Table 5: Heterogeneous impacts of policy on neonatal mortality through boosting first-dose HBV vaccination across racial and ethnic minority groups

|  | Age: Day 1-3 | | | Age: 2 Days Old and Less | | | Age: 1 Day Old | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
|  | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) | (9) |
| African American (%)\*HBV Vaccination Rate\*Policy Dummy | -0.039 [0.968] | -0.432 [0.593] | -0.408 [0.614] | -0.184 [0.863] | -0.672 [0.429] | -0.646 [0.448] | -0.563 [0.612] | -0.083 [0.922] | -0.086 [0.918] |
|  | (0.985) | (0.807) | (0.808) | (1.062) | (0.849) | (0.851) | (1.109) | (0.846) | (0.837) |
| Hispanic American (%)\*HBV Vaccination Rate\*Policy Dummy | -3.240 [<0.001] | -2.313 [<0.001] | -2.316 [<0.001] | -3.165 [0.006] | -3.264 [<0.001] | -3.262 [<0.001] | 6.395 [0.010] | -2.723 [0.269] | -2.563 [0.295] |
|  | (0.938) | (0.595) | (0.595) | (1.161) | (0.647) | (0.647) | (2.484) | (2.462) | (2.447) |
| Asian American (%)\*HBV Vaccination Rate\*Policy Dummy | -8.657 [0.049] | -8.235 [0.009] | -8.162 [0.009] | -12.380 [0.011] | -12.625 [<0.001] | -12.603 [<0.001] | -5.011 [0.610] | 3.176 [0.616] | 3.362 [0.594] |
|  | (4.391) | (3.149) | (3.129) | (4.847) | (3.424) | (3.409) | (9.808) | (6.336) | (6.301) |
| American Indian and Alaskan Native (%)\*HBV Vaccination Rate\*Policy Dummy | -9.315 [0.034] | -0.678 [0.920] | -0.715 [0.916] | -9.649 [0.030] | -1.078 [0.871] | -1.101 [0.869] | -9.829 [0.023] | 0.975 [0.881] | 0.856 [0.896] |
|  | (4.397) | (6.711) | (6.761) | (4.435) | (6.633) | (6.693) | (4.315) | (6.496) | (6.525) |
| African American (%)\*Policy Dummy | 0.470 [0.506] | 0.275 [0.649] | 0.353 [0.563] | 0.479 [0.543] | 0.427 [0.515] | 0.503 [0.448] | 0.415 [0.636] | -0.645 [0.323] | -0.542 [0.402] |
|  | (0.706) | (0.604) | (0.611) | (0.789) | (0.656) | (0.662) | (0.877) | (0.652) | (0.647) |
| American Indian and Alaskan Native (%)\*Policy Dummy | 5.669 [0.152] | 0.270 [0.966] | 0.410 [0.949] | 5.954 [0.136] | 0.914 [0.884] | 1.031 [0.871] | 5.769 [0.131] | -1.492 [0.810] | -1.272 [0.839] |
|  | (3.959) | (6.346) | (6.407) | (3.993) | (6.268) | (6.338) | (3.821) | (6.192) | (6.241) |
| Hispanic American (%)\*Policy Dummy | 1.519 [0.004] | 1.973 [<0.001] | 1.971 [<0.001] | 1.408 [0.084] | 2.568 [<0.001] | 2.558 [<0.001] | -7.818 [<0.001] | 1.856 [0.445] | 1.758 [0.467] |
|  | (0.530) | (0.489) | (0.495) | (0.815) | (0.522) | (0.527) | (2.307) | (2.430) | (2.418) |
| Asian American (%)\*Policy Dummy | 16.935 [<0.001] | 11.387 [<0.001] | 11.207 [<0.001] | 20.107 [<0.001] | 15.485 [<0.001] | 15.315 [<0.001] | 10.717 [0.259] | -2.397 [0.706] | -2.390 [0.705] |
|  | (3.894) | (3.017) | (3.006) | (4.358) | (3.321) | (3.308) | (9.492) | (6.345) | (6.317) |
| African American (%)\*HBV Vaccination Rate | 2.242 [0.007] | 2.543 [<0.001] | 2.556 [<0.001] | 2.121 [0.017] | 2.694 [<0.001] | 2.716 [<0.001] | 1.344 [0.141] | 0.256 [0.685] | 0.253 [0.685] |
|  | (0.833) | (0.679) | (0.680) | (0.891) | (0.768) | (0.770) | (0.913) | (0.631) | (0.625) |
| Hispanic American (%)\*HBV Vaccination Rate | 2.025 [0.009] | 3.193 [<0.001] | 3.171 [<0.001] | 1.869 [0.059] | 3.472 [<0.001] | 3.449 [<0.001] | -7.969 [<0.001] | 2.001 [0.405] | 1.983 [0.406] |
|  | (0.772) | (0.469) | (0.465) | (0.989) | (0.496) | (0.494) | (2.288) | (2.403) | (2.388) |
| Asian American (%)\*HBV Vaccination Rate | 12.636 [0.003] | 9.800 [<0.001] | 9.626 [<0.001] | 15.829 [<0.001] | 13.950 [<0.001] | 13.806 [<0.001] | 6.502 [0.497] | -4.416 [0.477] | -4.389 [0.477] |
|  | (4.218) | (2.874) | (2.856) | (4.649) | (3.198) | (3.178) | (9.561) | (6.206) | (6.167) |
| American Indian and Alaskan Native (%)\*HBV Vaccination Rate | -2.461 [0.525] | -2.429 [0.593] | -2.357 [0.604] | -1.718 [0.654] | -1.682 [0.701] | -1.619 [0.712] | -1.227 [0.701] | -2.673 [0.549] | -2.577 [0.562] |
|  | (3.868) | (4.541) | (4.542) | (3.837) | (4.380) | (4.381) | (3.198) | (4.461) | (4.446) |
| HBV Vaccination Rate\*Policy Dummy | 0.106 [0.708] | -0.023 [0.902] | -0.024 [0.895] | 0.255 [0.401] | 0.234 [0.223] | 0.231 [0.230] | -0.038 [0.914] | 0.234 [0.273] | 0.224 [0.294] |
|  | (0.284) | (0.185) | (0.185) | (0.303) | (0.192) | (0.192) | (0.356) | (0.214) | (0.213) |
| HBV Vaccination Rate | -0.216 [0.314] | 0.006 [0.965] | 0.016 [0.915] | -0.413 [0.077] | -0.235 [0.118] | -0.225 [0.132] | -0.063 [0.826] | -0.089 [0.598] | -0.090 [0.593] |
|  | (0.214) | (0.147) | (0.146) | (0.234) | (0.150) | (0.150) | (0.288) | (0.169) | (0.169) |
| Policy Dummy | -0.619 [0.004] | -0.223 [0.142] | -0.241 [0.124] | -0.770 [0.001] | -0.458 [0.004] | -0.470 [0.004] | -0.441 [0.145] | -0.353 [0.055] | -0.412 [0.028] |
|  | (0.217) | (0.152) | (0.157) | (0.241) | (0.158) | (0.164) | (0.302) | (0.184) | (0.188) |
| African American (%) | -0.090 [0.899] | 1.053 [0.688] | 0.711 [0.791] | 0.388 [0.609] | 2.538 [0.376] | 2.195 [0.454] | 1.770 [0.027] | 7.397 [0.031] | 6.835 [0.049] |
|  | (0.712) | (2.620) | (2.679) | (0.758) | (2.865) | (2.929) | (0.799) | (3.425) | (3.465) |
| American Indian and Alaskan Native (%) | 7.390 [0.025] | -0.363 [0.982] | 0.868 [0.957] | 6.487 [0.048] | -3.436 [0.831] | -2.266 [0.889] | 5.846 [0.014] | 3.877 [0.817] | 4.446 [0.792] |
|  | (3.293) | (15.840) | (16.029) | (3.279) | (16.088) | (16.302) | (2.377) | (16.796) | (16.881) |
| Hispanic American (%) | -1.961 [<0.001] | -4.773 [0.077] | -5.989 [0.026] | -1.423 [0.121] | -5.074 [0.074] | -6.182 [0.028] | 8.928 [<0.001] | -4.327 [0.287] | -6.566 [0.099] |
|  | (0.582) | (2.701) | (2.680) | (0.917) | (2.838) | (2.805) | (2.262) | (4.059) | (3.983) |
| Asian American (%) | -30.732 [<0.001] | -16.440 [0.002] | -17.782 [0.001] | -33.669 [<0.001] | -19.717 [<0.001] | -20.977 [<0.001] | -21.892 [0.021] | -6.540 [0.436] | -10.595 [0.225] |
|  | (3.889) | (5.200) | (5.551) | (4.416) | (5.794) | (6.176) | (9.458) | (8.389) | (8.726) |
| Log Number of Housing Units |  |  | 0.369 [0.759] |  |  | 0.298 [0.814] |  |  | 1.752 [0.189] |
|  |  |  | (1.204) |  |  | (1.267) |  |  | (1.335) |
| Log Number of Multi-Unit Housing |  |  | 0.087 [0.791] |  |  | 0.088 [0.792] |  |  | 0.259 [0.458] |
|  |  |  | (0.328) |  |  | (0.332) |  |  | (0.349) |
| Log Number of Mobile Homes |  |  | 0.021 [0.925] |  |  | 0.090 [0.688] |  |  | 0.008 [0.974] |
|  |  |  | (0.220) |  |  | (0.225) |  |  | (0.247) |
| Log Number of Crowded Housing |  |  | 0.279 [0.128] |  |  | 0.262 [0.160] |  |  | 0.251 [0.191] |
|  |  |  | (0.183) |  |  | (0.186) |  |  | (0.192) |
| Log Number of No Vehicle Households |  |  | -0.376 [0.276] |  |  | -0.350 [0.318] |  |  | -0.398 [0.279] |
|  |  |  | (0.345) |  |  | (0.350) |  |  | (0.367) |
| Log Number of Limited English Speakers |  |  | 0.179 [0.032] |  |  | 0.182 [0.029] |  |  | 0.154 [0.056] |
|  |  |  | (0.083) |  |  | (0.083) |  |  | (0.080) |
| N Obs. | 5954 | 5954 | 5954 | 5607 | 5607 | 5607 | 5066 | 5066 | 5066 |
| Adjusted R Squared | 0.101 | 0.672 | 0.672 | 0.087 | 0.680 | 0.680 | 0.073 | 0.733 | 0.734 |
| State FE | N | Y | Y | N | Y | Y | N | Y | Y |
| Age FE | N | Y | Y | N | Y | Y | N | Y | Y |
| Note: The table presents the Ordinary Least Squares (OLS) results from equation (4). In this equation, the dependent variable is the neonatal mortality rate, while the independent variable of interest is the triple interaction term between the population share of a racial minority group, the lowest quartile vaccination dummy (referred to as Vaccination Dummy in the table), and the policy dummy (referred to as Policy Dummy in the table). The racial and ethnic variables indicate the percentages of the population belonging to specific racial or ethnic groups in a county. The low vaccination area dummy takes value one if a county has a pre-policy vaccination rate below the 25th percentile. The policy is the CDC's changed recommendation of the first-dose HBV vaccination to neonates within 24 hours of birth on January 12, 2018. The policy dummy takes a binary value one, if the year is after 2017 and zero otherwise. The median household income and unemployment rate variables are included to account for county-level economies. The proportion of children in poverty is calculated based on the federal poverty threshold of households in a county. Since parents' education level may influence the neonatal outcome variable, we incorporate two additional factors into our model. These factors are the percentage of parents who have a high school degree and the percentage of parents who have some college education. To control health behavior and gender, the model includes percentages of adult smokers and females in a county. To control for health-related factors that may impact the outcome, the model also includes the percentage of low birthweight, HIV prevalence, and per capita sexually transmitted infections. Further details about these variables are available from the data source County Health Rankings. Age 0-2 days include 0-1 and 0-2 days. Age 0-3 days include 0-1, 0-2, and 0-3 days. Standard errors are reported in parentheses and P-values in brackets. | | | | | | | | | |