EXPERT DECLARATION OF WALTER RICHARD MEBANE, JR.
ON BEHALF OF PLAINTIFFS

I, Walter Richard Mebane, Jr., declare to the following under penalty of perjury at law in
support of the Plaintiffs' lawsuit against election officials in the Commonwealth of
Virginia.

A. Qualifications

1. My academic position is Professor, Department of Political Science and
   Department of Statistics, University of Michigan, Ann Arbor. I received my
doctorate in Political Science from Yale University in 1985. I was an Associate-
Professor of Government at Cornell University from 1989 to 2003. I was
promoted to Professor of Government at Cornell in 2003 and taught there until
2007. From 1985 to 1989 I was Assistant Professor in the Department of Political
Science at University of Michigan, Ann Arbor. My full curriculum vitae is
attached as Exhibit One.

2. My expertise lies in the areas of American National Institutions and Elections,
   Political Economy, Political Behavior; Methodology (Statistics, Computation,
   Research Design); Mathematical Modeling (Formal Theory, Dynamical Systems).
   I regularly teach courses to undergraduate and graduate students on those topics.
   As my curriculum vitae, attached as Exhibit A, shows I have published more than
   25 scholarly articles and a few other occasional pieces such as book reviews, and
   I have written three statistical application packages that are widely distributed and
   used.
3. My recent work includes: Machine Errors and Undervotes in Florida 2006


B. Background

4. On October 21, 2008, I was contacted by Jim Freeman of Advancement Project and Maria Blanco of the Earl Warren Institute at UC Berkeley Law School to determine if I would like to analyze and testify about the allocation of voting machines and poll workers in Norfolk, Richmond, and Virginia Beach, Virginia. I am being paid $200 per hour for my work on this case, plus expenses. I have reviewed the following documents provided to me by Jim Freeman and Maria Blanco:
a. October 6, 2008 Letter to Nancy Rodrigues, Secretary State Board of Elections from Advancement Project and other non-profit organizations concerning the disparity in voting machines and poll worker allocations in Virginia Beach, Richmond and Norfolk, Virginia;

b. 2008 voter registration files for Virginia Beach, Richmond, and Norfolk, Virginia;

c. 2004 General Election voter registration and voter turnout files for Virginia Beach, Richmond, and Norfolk, Virginia;

d. Documents provided by the registrars of Virginia Beach, Richmond, and Norfolk, Virginia showing the projected allocation of voting machines and poll workers, by precinct, for the November 4, 2008 General Election;

e. Documents provided by the registrars of Virginia Beach, Richmond, and Norfolk, Virginia showing the actual allocation of voting machines and poll workers, by precinct, for the 2004 General Election;

f. News reports documenting lines at the polls in Virginia Beach, Richmond, and Norfolk, Virginia for the 2004 General Election;

g. Sample ballots and candidate lists indicating the number of races at issue in Virginia Beach, Richmond, and Norfolk, Virginia for the 2008 General Election;

h. Documents indicating the 2008 General Election turnout projected by election officials in jurisdictions throughout the Commonwealth of Virginia;
i. A data set prepared by Karin MacDonald and Nicole Boyle of Q2 Data and Research, LLC showing the racial composition of all the 2008 precincts in Virginia Beach, Richmond and Norfolk, Virginia.

C. Research on Effects of Resource Allocations on Voter Participation

5. My research into the effects of polling place resource allocations on voter participation indicates that mis-allocating polling place resources can lead to mass disenfranchisement. More specifically, having fewer machines and poll workers per registered voter leads to a greater likelihood of long lines to vote and “lost” voters. In other words, having fewer resources increases the chance of long lines forming at polling places, and the knowledge of the long lines, the sight of long lines upon arriving at their polling places, or simply having to wait in line for an extended period of time, deters voters from casting a ballot.

6. For example, I conducted a study of the 2004 General Election in Ohio and found serious problems with the administration of that election. I found a clear relationship between precincts having higher ratios of registered voters to machines and long lines when the polls were supposed to close. Also, not providing a sufficient number of voting machines in each precinct was associated with roughly a three percent reduction in voter participation, presumably due to delays that deterred many people from voting.

7. In a study just of Franklin County, Ohio, I found the allocation of voting machines was clearly biased against voters in precincts with high proportions of African-Americans. My research indicated that the allocation of voting machines
there reduced voter participation more among African American voters than among White voters.

8. A field of mathematical analysis called queueing theory has been demonstrated to help understand the implications of insufficient election resource provision. Queueing theory suggests what to expect from having an increasing number of voters for each voting machine. In general, if the rate at which voters arrive at the polls is much less than the rate at which voters successfully finish voting, then there may be a line of people waiting to vote but the line will tend to be short. If more people arrive during each unit of time than finish voting during that time, then the line length and waiting times grow without bound. Facing very long lines, the proportion of voters who cannot wait increases, and consequently voter participation declines.

D. Allocation of Resources Across Precincts in Norfolk, Richmond, and Virginia Beach

9. I have conducted a similar analysis of the resource allocation plans in Norfolk, Richmond, and Virginia Beach, Virginia for the 2004 and 2008 General Elections. I have analyzed the distribution of voting machines and poll workers across precincts for those two elections, including how that distribution affects precincts with high proportions of African-Americans. I have also analyzed the impact of voting machine allocation on voter participation in the 2004 election, and the potential impact of current machine allocations on the November 2008 election. The tables and graphs with my findings are attached at Exhibit Two.
10. In looking at the allocation of voting machines across precincts in these three cities, I
found substantial variances across precincts in the number of registered voters per
machine. In other words, some precincts have many more registered voters per
machine than others. The differences, as measured by standard deviation and
interquartile range, are of the magnitude that can cause voters in different precincts
to have very different experiences when they try to cast their votes: some precincts
will be crowded and others will not.

11. Similarly, in examining the allocation of poll workers across precincts, I found
substantial differences of the magnitude that could result in qualitative differences in
the administration of the election across precincts.

12. I also found that, in looking at both 2004 and 2008 allocations of voting machines,
the average level of registered voters per machine is similar in both Norfolk and
Virginia Beach. That is particularly concerning because news reports indicate that
there were long lines in both cities in 2004, and voter participation is expected by
Virginia elections officials to be far greater this year, suggesting that the lines to vote
could be far worse than they were in 2004 and large numbers of voters could be
deterred from casting a ballot.

E. Impact of Machine Allocations on African-Americans

13. I also found that the distribution of machines in both Richmond and Virginia Beach
for the upcoming election is clearly biased against voters in precincts with high
proportions of African-Americans. In other words, precincts with high
proportions of African-Americans have substantially more registered voters per
allocated machine than precincts with fewer African-Americans. There were similar relationships in the allocation of voting machines in 2004.

14. One way to quantify these disparities is to separate precincts into groups based the proportion of the voting age population in each precinct that is Black. I define quartiles of this race measure for the set of precincts in all three counties, which is to say I find the values that put one-quarter of the precincts into each group. The first quartile includes precincts with less than 11.5 percent Black and the third quartile includes precincts with between 22.8 and 56.3 percent Black. The fourth quartile has an upper bound of 97.3 percent Black. In Richmond, the mean number of registered voters per allocated machine is 232 in the first quartile, 274 in the third quartile and 308 in the fourth quartile. Virginia Beach has only one precinct in the fourth quartile, so I look at the mean in the first three. These means increase as one moves from the first to the third quartile: from 310 to 328 to 354 registered voters per allocated machine. In both Richmond and Virginia Beach, as the proportion of the voting age population that is African-American increases, the mean number of registered voters per voting machine also increases.

F. Effects of Machine Allocations on Voter Participation in Norfolk, Richmond, and Virginia Beach

15. In examining the registration, turnout, and machine allocation data from the 2004 election, I found that higher ratios of registered voters per machine were associated with lower levels of voter participation in Norfolk, Richmond, and Virginia Beach. This indicates that voters in those precincts with relatively many voters for each
machine were more likely to be deterred from voting than voters in precincts with fewer voters for each machine.

16. I estimated a set of statistical models to try to isolate the effects of higher ratios of registered voters per machine on voter participation. The models suggest that in Norfolk, voter participation rapidly declines as the ratio increases in precincts with more than about 300 to 350 registered voters per machine. In Richmond, there are rapid declines in voter participation for ratios greater than about 400 registered voters per machine. In Virginia Beach, voter participation declines steadily throughout the range of ratios observed in the city. The magnitude of the declines is substantial: from the peak value to the lowest the decrease in voter participation is on the order of five to ten percent.

17. When I applied the findings from 2004 to the 2008 resource allocations and assumed that the same percentage of registered voters will attempt to vote, I found that the 2008 allocations are likely to lead to the same effects as in 2004 in both Norfolk and Virginia Beach, meaning that even at current resource levels voter participation is likely to be depressed in precincts with high ratios of registered voters per machine.

18. I have also applied the findings from 2004 to an analysis that predicts a surge in voter participation, reflecting the projections of election officials across Virginia. I considered a surge from 70 percent turnout up to 85 percent turnout, a level I understand election officials in several Virginia counties have stated is what they expect. Such a surge in the number of registered voters who present on Election Day to vote will create an even greater probability that voter participation will be depressed by long lines and “lost” voters in Norfolk, Richmond, and Virginia Beach.
19. Because of the maldistribution of voting machines that disadvantages precincts with high proportions of African-Americans in Richmond and Virginia Beach, the deterrence of voters due to insufficient resources is more likely to affect African-American voters in these cities. In other words, precincts in Richmond and Virginia Beach that have high proportions of African-Americans face a higher likelihood of long lines and “lost” voters on Election Day than precincts with more White voters.

G. Addressing the Maldistribution of Resources in Norfolk, Richmond, and Virginia Beach

20. Re-allocating voting machines and poll workers in a more equitable fashion would address some of the problems identified above. In particular, remedying the racial disparities in machine allocation is advisable for reasons of both fundamental fairness and the likelihood that voter participation patterns in the upcoming election are likely to be quite different than previous elections, with more African-American voters likely to turn out.

21. However, my analysis indicates that even if Norfolk, Richmond, and Virginia Beach were to re-allocate their resources in a more equitable fashion, there is still a substantial likelihood that voters will be deterred from voting by long lines at the polls. In other words, re-allocation by itself may not be enough to prevent disenfranchisement of voters due to excessive lines at the polls, thus indicating that additional remedies are needed to ensure eligible voters who present to vote are able to cast a ballot in a timely fashion. Three possible solutions are (a) providing additional machines to relatively under-resourced precincts; (b) offering paper ballots to voters when lines have formed at machines; and (c) extending polling place hours.
All would have the effect of reducing congestion at the polls, and would likely lead to more voters being able to cast a ballot on Election Day.

**H. Conclusion**

22. The evidence I have examined indicates that unless election officials address the administrative failure described above, there could be substantial disenfranchisement in Norfolk, Richmond, and Virginia Beach on November 4, 2008, particularly of African-American voters.

***

Based on my extensive experience studying the allocation of polling place resources in elections, I declare under penalty of perjury pursuant to 28 U.S.C. § 1746 that the statements in this document are true and correct.
Signed [Signature]

Executed on 27 October 2008
Walter Richard Mebane, Jr.

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       Ann Arbor, MI 48104  
       734/769-7137

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        University of Michigan  
        Ann Arbor, MI 48109-1045  
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Born November 30, 1958 in Long Branch, New Jersey.

EDUCATION:
Ph.D. Yale University, New Haven, CT, December 1985 (Political Science).
M.Phil. Yale University, New Haven, CT, December 1981 (Political Science).
M.A. Yale University, New Haven, CT, December 1980 (Political Science).

HONORS AND AWARDS:
A.B. magna cum laude; Phi Beta Kappa; National Science Foundation Graduate Fellowship (1979–1982);  
Danforth Graduate Fellowship (1979–1983); American Political Science Association Graduate Fellowship (1979);  
Midwest Political Science Association Brooks-Cole Award (1982); 1996 Harold Gosnell Award  
(with Jonathan Wand); Cornell University Robert A. and Donna B. Award for Excellence in Advising  

RESEARCH INTERESTS:
American National Institutions and Elections, Political Economy, Political Behavior; Methodology
(Statistics, Computation, Research Design); Mathematical Modeling (Formal Theory, Dynamical Systems).

WORK EXPERIENCE:
Professor. Department of Political Science and Department of Statistics, University of Michigan, Ann  
Arbor (9/07–).
Visiting Professor. Department of Political Science, University of Michigan, Ann Arbor (7/07–8/07).
Visiting Scholar. Center for Basic Research in the Social Sciences, Harvard University (Spring 2004).
Professor. Department of Government, Cornell University (7/03–6/07).
Visiting Associate Professor. Department of Social and Decision Sciences, Carnegie Mellon University  
(9/97–12/97).
Associate Professor. Department of Government, Cornell University (7/89–6/03; tenured 11/93).
Assistant Professor. Department of Political Science, University of Michigan (9/85–6/89).
Instructor. Department of Political Science, University of Michigan (9/83–8/85).
Study Director. National Election Studies Development Project on Political Reasoning (1/84–8/84).
Assistant Research Scientist. Center for Political Studies, University of Michigan (1/83–8/83).
Teaching Fellow. Introduction to American Government and Politics, F. Christopher Arterton, Yale  
University (Fall 1981).
Research Assistant. World Handbook of Political and Social Indicators, Charles L. Taylor and David A.  
Jodice, Harvard University and Science Center Berlin (Summer 1978–Summer 1979).
Research Assistant. Injury to Insult, Sidney Verba, Harvard University (Summer 1978).

PUBLICATIONS:
"Machine Errors and Undervotes in Florida 2006 Revisited." William & Mary Bill of Rights Journal,  
forthcoming

"Voting Technology and the 2008 New Hampshire Primary" (with Michael C. Herron and Jonathan N.  
Wand). William & Mary Bill of Rights Journal, forthcoming


REVIEWS AND COMMENTS:


SPONSORED RESEARCH:

“Strategic Coordination Among American Voters” (P.I. at Cornell University-Endowed, with subcontract to Jasjeet Sekhon at Harvard University). National Science Foundation Award Number SES-0214965 ($99,171; June 1, 2002–April 30, 2005).


COMPUTER SOFTWARE:


OP-ED:


CONFERENCE PAPERS:


“Statistics for Digits.” Presented at the 2007 Summer Meeting of the Political Methodology Society, Pennsylvania State University, July 18–21.


“Election Forensics: Vote Counts and Benford’s Law,” Presented at at the 2006 Summer Meeting of the Political Methodology Society, UC-Davis, July 20–22.

“Detecting Attempted Election Theft: Vote Counts, Voting Machines and Benford’s Law,” Presented at at the 2006 Annual Meeting of the Midwest Political Science Associate, Chicago, IL, April 20–23.

“Does it Help or Hurt Kerry if Nader is on the Ballot?” (with Israel Waismel-Manor). Presented at the 2005 Annual Meeting of the Midwest Political Science Association, Chicago, Illinois, April 7–10.


“Imitative and Evolutionary Processes that Produce Coordination Among American Voters.” Presented at the 2003 Political Methodology Summer Meeting, Minneapolis, Minnesota, July 17–19.


“The Butterfly Did It: The Aberrant Vote for Buchanan in Palm Beach County, Florida” (with Jonathan N. Wand, Kenneth Shotts, Jasjeet S. Sekhon, Michael Herron and Henry E. Brady). Presented at the 2001 Joint Statistical Meetings, American Statistical Association, Social Statistics Section, August 5–9, Atlanta, Georgia.


“Legislative Context, Legislator Quality and Campaign Contributions” (with Marc T. Ratkovic and Michael W. Toftas). Presented at the 2001 Annual Meeting of the Midwest Political Science Association, April 19–22, Palmer House, Chicago.


“Legislator Quality and Campaign Contributions” (with Marc T. Ratkovic and Michael W. Toftas). Presented at the 2000 Summer Methods Conference, July 20–22, UCLA.


“Coordination, Moderation and Institutional Balancing in American House Elections at Midterm” (with Jasjeet Sekhon). Presented at the 1999 American Political Science Association Annual Meeting, September 2–5, Atlanta, GA.

“The Dynamics of Campaign Contributions in U.S. Congressional Elections” (with Jonathan Wand). Presented at the 1999 American Political Science Association Annual Meeting, September 2–5, Atlanta, GA.


“Rational Expectations Coordinating Voting in American Presidential and House Elections.” Presented at the 1998 Midwest Political Science Association Annual Meeting, April 23–25, Palmer House Hilton,
Chicago, IL.


"The Changing Relationship between Conflict and Mobilization in American Politics" (with Benjamin Ginsberg and Martin Shefter). Presented at the 1993 Annual Meeting of the Social Science History
Association, Radisson Plaza Lord Baltimore, Baltimore, MD, November 4-7.


"Spatially Aggregated Analysis using the Censuses and Annual Surveys of Governments." Presented at the Seventh Annual Conference on Political Methodology, Washington University, St. Louis, July 19–21, 1990.


"Project on Political Reasoning" (with Donald Kinder). Memo to the National Election Studies Board of Overseers, June 1984.

"Pilot Project on Political Reasoning" (with Donald Kinder). Memo to the National Election Studies Planning Committee and Board of Overseers, April 1983.

"Measuring Covariance and Noncentrality for Few-category Variables in Maximum Likelihood Estimation of Linear Structures." Presented at the 1982 Annual Meeting of the American Political Science Association, Denver, CO.

"The Warp of Sociotropic Thinking." Presented at the 1982 Annual Meeting of the Midwest Political Science Association, Milwaukee, WI.


INVITED TALKS:

Seminar, Voting Analysis in Mathematics and Politics: Interdisciplinary Research and Education, Morehouse College, Atlanta, Georgia, April 25, 2008.


Seminar, Department of Political Science, Washington University, St. Louis, February 24, 2006.

Seminar, Department of Political Science, Stanford University, May 19, 2005.


Seminar, Department of Political Science, New York University, November 14, 2003.


Seminar, Department of Political Science, University of Minnesota, April 23, 2003.

Seminar, Department of Political Science, Washington University, St. Louis, October 11, 2002.

Seminar, Department of Political Science, University of Rochester, April 12, 2002.

Lecture, Quantitative Methods and Political Science Departments, Applied Statistics Program and Local Chapter of the American Statistical Association, Syracuse University, October 26, 2001.

Seminar, Department of Politics, Princeton University, March 29, 1995.

Seminar, Department of Political Science, University of North Carolina, Chapel Hill, March 25, 1994.

PUBLICATIONS (NON-POLITICAL SCIENCE):


WORK IN PREPARATION:


PROFESSIONAL ACTIVITIES:

American Political Science Association: Political Methodology Section, Treasurer: 1992–1994; 1994 Annual Meeting Program Committee, Political Methodology Section Chair; Committee on the Status of Blacks in the Profession, Member, 1994–1997; Section on Political Economy, Best Book Prize Committee Chair, 1995; ad hoc Committee on Minority Fellowship Programs, Member, 1997–1998; PROGRAMS focus group, 1998; ad hoc advisory committee on reappointment of the APSR Editor, 2004; Comparative Politics Section, Data Set Award Committee Chair, 2006.


Memberships: American Political Science Association; Midwest Political Science Association; American Statistical Association.

National Science Foundation: Information Technology Research large pre-proposals panel (January 2002); SBE/CISS Workshop (March 15–16, 2005); Human and Social Dynamics panel (May 16–17, 2005); Political Science panel (2004–2006); Political Science Committee of Visitors (March 10, 2007).


American Political Science Association Annual Meeting Panel Chair, Discussant or Roundtable


American National Election Study: Board of Overseers, Member (2006–).

ACCURATE (A Center for Correct, Usable, Reliable, Auditable, and Transparent Elections): Advisory Board member (2007–).


National Annenberg Election Study: Advisory Board, Member (2007–).

Benford’s Law Conference (Santa Fe, NM, December 17–18, 2007).

William & Mary School of Law: How We Vote Symposium (March 14, 2008).

October 22, 2008
EXHIBIT TWO
Voting Machine Provision and Allocation in the Virginia 2008 General Election: Relations to Precinct Racial Composition and Implications for Voter Turnout in Norfolk, Richmond and Virginia Beach Counties

Walter R. Mebane, Jr.¹

October 27, 2008

¹Professor of Political Science and Professor of Statistics, University of Michigan. 7735 Haven Hall, Ann Arbor, MI 48109-1045. Phone: 734-763-2220. Email: wmebane@umich.edu.
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<th>County</th>
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<th>IQR</th>
<th>2004 mean</th>
<th>sdev</th>
<th>IQR</th>
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<td>Norfolk</td>
<td>Reg Voters per Machine</td>
<td>358.9</td>
<td>63.9</td>
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<td>Reg Voters per Machine</td>
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<td>Virginia Beach</td>
<td>Reg Voters per Machine</td>
<td>321.8</td>
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<td>58.5</td>
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<td>75.3</td>
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<td>Reg Voters per Poll Worker</td>
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Figure 1: 2008 Registered Voters per Poll Worker by 2008 Registered Voters per Machine
Figure 2: 2008 Registered Voters per Machine by VAP Black Proportions
Figure 3: 2004 Registered Voters per Machine by VAP Black Proportions
Table 2: Linear Models for 2004 Turnout among Registered Voters

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<th>County</th>
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<td>RV per Machine</td>
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<td>-0.000832</td>
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Notes: Robust (tanh) overdispersed binomial regression estimates (Mebane and Sekhon, 2004a). For each precinct, the dependent variable counts the number of registered voters voting versus the number of registered voters not voting. Norfolk: \( n = 55 \); model 1, \( \sigma = 5.7 \); model 2, \( \sigma = 4.8 \). Richmond: \( n = 63 \); model 1, \( \sigma = 6.0 \); model 2, \( \sigma = 4.6 \). Virginia Beach: \( n = 85 \); model 1, \( \sigma = 7.6 \); model 2, \( \sigma = 5.6 \).
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<td>1/(RV per Machine)</td>
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<td>Virginia Beach</td>
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<td>1/(RV per Machine)</td>
<td>164.0</td>
<td>3.88</td>
<td>129.0</td>
<td>4.52</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>VAP Prop. Black</td>
<td>--</td>
<td>--</td>
<td>-1.61</td>
<td>-8.63</td>
<td></td>
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</tr>
</tbody>
</table>

Notes: Robust (tanh) overdispersed binomial regression estimates (Mebane and Sekhon, 2004a). For each precinct, the dependent variable counts the number of registered voters voting versus the number of registered voters not voting. Norfolk: n = 55; model 3, σ = 5.7; model 4, σ = 4.9. Richmond: n = 63; model 3, σ = 6.1; model 4, σ = 4.6. Virginia Beach: n = 85; model 3, σ = 7.6; model 4, σ = 5.6.
Table 4: Quadratic Models for 2004 Turnout among Registered Voters

<table>
<thead>
<tr>
<th>County</th>
<th>Variable</th>
<th>Model 5</th>
<th></th>
<th>Model 6</th>
<th></th>
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<tbody>
<tr>
<td></td>
<td></td>
<td>coef.</td>
<td>t-stat.</td>
<td>coef.</td>
<td>t-stat.</td>
</tr>
<tr>
<td>Norfolk</td>
<td>Intercept</td>
<td>-1.26</td>
<td>-2.31</td>
<td>-0.676</td>
<td>-1.25</td>
</tr>
<tr>
<td></td>
<td>RV per Machine</td>
<td>0.0102</td>
<td>3.49</td>
<td>8.49e-3</td>
<td>3.08</td>
</tr>
<tr>
<td></td>
<td>(RV per Machine)^2</td>
<td>-0.000014</td>
<td>-3.69</td>
<td>-1.25e-5</td>
<td>-3.51</td>
</tr>
<tr>
<td></td>
<td>VAP Prop. Black</td>
<td>—</td>
<td>—</td>
<td>-0.415</td>
<td>-3.93</td>
</tr>
<tr>
<td>Richmond</td>
<td>Intercept</td>
<td>-0.881</td>
<td>-1.72</td>
<td>0.104</td>
<td>0.21</td>
</tr>
<tr>
<td></td>
<td>RV per Machine</td>
<td>7.75e-3</td>
<td>3.64</td>
<td>4.49e-3</td>
<td>2.34</td>
</tr>
<tr>
<td></td>
<td>(RV per Machine)^2</td>
<td>-8.32e-6</td>
<td>-3.81</td>
<td>-4.73e-6</td>
<td>-2.46</td>
</tr>
<tr>
<td></td>
<td>VAP Prop. Black</td>
<td>—</td>
<td>—</td>
<td>-0.610</td>
<td>-5.98</td>
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<tr>
<td>Virginia Beach</td>
<td>Intercept</td>
<td>0.402</td>
<td>0.74</td>
<td>1.93</td>
<td>4.80</td>
</tr>
<tr>
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<td>RV per Machine</td>
<td>2.74e-3</td>
<td>0.83</td>
<td>-5.32e-3</td>
<td>-2.22</td>
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<tr>
<td></td>
<td>(RV per Machine)^2</td>
<td>-6.31e-6</td>
<td>-1.31</td>
<td>5.95e-6</td>
<td>1.69</td>
</tr>
<tr>
<td></td>
<td>VAP Prop. Black</td>
<td>—</td>
<td>—</td>
<td>-1.68</td>
<td>-8.10</td>
</tr>
</tbody>
</table>

Notes: Robust (tanh) overdispersed binomial regression estimates (Mebane and Sekhon, 2004a). For each precinct, the dependent variable counts the number of registered voters voting versus the number of registered voters not voting. Norfolk: $n = 55$; model 5, $\sigma = 5.4$; model 6, $\sigma = 4.7$. Richmond: $n = 63$; model 5, $\sigma = 5.6$; model 6, $\sigma = 4.5$. Virginia Beach: $n = 85$; model 5, $\sigma = 7.5$; model 6, $\sigma = 5.7$. 
<table>
<thead>
<tr>
<th>County</th>
<th>Variable</th>
<th>Model 7</th>
<th></th>
<th></th>
<th>Model 8</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Norfolk</td>
<td>Intercept</td>
<td>-0.718</td>
<td>-1.80</td>
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<td>-0.819</td>
<td>-2.12</td>
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<tr>
<td></td>
<td>1/(RV per Machine)</td>
<td>793.0</td>
<td>3.20</td>
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<td>925.0</td>
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<tr>
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<td>1/(RV per Machine)$^2$</td>
<td>-1.21e+5</td>
<td>-3.35</td>
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<td>-1.31e+5</td>
<td>-3.69</td>
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<tr>
<td></td>
<td>VAP Prop. Black</td>
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<td>—</td>
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<td>-0.430</td>
<td>-4.38</td>
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<td>Intercept</td>
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<td>0.570</td>
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<tr>
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<td>1/(RV per Machine)</td>
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<td></td>
<td>448.0</td>
<td>2.39</td>
</tr>
<tr>
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<td>1/(RV per Machine)$^2$</td>
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<td>-3.05</td>
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<td>-7.88e+4</td>
<td>-2.65</td>
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<tr>
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<td>VAP Prop. Black</td>
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<td>—</td>
<td></td>
<td>-0.641</td>
<td>-6.45</td>
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<tr>
<td>Virginia Beach</td>
<td>Intercept</td>
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<td>-1.15</td>
<td></td>
<td>0.44</td>
<td>1.21</td>
</tr>
<tr>
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<td>1/(RV per Machine)</td>
<td>558.0</td>
<td>1.95</td>
<td></td>
<td>122.0</td>
<td>0.58</td>
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<tr>
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<td>1/(RV per Machine)$^2$</td>
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<td>-1.47</td>
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<td>1.12e+3</td>
<td>0.038</td>
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<td>—</td>
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<td>-1.61</td>
<td>-8.23</td>
</tr>
</tbody>
</table>

Notes: Robust (tanh) overdispersed binomial regression estimates (Mebane and Sekhon, 2004a). For each precinct, the dependent variable counts the number of registered voters voting versus the number of registered voters not voting. Norfolk: $n = 55$; model 7, $\sigma = 5.5$; model 8, $\sigma = 4.7$. Richmond: $n = 63$; model 7, $\sigma = 5.8$; model 8, $\sigma = 4.5$. Virginia Beach: $n = 85$; model 7, $\sigma = 7.6$; model 8, $\sigma = 5.8$. 
Figure 4: Expected 2004 Voter Turnout, Quadratic and Linear Models, Fixing 2000 VAP Black Proportions at Median
Figure 5: Expected 2004 Voter Turnout, Inverse Quadratic and Inverse Linear Models, Fixing 2000 VAP Black Proportions at Median
Figure 6: Predicted 2008 Voter Turnout, Quadratic and Linear Models, Fixing 2000 VAP Black Proportions at Median
Figure 7: Predicted 2008 Voter Turnout, Inverse Quadratic and Inverse Linear Models, Fixing 2000 VAP Black Proportions at Median
Norfolk Precincts (Proportion Black at 2000 Values)

Figure 8: Predicted 2008 Voter Turnout in Norfolk Precincts, Quadratic Model, Using 2000 VAP Black Proportions
Figure 9: Predicted 2008 Voter Turnout in Richmond Precincts, Quadratic Model, Using 2000 VAP Black Proportions
Figure 10: Predicted 2008 Voter Turnout in Virginia Beach Precincts, Linear Model, Using 2000 VAP Black Proportions
Figure 11: Predicted 2008 Voter Turnout in Norfolk Precincts, Inverse Quadratic Model, Using 2000 VAP Black Proportions
Figure 12: Predicted 2008 Voter Turnout in Richmond Precincts, Inverse Quadratic Model, Using 2000 VAP Black Proportions
Figure 13: Predicted 2008 Voter Turnout in Virginia Beach Precincts, Inverse Linear Model, Using 2000 VAP Black Proportions
Figure 14: Predicted 2008 Voter Turnout, Inverse Quadratic and Inverse Linear Models, Fixing 2000 VAP Black Proportions at Median, Surging Arrivals from .7 to .85