Perceived vs Genetic Ancestry and the Black-White Infant Mortality/Morbidity Gap

Geoffrey Fain Williams
Transylvania University

Henrietta Bada
University of Kentucky

Ariana Napier

James Wagner
Transylvania University

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Abstract

In the United States there is a substantial black-white disparity in infant mortality, infant pre-term birth, birthweight, and neonatal morbidity. Researchers are looking at a range of causes, including differences in income, education, access to healthcare, social status, ancestry and genetics. A number of studies suggest that disparity is caused by social response to phenotypic differences; that is, mothers whose appearance leads them to be identified as "black" experience different social pressures than mothers whose appearance identifies them as "white." We test the relative importance of the genotypic and social/phenotypic pathways by comparing the relative influence of social identity and genetic ancestry on pregnancy outcomes in a dataset based on self-reports from 98 respondents recruited on Facebook in 2020-2021. Respondents who had had their ancestry analyzed by one of the standard retail kits (23andme, Ancestry.com, etc) reported basic information on their ethnic identity as perceived by others and as they perceive it, the retail ancestry analysis results, as well as information on their most recent pregnancy. Regressing birthweights on each measure in turn (with basic socioeconomic controls), African ancestry has an insignificant effect, while social identity (ancestry as perceived by self and others) is significant. When genetic and social measures are combined, coefficients on genetic measures collapse to zero while

coefficients on social measures shift only slightly (significance is lost as standard errors increase by 50-60%). Income and education do not show substantial significance, suggesting direct psychological impacts of racism are the causal driver. We are able to make use of the correlations between variables to make precise power calculations that can be used in future research developing this method. The method shows substantial promise, both in isolation and combined with other recent methodological advances, in measuring and analyzing variation in racism and its effects across society.

1 Introduction

The black-white gap in infant mortality and morbidity can be tracked to some of the earliest reliable data in the United States (Shin, 1975), and despite some shifts over time continues to be significant. Recent research estimates that reducing black infant mortality to white levels would save over four thousand lives per year (Speights et al., 2017).

While infant mortality is a relatively visible and measurable pattern of loss, research indicates that disparities in preterm birth, low birthweight and other measures of morbidity likely represent similar or greater costs. There is increasing evidence that in utero insults and early childhood morbidity are associated with a range of negative longterm outcomes in lifetime health, education and employment (Almond and Currie, 2011; Almond, 2006). While research continues to shed light on the costs of low birthweight and other measures, there is no doubt that they are substantial (Almond et al., 2005; Oreopoulos et al., 2008).

Given its importance, research into causes of racial disparities in both infant mortality and morbidity is active and ongoing, with researchers looking at a range of genetic and social causes. Researchers work to find links between genetic variation of African-American women and preterm outcomes (Anum et al., 2009; Frey et al., 2016). Others look at potential social causes, using measures of county or MSA-level racism to predict differences in outcomes (Orchard and Price, 2017; Chae et al., 2018). What is particularly interesting is that education, income and general access to healthcare seem to have steadily diminished in explanatory power (Elder et al., 2014) and the majority of the gap cannot be explained by background characteristics (Elder et al., 2016, page 11). Additionally, disparities between European-Americans

and first generation African immigrants are effectively non-existent, but second and third generation African immigrants show patterns similar to the general African-American population, suggesting a long lasting social role (David and Collins, Jr., 2007). Because the disparity increases with age, it has been suggested that there is a cumulative weathering effect of social stress Geronimus (1992).

1.1 Disentangling Social Influences

The methods in this paper build on ideas from roughly 50 years ago, in Loehlin et al. (1973) and Scarr et al. (1977).[1] The key idea is that the correlation between measures of genetic and socially-percieved ancestry, while highly correlated, are not perfectly correlated.

The earlier papers used blood types as a measure of ancestry, based on variation across populations and focused on IQ. Loehlin et al. look at a pool of White and Black adolescents where they have both IQ and blood type data. They compute the correlations between IQ and frequency of blood types associated with European ancestry in the two social groups (White and Black) separately, and find correlations to be generally low and frequently negative. Scarr et al. note that while 90% of variation in blood types can be observed within a population group, 10% occurs between populations, allowing blood type genetic data to be used to estimate ancestry variation. However, this was not sufficient to make a point estimate of ancestry; instead the authors computed a relative probability measure (pages 71-72) based on 43 loci (Table 3, pages 78-79), and also found little to no relationship between the genetic measure and outcomes, after controlling for social identity.

In contrast, retail DNA analysis services such as 23andme use single nucleotide polymorphisms (SNP) genotyping use hundreds of thousands of genetic markers, allowing them to make much more specific statements about ancestry with accuracy[2] (*Ancestry Composition: 23andMe's State-of-the-Art Geographic Ancestry Analysis*, 2022; Durand et al., 2021; Noto et al., 2013).

The development of more precise measures of genetic ancestry allows the earlier approaches of the 1970s to be updated. Retail DNA

[1] As referenced in (Jencks and Phillips, 2011, page 90).

[2] To be clear, the reported ancestry percentages are still estimates and have a substantial probabilistic component.

ancestry tests provide point estimates of African ancestry on a 100-point scale (some providing the first decimal place, a 1,000-point scale). In contrast, even the most detailed systems to construct social identities around African ancestry (for example, Louisiana in the 1800s) considered fewer than a dozen categories (Bodenhorn, 2015, pages 9-10). If social issues are driving IMR gap, it should jump up with changes in identity. If genetic issues are driving IMR gap, it should move fairly smoothly with increased genetic ancestry.

Figure 1 shows a directed acyclic graph (DAG) summarizing a number of plausible causal pathways from genetic ancestry to maternal and child health.[3] Variables that should be more readily measured are marked with dark ovals, those that are difficult or impossible to measure are light ovals. One way to phrase the research question is: we know that genetic ancestry is correlated with maternal/child health outcomes, but this doesn't help us because there are (at least) three distinct pathways whereby the effect could occur. Moving from genetic ancestry (the top oval) to birth outcomes, we see that

1. there might be a direct genetic path, whereby ancestry is correlated with genes that lead to worse outcomes,
2. there might be a path that goes from ancestry to appearance (via genetic factors) to discrimination (via social factors) and reduced access to resources such as education, income, healthcare, and
3. there might be a path from ancestry to appearance (via genetic factors) to discrimination (via social factors) and increased stress.

By measuring (a) ancestry, (b) appearance, (c) social identity, and (d) income and education, we can gain insight into the relative power of these.

[3]For more on DAGs and their use in causal inference, see (Morgan, 2015, chapter 3).

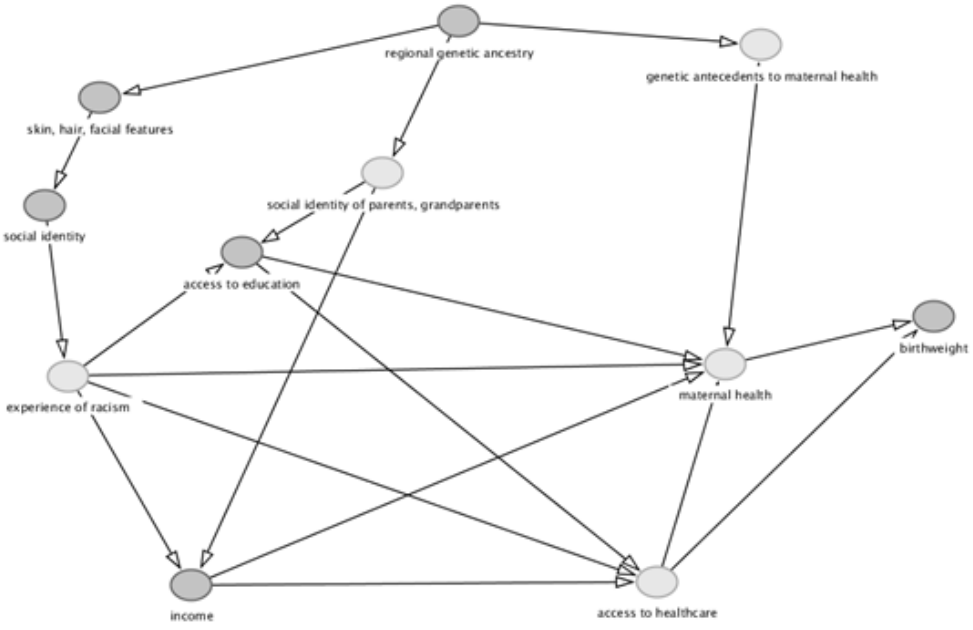


Figure 1: A directed acyclic graph (DAG) sketching possible pathways which might explain the correlation of African ancestry and negative maternal-child health outcomes. By developing measures of key potential causes such as appearance, identity, income and education, we hope to control for and eliminate spurious correlations.

2 Methods

In May-June 2020 and May-September 2021 we recruited respondents to fill out a confidential questionnaire online. As an incentive, randomly selected respondents were awarded $100. The initial part of the form screened respondents as to whether or not (a) they were American citizens, (b) they had been pregnant, (c) they had genetic testing done to determine their ancestry and (d) that ancestry was determined to be at least 2.5% African.

We used a number of outreach methods to recruit respondents, including advertising on a range of social media and reaching out to African-American genealogy groups and services. The outreach media gave a brief description of the project and a link to the Google Form questionnaire. By far the most effective method was paid, targeted advertising on Facebook. In August 2021, Facebook began to reject ads mentioning ethnicity and other social characteristics, and our respondents after that were almost completely women with $< 1\%$ African ancestry.

All data was self-reported via Google Forms, stored in a Google Sheet spreadsheet. After identifying information was removed, the responses were downloaded to a laptop computer and the analysis was done using Stata/MP 16.1.[4]

Out of 153 total responses, only 98 included birthweight as well as all 6 regressors (genetic ancestry, self-identification, perceived African ancestry, income, education and age at pregnancy).

[4]Regressions were performed using the command **regress**. Standard errors were computed using the **hc3** option when unweighted and the **rob** option when weighted.

2.1 Measures

2.1.1 Birthweight

Respondents were asked the birthweight of their most recent pregnancy in English units (pounds and ounces) and this was converted to grams.

2.1.2 Genetic Ancestry

Recruited respondents indicated that they had already gotten their genetic ancestry analyzed by a retail service. They were asked to report the percentage of ancestry that was African, European, Asian, Indigenous or Native American and Other. Responses that did not sum to approximately 100 were dropped.

2.1.3 Social Identity and Perception

Respondents were asked to note any and all of the standard U.S. Census racial categories ("White", "Black or African-American", "American Indian or Alaska Native", "Asian" or "Other") with which they identified. For the analysis in the main paper, the measure of "any self-identification" is used which corresponds to those who checked "Black or African-American" regardless of what other categories they checked.

Respondents were also asked how often strangers perceived them to have African, European, Native American/Pacific Islander, Asian and Other ancestries (they could respond "Always", "Sometimes", "Never" for each of these). For the analysis, the measure of "any perceived African ancestry" is used which correspond to those who checked either "Always" or "Sometimes" for African ancestry.

2.1.4 Controls

Respondents were asked about their income, education and age at pregnancy. For income, they could respond with any of four categories: "$<$ \$25,000", "\$25-50,000", "\$50-100,000", and "$>$ \$100,000." For education, they could respond "less than high school", "high school degree", "bachelor's degree", "graduate degree."

Summary Data	
Responses	98
Birthweight	3,344 (692)
African genetic ancestry	23.5 (32.9)
Black self-identification	
Yes	20.4
Yes (with other categories)	14.3
No	65.3
Perceived African ancestry	
Always	31.6
Sometimes	12.2
Never	56.1
Income	
< $25,000	14.3
$25-50,000	22.5
$50-100,000	42.9
> $100,000	20.4
Education	
less than high school	4.1
high school degree	39.8
bachelor's degree	23.5
graduate degree	32.7
Age at pregnancy	30.1 (5.4)

Table 1: Means and percentages for the variables used. Standard deviations for means in parentheses.

3 Results

Summary data for our responses can be seen in Table 1. Our usable responses skew towards White identities (as discussed above, after August 2021 it became much more difficult to reach Black women using targeted Facebook advertising). We are able to use several regression methods to mitigate this issue. Our responses are largely middle income (most report being in the $25,000-100,000 range) and are quite well-educated (more than 50% have at least a bachelor's degree). Breakdown of income and education by social categories is provided in the appendices.

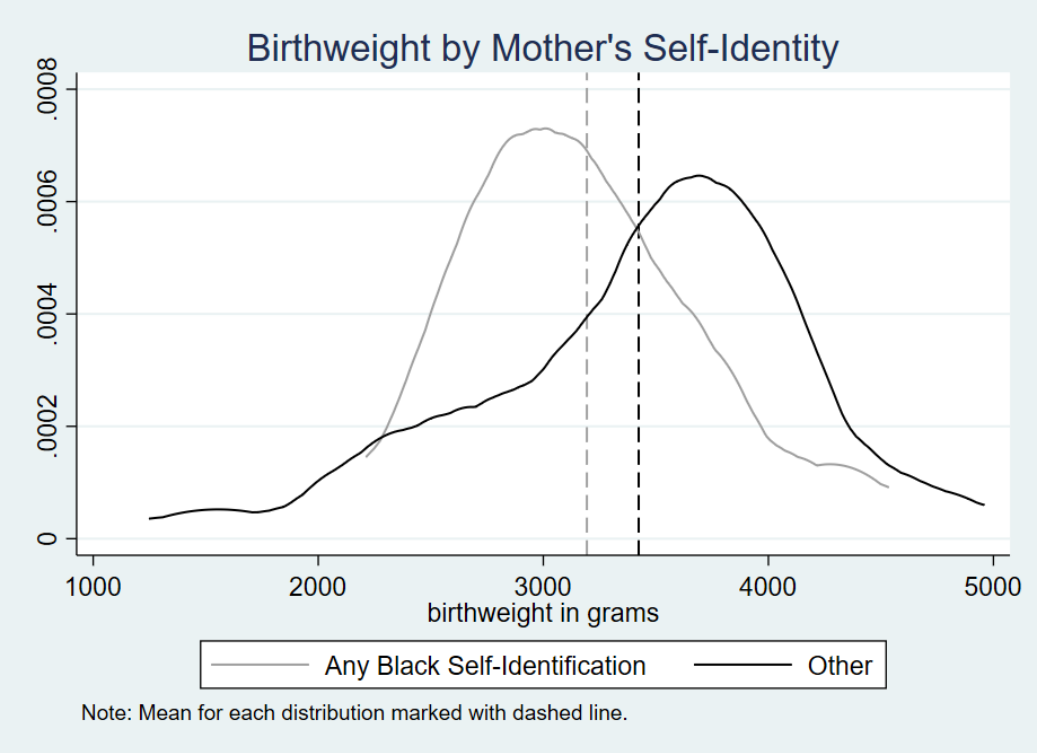


Figure 2: Kernel density graphs of birthweights reported among respondents, for those mothers who report any self-identification as Black, and for those reporting different self-identification.

Both the means and the distributions of birthweights are consistent with national data, although there is of course sampling error given the small sample (see Table 3 in Appendix A for a summary comparison).

Here we show results from the preferred specification - using all 98 responses with birthweight information, statistically weighting to give equal weight to each decile in the 0%-100% range of African ancestry.

Birthweight Regressed on Controls, Genetic African Ancestry (GA), Perceived African Ancestry (PA) and Black Self-Identification (SI)					
	GA only	PA only	SI only	GA & PA	GA & SI
Genetic Ancestry	-4.5			-0.9	-0.5
	(2.7)			(4.3)	(4.5)
Perceived African Ancestry		-425.6*		-376.4	
		(180.5)		(303.8)	
Black Self-Identification			-382.8*		-357.1
			(182.9)		(308.0)
Controls	Education, Income, Age at Pregnancy *Included and not statistically significant*				
R^2	0.183	0.209	0.210	0.210	0.210
Adj. R^2	0.110	0.138	0.139	0.129	0.130
N	98	98	98	98	98

* $p < 0.05$

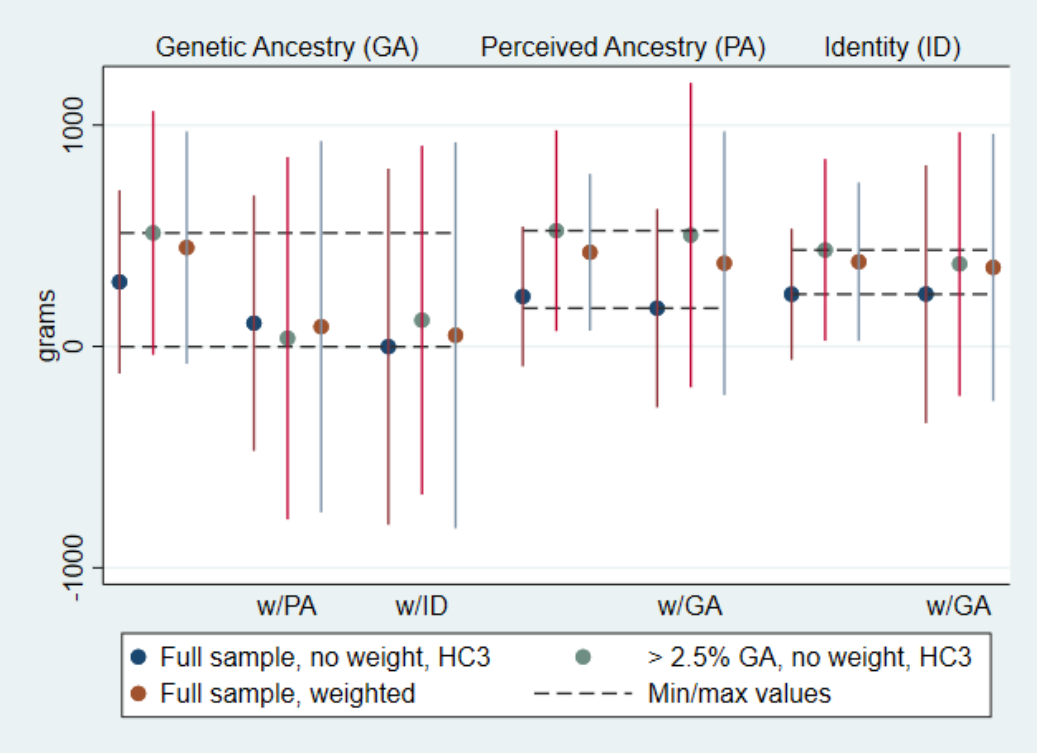


Figure 3: Coefficient values for identity and perceived ancestry show substantially greater stability than the coefficient values for genetic ancestry, across multiple specifications (whiskers show 95% CIs).

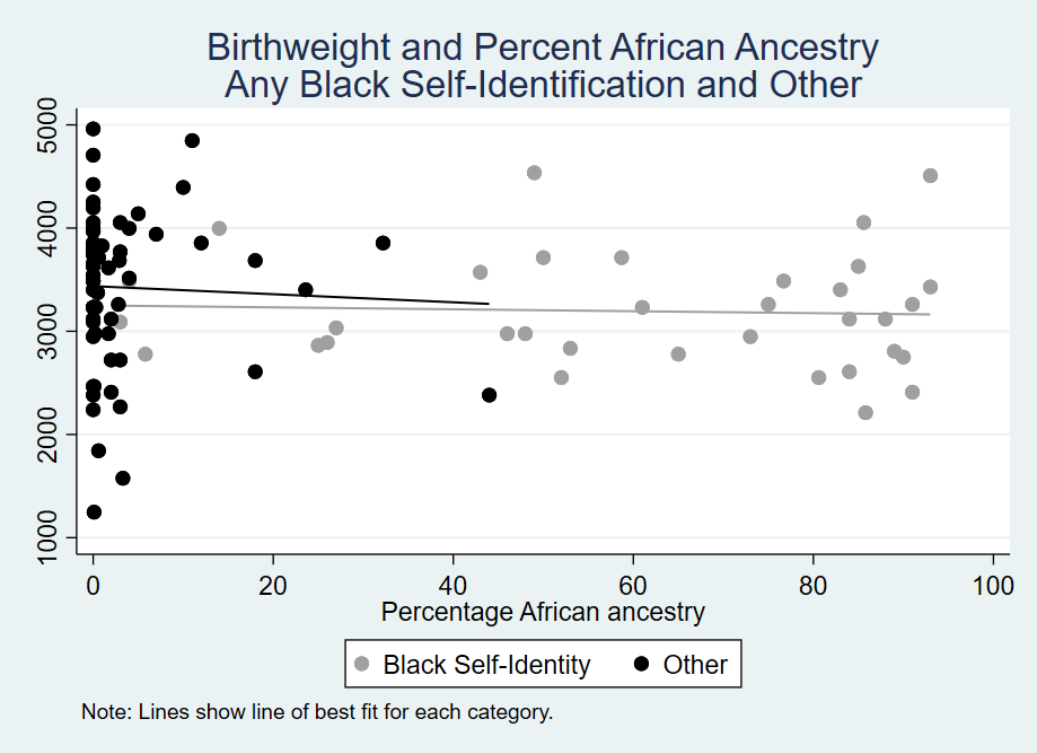


Figure 4: Scatterplot of reported birthweight on percentage African ancestry. Observations are separated into those for mothers who report any self-identification as Black, and for those reporting different self-identification. Lines of best fit are shown for each group (using the Stata procedure graph twoway lfit).

4 Discussion

The analysis above demonstrates the potential of a revised version of a long-standing approach to thinking about genetic versus social issues in healthcare and human development. Using self-reported data from confidential respondents on social identity, socioeconomic status, genetic measures of ancestry, and birthweight, we find that ethnic social identity, in and of itself, is strongly predictive of birthweight. The evidence, which is suggestive but not dispositive, points to the role of "weathering" and stress from ethnic social identity as crucial in explaining the Black-White gap in infant health. However, the dataset does not yield statistically significant coefficients on identity when genetic ancestry data is included. In order to develop this method, larger datasets are required. The next section walks through basic power computations to estimate a reasonable number of observations to clarify the relative roles of social identity and genetic ancestry.

4.1 Power Analysis

While the results are promising, the loss of significance when social and genetic measures are combined is frustrating. Thankfully, the dataset gives some starting parameter estimates for the US population, allowing us to do power computations for future work. In particular, the data provides a joint distribution of social identity and African ancestry; we are not aware of other sources that document this. As can be seen in Figure 5, Black self-identity increases as African ancestry increases from roughly 5% to 50%.

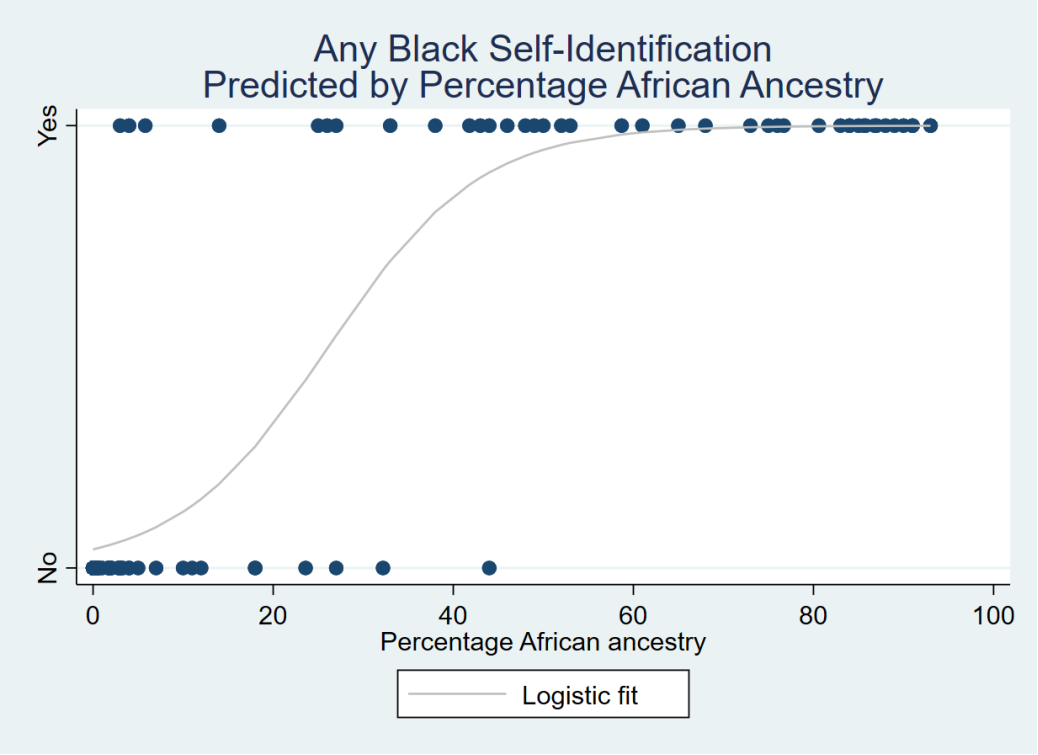


Figure 5: The relationship between Sub-Saharan African ancestry and any Black self-identity is stochastic as ancestry increases from a few percent to roughly 50%.

The effect of Black social identity and perceived African ancestry are between 200 and 350 grams, generally at the higher end of the range. A standard error of 100 grams should thus give sufficient power. A major factor is the strong correlation (collinearity) between social and genetic measures; this increases the standard errors when both social and genetic measures are used.

The power computations in this case is: [5]

$$SE_{B_i} = \frac{sd_Y}{sd_i}\sqrt{\frac{1}{1-R_i^2}}\sqrt{\frac{1-R_Y^2}{n-k-1}}$$

The variables and their values are as follows:

- Standard deviation for US birthweight (grams): $sd_Y = 490$
- Standard deviation for Black identity/perceived African ancestry (a Bernoulli variable, with a mean in this population of 0.35-0.4): $sd_x = 0.45$
- Most regressions offer R^2 of about 0.2
- Basic regressors are the social and genetic measures, as well as income, education, and age at pregnancy: $k = 5$
- R^2 for regressing identity/perceived ancestry on genetic ancestry and controls: $R_i^2 = 0.75$

In order to achieve a standard error on identity equal to or less than 100 grams, roughly 385 observations are needed.

5 Acknowledgements

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References

Almond, Douglas, "Is the 1918 influenza pandemic over? Long-term effects of in utero influenza exposure in the post-1940 US population," *Journal of political Economy*, 2006, *114* (4), 672–712.

[5] Formula 3.6.1 on page 86 of Cohen et al. (2003).

_ **and Janet Currie**, "Killing me softly: The fetal origins hypothesis," *Journal of economic perspectives*, 2011, *25* (3), 153–172.

_ **, Kenneth Y. Chay, and David S. Lee**, "The costs of low birth weight," *The Quarterly Journal of Economics*, 2005, *120* (3), 1031–1083.

Ancestry Composition: 23andMe's State-of-the-Art Geographic Ancestry Analysis

Ancestry Composition: 23andMe's State-of-the-Art Geographic Ancestry Analysis, */urlhttps://www.23andme.com/ancestry-composition-guide/ 2022. Accessed: 7/15/2024.*

Anum, Emmanuel A., Edward H. Springel, Mark D. Shriver, and Jerome F. Strauss, *"Genetic contributions to disparities in preterm birth," Pediatric research, 2009, 65 (1), 1.*

Bodenhorn, Howard, *The color factor: The economics of African-American well-being in the nineteenth-century South, Oxford University Press, 2015.*

Chae, David H., Sean Clouston, Connor D. Martz, Mark L. Hatzenbuehler, Hannah LF Cooper, Rodman Turpin, Seth Stephens-Davidowitz, and Michael R. Kramer, *"Area racism and birth outcomes among Blacks in the United States," Social science and medicine, 2018, 199, 49–55.*

Cohen, Jacob, Patricia Cohen, Stephen G West, and Leona S Aiken, *Applied multiple regression/correlation analysis for the behavioral sciences, 3. ed., Mahwah, NJ: L. Erlbaum Associates, 2003.*

David, Richard and James Collins, Jr., *"Disparities in infant mortality: what's genetics got to do with it?," American Journal of Public Health, 2007, 97 (7), 1191–1197.*

Durand, Eric Y, Chuong B Do, Peter R Wilton, Joanna L Mountain, Adam Auton, G David Poznik, and J Michael Macpherson, *"A scalable pipeline for local ancestry inference using tens of thousands of reference haplotypes," bioRxiv, 2021, pp. 2021–01.*

Elder, Todd E, John H Goddeeris, and Steven J Haider, *"Racial and ethnic infant mortality gaps and the role of socioeconomic status," Labour economics, 2016, 43, 42–54.*

Elder, Todd E., John H. Goddeeris, Steven J. Haider, and Nigel Paneth, *"The changing character of the Black–White infant mortality gap, 1983–2004," American Journal of Public Health, 2014, 104 (S1), S105–S111.*

Frey, Heather A., Molly J. Stout, Laurel N. Pearson, Methodius G. Tuuli, Alison G. Cahill, Jerome F. Strauss III, Luis M. Gomez, Samuel Parry, Jenifer E. Allsworth, and George A. Macones, *"Genetic variation associated with preterm birth in African-American women," American Journal of Obstetrics and Gynecology, 2016, 215 (2), 235. e1–235. e8.*

Geronimus, Arline T, *"The weathering hypothesis and the health of African-American women and infants: evidence and speculations," Ethnicity & disease, 1992, pp. 207–221.*

Jencks, Christopher and Meredith Phillips, *The Black-White test score gap, Brookings Institution Press, 2011.*

Loehlin, John C., Steven G. Vandenberg, and R. Travis Osborne, *"Blood group genes and Negro-White ability differences," Behavior genetics, 1973, 3 (3), 263–270.*

Morgan, SL, *Counterfactuals and causal inference, Cambridge University Press, 2015.*

Noto, Keith, Yong Wang, Shiya Song, David Turissini, Alisa Sedghifar, Barry Starr, Jake Byrnes, Eurie Hong, Catherine Ball, and Kenneth Chahine, *"Ethnicity Estimate White Paper,"* `https://www.ancestry.com/cs/dna-help/ethnicity/whitepaper` *2013. Accessed: 7/15/2024.*

Orchard, Jacob and Joseph Price, *"County-level racial prejudice and the black-white gap in infant health outcomes," Social science and medicine, 2017, 181, 191–198.*

Oreopoulos, Philip, Mark Stabile, Randy Walld, and Leslie L. Roos, *"Short-, medium-, and long-term consequences of poor infant*

health an analysis using siblings and twins," Journal of human Resources, 2008, 43 (1), 88–138.

Osterman, MJK, BE Hamilton, JA Martin, AK Driscoll, and CP Valenzuela, *"Births: Final data for 2022," 2024.*

Scarr, Sandra, Andrew J. Pakstis, Solomon H. Katz, and William B. Barker, *"Absence of a relationship between degree of White ancestry and intellectual skills within a Black population," Human genetics, 1977, 39 (1), 69–86.*

Shin, Eui Hang, *"Black-white differentials in infant mortality in the south, 1940–1970," Demography, 1975, 12 (1), 1–19.*

Speights, Joedrecka S. Brown, Samantha Sittig Goldfarb, Brittny A. Wells, Leslie Beitsch, Robert S. Levine, and George Rust, *"State-level progress in reducing the Black–White infant mortality gap, United States, 1999–2013," American Journal of Public Health, 2017, 107 (5), 775–782.*

A Additional Study Background

Summary of responses.

Summary of Responses	
Stage	Count
Initial responses	153
Dropped responses:	
DNA analysis not reported	15
Excluded based on cutoffs	12
No pregnancy reported	6
Multiples	6
No data on length of pregnancy	1
Main dataset	113
No data on weight	14
No data on age at pregnancy	1
Birthweight dataset	98

Table 2: Summary of responses gathered May-June 2020 and May-September 2021.

Summary of Responses				
	Study		US 2022	
	Black	White	Black	White
Less than 2,000g	0	4.69	5.74	2.42
2,000-2,499	5.88	10.94	9.01	4.70
2,500-2,999	38.24	9.38	26.40	16.84
3,000-3,499	32.35	21.88	37.23	38.38
3,500-3,999	14.71	37.50	17.57	28.91
4,000g and greater	8.82	15.63	4.05	8.74

Table 3: Comparison of study birthweights with US data from the National Center for Health Statistics for 2022 Osterman et al. (2024).

B Additional Detail on Self-Identification

For the analysis in the main paper we use "Any self-identification as Black" as the key variable for self-identification. In the questionnaire, respondents were encouraged to note any of the standard U.S. Census racial categories ("White", "Black or African-American", "American Indian or Alaska Native", "Asian" or "Other"). Any self-identification then corresponded to those who checked "Black or African-American" regardless of what other categories they checked. We have a fuller measure of self-identification which notes if they only checked "Black", if they checked "Black" and another category, or if they did not check "Black." The following data summarizes some of the patterns by this measure.

Black Self-Identification: Breakdown of Income and Education Covariates					
			Income		
	$< \$25{,}000$	\$25-50,000	\$50-100,000	$> \$100{,}000$	Total
Black self-identity..					
strong	3	5	8	4	20
some	2	5	7	0	14
none	9	12	27	16	64
Total	14	22	42	20	98
N	98				

			Education		
	< high school	High school	Bachelor's degree	Graduate degree	Total
Black self-identity..					
strong	0	7	6	7	20
some	1	6	3	4	14
none	3	26	14	21	64
Total	4	39	23	32	98
N	98				

Table 4: Summary of income and education by racial self-identity.

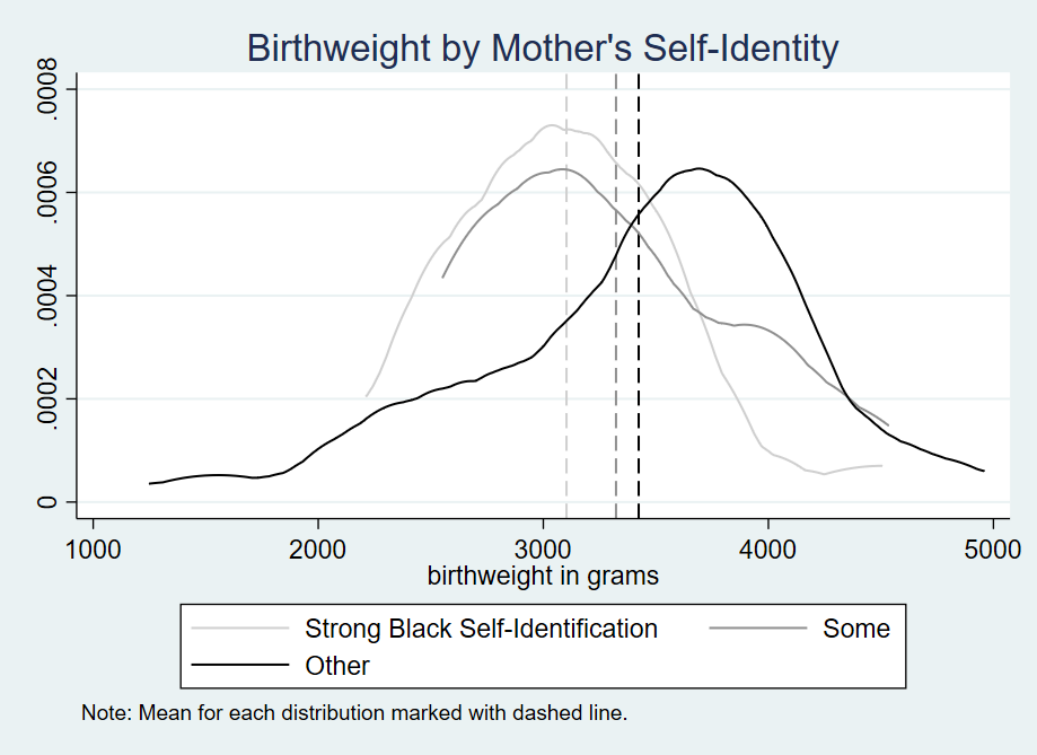


Figure 6: (
The above graph summarizes the distribution of birthweights for the three categories of Black self-identification.

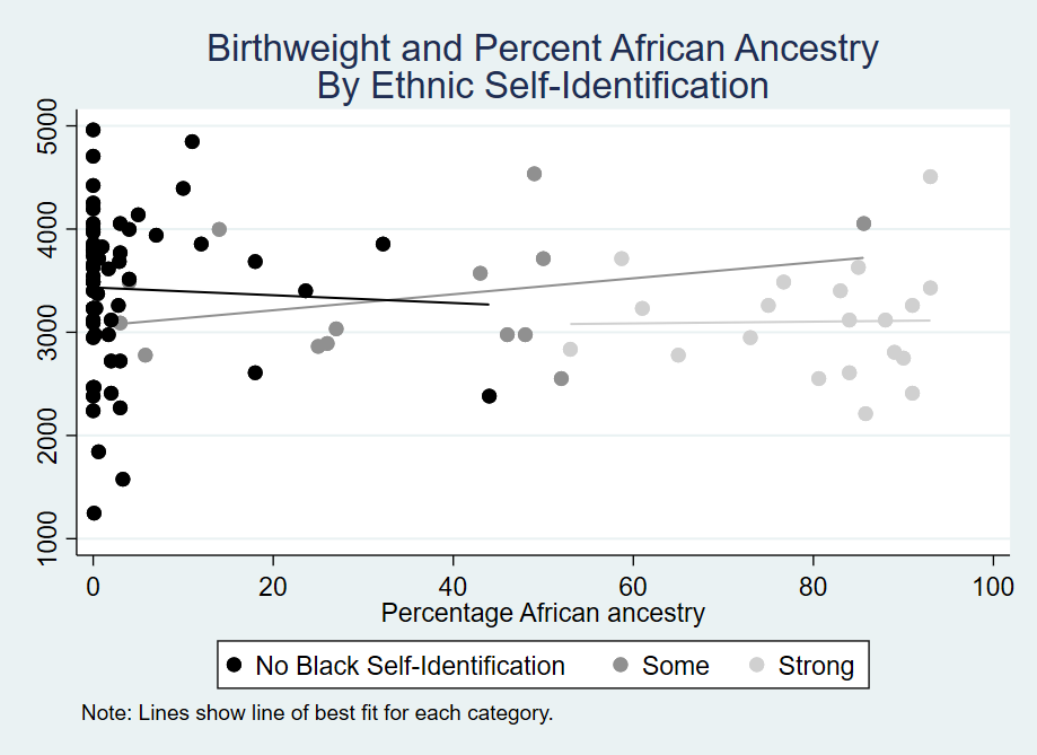


Figure 7: (
The above graph summarizes the relationship between percentage African ancestry and birthweight for the three categories of Black self-identification.

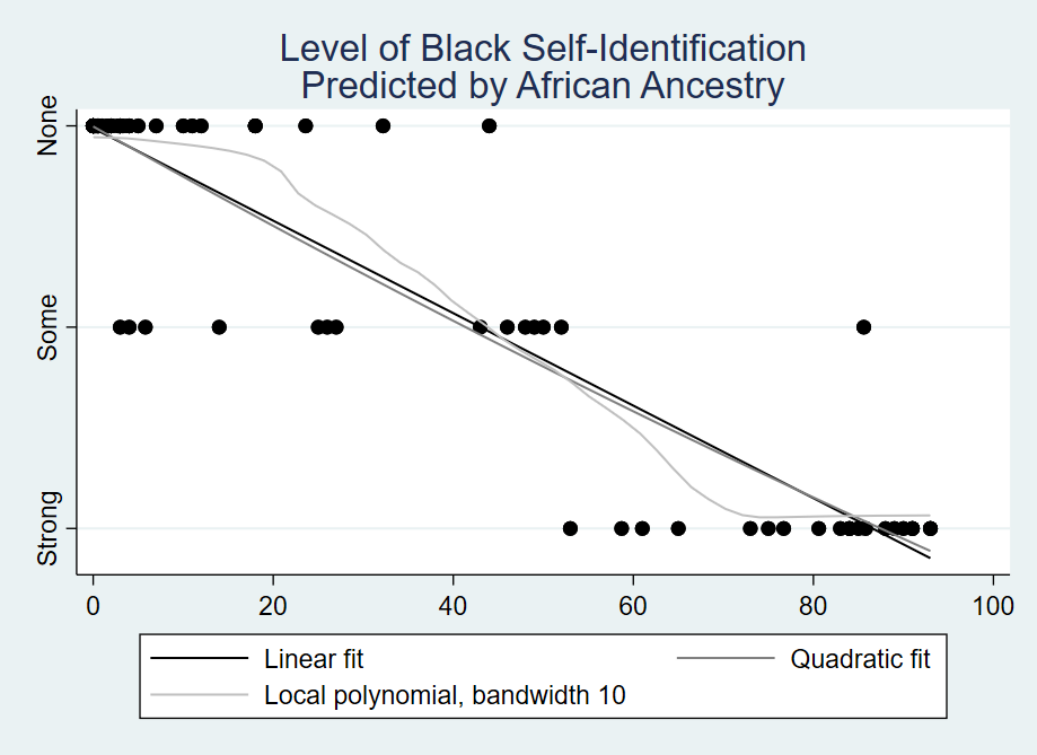


Figure 8: (
The above graph uses percentage of African ancestry to predict where respondents align in the three categories of Black self-identification.

C Additional Detail on Perceived Ancestry

For the analysis in the main paper we use "Any perceived African ancestry" as the key variable for perceived ancestry. In the questionnaire, respondents were asked to note how often strangers perceived them to have African, European, Native American/Pacific Islander, Asian and Other ancestries (they could respond "Always", "Sometimes", "Never" for any combination of these). Any perceived African ancestry then corresponded to those who checked either "Always" or "Sometimes" for African ancestry. We have a fuller measure of perceived African ancestry which notes if for African ancestry (a) they checked "Always", (b) "Sometimes," or (c) "Never." The following data summarizes some of the patterns by this measure.

Perceived African Ancestry: Breakdown of Income and Education Covariates					
			Income		
	$< \$25{,}000$	\$25-50,000	\$50-100,000	$> \$100{,}000$	Total
African ancestry..					
always perceived	6	9	12	4	31
sometimes perceived	2	5	5	0	12
never perceived	6	8	25	16	55
Total	14	22	42	20	98
N	98				

			Education		
	< high school	High school	Bachelor's degree	Graduate degree	Total
African ancestry..					
always perceived	1	15	4	11	31
sometimes perceived	0	5	4	3	12
never perceived	3	19	15	18	55
Total	4	39	23	32	98
N	98				

Table 5: Summary of income and education by perceived ancestry.

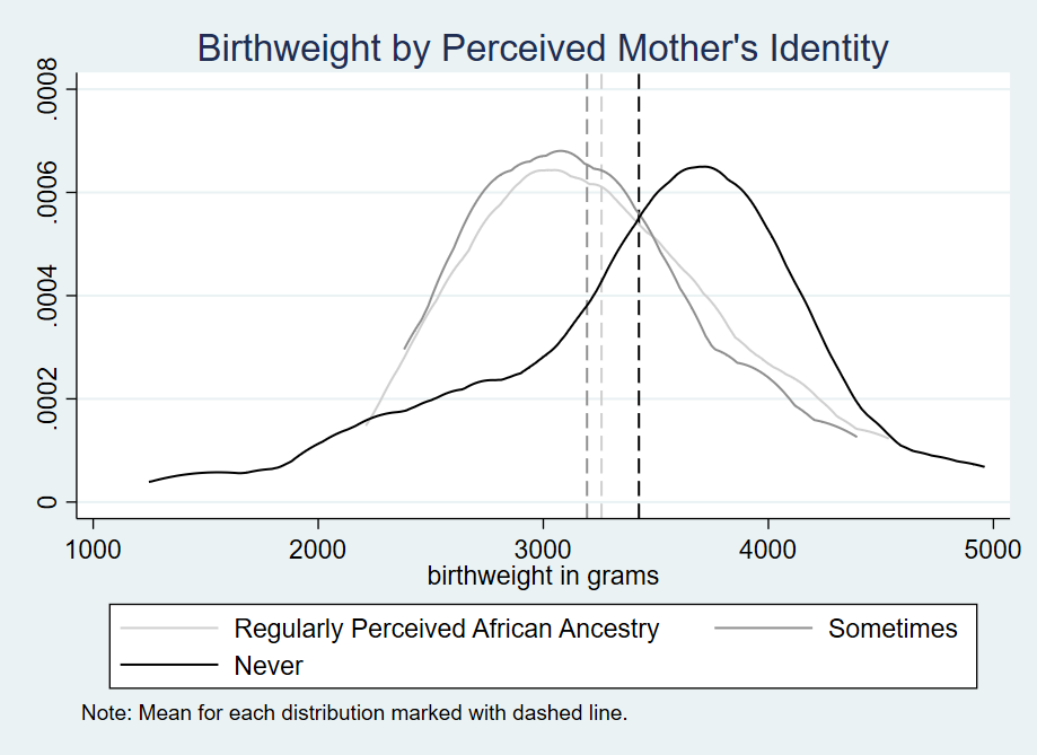


Figure 9: (
The above graph summarizes the distribution of birthweights for the three categories of perceived African ancestry.

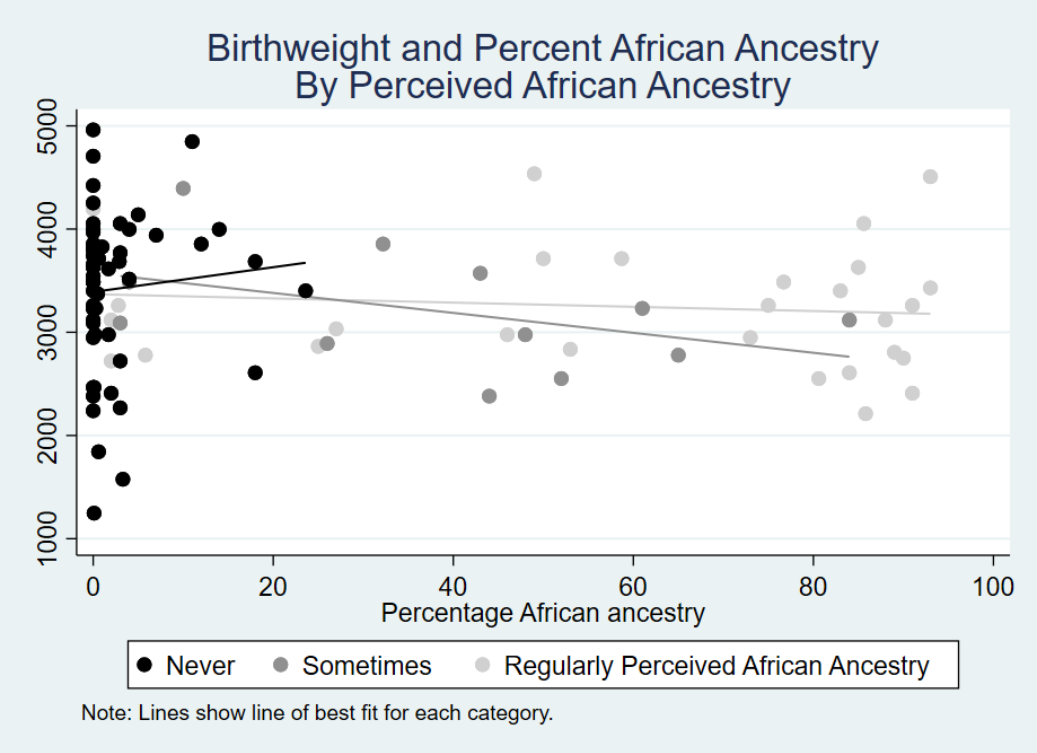


Figure 10: (
The above graph summarizes the relationship between percentage African ancestry and birthweight for the three categories of perceived African ancestry.

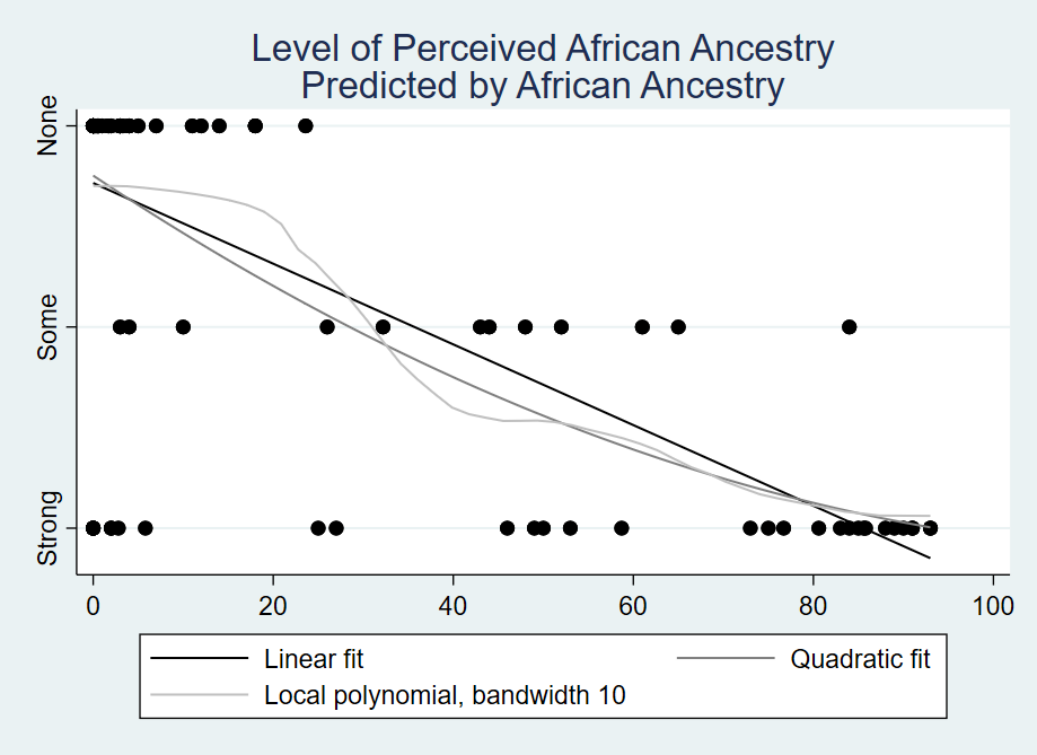


Figure 11: (
The above graph uses percentage of African ancestry to predict where respondents align in the three categories of perceived African ancestry.

D Additional Detail on Main Regressions

Birthweight Regressed on Controls and Genetic African Ancestry (GA)						
		Controls Only			Controls and Ancestry (GA)	
		GA > 2.5%	GA reg wgt		GA > 2.5%	GA reg wgt
Percentage African ancestry				-2.9	-5.1	-4.5
				(2.1)	(2.8)	(2.7)
High school	-484.1	450.2	-436.6	-421.5	601.9	-250.3
	(596.4)	(1063.5)	(509.9)	(596.9)	(948.1)	(531.1)
Bachelor's degree	-757.2	216.7	-949.4	-670.3	433.9	-700.4
	(588.5)	(1090.1)	(519.9)	(595.0)	(973.2)	(555.4)
Graduate degree	-403.1	364.7	-585.2	-307.0	664.6	-333.6
	(578.4)	(1096.8)	(525.7)	(579.7)	(986.6)	(542.8)
$25-50,000	54.6	321.8	461.9	46.4	349.0	472.9
	(276.7)	(363.4)	(338.0)	(276.8)	(353.1)	(312.6)
$50-100,000	210.9	232.4	368.4	175.6	198.0	332.7
	(246.1)	(332.4)	(321.7)	(243.8)	(320.7)	(312.7)
More than $100,000	-40.1	-176.7	26.7	-84.9	-257.7	-11.0
	(326.6)	(488.7)	(415.8)	(323.0)	(465.2)	(386.2)
Age at pregnancy	-2.1	5.8	11.3	-1.7	7.7	11.6
	(14.6)	(19.3)	(16.9)	(14.2)	(18.9)	(16.5)
R-squared	0.068	0.099	0.138	0.087	0.157	0.183
Adj R-squared	-0.004	-0.041	0.071	0.005	0.004	0.110
F value	0.877	0.540	1.548	1.229	1.202	1.893
N	98	53	98	98	53	98
Education Wald F	1.44	0.31	3.01	1.33	0.41	2.06
Education Wald p	0.24	0.82	0.03	0.27	0.75	0.11
Income Wald F	0.80	0.81	1.20	0.77	1.16	1.58
Income Wald p	0.50	0.50	0.32	0.51	0.33	0.20
Ed & Inc F	1.02	0.61	1.69	0.92	0.80	1.53
Ed & Inc p	0.42	0.72	0.13	0.48	0.58	0.18

* $p < 0.05$

Birthweight Regressed on Controls, Perceived African Ancestry (PA), and Black Self-Identification (SI)						
	Perceived African Ancestry (PA)			Black Self-Identification (SI)		
		GA > 2.5%	GA reg wgt		GA > 2.5%	GA reg wgt
Others perceive	-226.2	-523.2*	-425.6*			
African ancestry	(161.1)	(231.4)	(180.7)			
Black self identity				-236.1	-436.1*	-382.8*
				(151.2)	(209.5)	(182.9)
High school	-424.9	277.7	-221.7	-469.7	207.0	-300.5
	(575.5)	(1732.7)	(480.2)	(570.2)	(464.4)	(495.1)
Bachelor's degree	-711.7	45.4	-703.6	-715.0	44.7	-738.0
	(571.9)	(1740.7)	(502.7)	(567.7)	(499.7)	(522.1)
Graduate degree	-326.1	317.6	-291.9	-364.8	221.7	-429.9
	(560.6)	(1749.4)	(493.8)	(554.3)	(533.6)	(504.1)
$25-50,000	62.2	421.2	412.4	71.6	462.3	527.4
	(277.7)	(354.5)	(320.9)	(278.2)	(350.9)	(302.3)
$50-100,000	162.9	217.6	278.5	196.6	305.9	392.8
	(241.8)	(317.2)	(313.9)	(240.4)	(313.1)	(302.4)
More than $100,000	-135.4	-376.5	-195.8	-88.2	-244.1	-7.5
	(325.8)	(463.8)	(384.4)	(320.7)	(471.4)	(386.0)
Age at pregnancy	-2.5	5.0	8.0	-3.5	2.9	8.1
	(13.5)	(16.2)	(15.5)	(13.9)	(18.4)	(15.6)
R-squared	0.092	0.207	0.209	0.094	0.182	0.210
Adj R-squared	0.010	0.062	0.138	0.013	0.034	0.139
F value	1.151	1.507	2.620	1.282	1.776	2.747
N	98	53	98	98	53	98
Education Wald F	1.60	0.50	2.65	1.31	0.23	1.92
Education Wald p	0.19	0.68	0.05	0.28	0.88	0.13
Income Wald F	0.88	1.91	1.93	0.93	1.97	2.32
Income Wald p	0.46	0.14	0.13	0.43	0.13	0.08
Ed & Inc F	1.10	1.33	2.17	1.01	1.33	1.90
Ed & Inc p	0.37	0.27	0.05	0.42	0.26	0.09

* $p < 0.05$

Birthweight Regressed on Controls, Genetic African Ancestry (GA) Perceived African Ancestry (PA) and Black Self-Identification (SI)						
	Perceived African Ancestry (PA)			Black Self-Identification (SI)		
		GA > 2.5%	GA reg wgt		GA > 2.5%	GA reg wgt
Percentage African ancestry	-1.1	-0.4	-0.9	0.0	-1.2	-0.5
	(2.9)	(4.2)	(4.3)	(4.1)	(4.0)	(4.5)
Others perceive	-173.1	-503.4	-376.4			
African ancestry	(228.8)	(350.9)	(303.8)			
Black self identity				-236.7	-373.0	-357.1
				(297.2)	(304.3)	(308.0)
High school	-416.1	295.3	-209.3	-469.9	277.3	-288.6
	(589.7)	(774.4)	(498.9)	(584.3)	(532.4)	(506.0)
Bachelor's degree	-691.0	67.8	-682.1	-715.2	119.9	-724.0
	(589.3)	(814.6)	(530.5)	(586.9)	(582.4)	(538.7)
Graduate degree	-309.5	341.2	-275.4	-365.0	311.9	-411.9
	(574.8)	(829.2)	(512.9)	(570.6)	(613.3)	(518.1)
$25-50,000	57.5	419.4	420.3	71.6	448.3	524.2
	(284.2)	(373.3)	(306.9)	(282.6)	(352.8)	(299.7)
$50-100,000	161.4	215.7	281.7	196.7	287.3	387.2
	(244.4)	(333.3)	(307.9)	(244.3)	(311.0)	(296.9)
More than $100,000	-129.2	-374.9	-177.6	-88.1	-253.1	-9.5
	(325.4)	(467.9)	(370.5)	(325.1)	(468.7)	(384.2)
Age at pregnancy	-2.3	5.1	8.4	-3.5	3.7	8.3
	(13.7)	(16.4)	(15.5)	(14.2)	(18.4)	(15.8)
R-squared	0.093	0.207	0.210	0.094	0.184	0.210
Adj R-squared	0.000	0.041	0.129	0.001	0.013	0.130
F value	1.086	1.526	2.312	1.131	1.546	2.444
N	98	53	98	98	53	98
Education Wald F	1.45	0.51	2.41	1.28	0.27	1.81
Education Wald p	0.23	0.67	0.07	0.29	0.84	0.15
Income Wald F	0.83	1.63	1.75	0.92	1.80	2.30
Income Wald p	0.48	0.20	0.16	0.44	0.16	0.08
Ed & Inc F	0.98	1.21	1.88	0.98	1.29	1.78
Ed & Inc p	0.44	0.32	0.09	0.45	0.28	0.11
Ed & Inc p	0.37	0.27	0.05	0.42	0.26	0.09

* $p < 0.05$