

Confidentiality and Suppression in the Missouri Information for Community Assessment (MOPHIMS) System

Community Data Profiles Suppression

Suppression rules are not utilized in the Profiles. Internal analysis is used to determine the appropriate number of years required to protect confidentiality in this system. In MOPHIMS, the Profiles will continue to show indicators for relatively rare events, even if the same indicator with the same selection parameters would be suppressed in the Missouri Information for Community Assessment (MICA) Data MICAs. Internal review and analysis will continue in order to ensure that the risk of identifiable information being released through the Profiles is minimized.

Conditionally Exempt Variables in the Data MICAs

It is important to display as much information as possible in the MOPHIMS system so stakeholders can determine the overall impact of health conditions and factors impacting health. At the same time, MOPHIMS should suppress enough data so that personally identifying information cannot be determined through use of the tools.

As such, variables/indicators have been designated as exempt or conditionally exempt from the confidentiality rule so stakeholders can conduct a proper analysis. If a table is generated using only variables/indicators from the exemption list, suppression will not apply to that table even when small numbers are generated. If a table is generated using more than two variables/indicators from the conditionally exempt list and the cell count is below the suppression threshold for that Data MICA, then suppression rules would be applied. The lists of exempt and conditionally exempt variables will vary across Data MICAs but all follow the same general patterns. (Appx- Emergency Room MICA: Exempt and Conditionally Exempt Variables)

Data MICA Tables and Cell Types

Data MICA table output consists of inner cells and total cells. (Appx-Figure 1) Suppression is applied separately to the inner and outer (total) cells of a MICA table. Most Data MICAs have a suppression threshold of four. Values less than or equal to four (not including zero) will trigger/initiate suppression. (Appx- Current MOPHIMS System Suppression Thresholds) In order to prevent algebraic calculation, if the sum total of rows/columns triggering suppression is greater than one but less than three, the three rows/columns with the lowest row totals are suppressed.

Inner Cell Suppression

Suppression will be applied to the inner cells of either the row or the column depending on the chosen layout of the MICA table. As a default, suppression will be applied only to

the rows, except in cases where the table has more columns than rows. If the table has more columns than rows, then suppression will primarily be applied to the columns.

If a table contains three or fewer rows/columns and suppression is invoked, all of the inner cells of that table will be suppressed. (Appx- Figure 2)

If a table contains four or more rows/columns, any inner cell that is less than or equal to the suppression threshold (but greater than 0) will be suppressed. If the total number of rows/columns that trigger suppression is at least one but less than three, the inner cells in the three rows with the smallest row totals must be suppressed. (Appx- Figures 3 and 4)

Suppression of Row/Column Totals

If an outer row/column total is less than or equal to the suppression threshold, it will be suppressed along with the inner cells in that row/column. If an outer row/column total is greater than the suppression threshold, the outer row/column will be displayed, even if all of the inner cells in that row are suppressed. (Appx- Figure 5)

Suppressing Charts and Maps in MOPHIMS

If a chart is to be created in MOPHIMS from a table that has suppressed data that chart must also be suppressed in its entirety with a footnote notifying users that the chart was suppressed due to confidentiality concerns.

When mapping information from the Data MICAs, geographies with suppressed data should be shaded the appropriate color for whichever category they may fall. However, the geography's data should be suppressed in the data table shown below the map, and the count, rate, and confidence intervals should be suppressed in the map's hover box.

'Unknown' Values in MOPHIMS

'Unknown' rows/columns will not trigger suppression. However, they will otherwise be treated the same as other values that do not trigger suppression and may be used to suppress additional rows/columns in a table with low counts.

Appendix

Examples in this appendix use a mix of true and fictional data.

Figure 1. Inner Cells versus Total Cells

Inner cells shown in orange. Outer (total) cells shown in blue.

Inner Cells vs Total Cells

	Non-Hispanic		Hispanic		Total for Selection	
County	Count	Rate	Count	Rate	Count	Rate
Adair	100	7.2	20	1.9	120	4.3
Andrew	75	3.9	4	0.7@	79	2.7
Total for Selection	175	5.8	24	1.6	199	3.7

Figure 2. Suppressing a Table with Three or Fewer Rows/Columns

Count in red has triggered suppression. All inner cells shaded in red would be suppressed.

County	Non-Hispanic		Hispanic		Total for Selection	
	Count	Rate	Count	Rate	Count	Rate
Adair	100	7.2	20	1.9	120	4.3
Andrew	75	3.9	4	0.7@	79	2.7
Total for Selection	175	5.8	24	1.6	199	3.7

Figure 3. Suppressing a Table with Greater than Four Rows/Columns

Counts in red have triggered suppression. All inner cells shaded in red would be suppressed. Because more than three rows have triggered suppression (and subsequently been suppressed), no additional suppression is necessary. Notice the 0 counts do not trigger suppression, but are suppressed with the rest of the row.

ER Discharges: Residents of Mobley County

Year= 2014, 2015

Diagnosis	White		Black/African-American	
	Count	Rate	Count	Rate
Cancer	242	197.8	223	137.6
Conditions of the perinatal period	8	4.9	2	1.8
Birth defects	6	3.2	2	1.8
Atherosclerosis	1	1.1	0	0.0
AIDS (HIV disease)	1	1.1	0	0.0
Peptic ulcer	0	0.0	1	0.3
Pregnancy complications	0	0.0	1	0.3
Sudden Infant Death Syndrome	0	0.0	1	0.3
Tuberculosis	0	0.0	0	0.0
Syphilis	0	0.0	0	0.0
Total for Selection	258	664.4	230	635.4

Figure 4. Suppressing a Table with Greater than Four Rows/Columns

Counts in red have triggered suppression. All inner cells shaded in red would be suppressed. Only one row in the table (Syphilis) triggers suppression, so not only would the inner cells of that row be suppressed, so should the rows with the next two lowest totals (SIDS and Tuberculosis). This suppresses a total of three inner rows.

ER Discharges: Residents of Hunter County

Year= 2012, 2013

Race= Non-Hispanic or Latino

Diagnosis	Male		Female	
	Count	Rate	Count	Rate
Cancer	13459	214.9	12274	154.6
Conditions of the perinatal period	262	4.7	220	4.1
Birth defects	201	3.5	171	2.9
Atherosclerosis	92	1.7	199	2.1
AIDS (HIV disease)	118	1.9	37	0.6
Peptic ulcer	43	0.7	67	0.8
Pregnancy complications	0	0.0	49	0.9
Sudden Infant Death Syndrome	19	0.3	11	0.2
Tuberculosis	8	0.1	5	0.1
Syphilis	1	0.0	3	0.0
Total for Selection	47794	797.5	45615	554.2

Figure 5. Suppressing Total /Outer Cells

Several inner rows are suppressed due to low counts. However, only two total cells (on the same row) trigger suppression. However, two additional total rows (with the lowest totals) must also be suppressed in order to meet the three row suppression guidelines.

ER Discharges: Residents of Berkley County

Diagnosis: Peptic ulcer

Age	Male		Female		Both Sexes	
	2011 Count	2012 Count	2011 Count	2012 Count	2011 Count	2012 Count
18-19	2	2	6	15	9	17
20-24	0	1	1	3	1	4
25-29	13	9	19	13	33	22
30-34	6	5	18	9	24	14
35-39	8	14	6	14	14	28
Total for Selection	29	31	50	54	81	85

Emergency Room MICA: Exempt and Conditionally Exempt Variables

Exempt:

Statewide

BRFSS Regions

LPHA Regions

Year- Multi-year Ranges

Year- Single year if more than one single year is selected and Year is NOT selected as a row/column variable

Basic Age Groups

Total Diagnosis

Sex

Conditionally Exempt:

County

City

Zip/ZCTA

Census Tract

RPC Regions

Diagnosis

Year- Single year if only one year is selected or if multiple single years are selected and Year is chosen as a row/column variable

Basic Race

Expanded Race

Expanded Age Groups

Ethnicity

Pay Source

Admission Month

Disposition

Current MOPHIMS System Suppression Thresholds

Birth MICA:	Less than 5	Fertility and Pregnancy Rate MICA:	Less than 5
Cancer Incidence MICA:	Less than 6	Injury MICA:	Less than 5
Chronic Disease MICAs:	Less than 5	Inpatient Hospitalizations MICA:	Less than 5
Emergency Room MICA:	Less than 5	Medicaid MICA:	Less than 5
Pregnancy MICA:	Less than 5	Preventable Hospitalizations MICA:	Less than 5
Procedures MICA:	Less than 5	TANF MICA:	Less than 5
WIC MICAs:	Less than 5	Death MICA:	Less than 5