

Appendix 1a. Adjusted Marginal Difference in 3-month Score Estimation from the GLM

Example of calculating the marginal gender effects on 3-month score in each PROMIS outcomes:

Using GLM, the regression on 3-month scores of each PROMIS domain or pain intensity is calculated as follows:

$$(3 - month\ score_{3m})_i = \beta_0 + female_i * \beta_1 + other_i * \beta_2 + covid_i * \beta_3 + (female_i * covid_i) * \beta_4 + (other_i * covid_i) * \beta_5 + \mathbf{X}_i' * \mathbf{B}$$

Where $\mathbf{X}_i$ denotes a vector of observed values of independent variables for patient, $\mathbf{B}$ denotes these covariates' coefficients for an outcome (e.g., physical function) and,

$$covid_i = \begin{cases} 1, & \text{if COVID +} \\ 0, & \text{else} \end{cases}$$

$$female_i = \begin{cases} 1, & \text{if gender is female} \\ 0, & \text{else} \end{cases}$$

$$other_i = \begin{cases} 1, & \text{if gender is transgender/non - binary other} \\ 0, & \text{else} \end{cases}$$

The estimated coefficients (hated-betas) from the GLM are used to calculate the adjusted marginal difference in 3-month score. For example, the adjusted marginal difference in 3-month score for physical function of female covid-positive participants in comparison to the 3-month score for physical function of male covid-positive participants is calculated as below:

$$3 - month\ sScore_{3m_{physical_function}}(female\ vs.\ male)|_{COVID+} = \hat{\beta}_1 + \hat{\beta}_4$$

Appendix 1b. Adjusted Marginal Difference in Change in Score Estimation from the GLM

Example of calculating the marginal gender effects on change in each PROMIS outcomes from baseline to 3-month:

Using GLM, the regression on change scores from baseline to 3 months of each PROMIS domain or pain intensity is calculated as follows:

$$(change)_i = \beta_0 + female_i * \beta_1 + other_i * \beta_2 + covid_i * \beta_3 + (female_i * covid_i) * \beta_4 + (other_i * covid_i) * \beta_5 + BSScore_i * \beta_6 + \mathbf{X}_i' * \mathbf{B}$$

Where **BSScore_i** is the corresponding baseline PROMIS score, **X_i** denotes a vector of observed values of independent variables for patient *i*, **B** denotes these covariates' coefficients for outcome (e.g. physical function) and,

$$covid_i = \begin{cases} 1, & \text{if COVID +} \\ 0, & \text{else} \end{cases}$$

$$female_i = \begin{cases} 1, & \text{if gender is female} \\ 0, & \text{else} \end{cases}$$

$$other_i = \begin{cases} 1, & \text{if gender is transgender/non – binary other} \\ 0, & \text{else} \end{cases}$$

The estimated coefficients (hated-betas) from the GLM are used to calculate the adjusted marginal difference in change-score. For example, the adjusted marginal difference in change-score (from baseline to 3-months follow-up) for physical function of female covid-positive participants in comparison to the change-score for physical function of male covid-positive participants is calculated as below:

$$change_{\text{physical_function}}(female\ vs.\ male)|_{COVID+} = \hat{\beta}_1 + \hat{\beta}_4$$

Appendix 2. Adjusted marginal differences in 3-month PROMIS domain scores and differences in change in scores from baseline to 3-month in race/ethnicity groups among COVID- participants

		Adjusted Marginal Difference (95% CI) Reference = Non-Hispanic White			
		Non-Hispanic Black	Non-Hispanic Asian	Hispanic/Latino	Non-Hispanic Other
Adjusted 3-Month PROMIS Scores					
Higher Better	Cognitive Function	5.13 (1.51, 8.75) ^C	0.39 (-2.84, 3.63)	0.76 (-2.33, 3.85)	-1.65 (-7.53, 4.23)
	Physical Function	2.33 (-0.16, 4.83) ^C	3.37 (1.14, 5.59) ^C	-0.55 (-2.68, 1.57)	0.73 (-3.32, 4.77)
	Social Participation	2.92 (-0.33, 6.17) ^C	0.26 (-2.64, 3.16)	-0.87 (-3.65, 1.90)	-3.93 (-9.20, 1.35) ^C
Lower Better	Anxiety	-3.39 (-6.48, -0.31) ^C	-2.50 (-5.26, 0.25) ^C	-0.41 (-3.04, 2.22)	3.36 (-1.66, 8.37) ^C
	Depression	-1.90 (-4.78, 0.98)	-0.93 (-3.51, 1.64)	-1.74 (-4.20, 0.72)	2.49 (-2.20, 7.17) ^C
	Fatigue	-4.70 (-8.01, -1.39) ^C	-2.87 (-5.82, 0.09) ^C	-2.39 (-5.22, 0.44) ^C	3.71 (-1.67, 9.09) ^C
	Sleep Disturbance	-3.31 (-6.00, -0.63) ^C	0.25 (-2.14, 2.65)	-1.08 (-3.37, 1.20)	-0.10 (-4.46, 4.26)
	Pain Interference	-0.55 (-3.33, 2.23)	-1.91 (-4.40, 0.57)	-0.30 (-2.67, 2.07)	2.40 (-2.12, 6.91) ^C
	Pain Intensity	0.56 (-0.18, 1.31)	-0.50 (-1.17, 0.17)	0.01 (-0.63, 0.65)	-0.19 (-1.40, 1.03)
Change in PROMIS scores additionally adjusted for baseline scores					
Higher Better	Cognitive Function	4.16 (1.27, 7.05) ^C	0.77 (-1.81, 3.36)	-0.43 (-2.90, 2.04)	0.10 (-4.60, 4.80)
	Physical Function	2.15 (-0.14, 4.45) ^C	2.69 (0.63, 4.74) ^C	-0.28 (-2.24, 1.68)	0.51 (-3.22, 4.24)
	Social Participation	2.97 (-0.00, 5.95) ^C	0.27 (-2.39, 2.93)	-0.38 (-2.92, 2.16)	-4.36 (-9.19, 0.47) ^C
Lower Better	Anxiety	-2.66 (-5.26, -0.06) ^C	-2.05 (-4.37, 0.27) ^C	0.16 (-2.06, 2.38)	2.04 (-2.19, 6.26) ^C
	Depression	-2.03 (-4.36, 0.30) ^C	-0.41 (-2.49, 1.67)	0.13 (-1.87, 2.12)	1.54 (-2.24, 5.33)
	Fatigue	-4.44 (-7.27, -1.62) ^C	-2.27 (-4.79, 0.25) ^C	-1.48 (-3.89, 0.93)	5.09 (0.50, 9.68) ^C
	Sleep Disturbance	-2.71 (-4.95, -0.47) ^C	0.41 (-1.59, 2.41)	-0.86 (-2.77, 1.05)	0.39 (-3.25, 4.02)
	Pain Interference	-0.43 (-2.94, 2.08)	-1.08 (-3.32, 1.16)	-0.61 (-2.75, 1.53)	2.97 (-1.11, 7.05) ^C
	Pain Intensity	0.32 (-0.34, 0.98)	-0.40 (-0.99, 0.20)	-0.25 (-0.81, 0.32)	-0.03 (-1.10, 1.04)

Note: (a) The adjusted marginal differences of racial-ethnic minoritized groups compared with the non-Hispanic White participant group in COVID- participants are calculated based on the adjusted estimates from the

generalized linear models with adjustment for age, race/ethnicity, gender, education, marital status, health insurance status, family income, employment status, location of baseline testing, tobacco use, pre-existing health conditions, hospitalization, COVID vaccination status in addition to index COVID-19 test result and its interaction with race/ethnicity group variables.

(b) Clinical significance indicated by 'C' in the superscript. For scores other than pain intensity, a difference in score of ≥ 2 is considered clinically significant and for pain intensity, a score difference of ≥ 1 is considered clinically significant.

Appendix 3. Adjusted marginal differences in 3-month PROMIS domain scores and differences in change in scores from baseline to 3-month in gender groups among COVID- participants

		Adjusted Marginal Difference (95% CI) Reference = Male	
		Female	Transgender/Non-binary/Other
3-Month PROMIS Scores			
Higher Better	Cognitive Function	-3.77 (-6.26, -1.29) ^C	-8.13 (-14.24, -2.02) ^C
	Physical Function	-2.92 (-4.63, -1.20) ^C	-7.66 (-11.87, -3.44) ^C
	Social Participation	-4.52 (-6.75, -2.29) ^C	-9.26 (-14.74, -3.79) ^C
Lower Better	Anxiety	2.43 (0.31, 4.55) ^C	8.24 (3.04, 13.45) ^C
	Depression	1.57 (-0.41, 3.54)	6.68 (1.81, 11.55) ^C
	Fatigue	4.55 (2.28, 6.82) ^C	11.12 (5.53, 16.71) ^C
	Sleep Disturbance	2.17 (0.32, 4.01) ^C	5.94 (1.41, 10.48) ^C
	Pain Interference	2.32 (0.42, 4.23) ^C	6.65 (1.96, 11.34) ^C
	Pain Intensity	0.71 (0.20, 1.22)	1.29 (0.03, 2.55) ^C
Change in PROMIS scores additionally adjusted for baseline scores			
Higher Better	Cognitive Function	-1.16 (-3.16, 0.84)	-2.14 (-7.05, 2.77) ^C
	Physical Function	-2.31 (-3.90, -0.73) ^C	-5.54 (-9.43, -1.65) ^C
	Social Participation	-3.30 (-5.35, -1.26) ^C	-5.33 (-10.38, -0.29) ^C
Lower Better	Anxiety	-0.06 (-1.86, 1.74)	4.56 (0.16, 8.96) ^C
	Depression	-0.29 (-1.89, 1.31)	1.66 (-2.29, 5.61)
	Fatigue	2.15 (0.20, 4.10) ^C	5.33 (0.53, 10.12) ^C
	Sleep Disturbance	1.96 (0.42, 3.50)	3.99 (0.20, 7.77) ^C
	Pain Interference	1.52 (-0.21, 3.24)	5.08 (0.84, 9.32) ^C
	Pain Intensity	0.51 (0.05, 0.96)	1.10 (-0.02, 2.21) ^C

Note: (a) The adjusted marginal differences of gender groups compared with the non-Hispanic White participant group in COVID- participants are calculated based on the adjusted estimates from the generalized linear models with adjustment for age, race/ethnicity, gender, education, marital status, health insurance status, family income, employment status, location of baseline testing, tobacco use, pre-existing health conditions, hospitalization, COVID vaccination status in addition to index COVID-19 test result and its interaction with gender group variables.

(b) Clinical significance indicated by ‘C’ in the superscript. For scores other than pain intensity, a difference in score of ≥ 2 is considered clinically significant and for pain intensity, a score difference of ≥ 1 is considered clinically significant.