

## Supplemental Information

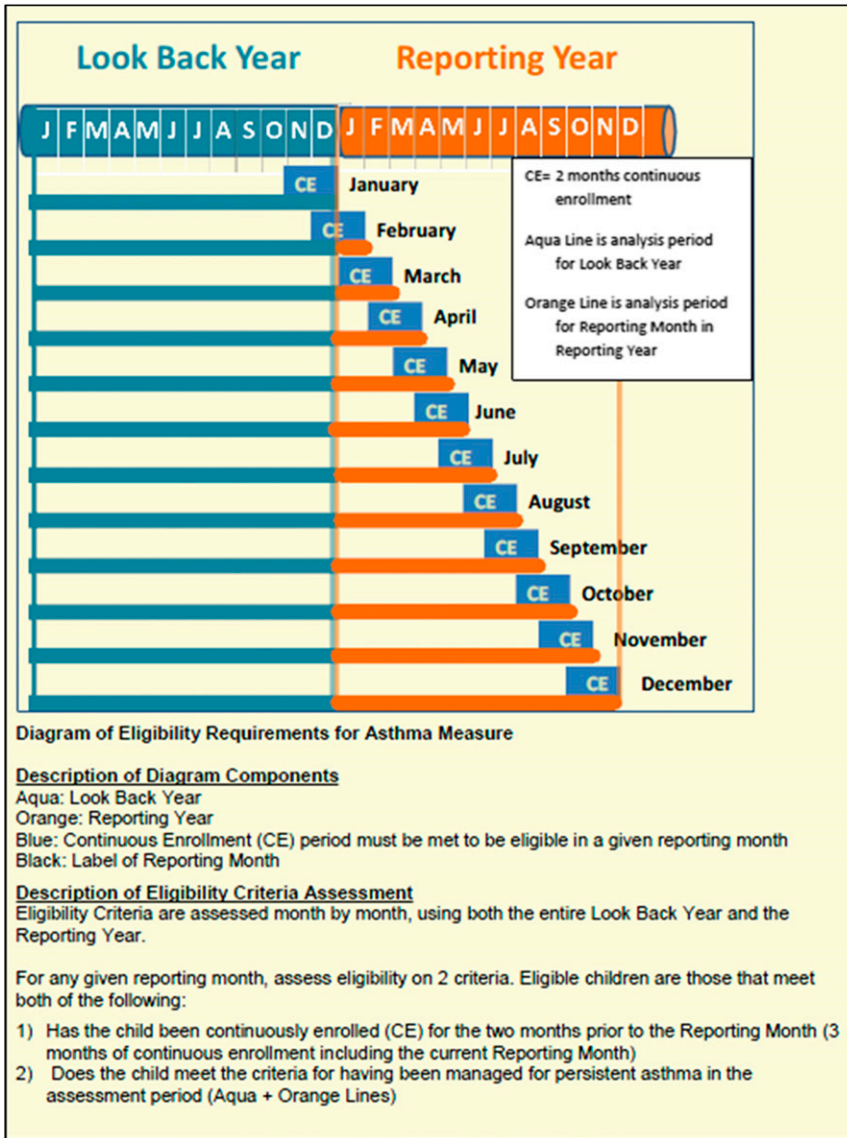
### MARGINS COMMAND FOR ADJUSTED ASTHMA RATES

The margins command in Stata can be used postestimation after most regression commands in Stata. It derives multiple predicted rates of asthma-related ED use for each person. The predicted probabilities for different groups are based on the fitted model and derive predictions as if each person was in each group (eg, as if the person had no depression or anxiety, if they had depression only, if they had anxiety only, or if they had

both). Except for the grouping variable, Stata uses the values of the covariates that were observed for that person (eg, their actual age and insurance status), and it uses the predicted random effects for that person (both person level and the random effect for their site). Those are then averaged over all the participants (for each grouping level) to get the marginal estimated rates. It is interpreted as the rate for each grouping level of each covariate and adjusted for the other covariates that

are in the model.<sup>30</sup> We chose to use adjusted rates in this analysis because they have a more intuitive interpretation, and are more easily compared with the raw rates, than are  $\beta$  coefficients derived from the regression model.

Each table below (Supplemental Tables 4 through 9) presents the results of the base multivariable model (see Methods) with changes to patient population as annotated in each table title.



**SUPPLEMENTAL FIGURE 2**

Eligibility algorithm diagram. CE, continuous enrollment. (Reprinted with permission from CAPQuaM.)

**SUPPLEMENTAL TABLE 3** ICD 9 and 10 Codes for Anxiety and Depressive Disorders

ICD Code	Description	Diagnostic Category	ICD Version (9 or 10)
296.20	Major depressive affective disorder, single episode, unspecified	Depression	9
296.21	Major depressive affective disorder, single episode, mild	Depression	9
296.22	Major depressive affective disorder, single episode, moderate	Depression	9
296.23	Major depressive affective disorder, single episode, severe, without mention of psychotic behavior	Depression	9
296.24	Major depressive affective disorder, single episode, severe, specified as with psychotic behavior	Depression	9
296.30	Major depressive affective disorder, recurrent episode, unspecified	Depression	9
296.31	Major depressive affective disorder, recurrent episode, mild	Depression	9
296.32	Major depressive affective disorder, recurrent episode, moderate	Depression	9
296.33	Major depressive affective disorder, recurrent episode, severe, without mention of psychotic behavior	Depression	9
296.34	Major depressive affective disorder, recurrent episode, severe, specified as with psychotic behavior	Depression	9
296.82	Atypical depressive disorder	Depression	9
300.00	Anxiety state, unspecified	Anxiety	9
300.01	Panic disorder without agoraphobia	Anxiety	9
300.02	Generalized anxiety disorder	Anxiety	9
300.09	Other anxiety states	Anxiety	9
300.10	Hysteria, unspecified	Anxiety	9
300.20	Phobia, unspecified	Anxiety	9
300.21	Agoraphobia with panic disorder	Anxiety	9
300.22	Agoraphobia without mention of panic attacks	Anxiety	9
300.23	Social phobia	Anxiety	9
300.29	Other isolated or specific phobias	Anxiety	9
300.4	Dysthymic disorder	Depression	9
309.21	Separation anxiety disorder	Anxiety	9
311	Depressive disorder, not elsewhere classified	Depression	9
313.0	Overanxious disorder specific to childhood and adolescence	Anxiety	9
625.4	Premenstrual tension syndromes	Depression	9
F32.89	Other specified depressive episodes	Depression	10
F34.81	Disruptive mood dysregulation disorder	Depression	10
F32.0	Major depressive disorder, single episode, mild	Depression	10
F32.1	Major depressive disorder, single episode, moderate	Depression	10
F32.2	Major depressive disorder, single episode, severe without psychotic features	Depression	10
F32.3	Major depressive disorder, single episode, severe with psychotic features	Depression	10
F32.4	Major depressive disorder, single episode, in partial remission	Depression	10
F32.5	Major depressive disorder, single episode, in full remission	Depression	10
F32.9	Major depressive disorder, single episode, unspecified	Depression	10
F33.0	Major depressive disorder, recurrent, mild	Depression	10
F33.1	Major depressive disorder, recurrent, moderate	Depression	10
F33.2	Major depressive disorder, recurrent, severe without psychotic features	Depression	10
F33.3	Major depressive disorder, recurrent, severe with psychotic symptoms	Depression	10
F33.40	Major depressive disorder, recurrent, in remission, unspecified	Depression	10
F33.41	Major depressive disorder, recurrent, in partial remission	Depression	10
F33.42	Major depressive disorder, recurrent, in full remission	Depression	10
F33.8	Other recurrent depressive disorders	Depression	10
F33.9	Major depressive disorder, recurrent, unspecified	Depression	10
F34.1	Dysthymic disorder	Depression	10
F40.00	Agoraphobia, unspecified	Anxiety	10
F40.01	Agoraphobia with panic disorder	Anxiety	10
F40.02	Agoraphobia without panic disorder	Anxiety	10
F40.10	Social phobia, unspecified	Anxiety	10
F40.11	Social phobia, generalized	Anxiety	10
F40.210	Arachnophobia	Anxiety	10
F40.218	Other animal-type phobia	Anxiety	10
F40.220	Fear of thunderstorms	Anxiety	10
F40.228	Other natural environment-type phobia	Anxiety	10
F40.230	Fear of blood	Anxiety	10
F40.231	Fear of injections and transfusions	Anxiety	10
F40.232	Fear of other medical care	Anxiety	10
F40.233	Fear of injury	Anxiety	10
F40.240	Claustrophobia	Anxiety	10
F40.241	Acrophobia	Anxiety	10

**SUPPLEMENTAL TABLE 3** Continued

ICD Code	Description	Diagnostic Category	ICD Version (9 or 10)
F40.242	Fear of bridges	Anxiety	10
F40.243	Fear of flying	Anxiety	10
F40.248	Other situational-type phobia	Anxiety	10
F40.290	Androphobia	Anxiety	10
F40.291	Gynophobia	Anxiety	10
F40.298	Other specified phobia	Anxiety	10
F40.8	Other phobic anxiety disorders	Anxiety	10
F40.9	Phobic anxiety disorder, unspecified	Anxiety	10
F41.0	Panic disorder (episodic paroxysmal anxiety) without agoraphobia	Anxiety	10
F41.1	Generalized anxiety disorder	Anxiety	10
F41.3	Other mixed anxiety disorders	Anxiety	10
F41.8	Other specified anxiety disorders	Anxiety	10
F41.9	Anxiety disorder, unspecified	Anxiety	10
F93.0	Separation anxiety disorder of childhood	Anxiety	10
F94.0	Selective mutism	Anxiety	10

**SUPPLEMENTAL TABLE 4** Youngest Age Group (6 to 11 Years Old; *n* = 30 523)

	Rate	95% CI Lower Limit	95% CI Upper Limit	<i>P</i> <sup>a</sup>
No anxiety or depression	16.6	15.4	17.8	Reference
Anxiety only	17.3	14.8	19.8	.58
Depression only	25.3	19.6	30.9	<.001
Anxiety and depression	31.8	24.4	39.2	<.001

<sup>a</sup> *P* for results of multivariate comparison testing model adjusted for sex, chronic disease status, and insurance type.

**SUPPLEMENTAL TABLE 5** Middle Age Group (12 to 17 Years Old; *n* = 23 013)

	Rate	95% CI Lower Limit	95% CI Upper Limit	<i>P</i> <sup>a</sup>
No anxiety or depression	12.4	11.4	13.4	Reference
Anxiety only	18.3	15.5	21.0	<.001
Depression only	19.4	16.4	22.4	<.001
Anxiety and depression	22.6	19.5	25.6	<.001

<sup>a</sup> *P* for results of multivariate comparison testing model adjusted for sex, chronic disease status, and insurance type.

**SUPPLEMENTAL TABLE 6** Oldest Age Group (18 to 21 Years Old; *n* = 11 806)

	Rate	95% CI Lower Limit	95% CI Upper Limit	<i>P</i> <sup>a</sup>
No anxiety or depression	19.0	16.7	21.3	Reference
Anxiety only	23.4	18.4	28.4	.07
Depression only	21.8	16.3	27.3	.29
Anxiety and depression	31.0	26.4	35.5	<.001

<sup>a</sup> *P* for results of multivariate comparison testing model adjusted for sex, chronic disease status, and insurance type.

**SUPPLEMENTAL TABLE 7** Patients With 12 Months of Continued Enrollment (*n* = 34 605)

	Rate	95% CI Lower Limit	95% CI Upper Limit	<i>P</i> <sup>a</sup>
No anxiety or depression	16.2	15.1	17.4	Reference
Anxiety only	19.6	17.3	22.0	.003
Depression only	23.6	19.2	28.0	<.001
Anxiety and depression	27.7	24.3	31.1	<.001

<sup>a</sup> *P* for results of multivariate comparison testing model adjusted for age category, sex, insurance type, and chronic disease status.

**SUPPLEMENTAL TABLE 8** Asthma Population, Including Patients With Asthma Identified Only on the Basis of Use of a  $\beta$ -Agonist, Adjusted for Asthma Severity

	Rate	95% CI Lower Limit	95% CI Upper Limit	<i>P</i> <sup>a</sup>
No anxiety or depression	14.4	13.5	15.3	Reference
Anxiety only	17.8	16.0	19.6	<.001
Depression only	20.8	17.8	23.8	<.001
Anxiety and depression	25.8	23.3	28.2	<.001

<sup>a</sup> *P* for results of multivariate comparison testing model adjusted for age category, sex, chronic disease status, and albuterol-only use (as a marker of milder disease).

**SUPPLEMENTAL TABLE 9** New Numerator Definition: ED Visits Without Depression or Anxiety as a First or Second Diagnosis (*n* = 65 342)

	Rate	95% CI Lower Limit	95% CI Upper Limit	<i>P</i> <sup>a</sup>
Overall	16.8	16.4	17.2	NA
No anxiety or depression	15.4	14.5	16.4	Reference
Anxiety only	18.0	16.2	19.9	.003
Depression only	21.2	18.1	24.4	<.001
Anxiety and depression	26.1	23.6	28.7	<.001

<sup>a</sup> *P* for results of multivariate comparison testing model adjusted for age category, sex, insurance type, and chronic disease status.

**SUPPLEMENTAL TABLE 10** New Numerator Definition: ED Visits for Asthma as the First Diagnosis Only

	Rate	95% CI Lower Limit	95% CI Upper Limit	<i>P</i> <sup>a</sup>
No anxiety or depression	7.7	7.2	8.3	Reference
Anxiety only	8.5	7.3	9.7	.203
Depression only	9.5	7.4	11.6	.053
Anxiety and depression	11.0	9.3	12.7	<.001

<sup>a</sup> *P* for results of multivariate comparison testing model adjusted for age category, sex, insurance type, and chronic disease status.