

VILLOS Vital Statistics Rapid Release

Report No. 34 ■ November 2023

Provisional Estimates of Suicide by Demographic Characteristics: United States, 2022

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Abstract

Objectives—This report presents the provisional number of deaths due to suicide in 2022 by demographic characteristics (age, sex, and race and Hispanic origin) compared with final 2021 data.

Methods—Data are based on more than 99% of all 2022 death records received and processed by the National Center for Health Statistics as of August 6, 2023. Comparisons are made with final 2021 data. Deaths due to suicide were identified using International Classification of Diseases, 10th Revision underlying cause-of-death codes U03, X60-X84, and Y87.0. Provisional 2022 age-adjusted and age-specific suicide rates are presented by sex and compared with final 2021 rates. Age-adjusted suicide rates by race and Hispanic origin for 2022 are also presented and compared with final 2021 rates.

Results—The provisional number of suicides in 2022 (49,449) was 3% higher than in 2021 (48,183). The provisional age-adjusted suicide rate was 1% higher in 2022 (14.3 deaths per 100,000 standard population) than in 2021 (14.1). The age-adjusted suicide rate was 1% higher in 2022 than 2021 for males (23.1 compared with 22.8) and 4% higher for females (5.9 compared with 5.7). Suicide rates generally declined for males ages 34 and younger and increased for those 35 and older. For females, rates declined

for those ages 24 and younger and increased for those 25 and older. Suicide rates increased for nearly all race and Hispanic-origin groups, although only the 3% increase for White non-Hispanic females was statistically significant.

Keywords: cause of death • intentional self-harm • self-injury • mental health • National Vital Statistics System

Introduction

Suicide has risen almost steadily during the 21st century, with increases experienced for both males and females in nearly every age and race and Hispanic-origin group (1,2). In 2021, the U.S. Surgeon General issued a call to action on a national strategy for suicide prevention (3) as well as an advisory for youth mental health (4) in response to the steady rise in suicides. This report presents the provisional number and rate of suicides for 2022 and compares them with final 2021 data, in total, by sex, and by sex and age combined. Numbers and age-adjusted rates for five race and Hispanic-origin groups (Hispanic, and for non-Hispanic groups: American Indian and Alaska Native, Asian, Black, and White) are also presented for 2022 and compared with final data for 2021.

Data Source and Methods

Data and methods

Data for 2022 are based on death certificate data received and processed by the National Center for Health Statistics as of August 6, 2023. Population data for computing the rates are July 1, 2022, estimates based on a blended base produced by the U.S. Census Bureau: see Technical Notes. Because most suicides typically require a death investigation, provisional suicide rates are usually computed using death data after a 6-month lag following date of death, which is longer than the 3-month lag used to compute rates for most other causes of death (5). For this report, 2022 data for all months had at least a 6-month lag. In particular, the method of the suicide has a role in the timing of the reporting, with those involving drug poisoning typically lagging behind other methods (6). Because suicides involving drug poisoning are a larger proportion of suicides among females, the completeness of provisional suicide counts for females typically lags behind that of males.

Completeness and timeliness of provisional death data can vary by other factors as well, such as month of the year and age of the decedent (7). Mortality data used in this report include more than 99% of the expected deaths that occurred in 2022. However, some



death records that have been received with a "pending" cause of death (0.2% of all death records) may eventually be classified as suicides. For two previous Vital Statistics Rapid Release reports for 2020 and 2021 with earlier data cutoffs (May 19, 2021, and May 15, 2022), the final suicide numbers were 0.3% and 1.1% higher than the provisional numbers, respectively (8,9). Suicides were identified using *International Classification of Diseases*, 10th Revision underlying cause-of-death codes U03, X60–X84, and Y87.0 (10).

Rates and significance testing

Age-adjusted suicide rates are calculated as the number of deaths per 100,000 U.S. standard population for 2000 and include all ages. Age-specific suicide rates begin with the 10-14 age group because it is difficult to determine suicidal intent in children younger than age 10 and, consequently, very few deaths are classified as suicides for those younger than 10 (11 deaths in 2021 and 9 in 2022). Pairwise comparisons between rates for 2022 and 2021 use the z test statistic at the 0.05 level of significance. Comparisons made in the text among rates, unless otherwise noted, are statistically significant; see Technical Notes for more information.

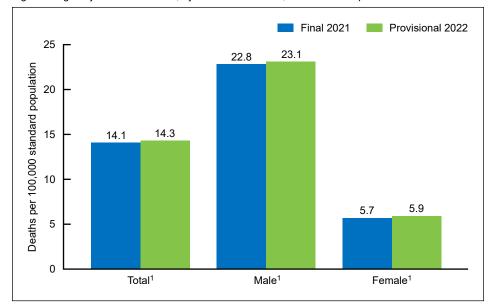
Results

Suicides by demographic characteristics

Total and by sex

The provisional number of suicides in 2022 (49,449) was 3% higher than the final 2021 number (48,183). The age-adjusted suicide rate in 2022 (14.3 deaths per 100,000 standard population) was 1% higher than in 2021 (14.1) (Table, Figure 1). The number of suicides for males increased 2%, from 38,358 in 2021 to 39,255 in 2022, while the number for females increased 4%, from 9,825 to 10,194. Age-adjusted suicide rates for males and females increased 1% and 4%,

Figure 1. Age-adjusted suicide rate, by sex: United States, final 2021 and provisional 2022



¹Difference in rates between 2021 and 2022 was statistically significant; *p* < 0.05. NOTE: Suicides are identified with *International Classification of Diseases, 10th Revision* underlying cause-of-death codes U03, X60–X84, and Y87.0.

SOURCE: National Center for Health Statistics, National Vital Statistics System, mortality data file.

respectively (from 22.8 to 23.1 for males and from 5.7 to 5.9 for females).

By age

Rates for people in age groups 10–14, 15–24, and 25–34 declined 18%, 9%, and 2%, respectively, from 2021 to 2022. However, the decline for ages 25–34 was not significant (Table). In contrast, rates increased 3%–9% for all age groups 35 and older, with significant increases for those ages 35–44 (from 18.1 to 18.7), 45–54 (18.2 to 19.2), 55–64 (17.0 to 18.5), and 75 and older (20.3 to 21.3). Consistent with 2021, the rate for people ages 10–14 was the lowest of all age groups in 2022, while the rate for people 75 and older was the highest.

By race and Hispanic origin

Of the five race and Hispanic-origin groups presented in this report, the highest age-adjusted rate in 2022 was for American Indian and Alaska Native non-Hispanic (subsequently, American Indian and Alaska Native) people at 26.7 deaths per 100,000 standard population (Table). However, note the increased misclassification of deaths for American Indian and Alaska Native decedents compared with other race

groups (Technical Notes). The rate was 5% lower in 2022 compared with 2021, the only group to experience a decline in rates, although this decrease was not significant. All other race and Hispanicorigin groups experienced increases of 1%–3%, with a 1% increase for White non-Hispanic (subsequently, White) people (from 17.4 to 17.6) and a 3% increase for Hispanic (7.9 to 8.1), Asian non-Hispanic (subsequently, Asian) (6.8 to 7.0), and Black non-Hispanic (subsequently, Black) (from 8.7 to 9.0) people. None of these changes were significant, however.

By sex and age

Rates for males in age groups 10–14, 15–24, and 25–34 declined by 13%, 9%, and 4%, respectively, with significant declines only for age groups 15–24 (from 23.8 deaths per 100,000 population to 21.6) and 25–34 (31.3 to 30.2) (Figure 2). Rates for men in all age groups 35 and older increased from 2021 to 2022, with significant increases for those ages 55–64 (10%, 26.6 to 29.3) and 45–54 (6%, 27.7 to 29.5). Consistent with 2021, the highest suicide rate for males was for age group 75 and older, whose rate increased nonsignificantly from 42.2 in 2021 to 43.7 in 2022.

Final 2021 Provisional 2022 50 43.7 42.2 40 Deaths per 100,000 population in specified group 30.2 29.3 29.5 29.3 28.5 27.7 26.8 26.6 26.1 23.8 21.6 10 3.2 2.8 0 65-74 75 and older 10-14 15-24¹ 25-34¹ 35-44 45-54¹ 55-64¹

Figure 2. Suicide rate for males, by age group: United States, final 2021 and provisional 2022

¹Difference in rates between 2021 and 2022 was statistically significant; *p* < 0.05. NOTE: Suicides are identified with *International Classification of Diseases*, *10th Revision* underlying cause-of-death codes U03, X60–X84, and Y87.0. SOURCE: National Center for Health Statistics, National Vital Statistics System, mortality data file.

For females, rates declined for those ages 10–14 and 15–24, with a significant 22% decline only for those 10–14 (from 2.3 to 1.8) (Figure 3). Rates increased 7% for women ages 25–34 (from 7.3 to 7.8), the only age group with a significant increase. Rates also increased 2%–9% for women in age groups 35–44, 45–54, 55–64, 65–74, and 75 and older.

By sex and race and Hispanic origin

In 2022, the highest age-adjusted suicide rate for males was for American Indian and Alaska Native people (39.2 deaths per 100,000 standard population), although this rate declined nonsignificantly by 8% from 2021 (42.6) (Figure 4). For all other groups, rates increased from 2021 to 2022, ranging

from a 1% increase for Black (from 14.6 to 14.8) and White (28.0 to 28.2) males to a 4% increase for Asian males (9.9 to 10.3), the group with the lowest rate in 2022. None of the changes by race and Hispanic origin for males were statistically significant.

For females, all groups experienced increases in suicide rates from 2021 to 2022, with a significant increase only for White females (3%, from 7.1 to 7.3) (Figure 5). The group with the highest rate in 2022, American Indian and Alaska Native females (14.4), and the lowest rate, Hispanic females (3.1), experienced increases from 2021 (13.8 and 3.0, respectively). Rates also increased from 2021 to 2022 for Asian (3.9 to 4.0) and Black females (3.3 to 3.4).

Discussion

The provisional 2022 suicide number (49,449) was 3% higher than the 2021 final number (48,183), and the highest number ever recorded in the United States (1). The 2022 final number of suicides is likely to be higher as additional death certificates with pending causes of death may be determined to be suicides (5). The ageadjusted rate of 14.3 was 1% higher than in 2021 (14.1), the highest since 1941 (11). The percentage increase in the number of suicides was greater for females (4%) than males (2%), but the provisional 2022 suicide number for males (39,255) was nearly four times that of females (10,194).

The age-adjusted rates were 4% higher in 2022 than in 2021 for females and

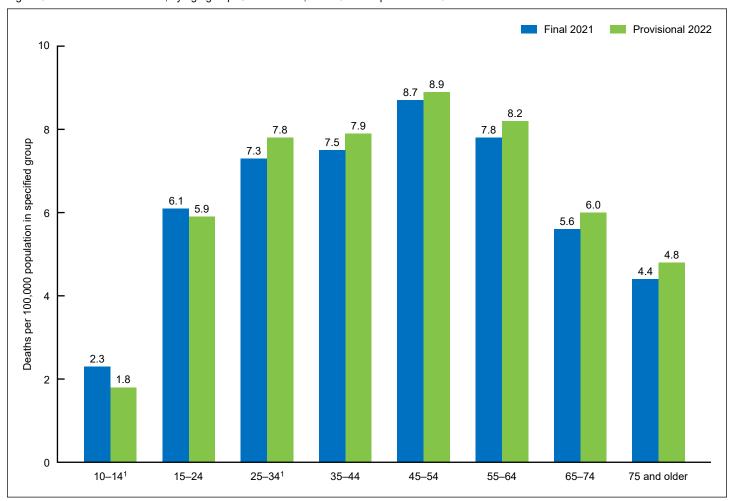


Figure 3. Suicide rate for females, by age group: United States, final 2021 and provisional 2022

¹Difference in rates between 2021 and 2022 was statistically significant; *p* < 0.05. NOTE: Suicides are identified with *International Classification of Diseases, 10th Revision* underlying cause-of-death codes U03, X60–X84, and Y87.0. SOURCE: National Center for Health Statistics, National Vital Statistics System, mortality data file.

1% higher for males. For both males and females, suicide rates generally declined from 2021 to 2022 for younger age groups, from ages 10 to 34 for males and 10 to 24 for females, although not all decreases were significant. Most age groups of men 35 and older experienced increases, with significant increases among those ages 45–54 and 55–64. All age groups for females 25 and older experienced increases, with a significant increase only for those ages 25–34.

Nearly all of the age-adjusted rates for males and females for the five race and Hispanic-origin groups featured in this report increased from 2021 to 2022, ranging from 1% to 4%. The only statistically significant change was the 3% increase for White females. The rate for American Indian and Alaska Native

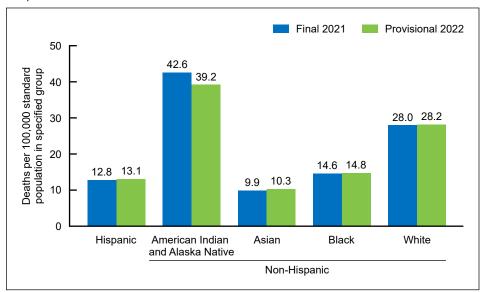
males, who typically have the highest rate of all groups, declined 8%, although this was not a significant decrease.

A limitation of this report is that the changes in rates for some age or race and Hispanic-origin groups were based on insufficient numbers of deaths to reach statistical significance. This does not mean that the findings are not important, but rather that they did not reach the threshold for statistical significance (alpha less than 0.05, or 95% confidence, that the changes were not due to random variation alone). For example, the suicide rate for American Indian and Alaska Native males declined 8% from 2021 to 2022, the largest change of any race and Hispanic-origin group. However, the change did not reach statistical significance because it was

based on relatively few cases: 525 deaths in 2021 and 475 in 2022. Accordingly, assessment of changes between 2021 and 2022 should consider the number of deaths and the criteria for statistical significance presented in the Table and Figures 1–5.

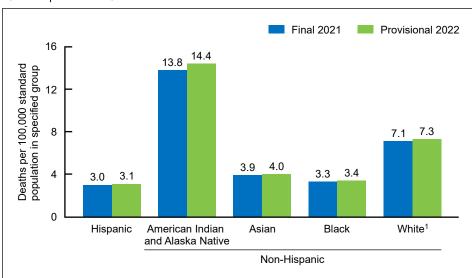
Because the numbers and rates presented in this report are provisional, they are subject to change. Reporting of suicides in particular can be delayed due to investigations regarding the cause and circumstances surrounding the death. Suicides for females are more likely to be incomplete in this report than suicides for males because their deaths more frequently involve drug poisonings (6). Nonetheless, this analysis is based on more than 99% of expected death records, and the lag from event

Figure 4. Age-adjusted suicide rate for males, by Hispanic origin and race: United States, final 2021 and provisional 2022



NOTES: Suicides are identified with *International Classification of Diseases, 10th Revision* underlying cause-of-death codes U03, X60–X84, and Y87.0. Death rates for American Indian and Alaska Native, Asian, and Hispanic people may be underestimated and should be interpreted with caution; see Technical Notes in this report. People of Hispanic origin may be of any race. SOURCE: National Center for Health Statistics, National Vital Statistics System, mortality data file.

Figure 5. Age-adjusted suicide rate for females, by Hispanic origin and race: United States, final 2021 and provisional 2022



¹Difference in rates between 2021 and 2022 was statistically significant; *p* < 0.05. NOTES: Suicides are identified with *International Classification of Diseases*, *10th Revision* underlying cause-of-death codes U03, X60–X84, and Y87.0. Death rates for American Indian and Alaska Native, Asian, and Hispanic people may be underestimated and should be interpreted with caution; see Technical Notes in this report. People of Hispanic origin may be of any race. SOURCE: National Center for Health Statistics, National Vital Statistics System, mortality data file.

to reporting is more than 6 months for all records. Comparisons of provisional 2020 suicide data (based on a May 19, 2021, cutoff) (8) with final 2020 suicide numbers, and provisional 2021 suicide data (based on a May 15, 2022, cutoff) (9) with final 2021 suicide numbers, suggest that the findings in this report for provisional 2022 suicide data are

expected to be consistent but lower than final 2022 data.

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Vital Statistics Surveillance Report

Table. Number and rate of suicides, by age group, ethnicity and race, and sex: United States, final 2021 and provisional 2022 [Rates are per 100,000 population estimated as of July 1 in 2021 and 2022]

	Number			Rate		
Age group, ethnicity and race, and sex	Final 2021	Provisional 2022	Percent change between 2021 and 2022	Final 2021	Provisional 2022	Percent change between 2021 and 2022
Total ^{1,2}	48,183	49,449	3	14.1	14.3	†1
Age group:						
10–14	598	493	-18	2.8	2.3	† -18
15–24	6,528	6,036	-8	15.2	13.9	†- 9
25–34	8,862	8,663	-2	19.5	19.1	-2
35–44	7,862	8,131	3	18.1	18.7	†3
45–54	7,401	7,719	4	18.2	19.2	†5
55–64	7,267	7,792	7	17.0	18.5	†9
65–74	5,144	5,367	4	15.3	15.8	. 3
75 and older	4,508	5,014	11	20.3	21.3	†5
Ethnicity and race:	•	,				
Hispanic ^{2,3} Non-Hispanic, single race ⁴ :	4,907	5,115	4	7.9	8.1	3
American Indian and Alaska Native ^{2,3}	692	650	-6	28.1	26.7	-5
Asian ^{2,3}	1,379	1,458	6	6.8	7.0	3
Black ²	3,692	3,825	4	8.7	9.0	3
White ²	36,681	37,459	2	17.4	17.6	1
Male ^{1,2} Age group:	38,358	39,255	2	22.8	23.1	†1
10–14	357	303	-15	3.2	2.8	-13
15–24	5,243	4,777	-13 -9	23.8	21.6	†-9
	7,223	6,928	-9 -4	23.6 31.3	30.2	
25–34			- 4 4			†-4 2
	6,237	6,458		28.5	29.3	3
45–54	5,632	5,973	6	27.7	29.5	†6
55–64	5,568	6,094	9	26.6	29.3	†10
65–74	4,140	4,319	4	26.1	26.8	3
75 and older Ethnicity and race:	3,947	4,393	11	42.2	43.7	4
Hispanic ^{2,3}	3,967	4,124	4	12.8	13.1	2
Non-Hispanic, single race ⁴ :	-,	,				
American Indian and Alaska Native ^{2,3}	525	475	-10	42.6	39.2	-8
Asian ^{2,3}	962	1,024	6	9.9	10.3	4
Black ²	2,972	3,068	3	14.6	14.8	1
White ²	29,292	29,847	2	28.0	28.2	1
Female ^{1,2}	9,825	10,194	4	5.7	5.9	†4
Age group:	0,020	10,104	7	0.7	0.0	1-7
10–14	241	190	-21	2.3	1.8	† -22
15–24	1,285	1,259	-21 -2	6.1	5.9	-3
25–34	1,639	1,735	- <u>-</u> 2	7.3	7.8	
						† 7
35–44	1,625	1,722	6	7.5	7.9	5
45–54	1,769	1,803	2	8.7	8.9	2
55–64	1,699	1,762	4	7.8	8.2	5
65–74	1,004	1,075	7	5.6	6.0	7
75 and older Ethnicity and race:	561	647	15	4.4	4.8	9
Hispanic ^{2,3} Non-Hispanic, single race ⁴ :	940	991	5	3.0	3.1	3
American Indian and Alaska Native ^{2,3}	167	175	5	13.8	14.4	4
Asian ^{2,3}	417	434	4	3.9	4.0	3
Black ²	720	757	5	3.3	3.4	3
White ²			3			
vvriite=	7,389	7,612	ა 	7.1	7.3	†3

[†] Change in rates between 2021 and 2022 was statistically significant; *p* < 0.05.

¹Includes deaths for children younger than age 10 years and age not stated; also includes people in race and Hispanic-origin groups not shown and people of multiple races.

²Rate adjusted to a standard 2000 population; see Data Source and Methods, and Technical Notes, in this report.

³Rate may be underestimated and should be interpreted with caution; see Technical Notes.

⁴Only one race reported on the death certificate.

NOTE: Suicides are identified with International Classification of Diseases, 10th Revision underlying cause-of-death codes U03, X60-X84, and Y87.0.

SOURCE: National Center for Health Statistics, National Vital Statistics System, mortality data file.

Technical Notes

Race and Hispanic-origin data

The race and ethnicity categories presented in this report are based on the 1997 Office of Management and Budget standards as presented on the 2003 revision of the U.S. Standard Certificate of Death (12). Information on race and ethnicity are from death certificates and are supplied by an informant, usually the next of kin. Race and Hispanic origin are two distinct attributes and are reported separately on death certificates. The data shown in this report by Hispanic origin and race consequently are based on a combination of the two attributes for the non-Hispanic population. Data shown for the Hispanic population include people of any race. All race categories are single race, meaning that only one race was reported on the death certificate. Death rates for Asian, American Indian and Alaska Native, and Hispanic people are impacted by inconsistencies in reporting race and Hispanic origin on the death certificate compared with censuses and surveys. Validity studies have shown underreporting on death certificates of both Asian non-Hispanic and Hispanic decedents by 3%, and of American Indian and Alaska Native non-Hispanic decedents by 33%-34% (13,14).

Census population data

The population data used to estimate the death rates shown in this report are estimated as of July 1, 2022, based on a blended base produced by the U.S. Census Bureau. The blended base is a blend of Vintage 2020 postcensal population estimates, 2020 demographic analysis estimates, and the (protected) internal 2020 Census Edited File or CEF (15). Population data are available from the Census Bureau website at: https://www.census.gov/data/tables/time-series/demo/popest/2010s-national-detail.html.

Cause-of-death classification

Cause of death was classified according to World Health Organization regulations, which specify that member countries classify and code causes of death according to the current revision of the *International Classification of Diseases* (ICD). ICD provides the basic guidance used in virtually all countries to code and classify causes of death. Effective with deaths occurring in 1999, the United States began using the 10th revision of this classification (ICD–10) (10).

In this report, cause-of-death statistics are based solely on the underlying cause of death. The underlying cause is defined by the World Health Organization as "the disease or injury which initiated the train of morbid events leading directly to death, or the circumstances of the accident or violence which produced the fatal injury." The underlying cause is selected from the conditions entered by the medical certifier in the cause-ofdeath section of the death certificate. When more than one cause or condition is entered by the medical certifier, the underlying cause is determined by the sequence of conditions on the certificate, provisions of ICD, and associated selection rules and modifications. Suicides are identified by ICD-10 underlying cause-of-death codes U03, X60-X84, and Y87.0.

Computing rates

Rates for all ages combined in this report are age adjusted based on a standard 2000 population per 100,000 estimated U.S. population. Age-specific rates are per 100,000 population in the specified age group. Comparisons made in the text among rates, unless otherwise noted, are statistically significant at the 0.05 level of significance. Lack of comment in this report about any two rates does not mean that the difference was tested and found not to be significant at this level.

Random variation

The mortality data presented in this report are not subject to sampling error. Provisional mortality data may be affected by random variation—that is, the number of deaths that actually occurred may be considered as one of a large series of possible results that could have arisen under the same circumstances.

When the number of deaths is large, a normal approximation may be used in calculating confidence intervals and statistical tests. However, the definition of large, in terms of number of deaths, is to some extent subjective. In general, for age-specific death rates, the normal approximation performs well when the number of deaths is 100 or greater. More information on statistical testing is published elsewhere (16).

Availability of mortality data

Mortality data used in this report are available in electronic products as described on the National Center for Health Statistics mortality website at: https://www.cdc.gov/nchs/deaths.htm. Provisional mortality data are available from: https://www.cdc.gov/nchs/nvss/vsrr.htm and on CDC WONDER at: https://wonder.cdc.gov/mcd-icd10-provisional.html.

Acknowledgments

This report was prepared in the Division of Vital Statistics under the direction of Paul D. Sutton, Acting Director; Andrés A. Berruti, Associate Director for Science: Robert N. Anderson, Chief. Statistical Analysis and Surveillance Branch; and Elizabeth Arias, Team Lead, Mortality Statistics and Research Team, Statistical Analysis and Surveilllance Branch. Registration Methods staff and Data Acquisition, Classification, and Evaluation Branch staff provided consultation to state vital statistics offices regarding collection of the death certificate data on which this report is based. The National Center for Health Statistics Office of Information Services.

Vital Statistics Surveillance Report

Information Design and Publishing Staff edited and produced this report: editor Jane Sudol and typesetter and graphic designer Simon McCann.

Suggested citation

Curtin SC, Garnett MF, Ahmad FB. Provisional estimates of suicide by demographic characteristics: United States, 2022. Vital Statistics Rapid Release; no 34. November 2023. DOI: https://doi.org/10.15620/cdc:133702.

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