**THE CALIFORNIA ASSOCIATION OF CLERKS AND ELECTION OFFICIALS (CACEO)**

**ELECTION COSTS PROJECT**

**Research Brief III**

**Costs and Jurisdictional Complexity**

Two other research briefs in this series have looked at differences among counties in terms of their electorate and labor costs, and examined how those factors might affect the cost and composition of supporting an election. This paper looks at a third source of variation among counties: jurisdictional complexity. Counties bear the responsibility for providing their resident citizens the opportunity to cast votes on candidates and measures for a variety of levels and offices – federal, state, county, city, school or tax districts, judicial – some of which may or may not be completely contained within a county’s boundaries. This presents different challenges for a county with only one city – like Modoc or San Francisco – versus one with eighty-eight cities – like Los Angeles[[1]](#footnote-1).

From the decennial census, we draw on two measures of sub-county territorial complexity: the number of places – legally defined entities such as cities and towns – within the county, and the number of Census Designated Places (CDPs), which have no legally defined boundaries but have a locally recognized identity. In addition, we use population density as a proxy for the degree of urban-ness, with its accompanying capacity for multiple jurisdictions. The measures from the Census were drawn from 2010. In addition, we use five measures related to this complexity from the CACEO Election Profile survey, including number of ballot types; number of candidates on the ballot; number of measures on the ballot; voting opportunities, including both candidates and measures; and the percent of voting opportunities for sub-county jurisdictions, as opposed to federal, state, and county-wide opportunities.

**Descriptive Statistics for Jurisdictional Complexity**

Summaries of the lowest and highest values, and two measures of central tendency – the mean and median – reflect the tremendous range of variability in county sub-jurisdictions and the ways those differences are manifested in the ballots. Having a large range is helpful because it can make the level of difference and its potential impact on costs or cost composition clear. It is problematic if most of that range is driven by one or two outliers, however, since it risks having results driven by patterns in a very few counties. Tables presented here are for the entire group of counties with available data, but relationships are also verified for robustness[[2]](#footnote-2) by excluding the highest outliers.

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| **2014 General Election** |
|   | Population Density (per sq. mile) | Number of cities or towns in county | Number of CDPs in county | Number of Ballot Types | Number of Candidates on the Ballot | Number of Measures on the Ballot | Total Vote opportunities: Candidates and measures | Percent of Vote opportunities sub-county |
| Mean | 827.61 | 9.85 | 19.41 | 135.34 | 149.68 | 14.62 | 160.46 | 9.03% |
| Median | 134.23 | 6.50 | 15.50 | 46.00 | 102.50 | 11.00 | 110.00 | 4.33% |
| Minimum | 1.8 | 1 | 0 | 2 | 26 | 3 | 8 | 0.00% |
| Maximum | 17,441 | 88 | 56 | 1,737 | 512 | 39 | 536 | 100.00% |

In general, correlations with these measures amongst themselves confirm that they reflect some common background element. The most weakly associated of these measures is the percent of voting opportunities that are sub-county[[3]](#footnote-3) (e.g. are not federal, state or county-wide measures or candidates). For remaining tables, we’ll take advantage of the strong levels of correlation to reduce the list of measures of complexity from eight to four.

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|  Pearson Correlation | 2014 General Election |
| Population Density (per sq. mile) | Number of cities or towns in county | number of census-designated place in county | Number of Ballot Types | Number of Candidates on the Ballot | Number of Measures on the Ballot | Total Vote opportunities: Candidates and measures | Percent of Total Vote opportunities sub-county |
| Population Density (per sq. mile) | 1 | .103 | -.189 | .178 | .430 | .656 | .408 | .336 |
| # of cities or towns in county | .103 | 1 | .460 | .416 | .529 | .735 | .557 | .043 |
| # of CDPs in county | -.189 | .460 | 1 | .279 | .504 | .281 | .482 | .014 |
| # of ballot types | .178 | .416 | .279 | 1 | .660 | .303 | .639 | .017 |
| # of candidates on the ballot | .430 | .529 | .504 | .660 | 1 | .492 | .998 | -.199 |
| # of measures on the ballot | .656 | .735 | .281 | .303 | .492 | 1 | .550 | .198 |
| Total voting opportunities: Candidates and measures | .408 | .557 | .482 | .639 | .998 | .550 | 1 | -.230 |
| % of total voting opportunities sub-county | .336 | .043 | .014 | .017 | -.199 | .198 | -.230 | 1 |

Pearson correlation coefficients[[4]](#footnote-4) tell us how consistently the value of one measure is related to the value of another measure. When the sign of the coefficient is positive, the two measures tend to increase or decrease together; when the sign of the coefficient is negative, one measure tends to go up when the other decreases. If the association is perfect (also referred to as *total correlation*) – the second value is always twice as large as the first value, or the second value is always the first value plus a fixed amount – the coefficient is 1.00, and we can always perfectly predict the second value from the first. If larger values for the first value are always proportionally associated with smaller values for the second, the coefficient will be -1.00. Correlations of .50 or higher are usually considered to be strong associations.

**Jurisdictional Complexity and Election Survey Measures**

The association of measures of jurisdictional complexity is weak to moderate, with the exception of the percent of costs associated with multilingual support, which is strong, and the association with cost per voting opportunity[[5]](#footnote-5), which is strongly associated with population density and the number of cities within the county. Population density and number of cities is also associated with higher fractions of direct costs related to polling places and canvassing, although those relationships are absent with the ballot types or vote opportunities. Oddly, the fraction of costs associated with ballot printing is negatively associated with number of ballot types and vote opportunities.

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| Pearson Correlation | 2014 General Election |
| Population Density (per sq. mile) | Number of cities or towns in county | Number of Ballot Types | Total Voting opportunities: Candidates and measures |
| Direct Costs / RV | .141 | -.040 | -.103 | -.130 |
| Canvass Cost Percent | .248 | .383 | .020 | -.141 |
| Poll worker Cost Percent | .189 | .170 | .113 | .289 |
| Polling Place Cost Percent | .366 | .235 | .028 | .200 |
| Postage Cost Percent | -.170 | -.181 | -.195 | -.181 |
| Ballot Printing Cost Percent | -.205 | -.257 | -.362 | -.473 |
| Multilingual Cost Percent | .545 | .364 | .601 | .542 |
| Provisional Ballot Processing Cost % | .266 | .313 | .213 | .298 |
|   |   |   |   |   |
| Total Costs Per Capita  | .052 | -.047 | -.127 | -.225 |
| Total Costs Per Registered Voter | .015 | -.044 | -.076 | -.156 |
| Total Costs Per Ballot Cast | .261 | .289 | .204 | .161 |
| Total Costs Per Voting Opportunity | .584 | .577 | .150 | .100 |

**Jurisdictional Complexity and** **Other Factors Affecting Election Costs**

As the research briefs on labor costs and electorate complexity have discussed, jurisdictional complexity is part and parcel with linguistic diversity and typical wages, and strong correlations are generally found between the measures of each of these facets. There does not appear to be a consistent association between jurisdictional complexity and overall direct costs per registered voter, however, nor with the prevalence of vote-by-mail or number of hardware types. This persistent pattern suggests that, faced with more complex electorates, jurisdictions, and higher typical wage costs, counties where all of these characteristics are present have nevertheless found ways to blunt the expected effects of these on election costs. Although the precise mechanisms are not clear, the smaller proportions of costs for ballot printing may indicate one possible source of cost reduction.

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| --- | --- |
| Pearson Correlation | 2014 General Election |
| Population Density (per sq. mile) | Number of cities or towns in county | Number of Ballot Types | Total Vote opportunities: Candidates and measures |
| Direct Costs per registered voter | .141 | -.040 | -.103 | -.113 |
| Percent of Precincts with Non-English Language | .615 | .491 | .352 | .361 |
| Count of Languages CC/ROV | .391 | .664 | .498 | .598 |
| Percent Speaking English less Than Very Well | .280 | .425 | .215 | .413 |
| Languages Reported in Election Profile | .621 | .200 | .100 | .412 |
| GCC mean wage index, 2009-2014 | .528 | .445 | .180 | .316 |
| GCC median wage index, 2009-2014 | .488 | .341 | .102 | .217 |
| QCEW local govt mean wage index, 2009-2014 | .667 | .487 | .236 | .334 |
|  |  |  |  |  |
| VBM as Percent of Cast Ballots | -.187 | -.250 | -.110 | -.004 |
| # Different Hardware Types in Polling Places | .127 | .082 | .067 | -.138 |

Summary Conclusion:

Through this analysis, we see that external measures are reasonably reflective of jurisdictional complexity of counties. There is a strong association between these measures and the cost per voting opportunity, but not of cost per registered voter or cost per capita. Similar to electoral complexity, jurisdictional complexity drives up certain types of cost of elections, for example the costs related to multi-lingual ballots. Overall, the costs associated with jurisdictional complexity are part and parcel with electorate complexity and are not associated with Vote By Mail ballot or hardware-related costs.

1. Externally, we draw on only place definitions for measures of jurisdictional complexity. Incorporating external measures of other relevant territories and the extent to which they intersect could be a valuable extension of the research. [↑](#footnote-ref-1)
2. A “robust” statistic is one that is resistant to the errors in the results. One way to achieve ‘robustness’ is to exclude outliers, i.e. observations that are extremely different from all others. [↑](#footnote-ref-2)
3. A part of this weak association may be due to entry errors, since one county indicated that all of its candidates and measures were sub-county (for example contests for mayor of a city or school board)– which would not be possible in a general election. [↑](#footnote-ref-3)
4. A Pearson correlation describes the linear relationship between 2 variables. The coefficient is between -1 and +1 where 1 is a positive correlation (or relationship), 0 is no correlation and -1 is a negative correlation. [↑](#footnote-ref-4)
5. “Voting opportunity” for the purposes of the research briefs, refers to the sum of the number of candidate contests and ballot measures. It is a county-level measure of total items for which a vote could be cast. [↑](#footnote-ref-5)