



CMS Cell Size Suppression Policy

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What is the CMS cell size suppression policy?

As outlined for researchers in the data use agreement (DUA), the CMS cell size suppression policy sets minimum thresholds for the display of CMS data. The policy stipulates that no cell (e.g. admissions, discharges, patients, services, etc.) containing a value of 1 to 10 can be reported directly. A value of zero does not violate the minimum cell size policy. In addition, no cell can be reported that allows a value of 1 to 10 to be derived from other reported cells or information. For example the use of percentages or other mathematical formulas that, in combination with other reported information, result in the display of a cell containing a value of 1 to 10 are prohibited. The cell suppression policy also applies to the reporting of excluded cases.

CMS standards for minimum cell sizes aim to protect the confidentiality of Medicare and Medicaid beneficiaries by avoiding the release of information that can be used to identify individual beneficiaries. The policy applies to any output in tables and texts describing any of the following: beneficiaries, procedures, and diagnoses. The CMS policy applies to the use of CMS research identifiable files (RIF) and limited data sets (LDS). Any documents (manuscript, table, chart, study, report, etc.) created using CMS data must adhere to the minimum cell sizes set forth in this policy.

How to avoid violating the CMS cell size suppression policy

There are several options that researchers can employ to comply with the minimum cell size requirements outlined in the CMS cell size suppression policy. Common strategies to avoid displaying a cell of 1 to 10 include collapsing cells, coarsening data, and cell suppression.

The remainder of this document presents three common scenarios that would violate the CMS cell size suppression policy and provides examples of strategies that can be undertaken to comply with the CMS cell size suppression policy.

1. Table displays a cell with a value between 1 and 10.
2. Information from multiple tables can be used to derive values between 1 and 10.
3. Table displays a value for excluded patients that is between 1 and 10.

Resources:

ResDAC Assistance Desk

Email: resdac@umn.edu

Phone: 1-888-973-7322

Web: <http://www.resdac.org>

CMS Privacy office

Email: Privacy@cms.hhs.gov

Phone: 410-786-5357

Scenario 1: A value of 1 to 10, representing admissions, discharges, patients, services, etc., is directly displayed.

Table 1a violates the CMS cell suppression policy because the age category 85+ years displays a value of 6.

Violates CMS policy: Displays cell value of 1 to 10

Table 1a. Age Distribution of Patients with Procedure A

Procedure A (N=2,690)	
Beneficiary age group	N (%)
60-69 years	1,900 (71)
70-74 years	400 (15)
75-79 years	290 (11)
80-84 years	94 (3.5)
85+ years	6 (0.22)

Table 1b corrects the problem of the cell value for the 85+ age category by collapsing the age categories 80-84 years and 85+ years to achieve a displayed cell value that is greater than the CMS minimum threshold of 10.

Does not violate CMS policy: Collapse data to achieve cell value >10

Table 1b. Age Distribution of Patients with Procedure A

Procedure A (N=2,690)	
Beneficiary age group	N (%)
60-69 years	1,900 (71)
70-74 years	400 (15)
75-79 years	290 (11)
80+ years	100 (3.7)

Table 1c corrects the problem of the cell value for the 85+ age category by coarsening the data for 85+ years as well as for another age category:

- Add the value that is between 1 and 10 to any of the other cell values, e.g. for the 60-69 years category: $1900 + 6 = 1906$
- Subtract 11 from the total for the 60-69 years category: $1906 - 11 = 1895$
- Mask the 60-69 years category cell as > 1895 and the 85+ cell as < 11 .

Does not violate CMS policy: Coarsen data to prevent cell value of 1 to 10

Table 1c. Age Distribution of Patients with Procedure A

Procedure A (N=2,690)	
Beneficiary age group	N (%)
60-69 years	>1,895 (>70.4)
70-74 years	400 (15)
75-79 years	290 (11)
80+ years	<11 (<0.4)

Table 1d suppresses the cell that displayed a value of 1 to 10, but since the column total is known, the value for the age category 85+ can be derived [$** = 2690 - (1900+400+290+94) = 6$], which still violates the CMS policy.

Violates CMS policy: Insufficient suppression

Table 1d. Age Distribution of Patients with Procedure A

Procedure A (N=2,690)	
Beneficiary age group	N (%)
60-69 years	1,900 (71)
70-74 years	400 (15)
75-79 years	290 (11)
80-84 years	94 (3.5)
85+ years	**

Adequate suppression for the 85+ age category requires counter-suppression of another cell. In Table 1e, the age category with the next lowest value (80-84 years) is suppressed, but users can choose which other cell to suppress.

Does not violate CMS policy: Sufficient suppression

Table 1e. Age Distribution of Patients with Procedure A

Procedure A (N=2,690)	
Beneficiary age group	N (%)
60-69 years	1,900 (71)
70-74 years	400 (15)

75-79 years	290 (11)
80-84 years	**
85+ years	**

Scenario 2: Information presented from multiple tables or text can be used to derive values between 1 and 10.

Table 2a shows that there are 200 white diabetics and 400 black diabetics, which alone does not violate the CMS policy on minimum cell values.

Published information that by itself does not violate CMS policy

Table 2a. Baseline characteristics of study population

	White (N=800)	Black (N=1,200)
Diabetes	200	400
Hypertension	600	800

The information in Table 2a can be combined with the percentages presented in Table 2b to derive cell values for white and black diabetics with stage III cancer that are 1 to 10, which does violate CMS policy:

- 4% of 200 discloses that there are 8 white diabetics with stage III cancer.
- 1.75% of 400 discloses that there are 7 black diabetics with stage III cancer.

Violates CMS policy:

Table 2b. Tumor stage by race and comorbidity

	Stage I (%)	Stage II (%)	Stage III (%)	Total (%)
Diabetes				
White	60	36	4	100
Black	50	48.2	1.75	100
Hypertension				
White	66.7	23.3	10	100
Black	75	12.5	12.5	100

Table 2c corrects the problem by collapsing the stage II and stage III tumor categories so that the derived cell values are greater than the CMS minimum threshold of 10.

Does not violate CMS policy:

Table 2c. Tumor stage by race and comorbidity

	Stage I (%)	Stage II and III (%)	Total (%)
Diabetes			
White	60	40	100
Black	50	50	100
Hypertension			
White	66.7	33.3	100
Black	75	25	100

Scenario 3: Similar to scenario 1, a value of 1 to 10 is directly displayed, but it represents excluded patients. The CMS policy on minimum cell requirements applies to excluded cases as well.

Table 3a presents the selection criteria for a study cohort. Step 4 of the selection criteria shows that the number of excluded beneficiaries is 7.

Violates CMS policy:

Table 3a. Selection criteria

Step	Selection criteria	Included patients (N)	Excluded patients (N)
1	Medicare enrollees who were diagnosed with breast cancer	3,300	-
2	Continuously enrolled in Parts A & B 12 months before diagnoses and no HMO coverage and received procedure A	3,000	300
3	Patients who had positive nodes	2,000	1,000
4	Patients who received drug A	1,993	7

Table 3b corrects the problem by collapsing information to obtain a cell size above the minimum threshold. Combining the information in steps 3 and 4 results in a cell size that is above the threshold.

Does not violate CMS policy:

Table 3b. Selection criteria

Step	Selection criteria	Included patients (N)	Excluded patients (N)
1	Medicare enrollees who were diagnosed with breast cancer	3,300	-
2	Continuously enrolled in Parts A & B 12 months before diagnoses and no HMO coverage and received procedure A	3,000	300
3	Patients who had positive nodes and received drug A	1,993	1,007

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Related Data Request Materials:

[RIF Data Use Agreement \(DUA\)](#)