

Effects of weather on e-commerce

ADOBE DIGITAL INSIGHTS X THE WEATHER COMPANY

The Adobe Digital Economy Index offers the **most comprehensive set of insights** of its kind, based on analysis via Adobe Analytics that covers over *one trillion* visits to U.S. retail sites and over *100 million* SKUs—more than any other technology company.

Analysis is significantly **more in-depth and accurate** compared to survey-based reports, because only Adobe has access to this volume of real-time, transactional consumer data. It is aggregated and anonymized, to provide insights on consumer spending, online prices and 18 product categories

This specific report focuses on weather's impact on ecommerce behaviors, leveraging weather data from the **world's most accurate forecaster overall***, The Weather Company, an IBM business. The weather data in this report spans two years, 3 unique weather conditions (rain, snow and wind) and is US only.

*Source: ForecastWatch, Global and Regional Weather Forecast Accuracy Overview, 2017-2020, https://www.forecastwatch.com/AccuracyOverview2017-2020, commissioned by IBM.

Weather will add over a Cyber Monday's worth of spend to ecommerce in 2023

We project **\$13.5B extra** to be spent online due to weather effects this year, which is more than the \$11B spent online on Cyber Monday in 2022.

Rain alone will bring in \$8.7B.

Wind adds over \$4B in consumer spending.

Snow is rare in the grand scheme of things in the US and has a smaller overall effect.



Projected 2023 online spend from each weather phenomenon



Rain keeps consumers indoors and motivates them to shop online

Rain is a driving factor in whether consumers decide to go outdoors or stay in and shop online.

This effect peaks at 0.8in- 1in of rain in a day, boosting spending by over 4%.

After that point, an "extreme weather" point is reached, when the boost starts to decrease.

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Online spend increase by amount of rain in a 24h period



24h precipitation

Weekends accentuate the effects of rain on online shopping

Consumers react more strongly to rain on weekends.

On weekends, the rain effect on shopping is twice as strong.

Increase in revenue with rain on weekend vs weekday





Fall is where we see significant impact in online sales

 fall spring 6.0% summer winter 5.0% -Spending Increase 4.0% -3.0% -2.0% 1.0% 0.0in 0.1in 0.7in O.Zin 0.2in . 0.3in 0.3in 0.4in 0.4in 0.6in 0.6in 0.8in 0.8in - 1.0in 1.0in 1.2in 1.2in 1.Ain 24hr Precipitation

Increase in online shopping by season and precipitation

Year-round consumers tend to spend more online the more it rains.

In the fall the rain boost is felt strongly even at the lower precipitation levels with a 5% increase starting at a drizzle.



Snow affects cities differently based on their annual snow experience

Cities that don't experience much snowfall throughout the year, like Austin TX or Charlotte NC, respond quite strongly to snow, even small amounts.

For average snowfall cities like Seattle WA or New York NY, that get 20in – 80in per year, snow has a slightly positive effect until the 8in mark.

The consumers in cities with more than 75in of snowfall per year, like Minneapolis MN or Denver CO, don't react to snow almost at all until they get more than 10in in a day.

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Online spend response to snow by yearly snowfall



Just an inch of snow can have significant effects on consumer behavior

After just one inch of snow, cities that get less than 20 inches of snow a year forget about online shopping, and their online spend drops.

The moderately experienced cities that get **between 20in and 80in** of snow a year, take precautions, avoid the roads and stay home, shifting their spend online.

The **80in and above** club shrugs off an inch like it's nothing and doesn't change their behavior.

Effect of 1-2in of snow by amount of yearly snow in a city





North Carolina thrives in snow, while Texas struggles

North Carolina tends to shop on average 18% more on days when there's snowfall, but the total is below 4 inches.

Texas on the other hand decreases its spending by over 20% during snowy days.

Effects of snow on online shopping by state



There's a sweet spot for online shopping when it comes to wind speed

Wind seems to follow a similar trend to snow and rain, but with a much more subdued effect on the positive side.

Its positive effects are strongest at 15-20mph, and they boost ecommerce by 3.5%.

On the negative side, past 30mph ecommerce spending starts to decrease sharply, dropping 22%.

Consumer spend increase by average wind speed



Some cities shrug off 30mph winds, for others it's no joke

Cities like Knoxville TN that get less **than 4mph** in average yearly winds, never experience strong enough winds to where they'd see any negative effects.

For cities like Atlanta GA in the middle of the pack, 25mph is when infrastructure begins to break down and they'll decrease online shopping by 30%, and by 90% at the 30mph+ mark.

A city like Chicago IL experiences high winds all year long. So, it'll shrug off 30mph winds, and consumers will instead hunker down and shop from home 6% more.

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Consumer online spend increase with wind speed grouped by average yearly wind



