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The role of race and scientific trust on support for COVID-19 social distancing measures in the United States

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March 1, 2021
Re: The role of race and scientific trust on support for COVID-19 social distancing measures in the United States

Dear editorial team,

Please find our attached manuscript titled "The role of race and scientific trust on support for COVID-19 social distancing measures in the United States."

This paper intends to contribute to the fast growing literature on the mass public's response to the unprecedented COVID-19 pandemic by showing that latent scientific trust raises critical support for governmental policies aimed at containing the spread of the pandemic **across racial groups**. Indeed, standing literature in public health consistently shows racial disparities in public health policy support, such as mandatory vaccinations. Our work aims at identifying a critical mechanism towards addressing this disparity within the context of the pronounced COVID-19 pandemic.

We believe that PLOS ONE would be an appropriate multidisciplinary journal for this work given that: 1) our findings are both novel and unexpected, cutting across disciplinary literatures, 2) our findings are both timely and can likely inform future work on racial differences in support of public health and scientific-based policies, and 3) our findings are grounded in stark evidence showing that communities of color in the United States are bearing the disproportionate share of COVID-19 deaths.

Our work builds on two major lines of literature regarding variation in scientific trust on the basis of race and recent work assessing the variation in COVID-19 government responses in a divided country. To our knowledge, there is no other work assessing the influence of latent scientific trust across race on support for government policies aimed at containing the COVID-19 pandemic.

We look forward to your response and appreciate your time in reviewing our paper.

Sincerely,

Sam Fuller
Sara Kazemian
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The role of race and scientific trust on support for COVID-19 social distancing measures in the United States

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Abstract

Pundits and academics across disciplines note that the human toll brought forth by the novel coronavirus (COVID-19) pandemic in the United States (U.S.) is fundamentally unequal for communities communities of color. Standing literature on public health posits that one of the chief predictors of racial disparity in health outcomes is a lack of trust institutional trust among minority communities. Furthermore, in our own county-level analysis from the U.S., we find that counties with higher percentages of Black and Hispanic residents have had vastly higher cumulative deaths from COVID-19. In light of this standing literature and our own analysis, it is critical to better understand how to mitigate or prevent these unequal outcomes for any future pandemic or public health emergency. Therefore we assess the claim that raising institutional trust, primarily scientific trust, is key to mitigating these racial inequities. Leveraging a new, pre-pandemic measure of scientific trust, we find that trust in science, unlike trust in politicians or the media, significantly raises support for COVID-19 social distancing policies across racial lines. Our findings suggest that increasing scientific trust is essential to garnering support for public health policies that lessen the severity of the current, and potentially a future, pandemic.

Introduction

With more than 2 million dead and nearly 100 million infected across the world, as of this writing, the COVID-19 pandemic is an unprecedented international health crisis wreaking a devastating human toll. Moreover, racial and ethnic minorities in the United States (U.S.) have been disproportionately impacted by COVID-19. Studies show a higher incidence of COVID-19 related mortality among racial/ethnic minorities [1] and among essential workers [2]. For example, while Black Americans represent 13 percent of the U.S. population, they account for 24 percent of the COVID-19 related fatalities [3]. In the District of Columbia (D.C.), Black Americans reflect a 50 percent share of the population, but account for 75 percent of COVID-19 deaths. These findings are especially concerning, yet consistent, in light of extensive research that has found racial minorities in general, and Black Americans specifically, tend to be much less trustworthy of medicine, particularly immunization programs [3].

Given that COVID-19's spread is heavily determined by interpersonal interactions, restrictions meant to increase social distancing have been implemented widely, with varying degrees of success and compliance, by local, state, and national governments. Support for and compliance with these policies, evidenced by widespread anti-"lockdown" protests and surveys conducted by Pew Research Center [4], is highly variable, with many heavily in favor and nearly as many heavily opposed. Recent work has attempted to parse out the likely determinants of support and compliance, examining influences such as gender, partisanship, and scientific knowledge and trust [5, 6]; race/ethnicity, conspiracy theory beliefs, and COVID-19 knowledge [7]; and local coronavirus incidence and threat perceptions [8].

Recently, in the midst of the pandemic, scholars have turned their attention to the relationship between political trust, scientific trust, and COVID-19 outcomes. Thus far, research indicates that the pandemic has increased the public's trust in science [9], and impacted the extent to which citizens trust institutions [10]. However, it is unclear how trust in science, politicians, and the media influence support for public health recommendations. Previous research finds that when citizens distrust politicians they may also distrust the policies that the government formulates [11]. Indeed, (dis)trust in politicians can influence support for specific policies ranging from CO_2 taxes [12] to redistributive policy preferences [11]. Furthermore, research conducted explicitly about pandemic policy responses has found that (dis)trust in the government/politicians is a strong determinant in support of or opposition to shelter in place policies [13, 14]. Importantly, public trust in science tends to cut across partisan and racial lines. For example, Democrats are more likely than Republicans to believe that scientists act in the best interest of society [15]. Black Americans–who predominately identify with the Democratic party–however, are still more skeptical of science than White Americans [3]. This trust gap between White and Black Americans further fuels our investigation of the role of scientific trust on support for COVID-19 policies.

Finally, literature on the influence of traditional media (newspapers, television, radio) on health-related behaviors is well documented, yet there is mixed and scant evidence on how media usage and trust varies across different races and ethnicities [16]. Pandemic-related research has found that individuals' consumption of and trust in traditional media influences the adoption of preventative behaviors and vaccination intention during the 2009 H1N1 pandemic [17, 18] and the current pandemic [19]. Importantly, the most recent literature on media's influence has found that its effects are largely divided along partisan lines, i.e., if you consume conservative (liberal) media in the United States you are less (more) likely to practice social distancing [19].

The article proceeds as follows: First, we note the existing literature that highlights the link between scientific trust and support for social distancing policies and the racial disparities in scientific trust and resulting behaviors. Second, we reinforce previous findings on the racial disparities in COVID-19's human toll in the U.S. using a county-level, high-dimensional regression. Third, given previous findings and the pandemic's unequal impact on communities of color in the United States, we investigate the interactive influence of race/ethnicity and trust in science, politicians, and the media in determining support for social distancing policies/restrictions. We find that scientific trust influences support for both individual social distancing policies (such as restricting large gatherings) and a composite measure of all polled policies, and that these effects are particularly strong among Black Americans. Overall, we contend that increasing scientific trust among Black Americans is likely a very important and effective pathway for increasing support for social distancing policies and thus decreasing the unequal effects of COVID-19 and future pandemics on communities of color.

Scientific trust & COVID-19 social distancing policy support

Trust, be it political or scientific, is an important ingredient in any functioning society. News media and academic researchers alike often cite public trust in science as an important requirement for pro-social behavior and adherence to policy recommendations [20]. Trust can be defined as the "the willingness of a person, group or community to defer to or tolerate, without fear, the judgments or actions of another person in institutions that directly affect one's actions on welfare" [21]. In other words, trust is the decision to accept vulnerability and give another person the "benefit of the doubt" [22].

Scientific trust is key in understanding how ordinary citizens reach conclusions about public health. When the public trusts scientists, they place confidence in the scientific community to provide expert knowledge on important public policies such as public health, education, energy consumption, and climate change. Critically, public trust in science is especially important when the public has poor understanding of the risks associated with a new technology or a public health crisis, like COVID-19. Thus, if the average citizen is uninformed about a new technology (like a vaccine), or new public health recommendations (like social distancing), they may rely on scientists to inform their opinions [23]. Unsurprisingly, the prevailing consensus is that scientific trust underpins successful immunization programs [24], environmental policies, as well as support for social distancing [25]. As communities around the country combat COVID-19 and make plans to reopen their economies, policymakers will have to rely on public support for social distancing, mask mandates, and widespread testing.

Trust & racial disparities in public health

Although it is obvious why trust in science is important, it is less obvious why some groups have higher scientific trust than others. Even less clear is whether the relationship between scientific trust and support for scientific policies is moderated by a person's race or ethnicity. We draw on literature from immunization programs in the United States and investigate whether scientific trust's influence on support for social distancing policies is potentially moderated by race/ethnicity.

Research on immunization programs has consistently documented a racial trust gap between Black Americans and White Americans and support for the yearly influenza vaccine [24, 26, 27]. Much of the previous literature attributes this gap to historical discrimination of Black Americans in the medical community [28]. The Tuskegee syphilis study is the clearest and most well known example of why Black Americans may distrust medicine, physicians, and medical recommendations generally. The study, which was intended to last between 6 to 8 months, recruited 400 Black American men with syphilis who had not yet received any treatment. Despite the designated time frame, the study ran for 40 years, even though penicillin became available during the duration of the experiment [29]. The study's use of deception as well as mistreatment of participants is a key reason why Black Americans mistrust science and medicine. To examine this relationship further, Scharff et al. interview 11 focus groups and find that mistrust in medicine originates from unethical medical research and continues to have lasting effects in African American community today [30]. Similarly, Freimuth et al. document a racial immunization gap in the influenza vaccine: 53.4% of White participants reported getting a vaccine, compared to 44.4% of African Americans [24]. Importantly, the authors reveal that "the effect of racial consciousness was a negative predictor for both [White and Black] groups but was only significant for African Americans." Put simply, when Black adults think about race in a healthcare setting,

they are less likely to trust the influenza vaccine. However, racial consciousness has no effect on White Americans. Thus, racial factors such as historical discrimination and racial consciousness have clear and disproportionate effects across race.

The COVID-19 pandemic has once again revealed racial disparities in health outcomes between White and Black Americans. Data on hospitalization rates, infections, and deaths report that people of color comprise a disproportionate share of the human toll wreaked the pandemic. Indeed, minority communities have had substantially higher fatality rates than White communities: According to the Kaiser Family Foundation, "people of color represented more than half of all people tested (57%) and confirmed cases (56%) at health centers, and that Hispanic patients made up a higher share of positive tests compared to their share of total tested patients" [31]. Like immunization disparities, these unequal effects reflect larger underlying social and political factors that are fueled by the historical and systemic discrimination against minorities in the United States. Following this pattern, a 2020 Pew Research Center poll indicates that Black adults place lower confidence in scientists than White adults: 27% of Black Americans report having 'great deal' of trust in Scientists, compared to 44% for White adults [15]. These differences in trust are clearly concerning because when individuals mistrust science, they may be less willing to support policies that scientists formulate.

Racial disparities in COVID-19 deaths

To further motivate the importance of our research question and proceeding analyses, we first identify, above and beyond previous literature, the significant and widespread racial disparities present in the United States' COVID-19 deaths. Specifically, we test if communities of color had disproportionately higher rates of death due to COVID-19. Using daily death data from *The New York Times* [32] and demographic data from the *American Community Survey* [33], we specify high dimensional regression models modeling a given county's: (1) cumulative death count and (2) daily change in death counts as a function of the racial composition found in the county throughout the course of the pandemic. We specify our cumulative daily death count in the standard deaths per 100,000 residents and the daily change as a 7 day rolling average of deaths per 100,000 residents. The unit of observation of this model is a given county mortality rate on a given day of the pandemic from the confirmation of the first case of COVID-19 in Snohomish County, WA on January 21, 2020 until December 31, 2020. We specify three models per dependent variable measuring COVID-19 death counts, for a total of six models with the fully specified model (3) controlling for other salient county demographic variables, the lagged dependent variable, and date fixed-effects given the time component in our county-level panel. Specifically, our county-level models control for percentage foreign-born, median age, median income, percent college educated, percent older population 65+, population density per square mile, and total county population.

Table 1 reports the results of our models assessing racial disparities with respect to COVID-19 death rates at the county level. We find robust evidence across all model specifications that higher Black and Hispanic populations result in significantly higher cumulative daily death counts and higher rates of daily changes to the death count. We find largely null effects between higher percentages of Asian, White, and multi-racial populations and the cumulative daily death count in a county. However, we do find robust evidence that higher percentages of Asian and multi-race populations corresponds to a *decrease* in daily death count changes in a county, with the fully specified model (3) finding the same result for higher White populations.

Table 1. County-Level High Dimensional Regression Models Assessing Racial Disparities in COVID-19 Death, January 21st–December 31st 2020

	Dependent Variable: Σ Cumulative Daily Death Count			Dependent Variable: Δ Daily Death Count Changes		
	Model (1)	Model (2)	Model (3)	Model (1)	Model (2)	Model (3)
Percentage African-American	0.75***	0.66***	0.61***	0.01**	0.01**	0.01**
	(0.11)	(0.09)	(0.09)	(0.00)	(0.00)	(0.00)
Percentage Hispanic	0.34**	0.26**	0.23*	0.01**	0.01**	0.01**
	(0.15)	(0.12)	(0.12)	(0.00)	(0.00)	(0.00)
Percentage Asian	-0.97***	0.22	0.10	-0.01***	-0.01***	-0.01**
	(0.27)	(0.24)	(0.25)	(0.00)	(0.00)	(0.00)
Percentage Multi-Race	-0.34*	-0.08	-0.09	-0.01**	-0.01**	-0.01**
	(0.18)	(0.15)	(0.15)	(0.00)	(0.00)	(0.00)
Percentage White	0.14	0.09	0.01	0.00	0.00	0.00*
	(0.17)	(0.14)	(0.14)	(0.00)	(0.00)	(0.00)
Constant	36.61***	-1.04	-14.67*	0.49***	0.45***	0.58***
	(9.61)	(7.09)	(7.99)	(0.09)	(0.08)	(0.09)
Lagged DV	-	✓	✓	-	✓	✓
Control Variables	-	-	✓	-	-	✓
Date-Fixed Effects	✓	✓	✓	✓	✓	✓
R^2	0.41	0.54	0.55	0.03	0.03	0.03
Observation N	1,087,132	1,087,132	1,087,132	1,080,542	1,080,542	1,080,542
County N	3,142	3,142	3,142	3,142	3,142	3,142
Date N	346	346	346	346	346	346

Data begins with first U.S. confirmed case on January 21, 2020 in Snohomish County, WA.
COVID-19 Data: The New York Times from January 21-December 31, 2020
Demographic Data: 2015-2019 American Community Survey Estimates
All models specified with date-county clustered standard errors.
Models estimated using the `reghdfe Stata` package.
$^{*}\rho < 0.1$; $^{**}\rho < 0.05$; $^{***}\rho < 0.01$

The results of our county-level analysis throughout the first year of the COVID-19 pandemic present clear evidence of how severely the pandemic affected communities on the basis of race. These disparities in death rates underscore the significance of the proceeding analyses on the linkage between race, scientific-trust, and social distancing policy support.

Scientific trust, race, and social distancing policy support

Data & measurement

Scientific trust

To evaluate whether scientific trust can help raise support for governmental policies critical to containing the COVID-19 pandemic, we rely on the nationally representative sample provided by Pew's `American National Trends Panel Survey` [4]. To address potential concerns of endogeneity regarding the onset of the COVID-19 pandemic and scientific trust, we rely on two panel survey waves. To measure scientific trust, we rely on wave 42 fielded prior to the onset of the pandemic from January 7–21, 2019 to measure our main explanatory variable of interest, latent scientific trust. To measure this latent variable, we rely on a series of questions designed to tap into the propensity of an individual to trust the scientific process and scientific elites. Specifically, we leverage questions measuring the following: (1) confidence that scientists act in the best interest of the public; (2) whether scientists should take an active role in scientific issue policy debates or not; (3) whether public opinion should play an important role in guiding scientific policy issue decisions; (4) whether scientific experts are better suited to make "good" policy decisions about scientific issues relative to "other" people; (5) whether the scientific method produces accurate conclusions independent of the conclusion the researcher wants; (6) whether scientists make judgements based solely on facts or if they are "biased as other people;" (7) the importance of scientific research that has immediate practical applications for society; and (8) the importance of scientific research to advance knowledge, even if there are no immediate benefits for society.

Given that we are seeking to measure an inherent latent variable (scientific trust) using questions with varying scales, we employ an exploratory factor analysis to derive the structure of latent scientific trust. Results of this two-dimensional promax rotation factor analysis can be found in Fig 1. We find strong support for a one-dimensional structure of latent scientific trust and, given our high Cronbach's α, we also have support that our measure has a reliable degree of internal consistency. We extract our measure of latent scientific trust in our sample (i.e., first dimension factor scores) and also differences in this measure across racial groups. Consistent with previous work in public health [24, 26, 27], we find significant differences in the level of latent scientific trust across racial groups. Indeed, we find that White and Asian respondents generally exhibit higher levels of scientific trust than Black or Hispanic respondents. S4 Fig in the supporting information presents further evidence of this racial variation from a fully specified regression model showing that Black and Hispanic respondents possess lower levels of predicted latent scientific trust than White respondents. We also find that Asian-Americans do not possess significant differences in predicted trust than White-Americans. This model controls for other predictors of scientific trust, such as partisanship, ideology, income, gender, education, age, and geographic region. Overall, our descriptive finding of the differences in scientific trust between White and Black/Latino respondents adds strong face validity to our measure of latent scientific trust by uncovering a similar distribution across race as the standing literature.

Fig 1. Measuring latent scientific trust in the mass public A: Latent scientific trust as measured by factor analysis. B: Distribution of latent scientific trust by race.

Social distancing policy support

To measure our outcome variables of interest, namely support for government social distancing restrictions, we rely on panel wave 64 fielded from March 19–24, 2020. In this survey, panelists were asked if it was necessary for the government to restrict the following collective societal activities in an effort to contain the spread COVID-19:

1. International travel
2. Most businesses (except grocery stores & pharmacies)
3. Large gatherings > 10 people
4. Major sporting & entertainment events
5. K–12 schooling
6. Restaurant dining (i.e., mandating carry-out service only)
7. Upcoming state primary elections (i.e., to postpone due to the virus)

These outcome variables were coded as 1 if citizens felt it was necessary for the government to restrict a given activity to contain the spread of the COVID-19 virus or 0 if they felt it unnecessary. We construct a composite measure of latent COVID-19 restriction policy preferences using an item-response theory model (IRT), with resulting respondent scores providing a measure of overall preferences for social distancing policies. IRT models are a useful tool for measuring latent preferences or characteristics from a set of observed behaviors, with the canonical example being the measurement of students' abilities with multi-item tests. In the testing example, higher ability should correspond to a higher score from the IRT indicating a higher probability of answering a given question, dependent on that question's own difficulty. In political science, the IRT model has been used to measure ideology, political knowledge, and other latent concepts from a set of observed indicators [34]. Consistent with our expectations that these policies are determined more by scientific trust, rather than ideology or partisanship, COVID-19 restriction attitudes and the respondent's liberal-conservative identification are only weakly correlated ($\rho = 0.18$), with self-identified liberals slightly more likely to support restrictions. Lastly, we also construct a summated rating scale to evaluate the relationship between scientific trust and degree of policy support as an alternative-measure/robustness-check of aggregate policy support.

Media and institutional trust, race, and other covariates

To test whether scientific trust is a more salient predictor than media or institutional trust, we specify a series of baseline logistic regressions model for each of our individual outcome variables measuring a citizen's support for social distancing policies. Importantly, every model is specified with appropriate survey weights. Given our theoretical framework, we expect that the marginal effect of scientific trust on the probability of supporting COVID-19 containment public policies to be larger than the other two forms of trust. We measure trust in the media and institutions from wave 42, the same survey wave preceding the pandemic and used to measure latent scientific trust. These two trust variables are measured on a scale of 1 (no confidence at all) to 4 (a great deal) from survey questions asking respondents to indicate their trust in the news media and elected officials (the specific question wording can be found in the supporting information). We also specify our baseline model with standard predictors of policy preferences, such as gender, political ideology, age, education, income, race, and geographic region. With regards to race, we specify a series of dichotomous dummy

variables to indicate if a respondent identified as African-American, Hispanic-American, and Asian-American with majority White identification being the baseline category. In our sample, approximately 70.91% ($N = 1,855$) of respondents identified as White, 10.97% ($N = 287$) as African-American, 14.83% ($N = 388$) as Hispanic-American, and 3.29% ($N = 86$) as Asian-American. We extract Asian identification from the "other" coding provided by the race-ethnicity variable and additional information provided by a variable that expands on the initial race coding convention. This coding follows and expands standard race coding conventions provided by the Pew Survey.

Analyses

In terms of our two measures of latent and summated composite COVID-19 social distancing policy support, we specify ordinary least squares (OLS) regression models using the same set of variables as our individual policy logistic regression models. In these OLS models predicting a citizen's latent and summated COVID-19 containment policy support, we similarly expect that the marginal effect of scientific trust to be larger than that of media and institutional trust.

Lastly, our theoretical framework posits that scientific trust should increase policy support for social distancing policies, even across racial cleavages in the United States. Indeed, we argue that increased latent scientific can increase support of these critical public policies across differing racial communities. We also posit that scientific trust works in differing ways than media and institutional trust, in that scientific trust raises support for these policies across racial categories while media and institutional trust do not. To test this argument, we take our baseline model and include an interaction between an individual's racial identity and latent scientific trust. To fully specify the model, we also interact racial identity with media and institutional trust. This allows us to evaluate the marginal effect of each type of trust across racial categories and compare the magnitude of these effects on support for social distancing policies. The expectation in this specification is that across individual, latent, and summated COVID-19 containment policies, the marginal effect of scientific trust should be positive and significant. By contrast, we expect the marginal effect of media and institutional trust to be smaller in magnitude to scientific trust across racial categories.

Results

Baseline trust effects on COVID-19 policy support

We now turn to the results of our analysis. Fig 2 shows the marginal effect of going from the minimum to maximum value of latent scientific trust, media trust, and institutional trust on the probability of individual policy support. With the exception of restricting international travel, latent scientific trust is a significant predictor of COVID-19 restriction policy support. Indeed, there is a high degree of agreement in restricting international travel during the onset of COVID-19 in March 2020, with 96.3% of respondents supported this containment policy. By contrast the other restriction policies attracted only 74.5% (most businesses), 90.6% (large gatherings), 93% (sporting events), 92.2% (K–12 schools), 87.8% (restaurant dining), & 69.5% (postponing primaries). Going from the minimum value of latent scientific trust to the maximum value, the probability of supporting closing most businesses increases by 24%, restricting large gatherings by 15%, restricting sporting events by 15%, restricting K–12 schooling by 34%, restaurant dining by 25%, and postponing state primary elections by 21%, respectively. By contrast, our models find a small, significant relationship between greater institutional/elected officials trust and support for restricting sporting events

(4%), K–12 schooling (3%), restaurant dining (4%), and postponing primary elections (6%). These effects are minimal in magnitude, ranging from a 3% increase in probability of supporting restrictions to K–12 schooling to a 6% increase in supporting postponing state primary elections. Lastly, increased trust in the media only corresponds to a 5% increase in the probability of supporting postponement of primary elections and, in fact, slightly reduces the probability of restricting K–12 schooling by 4%. In all, we find strong support that latent scientific trust is a far more salient predictor of individual COVID-19 containment policies than other sources of trust after accounting for standing predictors of policy preferences.

Fig 2. Baseline model effects of scientific, media, & institutional trust on specific COVID-19 social distancing policy support A: Restrict international travel. B: Close most businesses. C: Restrict large gatherings. D: Restrict major large & sporting events. E: Restrict K–12 schooling. F: Restrict restaurant dining. G: Postpone primary elections.

We now turn to evaluating our OLS models predicting our measure of latent and summated COVID-19 restriction policy support. Congruent with the findings of individual policies in Fig 2, Fig 3 shows that latent scientific trust, and institutional/elected official trust, significantly correspond to greater support for overall COVID-19 restriction policies in both our latent and summated policy measures. Once again, the effect of latent scientific trust as a predictor of overall policy support is larger than institutional trust in the media across both OLS models. Indeed, going from the maximum to minimum value of latent scientific trust corresponds to a significant predicted increase of 1.16 in the summated policy support scale. The magnitude of this effect is noteworthy, given that this summated COVID-19 policy support scale is on a scale of 0 to 7. By contrast, this same effect in terms of institutional trust for elected officials corresponds to only an increase of 0.4 in the summated policy scale. The effect of media trust on predicted latent and summated COVID-19 restriction policy support is insignificant across both models. Taken together, and both in terms of individual and summated policies, we find strong support for our baseline expectations that latent scientific trust not only increases support of COVID-19 social distancing policies, but is also a more salient predictor of these policy preferences than trust in the media and government institutions/elected officials.

Fig 3. Baseline OLS model effects of scientific, media, & institutional trust on composite COVID-19 social distancing policy support A: Latent policy measure. B: Summated policy support.

The consistent effects of scientific trust across race

Building off our strong findings in the baseline models, we turn to evaluation our interactive models assessing latent scientific trust across racial identification in our sample. We posit that across all racial cleavages, latent scientific trust should raise the probability of supporting individual COVID-19 restriction policies. Fig 4 evaluates this hypothesis from our interactive models. Unlike the two other forms of trust, there is strong evidence that latent scientific trust raises the probability of policy support across racial cleavages. Indeed, greater latent scientific corresponds to greater support for all racial cleavages (i.e., Hispanic, White, Black, Asian)for restricting large sporting events, K–12 schooling, and restaurant dining as shown in Fig 4 Panels D, E, and F. In terms of restricting international travel, greater scientist trust only significantly raised the probability of this policy support among Asian-Americans as shown in Fig 4A. Fig 4B

shows that this effect was significant for all racial categories with the exception of African-Americans in the context of closing most businesses. Fig 4C & Fig 4G shows only a significant effect for White and African-American respondents in the context of restricting large gatherings and postponing primaries, respectively. Lastly, we find overwhelming evidence of insignificant or minimal trust effects for elected officials and the media, suggesting that these effects do not substantively raise the probability of policy support across races. Across our 7 individual policy models, we find a significant positive effect of latent scientific trust in 4 models for Hispanic-Americans, 6 models for White-Americans, 5 models for African-Americans, and 5 models for Asian-Americans.

Fig 4. Measuring latent scientific trust in the mass public A: Restrict international travel. B: Close most businesses. C: Restrict large gatherings. D: Restrict major large & sporting events. E: Restrict K–12 schooling. F: Restrict restaurant dining. G: Postpone primary elections.

Turning to our composite measures of latent and summated COVID-19 policy preferences, Fig 5 finds strong support that latent scientific trust across both of these OLS measures predicting these outcome measures for all racial cleavages. Fig 5B finds that going from the minimum to the maximum level of latent scientific trust raises the predicted value of summated policy support by 2.23, 1.00, 1.68, and 1.33 for Asian, White, African-American, and Hispanic respondents, respectively. Aside from a minimal elected officials trust effect for White Americans in both OLS models, all other forms of trust are insignificant across both the latent and summated policy models. The results of these OLS models provide clear evidence that, in absolute terms, higher levels of latent scientific trust correspond to higher overall policy support for COVID-19 containment policies independent of measuring this support in latent or aggregate terms.

Fig 5. Baseline OLS model effects of scientific, media, & institutional trust on composite COVID-19 restriction policy support across race A: Latent policy measure. B: Summated policy support.

Discussion

COVID-19 has wreaked a profound toll on human life in most of the world, with much of its impact being concentrated unequally among marginalized communities and people of color, as shown in our county-level analysis. Given COVID-19's continuing toll before vaccination and thus immunity is widespread, and the high potential for another pandemic in the future [35], it is critical to understand how an individual's own characteristics and demographics influences their trust in science and thus their willingness to adopt behaviors that comply with scientific-based health policies and mandates. Furthermore, it is even more important to understand the specific interplay between race/ethnicity and scientific trust so as to mitigate, or better yet prevent, future, outsized damage to communities of color caused by a pandemic. Our research aims to aid in this understanding, already being investigated by other scholars [36], by exploring how scientific trust interacts with race/ethnicity to influence support for social distancing policies.

We find that scientific trust not only increases support across all races, but has particularly large effects among Black respondents and has a larger impact than both trust in media and government institutions/elected officials. This both confirms the importance of scientific trust in determining support for health policies, specifically those relating to social distancing, and points to a clear avenue for future intervention.

Specifically, increasing trust in science within communities of color has the potential to significantly increase support for and potentially compliance with social distancing policies specifically, and public health orders and recommendations more generally. Clearly, our results indicate both the need for and high potential return from building inroads between marginalized communities and the scientific community. Depending on the time-frame, a Black-specific intervention could likely help reduce infection rates and thus mortality rates for future pandemics. While compliance with and support for social distancing policies is not the only determinant of increased infections and mortality among communities of color in the U.S. (historic legacies of racism influence other determinants such as poverty and a lack of access to medical care) it is likely significant given the previous literature on the yearly influenza vaccination rates among people of color [24, 26, 27].

Overall, while our research is limited in its findings, namely that we have only isolated the relationship between scientific trust and policy support, not policy compliance, vaccine adoption, or infection rates, it provides an important basis for future research. Specifically, future research should continue to explore not only the determinants of the racial inequality in COVID-19 infections and deaths, but also explore what policies, including increasing scientific trust, could be used to prevent this inequality from occurring in a future pandemic. Finally, these results most clearly illustrate the devastating and unequal impact of COVID-19 on people of color. The potential to prevent any future, unnecessary deaths, especially among marginalized communities, should strongly motivate this future research.

Supporting information

S1 Appendix. Variable coding schemes and question wordings: Pew Data.

S1 Table. Descriptive statistics of dependent variables: Pew data.

S2 Table. Descriptive statistics of independent variables: Pew data.

S1 Fig. Item characteristic curves of social distancing policy support.

S2 Fig. Distribution of summated social distancing policy support by race.

S3 Fig. Factor loadings and auxiliary information for scientific trust measure.

S4 Fig. Additive OLS regression model results of latent scientific trust.

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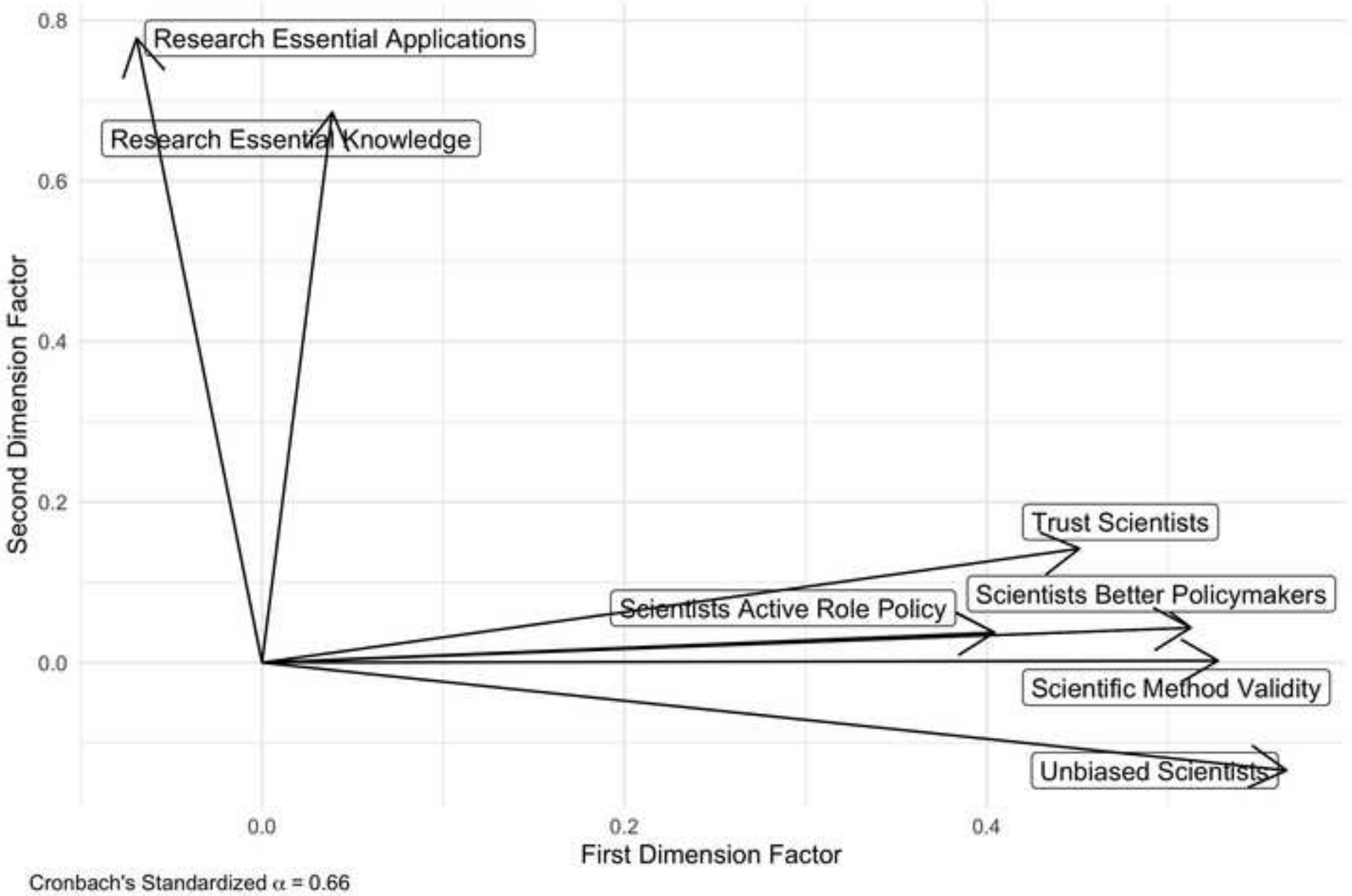

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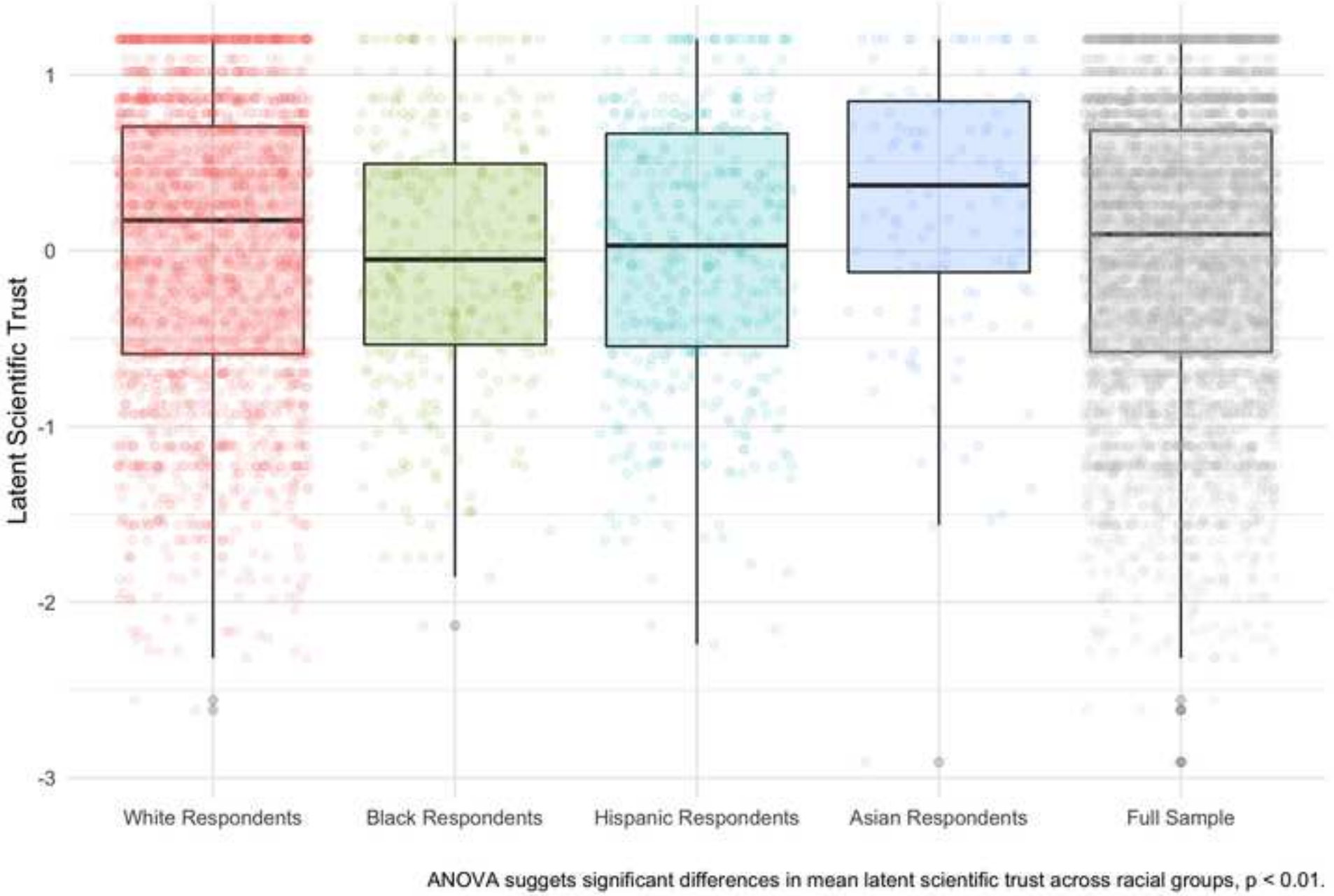

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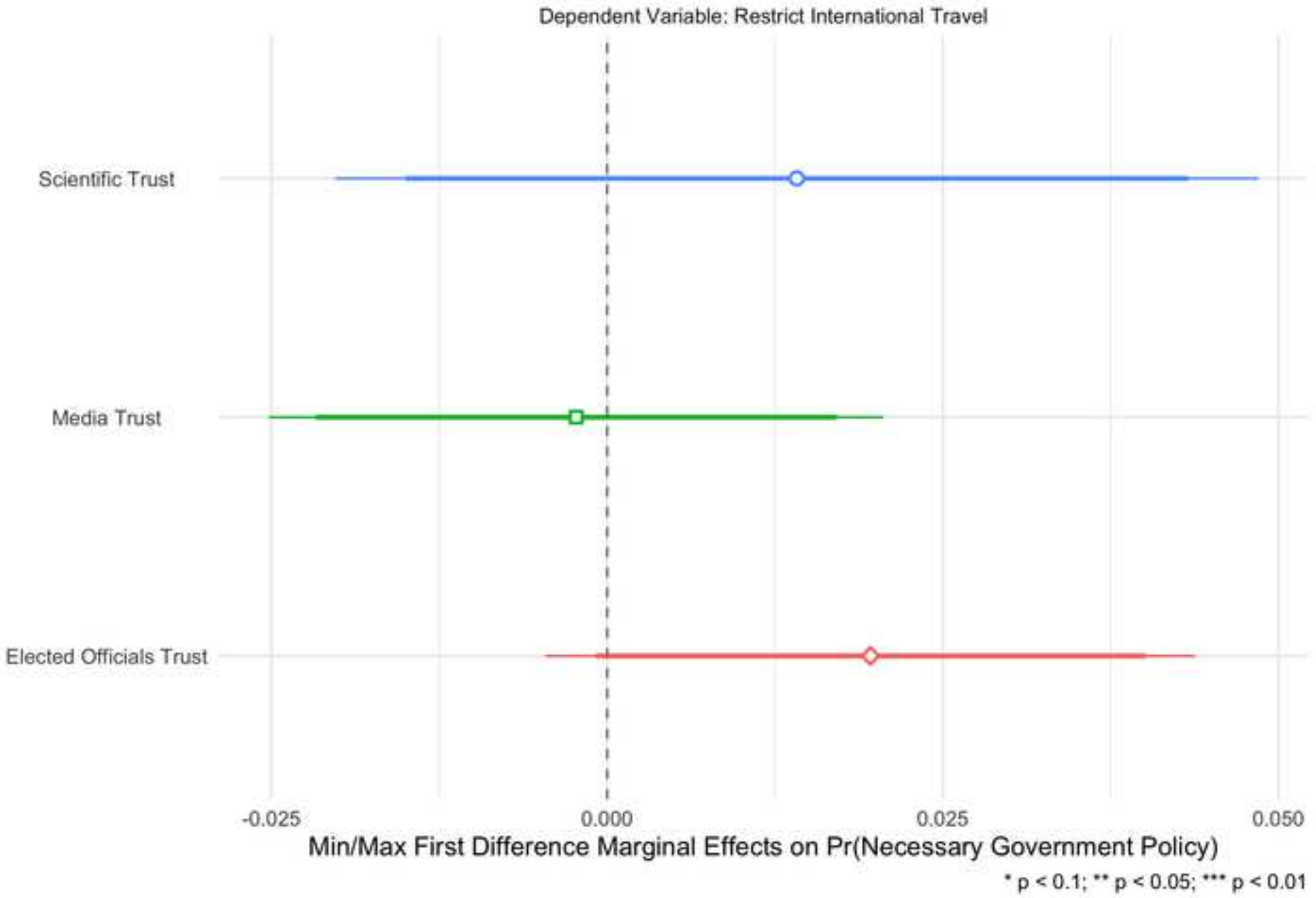

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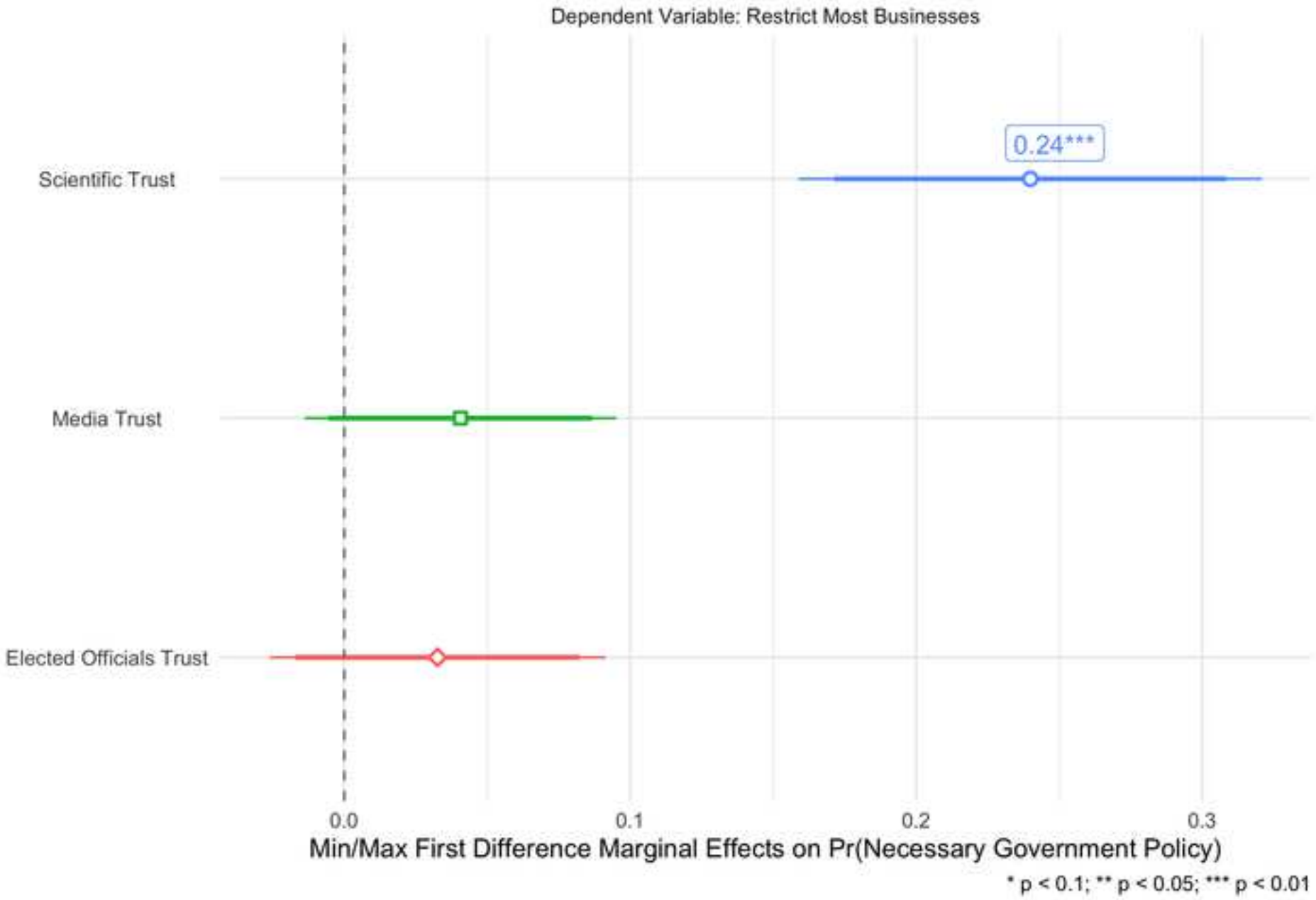

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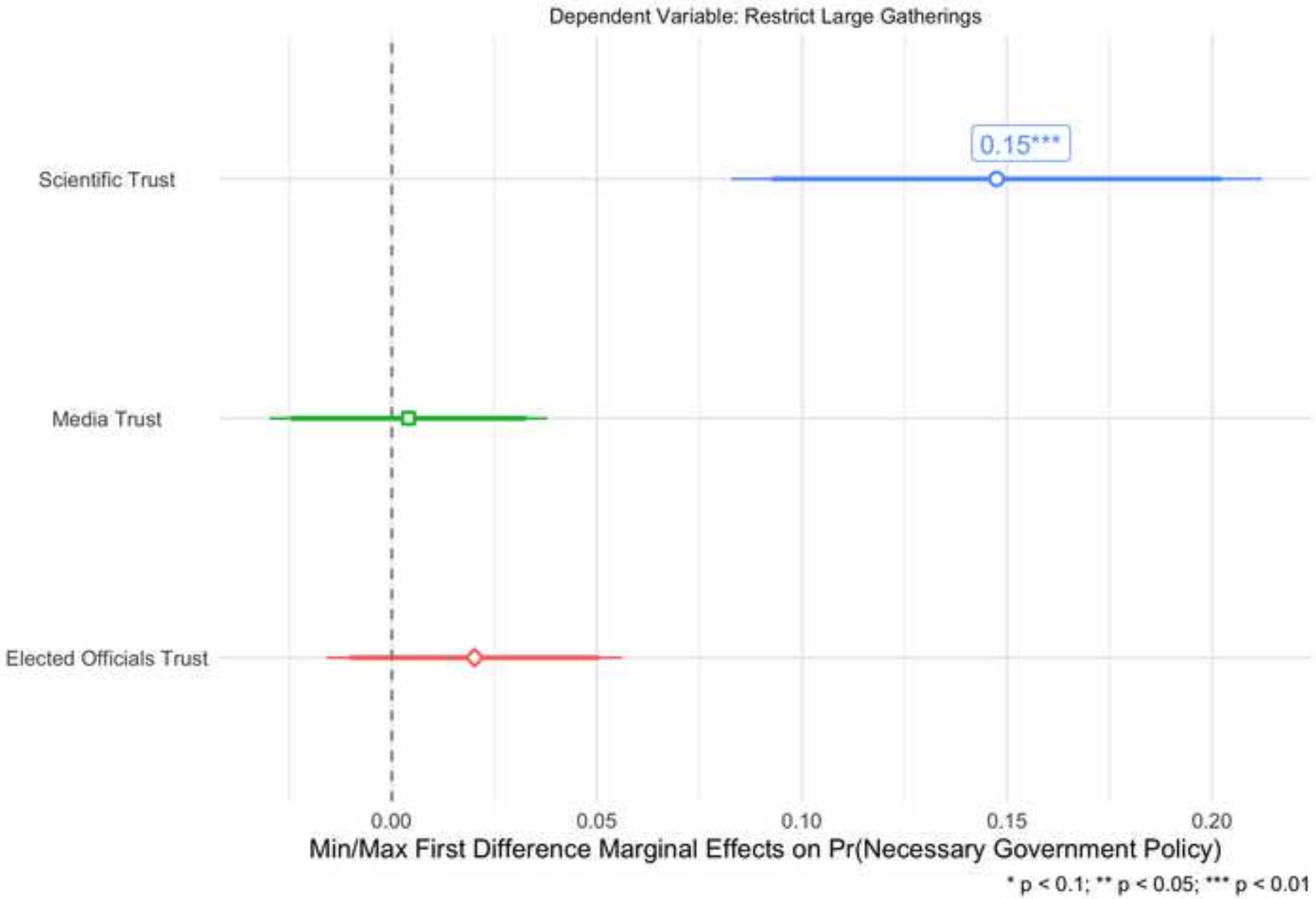

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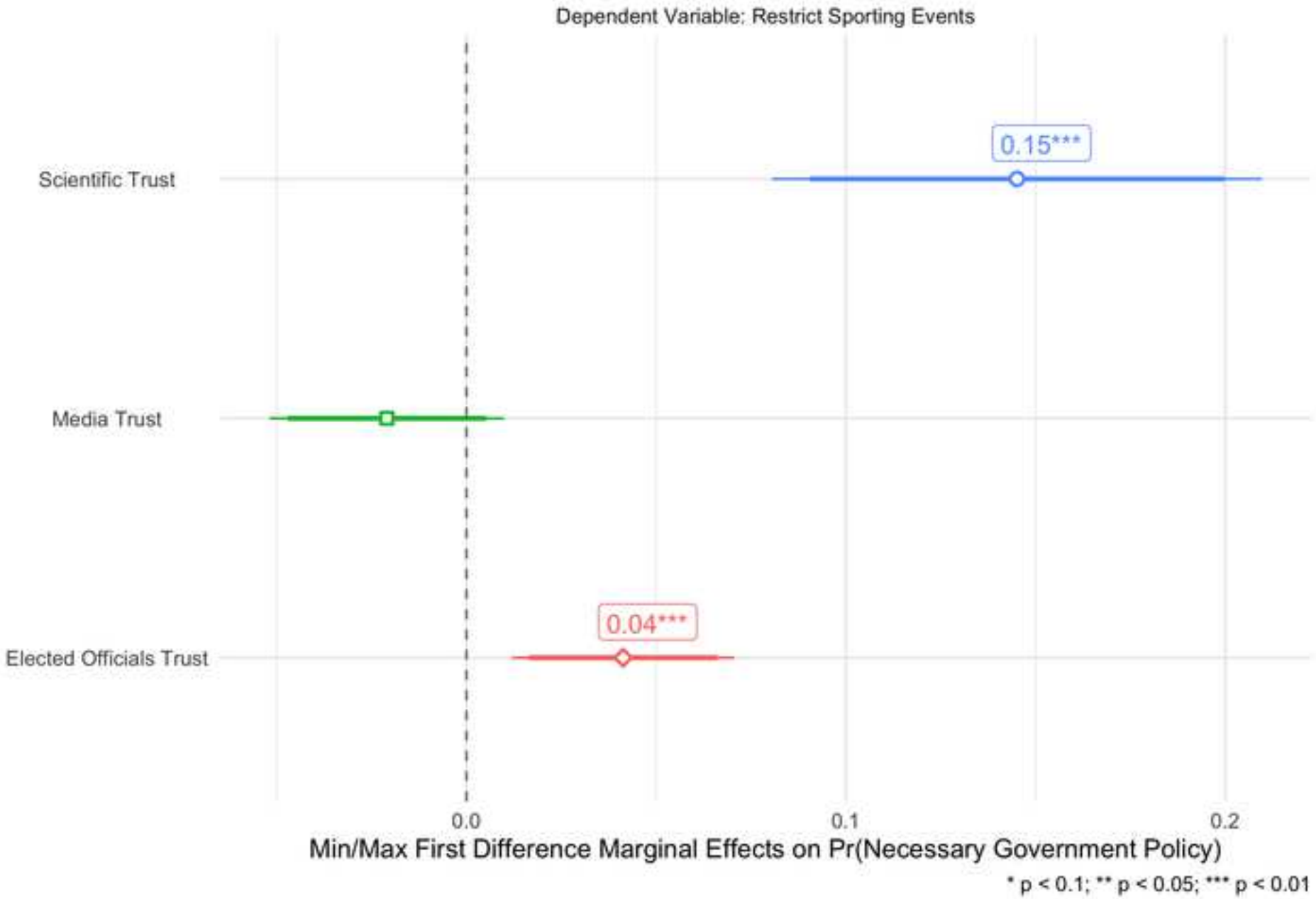

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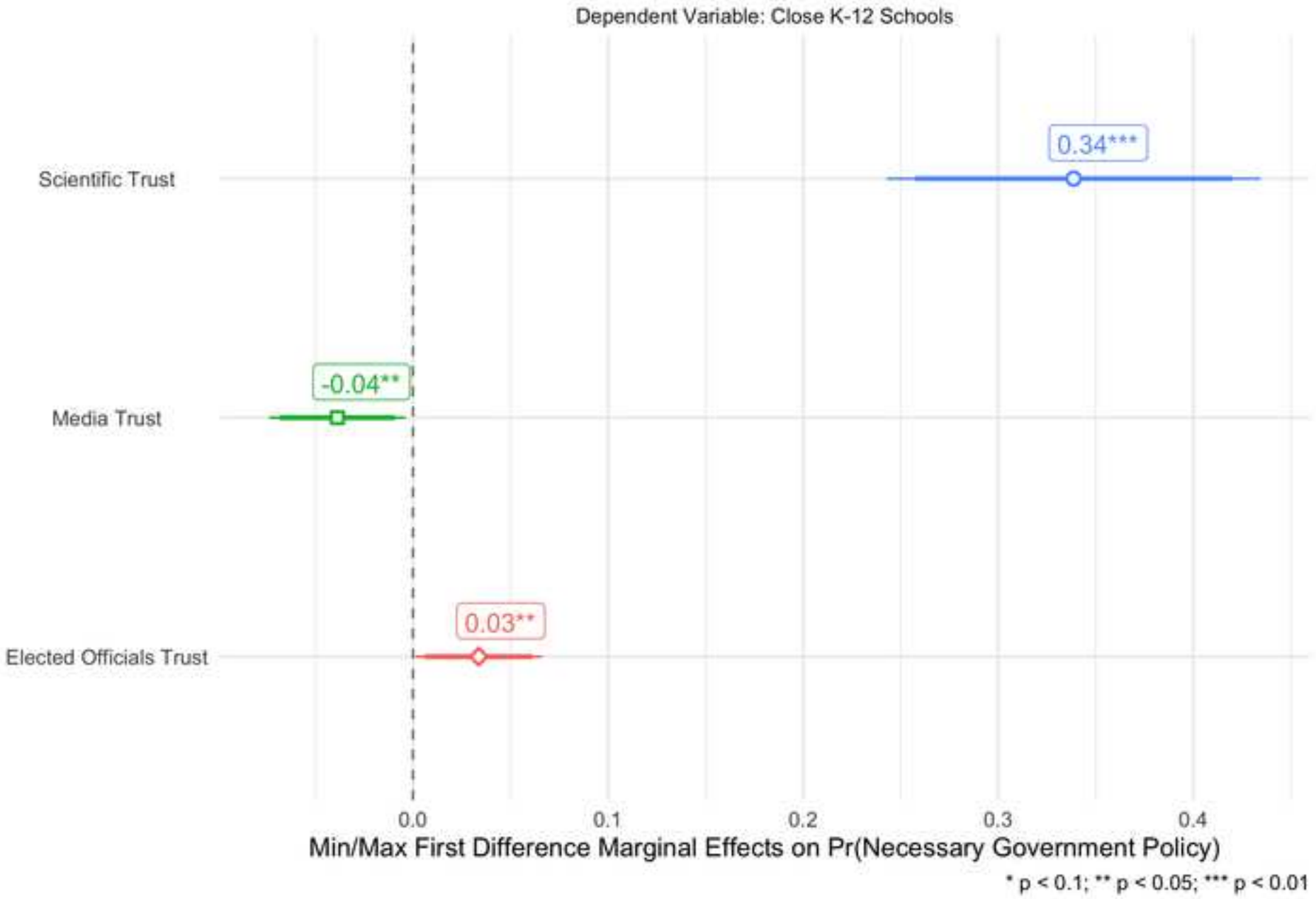

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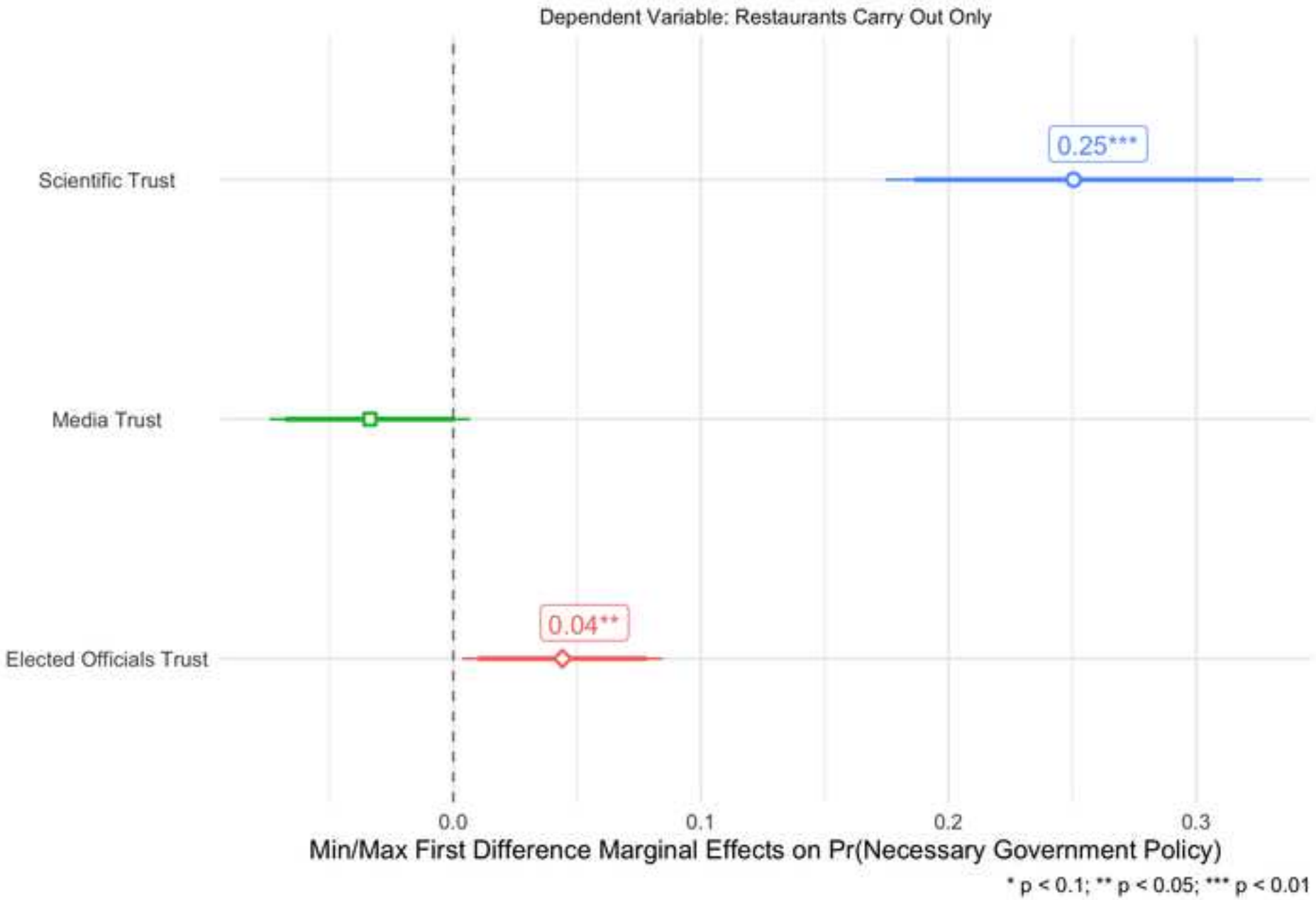

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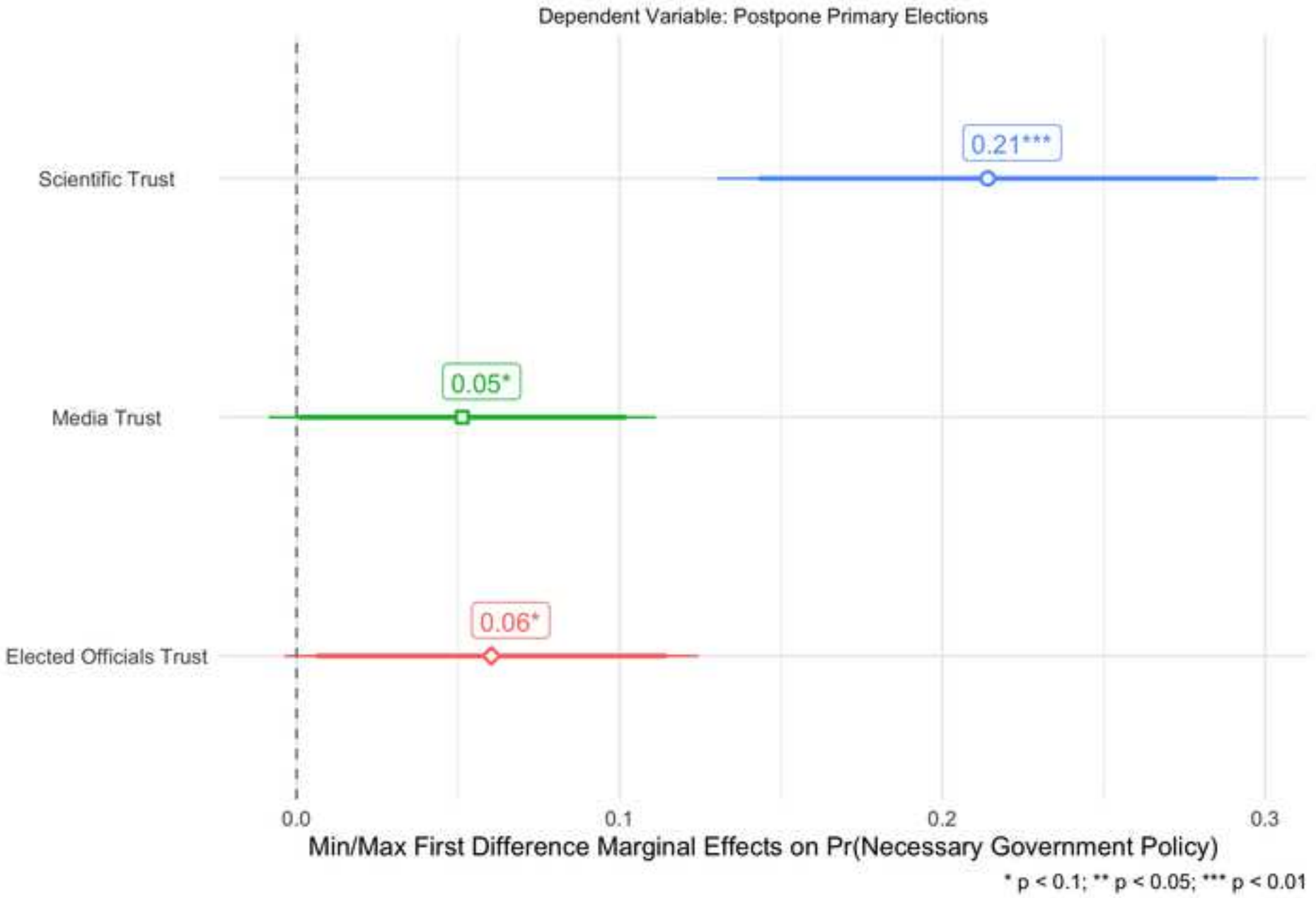

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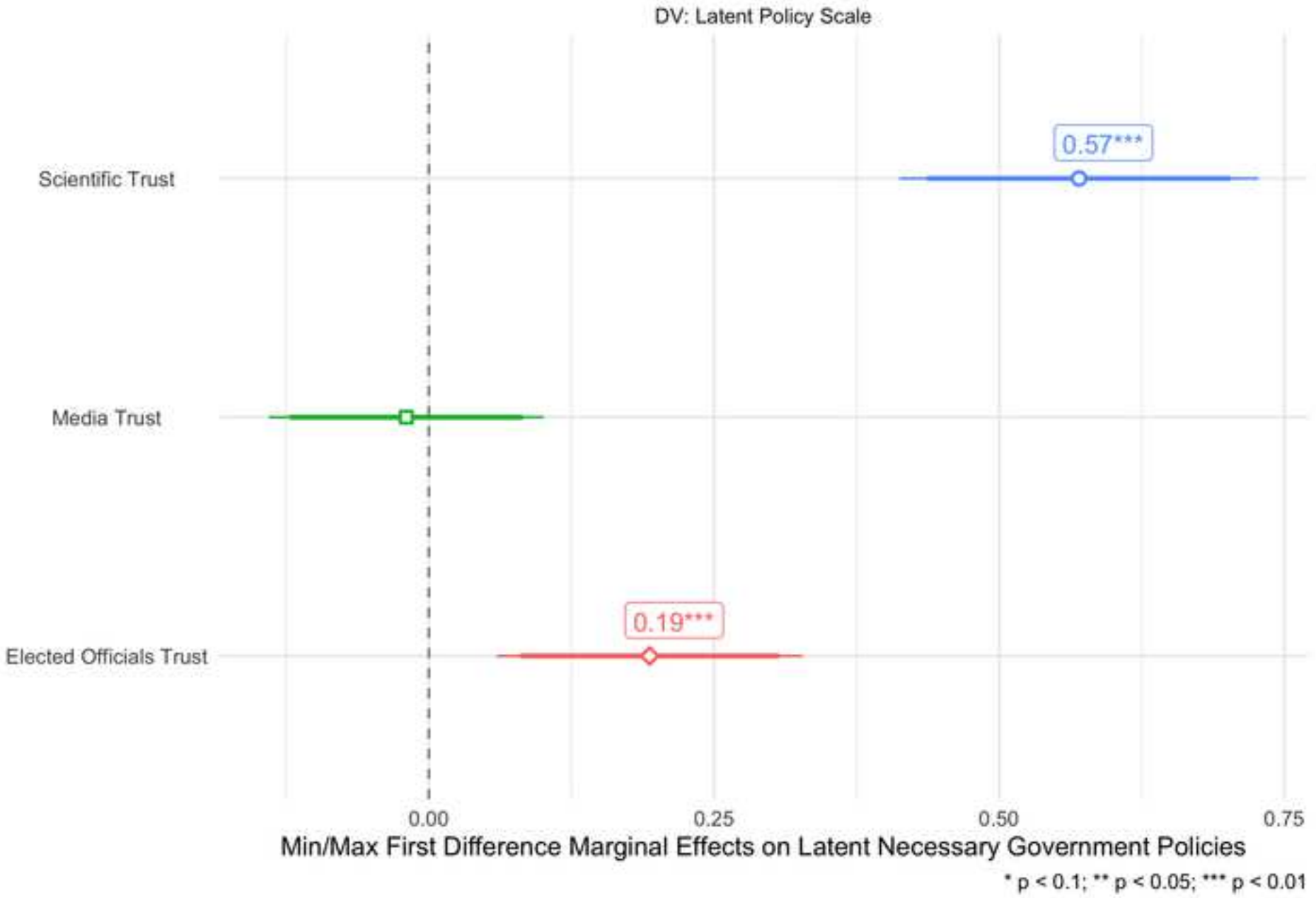

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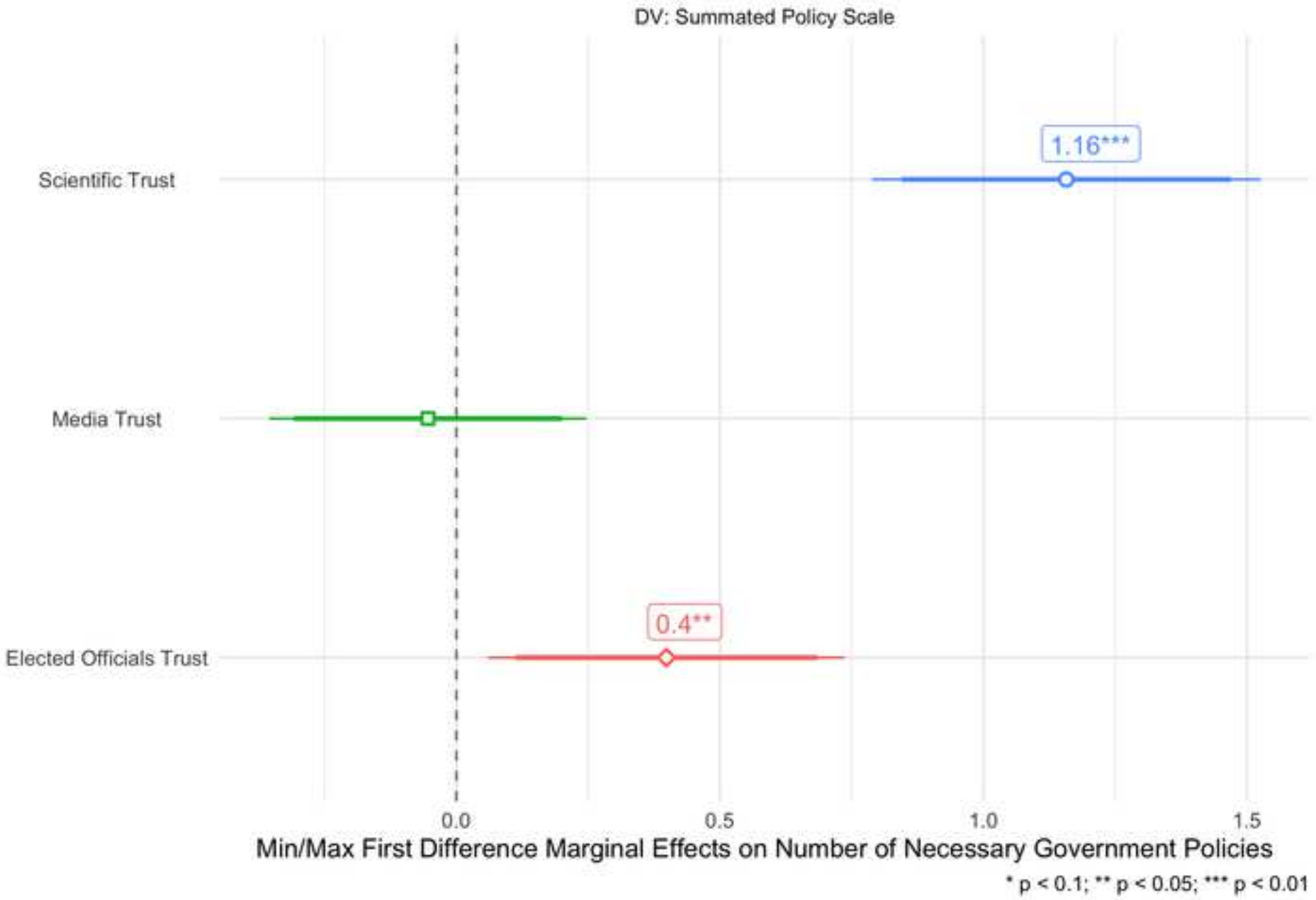

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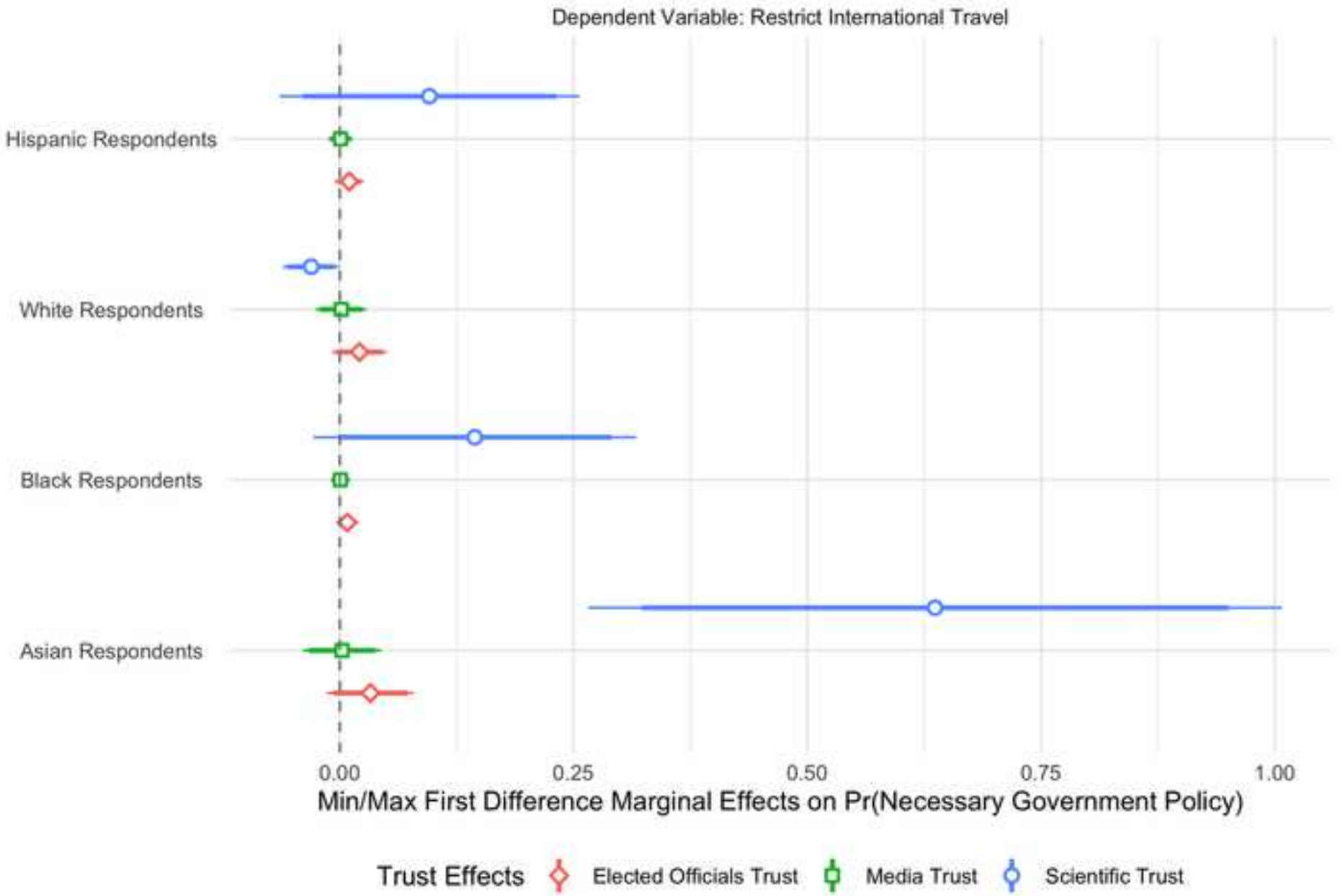

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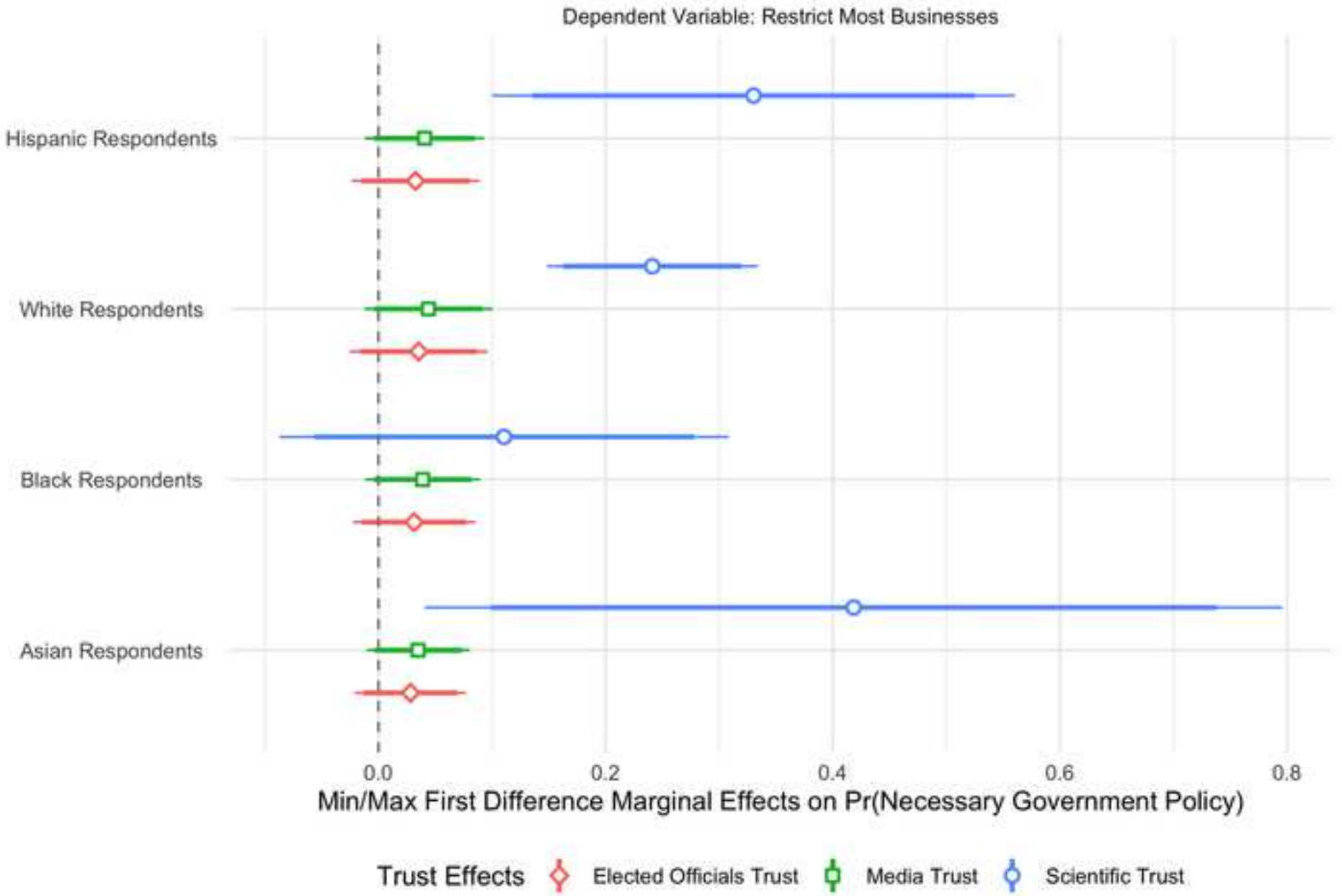

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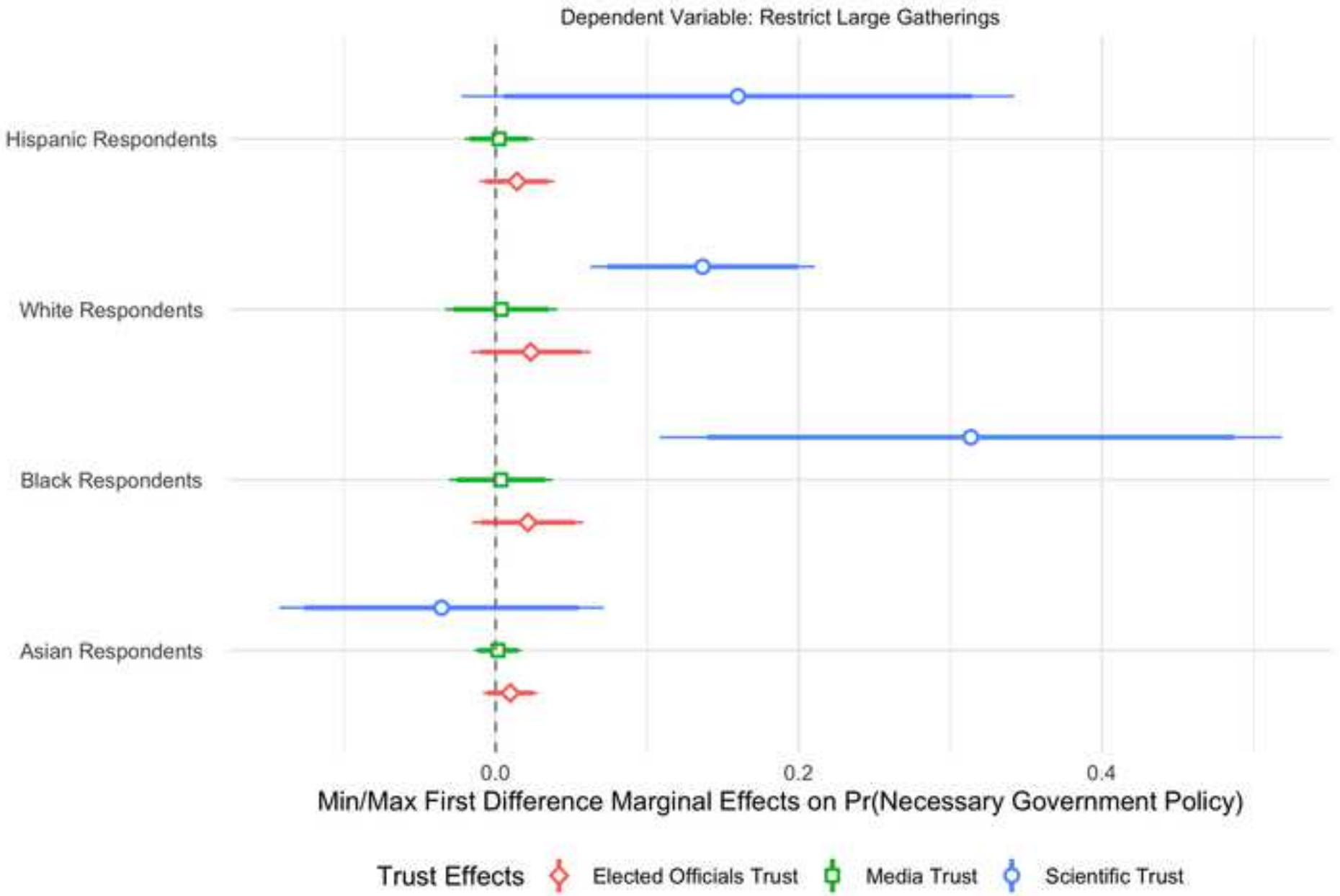

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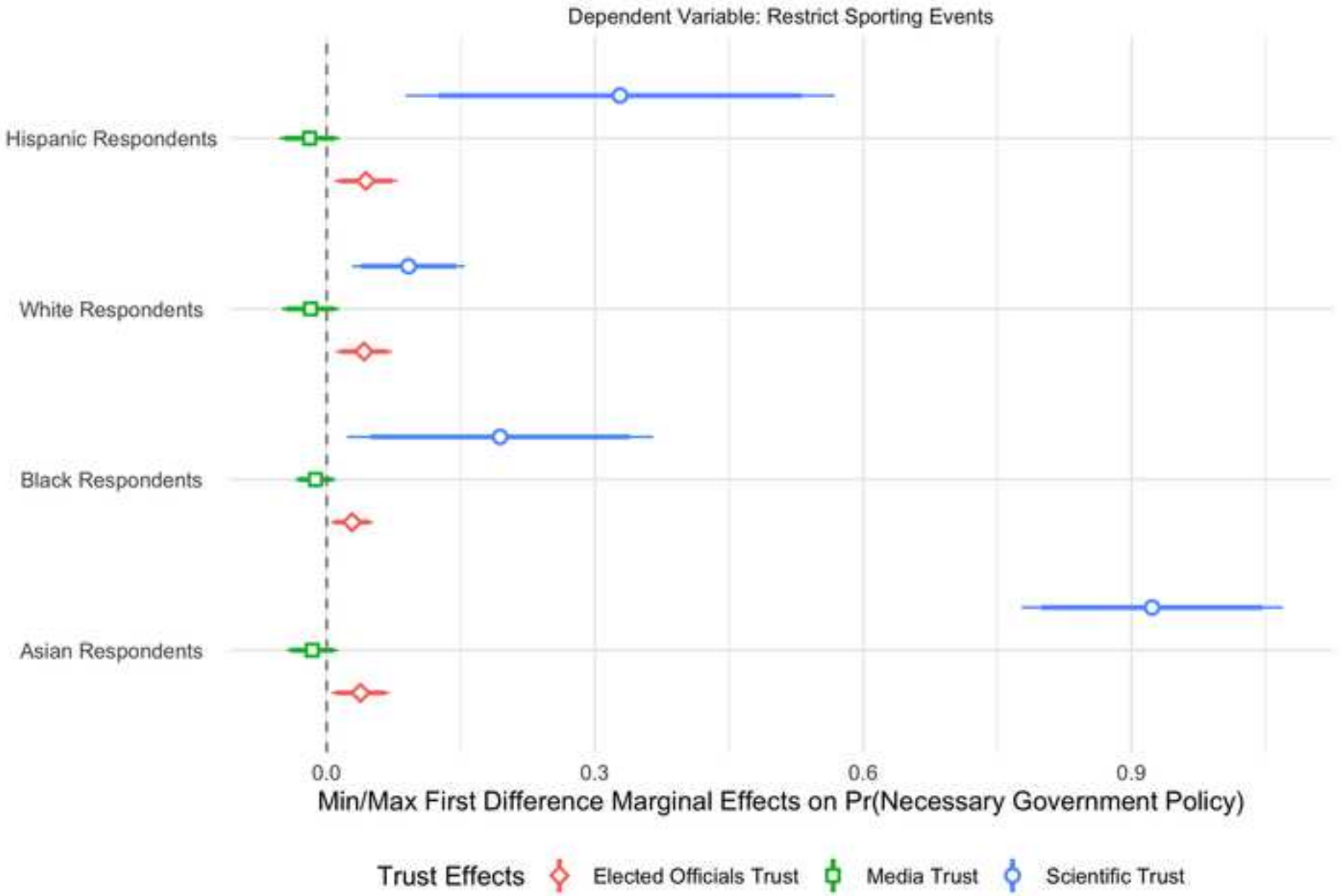

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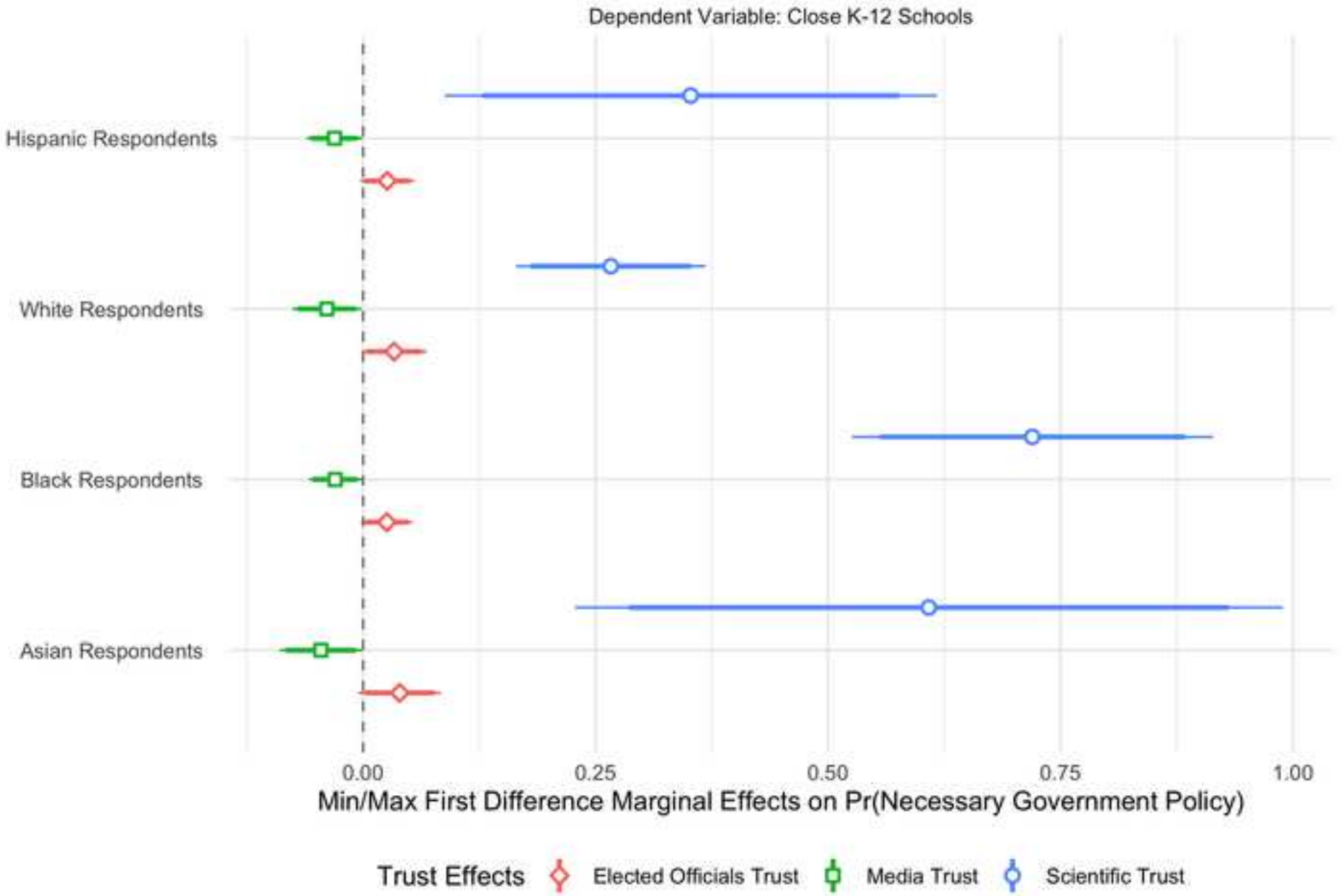

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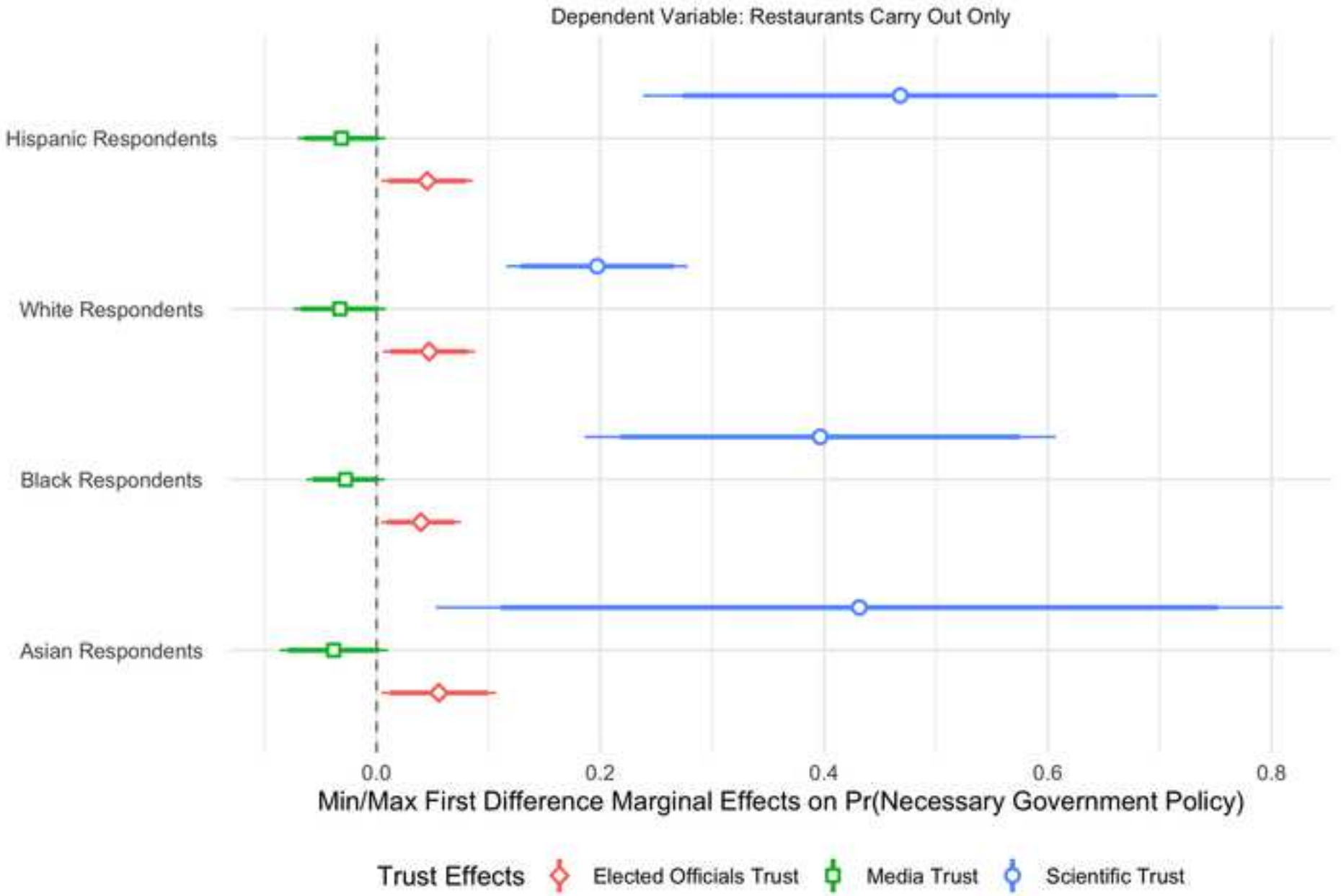

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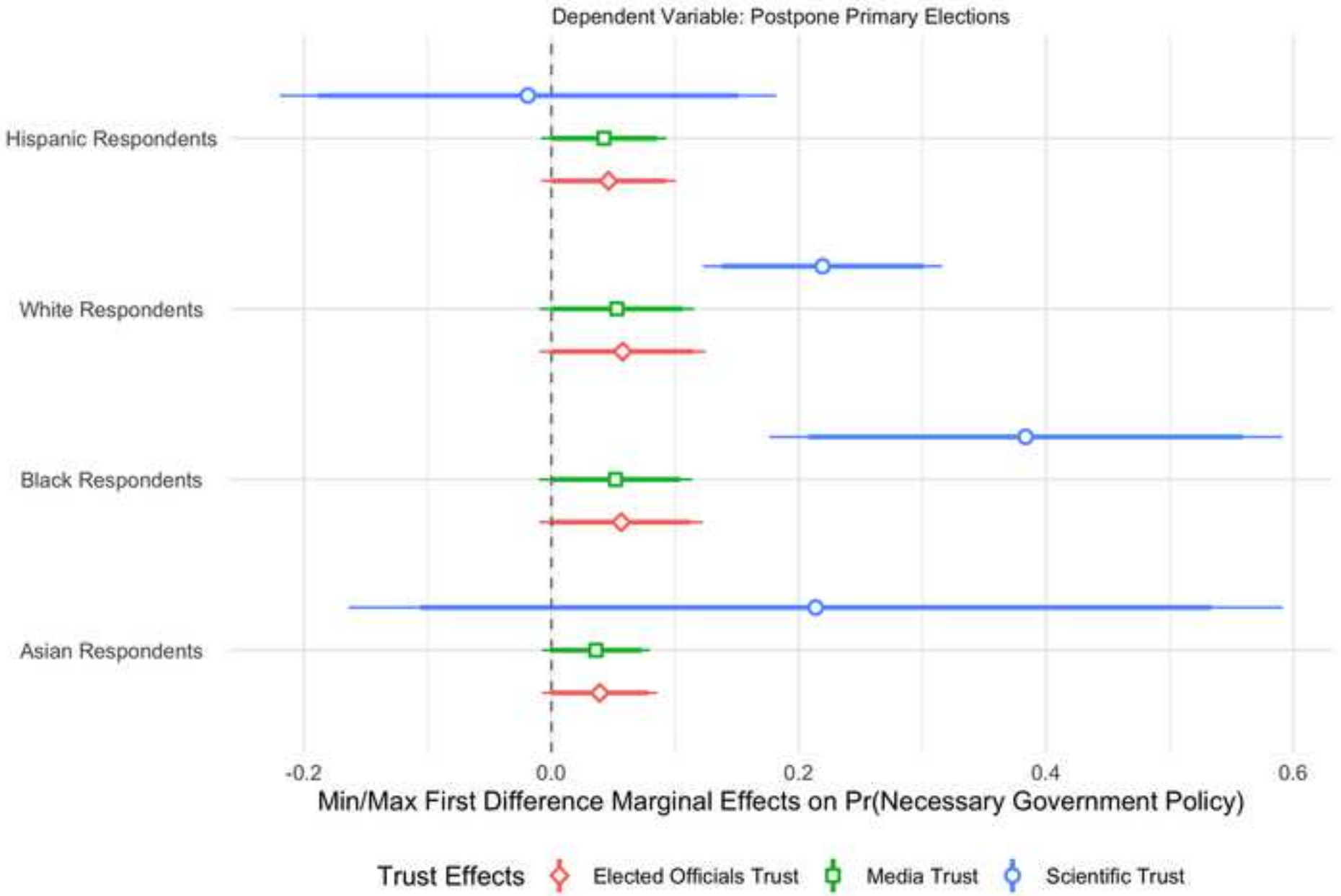

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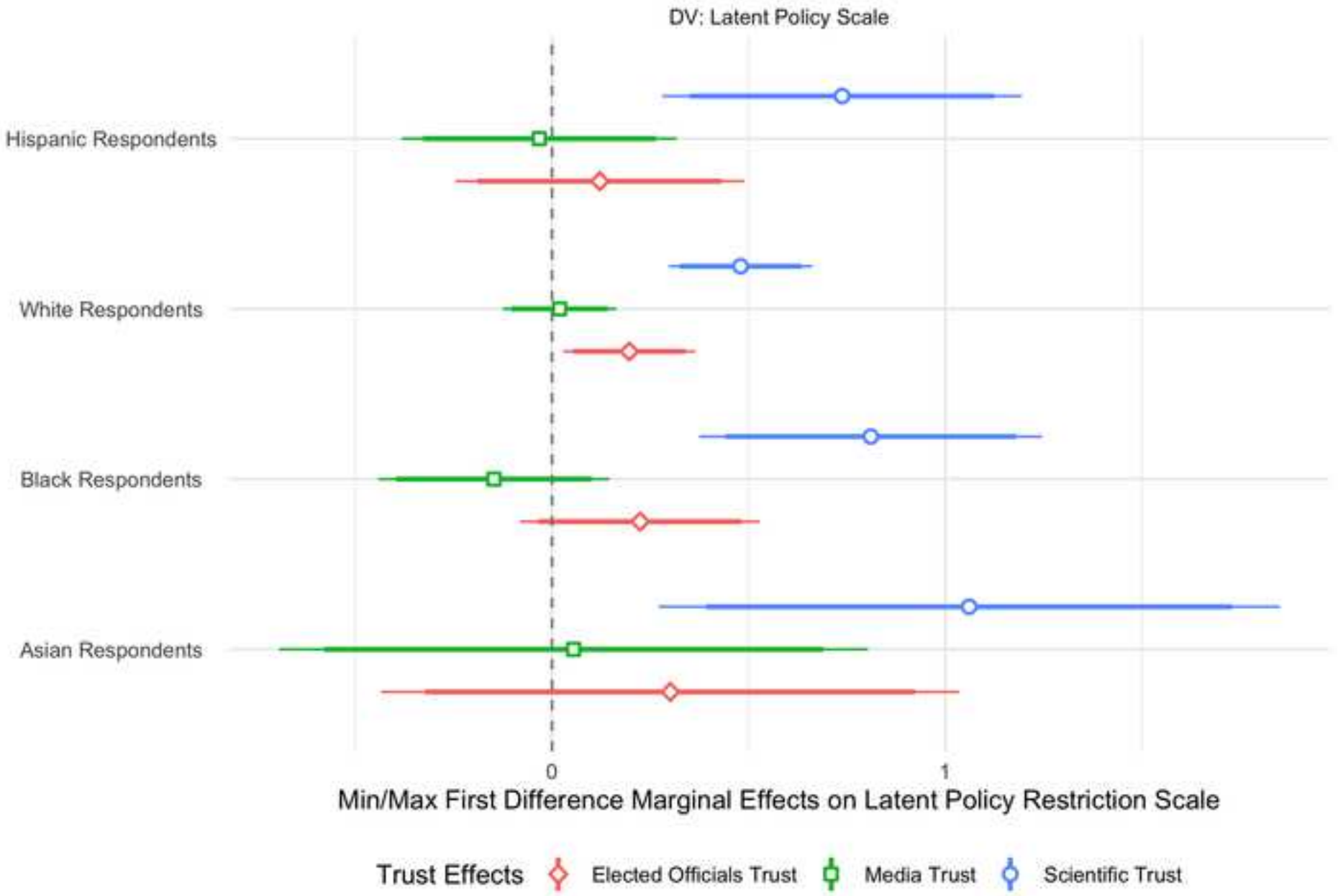

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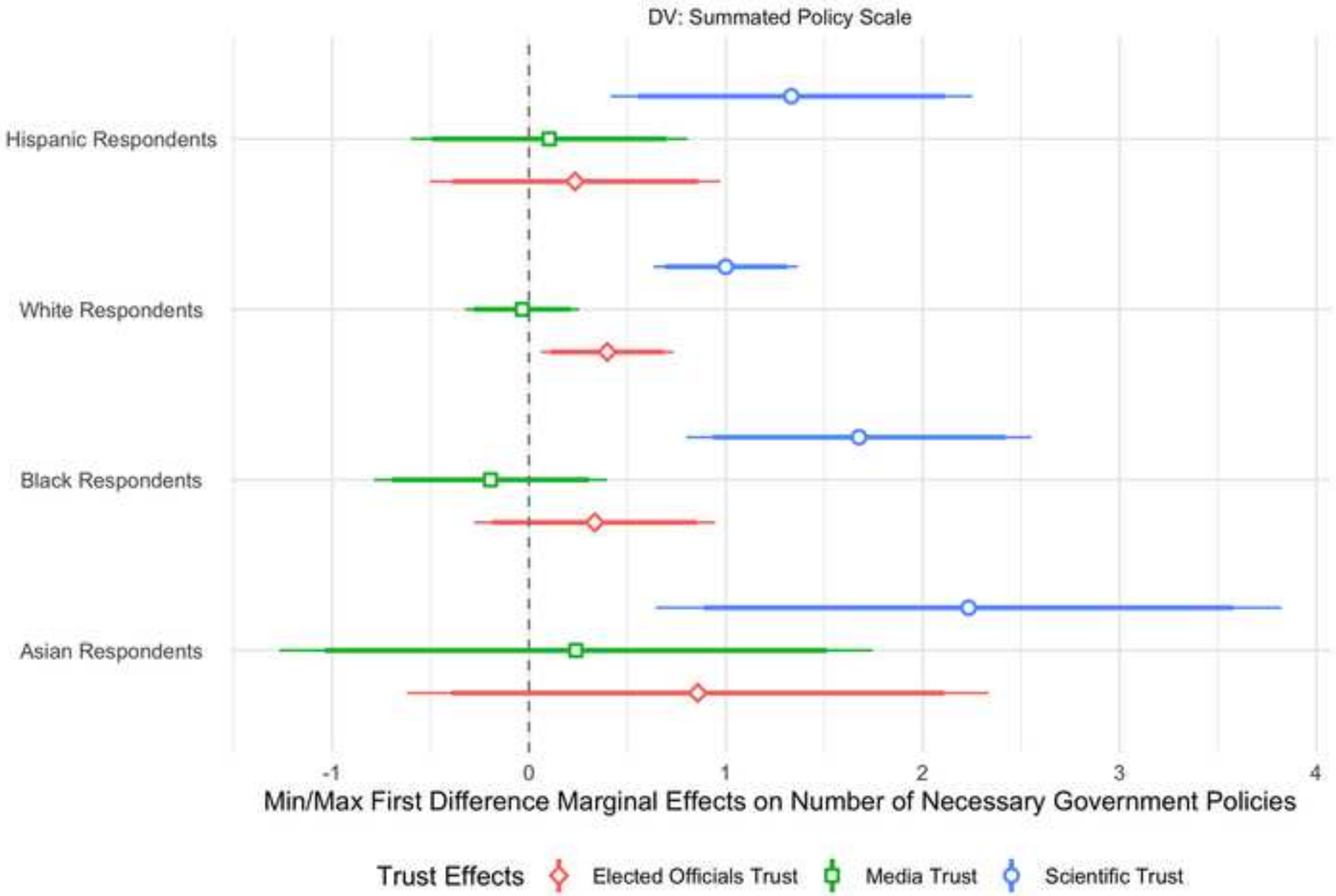

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