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Explaining Voter Turnout:
A Meta-Analysis of National and Subnational Elections*

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Abstract

Research about voter turnout has expanded rapidly in recent years. This article takes stock of this development by extending the meta-analysis of Geys (2006) in two main ways. First, we add 102 studies published between 2002 and 2015 to the initial sample of 83 studies. Overall, we document only minor changes to the original inferences. Second, since different processes might conceivably play at different levels of government, we exploit the larger sample to separately analyse the determinants of voter turnout in national versus subnational elections. We find that campaign expenditures, election closeness and registration requirements have more explanatory power in national elections, whereas population size and composition, concurrent elections, and the electoral system play a more important role for explaining turnout in subnational elections.

Keywords: Turnout, Elections, Meta-analysis.

JEL Codes: D72, H0.

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1. Introduction

Elections are central to democratic polities (Ashworth, 2012; Geys and Mause, 2016), and scholars have long sought to identify and explain variation in electoral participation across time and space. Indeed, few topics in political science have generated a comparable volume of literature, and turnout scholarship witnessed a veritable explosion over the past 15 years. A search for 'voter turnout' in Thomson Reuters' Web of Science database, for instance, shows that the *absolute* number of turnout articles has followed a sharply upward trend since 2000 (see figure 1). The number of articles on voter turnout published in 2014 (i.e. 197) is nearly four times the number of articles published in 2000 (i.e. 50). This is not just because more studies are being published in general. An identical query in JSTOR reveals a similar upward trend in the *relative* proportion of articles dealing with voter turnout within the overall number of articles indexed in its corpus in a given year (i.e. from 0.002 in 2000 to 0.006 in 2012; see figure 1).

FIGURE 1 ABOUT HERE

Clearly, effective accumulation of knowledge stems not only from conducting original studies, but also from taking stock of what we have learned so far. In addition to literature reviews following a conventional state-of-the-art model (Blais, 2006), two meta-analytic assessments of the determinants of voter turnout were published in recent years. Geys (2006) reviews 83 aggregate-level studies published between 1968 and 2004, while Smets and van Ham (2013) analyse the findings of 90 individual-level studies published between 2000 and 2010. In light of the rapid expansion of the voter turnout literature documented in figure 1, this article aims to further develop our knowledge on why people vote by extending the aggregate-level meta-analysis conducted by Geys (2006) in two ways. First,

we supplement the 83 studies featured in the original analysis with 102 additional studies published since 2002. This expanded and more diverse pool of literature allows us to increase the validity and generalizability of the meta-analysis, and thereby our confidence in the inferences drawn.

Second, we exploit the larger sample of studies to assess whether, and to what extent, the same set of determinants can explain voter turnout in elections at different levels of government. To the best of our knowledge, no such direct comparison currently exists. In fact, theoretical arguments and explanatory variables in most studies appear to be brought forward without specific attention to the level of government under analysis. Studies of political participation thus generally appear to follow an a-territorial approach in which local or regional politics is effectively viewed as a mere generalization of what goes on at the national level (Baybeck, 2014). As a result, the determinants of political engagement – both at the individual and aggregate level – are implicitly assumed not to differ across territorial levels.

Nevertheless, this view can be contested from a theoretical as well as empirical perspective. For instance, Sellers et al. (2013, p. 8) draw on the tradition of political geography to argue that voters are embedded in places defined by specific 'collective dynamics of communities and social mobilisation', which can foster turnout in some types of elections but not others. One recent illustration of this effect is provided in Andersen et al. (2014, p. 157, italics added), who offer strong evidence that 'higher stakes at the local level increase participation at the local *relative to* the regional election'. Furthermore, from an empirical point of view, relevant discrepancies clearly exist in the levels of engagement between national and local politics. This is reflected in, for instance,

significant variation in voter turnout for elections at different levels of government within the same jurisdiction (Andersen et al., 2014; Horiuchi, 2005; Morlan, 1984; Sørensen, 2015). As such, we cannot simply assume a general equivalence of turnout determinants irrespective of the type of election. By separately analysing studies on voter turnout in national versus subnational elections, we assess the different processes that might conceivably play at distinct levels of government.

2. Data and methods

2.1 Methodological approach

Meta-analyses – which can be defined as 'quantitative methods for combining information across different studies' (Tweedie, 2001, p. 9717) – are useful tools to aggregate existing knowledge and highlight what we know and do not know about certain phenomena. Yet, while they are common in, for instance, psychology and medicine, they have remained quite rare in political science (Morton and Williams, 2010, p. 272).[1] In this article, we follow the procedures employed by Geys (2006), which effectively constitute a blend of 'vote-counting' and 'combined tests' procedures. Specifically, the aggregation of findings in our meta-analysis is conducted as follows.

First, the direction of the expected effect is defined *a priori* for each independent variable. This constitutes the yardstick for evaluating the coefficient estimates reported in the studies in the meta-analysis. A *study* (article, working paper, chapter, or book) will often include more than one coefficient estimate for the same variable, due to the use of distinct model specifications or samples. Each reported coefficient estimate for a given variable of interest is referred to as a *test*, and can be categorised as 'success' (if there is a

[1] In addition to the mentioned meta-analyses on turnout, other published meta-analyses in political science include Doucouliagos and Ulubaşoğlu (2008), Boulianne (2009) and Ahmadov (2014).

statistically significant association with the expected sign), a 'failure' (if the observed relation is not statistically significant at conventional levels) or an 'anomaly' (if the observed association is statistically significant, but its sign is contrary to expectations). Second, the number of successful, failed and anomalous tests is recorded for each study. Third, if more than half of the reported tests in a given study are successful, then the modal outcome for that study is coded as a 'success'. Otherwise, the study's modal outcome is 'failure'.

Using this simple coding scheme, a number of metrics can be derived. The first of these provides a proxy measure of effect size *r*, and is calculated using the outcomes of individual tests within each study as:

$$r = \frac{successes\ -\ anomalies}{number\ of\ tests}$$

The values of *r* for each individual study lie between –1 and 1, and can be averaged across studies to yield the average approximate effect size r_{av} for each variable under analysis. We can also calculate a 95% confidence interval around r_{av} as follows:

$$\bar{r}\ \pm 1.96 \times \frac{\sigma}{\sqrt{n}}$$

Where σ is the standard deviation of the observed values of *r*, and *n* refers to the number of studies including a given explanatory variable. If this confidence interval excludes 0, the variable under study is inferred to have explanatory power for voter turnout.

A second aggregate metric is the *study success rate*, which is calculated using the modal categories of each study ('success' or 'failure') as:

$$success\ rate = \frac{modal\ successes}{number\ of\ studies}$$

Both metrics – i.e. r_{av} and the *study success rate* – give equal weight to all studies, irrespective of the number of tests provided. Clearly, this approach lowers the relative influence of tests reported in studies with multiple models or samples vis-à-vis studies that present a single model or sample. To account for this, we also report two equivalent metrics, which give equal weight to each individual *test* rather than each *study*. Thus, the *test success rate* is the ratio of the number of successful tests for a given variable across all studies and the total number of tests across all studies for that variable. Analogously, an alternative version of the estimated effect size *r* can be computed using the number of successes, failures and anomalies across all *tests* rather than studies (again complemented with its 95% confidence interval).

As distinct operationalisations for the same variable are almost inevitable within the social sciences (unlike in, for instance, experimental research), it is important to account for the way the same variable is operationalized across different studies. This is true for the dependent variable (i.e. turnout measured as the number of (valid) votes relative to the total, eligible, or voting age population; see Geys, 2006 for a discussion) as well as all explanatory variables. To avoid biased inferences and aggregate results into meaningful and interpretable scores, we restrict our sample to those studies whose operationalisations of our key variables are arguably sufficiently equivalent. Let us take the specific case of electoral system proportionality as an example. This has been

operationalised in a number of ways, including indicator variables for PR or majoritarian systems, measures of a jurisdiction's district magnitude, or Gallagher's disproportionality index (Gallagher, 1991). We treat these as 'equivalent' in our analysis in the sense that a given test is labelled as a 'success' whenever an operationalisation indicating a more proportional system yields a statistically significant positive effect on turnout. The magnitude of the estimated effects is not explicitly taken into account, which is important since these will evidently not be equivalent when using different operationalisations. Yet, the statistical significance and direction of the estimated effects do provide equivalent information across operationalisations, and thus can be treated equally. As mentioned above, this is exactly the information we use for evaluating test and study results.[2] Table A.1 in the appendix provides more details about the measurement of the variables in our analysis, both for our outcome of interest (voter turnout) and the independent variables.

2.2. Updating the pool of articles

The 83 studies originally examined by Geys (2006) share a number of basic attributes. They assess the determinants of aggregate-level voter turnout in geographically defined areas: countries, states, provinces, congressional districts, municipalities or other administrative units. Turnout is typically defined as the number of votes cast in a given election as a percentage of either the number of eligible voters or the voting age population living in the area. Finally, all studies engage in multivariate regression analyses and include at least one of 14 independent variables: *Socio-economic variables*

[2] In addition to different measurements for the variables of interest, there is also a growing diversification of statistical methods in turnout research. The predominance of ordinary least squares regression frameworks in early work is increasingly challenged by studies using, for instance, regression discontinuity, two-stage least squares or time-series–cross-section models. Studies using these various methods are included in our dataset since we can interpret their findings on the statistical significance and direction of the estimated effects in a rigorous and meaningful way. That is, only if a test flags robust evidence for a given variable of interest, we code it as "successful".

(i.e. population size, population concentration, population stability, income homogeneity, ethnic homogeneity, proportion of minorities, and past turnout), *political variables* (i.e. electoral closeness, campaign expenditures, and political fragmentation), and *institutional variables* (i.e. electoral system, compulsory voting, concurrent elections and registration requirements).

In expanding the pool of studies, we initially searched for articles on Thomson Reuters' Web of Science, Elsevier's Scopus and Google Scholar using 'voter turnout' and 'electoral participation' as search strings. We also exploited the citation tools provided by these bibliographic databases to locate studies citing two earlier literature reviews (i.e. Blais, 2006; Geys, 2006). Then, we additionally searched the EBSCOhost Academic Complete and the ProQuest Research Library databases using the same search strings (or component terms thereof). After performing each search, we subsequently went through the list of retrieved studies and retained only those adhering to the criteria set out above: i.e. aggregate-level studies of turnout levels using multivariate regression analyses including at least one of our 14 key independent variables.[3] Although we predominantly targeted articles appearing between 2006 and 2015 to complement the time period already available in the original dataset, we also included several previously overlooked articles (e.g., Fornos et al., 2004; Francia and Herrnson, 2004; Mahler, 2002). The complete list of additional articles is indicated with an * in the reference list, and was coded following the same procedures employed by Geys (2006) and described in section 2.1.

[3] Note that this implies we exclude all studies examining voter turnout at the individual level, even when they employ a multilevel modelling approach with explanatory variables at the individual- and aggregate-level.

3. Re-examining the covariates of turnout

This section replicates the analysis in Geys (2006) on the extended set of studies. For ease of comparison, we focus on the same set of explanatory variables, maintain the same differentiation according to socio-economic, political, and institutional determinants, and repeat the original results in the left-hand panel of table 1. [4] The right-hand panel of table 1 contains the results using the extended dataset. Detailed discussions of the expected effects for each covariate – indicated between brackets in the first column of table 1 – are provided in Geys (2006), and are not replicated here to preserve space. Our discussion of table 1 will predominantly focus on any changes in the meta-analytic results arising from introducing the additional studies.

TABLE 1 ABOUT HERE

From table 1, it is clear that the findings generally do not change very much for the included socio-economic variables. For instance, the success rates and estimated effect sizes for population size, population stability and past turnout remain very high, and thus can be viewed as having significant explanatory power for aggregate-level turnout.[5] The main exception to this pattern concerns measures of population homogeneity. Economic inequality has been the object of growing attention in recent years (Wilkinson and Pickett,

[4] This list of explanatory variables is clearly not exhaustive, and other potentially important variables – such as corruption, economic development, altruism, political polarization, group identification, polling hours, and so on – have attracted increasing attention in more recent work (e.g., Ben-Bassat and Dahan, 2012; Escaleras et al., 2012; Steiner and Martin, 2012; Stockemer and Scruggs, 2012; Stockemer and Calca, 2013; Hillman et al., 2015, Bonoldi et al., 2016; Potrafke and Roesel, 2016). Yet, we abstain from adding such variables here as our meta-analysis requires a sufficient number of studies to be available for each variable to avoid biased inferences, which is often not (yet) the case for such new variables.

[5] Even so, their 'popularity' in recent turnout studies is very different. Population size is often (and, judging by our results, rightfully) regarded as a cornerstone to any aggregate-level turnout model, and is included in more than half of the new studies. Population stability, however, is ignored in most new studies. While past turnout is likewise only irregularly included in new studies, this is predominantly due to the fact that most aggregate-level turnout studies remain cross-sectional in nature – and thus cannot account for temporal patterns or persistence in turnout.

2010; Piketty, 2014), and the relationship between income inequality and voter turnout has even been labelled a 'burgeoning debate' (Stockemer and Scruggs, 2012). This increased attention has led to a rise in the average approximate effect size *r* at the test level (to 0.14), which is now also significantly different from 0. However, the success rate at the level of studies remains low (11%, down from 14%), such that only a limited number of models – and studies – appear to detect a significant relation between income inequality and voter turnout. Overall, therefore, its importance for explaining turnout rates appears to remain limited.

In contrast, studies looking at the impact of minority population shares have become more successful at verifying its negative expected influence on voter turnout. The study success rate climbs from 56% to 66% and the approximate effects sizes estimated at test and study level also increase. Nonetheless, most of these results derive from US data, and we may have to be careful in generalizing this finding to other settings. Indeed, recent studies conducted in South Africa – where the relationship between minority status and socioeconomic resources is inverted vis-à-vis the US – provide an interesting contrast (Fauvelle-Aymar, 2008; McLaughlin, 2014). Turnout in local elections in Johannesburg, for instance, 'is higher in wards which have a higher percentage of black population' (Fauvelle-Aymar, 2008, p. 150), even though the white minority tends to be better off. Clearly, more comparative research into how underlying societal processes affect the relation between minority status, socioeconomic resources and voter turnout is required.

Turning to the results for our three political variables, we confirm that strong support exists for a positive relation between the competitiveness of the election and the share of voters turning out on Election Day. Similarly, approximately four out of five studies

(83%) conclude that higher spending during electoral campaigns is associated with higher voter turnout. Although such studies typically focus on the US, similar effects have more recently also been documented in other contexts (for instance, in Korea: Joo and Yun, 2014). Finally, table 1 indicates that political fragmentation has been the subject of intense additional research and debate in recent years. Yet, the number of studies confirming the hypothesized positive effect of fragmentation on turnout (due to its expected positive influence on the choice offered to voters) is declining. Hence, from the 'clearly inconclusive' picture obtained previously (Geys, 2006, p. 650), we appear to be moving towards the conclusion that political fragmentation in general has little direct, independent relation to voter turnout.

Institutional variables are often regarded as the most powerful determinants of voter turnout (Jackman, 1987), and their impact has been estimated to be four times greater than that of individual-level characteristics (Franklin, 1996, p. 223). This importance is largely confirmed by the results in table 1. Compulsory voting, concurrent elections and easier registration requirements are all found to strongly and consistently link to higher voter turnout. Our results on the role of different electoral systems, however, are less conclusive. Proportional representation (PR) is often thought to increase voter turnout relative to majoritarian or plurality systems (Blais and Aarts, 2006) (Blais and Aarts, 2006), because it reduces distortions in the conversion of ballots into seats (Blais and Carty, 1990, p. 167). Interestingly, while this prediction received fairly unambiguous support in Geys (2006), recent work has induced a drop in the study success rate to 53% (from 71%). Similarly, the average effect size r_{av} drops to 0.59 (using tests) and 0.48 (using studies).

Since our updated dataset includes studies covering a larger variety of countries, one potential explanation may be that the relationship between PR and turnout 'observed in the small set of established democracies may not be robust' in other countries (Blais and Aarts, 2006, p. 193). In line with this view, Fornos *et al*. (2004, p. 925) do not detect any association between PR and turnout in their study of elections in Latin America. Still, cross-sectional studies – or cross-country panel studies where inference on electoral system effects derives mostly from cross-sectional variation – could have a hard time properly identifying the *causal* effect of electoral systems on voter turnout. Recent studies exploiting differences in electoral systems at arbitrary population thresholds in France (Eggers, 2014) or differences in electoral systems across Swiss cantons (Funk and Gathmann, 2013) should be better able to identify such causal effects. Interestingly, both Eggers (2014) and Funk and Gathmann (2013) go against the recent trend of null results, and show significant positive effects of PR on turnout.

4. Turnout in national and subnational elections

In most democratic countries, citizens have the opportunity to cast their vote for multiple political offices – including presidents, national legislatures, and state, regional or municipal representatives. Even though such multiple elections may, but need not, take place on the same day, different turnout rates are generally observed across distinct types of elections within the same jurisdiction (Andersen et al., 2014; Horiuchi, 2005; Morlan, 1984; Reif and Schmitt, 1980; Sørensen, 2015). This naturally raises the question whether these varying levels of participation across levels of government can nonetheless be explained by the same covariates, or whether different processes are at play. While previous scholarship has not directly addressed this question, there are a number of theoretical reasons why the factors affecting voter turnout rates at different levels of

government might be diverging – or, at least, why the same factors might have varying explanatory power in different contexts. In the remainder of this section, we first set out why different effects might be expected for the set of socio-demographic, political and institutional variables discussed before (section 4.1). Then, in section 4.2, we turn to the empirical verification of these theoretical propositions using the complete dataset of 185 studies included in table 1.

4.1 Theoretical background and hypotheses

From a theoretical perspective, jurisdictions' socio-demographic characteristics – such as population size, concentration, stability, and homogeneity – may be expected to have a stronger relation to voter turnout in subnational compared to national elections. For population size, the reason is that the turnout decision is generally thought to be affected by the likelihood of a single vote being decisive (Mueller, 2003). This probability to cast the deciding ballot is effectively zero in large elections (Owen and Grofman, 1984; Mueller, 2003). Although the smaller sizes of local electorates may still generate variation in the (perceived) probability of being influential in subnational elections (and thereby influence voter's turnout decisions), this is less likely to be true for the large electorates in national elections.

Population concentration, stability, and homogeneity may likewise matter more at the subnational electoral level. These characteristics increase the likelihood that people know the candidates (and what they stand for) within their local area, while the same is not necessarily true for the candidates in national elections. This is important because the more 'personal' aspect of elections in stable, homogenous high-density areas (Blank, 1974) lowers the information costs of turning out, which can be expected to translate into

higher turnout rates for subnational elections. Moreover, population concentration, stability, and homogeneity have been argued to represent important factors in individuals' attachment to one's local – though not necessarily national – community (Wirth, 1938; Sampson, 1988). This may stimulate turnout in subnational elections because strong 'interpersonal bonds, primary social structures and consensus on norms' (Hoffmann-Martinot, 1994, p. 14) buttresses the 'social pressure' to turn out and cast a vote.

Note that a similar set of arguments clearly does *not* hold for the effect of past turnout. The link between past and current turnout decisions conceivably derives from a form of habit formation at the individual level (e.g., Wuffle, 1984; Kanazawa, 2000; Green and Shachar, 2000; Plutzer, 2002; Gerber et al., 2003). To the extent that habits always induce the same behaviour, one would therefore not expect habit-driven turnout decisions to be affected by subnational versus national elections. The relative explanatory power of past turnout should thus, in principle, be comparable in both types of elections. This discussion leads to the following set of testable hypotheses:

H1: Population size has more explanatory power in subnational compared to national elections.

H2: Population concentration, stability, and homogeneity have more explanatory power in subnational compared to national elections.

H3: The explanatory power of past turnout is comparable in subnational and national elections.

In contrast, political covariates such as election closeness and campaign expenditures can be expected to matter more for voter turnout in national compared to subnational

elections. As Blais (2000, p. 39) puts it, “citizens are much more likely to hear on the news about a national campaign than about a local one, to see the main candidates, and to be exposed to the major issues on the news”. Voters are also more likely to be informed about election-specific characteristics in national elections due to, for instance, higher media attention and the publication of opinion polls (Bardhan and Mookherjee, 2000; Berry and Howell, 2007). Moreover, the legal framework regarding campaign financing often involves greater fungibility of campaign funds in national compared to local elections, which raises the relative value of the available funds during national elections (Bardhan and Mookherjee, 2000). For analogous reasons, the degree of political fragmentation should also be more easily observable by voters in national elections. The number of parties that participate will be more visible (see Blais’ citation above) and is directly reflected in the amount and diversity of campaign advertisements and media coverage (which will be more intense in the case of national elections; see above).

H4: Election closeness, campaign expenditures and political fragmentation have more explanatory power in national compared to subnational elections.

Finally, many institutional covariates – including compulsory voting and voter registration procedures – tend to be constant across jurisdictions within one country. Indeed, when a country has a legal requirement to turn out and vote, this requirement generally holds similarly for elections at all levels of government (e.g., Belgium). Likewise, voter registration procedures tend to be equivalent at different levels of election, and thus create the same monetary and information costs (Kelley et al., 1967) for both subnational and national elections. As such, there appears little reason to suspect that the effects of these variables on voter turnout differ across levels of government.

Some institutional variables may nonetheless have a different effect in at various levels of government. One of these is the electoral system. To the extent that individuals are aware of the methods by which ballots are converted into seats, a more proportional system should, in principle, be equally effective in fostering voter turnout regardless of the level of the election at stake. However, studying subnational elections with variation in the details of the employed electoral system (such as across cantons in Switzerland or across Italian municipalities of differing sizes; see below) may provide a better setting for evaluating the potential effect of PR than cross-national studies. The reason is that many potentially intervening contextual variables can be held constant in subnational elections, whereas the nature of comparison is less controlled in national elections. Though admittedly a technical argument, it leads to the hypothesis that electoral system variables may have more explanatory power in subnational elections.

Furthermore, we hypothesise that the relation between concurrent elections and voter turnout is asymmetric in the sense that turnout in subnational elections is likely to benefit from concurrent national elections, but turnout in national elections may *not* increase due to concurrent subnational elections. Whereas national elections are able to attract voters due to their higher inherent relevance (Reif and Schmitt, 1980) – and thus may not require concurrent subnational elections to convince voters to turn out on Election Day – the same does not necessarily hold for subnational (second-order) elections.

This leads to our final set of hypotheses:

H5: The explanatory power of compulsory voting and voter registration procedures is comparable in subnational and national elections.

H6: The existence of a (more) proportional electoral system and concurrent elections has more explanatory power in subnational compared to national elections.

To verify these six propositions, our 185 articles were classified according to the level of government under investigation: national, state/regional, or municipal elections. The resulting distribution was heavily skewed towards national elections (123 studies), followed by local elections (44) and state/provincial elections (22). As shown in Table 2, the number of studies (and tests) in the latter two categories was often too low for robust meta-analytic assessment of every covariate. We therefore merged studies about local and regional/state elections into a single 'subnational' category encompassing 66 studies. This implicitly imposes that we expect our hypotheses derived above to hold equally for all types of subnational elections (whether state/regional or local elections).[6] The sum of studies on national and subnational elections exceeds the total number of studies in our sample since some of them deal with more than one level of government. In such cases, we processed test results provided within these studies separately according to the level of election.

TABLE 2 ABOUT HERE

4.2 Results

Table 3 reports the metrics brought forward in section 2 for the two sub-samples of national and subnational turnout studies. In the last two columns of table 3, we

[6] Our merger of all subnational elections largely derives from sample size restrictions. Even though we expect largely similar results for both types of subnational elections, it would, of course, be good for the literature on subnational electoral behaviour to assess this proposition to a greater degree in the future.

additionally report the results of Pearson's Chi-square test for count data, which assesses whether the distribution of (un)successful tests in both samples is statistically equivalent. We thereby compare instances of 'success' with combined instances of 'failures' and 'anomalies' as we are mainly interested in whether or not a given covariate matters for explaining turnout at a specific level of government. The null hypothesis is that there is *no* difference in the share of successes (versus failures/anomalies) in both samples, such that a statistically significant test statistic in the final column of table 3 implies an asymmetry in the explanatory power of a covariate between national and subnational elections. Note also that we focus on the results of individual *tests* rather than *studies* for this evaluation since some covariates are employed in an insufficient number of studies to allow valid inferences.

TABLE 3 ABOUT HERE

Starting with the socio-economic covariates, we first of all find very strong evidence of significant differences across national and subnational elections in the explanatory power of population size. This confirms our first hypothesis, and provides a particularly clear example of how looking exclusively at the pooled set of studies can conceal interesting variation. Taking the 185 studies as a whole, population size has a test-based success rate of 53% and its estimated r_{av} equals 0.44 (see table 1). However, the estimated approximate effect size r_{av} is only 0.33 for studies of national elections, and more than doubles for studies of subnational elections ($r_{av} = 0.69$). The difference in test success rates (70% for subnational elections and 45% for national elections) is also statistically significant beyond the 99% confidence level. This confirms the idea that the smaller size of local relative to national electorates may lead voters to still perceive a varying probability of

being influential across jurisdictions, which subsequently translates into differing turnout rates (Horiuchi, 2005).

Our second hypothesis, however, is only partially confirmed. On the one hand, the proportion of minorities is found to perform more in line with expectations for subnational elections compared to national elections (test success rate of 80% versus 64%; $p = 0.005$). This finding provides supportive evidence of the idea that attachment towards the local community may be more critical in the arena of subnational rather than national elections (Oliver, 2012). On the other hand, the test success rates for population concentration, income homogeneity and population stability across both subsamples are not statistically significantly different at conventional levels. While population stability is positively and significantly linked with higher turnout at both levels of election, population concentration, income homogeneity appear to matter equally little for explaining turnout in national and subnational elections (i.e. we always find small estimated effect sizes and success rates).[7] The final socio-economic covariate – turnout in a past election – shows a somewhat stronger performance in the sample of subnational elections. Yet, the difference only approaches statistical significance at conventional levels (p-values of 0.15), and we thus cannot formally reject our hypothesis of no differences between both subsamples (*H3*).

Turning to the political covariates, the analysis yields partial evidence in favour of *H4*, according to which electoral closeness and campaign expenditures would have a stronger effect in national elections. When looking at the role of election closeness, the study

[7] Still, as there are only five studies looking at the effect of income inequality in subnational elections (jointly presenting 55 tests), we should be cautious in interpreting this result. If anything, it indicates that more research dealing with the impact of income inequality in local and regional elections is required.

success rates are quite similar between national (68%) and subnational (65%) elections. At the level of individual tests, however, this variable is more effective as a predictor of voter turnout in national (70%) rather than subnational elections (46%), with a *p-value* lower than 0.001. Likewise, campaign expenditures perform more consistently in line with theoretical expectations in national rather than subnational elections. The predicted effect size r_{av} is 0.85 for studies using data of national elections and 0.57 for subnational election data (differences in the test success rates are also significant with $p < 0.001$). As outlined above, these results may reflect that voters in national elections are better informed about specific election characteristics due to, for instance, higher media coverage (Bardhan and Mookherjee, 2000; Berry and Howell, 2007). It bears stressing, however, that election closeness and campaign expenditures are relevant covariates of aggregate-level turnout for *both* national *and* subnational elections. Political fragmentation, on the other hand, consistently fails to provide a stable and significant effect on turnout, regardless of the type of election in question.

The bottom rows of table 3 highlight that relatively few studies analyse institutional covariates' potential relation to voter turnout in subnational elections. Our meta-analytic results for these covariates in table 3 should thus best be viewed as preliminary. Nonetheless, some interesting observations arise. Our fifth hypothesis posited that compulsory voting and registration requirements would not have a differential effect depending on the election at stake. While our expectation is confirmed regarding the former, results go against expectations when we disentangle the findings about the latter: tighter registration procedures are associated with lower voter turnout in both types of elections, but this link arises more consistently in studies of national elections ($p = 0.01$). It is not immediately clear to us what might drive this effect.

Finally, the analysis supports our sixth hypothesis about the differential impact of PR and concurrent elections. Studies on subnational elections more consistently detect a turnout-supporting effect of concurrent elections (test success rate of 89% versus 61%; $p < 0.001$). Using Reif and Schmitt's (1980) terminology, more voters are likely to also vote in local or regional (second-order) elections when they are simultaneously able to vote in national (first-order) elections. Similarly, electoral system variation affects voter turnout more robustly in studies of subnational elections. This is particularly interesting since such studies often more explicitly rely on quasi-experimental, causal inferences. In Switzerland, for instance, subnational elections are organised using different institutional designs across the cantons (Altman, 2013; Freitag, 2010; Ladner and Milner, 1999), while the Italian municipal electoral system varies for municipalities above and below 15000 inhabitants (Bordignon et al., 2013; Geys, 2015). Moreover, the number of seats in local councils in many countries increases at arbitrary population thresholds (Eggers et al., 2015; De Witte and Geys, 2015), which might generate important and exploitable variation in the implicit proportionality of the electoral system around these thresholds (see Eggers, 2014). Exploiting such quasi-experimental differences remains an important avenue for future research, since they are arguably better suited than cross-national studies to capture a *causal* estimate of institutional variables' effect on voter turnout.

5. Conclusion

The empirical literature explaining variation in both individual- and aggregate-level voter turnout rates has grown rapidly in recent years. This paper aimed to take stock of this evolution by extending the meta-analysis of Geys (2006) in two ways. On the one hand, we collected and coded 102 additional articles published since 2002, and replicated the

original analysis on the extended database of 185 studies. On the other hand, we differentiate between studies of national and subnational elections, which provides the first explicit consideration of the different processes that might play at different levels of government. Three main conclusions emerge from our analysis.

First, analysing the updated dataset by and large yields similar findings to those originally reported by Geys (2006). Population size and stability, electoral closeness, campaign expenditures, and institutional procedures governing the course of elections more often than not have a statistically significant association to voter turnout in the predicted direction. Such variables thus continue to appear 'indispensable to any future analysis of turnout' (Geys, 2006, p. 653). In contrast, variables measuring population concentration and homogeneity as well as the level of political fragmentation in the jurisdiction appear to have no unambiguous effect in the overall sample of studies.

Second, there remains a relative shortage of studies evaluating the impact of some covariates in subnational elections and, perhaps more troublesome, in some areas of the globe, irrespectively of the type of election at stake. The conclusions about the effect of campaign expenditures and the proportion of minorities, for instance, depend almost exclusively on analyses of US elections, and so far few scholars have analysed the impact of income inequality or institutional characteristics (such as electoral systems) on turnout in subnational elections. Such studies should be encouraged in future research, certainly since we agree with Blais and Aarts' (2006) claim that the effect of electoral institutions (including PR) in bolstering turnout is likely to be contextual. From this perspective, it is also important for future research to assess the turnout literature through a more systematic coding of cases based upon the level of development or democracy, or world

region. We abstain from this here since it induces a small-N problem in our dataset: i.e. there are too few studies on, say, the impact of inequality in Latin America to engage in a credible meta-analytic study. Yet, with a further geographical diversification of the turnout literature, this should become a feasible and important objective in coming years.

Finally, we uncover substantial variation in the role of specific covariates depending on the level of government under analysis. By and large, socio-economic variables appear more important in explaining turnout in subnational elections, while political variables are more relevant in national elections. With the exception of population size, these differences are not so strong as to imply different modal categories in the meta-analysis, but they still imply notable differences in the estimated approximate effect sizes. This indicates that we should *not* be looking at voter turnout as an attribute of a single class of events – elections writ large – but instead should try to model variations in turnout taking into account the territorial scope of the election.

In our view, these results have a number of important implications for future work on voter turnout.

- First, as mentioned, future research should be conducted taking into account the specific characteristics of national and subnational elections, and should explicitly address these differences in the selection of the explanatory variables. To date, only a limited number of studies take the national-versus-subnational election turnout difference seriously. Horiuchi (2005), for instance, does so while focusing on the different impact of population size while Remmer (2010) instead concentrates on differences in mobilization issues. Our analysis strongly suggests that such efforts should be extended to other variables.

- Second, future research should also move beyond the independent or comparative analysis of subnational and national turnout (e.g., Baekgaard et al., 2014; Martins and Veiga, 2012), and start looking into the determinants of the *differences in turnout* at different levels of aggregation. That is, we believe that addressing the variation in turnout levels at different levels of government as the main explanandum would be a worthwhile development.

- Finally, although our analysis is solely concerned with aggregate-level turnout, we believe it can also provide some useful insights for individual-level, survey-based studies. Indeed, our results suggest that contextual variables might have differential effects on individuals depending on whether one analyses national, subnational or supranational elections. From this perspective, it is interesting to observe that Lefevere and Van Aelst (2014) show campaign exposure to have different individual-level effects in the Netherlands in second-order versus national elections. Similarly, Marien et al. (2015) use Belgian data to show that voting motives and party preferences in subnational elections reflect national developments beyond local specificities and idiosyncrasies. As, such, one can question whether subnational elections – in Belgium and beyond – may not be so "second-order" after all.

Appendix A

Table A.1. Operationalisation of variables

Variable	Operationalisation	Frequency
Turnout	Number of voters/Registered voters	90
	Number of voters/Voting age population	60
	Number of voters/Eligible voters	27
	Absolute number of votes cast	2
	No clear indication given	17
Population size	Total population	42
	Voting age population	15
	Number registered voters	21
	Population threshold	1
Population concentration	% Population in metropolitan/urban area	33
	Density	26
Population stability	% Moved	23
	% Homeowner/tenant	19
	Population growth rate	7
Population homogeneity	Interquartile difference in income	4
	Herfindahl ethnic heterogeneity	10
	Gini coefficient of income	14
	% Minorities	24
Lagged turnout	Turnout (one or more lags)	27
	Turnout (average last 3 elections)	1
Closeness	Difference vote share winner/loser	76
	% Vote winner	11
	Entropy	8
	Ranney (1976) index	2
	Predicted closeness	8
Campaign expenditures	Expenditures per capita	15
	Total expenditures	9
	Expenditures as share of legal maximum	5
	Campaign funding limits	1
	Campaign intensity	1
Political fragmentation	Absolute number of candidates	1
	Effective number of candidates (or entropy)	19
	Dummy for multiple candidates	27
	Number of years of divided government	4
	Gap in seats	1
Electoral system	Dummies for various electoral systems	26
	Proportionality index	17
	District magnitude	10
Compulsory voting	Dummy	39
	Degree of compulsiveness	4
Concurrent elections	Dummy	48
Registration requirements	Days between close of registration and election	17

Auto-registration dummy	10
Dummy for literacy test, poll tax…	3
Tightness of election laws	7

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Table 1: Results for extended analysis

	Geys (2006)						Full extended sample					
Variable (expected effect sign)	Study Success Rate	Study r_{av}	Test Success Rate	Test r_{av}	N (studies)	N (tests)	Study Success Rate	Study r_{av}	Test Success Rate	Test r_{av}	N (studies)	N (tests)
Socio-economic												
Population size (–)	64%	0.65*	56%	0.48*	28	120	57%	0.52*	53%	0.44*	79	366
Population concentration (–)	44%	0.26	40%	0.26*	25	104	33%	0.19*	35%	0.26*	58	318
Population stability (+)	78%	0.73*	75%	0.60*	24	195	78%	0.7*	67%	0.56*	36	263
Income homogeneity (+)	14%	-0.27	19%	-0.22	7	32	11%	0.03*	28%	0.14*	18	109
Ethnic homogeneity (+)	40%	-0.03	43%	0.14	5	28	50%	0.35*	50%	0.36*	10	58
Proportion of minorities (–)	56%	0.69*	61%	0.47*	27	111	66%	0.67*	74%	0.65*	50	251
Past turnout (+)	88%	0.71*	89%	0.89*	8	35	86%	0.82*	90%	0.9*	28	143
Political												
Closeness of election (+)	69%	0.69*	57%	0.52*	52	362	69%	0.63*	61%	0.56*	105	629
Campaign expenditures (+)	80%	0.79*	76%	0.52*	20	134	83%	0.82*	77%	0.75*	30	178
Fragmentation (+)	23%	-0.31	33%	-0.03	22	75	19%	-0.2	30%	0.06	53	253
Institutional												
Electoral system (PR+; Maj. –)	71%	0.63*	69%	0.69*	14	71	53%	0.48*	61%	0.59*	51	239
Compulsory vote (+)	87%	0.86*	90%	0.90*	15	68	86%	0.89*	89%	0.89*	43	190
Concurrent election (+)	55%	0.49*	59%	0.53*	22	129	63%	0.62*	68%	0.65*	48	240
Registration requirements (–)	81%	0.75*	75%	0.75*	16	61	91%	0.73*	84%	0.84*	35	154

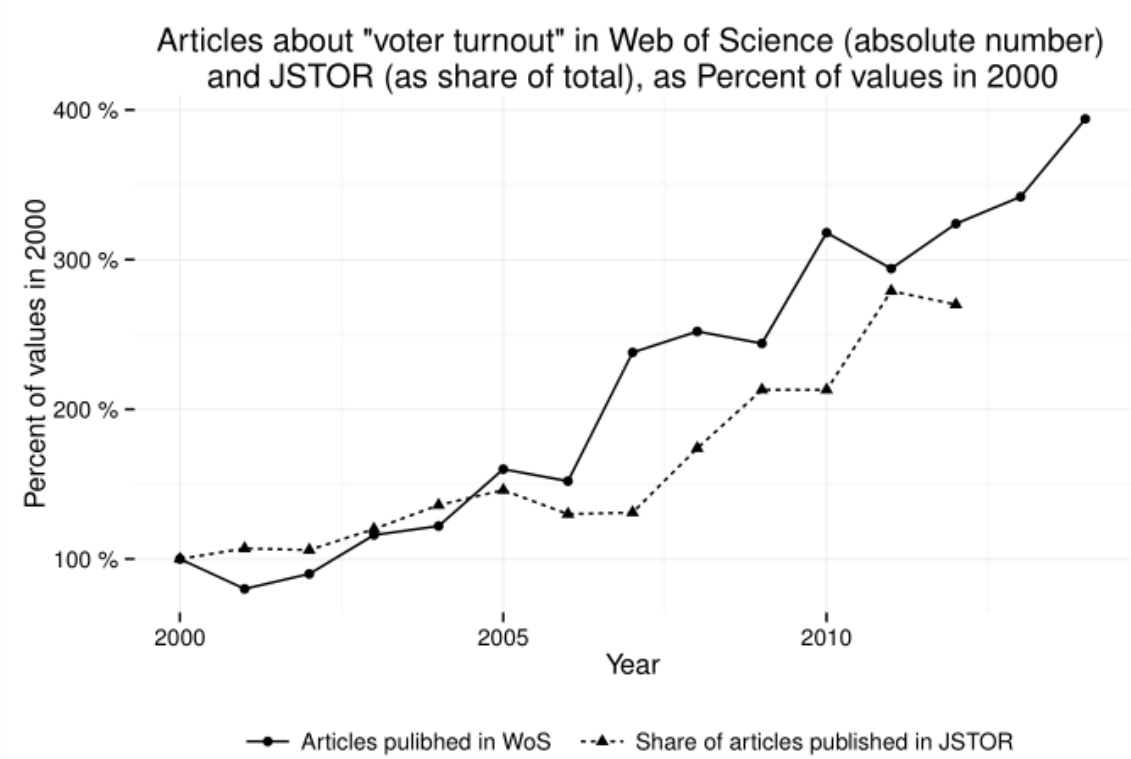
Table 2. Coverage of different variables across levels of elections

Variables	National	Subnational		
		State	Local	State/local combined
Socio-economic				
Population size	47	7	29	36
Population concentration	38	5	17	22
Population stability	20	1	16	17
Income homogeneity	13	0	5	5
Ethnic homogeneity	7	0	3	3
Proportion of minorities	29	6	16	22
Past turnout	18	2	7	9
Political				
Closeness of election	74	17	17	34
Campaign expenditures	20	7	3	10
Fragmentation	39	3	14	17
Institutional				
Electoral system	41	4	6	10
Compulsory vote	39	4	0	4
Concurrent election	32	10	6	16
Registration requirements	27	6	2	8
Total	123	22	44	66

Table 3. Results disaggregated by level of election

Variable	National						Subnational						Difference in distribution of successful tests	
	Study Success Rate	Study r_{av}	Test Success Rate	Test r_{av}	N (studies)	N (tests)	Study Success Rate	Study r_{av}	Test Success Rate	Test r_{av}	N (studies)	N (tests)	Pearson's Chi-squared test	p-value
Socio-economic														
Population size (–)	49%	0.42*	45%	0.33*	47	248	69%	0.65*	70%	0.69*	36	121	20.21	<0.001
Population concentration (–)	39%	0.25*	35%	0.31*	38	203	23%	0.06	35%	0.13*	22	115	0.00	1.00
Population stability (+)	65%	0.65*	65%	0.5*	20	202	76%	0.72*	74%	0.74*	17	61	1.30	0.25
Income homogeneity (+)	15%	0.08*	17%	0.07	13	54	40%	-0.1	38%	0.2	5	55	0.00	1.00
Proportion of minorities (–)	66%	0.66*	64%	0.49*	29	104	68%	0.69*	80%	0.77*	22	147	7.10	0.01
Past turnout (+)	83%	0.77*	88%	0.88*	18	112	100%	1*	100%	1*	9	26	2.11	0.15
Political														
Closeness of election (+)	68%	0.64*	70%	0.67*	74	392	65%	0.58*	46%	0.38*	34	237	33.66	<0.001
Campaign expenditures (+)	85%	0.85*	86%	0.85*	20	113	80%	0.74*	62%	0.57*	10	65	12.41	<0.001
Fragmentation (+)	18%	-0.25	29%	0.06	39	185	18%	-0.14	34%	0.07	17	68	0.31	0.58
Institutional														
Electoral system (PR+; Maj. –)	51%	0.48*	57%	0.55*	41	185	70%	0.5*	76%	0.7*	10	54	5.68	0.02
Compulsory vote (+)	87%	0.88*	89%	0.89*	39	177	100%	0.97*	92%	0.92*	4	13	0.00	1.00
Concurrent election (+)	53%	0.51*	61%	0.56*	32	176	88%	0.86*	89%	0.88*	16	64	16.05	<0.001
Registration requirements (–)	93%	0.76*	90%	0.9*	27	107	88%	0.61*	70%	0.7*	8	47	7.76	0.01

Figure 1: development of voter turnout literature: 2000-2014



Note: Published articles about voter turnout. The solid line represents the yearly evolution of the number articles returned in a search for 'voter turnout' in Thomson Reuters Web of Science. The dashed line represents the number of articles on 'voter turnout' available in JSTOR as a share of the total number of articles published in a given year. Both time-series are expressed as a percentage of the values observed for the year 2000. Data for JSTOR available only until 2012. Sources: Thomson Reuters Web of Science and JSTOR Data for Research.