**Airline On-Time Performance and Causes of Flight Delays**

Tuesday, March 16, 2021

[Airline On-Time Statistics Home Page](https://www.bts.dot.gov/explore-topics-and-geography/topics/time-data) | [Airline On-Time Tables Home Page](https://www.bts.dot.gov/explore-topics-and-geography/topics/airlines-and-airports/airline-time-tables) | [Airline Delay Causes Home Page](http://www.transtats.bts.gov/OT_Delay/OT_DelayCause1.asp) | [Understanding the Reporting of Causes of Flight Delays and Cancellations](https://www.bts.dot.gov/topics/airlines-and-airports/understanding-reporting-causes-flight-delays-and-cancellations)

* [Which marketing carriers report on-time performance, causes of flight delays, tarmac times, mishandled baggage, mishandled wheelchairs/scooters and denied boardings?](https://www.bts.dot.gov/explore-topics-and-geography/topics/airline-time-performance-and-causes-flight-delays#q0)
* [Which operating carriers report on-time performance, causes of flight delays causes of flight delays, tarmac times, mishandled baggage, mishandled wheelchairs/scooters and denied boardings?](https://www.bts.dot.gov/explore-topics-and-geography/topics/airline-time-performance-and-causes-flight-delays#q1)
* [What types of flight delays are reported to BTS by the airlines?](https://www.bts.dot.gov/explore-topics-and-geography/topics/airline-time-performance-and-causes-flight-delays#q2)
* [How were the reporting categories determined?](https://www.bts.dot.gov/explore-topics-and-geography/topics/airline-time-performance-and-causes-flight-delays#q3)
* [What flights does the reporting cover?](https://www.bts.dot.gov/explore-topics-and-geography/topics/airline-time-performance-and-causes-flight-delays#q6)
* [What airports does the reporting cover?](https://www.bts.dot.gov/explore-topics-and-geography/topics/airline-time-performance-and-causes-flight-delays#q7)
* [How are flight delays calculated?](https://www.bts.dot.gov/explore-topics-and-geography/topics/airline-time-performance-and-causes-flight-delays#q8)
* [For how long have airlines reported on-time performance?](https://www.bts.dot.gov/explore-topics-and-geography/topics/airline-time-performance-and-causes-flight-delays#q9)
* [What types of data are published?](https://www.bts.dot.gov/explore-topics-and-geography/topics/airline-time-performance-and-causes-flight-delays#q10)

**Which marketing carriers report on-time performance, causes of flight delays, tarmac times, mishandled baggage, mishandled wheelchairs/scooters and denied boardings?**

Marketing carrier networks include carriers that operate flights under their own brands plus any regional code share partners that contract to operate flights under the marketing carrier’s brand.

The marketing carrier networks are:

|  |  |
| --- | --- |
| * Alaska Airlines (AS)\* * Allegiant Air (G4) * American Airlines (AA)\* * Delta Air Lines (DL)\* * Frontier Airlines (F9) | * Hawaiian Airlines (HA)\* * JetBlue Airways (B6) * Southwest Airlines (WN) * Spirit Airlines (NK) * United Airlines (UA)\* |

\* Includes branded code-share partners

**Which operating carriers report on-time performance, causes of flight delays causes of flight delays, tarmac times, mishandled baggage, mishandled wheelchairs/scooters and denied boardings?**  
Carriers that have 0.5 percent of total domestic scheduled-service passenger revenue report on-time data and the causes of delay. In 2021, there are 17 carriers required to report these numbers. The reports cover nonstop scheduled-service flights between points within the United States (including territories) as described in 14 CFR Part 234 of DOT's regulations.

The reporting airlines are:

|  |  |
| --- | --- |
| * Alaska Airlines (AS) * Allegiant Air (G4) * American Airlines (AA) * Delta Air Lines (DL) * Endeavor Air (9E) * Envoy Air (MQ) * Frontier Airlines (F9) * Hawaiian Airlines (HA) * Horizon Air (QX) | * JetBlue Airways (B6) * Mesa Airlines (YV) * PSA Airlines (OH) * Republic Airlines (YX) * SkyWest Airlines (OO) * Southwest Airlines (WN) * Spirit Airlines (NK) * United Airlines (UA) |

**What types of flight delays are reported to BTS by the airlines?  
Airlines that report monthly numbers of flight delays to the BTS began reporting information on causes of delays in June 2003. The airlines report the causes of delays in five broad categories:**

* **Air Carrier:** The cause of the cancellation or delay was due to circumstances within the airline's control (e.g. maintenance or crew problems, aircraft cleaning, baggage loading, fueling, etc.).
* **Extreme Weather:** Significant meteorological conditions (actual or forecasted) that, in the judgment of the carrier, delays or prevents the operation of a flight such as tornado, blizzard or hurricane.
* **National Aviation System (NAS):** Delays and cancellations attributable to the national aviation system that refer to a broad set of conditions, such as non-extreme weather conditions, airport operations, heavy traffic volume, and air traffic control.
* **Late-arriving aircraft:** A previous flight with same aircraft arrived late, causing the present flight to depart late.
* **Security:** Delays or cancellations caused by evacuation of a terminal or concourse, re-boarding of aircraft because of security breach, inoperative screening equipment and/or long lines in excess of 29 minutes at screening areas.

**How were the reporting categories determined?**  
The U.S. Department of Transportation issued a final rule on reporting the causes of flight delays on November 25, 2002. The final rule followed two years of consideration.

DOT formed an Air Carrier On-Time Reporting Advisory Committee in August 2000 to consider changes to the current on-time reporting system so that the public would have clear information about the nature and sources of airline delays and cancellations. This task force recommended the creation of a reporting framework for collecting information about the causes of airline delays and cancellations.

In 2001, BTS conducted a pilot program with four airlines to test the monthly reporting of causation. BTS based the final rule on the recommendations of the task force, the results of its pilot project, its outreach efforts to the aviation community and comments received after a proposed rule was published in December 2001.

To view a copy of the rule, go to [Regulations.gov](https://www.regulations.gov/document?D=DOT-OST-2000-8164-0059) for Rule OST 2000-8164.

**What flights does the reporting cover?**  
The rule requires carriers to report on domestic operations to and from U.S. airports.

**How are flight delays calculated?**

A flight is counted as "on time" if it operated less than 15 minutes later **than** the scheduled time shown in the carriers' Computerized Reservations Systems (CRS). Arrival performance is based on arrival at the gate. Departure performance is based on departure from the gate.

**For how long have airlines reported on-time performance?**  
Airlines have reported on-time performance to the U.S. Department of Transportation since 1987. Reporting was modified in 1995 to include reporting of mechanical delays, which had not been included in the original rule. Monthly reports are released in the Air Travel Consumer Report.

**What types of data are published?**  
The U.S. Department of Transportation publishes a monthly summary of airline on-time performance, including causes of delay, in the [Air Travel Consumer Report](https://www.transportation.gov/airconsumer/air-travel-consumer-reports).

The Bureau of Transportation Statistics publishes a variety of on-time and flight delay information.

# Understanding the Reporting of Causes of Flight Delays and Cancellations

Monday, January 10, 2022

* [How do we know the reason for a flight being late or cancelled?](https://www.bts.gov/topics/airlines-and-airports/understanding-reporting-causes-flight-delays-and-cancellations#q1)
* [Which airlines report on-time data?](https://www.bts.gov/topics/airlines-and-airports/understanding-reporting-causes-flight-delays-and-cancellations#q2)
* [Do the airlines report the exact cause of the delay?](https://www.bts.gov/topics/airlines-and-airports/understanding-reporting-causes-flight-delays-and-cancellations#q3)
* [How are these categories defined?](https://www.bts.gov/topics/airlines-and-airports/understanding-reporting-causes-flight-delays-and-cancellations#q4)
* [What have the airline reports on the causes of delay shown about flight delays?](https://www.bts.gov/topics/airlines-and-airports/understanding-reporting-causes-flight-delays-and-cancellations#q5)
* [Is it true that weather causes only 4 percent of flight delays?](https://www.bts.gov/topics/airlines-and-airports/understanding-reporting-causes-flight-delays-and-cancellations#q6)
* [How many flights were really delayed by weather?](https://www.bts.gov/topics/airlines-and-airports/understanding-reporting-causes-flight-delays-and-cancellations#q7)
* [Why aren’t all weather-related delays reported as a single number?](https://www.bts.gov/topics/airlines-and-airports/understanding-reporting-causes-flight-delays-and-cancellations#q8)
* [Is more information available on the Air Carrier On-Time Reporting Advisory Committee?](https://www.bts.gov/topics/airlines-and-airports/understanding-reporting-causes-flight-delays-and-cancellations#q9)
* [Is more information available on the causes of delays and cancellations?](https://www.bts.gov/topics/airlines-and-airports/understanding-reporting-causes-flight-delays-and-cancellations#q10)

**How do we know the reason for a flight being late or cancelled?**  
Since June 2003, the airlines that report on-time data also report the causes of delays and cancellations to the Bureau of Transportation Statistics. Reported causes of delay are [available](http://www.transtats.bts.gov/OT_Delay/OT_DelayCause1.asp) from June 2003 to the most recent month.

**Which airlines report on-time data?**

In 2018, BTS began collecting on-time data on marketing carrier networks, which include mainline carriers and branded code share partners.  In 2021, there are 10 marketing carrier networks.

Additionally, operating carriers that have 0.5% of total domestic scheduled-service passenger revenue report on-time data and the causes of delay. In 2021, there are 17 carriers reporting these numbers.

**Do the airlines report the exact cause of the delay?**  
The airlines report the causes of delay in broad categories that were created by the Air Carrier On-Time Reporting Advisory Committee.  The categories are Air Carrier, National Aviation System, Weather, Late-Arriving Aircraft and Security.  The causes of cancellation are the same, except there is no late-arriving aircraft category.

**How are these categories defined?**

* **Air Carrier:** The cause of the cancellation or delay was due to circumstances within the airline's control (e.g. maintenance or crew problems, aircraft cleaning, baggage loading, fueling, etc.).
* **Extreme Weather:** Significant meteorological conditions (actual or forecasted) that, in the judgment of the carrier, delays or prevents the operation of a flight such as tornado, blizzard or hurricane.
* **National Aviation System (NAS):** Delays and cancellations attributable to the national aviation system that refer to a broad set of conditions, such as non-extreme weather conditions, airport operations, heavy traffic volume, and air traffic control.
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* **Security:** Delays or cancellations caused by evacuation of a terminal or concourse, re-boarding of aircraft because of security breach, inoperative screening equipment and/or long lines in excess of 29 minutes at screening areas.

**What have the airline reports on the causes of delay shown about flight delays?**

## [Delay Cause by Year, as a Percent of Total Delay Minutes](https://www.bts.gov/content/delay-cause-year-percent-total-delay-minutes)

**Is it true that weather causes only 4 percent of flight delays?**  
That category consists of extreme weather that prevents flying. There is another category of weather within the NAS category. This type of weather slows the operations of the system but does not prevent flying. Delays or cancellations coded "NAS" are the type of weather delays that could be reduced with corrective action by the airports or the Federal Aviation Administration. During 2020, 45.8% of NAS delays were due to weather. NAS delays were 33.4% of total delays in 2020.

**How many flights were really delayed by weather?**  
A true picture of total weather-related delays requires several steps. First, the extreme weather delays must be combined with the NAS weather category. Second, a calculation must be made to determine the weather-related delays included in the "late-arriving aircraft" category. Airlines do not report the causes of the late-arriving aircraft but an allocation can be made using the proportion of weather related-delays and total flights in the other categories. Adding the weather-related delays to the extreme weather and NAS weather categories would result in weather's share of all flight delays.

## [Weather's Share of Delay as Percent of Total Delay-Minutes, by Year](https://www.bts.gov/content/weathers-share-delay-percent-total-delay-minutes-year)

**Why aren’t all weather-related delays reported as a single number?**

The Air Carrier On-Time Reporting Advisory Committee created this reporting system. The committee believed that separating the extreme weather delays from the weather delays that could be fixed through improvements to the system, would provide a truer picture of the extent of weather delays.  The separate reports would provide the system’s managers with better information for making improvements.

**Is more information available on the Air Carrier On-Time Reporting Advisory Committee?**  
DOT formed an Air Carrier On-Time Reporting Advisory Committee in August 2000 to consider changes to the current on-time reporting system so that the public would have clear information about the nature and sources of airline delays and cancellations. This task force recommended the creation of a reporting framework for collecting information about the causes of airline delays and cancellations.

In 2001, BTS conducted a pilot program with four airlines to test the monthly reporting of causation. BTS based the final rule on the recommendations of the task force, the results of its pilot project, its outreach efforts to the aviation community and comments received after a proposed rule was published in December 2001.

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**Is more information available on the causes of delays and cancellations?**  
Cause of delay numbers can be found on the BTS website at <http://www.transtats.bts.gov/OT_Delay/OT_DelayCause1.asp>  This page allows searches by time period and by airline or airport.  It also has calculations for weather’s share of flight delays and a breakdown of NAS delays by category.  More data can be found on the [TranStats database](https://transtats.bts.gov/Tables.asp?QO_VQ=EFD&QO_anzr=Nv4yv0r%FDb0-gvzr%FDcr4s14zn0pr%FDQn6n&QO_fu146_anzr=b0-gvzr). Also, the Department’s monthly Air Travel Consumer Report includes a summary of causes of delay numbers reported by each carrier for the most recent month.  The report can be found at <http://www.dot.gov/airconsumer/air-travel-consumer-reports>.