**Appendix for:**

**Black-white differences in perceived lifetime discrimination by education and income**

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1. **Formal description of our models**

Our GSEM models (including our interactive terms of interest) estimates for each type of discrimination, equations of the following form:

$$log\left\{E\left(y\_{ij}\right)\right\}=α\_{j}+π\_{j}R\_{i}+\sum\_{e}^{}γ\_{je}E\_{ie}+\sum\_{t}^{}θ\_{jt}I\_{it}+\sum\_{e}^{}ϑ\_{je}\left(R\_{i}\*E\_{ie}\right)+\sum\_{t}^{}ρ\_{jt}\left(R\_{i}\*I\_{it}\right)+\sum\_{k=1}^{n}δ\_{jk}X\_{ik}+ε\_{ij}, y\~F$$

where $log\left\{E\left(y\_{ij}\right)\right\}$ is the natural logarithm (denoting the log link) of the value reported by individual $i$ on type of lifetime discriminatory experience $j$ and that its functional form follows a Poisson distribution. The GSEM model also estimates intercept $α\_{j}$ for each discriminatory experience $j$. $R\_{i}$ is the race of the individual, with coefficients $π\_{j}$ estimated for each discriminatory experience $j$. The term $\sum\_{e}^{}γ\_{je}E\_{ije}$ is a vector where education $E$ of individual $i$ varies across educational category dummies $e$, each category with an assigned coefficient $γ\_{je}$ for each type of discriminatory experience $j$. This same notation applies to the expression $\sum\_{t}^{}θ\_{jt}I\_{it}$, where income $I$ of individual $i$ takes on tertile $t$ dummies and for which a coefficient $θ\_{jt}$ is estimated to each type of discriminatory experience $j$. The terms $\sum\_{e}^{}ϑ\_{je}\left(R\_{i}\*E\_{ie}\right)$ and $\sum\_{t}^{}ρ\_{jt}\left(R\_{i}\*I\_{it}\right)$ represent the interactions between race and each education categories and income tertiles with their respective coefficients $ϑ\_{je}$ and $ρ\_{jt}$ for each type of discriminatory experience $j$. The GSEM model also includes a set of $k $covariates $X\_{ik}$ (the same used in the propensity scores estimation) with their respective set of $k $coefficients $δ\_{jk}$, one for each covariate $X\_{ik}$ and for each type of discriminatory experience $j$. The error terms are for each individual $i$ for each of the types of discriminatory experience equations $j$, and they are allowed to correlate across equations. All parameters are estimated simultaneously using maximum likelihood estimation.

In addition to estimate the associations between race, education, income, and their respective race-interactions with each of the perceived lifetime discriminatory experiences, we also tested the hypothesis that these associations hold using an overall index of lifetime discrimination. To test this hypothesis, we used a weighted Generalized Linear Model (GLM) with a log link. The econometric specification of this model is of the following form:

$$log\left\{E\left(y\_{i}\right)\right\}=β\_{0}+β\_{1}R\_{i}+\sum\_{e}^{}φ\_{e}E\_{ie}+\sum\_{t}^{}ω\_{t}I\_{it}+\sum\_{e}^{}σ\_{e}\left(R\_{i}\*E\_{ie}\right)+\sum\_{t}^{}μ\_{jt}\left(R\_{i}\*I\_{it}\right)+\sum\_{k=1}^{n}λ\_{k}X\_{ik}+ε\_{i}, y\~F$$

where $log\left\{E\left(y\_{i}\right)\right\}$ denotes the log link for our overall lifetime discrimination index. All variables in the right side of the equation are the same variables implemented in the GSEM model. The notation $y\~F$ demotes the distributional family of our discrimination index $y\_{i}$ (in our case, Gamma, which was determined using a Park test [49]). All parameters were estimated using Ordinary Least Squares and the standard errors using robust estimation.

1. **Additional tables**
2. **Correlation matrices for MIDUS 1 and MIDUS Refresher**

Table 1A. Correlation matrix (MIDUS 1)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variables | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
| Discrimination |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| (1) High education  | 1.00 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| (2) Denied job  | 0.278\* | 1.00 |  |  |  |  |  |  |  |  |  |  |  |  |
| (3) Promotion  | 0.312\* | 0.471\* | 1.00 |  |  |  |  |  |  |  |  |  |  |  |
| (4) Buy a home | 0.208\* | 0.210\* | 0.193\* | 1.00 |  |  |  |  |  |  |  |  |  |  |
| (5) By police | 0.219\* | 0.230\* | 0.225\* | 0.248\* | 1.00 |  |  |  |  |  |  |  |  |  |
| (6) Denied loan  | 0.214\* | 0.306\* | 0.325\* | 0.288\* | 0.257\* | 1.00 |  |  |  |  |  |  |  |  |
| (7) Medical care | 0.192\* | 0.232\* | 0.246\* | 0.218\* | 0.203\* | 0.243\* | 1.00 |  |  |  |  |  |  |  |
| (8) Other service | 0.220\* | 0.223\* | 0.273\* | 0.143\* | 0.173\* | 0.262\* | 0.284\* | 1.00 |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| (9) Race (Black) | 0.148\* | 0.132\* | 0.151\* | 0.232\* | 0.219\* | 0.178\* | 0.074\* | 0.072\* | 1.00 |  |  |  |  |  |
| (10) Education | 0.078\* | 0.056\* | 0.061\* | 0.01 | 0.037\* | -0.02 | 0.02 | 0.072\* | -0.053\* | 1.00 |  |  |  |  |
| (11) Income  | 0.03 | -0.01 | 0.02 | -0.02 | -0.02 | -0.02 | -0.03 | 0.02 | -0.106\* | 0.285\* | 1.00 |  |  |  |
| (12) Age | -0.059\* | -0.056\* | -0.03 | -0.053\* | -0.114\* | -0.03 | -0.034\* | -0.072\* | -0.059\* | -0.114\* | -0.116\* | 1.00 |  |  |
| (13) Female | 0.054\* | -0.02 | 0.02 | -0.01 | -0.122\* | -0.01 | 0.03 | 0.136\* | 0.047\* | -0.102\* | -0.146\* | 0.02 | 1.00 |  |
| (14) Body mass index | 0.03 | 0.074\* | 0.050\* | 0.01 | 0.01 | 0.03 | 0.055\* | -0.01 | 0.092\* | -0.110\* | -0.039\* | 0.098\* | -0.074\* | 1.00 |
| *\*\*\* p<0.01, \*\* p<0.05, \* p<0.1* |
| *Eight discrimination, education and income variables are categorized into three groups.* |

Table 2A. Correlation matrix (MIDUS Refresher)

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Variables | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) | (10) | (11) | (12) | (13) | (14) |
| Discrimination |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| (1) High education  | 1.00 |  |  |  |  |  |  |  |  |  |  |  |  |  |
| (2) Denied job  | 0.484\* | 1.00 |  |  |  |  |  |  |  |  |  |  |  |  |
| (3) Promotion  | 0.566\* | 0.643\* | 1.00 |  |  |  |  |  |  |  |  |  |  |  |
| (4) Buy a home | 0.679\* | 0.535\* | 0.623\* | 1.00 |  |  |  |  |  |  |  |  |  |  |
| (5) By police | 0.605\* | 0.514\* | 0.582\* | 0.739\* | 1.00 |  |  |  |  |  |  |  |  |  |
| (6) Denied loan  | 0.604\* | 0.551\* | 0.622\* | 0.764\* | 0.661\* | 1.00 |  |  |  |  |  |  |  |  |
| (7) Medical care | 0.645\* | 0.520\* | 0.611\* | 0.793\* | 0.709\* | 0.726\* | 1.00 |  |  |  |  |  |  |  |
| (8) Other service | 0.550\* | 0.488\* | 0.568\* | 0.651\* | 0.586\* | 0.613\* | 0.669\* | 1.00 |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| (9) Race (Black) | 0.071\* | 0.102\* | 0.111\* | 0.115\* | 0.166\* | 0.057\* | 0.05 | 0.086\* | 1.00 |  |  |  |  |  |
| (10) Education | -0.03 | -0.05 | -0.04 | -0.063\* | -0.069\* | -0.099\* | -0.074\* | -0.04 | -0.057\* | 1.00 |  |  |  |  |
| (11) Income  | -0.03 | -0.116\* | -0.066\* | -0.04 | -0.05 | -0.067\* | -0.04 | -0.04 | -0.116\* | 0.387\* | 1.00 |  |  |  |
| (12) Age | 0.04 | 0.01 | 0.02 | 0.02 | -0.02 | 0.03 | 0.04 | 0.05 | -0.079\* | -0.089\* | -0.091\* | 1.00 |  |  |
| (13) Female | 0.01 | -0.00 | 0.01 | 0.02 | -0.059\* | 0.00 | 0.03 | 0.092\* | 0.083\* | -0.02 | -0.141\* | -0.01 | 1.00 |  |
| (14) Body mass index | 0.04 | 0.083\* | 0.03 | 0.02 | 0.00 | 0.05 | 0.04 | 0.02 | 0.104\* | -0.207\* | -0.155\* | 0.062\* | 0.02 | 1.00 |
| *\*\*\* p<0.01, \*\* p<0.05, \* p<0.1* |

*Eight discrimination, education and income variables are categorized into three groups.*

1. **Interactive GSEM model results for MIDUS 1 and MIDUS Refresher**

Table 3A. Interactive GSEM parameter estimates for types of lifetime discrimination (MIDUS 1)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **High education** | **Denied job**  | **Promotion** | **Buy a home** | **By police** | **Denied loan** | **Medical care** | **Other service** |
|  | Coeff. | (SE) | Coeff. | (SE) | Coeff. | (SE) | Coeff. | (SE) | Coeff. | (SE) | Coeff. | (SE) | Coeff. | (SE) | Coeff. | (SE) |
| Black | -.349 | (.653) | .634\* | (.307) | .398 | (.349) | 1.060 | (.695) | .793 | (.626) | -.243 | (.542) | .317 | (.954) | -.854 | (.614) |
| Some college | -.011 | (.230) | .236 | (.135) | .294 | (.159) | -.046 | (.407) | -.061 | (.309) | -.007 | (.235) | .220 | (.434) | .189 | (.182) |
| At least Bachelor’s | .660\*\* | (.224) | .376\*\* | (.136) | .470\*\* | (.163) | -.423 | (.447) | .189 | (.294) | -.240 | (.249) | .738 | (.454) | .470\*\* | (.181) |
| Mid tertile | -.538\* | (.221) | .098 | (.132) | -.075 | (.158) | -.822 | (.433) | -.538\* | (.266) | -.335 | (.235) | -.706 | (.406) | -.104 | (.175) |
| Top tertile | -.146 | (.211) | -.057 | (.144) | .011 | (.161) | -.174 | (.401) | -.471 | (.284) | -.218 | (.248) | -.526 | (.404) | -.022 | (.177) |
| Black X Some college | .770 | (.523) | .200 | (.348) | -.019 | (.393) | -.282 | (.712) | .745 | (.505) | 1.079\* | (.531) | .611 | (1.000) | .715 | (.547) |
| Black X At least BA | -.083 | (.590) | .196 | (.377) | -.011 | (.414) | 1.115 | (.691) | .250 | (.585) | .664 | (.643) | .826 | (.904) | .640 | (.648) |
| Black X Mid tertile | 2.489\*\*\* | (.693) | .102 | (.366) | 1.003\* | (.442) | 1.579\* | (.730) | 1.144\* | (.547) | 1.775\*\*\* | (.522) | .732 | (.916) | 1.280\* | (.631) |
| Black X Top tertile | 2.393\*\*\* | (.632) | .757\* | (.370) | 1.162\*\* | (.421) | 1.266 | (.683) | 1.631\*\* | (.536) | 1.579\*\* | (.516) | 1.667\* | (.697) | 1.900\*\*\* | (.569) |
| Age | -.013 | (.009) | -.004 | (.004) | .002 | (.005) | -.055\*\* | (.020) | -.039\*\*\* | (.009) | -.019\* | (.009) | -.012 | (.017) | -.020\*\*\* | (.006) |
| Residual of age^2 | -.003\*\*\* | (.001) | -.001\*\*\* | (.000) | -.001\*\*\* | (.000) | -.003 | (.001) | -.002\* | (.001) | -.002\* | (.001) | -.003\* | (.001) | -.001\* | (.000) |
| Female | .394\* | (.156) | -.041 | (.098) | .162 | (.113) | -.014 | (.281) | -1.082\*\*\* | (.215) | .120 | (.175) | .822\*\* | (.309) | 1.184\*\*\* | (.153) |
| Body Mass Index | .032\* | (.013) | .025\*\* | (.009) | .021 | (.011) | .019 | (.027) | .003 | (.019) | .020 | (.018) | .036 | (.033) | .006 | (.013) |
| Constant | -3.354\*\*\* | (.611) | -2.315\*\*\* | (.388) | -2.984\*\*\* | (.428) | -1.824 | (1.101) | -.786 | (.843) | -2.460\*\*\* | (.622) | -4.853\*\*\* | (1.106) | -2.215\*\*\* | (.487) |
| Log pseudolikelihood | -9772738 |  |  |  |  |  |  |  |  |  |  |  |
| AIC | 1.95e+07 |  |  |  |  |  |  |  |  |  |  |  |
| BIC | 1.95e+07 |  |  |  |  |  |  |  |  |  |  |  |
| Observations |  | 5,265 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Statistical significance code: \* p<.05, \*\* p<.01, \*\*\* p<.001 |

* **MIDUS Refresher**

Table 4A. Interactive GSEM parameter estimates for types of lifetime discrimination (MIDUS Refresher)

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | **High education** | **Denied job**  | **Promotion** | **Buy a home** | **By police** | **Denied loan** | **Medical care** | **Other service** |
|  | Coeff. | (SE) | Coeff. | (SE) | Coeff. | (SE) | Coeff. | (SE) | Coeff. | (SE) | Coeff. | (SE) | Coeff. | (SE) | Coeff. | (SE) |
| Black | -.142\*\*\* | (.015) | -.072\*\*\* | (.010) | .101\*\*\* | (.011) | .492\*\*\* | (.014) | .535\*\*\* | (.010) | -.253\*\*\* | (.014) | .357\*\*\* | (.014) | .398\*\*\* | (.012) |
| Some college | .141\*\*\* | (.006) | .242\*\*\* | (.004) | .129\*\*\* | (.005) | .322\*\*\* | (.008) | -.056\*\*\* | (.006) | -.166\*\*\* | (.006) | .329\*\*\* | (.007) | .251\*\*\* | (.006) |
| At least Bachelor’s | .063\*\*\* | (.007) | .044\*\*\* | (.005) | -.044\*\*\* | (.006) | -.402\*\*\* | (.010) | -.606\*\*\* | (.008) | -.743\*\*\* | (.008) | -.242\*\*\* | (.008) | .173\*\*\* | (.006) |
| Mid tertile | -.052\*\*\* | (.006) | -.271\*\*\* | (.004) | -.218\*\*\* | (.005) | -.222\*\*\* | (.008) | -.105\*\*\* | (.007) | -.191\*\*\* | (.006) | .015\* | (.007) | -.058\*\*\* | (.006) |
| Top tertile | .030\*\*\* | (.008) | -.369\*\*\* | (.006) | -.149\*\*\* | (.006) | .173\*\*\* | (.009) | .190\*\*\* | (.008) | -.008 | (.008) | .196\*\*\* | (.009) | .047\*\*\* | (.007) |
| Black × Some college | .880\*\*\* | (.019) | .581\*\*\* | (.013) | .386\*\*\* | (.014) | .403\*\*\* | (.019) | .539\*\*\* | (.014) | .725\*\*\* | (.019) | .285\*\*\* | (.019) | .118\*\*\* | (.016) |
| Black × At least BA | .817\*\*\* | (.021) | .709\*\*\* | (.015) | .744\*\*\* | (.016) | 1.012\*\*\* | (.021) | .962\*\*\* | (.016) | 1.008\*\*\* | (.022) | .365\*\*\* | (.025) | .557\*\*\* | (.017) |
| Black × Mid tertile | -.413\*\*\* | (.019) | -.157\*\*\* | (.013) | .083\*\*\* | (.014) | .155\*\*\* | (.018) | .477\*\*\* | (.014) | -.177\*\*\* | (.020) | -.374\*\*\* | (.020) | -.279\*\*\* | (.015) |
| Black × Top tertile | -.049\* | (.022) | -.095\*\*\* | (.018) | -.353\*\*\* | (.020) | -.505\*\*\* | (.025) | -.172\*\*\* | (.019) | .044 | (.024) | -.642\*\*\* | (.030) | -.091\*\*\* | (.019) |
| Age | .009\*\*\* | (.000) | -.000 | (.000) | -.001\*\*\* | (.000) | .004\*\*\* | (.000) | -.008\*\*\* | (.000) | -.003\*\*\* | (.000) | .009\*\*\* | (.000) | .014\*\*\* | (.000) |
| Residual of age^2 | .000\*\*\* | (.000) | .000\*\*\* | (.000) | .000\*\*\* | (.000) | .001\*\*\* | (.000) | .000\*\*\* | (.000) | .000\*\*\* | (.000) | -.000 | (.000) | -.000\*\*\* | (.000) |
| Female | .047\*\*\* | (.005) | -.178\*\*\* | (.004) | -.159\*\*\* | (.004) | -.093\*\*\* | (.006) | -.642\*\*\* | (.005) | -.190\*\*\* | (.005) | -.005 | (.006) | .327\*\*\* | (.005) |
| Body Mass Index | -.003\*\*\* | (.000) | .004\*\*\* | (.000) | -.008\*\*\* | (.000) | -.039\*\*\* | (.000) | -.019\*\*\* | (.000) | .002\*\*\* | (.000) | .004\*\*\* | (.000) | -.005\*\*\* | (.000) |
| Constant | -1.985\*\*\* | (.015) | -.829\*\*\* | (.010) | -.685\*\*\* | (.012) | -.985\*\*\* | (.019) | -.200\*\*\* | (.015) | -1.053\*\*\* | (.014) | -2.478\*\*\* | (.017) | -2.243\*\*\* | (.014) |
| Log pseudolikelihood | -3926511 |  |  |  |  |  |  |  |  |  |  |  |
| AIC | 7853245 |  |  |  |  |  |  |  |  |  |  |  |
| BIC | 7853881 |  |  |  |  |  |  |  |  |  |  |  |
| Observations |  | 2,163 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| Statistical significance code: \* p<.05, \*\* p<.01, \*\*\* p<.001 |

1. **GLM results for MIDUS 1 and MIDUS Refresher**
* **MIDUS 1**

|  |
| --- |
| Table 5A. GLM parameter estimates for overall index of discrimination (MIDUS 1) |
|  | **Coeff.** | **SE** |
| **Black** | .401 | (.312) |
| **Some college** | .218 | (.116) |
| **At least BA** | .362\*\* | (.115) |
| **Black X Some college** | .362 | (.318) |
| **Black X At least BA** | .411 | (.410) |
| **Mid tertile** | -.098 | (.110) |
| **Top tertile** | -.048 | (.121) |
| **Black X Mid tertile** | .860\*\* | (.313) |
| **Black X Top tertile** | 1.255\*\*\* | (.297) |
| **Age** | -.016\*\*\* | (.004) |
| **Residual of squared age** | -.001\*\*\* | (.000) |
| **Female** | .239\*\* | (.086) |
| **Body Mass Index** | .022\* | (.008) |
| **Constant** | -.586 | (.314) |
| **AIC** | 4802917 |  |
| **BIC** | 4803008 |  |
|  |  |  |
| **Log pseudolikelihood** | -2401444 |  |
| **Observations** | 5,036 |  |
| Statistical significance code: \* p<.05, \*\* p<.01, \*\*\* p<.001 |

* **MIDUS Refresher**

|  |
| --- |
| Table 6A. GLM parameter estimates for overall index of discrimination (MIDUS Refresher) |
|  | **Coeff.** | **SE** |
| **Black** | .179 | (.225) |
| **Some college** | .132 | (.100) |
| **At least BA** | -.158 | (.105) |
| **Black X Some college** | .448 | (.332) |
| **Black X At least BA** | .765 | (.396) |
| **Mid tertile** | -.117 | (.096) |
| **Top tertile** | -.039 | (.121) |
| **Black X Mid tertile** | -.064 | (.333) |
| **Black X Top tertile** | -.199 | (.491) |
| **Age** | .002 | (.003) |
| **Residual of age^2** | .000 | (.000) |
| **Female** | -.073 | (.086) |
| **Body Mass Index** | -.005 | (.005) |
| **Constant** | .785\*\*\* | (.235) |
| **AIC** | 2621123 |  |
| **BIC** | 2621203 |  |
|  |  |  |
| **Log pseudolikelihood** | -1310548 |  |
| **Observations** | 2,163 |  |
| Statistical significance code: \* p<.05, \*\* p<.01, \*\*\* p<.001 |

1. **Additional figures**
2. **Education and income effects on different experiences of lifetime discrimination by race**
* **MIDUS 1**

Figure 1A. Education effects on different experiences of lifetime discrimination by race (MIDUS 1)



Note: predicted values from GSEM interactive model in Table 3A (MIDUS 1)

Figure 2A. Income effects on different experiences of lifetime discrimination by race (MIDUS 1)



Note: predicted values from GSEM interactive model in Table 3A (MIDUS 1)

* **MIDUS Refresher**

Figure 3A. Education effects on different experiences of lifetime discrimination by race (MIDUS Refresher)



Note: predicted values from GSEM interactive model in Table 4A (MIDUS Refresher)

Figure 4A. Income effects on different experiences of lifetime discrimination by race (MIDUS Refresher)



Note: predicted values from GSEM interactive model in Table 4A (MIDUS Refresher)