

SUMMARY OF OHIO TORNADOES¹

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ABSTRACT

Ohio lies on the eastern edge of the maximum frequency belt for tornadoes in the whole world. Tornadoes approach from all directions, but about 90 percent come from the southwest, west-southwest, and west. As many as 32 tornadoes have been reported within the State in a single year and as few as none. During the period 1953-1968, Ohio averaged slightly more than 10 tornadoes a year. In contrast, reports of Ohio tornadoes prior to 1875 are especially rare. Upon examining these Ohio tornado statistics, one might conclude that there has been a great increase in the occurrence of tornadoes during the past 10 to 20 years. However, this can not be scientifically documented, and it is more likely that the apparent increase in numbers of tornadoes is due to the increased population and more efficient reporting procedures of more recent years. A brief resume of some of Ohio's worst tornadoes is given.



FIGURE 1. Mr. Robert B. Hamilton, Communications Consultant for Ohio Bell Telephone Company, Zanesville, Ohio, took this picture of the New Concord-area tornado of June 25, 1968, just after the funnel cloud had moved across I-70 (from left to right).

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Each year many Ohio residents hear a roaring, rushing noise which is said to closely approximate that made by a jet aircraft or a train speeding through a tunnel or over a bridge. Such a sound often signifies the passing of nature's most devastating storm, a tornado (fig. 1).

Ohio lies on the eastern edge of the maximum frequency belt for tornadoes in the whole world. The heart of this belt, "tornado alley", extends from northern Texas to southwestern Iowa. During the period 1953-1967, 9651 tornadoes were reported in the United States. Of these, 5184 occurred within states bordering on tornado alley, i.e., Iowa, Kansas, Missouri, Nebraska, Oklahoma, and Texas. Ohio, during the same period, averaged slightly more than 10 tornadoes a year. For the period 1953-1967, average numbers of tornadoes in Ohio's neighboring states were 23 for Indiana, 5 for Kentucky, 13 for Michigan, 6 for Pennsylvania, and 1 for West Virginia.

Tornadoes approach from all directions, but in Ohio about 90 percent of all tornadoes come from the southwest, west southwest, or west. Widths of tornadoes average 300 to 400 yards, while the lengths of the destructive paths average about 13 miles. Forward speed of tornadoes averages 25-40 miles per hour. Wind speed within the funnel cloud has never been measured, but some meteorologists have estimated this speed as being higher than 300 miles per hour.

Reports of Ohio tornadoes prior to 1875 are especially rare. Geauga County has the earliest reported tornado in the state (August 1804). Official records of the Environmental Science Services Administration, ESSA, (Mindling, 1944; ESSA, 1950 through 1958; ESSA, 1959 through 1968; U. S. Weather Bureau, 1891 through 1935; U. S. Weather Bureau, 1935 through 1949) list only 21 Ohio tornadoes between 1804 and 1875. From 1875 through 1899, 150 Ohio tornadoes are recorded. Since the turn of the century, 353 tornadoes have been reported within the state. Of these, 40 percent occurred within the western third, 34 percent in the central third, and 26 percent in the eastern third of the state. This eastward decrease in tornado frequency appears to be in line with data from bordering states. Only five of Ohio's 88 counties failed to have at least one tornado during the period 1900-1968 (fig. 2).

Tornadoes have occurred within Ohio during every month, but about seven out of 10 Ohio tornadoes occur between April 1 and July 31. Nearly three of four Ohio tornadoes touch ground between 2 and 10 PM Eastern Standard Time; however, tornadoes may occur at any time of day or night. As many as 32 tornadoes have been reported within the state in a single year (1965) and as few as none (in 1900, 1901, 1903, 1905, 1906, 1911, 1913, 1914, 1936, 1938, 1939, 1941, 1945, and 1949). The maximum number of tornadoes reported in one month is 15 (April, 1965). The greatest number of tornadoes in the shortest time span occurred between 9 PM on April 11 and 2 AM April 12, 1965; during those 5 hours, 12 tornadoes resulted in 57 deaths and more than 300 injuries.

Upon examining the Ohio tornado statistics in Table 1, one might conclude there has been a great increase in the occurrence of tornadoes during the past 10 or 20 years. However, this can not be scientifically documented. The increase should be attributed to the combined effects of an increase in population, a more educated public, and more efficient reporting procedures, rather than to any changes in physical processes governing the occurrence of tornadoes.

A brief resumé of some of the worst tornadoes or outbreaks of tornadoes in Ohio's history are given below. All damage estimates have been adjusted according to the Business and Defense Services Administration's (BDSA) Construction Cost Index (BDSA 1966; BDSA 1968).

- (1) June 28, 1924. Between 4 and 6 PM, three tornadoes moved across north-central Ohio just south of Lake Erie. The chief tornado formed over the water, a short distance northwest of Sandusky, advanced into the northern portion of that city, moved eastward across the Cedar Point peninsula, and then went back out over the main lake. The storm reached land again at Lorain. The path of destruction in Lorain narrowed eastward, being 4000 feet at first, but becoming only about 500 feet wide where it left the city. The



Figure 2. Tornadoes Reported Within Ohio Counties For The Period 1900-1968.

TABLE 1
Summary of Ohio tornadoes for 69 years (1900-1968) and 16 years (1953-1968)

	Jan	Feb	Mar	Apr	May	June	July	Aug	Sep	Oct	Nov	Dec	Total
TORNADES													
69 Years	5	6	32	68	67	64	39	38	18	5	10	1	353
16 Years	0	5	11	43	29	28	19	14	5	3	9	0	166
TORNADE DEATHS													
69 Years	0	0	25	73	5	120	2	23	2	0	2	0	252
16 Years	0	0	1	68	0	17	0	6	1	0	2	0	95
TORNADE INJURIES													
69 Years	1	10	65	866	58	761	98	89	38	3	30	0	2019
16 Years	0	6	11	638	8	419	36	25	34	3	30	0	1210

entire path of the storm extended 38 miles, with 85 deaths, 200 injured, and over \$32,400,000 property damage.

(2) April 27, 1943. Between 7 and 9 PM, a series of tornadoes battered north-central and northeastern areas in Ohio. In Akron, 955 building units were damaged or destroyed. A picture from an Akron newspaper shows a car that had been picked up and hurled into the second floor of a new home. Statistics from the storm show three deaths, 21 injured, and \$9,553,000 property damage.

(3) June 8, 1953. Many Ohioans remember the devastating tornado that rampaged through Wood, Sandusky, Erie, Lorain, and Cuyahoga Counties between 7 and 10 PM on this day. The twister left 17 dead and approximately 400 injured in its path. Numerous reports of hail up to one and one-half inches in diameter were received. The storm resulted in \$3,410,000 in crop damage and \$19,320,000 in property damage. Major property damage was in the Cleveland area.

(4) April 11-12, 1965. A series of 12 tornadoes resulted in the most property damage ever reported in a 24-hour period from such storms in Ohio. Deaths and damages were especially heavy in some Toledo and Cleveland areas. In all, 57 deaths, more than 300 injuries, and \$35,480,000 in damages were attributed to these storms.

(5) On April 23, 1967, Ohio had its greatest number of tornadoes during 24 hours since April 11-12, 1965. Between 1:56 and 4:55 PM, 6 tornadoes resulted in nine deaths, 126 injuries, and more than \$4,000,000 in property damage. The worst of these tornadoes occurred near Glen Este (Clermont County), where one died and 29 were injured, and in a line between Wheelersburg and Gallipolis, where seven persons were killed, 92 injured, and about 550 homes were destroyed or sustained significant damage. Several areas in the vicinity of the tornadoes of April 23, 1968 received hail as large as baseballs.

The National Severe Storm Forecast Center in Kansas City, Missouri, is responsible for issuing all TORNADO WATCH advisories within the United States. The Weather Bureau Offices in Akron, Dayton, Cincinnati, Cleveland, Columbus, Mansfield, Toledo, Youngstown, and Huntington, West Virginia, are responsible for issuing TORNADO WARNING advisories for designated areas within Ohio. These TORNADO WATCH and WARNING advisories are disseminated to the public by many radio and television stations and other news media outlets within the state. A TORNADO WATCH is meant to alert the public that a tornado(s) may occur in their area during the next few hours. It does not mean tornadoes are in the area at the present time. A TORNADO WARNING means a tornado has been sighted in the area or that its presence has been detected by radar.

Following the issuance of a TORNADO WARNING, persons in the indicated path of the tornado are advised to take safety precautions. In homes, the basement usually provides the greatest safety from tornadoes. In office buildings or schools, interior hallways on the lowest floor usually provide ample shelter. In open country, safety may be obtained by moving at right angles to the tornado's path, but if time does not permit escape in this manner, nearby depressions, such as a ditch or ravine, will usually provide satisfactory protection.

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