Electoral Geography, Strategic Mobilization, and Implications for Voter Turnout *

Karen Long Jusko
Department of Political Science
Stanford University

November 1, 2013

Abstract

When will parties mobilize the electoral support of low-income voters? This discussion presents evidence that rates of turnout among low-income citizens reflect legislators' and parties' electoral incentives to be responsive to the poor, and that these electoral incentives are determined by electoral geography – the joint geographic distribution of legislative seats and low-income voters across electoral districts. Further, this discussion demonstrates that under SMD electoral rules, low-income voters are more likely to vote in those electoral districts in which they are likely to be pivotal. By presenting a strategic mobilization account of voter turnout, this discussion breaks with current accounts of voter turnout that emphasize facilitative and motivational individual- and system-level factors. Instead, this discussion argues that low-income voters' turnout decisions, in fact, reflect parties' electoral incentives to cultivate and mobilize a low-income constituency.

*This paper was prepared for presentation at the First Annual Toronto Political Behaviour Workshop. This research benefitted from comments and suggestions offered by Chris Achen, Jonathan Rodden, and Richard Sinnott. This project is supported by a grant from the National Science Foundation, NSF-0836409, as part of the European Science Foundation Collaborative Research Program on Human Values, Institutions, and Behavior (EuroCORES HumVIB), "Voter Turnout in Context." Comments are most welcome: kljusko@stanford.edu.

How do electoral rules affect the poor? When will parties stand for – and mobilize – low-income citizens? This discussion presents a strategic mobilization account of turnout bias: Although low-income citizens typically vote less frequently than others in contemporary democratic societies (e.g., Nevitte, Blais, Gidengil & Nadeau 2009), political parties sometimes have strong electoral incentives to mobilize their electoral support. Here, electoral geography, specifically the joint geographic allocation of voters and seats across electoral districts, structures parties' incentives to strategically mobilize low-income citizens reflect . When low-income citizens are pivotal in the allocation of legislative seats, political parties actively mobilize their electoral support.

This motivating intuition – that turnout decisions among low-income citizens reflect, at least in part, parties' electoral incentives and efforts to mobilize their support – leads to two sets of testable hypotheses. First, in a broadly-comparative context, in those countries in which a low-income voting bloc is frequently pivotal in the allocation of a large proportion of legislative seats, levels of turnout bias (the under-representation of low-income citizens in the electorate) ought to be lower than the levels of turnout bias that characterize countries in which low-income citizens are rarely pivotal in the allocation of legislative seats. Second, within countries, and especially in competitive contests, turnout rates for low-income citizens ought to be higher in those electoral districts in which they are pivotal.

This discussion presents evidence in favor of both of these hypotheses: Using individual-level survey data, this discussion demonstrates that turnout bias generally decreases as the share of seats that a low-income voting bloc can elect increases, *and* turnout rates among low-income citizens within a particular country are higher in those electoral districts in which they are pivotal. Of course, this individual-level evidence provides only indirect support for a strategic mobilization account of voter turnout: I do not draw on evidence, for example, of cross-district differences in specific campaign activities. However, as I suggest in the next section, the contextual effect of living in low-income districts likely undermines parties' efforts to mobilize low-income citizens. The final sections of this discussion, therefore, presents hard tests of parties' strategic mobilization efforts: Do political parties succeed in mobilizing low-income voters in low-income electoral districts?

1 Electoral Rules, Electoral Geography, and Voter Turnout

Most earlier accounts of the relationship between voter turnout and electoral rules emphasize a stark distinction between multi-member district (MMD) electoral rules and single-member district (SMD) rules,[1] and have emphasized overall levels of voter turnout, rather than cross-national variation in the composition of the electorate. Blais & Dobrzynska (1998, 245), for example, establish that "turnout tends to be higher in PR systems," and suggest three reasons for why this might be the case:

> First, PR is a fairer system, and because it is fair people feel less alienated and thus more inclined to vote. Second, PR increases the number of parties and the variety of options among which people can choose.[2] Third, PR makes elections more competitive: as there are many members to be elected in each district, most parties have a chance to win at least one seat, and as a consequence they attempt to mobilize voters throughout the country.

As Cox (1999) notes, especially the third of these reasons why PR electoral rules might boost turnout corresponds to parties' incentives to mobilize voters. Notice, however, that Blais & Dobrzynska, and indeed, most other broadly comparative analysis of voter turnout, offer little consideration of within-country variation in the extent to a party might benefit from the mobilization of a *specific* group of voters.

To illustrate a strategic mobilization account of voter turnout, this discussion builds on Cox's (1999) useful framework for the analysis of electoral rules and turnout, based on the pivotal voter model: Following Downs (1957), let the utility of voting be defined over our expected benefits associated with one party, over all others (B), weighted by the probability our vote is decisive (p), and finally, minus the costs associated with voting (C). That is, let

$$U(voting) = pB - C. \tag{1}$$

[1] The expression "single-member district" distinguishes those electoral districts that elect only one legislator from others that elect more than one legislator. Cox (1999) rightly notes the confluence of district magnitude and electoral formula: Specifically, most prior studies of how electoral rules affect turnout compare single member simple plurality or majoritarian systems with multimember proportional representation systems.

[2] This contribution of PR electoral rules to turnout is similar to that suggested by Powell (1986): The increased diversity of ideological positions taken by parties in PR systems facilitates stronger party-group links, which aid in voter mobilization.

Of course, in this framework, a citizen will turnout to vote if her expected returns exceed her anticipated costs, or if $pB > C$. For most of us, most of the time, however, p is so very small that turnout is rarely expected. However, notice that, as Cox (1999, 388) argues, a party's mobilization efforts can be characterized using a similar expression: Parties will work to mobilize voters "only if the probability that their effort is decisive, times the benefit of winning rather than losing, exceeds the costs of mobilization." More specifically, parties will exert efforts to mobilize voters if (1) these efforts effectively generate votes, (2) the newly-won votes increase the likelihood of winning seats, and (3) the newly-won seats increase that party share of cabinet portfolios. Cox (1999, 394) formalizes this decision problem in the following way:

> Imagine a particular constituency in which n candidates or lists compete for $M \geq 1$ seats. Let e be the level of effort a party exerts in mobilizing its followers; $V(e)$ be the expected increment in votes that an effort of level e will yield; $S(V)$ be the expected increment in seats that V more votes will yield; $P(S)$ be the expected increment in portfolios that S more seats will yield; u_S be the value of a seats; u_P be the value of a portfolio; and $c(e)$ be the cost of the effort.

Thus, a party will exert mobilization efforts if the expected benefits exceed the costs of the efforts, or if

$$u_S S(V(e)) + u_P P(S(V(e))) > c(e). \tag{2}$$

Finally, the marginal utility derived from an increase in mobilization effort can be evaluated with the following expression:

$$\frac{\partial[u_S S(V(e)) + u_P P(S(V(e)))]}{\partial e} = u_S S' V' + u_P P' S' V' \tag{3}$$

(Here, following Cox 1999, V' denotes the derivative of V with respect to e, S' denotes the derivative of S with respect to V, and P' reports the derivative of P with respect to S). In substantive terms, a party's benefit from increased mobilization efforts is conditioned by the extent to which these efforts are effective in turning out new and favorable voters, securing new seats, and claiming new portfolios; larger values of V', S', and P' increase the returns to mobilization efforts. As Cox (1999) suggests, PR systems are likely associated with higher values of S' and V' than are SMP systems, particularly when few SMD electoral districts are competitive; in any case, the cross-district benefits to mobilization are decidedly more variable under SMP rules.

Now, consider a case in which a party can allocate mobilization efforts across different groups of voters, and suppose that these groups are geographically distributed so that efforts vary in the rates at which new votes contribute to new seats. To illustrate with a concrete example, let $e_L, e_M,$ and e_H denote a party's efforts to mobilize low-, middle-, and high-income voters, where $e \equiv e_L + e_M + e_H$. Importantly, suppose that because of the geographic distribution of income, the votes of low-income voters are less effectively converted into seats, or that $S'_L < S'_M$ and $S'_L < S'_H$. Clearly, even if mobilization efforts across all three groups are equally effective in bringing would-be voters to the polls (i.e., $V'_L \approx V'_M \approx V'_H$, an assumption made in the analysis below), a party that is behaving optimally will focus mobilization efforts on middle- and high-income citizens, rather than on low-income citizens.

Here, the discussion returns to its motivating research question: Under which conditions will electoral rules and electoral geography create incentives for the strategic mobilization of low-income citizens? Put concretely, what determines the relationship between S'_L, S'_M, and S'_H, and thus parties' incentives to strategically mobilize voters in different income groups? As the next section demonstrates, even when countries have similar electoral rules, the geographic distribution of income groups operates in important ways to moderate the effective conversion of votes to seats.

2 Measuring the Electoral Power of a Low-Income Voting Bloc

How many seats could a low-income voting bloc elect, if all low-income voters turned out to vote, and they all voted the same way? Building on the notation from the example presented above, define S_L as the "electoral power" of a low-income voting bloc, or the rate at which votes of low-income citizens contribute to legislative seats. As will be evident shortly, electoral power is a function of electoral geography – the joint geographic distribution of voters and seats *across* legislative districts, and of electoral formula, which provides the basis of the allocation of seats *within* districts. Importantly, the concept of electoral geography encompasses district magnitude in a general sense (whether more than one legislator is elected in each district), and the extent to which district magnitude varies across districts (see, e.g., Monroe & Rose 2002).

To measure the electoral power of a low-income voting bloc in contemporary developed democracies, this discussion proceeds in three steps:

1. First, using Luxembourg Income Study (LIS) and sometimes other data resources, I estimate the proportion of low-income voters in each electoral district, within each country. Here, "low-income" refers to those who comprise the lowest third of the national market income distribution. The set of countries included in the analysis are those for which LIS data are available, and in which the thirty-third percentile of the national income distribution is at least as great as the official 2000 U.S. poverty line ($8,969). All countries included in this analysis have low-income thresholds that are at least 60% of the median income, and are on average 70% of the median income.

2. Second, using these proportions of low-income voters in each district, seats are allocated according to current electoral rules of each country.

3. Finally, a ratio of national seat-share to national vote share (i.e., 33 percent) is calculated for the low-income voting bloc each country.

Notice that if electoral systems do not moderate the representation of different income groups, with this operationalization, each income group will have an electoral power measure equal to 1; in this case, we would expect that $\hat{S}'_L = 1$ in all countries. In electoral systems that favor the representation of low-income citizens, this measure of electoral power will be greater than 1, or $\hat{S}'_L > 1$. The rest of this section of the discussion describes each of the steps involved in estimating $\hat{S}'_L$; Appendix A presents more technical information about this analysis.

2.1 Estimating the Geographic Distribution of Income

Three different strategies are used to estimate the proportion of each lower house electoral district that is composed of low-income households:

(A) Whenever possible, i.e., when LIS data report each respondent household's region of residence and the regions reported correspond to the country's electoral districts (or to regions that comprise the electoral districts), the proportion of low-income households in each district is estimated in a straight-forward way.

(B) In several cases (e.g., Australia), data on the distribution of income within electoral districts are available from other sources. Sometimes the construction of income measures or samples

differ from the measures or samples used the analysis presented below.

(C) When income data corresponding to the electoral district are not available, LIS data are combined with other resources to estimate the proportion of low-income citizens in each electoral district.

To illustrate, the geographic distribution of low-income households in France, was evaluated in several steps: While LIS data do not report each household's electoral district (*circonscription*), they do include each respondent's region of residence. One way to proceed, therefore, might be to use the regional proportions of low-income households to estimate the proportion of low-income households in each electoral district. This strategy, however, would fail to reflect within-region cross-district variance in the concentration of poverty.

Alternatively, although *Institut National de la Statistique et des Études Économiques* (INSEE) does not report income data that correspond to the measures of poverty used in this analysis, INSEE does report data on the structure of the labor force – data that correspond to LIS variables – within each electoral district. Using LIS data, I estimate the proportion of low-income households in each labor force status and industrial sector for each French region, and then use this relationship in combination with the INSEE labor force data to estimate the proportion of low-income citizens in each district. This latter strategy has the advantage incorporating within-region across-district differences that are related to the distribution of poverty, but would be misleading if poverty rates vary within labor force status and industrial sector categories, within each region. For this reason, this strategy is pursued only when LIS regions do not correspond to electoral districts and other measures of the geographic distribution of income are unavailable or are quite different from the measure developed here.

As noted earlier, Jusko (2010) reports the specific details of the estimation strategy used for each country and lists the electoral districts in which a low-income voting bloc could elect (lower house) members of the national legislature.

2.2 Allocating Seats to a Low-Income Voting Bloc

The second task in assessing the electoral strength of a low-income voting bloc involves the allocation of seats according to the electoral rules of each system. Following the classification of electoral

systems used in the formal analytic examples, this section of the discussion distinguishes between systems in which all legislators are elected in single-member districts (SMDs), systems in which all legislators are elected in a single nation-wide district, and systems in which the number of legislators varies across districts (usually in a way that reflects population density). Countries included in a fourth category, "mixed" electoral systems, form a hybrid category and typically have two or more levels of nested districts, with separate (but sometimes related) allocations of seats at each level. Using this classification, then, this section outlines the general strategy used for seat allocations, for countries in each category of electoral rules.

Single-Member District (SMD) Systems. Following Lijphart (1994, 28; also Boix 1999), this analysis sets an effective threshold of 35 percent for all SMD systems, and allocates a district's seat to the low-income voting bloc if the proportion of low-income voters exceeds 35 percent. Note that this relatively low threshold – recall that low-income citizens comprise the bottom third, or 33 percent of the national income distribution – will understate differences between SMD and MMD proportional representation systems in the representation of low-income citizens.

National District Systems. In the two countries in which seats are allocated in a single national district, according to a PR allocation rule – Israel and the Netherlands – a low-income voting bloc could secure a third of the seats in the legislature.

Varying District-Magnitude Systems. Because a Droop quota, in contrast to a highest average allocation rule, requires little knowledge and few assumptions about the number of parties competing in each election or about distribution of support for other parties is needed to estimate the seats won by each party, a Droop quota is used to estimate the number of seats won by a low-income voting bloc in all varying district magnitude electoral systems. This strategy is also employed for MMDs in those "mixed" systems that elect some legislators under MMD rules.

2.3 The Electoral Power of Low-Income Voters

How many seats could a low-income voting bloc elect, if all low-income voters turned out to vote, and they all voted the same way? Table 1 reports the results of this analysis, specifically the number

of electoral districts in which low-income citizens are over-represented, and the shares of seats a low-income voting could win in each country. The data reported in Column (3) – an estimate of rate at which the votes of low-income citizens contribute to seats – will serve as the key independent variable in the analysis that follows, the electoral power of a low-income voting bloc.

Note, first, that the success of a low-income voting bloc varies within electoral system groups, and particularly within the group of SMD countries. In the US and the Canada, for example, the electoral success of a low-income voting bloc is potentially quite limited, while the largest seat share potentially won by a low-income voting bloc is observed in France, and the electoral power of low-income citizens in the UK is similar to the electoral power of low-income citizens in national-district (PR) systems.

Second, while there is a direct correspondence between the number of districts in which low-income voters are over-represented and their share of seats under SMD rules, there is, of course, no correspondence in the systems with varying district magnitudes. What matters for the representation of low-income citizens under varying district-magnitude rules is whether or not low-income voters are over-represented in rural districts that elect a small number of legislators (e.g. Finland, Norway and Sweden), or in urban settings: Under these circumstance, the disproportionality of low-magnitude districts, typically found in the rural regions of these countries, can favor the legislative representation of the low-income voters.

If, as suggested above, the strategic mobilization of low-income citizens reflects the effectiveness with which their votes contribute to legislative seats, then turnout rates among low-income citizens ought to be highest among those countries in which the measure of electoral power exceeds 1: In these countries, the votes of low-income citizens are over-weighted in the generation of seats and, conditional on the effectiveness of mobilization efforts generating votes (i.e., V_L'), the marginal return to mobilization efforts is comparatively large. The next section of this discussion evaluates this proposed relationship: Are turnout rates among low-income citizens larger in those countries in which low-income citizens are over-represented in the allocation of legislative seats?

Table 1: Seats Elected by a Low-Income Voting Bloc

Country	(1) # of Districts[a]	(2) Seat Share[b]	(3) Electoral Power ($\hat{S}'_L{}^c$)
A. Single Member District Systems			
United States	104/435	24%	**0.72**
Canada	94/308	30%	**0.90**
United Kingdom	190/569[d]	33%	**1.02**
Australia	51/150	34%	**1.02**
France	267/570[e]	47%	**1.41**
B. National District Systems			
Netherlands	0/1	33%	**1.00**
Israel	0/1	33%	**1.00**
C. Varying-District-Magnitude Systems			
Denmark	12/17	33%	**1.00**
Spain	28/52	35%	**1.05**
Ireland	12/43	36%	**1.08**
Finland	9/15	37%	**1.11**
Switzerland	21/26	37%	**1.11**
Norway	14/19	38%	**1.11**
Sweden	20/29	40%	**1.20**

NOTES. This Table reports estimates of the number of seats that a low-income voting bloc could secure if all low-income citizens cast ballots, and cast ballots for the same party. Please refer to the Appendix materials for details of how these estimates were calculated.

[a] This column reports the number of districts in which low-income citizens are over-represented.

[b] This column reports the total share of seats secured by a low-income voting bloc. The districts in which these seats are secured are listed in the Appendix of Jusko (2010).

[c] This column reports the measure of electoral power used in this analysis, or the ratio of national vote share to national seat share, in the lower house of national legislative assembly.

[d] Parliamentary constituencies in Scotland and Northern Ireland are excluded.

[e] The 15 overseas districts are excluded from the denominator reported in this column, but are included in the calculation of the seat share a low-income voting bloc could win.

[f] This ratio refers to the MMD *Länder*, not the SMDs.

[g] This ratio refers to the MMD *circoscrzioni*, not the SMDs, the *collegi uninominali*.

3 Electoral Power and Turnout Bias

This section explores the empirical relationship between electoral power and rates of turnout among low-income citizens, in a broadly comparative analysis and a focused case-study. First, using the measure of electoral power, developed in the previous section, as the key independent variable, this analysis considers the extent to which cross-national variance turnout bias can be attributed to strategic incentives to mobilize low-income voters. Then, because the strategic incentives to mobilize low-income voters likely vary across electoral districts, especially in SMD systems (as recognized by Cox 1999, in the general case), this analysis evaluates evidence of the strategic mobilization of low-income citizens across U.S. congressional districts.

3.1 Electoral Power and Turnout Bias in Contemporary Democratic Societies

To estimate the rate of turnout among low-income citizens, this analysis uses post-election survey data collected under the auspices of the Comparative Study of Electoral Systems (CSES). For a large set of contemporary democracies, these data offer measures of turnout, income, and other socio-demographic variables for large national samples, and are usually collected immediately following elections to the (lower house of) the national legislature.

Table 2 reports parameter estimates, for country, for a probit analysis, in which turnout is regressed on low-income status and two other potentially confounding socio-demographic variables, age and college education:

$$\pi \equiv Pr(Turnout = 1|\text{Low-income}, \mathbf{X}) = \Phi(\alpha + \beta\text{Low-Income} + \nu\mathbf{X}) \tag{4}$$

Here, "Low-Income" is an indicator variable that distinguishes those with incomes in (approximately[3]) the first third of the national income distribution, and $\mathbf{X}$ includes indicators for the college educated, and several cohorts. Column (1) in Table 2 reports parameter estimates from this analysis. For each country, the parameter β represents the low-income turnout gap, or "turnout

[3]In the CSES, income is reported by approximate quintiles; in this analysis, "low-income" respondents are those that comprise the first two income quintiles, a group slightly larger (and probably more participatory) than the the tertile used to calculate the electoral power of a low-income voting bloc. Note that this operationationalization, by diminishing cross-national variance in turnout bias, likely results in a downwards-biased estimate of the cross-national relationship between turnout bias and electoral power, the quantity of interest.

bias" in each system. However, because the β parameters result from a probit specification, they cannot be directly compared across countries (. Long 2009) Let us define, instead,

$$\Delta(\text{Low-Income}) \equiv \pi(\text{Low-Income} = 0) - \pi(\text{Low-Income} = 1) \tag{5}$$

as the measure of turnout bias, and estimate the difference between low-income citizens, and others, in their propensity to vote. Of course, this measure of turnout bias likely reflects two political processes: The magnitude of each $\Delta(Low - Income)$ reflects the effectiveness of party mobilization campaigns (i.e., V_L') *and* the underlying propensity of low-income citizens to vote in each country. This underlying voting propensity of low-income citizens may reflect some of the factors identified by Blais & Dobrzynska (1998, i.e., representation of diverse interests and perceptions of fairness), as well as voter registration and election day procedures that facilitate or hinder the process of casting ballots. Future versions of this analysis will incorporate these facilitative factors; here, I concentrate on the unconditional strategic incentives for parties to mobilize low-income citizens.

If the strategic mobilization account of voter turnout is correct, levels of turnout bias ought to decrease as the low-income voting bloc's electoral power increases. That is, in countries where low-income citizens have little electoral power ($S_L' << 1$), low-income citizens ought to turnout much less frequently than middle- or high-income citizens ($beta << 0$). Alternatively, when low-income citizens are over-represented in the allocation of legislative seats, there should be little or no evident turnout bias ($beta \approx 0$). Further, if the rate at which mobilization effort generates new votes is largely constant across countries, the overall relationship between turnout bias and electoral power ought to be well-represented with a linear specification. Therefore, instead, let

$$\hat{\Delta}(\text{Low-Income}) = \gamma_0 + \gamma_1 \hat{S}_L' + u_j. \tag{6}$$

Because we observe $\hat{\Delta}$(Low-Income), rather than Δ(Low-Income), the residual term, u_j includes both a cross-national variance component and a sampling error component. As a consequence, while an ordinary least squares (OLS) estimate of γ_1 – the key parameter of interest – is unbiased, the reported estimates of OLS standard errors are not correct (see Jusko & Shively 2005). (Appropriate standard errors will be incorporated in future versions of this paper.) To be clear: A positive

Table 2: Socio-Demographic Status and Voter Turnout in Contemporary Democracies

Country (Year of Study)	(1) Low-Income (β)	(2) College Educated	(3) Age 25-36	36-45	45-65	(4) Intercept
	A. Single-Member District Systems					
United States (2004)	**-0.55**	0.53	0.26	0.14	0.49	0.42
	(0.11)	(0.11)	(0.17)	(0.17)	(0.15)	(0.16)
Canada (2004)	**-0.39**	0.31	0.30	0.50	0.72	0.82
	(0.10)	(0.11)	(0.19)	(0.18)	(0.17)	(0.17)
Australia (2004)	**-0.38**	-0.03	-0.05	0.18	0.05	2.21
	(0.19)	(0.20)	(0.32)	(0.33)	(0.28)	(0.29)
United Kingdom (2005)	**-0.34**	0.34	0.50	0.94	1.26	-0.37
	(0.12)	(0.15)	(0.22)	(0.21)	(0.20)	(0.19)
France (2002)	**-0.01**	0.30	-0.07	0.53	0.64	0.42
	(0.11)	(0.12)	(0.15)	(0.16)	(0.15)	(0.13)
	B. National District Systems					
Netherlands (2002)	**-0.65**	-0.35	0.07	-0.09	0.17	2.29
	(0.17)	(0.19)	(0.39)	(0.36)	(0.35)	(0.36)
Israel (2003)	**-0.26**	0.53	0.02	0.16	0.47	0.98
	(0.14)	(0.16)	(0.19)	(0.21)	(0.21)	(0.17)
	C. Varying-District-Magnitude Systems					
Switzerland (2003)	**-0.41**	0.51	0.00	0.20	0.63	0.29
	(0.09)	(0.15)	(0.18)	(0.17)	(0.16)	(0.15)
Denmark (2001)	**-0.40**	0.25	0.03	0.23	0.65	1.56
	(0.13)	(0.14)	(0.18)	(0.19)	(0.19)	(0.17)
Norway (2001)	**-0.34**	0.28	0.27	0.56	0.73	0.56
	(0.09)	(0.09)	(0.12)	(0.13)	(0.12)	(0.12)
Finland (2003)	**-0.33**	0.51	0.16	0.40	0.67	0.59
	(0.11)	(0.21)	(0.15)	(0.15)	(0.13)	(0.13)
Sweden (2002)	**-0.31**	0.53	-0.27	-0.36	0.10	1.24
	(0.13)	(0.13)	(0.19)	(0.19)	(0.19)	(0.18)
Ireland (2002)	**-0.07**	-0.02	0.50	0.85	0.96	0.42
	(0.09)	(0.10)	(0.12)	(0.12)	(0.11)	(0.09)
Spain (2004)	**-0.05**	0.11	0.13	0.38	0.68	0.91
	(0.16)	(0.20)	(0.20)	(0.21)	(0.21)	(0.16)

NOTE. This Table reports probit coefficients from a regression of turnout on socio-demographic indicator variables. Countries are grouped according to their electoral rules, and are listed in order of the parameter estimating the partial effect of low-income status on turnout. Standard errors are reported in parentheses.

SOURCE. Comparative Study of Electoral Systems (CSES).

estimate of γ_1 is consistent with the strategic mobilization account of voter turnout, and indicates that turnout bias decreases with a more favorable vote-to-seat mapping.

Figure 1 reports the bivariate relationship between the electoral power of a low-income voting

bloc (S'_L, horizontal axis), and levels of turnout bias (or β, vertical axis). The top panel reports parameters estimated in a bivariate individual-level model; the lower panel reports conditional estimates of turnout bias. Although the generalizability of the observed relationship is somewhat dependent on the contributions of high-leverage outliers (the U.S. and France), the observed relationships between the electoral strength of a low-income voting and poverty responsiveness is consistent with strategic mobilization account of voter turnout: Turnout among low-income citizens generally increases with their electoral power.

3.2 Electoral Geography and Turnout Bias in the U.S.

How do incentives for parties to mobilize low-income voters vary *within* a particular country? As Cox (1999) and others rightly suggest, general mobilization incentives likely vary across districts within each country. We should find, therefore, further evidence of the strategic mobilization of low-income citizens within each country, and especially in systems that employ SMD electoral rules: Low-income voters should vote more frequently in single-member electoral districts when their support is pivotal in the allocation of legislative seats, and especially in competitive electoral races.

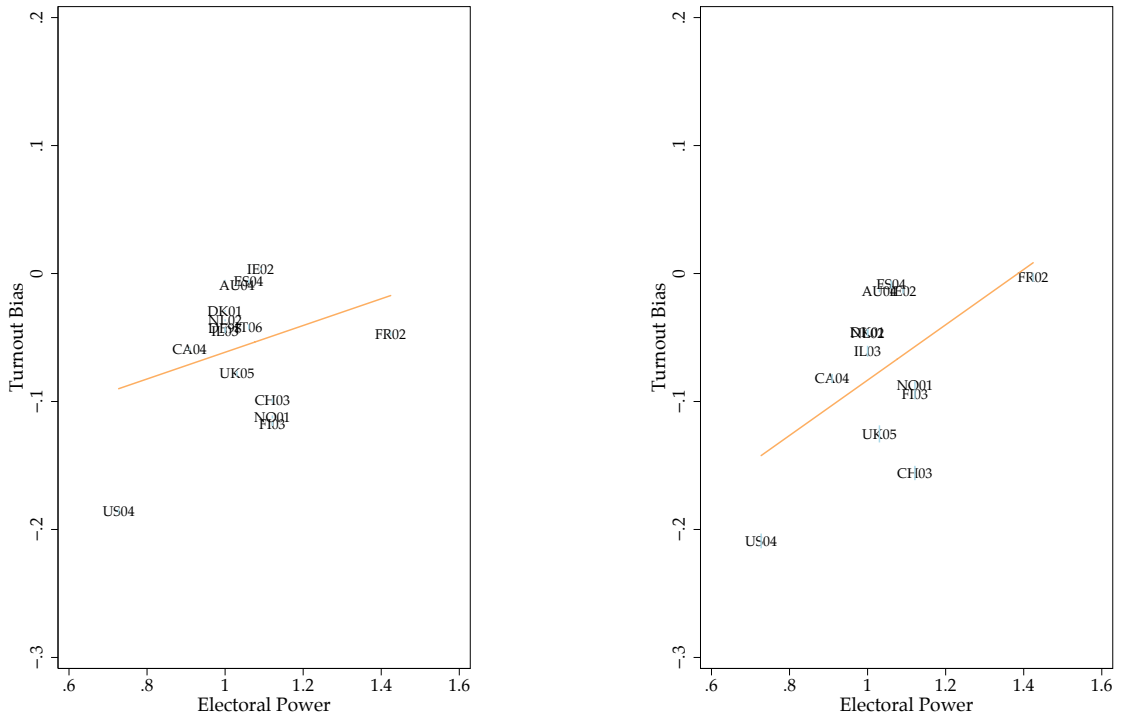
Recall that, to generate an estimates of $\hat{S}'_L$ for the U.S. (and, indeed, for each other country included in this analysis), the first step involved in calculating the percentage of low-income citizens living within each electoral district. Then, following Lijphart (1994) and others in setting an effective threshold of 35 percent, I identified congressional districts in which a low-income voting bloc is likely to be pivotal in the allocation of each House of Representative seat. These data can be usefully combined with individual-level income and voter turnout data to evaluate whether low-income citizens living in districts in which a low-income voting bloc is pivotal turnout at higher rates than low-income citizens living in other electoral districts.

To evaluate the strategic mobilization account of voter turnout, this part of the analysis draws on data collected as part of the November supplement of the 2004 Current Population Survey (CPS). The CPS offers the important advantages of a large national sample, detailed income data, and a measure of voter turnout.

There are two features of the CPS data, however, that should be noted: First, although the CPS data do not report each respondent's congressional district, each respondent's county is reported

Figure 1: Electoral Power and Voter Turnout

A. Bivariate Individual-Level Specification *B. Multivariate Individual-Level Specification*



NOTE. This Figure reports the bivariate relationship between the share of seats potentially secured by a low-income voting bloc and the (in the lower panel, conditional) low-income turnout gap, $\Delta(Low - Income)$, estimated for each country (reported in Table 2). Error bars report 95 percent confidence intervals, with standard errors estimated using the delta method:

$$SE(\Delta(Low - Income)) \equiv \frac{1}{\sqrt{N}}\sqrt{Var[\pi(Low - Income = 0|\mathbf{X})] + Var[\pi(Low - Income = 1|\mathbf{X})]}.$$

and

$$Var[\pi(Low - Income = 0|\mathbf{X}) = \big(\phi(\alpha + \nu\mathbf{X})\big)^2 \times \big[Var(\hat{\alpha}) + Var(\hat{\nu})\big]$$
$$Var[\pi(Low - Income = 1|\mathbf{X})] = \big(\phi(\alpha + \beta + \nu\mathbf{X})\big)^2 \times \big[Var(\hat{\alpha}) + Var(\hat{\beta}) + Var(\hat{\nu})\big]$$

The solid lines in each panel reports ordinary least-squares (OLS) fitted values: $\Delta(Low - Income) = -0.166(0.098) + 0.104(0.093)\hat{S}'_L$. (left panel) and $\Delta(Low - Income) = -0.299(0.110) + 0.216(0.101)\hat{S}'_L$. (right panel).

and can be matched, although imperfectly, to a congressional district. In those cases in which the boundaries of a county overlap several congressional districts, and in one or more of those districts, a low-income voting bloc is substantial and potentially pivotal, all of the individuals in that county are treated as if they live in a low-income district. This captures potential "spillover" effects from

the imperfect targeting of mobilization efforts, and therefore, in a downwardly biased estimate of the coefficient of interest.

Second, although the CPS data represent a random sample of the national population, these data do not offer a random sample of the congressional districts. Further, congressional districts in which a low-income voting bloc is pivotal in the allocation of the Representative's seat are under-represented in the CPS data, compared to the national proportion of low-income congressional districts. While the implications of these CPS features for the following analysis are unclear, it is unlikely that they contribute to the appearance of the hypothesized relationship.

To be clear, the following analysis presents several variations of the following model:

$$Pr(Turnout) = \Phi\big(\alpha_0 + \alpha_1 \text{Low-Income} + \alpha_2 \text{Low-Income District} + \alpha_3 \text{Low-Income} \times \text{Low-Income}\big). \quad (7)$$

Here, $\alpha_3 > 0$ indicates that low-income citizens living in districts in which a low-income voting is pivotal are more likely to turnout than low-income citizens living in other districts, and would be consistent with a strategic mobilization account of voter turnout. While we might expect to see $\alpha_3 > 0$ generally – and we do (although this parameter is estimated with more than conventionally-accepted levels of variance) – the incentives to mobilize a low-income voting bloc should be especially strong in those districts in which the elections are especially competitive.

In fact, as seen in Table 3 in every specification, $\alpha_3 > 0$ (although always estimated with substantial variance). This pattern holds when potentially confounding individual-level variables, and state indicators are incorporated into the analysis. Importantly, we observe the strongest and most robust effects (although, again, with still high variance) in the 20 districts (about five percent of districts) in which the margin of competition was less than ten percentage points. In the most competitive districts, when low-income voters are likely to be pivotal in the outcome of the election (i.e., their share of the district exceeds 35 percent), their probability of voting is 0.075 higher than in other districts.

Table 3: Electoral Geography and Turnout Bias in the US

	All Districts		Competitive Districts		
	(1)	(2)	(3)	(4)	(5)
Low-Income	-0.516	-0.526	-0.523	-0.488	-0.511
	(0.02)	(0.025)	(0.114)	(0.125)	(0.130)
Low-Income District		-0.025	-0.124	-0.209	-0.216
		(0.021)	(0.105)	(0.112)	(0.257)
Low-Income ×		0.032	0.307	0.329	0.253
Low-Income District		(0.041)	(0.224)	(0.241)	(0.257)
College-Educated				1.033	0.753
				(0.092)	(0.018)
Aged 33–44				0.213	0.283
				(0.113)	(0.024)
Aged 45–57				0.576	0.526
				(0.127)	(0.024)
Aged 58–85				1.03	0.74
				(0.132)	(0.025)
Race (Black)				-0.096	0.119
				(0.288)	(0.030)
Intercept	0.754	0.762	0.659	-0.064	0.012
	(0.009)	(0.011)	(0.054)	(0.021)	(0.088)
N	26,780	26,780	1053	1,053	1,053
Specification					State indicators

NOTE. Table reports probit coefficients. Standard errors are reported in parentheses
SOURCE. Current Population Survey, November Supplement (2004).

3.3 Discussion and Implications

The broadly-comparative and U.S.-based analysis offered in this discussion present evidence that is consistent with a strategic mobilization account of voter turnout: Specifically, turnout bias, or the under-representation of low-income citizens in the electorate, is systematically lower where the electoral power of a low-income voting bloc is greater and, at least in the U.S. case, in electoral

districts in which a low-income voting bloc is pivotal. What evidence is there, however, to suggest that these differences result from parties' mobilization efforts? Is it possible that voters are responding to similar variance in their electoral incentive structures? To put the question slightly differently, how might a group's electoral power change the turnout incentives of its membership?

Clearly, the Downsian pivotal voter model, presented above, does not easily accommodate the electoral strength of the different groups with which a particular voter might identify, within the framework of voter decision-making. Even in those districts in which a low-income voting bloc is pivotal, for example, an individual's probability of casting the decisive ballot is increased only to the extent that her group turns out completely and in support of the same party or candidate. Perhaps one's ability to contribute to a group's strength is reflected in Riker & Ordeshook's (1968) revision of the pivotal voter model, and incorporated in the utility derived from fulfilling one's civic "duty," but this is not what was intended by their original analysis, except insofar as contributing to one's group's success may affirm a partisan preference.

Perhaps a more important objection to a voter-based account of strategic turnout comes from the recent literature on neighborhood effects: Following Rosenstone & Hansen (1993), it seems unlikely that low-income voters are more likely to turnout *because* they live in low-income districts. In fact, low-income districts are generally characterized by lower overall levels of turnout than other districts; this pattern is evident in Table 3.

4 Conclusion

How do electoral rules affect the poor? When will parties stand for – and mobilize – low-income citizens? This discussion builds on Cox (1999) to present a strategic mobilization account of turnout bias: Although low-income citizens typically vote less frequently than other voters, political parties sometimes have strong electoral incentives to mobilize their electoral support. Here, parties' incentives to strategically mobilize low-income citizens reflect the electoral geography of their political system, specifically the joint geographic allocation of voters and seats across electoral districts. In fact, under both SMD and MMD electoral rules, parties' strategic incentives to mobilize a low-income bloc increase with the share of seats that voting bloc can secure. Preliminary evidence from from a broadly comparative analysis and focused case study supports this intuition: Turnout

bias is generally lower in those systems in which a low-income voting bloc is over-weighted in the allocation of legislative seats, and in the U.S., in those congressional districts in which the electoral support of a low-income voting bloc is likely to be pivotal in the election outcome.

Appendix A Measuring the Electoral Power of the Poor in Contemporary Democracies

This Appendix reports the specific details of the estimation strategy for each country, and lists the electoral districts in which a low-income voting bloc could elect (lower house) members of the national legislature, and is organized according to types of electoral systems, with the main distinction reflecting the number of legislators elected in each district.

Single Member District Systems

(A) Simple Plurality Rules

Canada. Estimates of the proportion of low-income citizens in each electoral district are calculated using 2001 Census data (corresponding to 2000 calendar year Statistics Canada 2003), reported for each Federal Parliamentary Riding (2003 Representation Order). The income measure includes all sources of income, including social transfers and is reported by income category, for men over the age of 15. This analysis distinguishes those with total income between $1,000 and $19,999 (in Canadian dollars; an amount slightly more than the $17,821 threshold observed in the LIS data), from those earning higher levels of income. Following the strategy used in the other single member, simple plurality systems, a threshold of representation of 35% is used to identify electoral districts in which low-income citizens are likely to be pivotal.

United Kingdom. To identify those electoral constituencies in which low-income citizens are likely to be pivotal, I used data collected under the auspices of the *Annual Survey of Hours and Earnings* (Office for National Statistics 2002). This data-set reports deciles of the gross income distribution within the (202) local authorities in the UK. These low-level geographic areas were matched to parliamentary constituencies according to the "Standard Names and Codes" (SNAC) protocol, provided by National Statistics. Then, those districts in which the 30th percentile of the district income distribution was less than the 30th percentile of the the national market income distribution (as reported in Office for National Statistics, approximately $18,333) were identified as those districts in which low-income citizens are pivotal. Note: The ASHE data offer the important measures of gross earnings distributions (the main component of market income), at much lower levels of

geographic aggregation than is available through LIS, which uses the 11 Government Office regions (these are also correspond to the Eurostat NUTS 1 regions). The ASHE data, however, provide a conservative estimate of the proportion of low-income citizens in any district: Only individuals with earnings are included in the sample. As a consequence, the estimate of the number of seats a low-income voting bloc could secure is likely quite conservative.

United States. Estimates of the percentage of the each congressional district electorate composed of low-income households are generated using the *US Census of Housing and Population, Summary File 3* (U.S. Census Bureau 2002). These data offer the important advantage of direct correspondence to congressional districts. It should be noted, however, that the SF3 data report total income– a measure that includes social transfers, as well as earnings income, etc. – rather than market income. Further, because of the way in which these data are reported, a poverty threshold of $24,999 was used, instead of the LIS working-age equivalent-household threshold, $20,613: This threshold corresponds to the 29th income percentile for these non-equivalent household total income data, rather than the 33rd.

To calculate the seat share a low-income voting bloc could secure in the House of Representatives, I use Lijphart's (1994) effective threshold of representation for majoritarian systems, 35%: If low-income households comprise 35% or a greater share of the congressional district, it is allocated the seat from that district.

(B) Alternative Vote Rules

Australia. Seats in Australia's House of Representatives are elected under Alternative Vote Rusles (ATV), in single member districts (of "Commonwealth Electoral Division"). ATV rules are similar to the single member, simple plurality rules that regulate elections in the United States, the United Kingdom and Canada in that candidates who receive the majority of the vote are elected. However, when all candidates fail to secure a majority of the votes cast – when, under SMSP rules, seats are allocated to the candidate who wins a plurality of the votes cast – ATV rules invoke voters' ranking-ordering of preferences. Ballots in which the voters' first preferences are allocated to the candidate winning the smallest vote share are re-allocated to the candidates ranked second by these voters. This process is repeated, with ballots reallocated at each step and according to

voters' preferences, until a candidate has secured the majority of the vote share. In practice, however, although at least four major parties compete for election, most of the seats are allocated to two major parties or coalitions, and election results closely resemble outcomes that characterize elections held under SMSP rules. For this reason, and to limit the influence of assumptions made about the number of parties competing, this analysis uses the same seat allocation rule as was used in the SMSP systems: Seats are allocated to the low-income voting bloc in those districts in which the proportion of low-income citizens exceeds 35% of the population.

To estimate the proportion of low-income citizens in each district, I use income data collected as part of the 2001 Census: For each district, the Australian Bureau of Statistics reports the number of individuals in 14 gross income categories (including social transfers) and eight age categories (Australian Bureau of Statistics 2001). Including only working-aged individuals (in this case, 25-64 years old), estimates of the number of low-income citizens are based on the number of individuals whose yearly earnings are less than $10,884 (AUD$15,599), an amount slightly lower than the LIS working-age equivalent-household threshold, ($13,954).

(C) Two-Round Majoritarian Rules

France. Legislative seats in France are allocated in single member districts, when a candidate secures 50% of the votes cast in their district. If, after the first round election, no candidate has secured this majoritarian, the two candidates who secured the largest vote shares stand in a a second round election. The candidate winning this second round election will then be allocated the seat. Following Lijphart (1994) and Powell (2000), I use the 35% threshold of representation, and allocated seats in those districts in which low-income citizens comprise at least 35% of the district to a low-income voting bloc.

Under current rules, seats are allocated in 555 single-member electoral districts ("circonscriptions électorales", plus 15 overseas SMDs). While income data are not available at this low level of aggregation, census data collected in 1999 on the composition of the labor force are available for each district (National Institute for Statistics and Economic Studies (INSEE) 2002). Using the LIS data to generate estimates of the proportion of low-income households for each labor force category (in which the head of household is classified as employed in agricultural, industrial, con-

struction, service work, or is unemployed), for each of eight regions, and then using these regional proportions, the proportion of low-income citizens in each district is estimated in a way that reflects within-region variance in labor market conditions.

Varying District Size-Magnitude Systems

(A) Single Transferable Vote

Ireland. Legislators in Ireland's lower house of representatives, ("Dail Eireann") are elected in MMDs and seats are allocated according to a Single-Transferable vote rule. In practice, this implies that voters rank candidates on a single ballot, and in a first allocation, seats are distributed according to a Droop quota "largest remainder" formula. The surplus votes cast in favor of any candidate whose share of votes exceeds the quota (and thus is automatically elected) are redistributed to candidates who are listed as each voters' second preference, in proportion to the preferences of all ballots cast in favor of the successful candidate. Seats are allocated to each candidate whose vote share exceeds their district's quota, and votes are re-distributed until all of the seats in the district are filled. If, at any stage in the allocation of seats, no candidate is supported by a share of votes which exceeds the quota, votes for the least popular candidate are re-distributed according to the distribution of preferences expressed by her supporters.

To estimate the number of seats won by a low-income voting bloc in Ireland, I consider only the first allocation of seats, using the approximation of the Droop quota as the basis of this calculation. This strategy avoids assumptions about the number of candidates competing in each district and voters' rank order preferences.

Generating estimates of the proportion of low-income citizens in each constituency involves a number of steps: The LIS data report the Eurostat NUTS 3 region for each household. Each of the eight NUTS 3 regions, however, includes between two and 12 districts (in the Midland and Dublin regions, respectively), each electing three to five seats. Fortunately, although the Central Statistics Office Ireland does not report distributions of income within the 43 electoral districts, the published census data include the number of employed and unemployed (male) residents for each district. Using corresponding head-of-household employment status data, which are included in LIS, I've identified the proportion of low-income households in each employment status group,

for each region, and use these proportions here to estimate the proportion of low-income citizens in each electoral district. This strategy offers the important advantage of incorporating within-region variation in the geographic distribution of income by incorporating differences in the structure of the labor market; an alternative strategy would be to simply impute the region proportion of low-income citizens for each electoral district. In practice, proportions of low-income citizens estimated in this way have regional means that are within a one or two percentage points of the LIS-generated regional proportions.

(B) Single-Tier Systems

Finland. Legislative seats in Finland are allocated in way that is similar to the Belgian allocation of seats: 200 seats are allocated in 15 multi-member districts that range in the number of seats allocated from one in Aland, to 34 in Uusimaa, according to the d'Hondt formula (the modified Droop quota, described above, is used here instead). With a few exceptions, the boundaries of the electoral districts correspond to the boundaries of Finland's 20 administrative districts. The city of Helsinki comprises a district in itself, and several electoral districts combine two or three administrative districts. Because the LIS data identify the administrative district of each household, the geographic distribution of income can be estimated directly from the LIS data; no supplementary data are needed.

Norway. Legislative elections in Norway are contested in 19 multi-member districts, that range in the number of seats elected from 4 (in Aust-Agder) to 17 (in Oslo). The electoral districts correspond to the Norwegian counties; the numbers of seats in each district reflect both the distribution of the population and the geographic size of each county, with the result that voters in rural areas are over-represented in the *Storting*. Following elections, seats are allocated first according to the modified Saint-Laguë method, which uses a slightly different quota from the more common d'Hondt allocation rule used in several of the other systems included in this analysis (the d'Hondt denominator is replaced by the series $1.4, 3, 5, .., (2s^p_{t-1} - 1)$). Then, an additional "leveling" seat is allocated within each district to the party whose seat share is less than its vote share (provided that the party meets the nation 4% threshold). The number of seats elected in each district varies slightly across elections; the analysis presented here reflects the 2001 distribution of seats.

The LIS data do not report the Norwegian respondents' region of residence. Therefore, to estimate the distribution of poverty, I use the national relationship between low-income status, age (whether the respondent is 25-39 years of age, or aged 40-54), and labor market activity (whether the head of household is employed, unemployed or receiving a pension), in combination with similarly-coded data on the county-level relationship between age and labor market activity (Statistics Norway 2001).

Spain. Spain's 52 provinces serve as the multi-member districts for the Congress of Deputies. Although a PR allocation rule was used, seats are allocated (according to the d'Hondt "highest average" formula, though the approximate Droop quota is used in this analysis) such that each province has at least two seats (plus one seat for each of Spain's autonomous cities, Ceuta and Melilla); the distribution of the remaining 248 seats reflects the distribution of the population. As a consequence, most districts elect fewer than eight seats, while the districts that include Barcelona and Madrid elect 31 and 35 legislators, respectively.

LIS data identify the (NUTS 1, groups of autonomous communities) region of each respondent household, but not the province in which they reside. Regions include between one (Madrid) and 16 (Castile and Léon) provinces. Fortunately, Spain's Instituto Nacional de Estadística reports data on the structure of the labor force (by industrial sector and rates of unemployment) within each province (for the first quarter of 2000 Instituto Nacional de Estadística N.d.). Using LIS data on the economic activity and industrial sector of each working-aged head of household, in combination with income data for each household, I have calculated the proportion of low-income households in each labor force group (agricultural, industrial, service, construction and unemployed works), for each region. Then, using these regional proportions, I estimate the proportion of low-income households in each labor force category for each province.

Switzerland. Seats in Switzerland's National Council are contested in the 26 districts (corresponding to the cantons and half-cantons), each electing between 1 (in 6 cantons) and 34 legislators (in Zurich). Ballots are cast in complex ways, as voters can cast votes for candidates across party lists, or cast multiple votes for their most preferred candidates. Seats are allocated according to the Hagenbach-Bischoff highest average rule. Although there are differences in practice, particularly in small electorates, here the Hagenbach-Bischoff allocation that is functionally equivalent to the

Droop quota.

LIS data report only the region of each respondent's residence, not the canton, and so a strategy similar to that used in several other cases included in this analysis is used here, as well: Swiss Statistics reports the distribution of workers over three economic sectors (primary, secondary and tertiary), as well as the unemployment rate, for each canton, in the on-line *Regional Portraits*(Swiss Statistics 2004). Using the LIS data, the proportion of low-income households is calculated for each of these categories (using the head of household's economic activity). Finally, using these regional proportions in combination with the Swiss Statistics data on the composition of the labor force within each canton, I estimate the proportion of low-income citizens in each canton.

(C) Multi-Tier Systems

Denmark. Legislative seats in Denmark's *Folketing* are allocated in two tiers, first according to the Sainte-Lägue highest average allocation rule in 17 multi-member districts (corresponding to Denmark's counties), and second, in a compensatory allocation, according to the Danish highest average formula.[4]

To estimate the electoral power of a low-income voting bloc, LIS data can be used directly: The county of residence is reported for each respondent, and closely approximates electoral district structure, with one exception: Although the cities of Copenhagen and Frederiksberg together form three electoral districts, they jointly form one LIS category.

Sweden. Elections to the *Riksdag* are contested in 29 MMDs (*valkretsar*), with 39 seats allocated in a second nation-wide tier to ensure the proportionality of the result, for those parties securing at least four percent of votes cast, or 12 percent of the votes cast in any constituency. A modified Sainte-Lägue highest average allocation rule is used for the allocation of seats in both tiers. Following the convention established above, a Droop quota is used in the allocation of first-tier seats in this analysis.

Although LIS data do not report the electoral districts in which each Swedish respondent lives, LIS does report each respondent's county. With two exceptions, the boundaries of the 22 counties

[4]This formula is similar to the d'Hondt formula, but like the Sainte-Lägue formula, uses a different series of divisors. This compensatory tier is ignored in this analysis.

largely coincide with the boundaries of Sweden's electoral districts: The Skåne county contains four electoral districts, and Västra Götalands county is comprised of five electoral districts. Here, the county proportions of low-income citizens are used for each of the composite districts.

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