



Measles Scenario-Based Human Health Risk Assessment

Updated as of April 9, 2025

Currently, the Center for Outbreak Response Innovation (CORI) judges the measles outbreak in the United States to be in Scenario 4: We are evaluating the potential risks to human health based on the scenarios outlined. In cases where multiple scenarios are occurring simultaneously nationally, we will highlight the highest-level scenario. Readers should refer to the scenario that applies to their specific region. Scenarios are described in detail in the [methodology](#) and listed on page 10.

	Risk to unvaccinated people	Risk to children	Risk to healthcare workers	Risk to the US general public
Scenario 4 – Development of 3+ large outbreaks (50+ cases) or at least one extra-large outbreak (300+ cases)	High	High	Low-Moderate	Moderate

Our confidence in these risk scores is **moderate** given the currently available information.

Notable Highlights

As of April 9, 2025, approximately 692 measles cases (including probable cases) and at least 7 outbreaks have been reported this year across 24 jurisdictions in the United States. *

- **Texas Outbreak Updates:**
 - [Second confirmed measles death](#) reported in a school-aged child in Lubbock, TX.
 - Small outbreak reported in [childcare center](#) in Lubbock, Texas.
 - Texas has identified [designated outbreak counties](#) with ongoing measles transmission: Cochran, Dallam, Dawson, Gaines, Garza, Lynn, Lamar, Lubbock, Terry and Yoakum.
 - [Pennsylvania](#) reported a case in an individual who traveled to Texas.
- **Other Notable Reports**
 - [New outbreak](#) (14 cases) linked to international travel in Knox County, Ohio.
 - [New outbreak](#) (6 cases) emerged in Allen County, Indiana linked to state's first case.
 - First cases in Hawaii ([1 case](#)), Indiana ([6 cases](#)) and Colorado ([3 cases](#)).
 - Detailed updates are available in the State Updates Table on page 3.
- **Transmission Risk:** Increased domestic and international travel during spring break and holidays, like Easter, heightens the risk of measles spreading. Travelers to and from U.S. outbreak areas raise concerns for interstate transmission, while mass gatherings in under-vaccinated, high-density settings or close-knit communities increase the risk of sustained transmission and large outbreaks (≥ 50 cases) if measles is introduced.

NEW: Measles public exposure information has been added to the dashboard. The [CORI measles dashboard](#) provides real-time data on reported cases and immunization coverage for counties with available information, sometimes before risk assessments.



National Outbreak Summary

The majority (over 90%) of cases occurring nationally are related to outbreaks but [sporadic cases](#), mostly related to international travel, have also been reported.

Age: Most cases are among children: [32% aged 5 and younger](#), [40% aged 5-19 years](#).

Hospitalizations: At least [74 individuals were hospitalized](#), with children under 5 years most affected. The majority ([76%](#)) of hospitalizations are linked to Texas.

Vaccination Status: [At least 97%](#) of reported cases are among individuals [unvaccinated](#) or with unknown vaccination status, underscoring the critical importance of measles-mumps-rubella (MMR) vaccination in preventing spread.

Fatalities: Three measles-associated deaths were reported, marking the first U.S. measles-related fatalities since [2015](#) and the first pediatric measles fatality since [2003](#). Two pediatric deaths were confirmed in Lubbock County, Texas and one adult death is under investigation in Lea County, New Mexico. None of the individuals had known underlying conditions.

Note: The typical measles case fatality rate is about [1 in 1,000](#), making the three reported deaths in this outbreak unusually high. Health officials suspect there may be more cases than reported, as some individuals may not seek testing or medical care.

Outbreaks: [Seven outbreaks](#) have been reported: Texas, Kansas, Ohio (2), New Jersey, and Georgia:

- **Texas Outbreak (Extra-Large Size, 573 cases):** This outbreak, which originated in Texas, has since spread to additional states, and is the largest outbreak this year.
 - **Texas:** The outbreak remains centered in Gaines County, where transmission began within a [close-knit, undervaccinated Mennonite community](#). It has spread across at least 21 counties, all in western Texas, except for two cases in central Texas.
 - **New Mexico:** Originated in Lea County, which borders Gaines County. All but three cases remain in Lea; the others are spread across two neighboring counties.
 - **Oklahoma:** The initial case [linked to Texas/ New Mexico](#). Subsequent cases have been linked through [household or extended family exposures](#).
 - **Pennsylvania:** One case is linked by [travel to Texas](#).
 - **Chihuahua, Mexico:** At least [39 cases](#) in have been reported [with links](#) to the Texas outbreak. *These cases are not included in outbreak numbers reported by CORI.*
 - **Colorado:** One case linked to the outbreak in Chihuahua, Mexico, which is related to the Texas outbreak.
- **Kansas (Medium Size, 32 cases):** The source of infection remains unknown. Initial linkages have been identified among cases in Stevens and Morton counties. Genetic sequencing suggests a possible connection to the Texas outbreak, though this has not been confirmed. CORI may reclassify the outbreak as more information becomes available.



- **Ashtabula County, Ohio (Medium Size, 10 cases):** The outbreak is linked to an unvaccinated adult who had contact with a recent international traveler. It is unknown if this outbreak is related to other cases or ongoing CORI may reclassify as additional information becomes available.
- **Knox County, Ohio (Medium Size, 14 cases):** Initial case linked to international travel.
- **Allen County, Indiana (Small Size, 6 cases):** Source of initial exposure is unknown. [All cases are linked](#) to the [first reported case](#) in the state and unconnected to other outbreaks.
- **New Jersey (Small Size, 3 cases):** Initial case linked to international travel.
- **Georgia (Small Size, 3 cases):** The initial exposure [occurred in the US](#), though the specific source has not been disclosed. Since it has been at least 42 days (two incubation cycles) since the last reported case, this outbreak is considered complete.

State Updates Table

Jurisdiction	Cases	Updates
Texas Outbreak (Extra-Large Size)		
Texas	505 (+178)	<p>New outbreak-related cases have been identified in Andrews, Borden, and Randall counties in western Texas, as well as Erath and Brown counties in central Texas—marking the first outbreak-related cases reported in this region. The previously reported case in Midland County has been reclassified as outbreak related.</p> <p>The second death of measles was reported in Lubbock County, involving an 8-year-old girl with no known underlying health conditions. Both confirmed measles deaths in this outbreak have occurred in children from Lubbock. This area is considered highly vulnerable, meaning a lot of people there might face challenges like limited access to healthcare, trouble getting transportation, or other barriers that can make it harder to stay healthy—especially during an outbreak.</p> <p>As part of the ongoing measles outbreak response, DSHS is updating the list of counties currently included in the designated outbreak area: Added: <i>Cochran, Dallam, Garza, Lamar, Lubbock, Andrews</i> Existing: <i>Dawson, Gaines, Lynn, Terry, Yoakum</i> Removed: <i>Martin</i></p> <p>Individuals residing in or traveling to outbreak areas are advised to follow updated MMR vaccination recommendations, which may include an adjusted schedule to ensure timely protection.</p> <p>A small outbreak (7 cases) was reported in a daycare in Lubbock which is affecting multiple classrooms. The daycare is excluding exposed children and cohorting students by vaccination status to reduce transmission. Children with one dose of vaccine are recommended to follow the adjusted</p>

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		<p>vaccination schedule.</p> <table border="1"> <thead> <tr> <th>Overview</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>% of cases unvaccinated/unknown status</td> <td>98%</td> </tr> <tr> <td>Hospitalizations</td> <td>57</td> </tr> <tr> <td>Measles-associated deaths</td> <td>2 (confirmed)</td> </tr> <tr> <td>Most affected age group</td> <td>Children 5-17 yrs</td> </tr> </tbody> </table>	Overview	Value	% of cases unvaccinated/unknown status	98%	Hospitalizations	57	Measles-associated deaths	2 (confirmed)	Most affected age group	Children 5-17 yrs
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New Mexico	56 (+13)	<p>New spread to Chavez County, which borders Lea and Eddy Counties. All cases are in Lea County, except for 1 Chavez County and 2 in Eddy County.</p> <p>Between February and April 3, the New Mexico Department of Health administered 15,718 doses of MMR, nearly twice as many as during the same period last year.</p> <p>Adults account for 48% of cases in this outbreak. In Lea County, MMR coverage with at least one dose among adults aged 18+ is only 63%, which may help explain the higher number of adult cases.</p> <table border="1"> <thead> <tr> <th>Overview</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>% of cases unvaccinated/unknown status</td> <td>89%</td> </tr> <tr> <td>Hospitalizations</td> <td>2</td> </tr> <tr> <td>Measles-associated deaths</td> <td>1 (under investigation)</td> </tr> <tr> <td>Most affected age group</td> <td>Adults 18+ yrs</td> </tr> </tbody> </table>	Overview	Value	% of cases unvaccinated/unknown status	89%	Hospitalizations	2	Measles-associated deaths	1 (under investigation)	Most affected age group	Adults 18+ yrs
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Oklahoma	10 (+1)	<p>One additional case reported. At least two cases are in Tulsa County, with the counties of other cases remaining unknown but likely in Tulsa since exposures were related to household and extended family. Two of the reported cases are probable.</p> <table border="1"> <thead> <tr> <th>Overview</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>% of cases unvaccinated/unknown status</td> <td>100%</td> </tr> <tr> <td>Hospitalizations</td> <td>0</td> </tr> <tr> <td>Measles-associated deaths</td> <td>0</td> </tr> <tr> <td>Most affected age group</td> <td>Adults 18+ yrs</td> </tr> </tbody> </table>	Overview	Value	% of cases unvaccinated/unknown status	100%	Hospitalizations	0	Measles-associated deaths	0	Most affected age group	Adults 18+ yrs
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Pennsylvania (outbreak related)	1 (+1)	A case was reported in a vaccinated adult from Bucks County with recent travel to Texas.										
Colorado (outbreak related)	1 (+1)	A case from Denver County was reported in an unvaccinated infant with recent travel to Chihuahua, Mexico , where there is a measles outbreak that has links to Texas. It is not clear if this case is related to the case from Pueblo County with travel to Mexico.										

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Small-to-Medium Outbreaks												
<p>Kansas Outbreak</p>	<p>32 (+9)</p>	<p>Nine new cases have been reported. New spread has been identified in Finney and Ford counties. Case distribution includes: 8 in Haskell, 7 in Stevens, 6 in Kiowa, and 5 or fewer in Finney, Ford, Grant, Gray, and Morton counties. All affected counties are in southwest Kansas and are geographically adjacent.</p> <p>Note: A case reported in Finney County was in an adult who recently traveled out of state. It is unknown whether this case is related to a different outbreak.</p> <table border="1"> <thead> <tr> <th>Overview</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>% of cases unvaccinated/unknown status</td> <td>94%</td> </tr> <tr> <td>Hospitalizations</td> <td>1</td> </tr> <tr> <td>Measles-associated deaths</td> <td>0</td> </tr> <tr> <td>Most affected age group</td> <td>Children 5-17 yrs</td> </tr> </tbody> </table>	Overview	Value	% of cases unvaccinated/unknown status	94%	Hospitalizations	1	Measles-associated deaths	0	Most affected age group	Children 5-17 yrs
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<p>Knox County, Ohio (OH)</p>	<p>14 (+14)</p>	<p>Fourteen measles cases have been reported, including seven Ohio residents linked to an international traveler who visited Knox County, representing a new outbreak. The remaining seven non-resident cases are international travelers visiting Knox County.</p> <p><i>Not enough data to produce an overview table.</i></p>										
<p>Ashtabula County, OH</p>	<p>10 (+0)</p>	<p>CORI reports no major updates.</p> <p><i>Not enough data to produce an overview table.</i></p>										
<p>Allen County, Indiana</p>	<p>6 (+6)</p>	<p>Six new cases have been reported, all linked to the county's first case in an unvaccinated child. The initial source of infection remains unknown with no known links to other outbreaks. The cases include four children and two adults.</p> <table border="1"> <thead> <tr> <th>Overview</th> <th>Value</th> </tr> </thead> <tbody> <tr> <td>% of cases unvaccinated/unknown status</td> <td>100%</td> </tr> <tr> <td>Hospitalizations</td> <td>0</td> </tr> <tr> <td>Measles-associated deaths</td> <td>0</td> </tr> <tr> <td>Most affected age group</td> <td>Children <18 yrs</td> </tr> </tbody> </table>	Overview	Value	% of cases unvaccinated/unknown status	100%	Hospitalizations	0	Measles-associated deaths	0	Most affected age group	Children <18 yrs
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<p>Bergen County, New Jersey</p>	<p>3 (+0)</p>	<p>No additional cases related to the outbreak as of April 3, 2025. If no new related cases are reported, CORI will consider the outbreak complete on Friday.</p> <p>Unrelated to the Bergen County outbreak, New Jersey has reported public measles exposures from non-NJ resident cases (presumably the Minnesota and Michigan cases). These are listed on the CORI measles dashboard and the NJ DOH website.</p>										



Unknown or Unrelated to Outbreaks		
California	9 (+1)	First case reported in Riverside County related to international travel.
Colorado (unlinked to outbreaks)	2 (+2)	First case in the state reported in Pueblo County in an unvaccinated adult linked to travel to an area in Mexico experiencing an outbreak. It is unclear if this case is related to the case in Denver County with reported travel to Mexico. Another case was reported in an adult from Archuleta County with no travel history. No links between cases or outbreaks have been reported, suggesting undetected transmission. CORI is monitoring the situation.
Hawaii	1 (+1)	First case in state reported in Honolulu County among an unvaccinated child with recent international travel.
Kentucky	2 (+1)	An additional case was reported within the last 30 days. No additional details are available.
Michigan	4 (+3)	New case reported in Kent County in an adult with recent international travel history. The infected adult recently traveled abroad before returning to the U.S. and traveling between Michigan and New Jersey. Another new case was reported in Macomb County related to international travel. A case was also reported in Montcalm County in an individual with recent out-of-state travel, not yet linked to other outbreaks.
Ohio (unlinked to outbreaks)	1 (+1)	New adult case reported in Holmes County . No additional details available.
Pennsylvania (unlinked to outbreaks)	5 (+1)	Third case reported in Erie County in a child which resulted in 227 contacts , including infants at a childcare setting . No additional cases reported. Reports suggest that the cases are currently unrelated to outbreaks .
Tennessee	4 (+3)	An additional 3 cases have been reported among Middle Tennessee residents. Unconfirmed reports suggest that two cases may be in the Upper Cumberland region and two in the Mid-Cumberland region, though specific counties have not been identified. Of the four reported cases, at least two are epidemiologically linked. No additional information is currently available. Shelby County Health Department reported a measles case on 3/28/25, referring to it as the second measles case in the state, but ultimately determined that the case did not meet definition of the disease after further testing.
Texas (Unlinked to Outbreak)	8 (+3)	First case in Fort Bend County , not currently linked to the ongoing outbreak in the state. The first cases have been reported in El Paso : one in a hospitalized patient and another in an unvaccinated child. While it is unclear if these cases are linked to ongoing outbreaks, their geographic proximity suggests a likely connection.



	The previously reported case in Midland County has been reclassified as outbreak related.
Jurisdictions with at least one case within the last 30 days with no major updates (total # of cases)	Maryland (3), Minnesota (1), New York State (1), New York City (3), Vermont (1)
Other	
Jurisdictions with no measles cases in the last 30 days (total # of cases)	Alaska (2), Florida (1), Georgia (3 – now complete small outbreak), Rhode Island (1)

Impact of MMR Vaccination Coverage

- The MMR vaccine is highly effective, providing [93% - 97% protection](#) from one to two doses.
- Maintaining [≥95% vaccination coverage](#) is critical for herd immunity, yet US MMR coverage stands at [92.7%](#) for the 2023-2024 kindergarten school year. Pockets of undervaccination in high-density settings or close-knit communities [increase the risk](#) of sustained transmission and large outbreaks (≥50 cases).
- Most cases this year are among children, the majority of whom are school aged. Schools can be high-risk settings for outbreaks—[once MMR coverage falls below 85% in a school, the likelihood of an outbreak and outbreak size increases significantly](#).

Notable Limitations

- Limited information and ongoing outbreak investigations may impact reported numbers, which are subject to change as more data becomes available.
- As of February 21, 2025, CDC transitioned to [weekly reporting](#) of measles cases.
- [National Notifiable Diseases Surveillance System \(NNDSS\)](#) data is often delayed, leading to potential underreporting in real time.
- Data is being supplemented by other sources, resulting in moderate confidence in current estimates.

Mitigation Recommendations

To minimize the spread of measles and the potential for large and extra-large outbreaks, CORI recommends:

- Monitoring vaccination coverage rates within local and state jurisdictions, at the provider or clinic level, and within sub-communities that may be at increased risk of transmission due to mass gatherings (e.g., schools, shelters, etc.).
- Promoting targeted and culturally informed vaccine messaging and mobile clinics for populations with low vaccine coverage.
- Promoting community and provider awareness of measles cases early on and through diverse media (e.g., health alerts, clinician letters, and press releases).



- Building strong relationships with providers, community leaders, and schools (including school leadership and school nurses) to increase awareness of importance and efficacy of MMR vaccination, measles symptoms, testing, and isolation protocols.
- Enhancing communication between public health and medical leaders to share outbreak response experiences and lessons learned.
- In high-risk areas experiencing outbreaks, strengthening vaccination policies is critical to prevent further transmission. Measures may include mandating vaccination for school

attendance and high-risk settings and implementing exclusion policies for unvaccinated individuals in schools and childcare settings. Additional public health measures, such as masking requirements in healthcare settings and targeted immunization campaigns, can further reduce transmission and increase community protection.

To minimize the spread of measles and the potential for small to medium-sized outbreaks, CORI recommends:

- Provision of [post-exposure prophylaxis \(PEP\)](#) as needed to possibly provide protection or alter the progression of illness.
- Implementation of temporary, [adjusted vaccination schedules](#) at the discretion of the state and local health departments.
 - NOTE: The [Texas Department of State Health Services](#) and [Kansas Department of Health](#) are now recommending adjusted vaccination schedules for those in affected counties.
- [Routine documentation of measles immunity status](#) among healthcare professionals to facilitate appropriate PEP or quarantine of individuals in the event of an occupational exposure.
- During a measles outbreak in a healthcare facility or facilities serving outbreak areas, healthcare personnel are [recommended](#) to receive two doses of MMR vaccine, regardless of birth year, if they lack laboratory evidence of immunity or laboratory confirmation of measles disease.

To minimize the risk of measles transmission [due to international travel](#), CORI recommends:

- Individuals DO NOT travel while sick, especially with a fever and rash.
- Individuals planning to travel outside of the US to be fully vaccinated against measles at least 2 weeks prior to departure, in accordance with [CDC guidelines](#).
- Individuals traveling internationally with infants under 12 months old should ensure that their child receives an early dose of vaccine between 6 and 11 months, a second dose at 12 to 15 months, and a final dose at 4 to 6 years, in accordance with [CDC guidelines](#).



- Individuals returning to the US after international travel should monitor their health for 3 weeks and contact their local health department or provider if symptoms such as high fever, cough, or rash develop.

To minimize the spread of measles in general, CORI recommends:

- [All children](#) receive a routine 2-dose measles, mumps, and rubella (MMR) vaccine: the first dose at age 12 through 15 months and the second dose at age 4 through 6 years (before school entry).
- [Adults and teens](#) should also be up to date on MMR vaccinations, with either 1 or 2 doses (depending on risk factors), unless they have other presumptive evidence of immunity to measles, mumps, and rubella.
- [Healthcare personnel without presumptive evidence of immunity](#) should get 2 doses of MMR vaccine, separated by at least 28 days.
- People with confirmed or suspected measles should isolate themselves from others without immunity to measles until after the fourth day of rash onset.
- Individuals without measles immunity who are exposed to the virus should receive [post-exposure prophylaxis](#) with the measles vaccine within 72 hours or immunoglobulin within 6 days, or they may need to quarantine to prevent further spread.

Scenarios

CORI identified 5 key scenarios that may shape the risk of measles in the US for the upcoming year. These scenarios consider the health risks of measles, taking into account the differing impacts to various population groups within the US.

Currently, the Center for Outbreak Response Innovation (CORI) judges the measles outbreak in the United States to be in Scenario 4.

Features that would characterize each scenario include:

- **Scenario 1 – Sporadic cases of measles, no outbreaks (baseline):** In this scenario, the measles virus is occasionally introduced, usually by international travelers, into a community, but transmission lasts for less than 12 months. While sporadic cases can occur in any community with varying vaccination coverage, they often occur in well-vaccinated communities (over 90% coverage). There is no or limited transmission from these cases, with a total of [1–2 related cases](#), and they do not lead to an outbreak.
- **Scenario 2 – Development of small-to-medium outbreaks:** In this scenario, small-to-medium outbreaks occur, with or without reports of sporadic cases, and do not result in sustained transmission beyond 12 months. These outbreaks usually occur when the measles virus is introduced to an undervaccinated community (90% coverage or less), which leads to a small ([3-9 related cases](#)) to medium ([10-49 related cases](#)) outbreak.



- Scenario 3 – Development of 1–2 large outbreaks:** In this scenario, large outbreaks occur, with or without reports of small-to-medium outbreaks and/or sporadic cases, and do not result in sustained transmission beyond 12 months. Large outbreaks typically occur in close-knit, undervaccinated settings with high population density, especially when there are pockets of unvaccinated individuals, such as migrant shelters or mass gatherings. This results in a large outbreak, ranging from [50 or more cases](#).
- UPDATED: Scenario 4 – Development of 3+ large outbreaks or at least one extra-large outbreak:** In this situation, three or more large outbreaks (50+ cases) occur across different communities or there is report of an extra-large outbreak (300+ cases). These outbreaks may or may not be accompanied by reports of small-to-medium outbreaks and/or sporadic cases and do not result in sustained transmission beyond 12 months. Large outbreaks may emerge independently, driven by localized drops in vaccination coverage, mass gatherings, or travel-related introductions, while an extra-large outbreak results from continued transmission within a single expanding outbreak. Additionally, there may be an increase of sporadic cases in highly vaccinated communities due to widespread prevalence of the virus.
- Scenario 5 – Sustained transmission beyond 12 months leading to loss of measles elimination status:** In the fifth scenario, the virus maintains sustained transmission, regardless of vaccination coverage levels, for at least 1 year. The sustained transmission of the virus results in measles once again becoming endemic in the US. CDC defines [endemic transmission](#) as a chain of measles virus transmission that is continuous for 12 months or more within the US. Under this scenario, the US would lose its measles elimination status, which was achieved in 2000.

Scenario-Based Human Health Risk Assessment for the US

Please note: We are evaluating the risks to human health should each scenario occur, **not** the relative risk of any one scenario occurring. We are evaluating the potential risks to human health based on the scenarios outlined. In cases where multiple scenarios are occurring simultaneously nationally, we will highlight the highest-level scenario. Readers should refer to the scenario that applies to their specific region and neighboring areas. This risk assessment will be updated regularly.

	Risk to unvaccinated people	Risk to children	Risk to healthcare workers	Risk to the US general public
Scenario 1 – Sporadic cases of measles, no outbreaks (baseline)	Low-Moderate	Low-Moderate	Low	Low

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Scenario 2 – Development of small- to-medium outbreaks	Moderate	Moderate	Low	Low
Scenario 3 – Development of 1-2 large outbreaks	Moderate- High	Moderate- High	Low	Low
Scenario 4 – Development of 3+ large outbreaks or at least one extra-large outbreak	High	High	Low-Moderate	Moderate
Scenario 5 – Sustained transmission beyond 12 months leading to loss of measles elimination status	High	High	Low-Moderate	Moderate

Our overall **confidence** in these risk scores is moderate given the current level and availability of information for each of these factors, historical knowledge from past outbreaks on transmission dynamics, and the availability of vaccination and treatment resources.

Human Health Risk Scale				
Low	Low-Moderate	Moderate	Moderate-High	High

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