**SUPPLEMENTUM  
Table S1**. Estimated mean gains for HITs with higher gains, by artifact type and calculation method.

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | HIT Mean Gain (95% CI) | |
| artifact | method | Clean (with artifacts removed) | Unclean (Only artifacts) |
| covert saccades | velocity gain 40 | 0.89 (0.80 to 0.99) | 0.92 (0.78 to 1.06) |
| velocity gain 60 | 0.89 (0.80 to 0.99) | 0.95 (0.82 to 1.09) |
| regression gain | 0.96 (0.87 to 1.05) | 1.01 (0.87 to 1.15) |
| position gain | 0.91 (0.82 to 1.01) | 1.00 (0.87 to 1.14) |
| blinks | velocity gain 40 | 0.91 (0.82 to 1.00) | 0.62 (0.46 to 0.78) |
| velocity gain 60 | 0.92 (0.82 to 1.01) | 0.41 (0.25 to 0.57) |
| regression gain | 0.98 (0.89 to 1.08) | 0.48 (0.32 to 0.64) |
| position gain | 0.93 (0.84 to 1.03) | 0.61 (0.45 to 0.77) |
| trace oscillations | velocity gain 40 | 0.91 (0.82 to 1.00) | 0.83 (0.72 to 0.94) |
| velocity gain 60 | 0.91 (0.82 to 1.00) | 0.83 (0.72 to 0.94) |
| regression gain | 0.97 (0.88 to 1.06) | 0.91 (0.80 to 1.03) |
| position gain | 0.93 (0.84 to 1.02) | 0.81 (0.70 to 0.92) |
| phase shift | velocity gain 40 | 0.90 (0.81 to 0.99) | 0.77 (0.61 to 0.93) |
| velocity gain 60 | 0.90 (0.81 to 0.99) | 0.93 (0.77 to 1.09) |
| regression gain | 0.96 (0.87 to 1.05) | 1.15 (0.98 to 1.31) |
| position gain | 0.92 (0.83 to 1.01) | 0.94 (0.78 to 1.10) |
| >2 peaks | velocity gain 40 | 0.90 (0.81 to 0.99) | 0.87 (0.77 to 0.98) |
| velocity gain 60 | 0.91 (0.82 to 1.00) | 0.80 (0.69 to 0.90) |
| regression gain | 0.98 (0.88 to 1.07) | 0.89 (0.79 to 1.00) |
| position gain | 0.93 (0.84 to 1.02) | 0.86 (0.76 to 0.97) |
| high gain | velocity gain 40 | 0.86 (0.79 to 0.93) | 1.29 (1.16 to 1.41) |
| velocity gain 60 | 0.85 (0.79 to 0.92) | 1.40 (1.28 to 1.53) |
| regression gain | 0.92 (0.86 to 0.99) | 1.43 (1.30 to 1.56) |
| position gain | 0.89 (0.83 to 0.96) | 1.10 (0.97 to 1.23) |
| **all artifacts combined** | **velocity gain 40** | **0.92 (0.83 to 1.02)** | **0.86 (0.76 to 0.96)** |
| **velocity gain 60** | **0.93 (0.84 to 1.03)** | **0.85 (0.75 to 0.95)** |
| **regression gain** | **1.00 (0.90 to 1.09)** | **0.93 (0.83 to 1.02)** |
| **position gain** | **0.97 (0.87 to 1.06)** | **0.86 (0.76 to 0.95)** |

**Table S2**. Estimated mean gains for *abnormal* (lower gain) HITs, by artifact type and calculation method.

|  |  |  |  |
| --- | --- | --- | --- |
|  |  | HIT Mean Gain (95% CI) | |
| artifact | method | Clean (with artifacts removed) | Unclean (only artifacts) |
| covert saccades | velocity gain 40 | 0.60 (0.45 to 0.75) | 0.55 (0.39 to 0.71) |
| velocity gain 60 | 0.46 (0.31 to 0.61) | 0.49 (0.33 to 0.65) |
| regression gain | 0.38 (0.23 to 0.53) | 0.40 (0.24 to 0.56) |
| position gain | 0.53 (0.38 to 0.68) | 0.47 (0.31 to 0.63) |
| blinks | velocity gain 40 | 0.60 (0.45 to 0.74) | 0.34 (0.11 to 0.57) |
| velocity gain 60 | 0.46 (0.32 to 0.61) | 0.61 (0.38 to 0.84) |
| regression gain | 0.39 (0.24 to 0.53) | 0.33 (0.10 to 0.57) |
| position gain | 0.52 (0.37 to 0.67) | 0.45 (0.21 to 0.68) |
| trace oscillations | velocity gain 40 | 0.59 (0.45 to 0.73) | 0.58 (0.42 to 0.74) |
| velocity gain 60 | 0.48 (0.34 to 0.63) | 0.39 (0.23 to 0.55) |
| regression gain | 0.40 (0.26 to 0.54) | 0.30 (0.14 to 0.46) |
| position gain | 0.53 (0.39 to 0.67) | 0.46 (0.30 to 0.62) |
| phase shift | velocity gain 40 | 0.60 (0.45 to 0.75) | 0.41 (0.22 to 0.60) |
| velocity gain 60 | 0.47 (0.33 to 0.62) | 0.39 (0.20 to 0.58) |
| regression gain | 0.38 (0.23 to 0.53) | 0.44 (0.25 to 0.63) |
| position gain | 0.51 (0.36 to 0.66) | 0.61 (0.41 to 0.80) |
| >2 peaks | velocity gain 40 | 0.56 (0.41 to 0.71) | 0.68 (0.52 to 0.83) |
| velocity gain 60 | 0.47 (0.32 to 0.62) | 0.47 (0.31 to 0.63) |
| regression gain | 0.40 (0.25 to 0.55) | 0.34 (0.18 to 0.49) |
| position gain | 0.50 (0.35 to 0.65) | 0.58 (0.42 to 0.74) |
| high gain | velocity gain 40 | 0.59 (0.45 to 0.73) | 0.41 (0.08 to 0.74) |
| velocity gain 60 | 0.47 (0.32 to 0.61) | 0.56 (0.23 to 0.89) |
| regression gain | 0.37 (0.23 to 0.51) | 1.22 (0.89 to 1.55) |
| position gain | 0.51 (0.37 to 0.66) | 0.62 (0.29 to 0.96) |
| **all artifacts combined** | **velocity gain 40** | **0.61 (0.46 to 0.77)** | **0.58 (0.43 to 0.73)** |
| **velocity gain 60** | **0.49 (0.34 to 0.65)** | **0.46 (0.31 to 0.61)** |
| **regression gain** | **0.43 (0.28 to 0.59)** | **0.36 (0.21 to 0.51)** |
| **position gain** | **0.51 (0.36 to 0.67)** | **0.52 (0.37 to 0.67)** |