| **Storm Type** | **Subject** | **State** | **Storm Exposure**  Supplemental Table 2: Overall and State-Specific Associations between Tropical Cyclones and Hurricanes and Math and RLA Scores | **% Cohort**  **Native American** | **% Cohort**  **Asian** | **% Cohort**  **Hispanic** | **% Cohort**  **Black** | **% Cohort**  **Free Lunch** | **% County ELL** | **% County Urban Schools** | **% County Special Ed** | **% Cohort Economically Disadvantaged** | **% County BA** | **% County Poverty** | **% County Single Moms** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Hurricane | Math | Overall | 0.00 (-0.05, 0.05) | -1.17 (-1.99, -0.35) | 2.85 (1.95, 3.75) | -0.97 (-1.13, -0.80) | -2.02 (-2.19, -1.85) | -0.28 (-0.35, -0.21) | 0.60 (0.13, 1.07) | 0.13 (-0.02, 0.28) | 0.31 (-0.02, 0.64) | -0.05 (-0.12, 0.02) | 2.05 (1.72, 2.39) | -0.83 (-1.11, -0.54) | 0.05 (-0.25, 0.36) |
|  |  | AL | 0.13 (-0.04, 0.32) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | FL | 0.19 (0.11, 0.27) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | GA | -0.06 (-0.16, 0.04) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | LA | -0.01 (-0.25, 0.22) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | NJ | -0.13 (-0.33, 0.06) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | NC | -0.15 (-0.26, -0.04) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | SC | -0.19 (-0.40, 0.00) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | Texas | -0.09 (-0.21, 0.02) |  |  |  |  |  |  |  |  |  |  |  |  |
| Hurricane | RLA | Overall | 0.00 (-0.04, 0.04) | -1.70 (-2.41, -0.99) | 2.72 (1.97, 3.48) | -1.60 (-1.74, -1.46) | -2.24 (-2.39, -2.10) | 0.09 (0.03, 0.15) | -1.07 (-1.45, -0.68) | 0.20 (0.07, 0.33) | 0.87 (0.59, 1.16) | -0.57 (-0.63, -0.51) | 1.74 (1.46, 2.01) | -0.08 (-0.31, 0.16) | 0.07 (-0.19, 0.32) |
|  |  | AL | 0.03 (-0.09, 0.16) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | FL | 0.05 (-0.01, 0.12) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | GA | 0.01 (-0.07, 0.09) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | LA | 0.00 (-0.15, 0.16) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | NJ | -0.02 (-0.16, 0.10) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | NC | 0.03 (-0.05, 0.12) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | SC | 0.02 (-0.11, 0.15) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | TX | -0.12 (-0.20, -0.04) |  |  |  |  |  |  |  |  |  |  |  |  |
| Cyclones | Math | Overall | -0.02 (-0.01, 0.00) | -0.49 (-0.86, -0.13) | 1.60 (1.17, 2.02) | -0.92 (-1.02, -0.82) | -1.69 (-1.79, -1.60) | -0.01 (-0.04, 0.02) | -0.62 (-0.84, -0.40) | 0.01 (-0.05, 0.07) | 0.88 (0.76, 1.00) | -0.30 (-0.33, -0.26) | 1.63 (1.47, 1.80) | -0.70 (-0.84, -0.56) | 0.08 (-0.07, 0.23) |
|  |  | AL | -0.04 (-0.09, 0.01) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | AR | 0.00 (-0.04, 0.04) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | CT | -0.01 (-0.06, 0.04) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | DE | 0.00 (-0.08, 0.09) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | DC | 0.15 (0.03, 0.29) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | FL | 0.03 (0.01, 0.05) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | GA | 0.06 (0.04, 0.09) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | IL | 0.00 (-0.03, 0.02) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | IN | 0.00 (-0.02, 0.02) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | LA | 0.00 (-0.02, 0.03) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | ME | -0.05 (-0.11, 0.00) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | MD | -0.03 (-0.07, 0.00) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | MA | -0.02 (-0.07, 0.02) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | MI | 0.00 (-0.04, 0.04) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | MS | 0.06 (0.02, 0.09) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | MO | 0.00 (-0.04, 0.04) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | NH | -0.01 (-0.06, 0.04) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | NJ | 0.00 (-0.04, 0.03) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | NY | -0.07 (-0.11, -0.03) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | NC | -0.04 (-0.06, -0.02) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | OH | 0.00 (-0.03, 0.03) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | PA | -0.02 (-0.05, 0.00) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | RI | 0.00 (-0.06, 0.07) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | SC | -0.06 (-0.10, -0.03) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | TX | 0.00 (-0.02, 0.02) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | VT | -0.15 (-0.21, -0.09) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | VA | 0.01 (-0.03, 0.04) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | WV | 0.13 (0.05, 0.21) |  |  |  |  |  |  |  |  |  |  |  |  |
| Cyclones | RLA | Overall | 0.00 (0.00, 0.01) | -0.77 (-1.10, -0.44) | 1.43 (1.06, 1.79) | -1.51 (-1.59, -1.42) | -1.89 (-1.98, -1.81) | 0.05 (0.03, 0.08) | -1.29 (-1.48, -1.09) | -0.03 (-0.08, 0.01) | 0.52 (0.41, 0.63) | -0.51 (-0.54, -0.49) | 1.78 (1.64, 1.92) | -0.30 (-0.42, -0.19) | 0.10 (-0.03, 0.22) |
|  |  | AL | -0.13 (-0.17, -0.08) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | AR | 0.00 (-0.04, 0.04) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | CT | 0.00 (-0.05, 0.05) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | DE | 0.00 (-0.07, 0.07) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | DC | 0.10 (-0.01, 0.20) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | FL | 0.00 (-0.01, 0.02) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | GA | 0.04 (0.02, 0.06) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | IL | 0.00 (-0.02, 0.02) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | IN | 0.00 (-0.02, 0.02) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | LA | 0.03 (0.00, 0.05) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | ME | -0.13 (-0.08, 0.02) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | MD | 0.00 (-0.04, 0.03) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | MA | 0.01 (-0.03, 0.05) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | MI | 0.00 (-0.04, 0.03) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | MS | 0.04 (0.01, 0.07) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | MO | 0.00 (-0.03, 0.03) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | NJ | 0.02 (-0.03, 0.06) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | NJ | 0.01 (-0.03, 0.04) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | NY | -0.04 (-0.07, 0.00) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | NC | 0.00 (-0.02, 0.02) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | OH | 0.00 (-0.03, 0.03) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | PA | -0.01 (-0.03, 0.02) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | RI | 0.00 (-0.06, 0.06) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | SC | -0.03 (-0.06, 0.00) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | TX | -0.02 (-0.03, 0.00) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | VT | -0.07 (-0.12, -0.02) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | VA | 0.00 (-0.02, 0.02) |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  | WV | 0.12 (0.05, 0.19) |  |  |  |  |  |  |  |  |  |  |  |  |

Supplemental Table 1. Tropical Cyclones From 2009-2017 and Their Maximal Intensities Recorded in the US (in knots), With Number of Tropical Cyclone Exposures in the US

|  |  |  |
| --- | --- | --- |
| Year | Tropical cyclones (maximal intensity in US, knots) | Tropical cyclone exposures |
| 2009 | Claudette (37.8), One (10.4)a, Ida (30.7)a | 6 |
| 2010 | Hermine (51.8), Alex (32.0)a, Bonnie (30.6)a, Earl (31.4)a, Five (24.9)a, Nicole (19.9)a, Paula (16.1)a, Two (24.8)a | 22 |
| 2011 | Irene (68.5)b, Lee (39.9), Bret (18.3)a, Don (26.6)a, Emily (14.3)a | 193 |
| 2012 | Beryl (51.0), Isaac (63.3), Sandy (64.5)b, Alberto (25.2)a, Debby (30.2)a | 196 |
| 2013 | Andrea (40.5), Dorian (16.0)a, Karen (16.9)a | 81 |
| 2014 | Arthur (76.2) | 55 |
| 2015 | Ana (38.7), Bill (49.9), Claudette (19.7)a | 19 |
| 2016 | Colin (44.9), Hermine (63.1), Julia (44.1), Matthew (68.0)b, Bonnie (29.1)a, Eight (16.5)a | 270 |
| 2017 | Cindy (44.1), Emily (37.4), Harvey (103.2)b, Irma (91.9)b, Nate (60.6)b, Jose (23.9)a, Phillipe (8.6)a | 166 |

a Did not contribute any tropical cyclone exposures in the US.

b Cyclone name subsequently retired by the World Meteorological Organization because of destruction caused in the US or elsewhere.