers to as a "feature enhancement." From this discussion, it seems likely that Mr. Ramsland is not familiar with ranked choice voting. It involves a different type of ballot, in which voters rank their preferences among candidates. This type of ballot was not used in Michigan. Even if all of the ballots in Michigan were somehow counted or processed using ranked choice voting, but using ballots that only allowed voters to select one candidate, the result would be the same. Ranked choice voting is a system where in the first round of counting, if one candidate has a majority, the process is over, and no votes are redistributed. If there were multiple candidates and voters' choices were ranked, there would then be a second round, where the lowest-ranked candidate would be dropped, and those voters who ranked that candidate first would then have their second-choice votes tallied. But clearly, nothing of the sort happened in Michigan. Jo Jorgensen, the Libertarian candidate, was credited with 60,381 votes in Michigan. Significant votes

were also recorded throughout the state for three additional parties as well as five write-in candidates.

He also seems to believe that ranked choice voting would somehow produce non-integer vote totals. This is simply not the case. Ranked-choice voting is no more capable of producing non-integer vote totals than is the winner-take-all plurality system. I have examined precinct-level vote totals from election clerks around Michigan, and have seen no non-integer vote totals. It appears that Mr. Ramsland may have been thrown off by election-night reporting by Edison Research that contained Biden and Trump vote totals that were not always whole numbers. One obvious possibility is that when sharing data on election night, workers at Edison Research multiplied total votes cast by vote shares that had been rounded when they were producing the field for total vote numbers for their data feed.

Finally, Mr. Ramsland expresses concern about the fact that as additional votes were counted in Michigan throughout the evening and into the next day, Biden's share of the vote increased. This exact phenomenon was widely anticipated before the election by scholars and reported in the media. The incumbent Republican presidential candidate made very strong negative statements about voting by mail, and encouraged his supporters to vote on Election Day. Moreover, provisional ballots very frequently favor Democrats. It was not possible to process absentee votes until November 2 in Michigan, which meant that it was likely that absentee

ballots would be counted later in the process, and counting would drag on after Election Day.

Thus, every knowledgeable election watcher understood that in states like Michigan, where absentee and provisional ballots were likely to be counted after election-day votes, observers would observe what analysts refer to as a "blue shift" as votes were counted late at night and in the days to follow. This was not the least bit surprising. Unlike Michigan, Florida is accustomed to handling a heavy volume of mail ballots, and has laws that encourage early counting of absentee ballots, for instance by letting counties process absentee ballots weeks in advance. The early results announced in Florida included pre-tabulated mail ballots, which led to early results that were skewed toward Democrats, eventually shifting toward Republicans. If Mr. Ramsland wishes to argue that shifts toward one party or another in vote counts over time are indicative of fraud, he would be required to argue that Florida's election was fraudulent as well. In reality, there are obvious explanations why different states, and different counties, would count more Democratic or Republican ballots earlier or later in the counting process. By no means does this constitute evidence related to fraud.

VI. CONCLUSION

The visions of fraud and conspiracy that motivate these reports are difficult to pin down. It is not clear whether the authors believe that nefarious actors within

certain counties have attempted to alter votes in targeted precincts, or whether they believe that programmers have implemented a statewide or national scheme. They have not explained what pattern of results might be consistent with any such story. The data presented in these reports have nothing to do with fraud, and the authors do not even attempt to link their so-called "anomalies" to theories about how fraud might be carried out. The data presented in the Ramsland report is of unknown origin and bears no resemblance to the data published by county clerks. The data presented in the Quinnell report merely captures a well-known nation-wide phenomenon in which the Democratic candidate gained votes in suburban areas. These reports provide no evidence of anomalies or fraud in Michigan's 2020 election.

Appendix:
Data Sources for Table 1

https://www.co.muskegon.mi.us/DocumentCenter/View/10306/Precinct-Results-11-3-2020

https://www.miottawa.org/appImages/ElectionManagement/precinctFile-203.pdf

https://www.oscodacountymi.com/wp-content/uploads/2020-November-Official-Results-by-Township.pdf

https://oceana.mi.us/elections/november-3-2020-general-election-results-per-precinct/

https://www.algercounty.gov/document_center/Departments/Clerk_RoD/Elections/2020/November%203,%202020%20General%20(official).pdf

https://www.gc4me.com/departments/county_clerks1/docs/Elections/202011/Canvass%20Results-11-17-2020%2020-55-47%20PM.pdf

https://www.ontonagoncounty.org/wp-content/uploads/2020/11/November-3-2020-General-Election-4.pdf

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Education

Ph.D. Political Science, Yale University, 2000.

Fulbright Scholar, University of Leipzig, Germany, 1993–1994.

B.A., Political Science, University of Michigan, 1993.

Academic Positions

Professor, Department of Political Science, Stanford University, 2012–present.

Senior Fellow, Hoover Institution, Stanford University, 2012–present.

Senior Fellow, Stanford Institute for Economic Policy Research, 2020–present.

Director, Spatial Social Science Lab, Stanford University, 2012–present.

W. Glenn Campbell and Rita Ricardo-Campbell National Fellow, Hoover Institution, Stanford University, 2010–2012.

Associate Professor, Department of Political Science, Stanford University, 2007–2012.

Fellow, Center for Advanced Study in the Behavioral Sciences, Palo Alto, CA, 2006–2007.

Ford Career Development Associate Professor of Political Science, MIT, 2003–2006.

Visiting Scholar, Center for Basic Research in the Social Sciences, Harvard University, 2004.

Assistant Professor of Political Science, MIT, 1999–2003.

Instructor, Department of Political Science and School of Management, Yale University, 1997–1999.

Publications

Books

Why Cities Lose: The Deep Roots of the Urban-Rural Divide. Basic Books, 2019.

Decentralized Governance and Accountability: Academic Research and the Future of Donor Programming. Co-edited with Erik Wibbels, Cambridge University Press, 2019.

Hamilton's Paradox: The Promise and Peril of Fiscal Federalism, Cambridge University Press, 2006. Winner, Gregory Luebbert Award for Best Book in Comparative Politics, 2007.

Fiscal Decentralization and the Challenge of Hard Budget Constraints, MIT Press, 2003. Co-edited with Gunnar Eskeland and Jennie Litvack.

Peer Reviewed Journal Articles

Partisan Dislocation: A Precinct-Level Measure of Representation and Gerrymandering, 2020, *Political Analysis* forthcoming (with Daryl DeFord Nick Eubank).

Who is my Neighbor? The Spatial Efficiency of Partisanship, 2020, *Statistics and Public Policy* (with Nick Eubank).

Handgun Ownership and Suicide in California, 2020, *New England Journal of Medicine* 382:2220-2229 (with David M. Studdert, Yifan Zhang, Sonja A. Swanson, Lea Prince, Erin E. Holsinger, Matthew J. Spittal, Garen J. Wintemute, and Matthew Miller).

Viral Voting: Social Networks and Political Participation, 2020, *Quarterly Journal of Political Science* (with Nick Eubank, Guy Grossman, and Melina Platas).

It Takes a Village: Peer Effects and Externalities in Technology Adoption, 2020, *American Journal of Political Science* (with Romain Ferrali, Guy Grossman, and Melina Platas). Winner, 2020 Best Conference Paper Award, American Political Science Association Network Section.

Assembly of the LongSHOT Cohort: Public Record Linkage on a Grand Scale, 2019, *Injury Prevention* (with Yifan Zhang, Erin Holsinger, Lea Prince, Sonja Swanson, Matthew Miller, Garen Wintemute, and David Studdert).

Crowdsourcing Accountability: ICT for Service Delivery, 2018, *World Development* 112: 74-87 (with Guy Grossman and Melina Platas).

Geography, Uncertainty, and Polarization, 2018, *Political Science Research and Methods* doi:10.1017/psrm.2018.12 (with Nolan McCarty, Boris Shor, Chris Tausanovitch, and Chris Warshaw).

Handgun Acquisitions in California after Two Mass Shootings, 2017, *Annals of Internal Medicine* 166(10):698-706. (with David Studdert, Yifan Zhang, Rob Hyndman, and Garen Wintemute).

Cutting Through the Thicket: Redistricting Simulations and the Detection of Partisan Gerrymanders, 2015, *Election Law Journal* 14,4:1-15 (with Jowei Chen).

The Achilles Heel of Plurality Systems: Geography and Representation in Multi-Party Democracies, 2015, *American Journal of Political Science* 59,4: 789-805 (with Ernesto Calvo). Winner, Michael Wallerstein Award for best paper in political economy, American Political Science Association.

Why has U.S. Policy Uncertainty Risen Since 1960?, 2014, *American Economic Review: Papers and Proceedings* May 2014 (with Nicholas Bloom, Brandice Canes-Wrone, Scott Baker, and Steven Davis).

Unintentional Gerrymandering: Political Geography and Electoral Bias in Legislatures, 2013, *Quarterly Journal of Political Science* 8: 239-269 (with Jowei Chen).

How Should We Measure District-Level Public Opinion on Individual Issues?, 2012, *Journal of Politics* 74, 1: 203-219 (with Chris Warshaw).

Representation and Redistribution in Federations, 2011, *Proceedings of the National Academy of Sciences* 108, 21:8601-8604 (with Tiberiu Dragu).

Dual Accountability and the Nationalization of Party Competition: Evidence from Four Federatons, 2011, *Party Politics* 17, 5: 629-653 (with Erik Wibbels).

The Geographic Distribution of Political Preferences, 2010, *Annual Review of Political Science* 13: 297–340.

Fiscal Decentralization and the Business Cycle: An Empirical Study of Seven Federations, 2009, *Economics and Politics* 22,1: 37–67 (with Erik Wibbels).

Getting into the Game: Legislative Bargaining, Distributive Politics, and EU Enlargement, 2009, *Public Finance and Management* 9, 4 (with Deniz Aksoy).

The Strength of Issues: Using Multiple Measures to Gauge Preference Stability, Ideological Constraint, and Issue Voting, 2008. *American Political Science Review* 102, 2: 215–232 (with Stephen Ansolabehere and James Snyder).

Does Religion Distract the Poor? Income and Issue Voting Around the World, 2008, *Comparative Political Studies* 41, 4: 437–476 (with Ana Lorena De La O).

Purple America, 2006, *Journal of Economic Perspectives* 20,2 (Spring): 97–118 (with Stephen Ansolabehere and James Snyder).

Economic Geography and Economic Voting: Evidence from the U.S. States, 2006, *British Journal of Political Science* 36, 3: 527–47 (with Michael Ebeid).

Distributive Politics in a Federation: Electoral Strategies, Legislative Bargaining, and Government Coalitions, 2004, *Dados* 47, 3 (with Marta Arretche, in Portuguese).

Comparative Federalism and Decentralization: On Meaning and Measurement, 2004, *Comparative Politics* 36, 4: 481-500. (Portuguese version, 2005, in *Revista de Sociologia e Politica* 25).

Reviving Leviathan: Fiscal Federalism and the Growth of Government, 2003, *International Organization* 57 (Fall), 695–729.

Beyond the Fiction of Federalism: Macroeconomic Management in Multi-tiered Systems, 2003, *World Politics* 54, 4 (July): 494–531 (with Erik Wibbels).

The Dilemma of Fiscal Federalism: Grants and Fiscal Performance around the World, 2002, *American Journal of Political Science* 46(3): 670–687.

Strength in Numbers: Representation and Redistribution in the European Union, 2002, *European Union Politics* 3, 2: 151–175.

Does Federalism Preserve Markets? *Virginia Law Review* 83, 7 (with Susan Rose-Ackerman). Spanish version, 1999, in *Quorum* 68.

Working Papers

Federalism and Inter-regional Redistribution, Working Paper 2009/3, Institut d'Economia de Barcelona.

Representation and Regional Redistribution in Federations, Working Paper 2010/16, Institut d'Economia de Barcelona (with Tiberiu Dragu).

Chapters in Books

Political Geography and Representation: A Case Study of Districting in Pennsylvania (with Thomas Weighill), forthcoming 2021.

Decentralized Rule and Revenue, 2019, in Jonathan Rodden and Erik Wibbels, eds., *Decentralized Governance and Accountability*, Cambridge University Press.

Geography and Gridlock in the United States, 2014, in Nathaniel Persily, ed. *Solutions to Political Polarization in America*, Cambridge University Press.

Can Market Discipline Survive in the U.S. Federation?, 2013, in Daniel Nadler and Paul Peterson, eds, *The Global Debt Crisis: Haunting U.S. and European Federalism*, Brookings Press.

Market Discipline and U.S. Federalism, 2012, in Peter Conti-Brown and David A. Skeel, Jr., eds, *When States Go Broke: The Origins, Context, and Solutions for the American States in Fiscal Crisis*, Cambridge University Press.

Federalism and Inter-Regional Redistribution, 2010, in Nuria Bosch, Marta Espasa, and Albert Sole Olle, eds., *The Political Economy of Inter-Regional Fiscal Flows*, Edward Elgar.

Back to the Future: Endogenous Institutions and Comparative Politics, 2009, in Mark Lichbach and Alan Zuckerman, eds., *Comparative Politics: Rationality, Culture, and Structure* (Second Edition), Cambridge University Press.

The Political Economy of Federalism, 2006, in Barry Weingast and Donald Wittman, eds., *Oxford Handbook of Political Economy*, Oxford University Press.

Fiscal Discipline in Federations: Germany and the EMU, 2006, in Peter Wierts, Servaas Deroose, Elena Flores and Alessandro Turrini, eds., *Fiscal Policy Surveillance in Europe*, Palgrave MacMillan.

The Political Economy of Pro-cyclical Decentralised Finance (with Erik Wibbels), 2006, in Peter Wierts, Servaas Deroose, Elena Flores and Alessandro Turrini, eds., *Fiscal Policy Surveillance in Europe*, Palgrave MacMillan.

Globalization and Fiscal Decentralization, (with Geoffrey Garrett), 2003, in Miles Kahler and David Lake, eds., *Governance in a Global Economy: Political Authority in Transition*, Princeton University Press: 87-109. (Updated version, 2007, in David Cameron, Gustav Ranis, and Annalisa Zinn, eds., *Globalization and Self-Determination: Is the Nation-State under Siege?* Routledge.)

Introduction and Overview (Chapter 1), 2003, in Rodden et al., *Fiscal Decentralization and the Challenge of Hard Budget Constraints* (see above).

Soft Budget Constraints and German Federalism (Chapter 5), 2003, in Rodden, et al, *Fiscal Decentralization and the Challenge of Hard Budget Constraints* (see above).

Federalism and Bailouts in Brazil (Chapter 7), 2003, in Rodden, et al., *Fiscal Decentralization and the Challenge of Hard Budget Constraints* (see above).

Lessons and Conclusions (Chapter 13), 2003, in Rodden, et al., *Fiscal Decentralization and the Challenge of Hard Budget Constraints* (see above).

Online Interactive Visualization

Stanford Election Atlas, 2012 (collaboration with Stephen Ansolabehere at Harvard and Jim Herries at ESRI)

Other Publications

How America's Urban-Rural Divide has Shaped the Pandemic, 2020, *Foreign Affairs*, April 20, 2020.

An Evolutionary Path for the European Monetary Fund? A Comparative Perspective, 2017, Briefing paper for the Economic and Financial Affairs Committee of the European Parliament.

Representation and Regional Redistribution in Federations: A Research Report, 2009, in *World Report on Fiscal Federalism*, Institut d'Economia de Barcelona.

On the Migration of Fiscal Sovereignty, 2004, *PS: Political Science and Politics* July, 2004: 427–431.

Decentralization and the Challenge of Hard Budget Constraints, *PREM Note* 41, Poverty Reduction and Economic Management Unit, World Bank, Washington, D.C. (July).

Decentralization and Hard Budget Constraints, *APSA-CP* (Newsletter of the Organized Section in Comparative Politics, American Political Science Association) 11:1 (with Jennie Litvack).

Book Review of *The Government of Money* by Peter Johnson, *Comparative Political Studies 32,7: 897-900.*

Fellowships and Honors

Fund for a Safer Future, Longitudinal Study of Handgun Ownership and Transfer (LongSHOT), GA004696, 2017-2018.

Stanford Institute for Innovation in Developing Economies, Innovation and Entrepreneurship research grant, 2015.

Michael Wallerstein Award for best paper in political economy, American Political Science Association, 2016.

Common Cause Gerrymandering Standard Writing Competition, 2015.

General support grant from the Hewlett Foundation for Spatial Social Science Lab, 2014.

Fellow, Institute for Research in the Social Sciences, Stanford University, 2012.

Sloan Foundation, grant for assembly of geo-referenced precinct-level electoral data set (with Stephen Ansolabehere and James Snyder), 2009-2011.

Hoagland Award Fund for Innovations in Undergraduate Teaching, Stanford University, 2009.

W. Glenn Campbell and Rita Ricardo-Campbell National Fellow, Hoover Institution, Stanford University, beginning Fall 2010.

Research Grant on Fiscal Federalism, Institut d'Economia de Barcelona, 2009.

Fellow, Institute for Research in the Social Sciences, Stanford University, 2008.

United Postal Service Foundation grant for study of the spatial distribution of income in cities, 2008.

Gregory Luebbert Award for Best Book in Comparative Politics, 2007.

Fellow, Center for Advanced Study in the Behavioral Sciences, 2006-2007.

National Science Foundation grant for assembly of cross-national provincial-level dataset on elections, public finance, and government composition, 2003-2004 (with Erik Wibbels).

MIT Dean's Fund and School of Humanities, Arts, and Social Sciences Research Funds.

Funding from DAAD (German Academic Exchange Service), MIT, and Harvard EU Center to organize the conference, "European Fiscal Federalism in Comparative Perspective," held at Harvard University, November 4, 2000.

Canadian Studies Fellowship (Canadian Federal Government), 1996-1997.

Prize Teaching Fellowship, Yale University, 1998-1999.

Fulbright Grant, University of Leipzig, Germany, 1993-1994.

Michigan Association of Governing Boards Award, one of two top graduating students at the University of Michigan, 1993.

W. J. Bryan Prize, top graduating senior in political science department at the University of Michigan, 1993.

Other Professional Activities

International Advisory Committee, Center for Metropolitan Studies, Sao Paulo, Brazil, 2006–2010.

Selection committee, Mancur Olson Prize awarded by the American Political Science Association Political Economy Section for the best dissertation in the field of political economy.

Selection committee, Gregory Luebbert Best Book Award.

Selection committee, William Anderson Prize, awarded by the American Political Science Association for the best dissertation in the field of federalism and intergovernmental relations.

Courses

Undergraduate

Politics, Economics, and Democracy

Introduction to Comparative Politics

Introduction to Political Science

Political Science Scope and Methods

Institutional Economics

Spatial Approaches to Social Science

Graduate

Political Economy of Institutions

Federalism and Fiscal Decentralization

Politics and Geography

Consulting

2017. Economic and Financial Affairs Committee of the European Parliament.

2016. Briefing paper for the World Bank on fiscal federalism in Brazil.

2013-2018: Principal Investigator, SMS for Better Governance (a collaborative project involving USAID, Social Impact, and UNICEF in Arua, Uganda).

2019: Written expert testimony in *McLemore, Holmes, Robinson, and Woullard v. Hosemann*, United States District Court, Mississippi.

2019: Expert witness in *Nancy Corola Jacobson v. Detzner*, United States District Court, Florida.

2018: Written expert testimony in *League of Women Voters of Florida v. Detzner* No. 4:18-cv-002510, United States District Court, Florida.

2018: Written expert testimony in *College Democrats of the University of Michigan, et al. v. Johnson, et al.*, United States District Court for the Eastern District of Michigan.

2017: Expert witness in *Bethune-Hill v. Virginia Board of Elections*, No. 3:14-CV-00852, United States District Court for the Eastern District of Virginia.

2017: Expert witness in *Arizona Democratic Party, et al. v. Reagan, et al.*, No. 2:16-CV-01065, United States District Court for Arizona.

2016: Expert witness in *Lee v. Virginia Board of Elections*, 3:15-cv-357, United States District Court for the Eastern District of Virginia, Richmond Division.

2016: Expert witness in *Missouri NAACP v. Ferguson-Florissant School District*, United States District Court for the Eastern District of Missouri, Eastern Division.

2014-2015: Written expert testimony in *League of Women Voters of Florida et al. v. Detzner, et al.*, 2012-CA-002842 in Florida Circuit Court, Leon County (Florida Senate redistricting case).

2013-2014: Expert witness in *Romo v Detzner*, 2012-CA-000412 in Florida Curcuit Court, Leon County (Florida Congressional redistricting case).

2011-2014: Consultation with investment groups and hedge funds on European debt crisis.

2011-2014: Lead Outcome Expert, Democracy and Governance, USAID and Social Impact.

2010: USAID, Review of USAID analysis of decentralization in Africa.

2006–2009: World Bank, Independent Evaluations Group. Undertook evaluations of World Bank decentralization and safety net programs.

2008–2011: International Monetary Fund Institute. Designed and taught course on fiscal federalism.

1998–2003: World Bank, Poverty Reduction and Economic Management Unit. Consultant for *World Development Report*, lecturer for training courses, participant in working group for assembly of decentralization data, director of multi-country study of fiscal discipline in decentralized countries, collaborator on review of subnational adjustment lending.

Last updated: October 19, 2020