Racial bias around the world*

Alexander Coutts

May 30, 2023†

Click here for most updated version

1 Introduction

The horrific killing of George Floyd on May 25, 2020 sparked a series of protests against police brutality and racism around the world. Much of the media and political leaders in the United States were quick to acknowledge and condemn racism in their country. Some foreign leaders did the same, such as the chancellor of Germany Angela Merkel. In other countries, leading political figures made statements insinuating that racism did not exist in their countries, or was not a big problem.

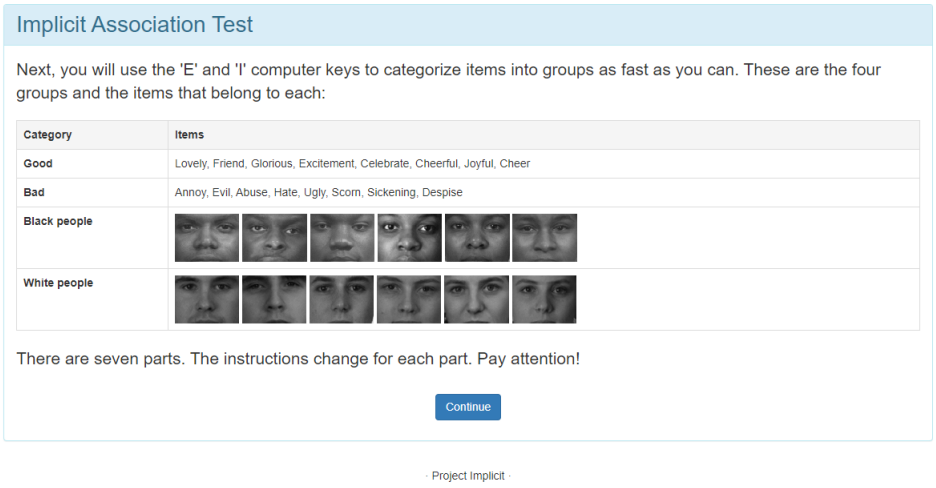
In this document I study racial bias across the world, and in doing so examine the extent to which the United States differs from other countries on a well-known psychological measure of racial bias against Black people. Specifically, I use data from nearly 3.75 million individuals across 146 countries who have taken the implicit association test (IAT) over the last ten years, to examine the extent of racial bias. There are five important results. First, there is significant racial bias against Black people and it is present in every country in the sample. Second, the average country has approximately one in five of its residents exhibiting strong pro-White bias and one in four exhibiting moderate pro-White bias. Third, the majority of countries show more bias than the USA, which is ranked, from high to low bias, 95th out of 146. Fourth, all races exhibit a pro-White bias, with the exception of Black people, who exhibit no substantial bias. Fifth, supplementary data about racial attitudes in Europe corroborates the IAT as a meaningful correlate of racist attitudes. Finally, I discuss and address some common critiques and misinterpretations of the IAT, and conclude that previous criticisms in the literature are unlikely to explain the aggregate patterns seen in the data. This bird's-eye view of the IAT suggests that it is a powerful and useful tool in the aggregate.

*Schulich School of Business, York University, 4700 Keele Street, Toronto, Ontario, Canada M3J 1P3, and NOVAFRICA; acoutts@schulich.yorku.ca

†Note that this version includes updated language in reference to race, e.g. removing inappropriate wording such as "Blacks" and replacing it with "Black people". It also corrects for a typo in result 4 which should have referred to pro-White, not pro-Black bias. Otherwise, the information content is identical to the previous version dated June 24, 2020.

2 Implicit Association Test

Figure 1: The Race IAT



Screenshot in June 2020 of Race IAT from https://implicit.harvard.edu/.

The IAT can be taken here https://implicit.harvard.edu/implicit/takeatest.html (select Race IAT for the test discussed in this article). The IAT was designed to measure implicit differential attitudes towards two "target concepts", for example flowers versus insects (or White versus Black people), and two attributes, for example pleasant versus unpleasant (or good versus bad) (Greenwald et al., 1998). To measure good associations with White relative to Black people, each is associated with a key, such as "E" or "I", and these keys are also associated to good or bad words, as shown in Figure 1. Test-takers are then instructed to categorize these items into groups as fast as they can, associating them to the appropriate key. To measure bias towards associating good words with White people vis-a-vis Black people, one would then compare how quickly the subjects are able to respond when good words and White people share the same response key, versus when good words and Black people share the same response key. A final "D-score" is calculated by taking the absolute difference in time for the two associations, and standardizing by the standard deviation of the subject's overall response times (Greenwald and Nosek, 2003). The D-score has an approximate range of -2 to 2. Setting Black-good as the first association (without loss of generality) means that positive values indicate a pro-White bias, while negative values indicate a pro-Black bias.

Greenwald et al. (1998) described the test as measuring implicit attitudes.[1] Using the language of Kahneman (2003) (and more generally, dual process theory), one can think that the test engages with our automatic and intuitive "System 1". In this sense the test may capture racial bias the test-taker is not aware of.[2] Of course, if one is explicitly biased against Black people, this would also be expected to be captured as implicit bias. Positive correlations between the test and explicit attitudes were found by Greenwald et al. (1998).

[1]The definition of Greenwald and Banaji (1995) is as follows: "Implicit attitudes are manifest as actions or judgments that are under the control of automatically activated evaluation, with-out the performer's awareness of that causation".

[2]An interesting question is the extent to which individuals are aware of their racial bias, but are hesitant to admit this to others, or even to themselves.

3 Data and Results

In this article I discuss data from the Race IAT, which examines bias against Black people vis-a-vis White people. The data for this study comes from 3,749,251 tests from individuals who took the Race IAT on the Project Implicit website from 2010-2019. The vast majority of these test-takers reside in the USA, accounting for 3,298,708 (88%) of all observations. The remaining 450,543 come from residents of 146 different countries.[3]

Because taking the test is typically voluntary, one might be worried about selection bias in the type of individual who decides to take the IAT. In Section 4.1 I discuss the extent to which selection could lead to over or underestimates of racial bias. I conclude that selection certainly plays a role, but is not likely to affect the broad pattern of results. Nearly all signs suggest that, to the extent selection is a problem, it is likely that the estimates in this paper under-estimate racial bias, as test-takers are more likely to be younger, and more liberal (both associated with lower racial bias). In the next section, I first examine the IAT data at the country level, in order to asses the extent of racial bias around the world.

3.1 Examining racial bias around the world

The first statistic of interest is the IAT score (D-score). Negative numbers indicate a bias against White people (pro-Black), while positive numbers indicate a bias against Black people (pro-White). Recalling that the IAT is a symmetric test, an unbiased population would have an average score of 0. Aggregating the data of these 146 countries, the average score is 0.282, which is substantially greater than zero. This indicates that worldwide, on average, there is a pro-White (anti-Black) bias. Figure 2 presents a map of the world with each country shaded according to its IAT score.[4]

Figure 2 presents a dramatic pattern across the world, showing pro-White bias in every country. Figure 3 presents this data for each of the 146 countries which meet the sample size requirement of 100, showing that there is some, but not an overly large degree of variation across countries. This figure plots the average IAT score for every country in the data set, shading the country in red if it is pro-White, and blue if it is pro-Black. As seen on the map, every country has, on average, a pro-White bias. Even more, one can see that 100 out of 146 (68%) of all countries' scores lie between the range (0.15, 0.35), meaning that the degree of racial bias is relatively uniform across countries.[5]

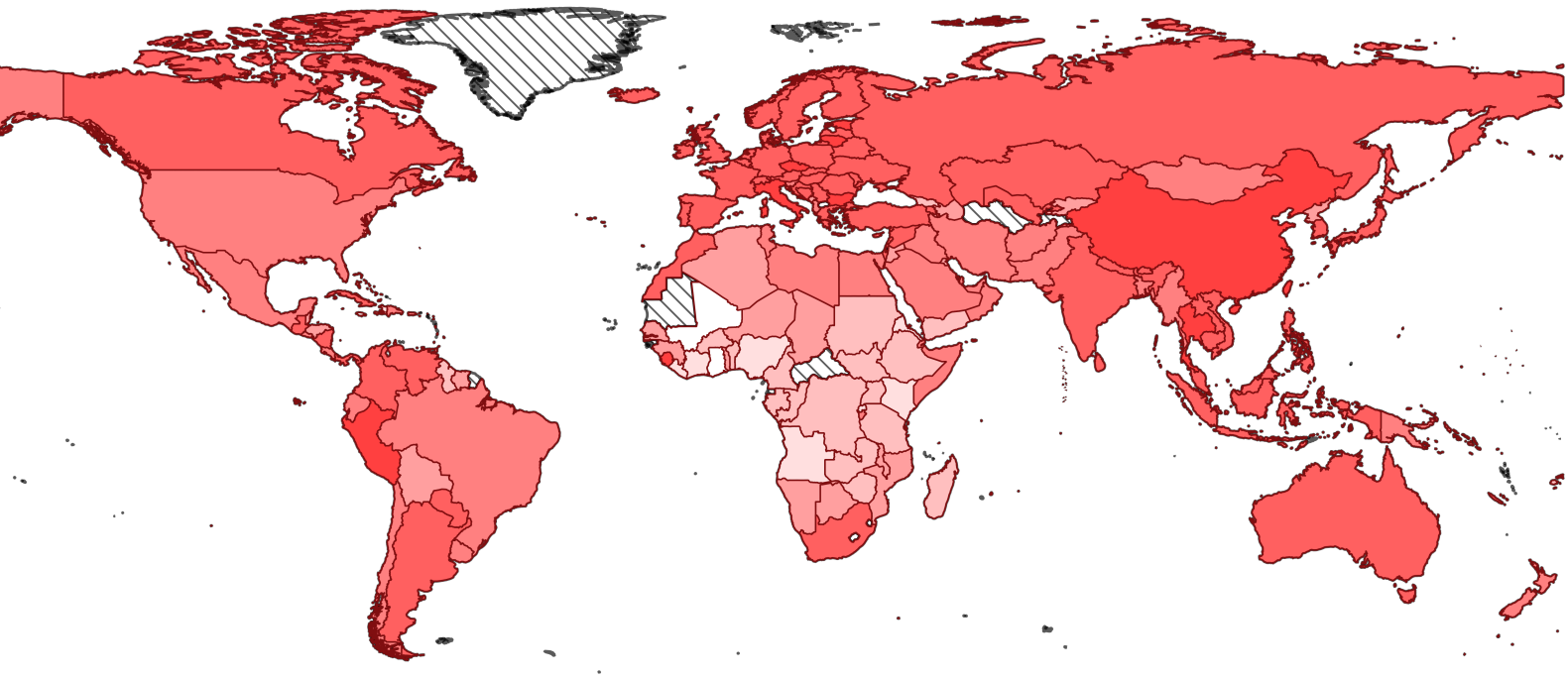
Result 1: *Every country in the world data set shows an average pro-White bias. Racial bias is relatively uniform across the world.*

[3]To be included in the data set a country must have at least 100 observations. This number was selected with the aim of including many countries for the analysis, while excluding average scores which have substantial noise. The largest standard error of the test score among countries is 0.049, meaning that an average score of .13 or greater would be significantly different from 0 at the 1% level.

[4]To provide a more complete visual, this figure includes countries with less than 100 observations (but not less than 20). In all other tables and analysis below I follow the restriction of requiring 100 observations.

[5]Approximately 21% have a score greater than 0.35, while 11% have a score less than 0.15.

Figure 2: Global IAT Results



Each country is shaded progressively darker according to the absolute value of the IAT score. Darker shading indicates more racial bias. Red indicates pro-White bias, blue indicates pro-Black bias.

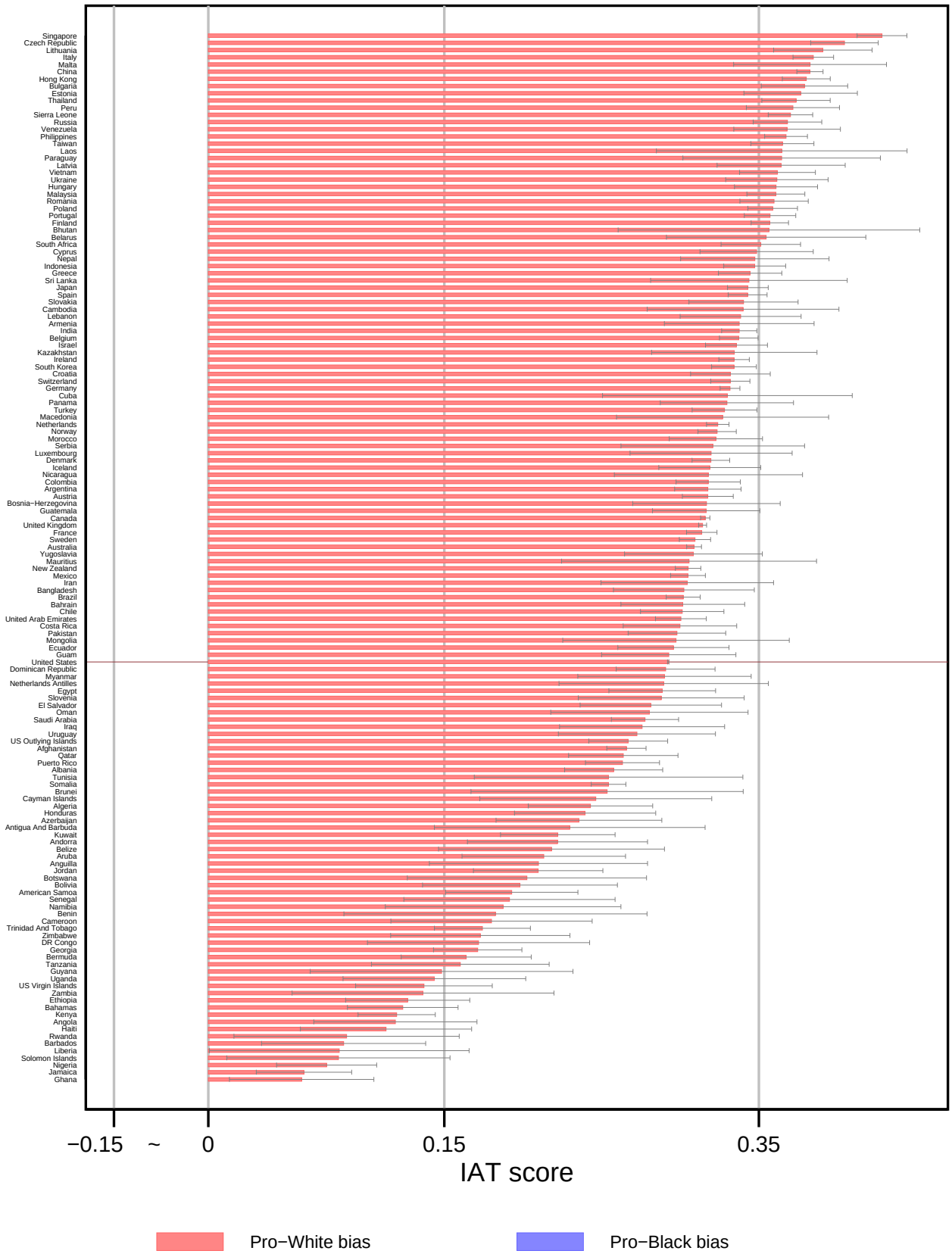


Figure 3: Shows the average IAT score by country. Positive scores indicate pro-White bias, while negative scores indicate pro-Black bias. 95% confidence intervals shown.

Table 1: IAT D-score classifications

< -0.65	strong pro-Black bias
$[-0.65, -0.35)$	moderate pro-Black bias
$[-0.35, -0.15)$	slight pro-Black bias
$[-0.15, 0.15]$	little or no bias
$(0.15, 0.35]$	slight pro-White bias
$(0.15, 0.65]$	moderate pro-White bias
> 0.65	strong pro-White bias

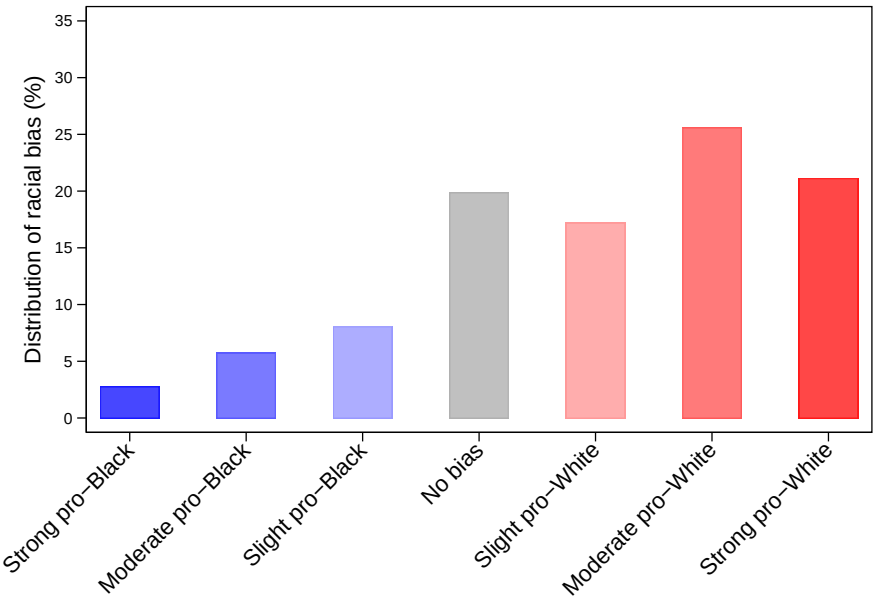
Beyond looking at the average IAT score, it is also possible to examine more details about the distribution of bias within each country. Project Implicit characterizes scores into seven categories summarized in the Table 1.[6] An average country score of 0.282 could mean that every single citizen has a "slight pro-White bias", but it could also mean that out of two citizens, one has a strong pro-White bias, and one has little or no bias. At this point, we appear to have no evidence on the welfare implications of these scenarios, i.e. which of them would be worse.

To examine the distribution I first classify each resident into the appropriate category in Table 1, and then calculate the full distribution for the country. Figure 4 shows the distribution of racial bias in the world after conducting this aggregation at the country level. Consistent with the overall result, there is substantially more pro-White than pro-Black bias. While just under 3% of the population has a strong pro-Black bias, just over one in five (21%) have a strong pro-White bias. The most common bias in the world sample is a moderate pro-White bias, with slightly over one in four (26%) of the population holding this bias.

Result 2: *The average country has approximately one in five of its residents exhibiting strong pro-White bias and one in four exhibiting moderate pro-White bias.*

[6]Importantly, there is no well-defined meaning associated with these categories, a point I return to later.

Figure 4: Distribution of IAT Results Globally



Graph shows the distribution of global IAT results, calculated by taking the simple average of all countries in the sample. Racial bias is classified strong, moderate, light, or no bias, following the IAT classifications, and are either biased towards White people (red) or towards Black people (blue).

Next Figure 5 presents the full distribution for each country separately, i.e. for every country it "stacks" the bars seen in Figure 4 horizontally. Thus, to read Figure 5, for each country, the total length of the bar from left to right adds to 100%. The length of each category (shaded from dark blue to dark red) shows the percentage of residents falling into that category. For example examining Ghana at the very bottom, there is about 9% strong pro-White bias, and 4% strong pro-Black bias. For Singapore at the very top there is approximately 30% strong pro-White bias and 1% strong pro-Black bias.[7]

The position of the United States is indicated by the horizontal red line. Out of the 146 countries, ranking from greatest to least pro-White bias, the USA ranks 95th. Thus, according to the IAT, the USA is not particularly remarkable relative to other countries when it comes to anti-Black bias. In other words, racial bias appears to just as problematic, or more problematic, in most other countries in the world.

It is also helpful to examine the net effect, that is taking the difference between pro-White bias and pro-Black bias. This is done in Figure 6, which echoes the earlier IAT results. The average level of net pro-White bias is 47% (median 52%), ranging from a low of 6% in Ghana, to a high of 69% in Singapore.

Result 3: *The majority of countries show on average more pro-White racial bias than the USA does.*

[7]Note that because the majority of observations in the little to no bias category nonetheless have on average a score above zero (pro-White), this figure may slightly underestimate total pro-White bias.

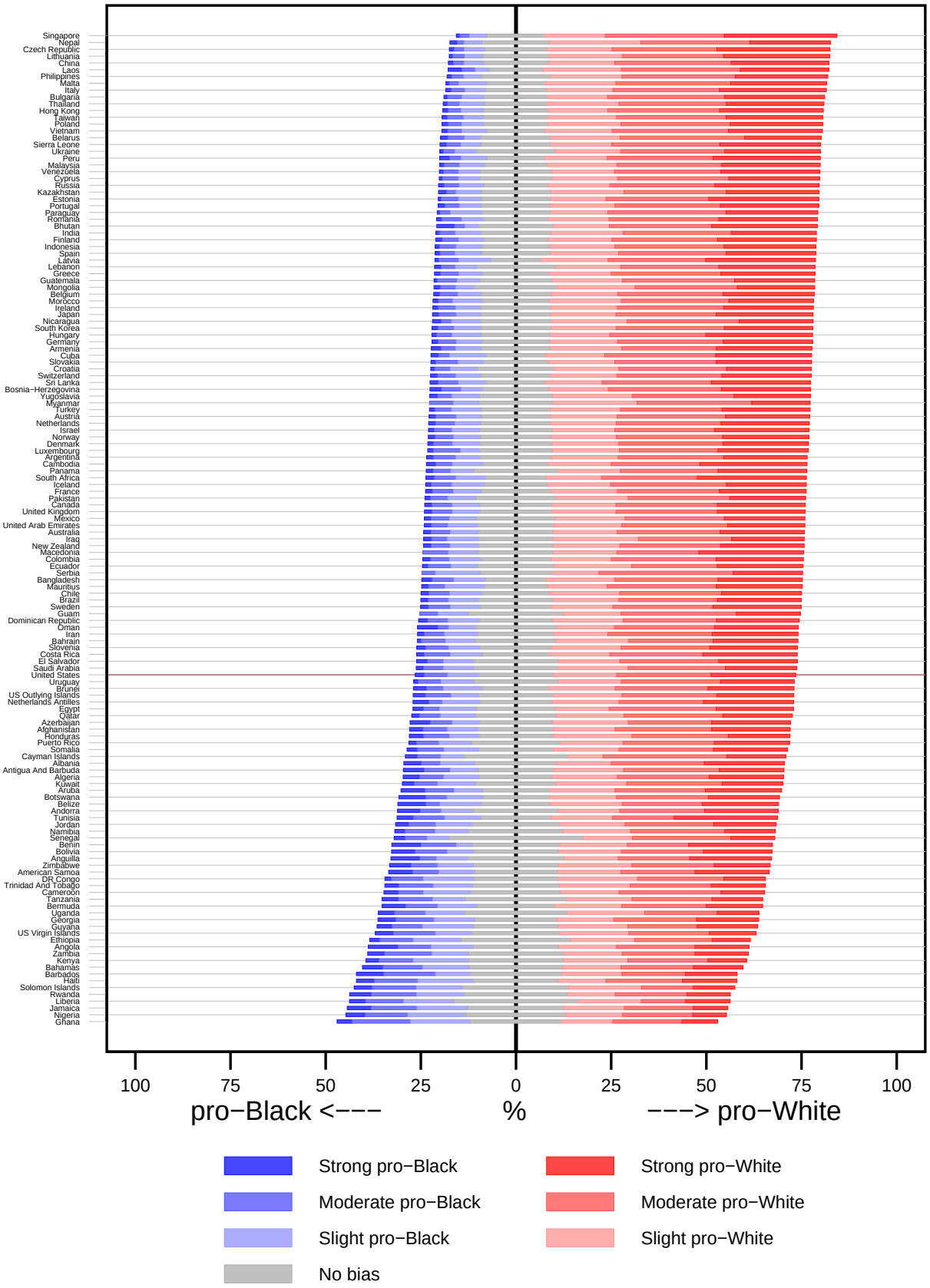


Figure 5: Distribution of IAT Results: All Respondents. Distribution of IAT results by country, for respondents of all racial backgrounds. Classifications follow those of Project Implicit. For each country the bars sum to 100%, with the percent in each category shown by the respective shading.

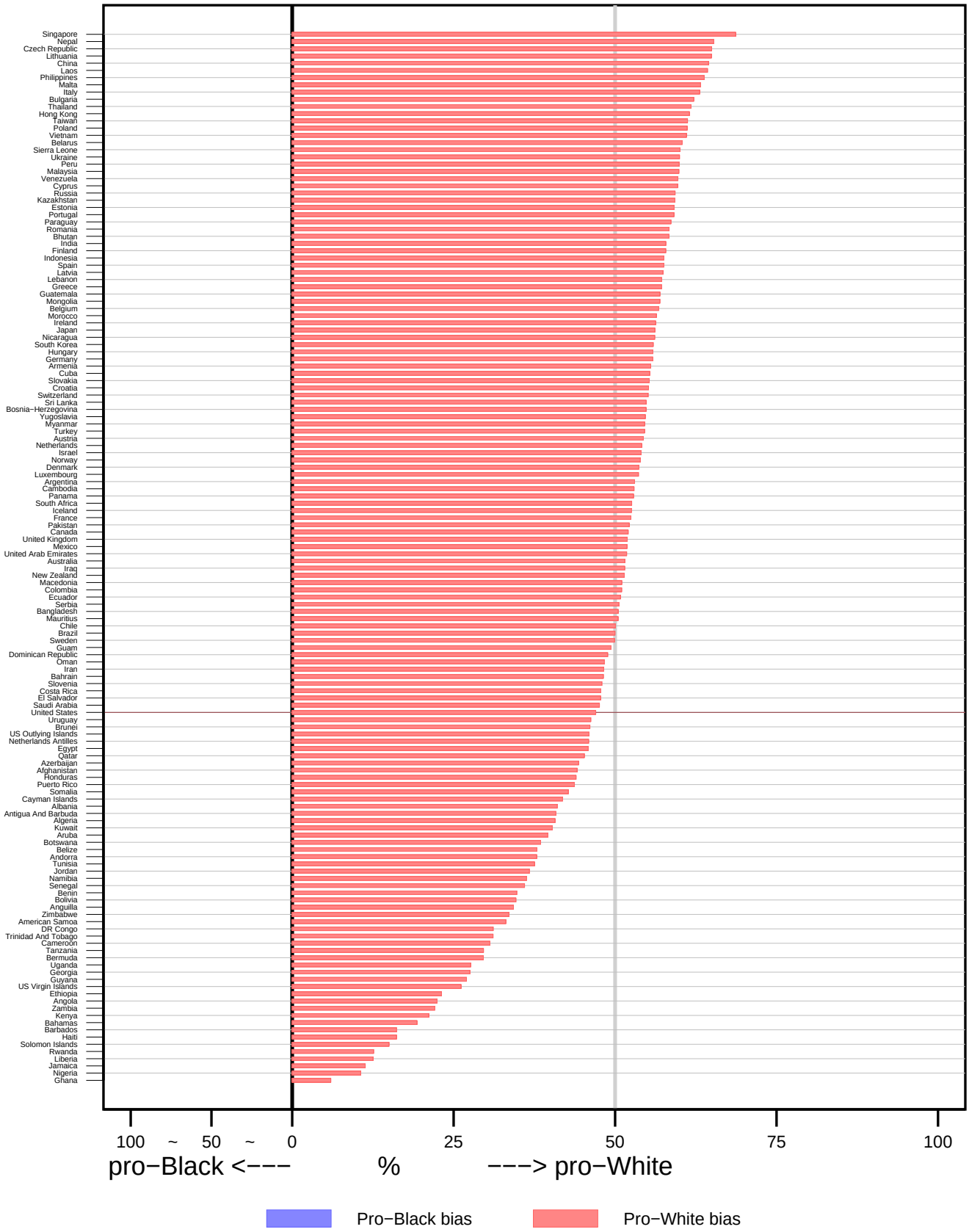


Figure 6: Net IAT Results: All Respondents. Graph shows the net racial bias of IAT test results by country, for respondents of all racial backgrounds. Net bias is defined as the difference between the percentage of individuals with pro-White bias and the percentage of individuals with pro-Black bias.

3.2 Examining White versus Black respondents

The data allow us to examine the IAT scores conditional on the self-reported race of the test taker.[8] The majority of test-takers are White, however the racial mix of the test-takers depends on the country. For example 88% of the test-takers in Nigeria identify as Black, and 78% of test-takers in China identify as East Asian. In this section I examine the analogous distributions of racial bias across all countries, for both White and Black respondents respectively. In the Appendix Section 6.1, I also present the analogous analysis for (1) East Asians, (2) South Asians, and (3) mixed race individuals.

Figures 7 and 8 show the analogue to Figures 5 and Figure 6 respectively, restricted to White respondents only. One can immediately see that the pro-White bias is substantially higher. From Figure 8, the average level of net pro-White bias is large, at 59% (median 60%), with a minimum of 41% in Kenya, to a maximum of 74% in the Dominican Republic.[9] An important note is that restricting test-takers to be White reduces the sample sizes for the countries, hence the sample now consists of 94 countries.[10] One can also see that the USA shifts its ranking (becoming more biased) to rank 49 out of 94, with 59% net pro-White bias, very close to the median level of bias in the sample. Beyond this, Appendix Section 6.1 shows that the patterns of pro-White bias across every country are also true for East Asian, South Asian, and mixed race individuals.

I now turn to examining the IAT test results of Black respondents. Figures 9 and 10 show the analogue to Figures 5 and Figure 6 respectively, restricted to Black respondents only, leading to a substantially smaller sample of 31 countries. Focusing on net bias in Figure 10, the difference between the earlier samples is dramatic. It is possible to see that, for the first time, there appear countries with pro-Black bias. In fact the average net bias is 3% (median 2%), indicating near-zero bias, with a small tendency towards the pro-White bias direction. The minimum net bias is -13% for the case of Bermuda, while the maximum is 25%, for the case of Zimbabwe.

From Figure 9, one can see that, among Black respondents, the *maximum* percentage of strong pro-White bias in any country is 11% (Zimbabwe), which is approximately two-thirds of the *minimum* percentage of strong pro-White bias among White respondents, in Figure 7, of any country (Jordan, which is 16%).[11] These striking patterns of little to no bias for Black respondents lend credibility to the IAT's intended purpose. Black people, on average, exhibit neither significant pro-Black nor pro-White bias. White people exhibit substantial pro-White bias. These patterns are present across varied contexts: higher and lower income countries, and across majority Black and majority White countries.

Result 4: *Across the world sample, White, East Asian, South Asian, and mixed race individuals exhibit substantial pro-White bias. Black people exhibit little to no bias.*

[8] Race data is available for an average of approximately 91% of respondents per country. Thus the sample size is slightly lower, in addition to the fact that I am examining sub-samples.

[9] One third of White respondents in the Dominican Republic have a strong pro-White bias, second in the world to White respondents in South Africa (at 36%).

[10] The same sample restriction is maintained that a country must have 100 White test-takers to be included.

[11] The maximum percentage of strong pro-Black bias of any country is also 11%, in Barbados.

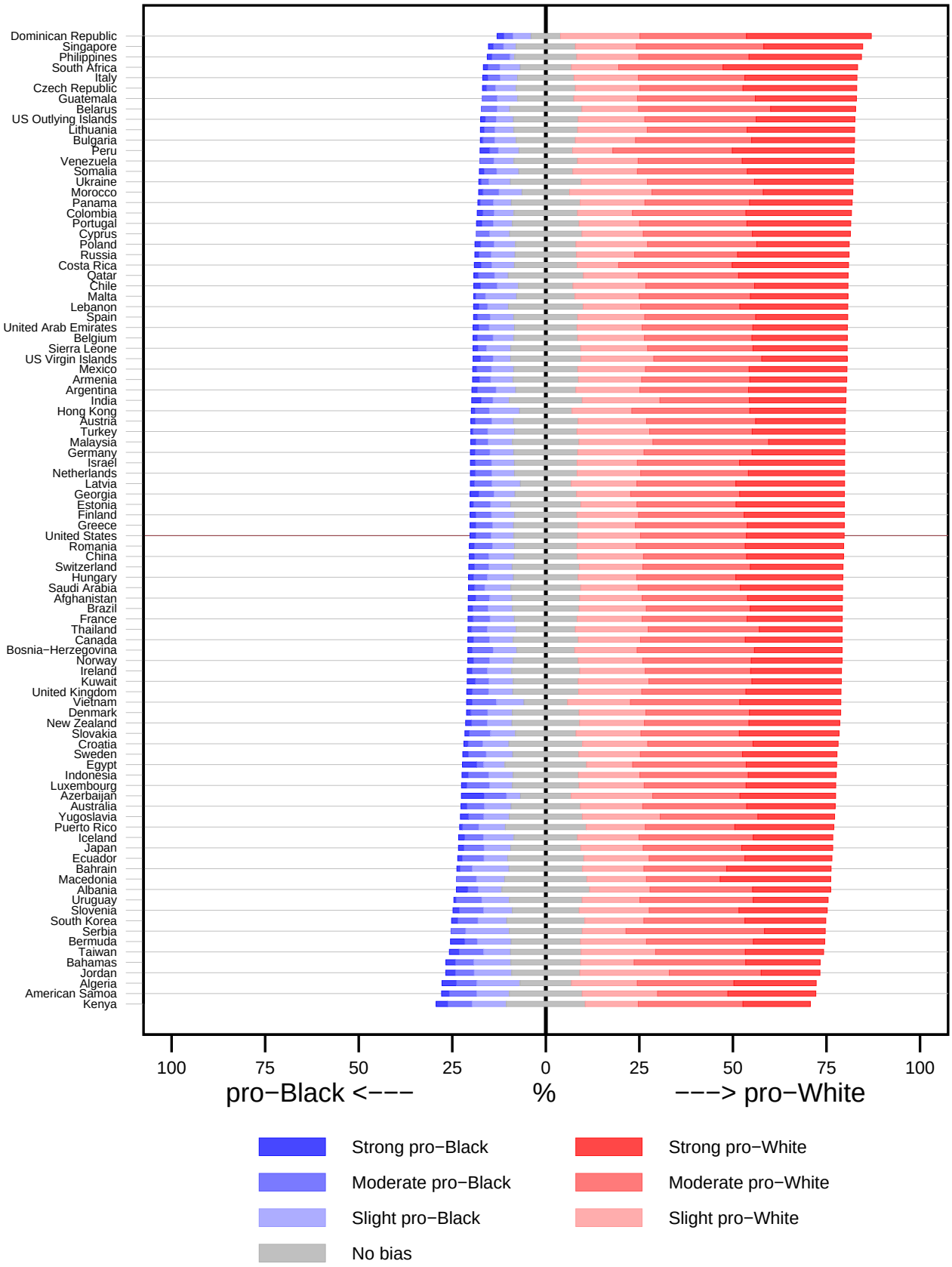


Figure 7: Distribution of IAT Results: White Respondents. Distribution of IAT results by country, for White respondents. Classifications follow those of Project Implicit. For each country the bars sum to 100%, with the percent in each category shown by the respective shading.

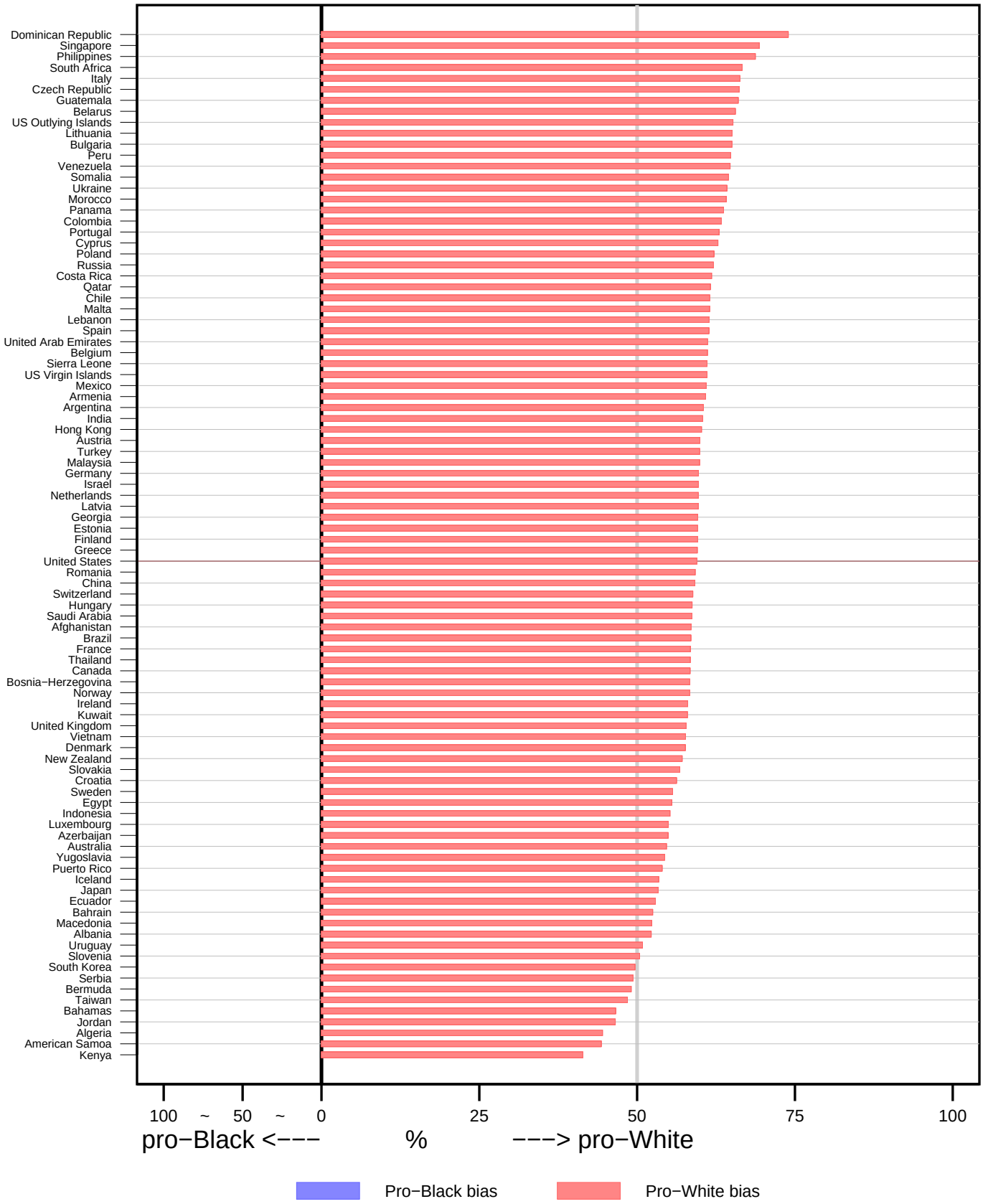


Figure 8: Net IAT Results: White Respondents. Graph shows the net racial bias of IAT test results by country, for White respondents. Net bias is defined as the difference between the percentage of individuals with pro-White bias and the percentage of individuals with pro-Black bias.

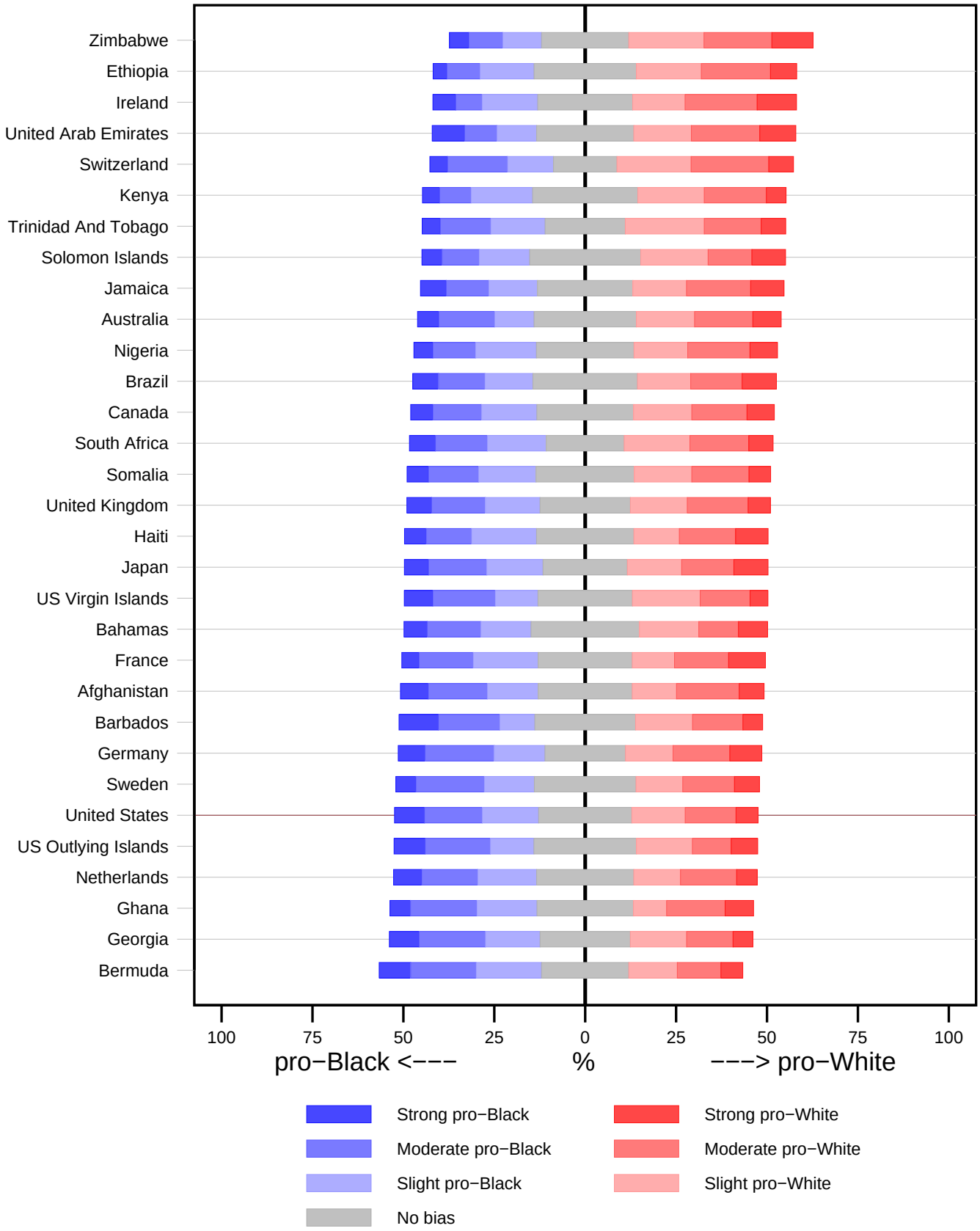


Figure 9: Distribution of IAT Results: Black Respondents. Distribution of IAT results by country, for Black respondents. Classifications follow those of Project Implicit. For each country the bars sum to 100%, with the percent in each category shown by the respective shading.

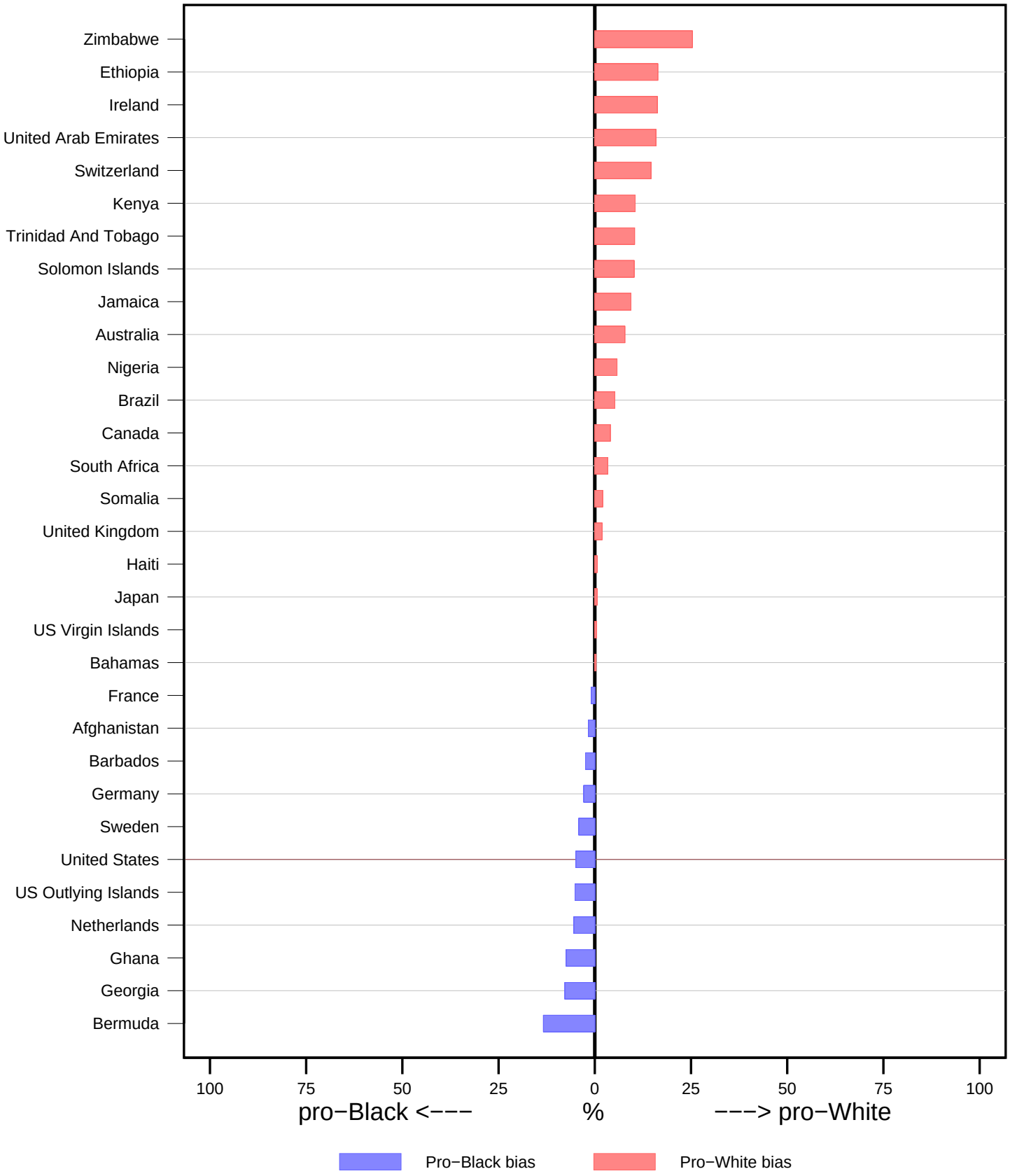


Figure 10: Net IAT Results: Black Respondents. Graph shows the net racial bias of IAT test results by country, for White respondents. Net bias is defined as the difference between the percentage of individuals with pro-White bias and the percentage of individuals with pro-Black bias.

3.3 The IAT score and explicit attitudes in Europe

While the earlier sections showed a strongly significant pro-White bias across the world sample, it remains to be seen what are the implications and consequences of such bias. The categories of the IAT have been labelled, "light, moderate, and strong", however there is no clear evidence for the societal impact of these different categories, nor the impact of differences in IAT scores. Average IAT scores across countries range from 0.06 to 0.43. What are the consequences for a Black person of living in one society versus the other?

While I cannot answer this question adequately given the data, I can superficially examine IAT scores and two explicit racial attitudes in Europe towards Black people. In 2015 Eurobarometer conducted a survey in the European Union regarding discrimination in the EU. One question asks about racial attitudes concerning a hypothetical love relationship with the respondent's son or daughter, and a Black person. I examine the average percent from each country that were not comfortable with such a relationship.[12] Additionally, the 2014 European Social Survey asked respondents, "Do you think some races or ethnic groups are born less intelligent than others?"

Both measures are highly correlated with country level IAT scores from 2015: $\rho = 0.704$ for the relationship variable, and $\rho = 0.543$ for the intelligence variable.[13] Figure 11 presents the average values of these two variables measuring racial attitudes for four categories of IAT scores. Although there is not substantial variation in IAT scores for the European sample, there is a clear pattern of higher average IAT scores being associated with increasingly racist attitudes. The error bars present the maximum and minimum country level values in each category. Thus, one can see that for the lowest category of IAT (least biased), the average percent of citizens not comfortable with the relationship is 27%, with a minimum of 11% (Sweden) and a maximum of 54% (Latvia). For the highest category, the average percent not comfortable is 62%, with a minimum of 38% (Italy) to a maximum of 79% (Bulgaria).

While these relationships present only a smaller subsample, they do suggest that countries with high average IAT scores are unlikely to have low explicit racial bias. Table 3 in Appendix Section 6.2 directly examines the probability of having a high or low IAT score, and having high or low explicit racial bias. Scoring above the median in the sample suggests a 77% probability of holding high explicit racial bias on the survey, while symmetrically, scoring below the median suggests also a 77% probability of having a low explicit racial bias on the survey.

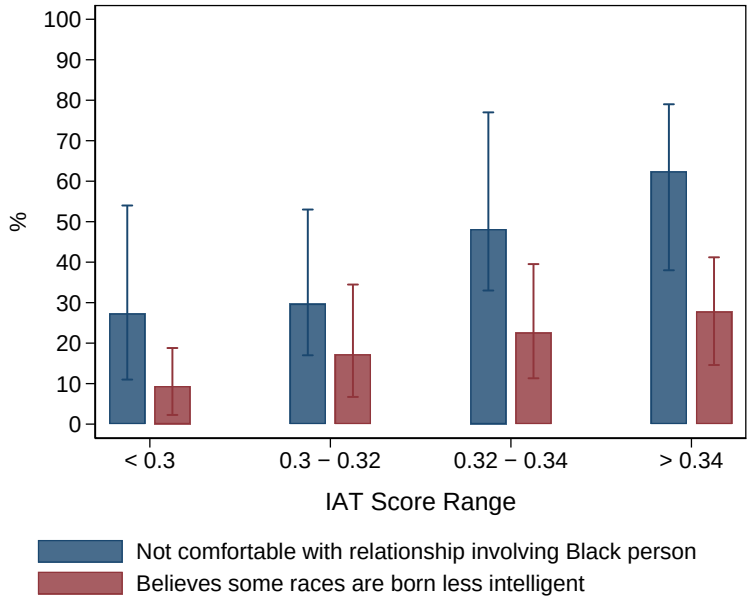
Also in Appendix Section 6.2, Figure 21 presents graphically the correlation between the IAT score and the percent not comfortable for EU countries. In the same section, Figure 22 presents the predicted mean values of this relationship variable, taking into account a set of variables to control for GDP per capita, education, and unemployment (among others). This figure suggests that decreasing the average IAT score by 0.05 points corresponds to 7 percentage points more acceptance of own-family relationships with a Black person, a substantial effect. While this only represents a simple investigation, it shows the power of the IAT to measure related racial attitudes.

Result 5: *Cross-country IAT scores are significantly associated with survey level measures of explicit racial bias.*

[12] This question specifically stated: Regardless of whether you have children or not, please tell me, using a scale of 1 to 10, how comfortable you would feel if one of your children was in a love relationship with a person from each of the following groups (of which one fo the groups was "a Black person"). '1' means "not at all comfortable" and '10' "totally comfortable". The variable is then coded as "percent comfortable" by country, by averaging the proportion of respondents who responded from 7 to 10. I consider percent uncomfortable which is the complementary probability (those responding from 1 to 6).

[13] The sample size in Eurobarometer is 26 countries, while for ESS it is 21 countries. A similarly high correlation ($\rho = 0.688$) is found with a variable on the European Social Survey which asks the respondent how uncomfortable they would be if an immigrant from a different ethnic group was appointed as their boss.

Figure 11: Relationship between IAT score and explicit racial bias from Eurobarometer and European Social Survey



Country averages for given categories of IAT score on respective survey questions. Error bars indicate the maximum and minimum values of these averages for the respective countries in each category. IAT data is from 2015. $N = 26$ for the Eurobarometer, and $N = 20$ for the European Social Survey.

3.4 Racial bias and other characteristics in the USA

Table 2: Summary statistics in the USA

	Mean	Std. Dev.	Min.	Max.
IAT D-Score	0.29	0.44	-2.1	1.9
Female	0.62	0.49	0.0	1.0
Age	27.02	12.30	5.0	100.0
Political Views	0.61	1.65	-3.0	3.0
White	0.69	0.46	0.0	1.0
Black	0.12	0.32	0.0	1.0
Observations	3298708			

Political views range from -3 (strongly conservative) to 3 (strongly liberal), with 0 as neutral.

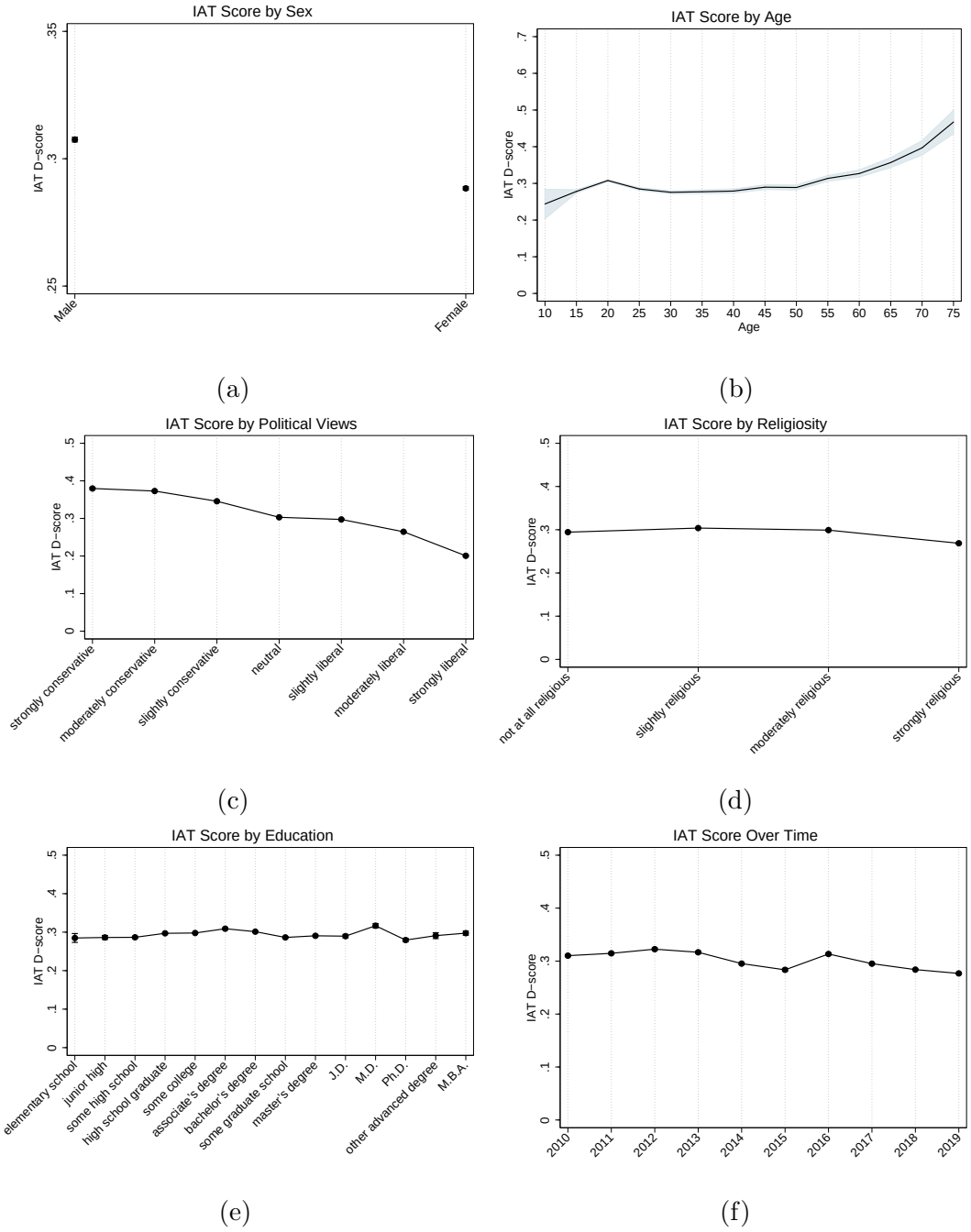
In this section I take advantage of the wealth of data available from the United States, to get a better sense of the demographics of test takers, and how these relate to their level of racial bias

as measured through the IAT. Table 2 presents summary statistics for a selection of demographic variables. Compared to the US population, the sample is significantly younger, more likely to be female, and more liberal in political views. Table 4 in the Appendix shows the rest of the world, which is similar, although slightly younger, less likely to be female, and less likely to be White.

Figure 12 examines patterns between racial bias as measured by the IAT score and the above demographics, plus education which is categorical. First, although differences are statistically significant, there are not large differences in the IAT scores by sex, nor by religiosity or education. We can note that men are slightly more pro-White, those who are more religious are slightly less pro-White, and there does not appear to be a common trend regarding education.

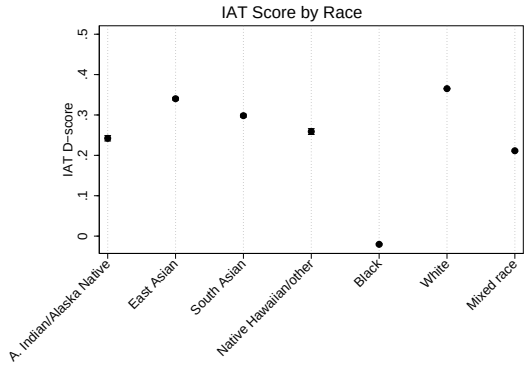
The most pronounced patterns are in age and political views. Regarding age, it appears that older individuals are substantially more pro-White than younger ones. A 70 year old exhibits approximately 40% more pro-White bias than a 35 year old. Regarding political views, more conservative individuals exhibit significantly more bias than more liberal individuals. A person who identifies as strongly conservative, exhibits approximately 80% more pro-White bias on average, than a person identifying as strongly liberal. Examining the evolution of the IAT score over the years 2010-2019, although the trend is that pro-White bias is decreasing, the magnitude is relatively small. Finally, Figure 13 shows the different scores by race.

Figure 12: IAT score by characteristics (USA)



Shows the average predicted IAT score for each indicated demographic variable, controlling for all other demographic variables in this figure, using OLS regression. Sample restricted to USA only. 95% confidence intervals indicated.

Figure 13: IAT score by race (USA)



Shows the average predicted IAT score by self-reported race, controlling for all other demographic variables in the previous figure, using OLS regression. Sample restricted to USA only.

4 Discussion of potential concerns

4.1 Selection issues

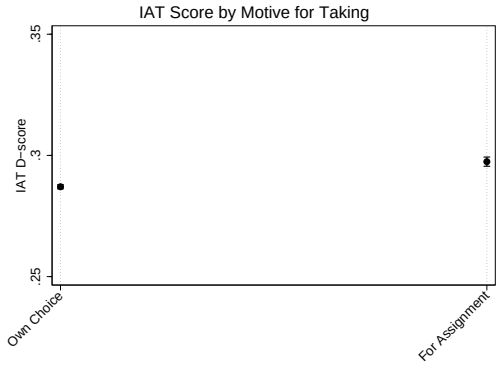
One concern with the analysis in this study is that respondents voluntarily take the test, and thus are unlikely to be a representative sample of their country. Having said this, it is unlikely that selection alone could be driving the significant pro-White bias seen in every country. But it is useful to briefly address the issue. To do so it is sensible to use the United States data, given the large number of observations. Indeed, respondents are on average younger, more likely to be female, and more likely to lean left on the political spectrum, compared with the US population. However, to the extent that Section 3.4 investigated these characteristics, by all indications, a more representative sample would look even more biased.

Another way to assess whether selection could be driving most of the results is to examine what motivation brought the individual to take the IAT test. This question was asked specifically to test-takers. In total 1,112,923 people responded to this question. Comparing those who took the test because of an assignment, versus those who took the test on their own free will, the average IAT score is relatively similar at 0.306 and 0.285 respectively. Because those who take the test for an assignment are more likely to be younger and less likely to lean left, I control for age and political views, as well as all of the other demographic variables from Section 3.4. The result in Figure 14 shows that in fact, there are not substantial differences, and if anything, those were required to take the test for an assignment show marginally more pro-White bias. Following the logic that those who were required to take the test are less susceptible to selection on some omitted variable, this would in fact suggest that selection bias might be in the other direction. To conclude, there does not appear to be significant evidence that selection is driving the overall patterns observed.

4.2 Validity of the IAT

The literature on the IAT is characterized by hundreds of smaller studies, along with meta-analyses of those studies. While there are many important and valid debates going on within this literature, and research trying to better understand the IAT is critical, some of the most common criticisms of the IAT in the literature are in fact relatively easy to address using a large aggregated data set, such as the one I examine in this study.

Figure 14: IAT score by motive for taking (USA)



A first concern is that the test is not "reliable" at the individual level, in the sense that an individual taking the test multiple times may receive different scores. There is some evidence suggesting that indeed test-retest reliability is not particularly high, see Wittenbrink and Schwarz (2007). However a test which cannot perfectly classify an individual can still be very useful in the aggregate, as the analysis of this document shows.

A further concern comes from a back in forth in the psychology literature on the ability of the IAT to measure actually measure implicit and explicit racial bias. Some of the studies in this debate are problematic, as they deal with small sample sizes. It can be more useful to examine meta-analyses such as Greenwald et al. (2009), Oswald et al. (2013), and Kurdi et al. (2019); the most recent is suggestive that IAT scores are correlated with implicit and explicit measures.

However, a broader concern appears to be that it is simply difficult to measure implicit and explicit racial bias in general. First, there is no accepted measure of implicit bias (the IAT itself is leading the way), and hence there is substantial variation in the type of implicit measures used for comparisons (Wittenbrink and Schwarz, 2007). Next, it is also difficult to gather accurate measures of explicit racial bias, either self-reported or behavioral measures. Due to social desirability bias, individuals may be afraid to appear racist, and so may be hesitant to admit to their biases, and may be guarded in their behavior (Crandall et al., 2002; Lane, 2016). In fact as Carlsson and Agerström (2016) note, the average amount of measured explicit discrimination towards Black people across several studies in their meta-analysis was close to zero.

Given the difficulties of measuring racial biases, it makes sense to examine outcomes outside of the experimental domain. In fact the current study provides solid evidence that the IAT does reliably correlate with explicit racially biased attitudes. The magnitude alone of the correlation between the average score and explicitly stated attitudes towards Black people suggests the test is capturing the type of bias it was intended to. In this vein, a number of other studies which examine the relationship between IAT test scores and outcomes which are expected to be affected by racial bias show strong effects, such as Rooth (2010) in the context of hiring, and Orchard and Price (2017) regarding differences in Black-White health outcomes.

A notable concern is that the test simply captures familiarity. Among others, Tetlock and Mitchell (2009) suggested that individuals might be positively biased due to familiarity of the target, which could explain the high average bias of White people in the USA. However, the fact that Black people show essentially no bias on average, itself suggests familiarity on its own cannot explain the aggregate patterns.[14] This is not to say that familiarity should not matter – indeed

[14]One can also note that there is no obvious relationship between the majority race in a country, and test results, conditional on race. Black people in Zimbabwe show significantly more pro-White bias than Black people in Norway.

a key theory in psychology (the contact hypothesis) suggests that intergroup contact can reduce prejudice. In this sense, this relates to a large literature on the role of contact (and hence familiarity) on reducing bias.[15]

5 Conclusion

Through a series of straightforward exercises, this document used publicly available data to provide an overview of the extent of racial bias worldwide. The results are stark. Of 146 countries, all 146 exhibit pro-White bias. Although racism in the United States receives significant attention, these results would suggest that most other countries in the world suffer from worse levels of pro-White (anti-Black) bias. Further, the analysis in this document also showcased aggregate patterns of the Implicit Association Test (IAT) which lend credibility to the method. First, across countries, Black people exhibit no substantial bias, neither pro-White, nor pro-Black. Second, the measures are highly correlated with explicit racial attitudes at the country level.

Given the patterns of anti-Black racial bias around the world, it is critical to devote resources to understanding and solving this global problem. First, this means reaching a better understanding of the scope of the problem and the magnitude of consequences. What are the consequences associated with different average IAT scores? And what are the impacts of differences in the distribution of racial attitudes, e.g. having one unbiased and one strongly biased individual, versus two slightly biased individuals? Second, it means better understanding the implicit versus explicit nature of racial bias, and what can be done to reduce or eliminate these biases.

White respondents in the Dominican Republic and South Africa show significantly more bias than White respondents in Denmark or Australia.

[15] These, and other concerns have also been discussed by Jost et al. (2009).

6 Appendix

6.1 Examining respondents of other races

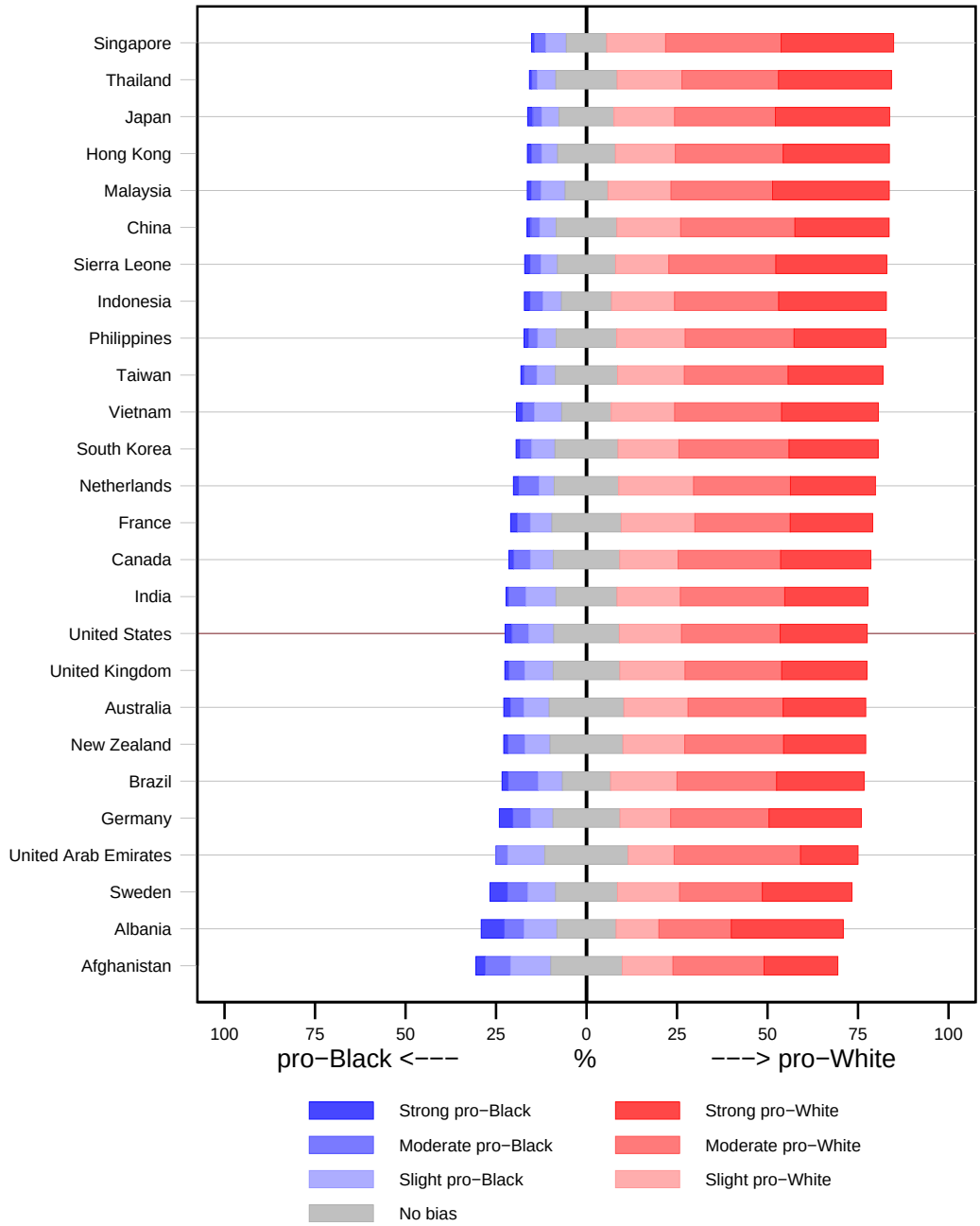


Figure 15: Distribution of IAT Results: East Asian Respondents. Distribution of IAT results by country, for East Asian respondents. Classifications follow those of Project Implicit. For each country the bars sum to 100%, with the percent in each category shown by the respective shading.

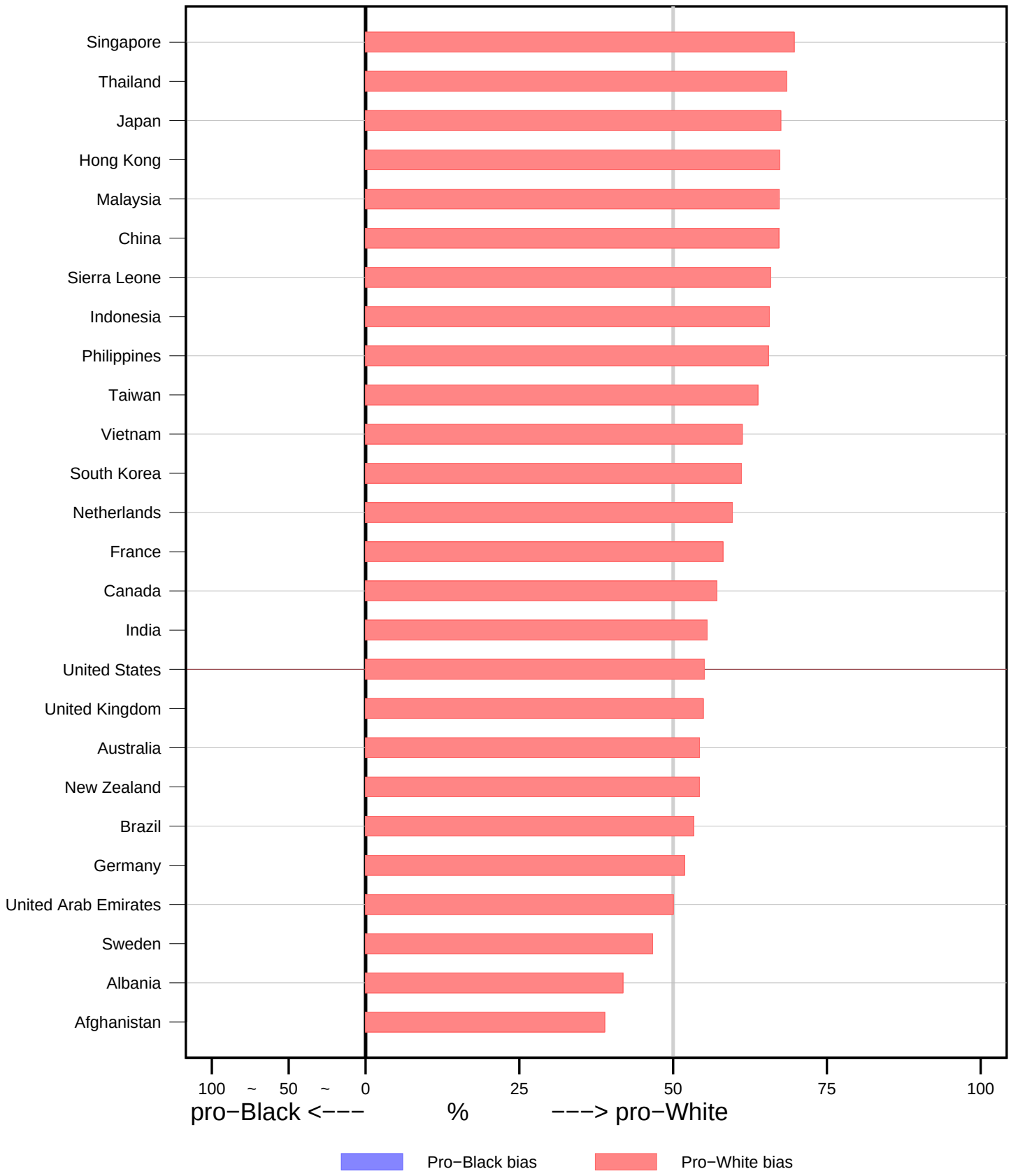


Figure 16: Net IAT Results: East Asian Respondents. Graph shows the net racial bias of IAT test results by country, for East Asian respondents. Net bias is defined as the difference between the percentage of individuals with pro-White bias and the percentage of individuals with pro-Black bias.

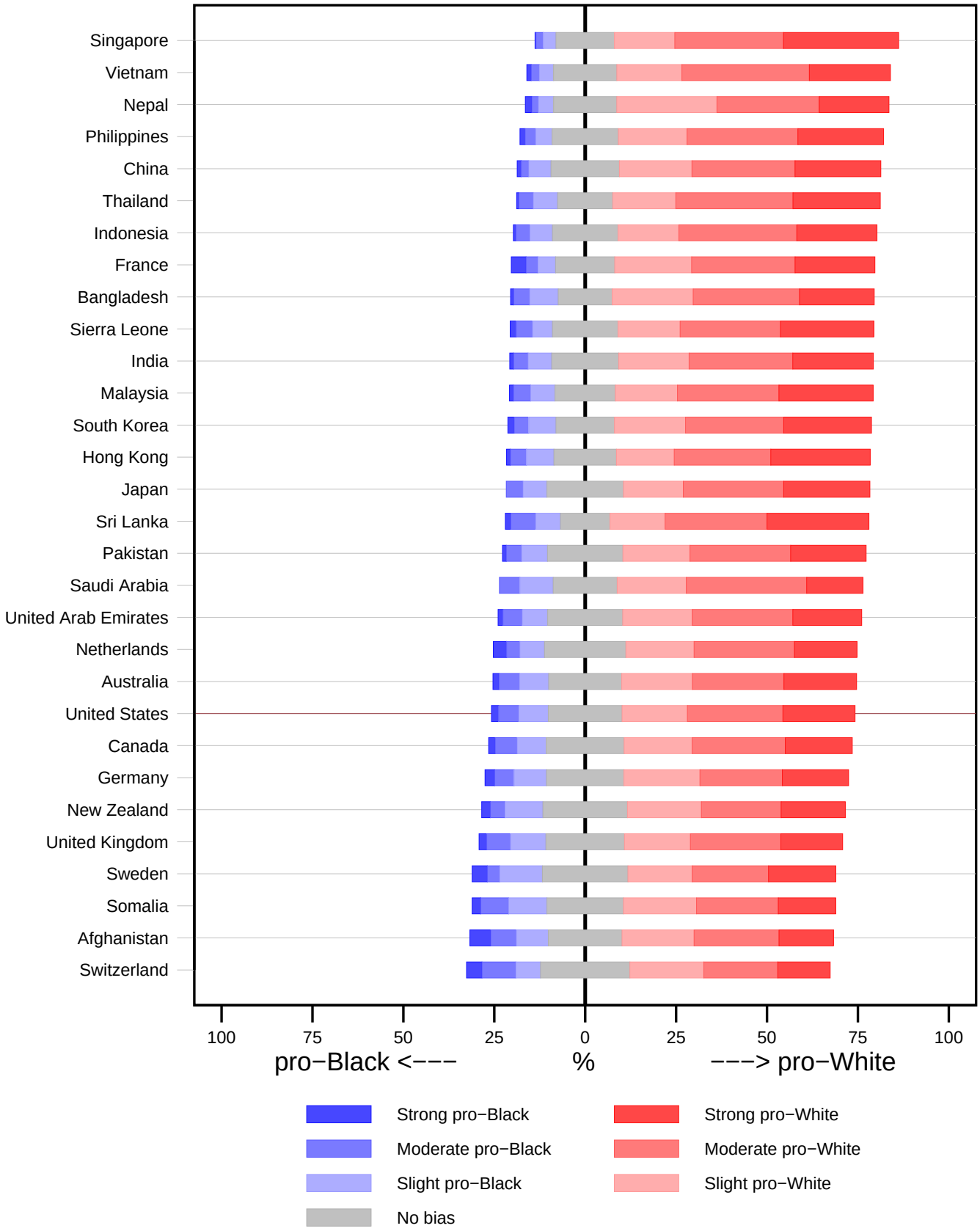


Figure 17: Distribution of IAT Results: South Asian Respondents. Distribution of IAT results by country, for South Asian respondents. Classifications follow those of Project Implicit. For each country the bars sum to 100%, with the percent in each category shown by the respective shading.

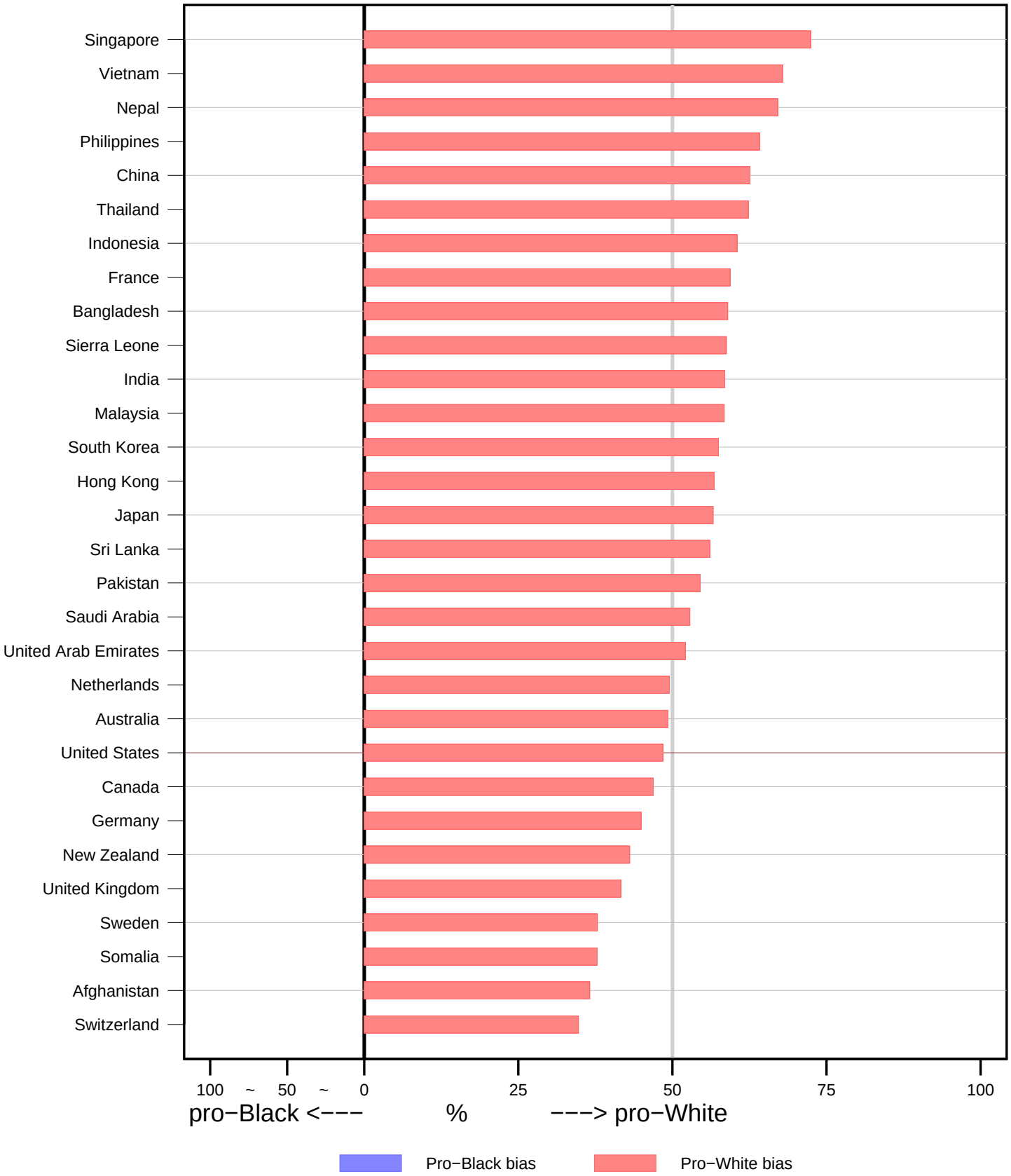


Figure 18: Net IAT Results: South Asian Respondents. Graph shows the net racial bias of IAT test results by country, for South Asian respondents. Net bias is defined as the difference between the percentage of individuals with pro-White bias and the percentage of individuals with pro-Black bias.

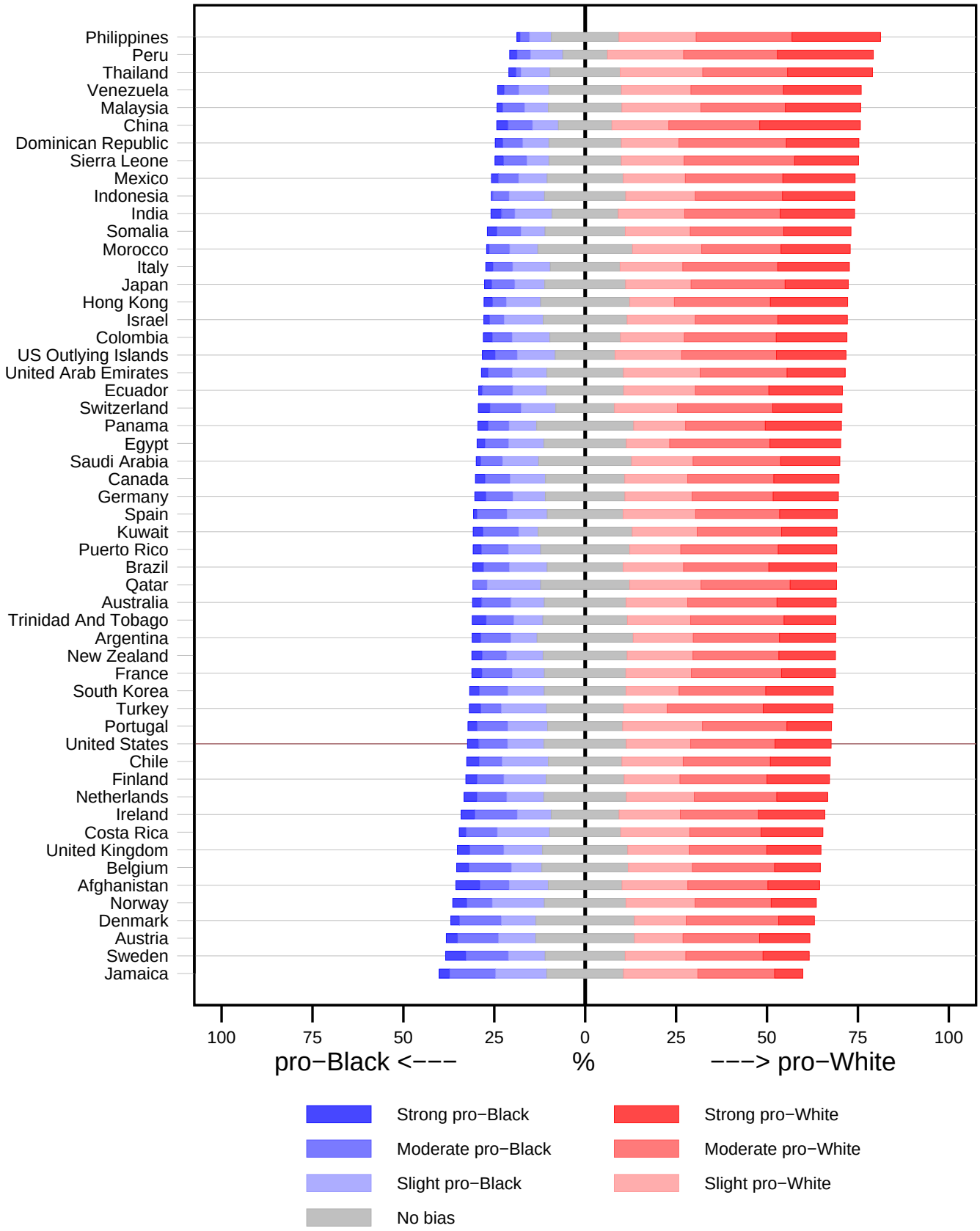


Figure 19: Distribution of IAT Results: Mixed Race Respondents. Distribution of IAT results by country, for mixed race respondents. Classifications follow those of Project Implicit. For each country the bars sum to 100%, with the percent in each category shown by the respective shading.

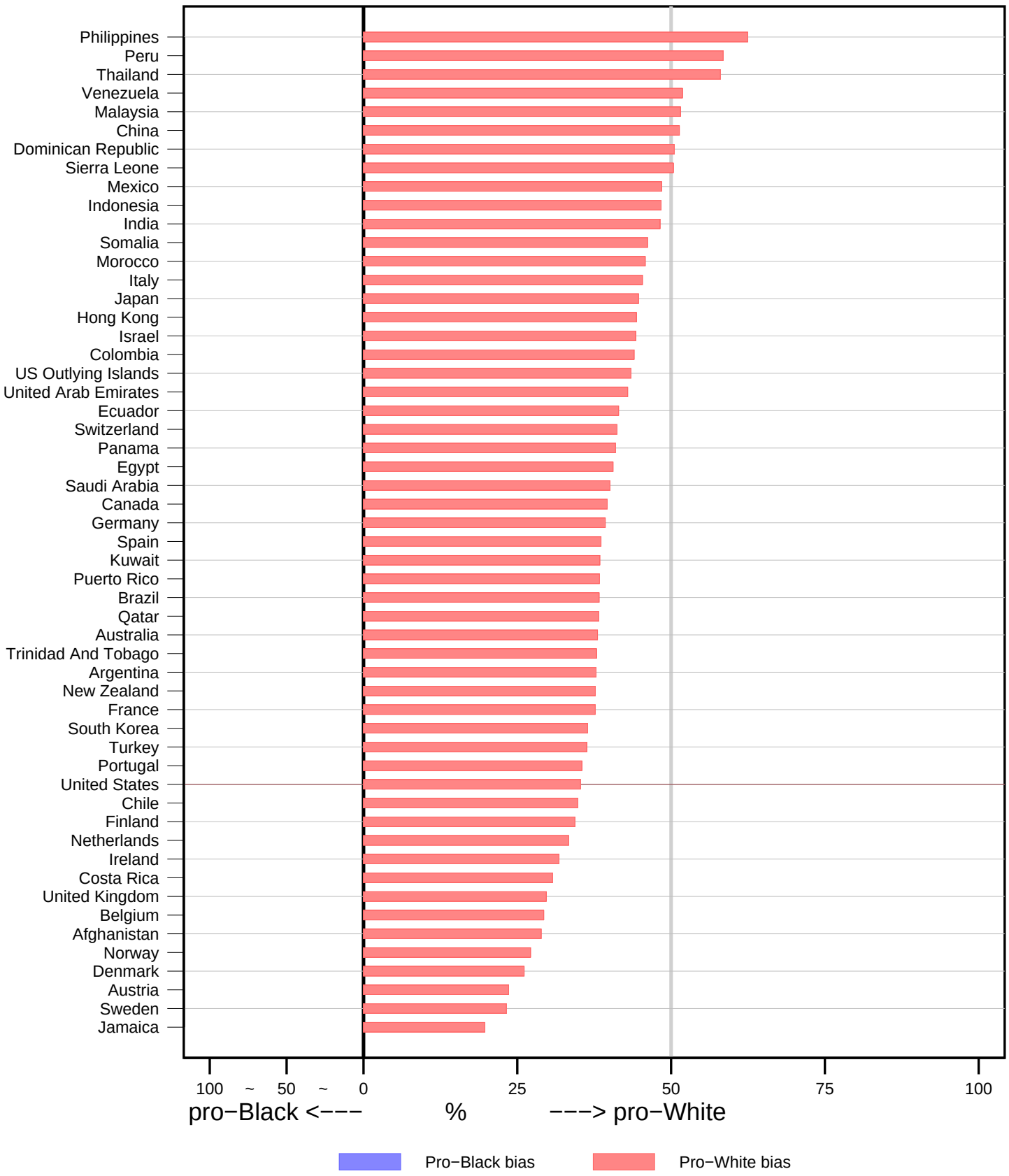
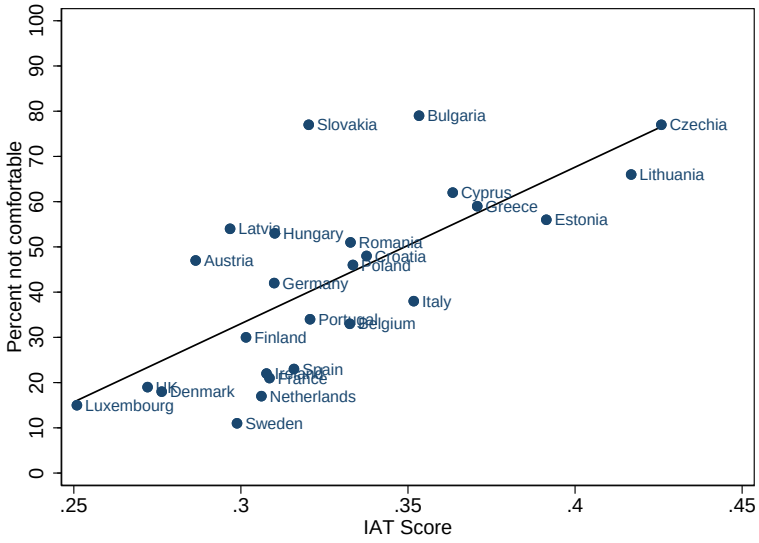


Figure 20: Net IAT Results: Mixed Race Respondents. Graph shows the net racial bias of IAT test results by country, for mixed race respondents. Net bias is defined as the difference between the percentage of individuals with pro-White bias and the percentage of individuals with pro-Black bias.

6.2 Relationships between IAT score and EU attitudes

Figure 21 shows the raw relationship between attitudes of EU respondents towards a love relationship with a Black person for their son/daughter, and the IAT score. See Section 3.3 for more details. Figure 22 shows this linear relationship controlling for a set of country level macroeconomic variables. Table 3 examines the probability a country has high or low explicit attitudes given a high or low IAT score.

Figure 21: Relationship between IAT score and racial bias from Eurobarometer 2015



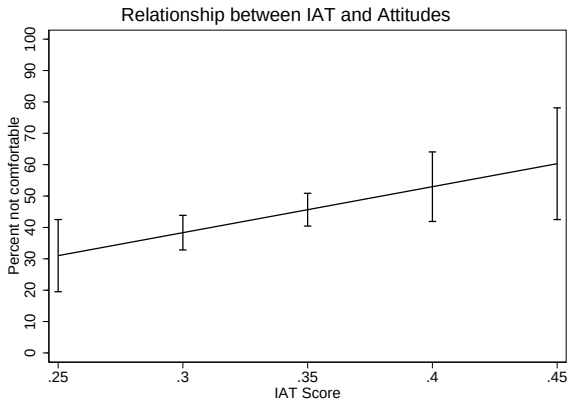
Scatter plot of racial attitudes (percent of respondent's comfortable with their son/daughter in a love relationship with a Black person) against average IAT scores, for the EU. Data comes from the 2015 Eurobarometer.

Table 3: Relationship IAT Score and Explicit Attitudes

		IAT Score		
		High	Low	Total
Explicit Attitudes	High	38.5	11.5	50
	Low	11.5	38.5	50
	Total	50	50	100%

Table divides the sample into below and above median IAT scores, and below and above median explicit attitudes (acceptance of relationship with Black person). It shows the percentage of countries which fall into each of the four categories. Thus, given a low IAT score, there is a 77% chance (38.5/50) that the country will hold below median explicit attitudes. However, there is a 23% chance (11.5/50) it will nonetheless exhibit high explicit attitudes. $N = 26$.

Figure 22: Relationship between IAT score and racial bias from Eurobarometer 2015



Average predicted percent not comfortable with the respondent's son/daughter in a love relationship with a Black person. Estimated using OLS. 95% confidence intervals indicated. Control variables are (1) GDP per capita, (2) labor force education level, (3) age demographics, (4) unemployment, (5) log of the total migrant stock. Data from World Bank Development Indicators, for 2015.

6.3 Summary statistics for rest of world

Table 4 shows summary statistics at the country level for the rest of the world, excluding the United States. Comparing with the US in Table 2, it is possible to see that globally, most variables are similar, while the rest of the world is more gender balanced compared to the USA, and the rest of the world has fewer White respondents. The test-takers in the rest of the world are also slightly over three years younger on average.

Table 4: Summary Statistics (Excluding USA)

	Mean	Std. Dev.	Min.	Max.
IAT D-Score	0.28	0.08	0.1	0.4
Female	0.51	0.06	0.4	0.7
Age	24.78	2.36	20.1	31.8
Political Views	0.60	0.38	-0.8	1.2
White	0.48	0.29	0.0	1.0
Black	0.12	0.19	0.0	0.9
Observations	145			

Table shows simple average of demographic variables across all 145 countries (excluding the United States).

References

Carlsson, Rickard and Jens Agerström (2016) "A closer look at the discrimination outcomes in the IAT literature," *Scandinavian Journal of Psychology*, Vol. 57, No. 4, pp. 278–287.

Crandall, Christian S, Amy Eshleman, and Laurie O Brien (2002) "Social Norms and the Expression and Suppression of Prejudice : The Struggle for Internalization," *Journal of Personality and Social Psychology*, Vol. 82, No. 3, pp. 359–378.

Greenwald, Anthony G and Mahzarin R. Banaji (1995) "Implicit social cognition: attitudes, self-esteem, and stereotypes.," *Psychological review*, Vol. 102, No. 1, pp. 4–27.

Greenwald, Anthony G, Debbie E Mcghee, and Jordan L K Schwartz (1998) "Measuring individual differences in implicit cognition: the implicit association test.," *Journal of Personality and Social Psychology*, Vol. 74, No. 6, pp. 1464–1480.

Greenwald, Anthony G and Brian A Nosek (2003) "Understanding and Using the Implicit Association Test : I . An Improved Scoring Algorithm," *Journal of Personality and Social Psychology*, Vol. 85, No. 2, pp. 197–216.

Greenwald, Anthony G., T. Andrew Poehlman, Eric Luis Uhlmann, and Mahzarin R. Banaji (2009) "Understanding and using the Implicit Association Test: III. Meta-analysis of predictive validity.," *Journal of Personality and Social Psychology*, Vol. 97, No. 1, pp. 17–41.

Jost, John T, Laurie A Rudman, Irene V Blair, Dana R Carney, Nilanjana Dasgupta, Jack Glaser, and Curtis D Hardin (2009) "The existence of implicit bias is beyond reasonable doubt : A refutation of ideological and methodological objections and executive summary of ten studies that no manager should ignore," *Research in Organizational Behavior*, Vol. 29, pp. 39–69.

Kahneman, Daniel (2003) "Maps of Bounded Rationality: Psychology for Behavioral Economics," *American Economic Review*, Vol. 93, No. 5, pp. 1449–1475.

Kurdi, Benedek, Allison E. Seitchik, Jordan R. Axt, Timothy J. Carroll, Arpi Karapetyan, Neela Kaushik, Diana Tomezsko, Anthony G. Greenwald, and Mahzarin R. Banaji (2019) "Relationship between the implicit association test and intergroup behavior: A meta-analysis," *American Psychologist*, Vol. 74, No. 5, pp. 569–586.

Lane, Tom (2016) "Discrimination in the laboratory : A meta-analysis of economics experiments," *European Economic Review*, Vol. 90, pp. 375–402.

Orchard, Jacob and Joseph Price (2017) "County-level racial prejudice and the black-white gap in infant health outcomes," *Social Science & Medicine*, Vol. 181, pp. 191–198.

Oswald, Frederick L., Gregory Mitchell, Hart Blanton, James Jaccard, and Philip E. Tetlock (2013) "Predicting ethnic and racial discrimination: A meta-analysis of IAT criterion studies," *Journal of Personality and Social Psychology*, Vol. 105, No. 2, pp. 171–192.

Rooth, Dan-olof (2010) "Automatic associations and discrimination in hiring : Real world evidence," *Labour Economics*, Vol. 17, No. 3, pp. 523–534.

Tetlock, Philip E. and Gregory Mitchell (2009) "Implicit Bias and Accountability Systems: What Must Organizations Do to Prevent Discrimination?."

Wittenbrink, Bernd and Norbert Schwarz (2007) *Implicit measures of attitudes*: Guilford Press.