

Hurricane Trend Over Decades

Saakshi Agarwal

Storms is an in-built R dataset used for this analysis. It originates from the NOAA Atlantic Hurricane database, which includes storm attributes and positions from 1975 to 2022. Year(numeric), status(categorical), and wind(numeric) variables have been used to evaluate “How have hurricanes evolved in frequency and intensity over time?”

The number of recorded storms per decade increased significantly from 289 in the 1970s to 1166 in the 2000s, as seen in Table 1. A notable drop to 392 storms in the 2020s is likely due to incomplete data for this decade. It can also be observed that the average wind speed has increased from 83.25 knots in the 1970s to 87.53 knots in the 2020s, with a peak in wind speed averages during the 2000s(89.74 knots).

As seen in Figure 1, the median wind speed remains consistent at around 80–85 knots across all decades; the average wind speed gradually increases, driven by more frequent extreme storms. Variability, measured by the interquartile range, widened slightly from 25 knots to 30 knots in the 2000s. This indicates greater diversity in hurricane intensities, showing that even non-extreme storms have become stronger. Outliers, representing hurricanes with high wind speeds, are notably more frequent from the 2000s onward, reflecting an increase in the intensity of extreme events.

In conclusion, analyzing hurricane wind speeds over the decades reveals consistency and change in storm characteristics. The findings underscore the critical need for continued monitoring, climate research, and enhanced disaster preparedness measures. As hurricanes grow in intensity and complexity, proactive strategies will be essential to safeguard regions and mitigate the risks.

Table 1: Descriptive Analysis of Hurricane Wind Speed over Decades

Decade	1970s	1980s	1990s	2000s	2010s	2020s
Average Wind Speed (knots)	83.25	83.29	83.93	89.74	87.42	87.53
Number of Storms	289	740	1132	1166	1084	392
Median Wind Speed (knots)	80	80	80	85	80	80
IQR (knots)	25	25	25	30	30	30

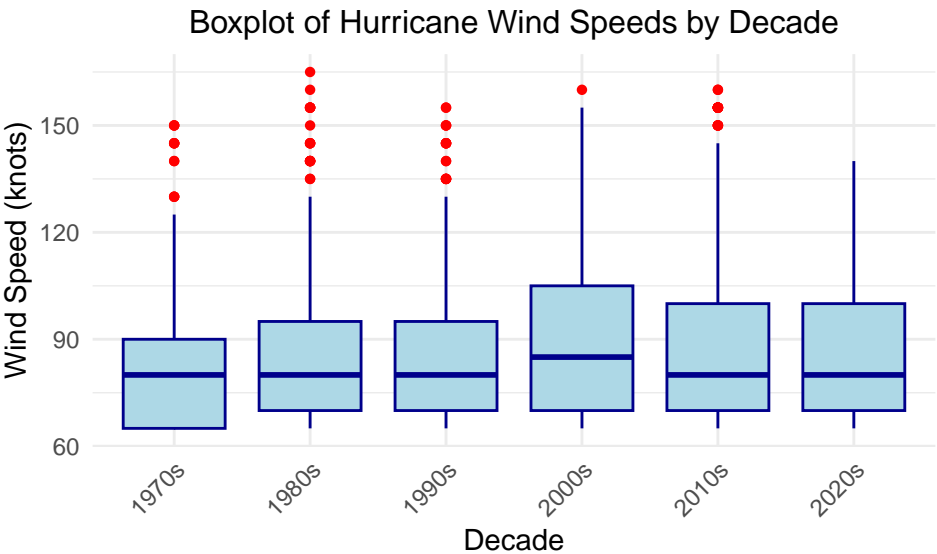


Figure 1: Boxplot for Wind Speed of Hurricane Over Decades