Supplemental analyses for
Specification Issues in Proximity Models of
Candidate Evaluation (with Issue Importance)[1]

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[1] This paper supplements the analyses detailed in Grynaviski & Corrigan (2006). Full details and references are presented there. Data for the 1996 ANES were provided by ICPSR.

Introduction

In Grynaviski & Corrigan (2006), we present an analysis of various specifications for the issue-based determinants of voter utility. We explore several ways in which proximity between the voter and the candidates along different issue dimensions can be incorporated into an empirical model: using measurements of perceived or average candidate placements, and possibly subjective assessments of the importance particular issues, incorporated into either a city-block or Euclidian functional form. Further, we emphasize the problematic nature of specifications that do not allow for ambiguity in the scaling of measurements, and derive a set of scale invariant forms of these models wherever possible.[2] In Section 4 of the article, we use the 1996 American National Election Study to evaluate the performance of various specifications, making several simplifying assumptions. We detail these assumptions under the heading, "Caveats."

In this supplement, we detail four supplemental analyses to examine whether our initial results hold up under alternative procedures, based on the advice of reviewers and the journal editor. We consider candidate-choice models, comparative models of candidate evaluation, and the inclusion of the candidates' perceived characteristics as a control. Further, we replicate our initial analysis using list-wise deletion to ensure that our treatment of missing data does not influence the results. To anticipate, aside from the inclusion of candidate image items, our supplemental analyses will demonstrate that, based on the BIC (which prefers smaller models), the findings presented in the article are robust for the 1996 ANES. However, when we include respondents' evaluations of politicians personal qualities as a predictor, we find noticeable changes in the model rankings. As we note in the article, however, this analysis leads to divergent results across candidates, and may be sensitive to both measurement error and

[2] Our recommendations in the article, from strongest to most tentative, are 1) that practitioners make use of perceived placements rather than arbitrary average placements, seeing the average placements as a theoretically poor and underperforming solution to the endogeneity problem, 2) that they make use of the city-block norm, and 3) that they use models that are scale invariant whenever possible.

the potential endogeneity of trait ascription relative to our issue-related predictors. Yet even if the result of including candidate-image items leads one to doubt our preliminary conclusions drawn from the 1996 ANES, it seems to support our broader point that researchers ought to reflect upon these assumptions when estimating proximity models.

Overview of analyses

Our primary analysis—which we describe in detail in the article—and the supplemental analyses we detail here make use of the 1996 American National Election Study (ANES). A full description of the data and measures can be found in the article. Our empirical analyses are devoted primarily to four crucial comparisons of model specifications: whether using candidate placements as given individually by respondents ("perceived candidate placements") or the sample mean of all respondents ("average candidate placements"), modeling of issue proximity using a city-block proximity measure or a Euclidian proximity measure, interacting issue-proximity with individual-level importance weights, and the inclusion of model terms that make the models invariant to the scale of the importance measures.

The primary analysis, as described in detail in the article, used separate models of candidate evaluations based on ANES feeling thermometer ratings of Clinton and Dole. The four supplemental analyses instead use candidate choice as the dependent variable, model comparative evaluations as a function of comparative proximity to Clinton and Dole, employ list-wise deletion (rather than imputation as in the primary analysis), or include candidate image items as potential control variables.

As in the article, our descriptions of these analyses are nested to focus on the best-performing models. We first compare average and perceived candidate placements, and proceed to compare the city-block and Euclidian proximity measures among only the models that use perceived placements, since their performance is apparently superior. Similarly, we focus on the use of weighted proximity and scaling terms among the perceived city-block models. However, for completeness, in discussing each analysis, we include a section entitled "Other comparisons," which includes an abbreviated discussion of lesser models with respect to the same four criteria.

Summary of Primary Analysis

Overview

The primary analysis is described in detail in Section 4 of the article. Here our dependent variables are separate feeling thermometer ratings of Clinton and Dole. We included a standard set of control variables as described in the article. Finally, we handled missing data through a multiple imputation procedure, again as described in the paper.

The most general finding that emerged here is the superiority of the unweighted city-block proximity model with perceived candidate placements, using the BIC as our criterion. The evidence was decisive (ΔBIC > 10) in all comparisons of this model to other specifications, except in comparison to the form weighted by issue importance for evaluations of Clinton. The evidence in favor of the unweighted model here too was positive (ΔBIC = 2.47).

Average vs. perceived candidate placements

In all cases, models using perceived placements outperformed models using average candidate placements, using either AIC or BIC as a criterion. The worst model that used perceived placement outperformed the best model that used average candidate placements. Further, using the more conservative BIC, for models of Dole evaluations, the baseline model that includes only control variables outperforms all seven of the models using the average candidate locations based on the BIC, while all six models using the perceived candidate location outperformed the baseline model.

City-block vs. Euclidian distance metric

Here we restrict attention to the models that make use of perceived candidate placements. For evaluations of Clinton, all models that made use of the city-block metric had lower AIC and BIC values than models that used the Euclidian metric. For evaluations of Dole, this overarching superiority of city-block modes was not observed. However, holding constant specification decisions about importance weights and scale invariance, each city-block model outperformed the most similar Euclidian block model using either AIC or BIC as a criterion. Furthermore, although for the scale invariant form of the weighted city-block model, two out of five coefficients are incorrectly signed, four out of five are incorrectly signed on the scale invariant form of the weighted Euclidian model.

Weighted versus unweighted

Here we restrict attention to the models that make use of perceived candidate placements as well as the city-block metric. For both Clinton and Dole evaluations, both the AIC and BIC favor the unweighted model over the weighted form of the model that is not scale-invariant. On the other hand, the AIC indicates support for the weighted city-block model in scale-invariant form over the unweighted model. The BIC, which favors simpler models, supports the unweighted model.

In the weighted, scale-invariant model for Clinton evaluations, the interaction terms are significant and correctly signed for three of five issues. For a fourth issue, Abortion, there is no evidence that the impact of issue proximity varies with the perceived importance of the issue. Finally, for a fifth issue, Aid to Blacks, issue proximity appears to decrease with increased issue importance, contrary to the model's theoretical basis. In contrast, for evaluations of Dole, the issue importance questions perform poorly, with nonsignificant and/or incorrectly signed coefficients.

Scale invariant vs. untransformed

Here we restrict attention to the models that make use of perceived candidate placements. Further, under our assumption that positional ratings of the candidates are on the same scale, we need only consider scale-invariant models in relation to those specifications that included importance weights. For evaluations of Clinton, the AIC and BIC give different results in comparisons of the scale-invariant and non-scale invariant weighted proximity models. The BIC, which favors more parsimonious models, indicates better performance for the unscaled, weighted specification, whereas the AIC supports the scale invariant form. For Dole, both the AIC and BIC support the use of the scale invariant weighted proximity form. However, only one out of the five issue proximity terms is statistically significant at the conventional level of $\alpha=0.05$.

Other comparisons

Here we consider comparisons among the relatively underperforming models: the models using perceived candidate placements with the Euclidian metric, and the models using either norm with average candidate placements.

Above, we considered the relative performance of weighted and scale invariant forms of the models using perceived placements under the city-block metric. We now consider the Euclidian models that used perceived placements. For Clinton, using either AIC or BIC as our criterion, the weighted and unscaled model outperformed the unweighted model. Comparisons between scaled and unscaled forms of the weighted Euclidian models with perceived placements of Clinton were inconclusive. The AIC indicates support for the scale-invariant form. The BIC, which favors simpler models, supports the unscaled, weighted model. For Dole, the results concerning the comparison between weighted and unweighted Euclidian models with perceived placements were inconclusive. The AIC indicates support for the weighted, scale-invariant form, whereas the BIC indicates support for the unweighted proximity model. The scaled forms of the weighted Euclidian models with perceived placements of Dole outperformed the unscaled forms under either AIC or BIC.

Next, we consider the comparisons between Euclidian and city-block norms for the models using average placements. The results for Clinton were nearly mirror-images of those for Dole. For Clinton, with either AIC or BIC as our criterion, the Euclidian models outperformed the city-block models with average candidate placements in two out of three comparisons. The weighted and scaled Euclidian model did better than the city-block model according to the AIC, but the reverse was true according to the BIC. For Dole, with either AIC or BIC as our criterion, the city-block models outperformed the Euclidian models with average candidate placements in two out of three comparisons. The weighted and scaled city-block model did better than the Euclidian model according to the BIC, but the reverse was true according to the AIC.

Last, we consider the comparisons between weighted and unweighted specifications using average candidate positions, and the relative performance of the scale invariant and untransformed forms of these models. For Clinton, with either AIC or BIC as our criterion, the weighted models using average candidate positions outperformed the unweighted models. For the city-block models, the unscaled weighted form outperformed the scaled and weighted form under either AIC or BIC. However, for Euclidian models, the scaled and weighted form outperformed the unscaled form under the AIC, but not under the BIC which penalizes larger models. In contrast, for Dole, with either AIC or BIC as our criterion, the weighted, unscaled proximity model using average candidate positions did better under the Euclidian metric and worse under the city-block metric. In general, the scaled forms of these models did worse in predicting evaluations of Dole for either distance metric.

Supplemental analysis: Candidate Choice

Overview

For the following supplemental analysis, our dependent variable is candidate choice. This variable is constructed from the ANES question asking respondents to select whom they would most like to win, or their second choice if that was not either Clinton or Dole. Our dependent variable was preference for Clinton over Dole. Further, as in the models of comparative evaluation described subsequently, we fit only one set of models, and use the differences in issue proximity as our predictor variables for respondents' choice of candidates. We employ a logit link. Otherwise, we specify issue proximity in the same way as in the original analysis, and include the same set of additive control variables. Because the candidate choice variable was not included in the original analysis, we chose to form a second set of imputation data-sets that included this variable. (We also included candidate image in this second set of imputations, as described below).

Again, as in the original analysis, the most general finding that emerged here is the superiority of the city-block proximity model with perceived candidate placements, in either weighted and unweighted forms, using the BIC as our criterion. There is trifling evidence in favor of the unweighted form (ΔBIC = 1.23). However, the evidence in favor of either city-block proximity model with perceived candidate placements was strong (ΔBIC > 6) in comparison to any other specification. Moreover, to underscore the poor performance of the other models in accounting for candidate choice, the evidence either did not distinguish these or suggested they were substantially worse than the baseline model that included no issue-related variables.

Average vs. perceived candidate placements

In nearly all cases, models of candidate choice using perceived placements outperformed models using average candidate placements, using either AIC or BIC as a criterion. With the exception of the weighted and scaled Euclidian model with perceived candidate placements, which was the worst performer under the BIC (with its inclination toward smaller models), the worst model that used perceived placement outperformed the best model that used average candidate placements. That these comparisons favored the models with perceived placements is consistent with the original analysis.

City-block vs. Euclidian distance metric

Here we restrict attention to the models that make use of perceived candidate placements. The models of candidate choice based on the city-block metric generally had lower AIC and BIC values than the models that used the Euclidian metric, with the exception of the weighted and scaled city-block proximity model under the BIC. This is consistent with the apparent superiority of the city-block models in the original analysis.

Weighted versus unweighted

Here we restrict attention to the models that make use of perceived candidate placements as well as the city-block metric. For models of candidate choice, both the AIC and BIC favor the unweighted model over both the scaled and unscaled specifications for the weighted model. This lends stronger support to the unweighted model than did the original analysis, in which the AIC supported the scale-invariant weighted city-block proximity model with perceived candidate locations over the unweighted specification.

Scale invariant vs. untransformed

Here we restrict attention to the models that make use of perceived candidate placements. Further, under our assumption that positional ratings of the candidates are on the same scale, we need only consider scale-invariant models in relation to those specifications that included importance weights. For models of candidate choice, both the AIC and BIC favor the weighted model that is not scale-invariant over the weighted and scaled model. Thus, the results for models of candidate choice contrast with the inconclusive comparison for evaluations of Clinton and the lukewarm support offered for the scale invariant weighted model in the case of comparisons with Dole.

Other comparisons

Here we consider comparisons among the relatively underperforming models: the models of candidate choice using perceived candidate placements with the Euclidian metric, and the models using either norm with average candidate placements.

Above, we considered the relative performance of weighted and scale invariant forms of the models using perceived placements under the city-block metric. We now consider the Euclidian models that used perceived placements. Here the pattern of results is the same, as both the AIC and BIC favor the unweighted model over the weighted form of the model that is not scale-invariant, and both the AIC and BIC favor the weighted model that is not scale-invariant over the weighted and scaled model. This contrasts with the inconclusive and conflicting results in the original analysis for the Euclidian models based on perceived candidate placements.

Next, we consider the comparisons between Euclidian and city-block norms for the models using average placements. For candidate choice, with either AIC or BIC as our criterion, the city-block models outperformed the Euclidian models using average candidate placements. This comports with the original analysis for the performance of these models for evaluations of Dole, but not Clinton, though those results were not consistent even for each candidate.

Last, we consider the comparisons between weighted and unweighted specifications using average candidate positions, and the relative performance of the scale invariant and untransformed forms of these models. For candidate choice, the weighted and unscaled forms of these models outperformed the unweighted forms under either AIC or BIC. The weighted, unscaled city-block model of candidate choice based on average candidate placements outperformed the scaled city-block model with average placements, under AIC or BIC. That weighted models using city-block proximity to average placements outperformed the weighted and scaled specifications contrasts with the original analysis, though the relative superiority of the scaled models was consistent with the original analysis.

Supplemental analysis: Comparative Evaluations

Overview

For this supplemental analysis, our dependent variable was comparative evaluation, i.e. differences between respondents' evaluations of the two candidates: the rating of Clinton minus that of Dole. Thus, we fit only one set of models, and use the differences in issue proximity as our predictor variables. Otherwise, we specify issue proximity in the same way as in the original analysis, and include the same set of additive control variables.

The most general finding that emerged here is the superiority of the unweighted city-block proximity model with perceived candidate placements, using the BIC as our criterion. The evidence was decisive (ΔBIC > 10) in all comparisons of this model to other specifications.

Average vs. perceived candidate placements

In all cases, models of comparative evaluations using perceived placements outperformed models using average candidate placements, using either AIC or BIC as a criterion. The worst model that used perceived placement outperformed the best model that used average candidate placements. Although in the original analysis, the models that used average placements underperformed even the baseline model for evaluations of Dole according to the BIC, that was not the case for the models of comparative evaluations.

City-block vs. Euclidian distance metric

Here we restrict attention to the models that make use of perceived candidate placements. For comparative evaluations, all models that made use of the city-block metric had lower AIC and BIC values than models that used the Euclidian metric. Thus the comparative strength of the models using perceived candidate placements paralleled those for evaluations of Clinton in the original analysis.

Weighted versus unweighted

Here we restrict attention to the models that make use of perceived candidate placements as well as the city-block metric. In contrast to the the separate models of Clinton and Dole evaluations, wherein the scaled model was preferred over the unweighted model under the AIC, for models of comparative evaluation, the unweighted city-block model of perceived evaluations is preferred to both the scaled and unscaled specifications under both the AIC and BIC.

Scale invariant vs. untransformed

Here we restrict attention to the models that make use of perceived candidate placements. Further, under our assumption that positional ratings of the candidates are on the same scale, we need only consider scale-invariant models in relation to those specifications that included importance weights. Here the results for comparing scale invariant and unscaled, weighted proximity models of comparative evaluation are inconclusive, as in the original analysis of evaluations of Clinton, but unlike the models of

Dole evaluations where the scale invariant form was supported. For the models of comparative evaluation, the BIC, which favors more parsimonious models, indicates better performance for the unscaled, weighted specification, whereas the AIC supports the scale invariant form.

Other comparisons

Here we consider comparisons among the relatively underperforming models: the models using perceived candidate placements with the Euclidian metric, and the models using either norm with average candidate placements.

Above, we considered the relative performance of weighted and scale invariant forms of the models using perceived placements under the city-block metric. We now consider the Euclidian models that used perceived placements. For models of comparative evaluations, using either AIC or BIC as our criterion, the weighted and unscaled model outperformed the unweighted model. Comparisons between scaled and unscaled forms of the weighted Euclidian models for comparative evaluations were inconclusive, paralleling the results for Clinton evaluations and unlike the support for the scale-invariant form of the weighted model for Dole evaluations. The AIC indicates support for the scale-invariant form. The BIC, which favors simpler models, supports the unscaled, weighted model.

Next, we consider the comparisons between Euclidian and city-block norms for the models using average placements. For comparative evaluations, with either AIC or BIC as our criterion, the Euclidian models outperformed the city-block models, paralleling the results for Clinton.

Last, we consider the comparisons between weighted and unweighted specifications using average candidate positions, and the relative performance of the scale invariant and untransformed forms of these models. For comparative evaluations, with either AIC or BIC as our criterion, the weighted and unscaled models using average candidate positions outperformed the unweighted models. Finally, the weighted and scaled form of the city-block model outperformed the weighted and unscaled model for comparative evaluations using average candidate placements.

Supplemental analysis: List-wise Deletion

Overview

For this supplemental analysis, we applied list-wise deletion to handle the missing data in the original data-set, and otherwise compared the same specifications that were reported in the paper, for evaluations of Clinton and Dole.

The most general finding that emerged here is the superiority of the unweighted city-block proximity model with perceived candidate placements, for evaluations of either Clinton or Dole, using the BIC as our criterion. The evidence was decisive (ΔBIC > 10) in all but one of the comparisons of this model to other specifications. The evidence in favor of the unweighted city-block model in comparison to the weighted model for evaluations of Clinton was strong (ΔBIC = 6.35).

Average vs. perceived candidate placements

In all cases, models using perceived placements outperformed models using average candidate placements, using either AIC or BIC as a criterion. The worst model that used perceived placement outperformed the best model that used average candidate placements. These results are comparable to the original analysis.

City-block vs. Euclidian distance metric

Here we restrict attention to the models that make use of perceived candidate placements. For evaluations of both Clinton and Dole, the results with list-wise deletion did not unilaterally support all city-block models over Euclidian models, but did so *ceteris paribus*, as in the original analysis for evaluations of Dole. In particular, each city-block model outperformed the most similar Euclidian block model using either AIC or BIC as a criterion.

Weighted versus unweighted

Here we restrict attention to the models that make use of perceived candidate placements as well as the city-block metric. Results under list-wise deletion are similar to those of the original analysis. For

Clinton evaluations under list-wise deletion, both the AIC and BIC favor the unweighted model over both the scaled and unscaled weighted forms of the model. For Dole evaluations, both the AIC and BIC favor the unweighted model over the weighted form of the model that is not scale-invariant. On the other hand, the AIC indicates support for the weighted city-block model in scale-invariant form over the unweighted model. The BIC, which favors simpler models, supports the unweighted model.

Scale invariant vs. untransformed

Here we restrict attention to the models that make use of perceived candidate placements. Further, under our assumption that positional ratings of the candidates are on the same scale, we need only consider scale-invariant models in relation to those specifications that included importance weights. Results under list-wise deletion are again similar to those of the original analysis. For evaluations of Clinton under list-wise deletion, the AIC and BIC give different results in comparisons of the scale-invariant and non-scale invariant weighted proximity models. The BIC, which favors more parsimonious models, indicates better performance for the unscaled, weighted specification, whereas the AIC supports the scale invariant form. For Dole, both the AIC and BIC support the use of the scale invariant weighted proximity form.

Other comparisons

Here we consider comparisons among the relatively underperforming models: the models using perceived candidate placements with the Euclidian metric, and the models using either norm with average candidate placements.

Above, we considered the relative performance of weighted and scale invariant forms of the models using perceived placements under the city-block metric. We now consider the Euclidian models that used perceived placements. For Clinton, using either AIC or BIC as our criterion, the the unweighted Euclidian model of perceived placements outperformed both the weighted and the weighted and scaled models, under list-wise deletion. Comparisons between scaled and unscaled forms of the weighted Euclidian models with perceived placements of Clinton were inconclusive. The AIC indicates support for the scale-invariant form. The BIC, which favors simpler models, supports the unscaled, weighted model. For Dole, the results concerning the comparison between weighted and unweighted Euclidian models with perceived placements were inconclusive under list-wise deletion. The AIC indicates support for the weighted, scale-invariant form, whereas the BIC indicates support for the unweighted proximity model. Further, as with the models for evaluation of Clinton, the comparison between scaled and unscaled weighted Euclidian models with perceived placements was also inconclusive. Again, the AIC indicates support for the scale-invariant form. The BIC, which favors simpler models, supports the unscaled, weighted model.

Next, we consider the comparisons between Euclidian and city-block norms for the models using average placements. In contrast to the original analysis, the results for Clinton with list-wise deletion supported the city-block specification with average placements in two out of three comparisons. The weighted and scaled Euclidian model did better than the city-block model according to the AIC, but the reverse was true according to the BIC. For evaluations of Dole with list-wise deletion, the results uniformly supported the city-block metric under both AIC and BIC. Therefore, in contrast to the original analysis, the results under list-wise deletion more uniformly support the city-block metric for models with average candidate placements.

Last, we consider the comparisons between weighted and unweighted specifications using average candidate positions, and the relative performance of the scale invariant and untransformed forms of these models. The results for both Clinton and Dole under list-wise deletion were substantively similar to the original analysis with regard to the performance of weights, but similar only in the Euclidian specifications with regard to the performance of scaling terms. With either AIC or BIC as our criterion, the weighted models using average candidate positions outperformed the unweighted and unscaled models. The scaled and weighted forms outperformed the unscaled and weighted forms under the AIC, but performed worse under the BIC which penalizes larger models.

In contrast, for Dole, the results under the city-block metric were inconclusive, with the weighted and scaled city-block model with average placements outperforming the unweighted and unscaled specification according to the AIC and under list-wise deletion, but the unweighted form outperforming the weighted forms under the BIC. The unweighted Euclidian model outperformed the unscaled and scaled weighted forms of the models under both AIC and BIC. Finally, for evaluations of Dole based on average placements under list-wise deletion, the results concerning the inclusion of scaling terms were inconclusive, with the weighted and scaled model performing better under the AIC than the weighted and unscaled model, but the unscaled specification performing better under the BIC.

Supplemental analysis: Candidate Image Items

Overview

For this supplemental analysis, we included a scale formed from responses to the 1996 ANES candidate image items. Respondents were asked to rate both Clinton and Dole in terms of whether the following 6 traits described the two candidates:

Moral
Inspiring
Leadership
Cares about people like me
Knowledgeable
Honest
Gets Things Done

Respondents expressed agreement using a 4 point Likert-type scale. We created a single candidate image variable by adding up the extent of agreement for each respondent and standardizing the sum to the 0-1 range. Because the candidate image variable was not included in the original analysis, and implied about 234 missing cases, we chose to form a second set of imputation data-sets that included this variable. (We also included candidate choice in this second set of imputations, as described above).

In theory, to the extent that candidate image is independently related both to issue proximity and weighted issue proximity and to candidate evaluations, our original model suffered from omitted variable bias. On the other hand, to the extent that it is causally posterior to issue positions, its inclusion leads our estimates to comprise only the direct effects of the spatial terms, controlling for candidate image. That means that the coefficients we measure may, in and of themselves, not represent the full impact of the spatial terms on attitudes towards the candidates.

While the superiority of the perceived issue-placements remained a defining feature of the analysis that included candidate image items, the best specification of distance metric for issue proximity (using the BIC as our criterion) varied between the two candidates, and for Clinton was a model including the interaction between issue importance weights and issue proximity. There was strong evidence for this *weighted* city-block proximity model with perceived candidate placements over all other specifications (ΔBIC > 6) for evaluations of Clinton. However, in contrast, for Dole, there was decisive evidence of the *unweighted Euclidian* proximity model with perceived candidate placements over all other specifications (ΔBIC > 10).

Average vs. perceived candidate placements

In all cases, when candidate image items were included, models using perceived placements outperformed models using average candidate placements, using either AIC or BIC as a criterion. The worst model that used perceived placement outperformed the best model that used average candidate placements. In the original analysis, the models that used average candidate placements underperformed relative to the baseline model for evaluations of Dole according to the BIC, meaning that the greater penalty of the BIC exceeded the explanatory power of the issue proximity variables. In contrast, with the inclusion of candidate image items, only the two largest models were outperformed by the baseline model.

City-block vs. Euclidian distance metric

Here we restrict attention to the models that make use of perceived candidate placements. For evaluations of Clinton, the results with the inclusion of candidate image items did not unilaterally support all city-block models over Euclidian models, but did so *ceteris paribus*, as in the original analysis for evaluations of Dole. In particular, each city-block model outperformed the most similar Euclidian block model using either AIC or BIC as a criterion. However, when candidate image items were included in the models of Dole evaluations, the results regarding the relative performance of the distance metrics reversed. Each Euclidian model outperformed the most similar city-block model using either AIC or BIC as a criterion. Thus the comparison between the city-block and Euclidian models was no longer conclusive once the candidate image items were added, but varied between the two candidates.

Weighted versus unweighted

Here we again restrict attention to the models that make use of perceived candidate placements. For Dole evaluations, once image items are included, both the AIC and BIC favor the unweighted model over the weighted form of the model that is not scale-invariant. On the other hand, the AIC indicates support for the weighted city-block model in scale-invariant form over the unweighted model. The BIC, which favors simpler models, supports the unweighted model. In the original analysis, we found the same results for the models of Clinton evaluations, with the BIC favoring the unweighted specification. However, when image items are included in predicting evaluations of Clinton, the weighted and unscaled form of the model outperforms the unweighted form according to both AIC and BIC. As in the original analysis, whereas the BIC supports the unweighted model over the weighted and scaled form, the AIC indicates the reverse.

Scale invariant vs. untransformed

Here we again restrict attention to the models that make use of perceived candidate placements. Further, under our assumption that positional ratings of the candidates are on the same scale, we need only consider scale-invariant models in relation to those specifications that included importance weights.

In the original analysis, comparisons between the scale invariant and unscaled forms of the weighted city-block proximity model were inconclusive for evaluations of Clinton, but favored the unscaled form for evaluations of Dole. However, once candidate image items were included, the results are inconclusive for both candidates. The BIC, which favors more parsimonious models, indicates better performance for the unscaled, weighted city-block model, whereas the AIC supports the scale invariant specification.

Other comparisons

Here we consider comparisons among the relatively underperforming models: the models using perceived candidate placements with the Euclidian metric, and the models using either norm with average candidate placements.

Above, we considered the relative performance of weighted and scale invariant forms of the models using perceived placements under the city-block metric, when candidate image items are included. We now consider the Euclidian models that used perceived placements, again with the inclusion of candidate image items. For Clinton, results paralleled those of the original analysis. For Clinton, using either AIC or BIC as our criterion, the weighted and unscaled model outperformed the unweighted model. Comparisons between scaled and unscaled forms of the weighted Euclidian models with perceived placements of Clinton were inconclusive. The AIC indicates support for the scale-invariant form. The BIC, which favors simpler models, supports the unscaled, weighted model. For Dole, the results concerning the comparison between weighted and unweighted Euclidian models with perceived placements were inconclusive, as in the original analysis. The AIC indicates support for the weighted, scale-invariant form, whereas the BIC indicates support for the unweighted proximity model. Unlike in the original analysis, however, comparisons of the scaled and unscaled forms of the weighted Euclidian model with perceived placements are also inconclusive, once candidate image items are included. Here, again, the AIC indicates support for the weighted, scale-invariant form, whereas the BIC indicates support for the unweighted proximity model.

Next, we consider the comparisons between Euclidian and city-block norms for the models using average placements. The results for Clinton contrasted with those for Dole, as in the original analysis, but the inclusion of candidate image items reversed the candidate for whom the city-block specification was favored. For Clinton, with either AIC or BIC as our criterion, the city-block models outperformed the Euclidian models in two out of three comparisons, in contrast to the original analysis. However, as in the original analysis, the weighted and scaled Euclidian model did better than the city-block model according to the AIC, but the reverse was true according to the BIC. For Dole, the mixed results in favor of the city-block model from the original analysis were converted to similar mixed results in support for the Euclidian model with the inclusion of candidate image items. The inconclusive case was the weighted and scaled model with average candidate placements for Dole, where the Euclidian specification was preferred to the city-block specification under the AIC, but not under the BIC.

Last, we consider the comparisons between weighted and unweighted specifications using average candidate positions, and the relative performance of the scale invariant and untransformed forms of these models, when candidate image items are included. For Clinton, with either AIC or BIC as our criterion, the weighted, unscaled models using average candidate positions outperformed the unweighted models, when candidate image items were included. However, the results were again mostly inconclusive in comparing scaled and unscaled forms of the weighted models—only now in a manner consistent across distance metrics. With the AIC as the criterion, the weighted and scaled models outperformed the weighted, unscaled models, but not under the BIC which penalizes larger models. The results for Dole again depended upon the distance metric, but differently from the original analysis. For Dole, with either AIC or BIC as our criterion, the weighted, unscaled proximity model using average candidate positions did better under the city-block metric and worse under the Euclidian metric. The comparison of scaled and unscaled models that used average candidate placements was now inconclusive, once candidate image items were included: with the AIC as the criterion, the weighted and scaled models outperformed the weighted, unscaled models, but not under the BIC.

References

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