

# Hurricane Pop-Tarts

Weather's Astounding Impact on Your Store.

Sean Lakind  
Vice President, Sales & Marketing

dor

A young woman with long, light brown hair is shown in profile, looking down at a smartphone. She is wearing a dark red top with white lace trim. The background is a blurred outdoor market scene with many people and stalls. A green text box is overlaid on the left side of the image.

# U.K. Retail Sales Rise More Than Expected on Nice Weather

Bloomberg - May 18, 2017



# \$421,000,000

loss to retailers due to warm holiday weather  
2014-2015

Does not include department stores

# \$112.7 BILLION

Lazo et al. (2011)

## WEATHER'S RETAIL ECONOMIC IMPACT



# Weather's Effect on the Sales of a Department Store

**"88 per cent of the variance of the sales of the store was accounted for by weather variables...In general, any firm...should contact a meteorological consultant...Together the meteorologist and the marketing analyst can do much to increase the efficiency of the firm."**

# The Effect of Weather on Consumer Spending

**The weather is not under management's control; yet, retailers must respond to changes in the weather on a regular basis...Weather can affect store traffic and complicate staffing decisions...and drive consumers towards some products and away from others...**

**As a result, retailers are often forced to respond to the effects of weather in a reactive, rather than proactive manner.**



# WEATHER AND RETAIL

Physically preventative

Uncomfortable

Psychological effects

Seasonal merchandise

# How do you think weather impacts your business?

Weather	Traffic	Sales	Inventory	Services
Sunny				
Rainy				
Snowy				
Hot				
Cold				

# Weather is subjective.

Hot? Cold? Rainy? Snowy?

Good? Bad?

Indoor? Outdoor? Northwest? Southeast?



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# Walmart



# Harvey & Irma

- Biggest drop in August since 2009
- Home Depot & Lowes
- Dunkin Donuts could lose \$17m = 10% quarterly sales
- Bojangles - 80% of stores were impacted
- Starbucks - 3% Texas; 5.6% Florida, \$35m = 1%
- Food, water, home improvement vs. discretionary fashion



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# THE CONVENIENCE EFFECT



45%

Snowing



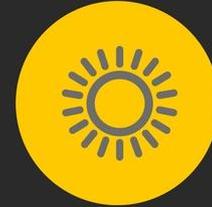
37%

Raining



35%

Too cold



30%

Too hot

Negative weather patterns "reduce sales of products of which the purchase is easily deferrable, such as furniture and apparel"

# Blame it on the Rain

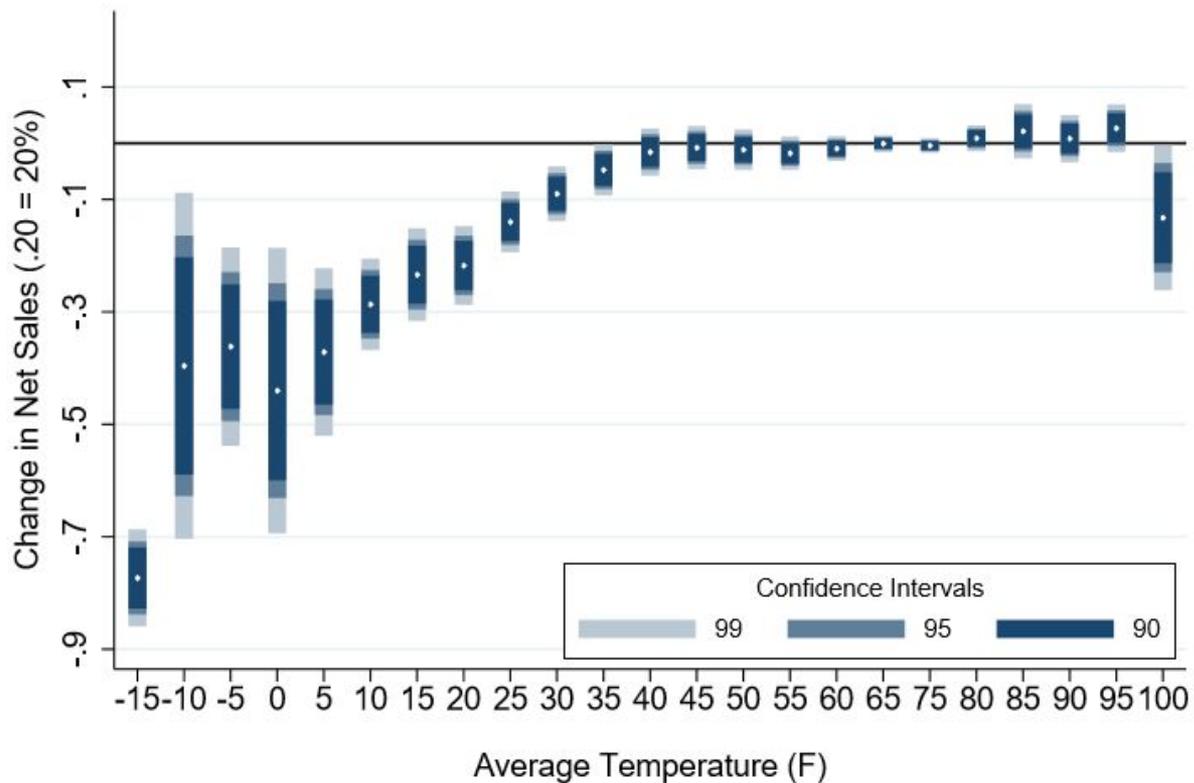
Brigitte Roth Tran

Ph.D. Candidate – Department of Economics

- 4 years
- 100 stores
- Nationwide
- Indoor vs. Outdoor
- Physical vs. E-commerce

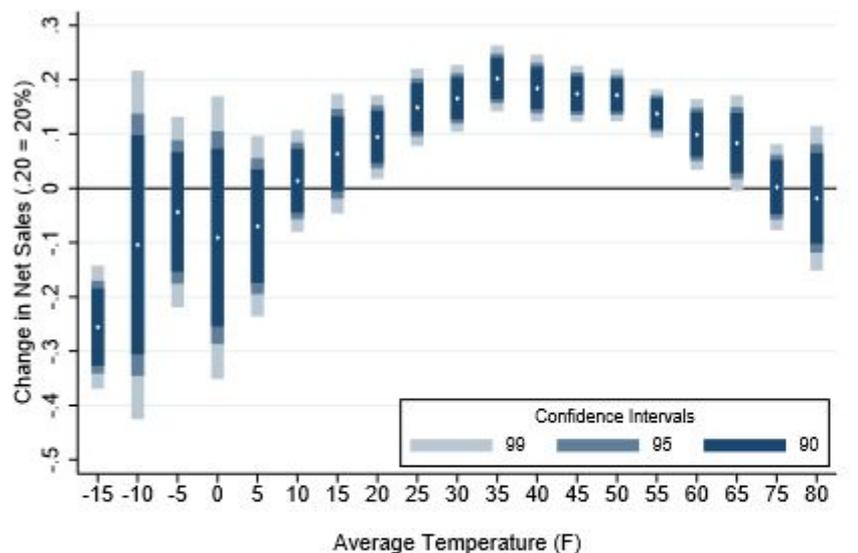
“Weather effects on sales are large, nonlinear, and heterogeneous by region, season, and whether a store is in an indoor or outdoor mall. The worst five percent of weather days for shopping reduce same day sales by 22 and 12 percent for stores in outdoor and indoor malls, respectively.

Amplified on surrounding days, these losses are permanent, with very limited recovery over longer time scales. While some moderate weather shocks may shift sales between indoor and outdoor malls, I find no support for substitution between in-store shopping and e-commerce. Estimates suggest that weather shocks account for up to about one-third of monthly store-level sales variation and that weather causes about 5 to 35 percent of total variability in quarterly year-over-year same-store sales growth.”



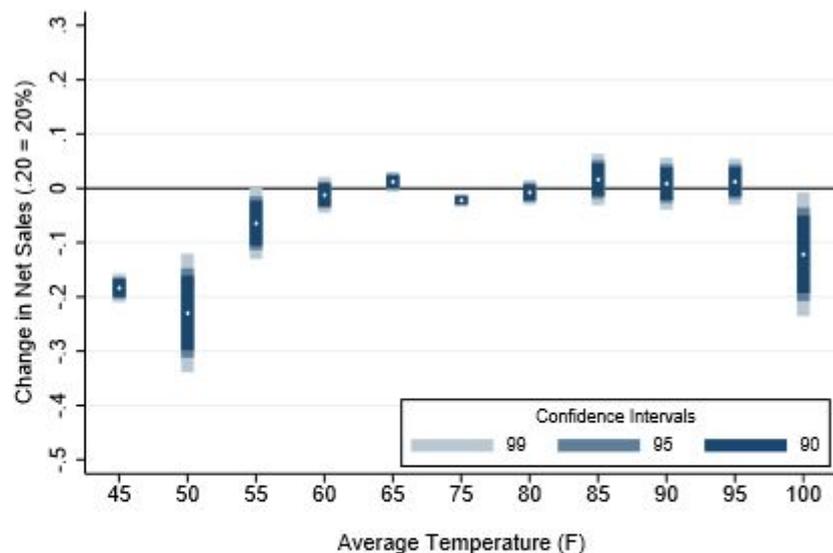
Includes store, year, month, weekday, holiday, store-month, store-weekday, and store-trend fixed effects. Controls for store opening and closing indicators.

Figure 6: Nonlinear effect of temperature on sales



Includes store, year, month, weekday, holiday, store-month, store-weekday, and store-trend fixed effects. Controls for store opening and closing indicators as well as precipitation, snowfall, snow dep

(a) Winter

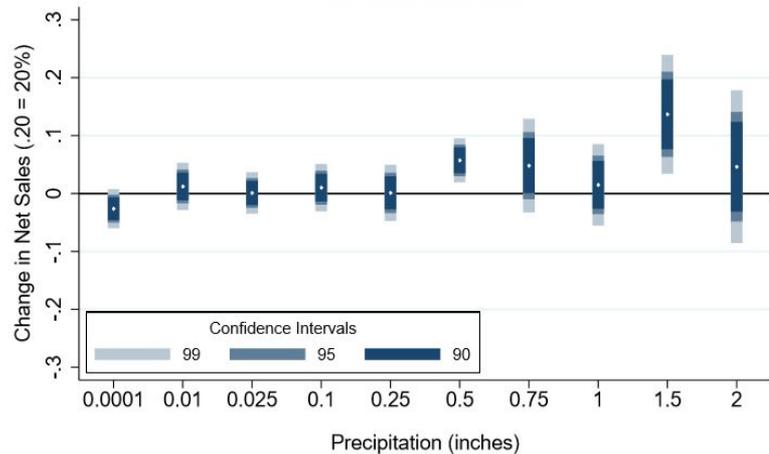


Includes store, year, month, weekday, holiday, store-month, store-weekday, and store-trend fixed effects. Controls for store opening and closing indicators.

(b) Summer

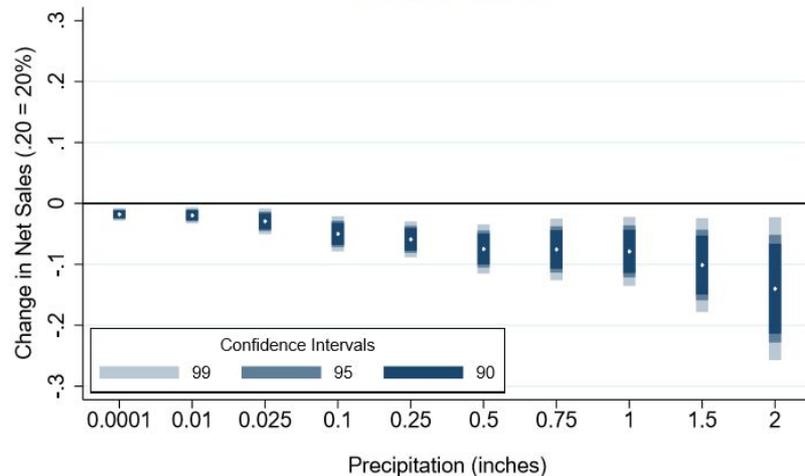
Figure 7: Responses to average temperatures vary by season

### Indoor Stores



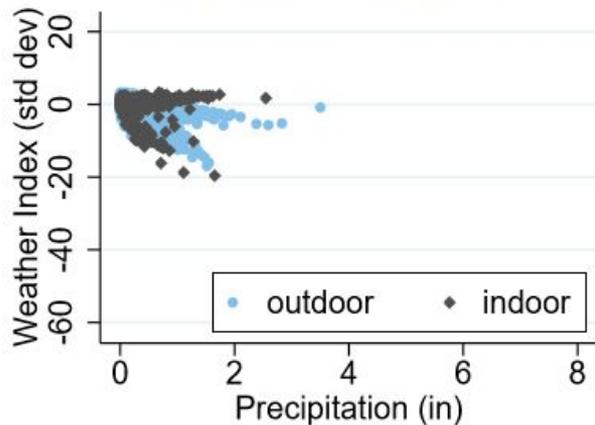
Note: Zero precipitation is omitted.  
Includes store, year, month, weekday, holiday, store-month, store-weekday, and store-trend fixed effects. Controls for store opening and closing indicators.

### Outdoor Stores

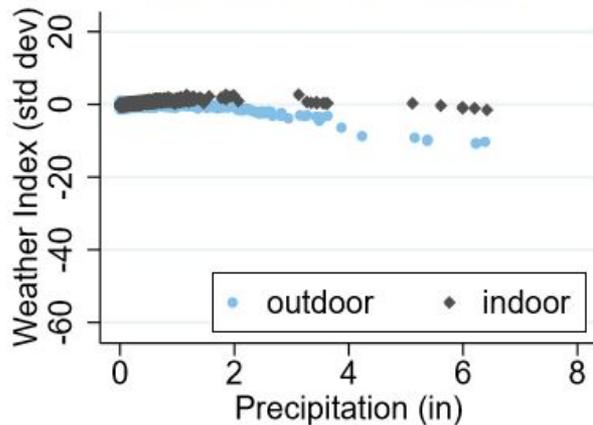


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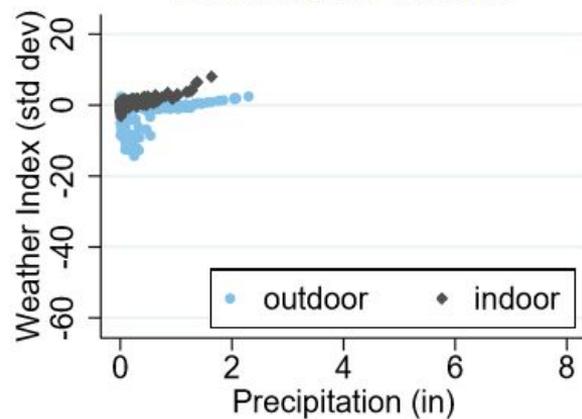
### Northeast Winter



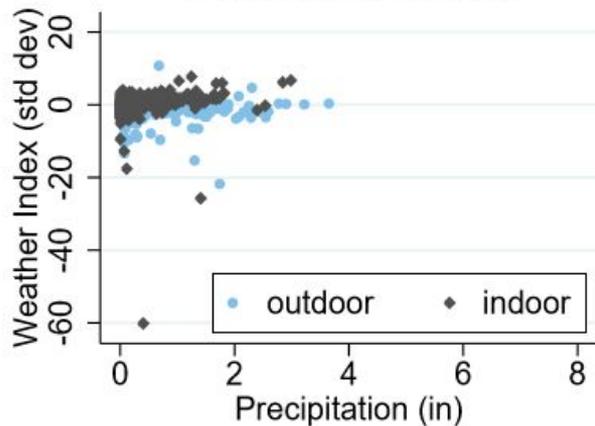
### Northeast Summer



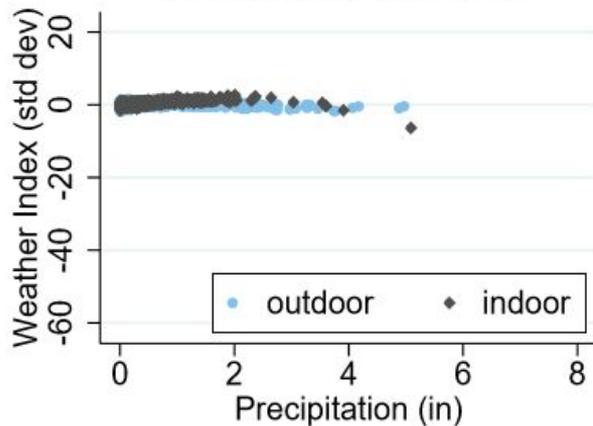
### Southwest Winter



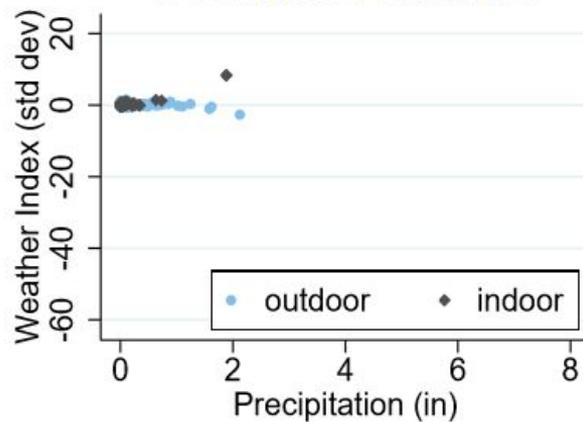
### Southeast Winter



### Southeast Summer



### Southwest Summer





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# PSYCHOLOGY

Anxiety and skepticism  
decrease with higher  
temperatures

Sunlight improves consumers'  
moods and leads to higher  
willingness to spend.

Sunshine increases convertible  
purchases - projection bias

people are more likely to return  
cold-weather items  
ordered during cold weather



# Mood congruency vs. mood regulation





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**+1!**

# The Great American Solar Eclipse



Totality passed over 14 states and 21 national parks.

12 million people live on the path of totality

75 million living within a 200-mile drive

Grand Teton National Park shattered a previous visitation record by 40%

Madras, Oregon that they had to call in the National Guard.





we drink anything short!

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ECLIPSE

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ORIGIN'S PRINCE



NEEDS SOME

KRISPY KREME  
COFFEE

JOIN THE FUN AT [KrispyKreme.com](http://KrispyKreme.com)  
GET SWEEET E-MAILS FROM US! [Feedback@KrispyKreme.com](mailto:Feedback@KrispyKreme.com)  
FACEBOOK.COM/KRISPKREME

KRISPY KREME  
DOUGHNUTS

DOUGHNUTS

YOU ONLY HAVE ONE  
NOW-TODAY! BUT  
WANT ONE IT WEEKLY

## How to Safely View the Solar Eclipse with a Pizza Hut Box



# YOUR *FREE* ECLIPSE SURVIVAL KIT

Come into Shoney's this Monday and get a free\* pair of eclipse viewing glasses and a delicious, chocolate MoonPie® with your purchase of any entrée, sandwich, or the buffet. It's the Eclipse Survival Kit everyone needs. It's gonna be Moon-tastic.

For Viewing Safety Instructions [click here](#).

\*Offer free with purchase while supplies last. MoonPie® is a registered trademark of Chattanooga Bakery, Inc. and is used with permission.



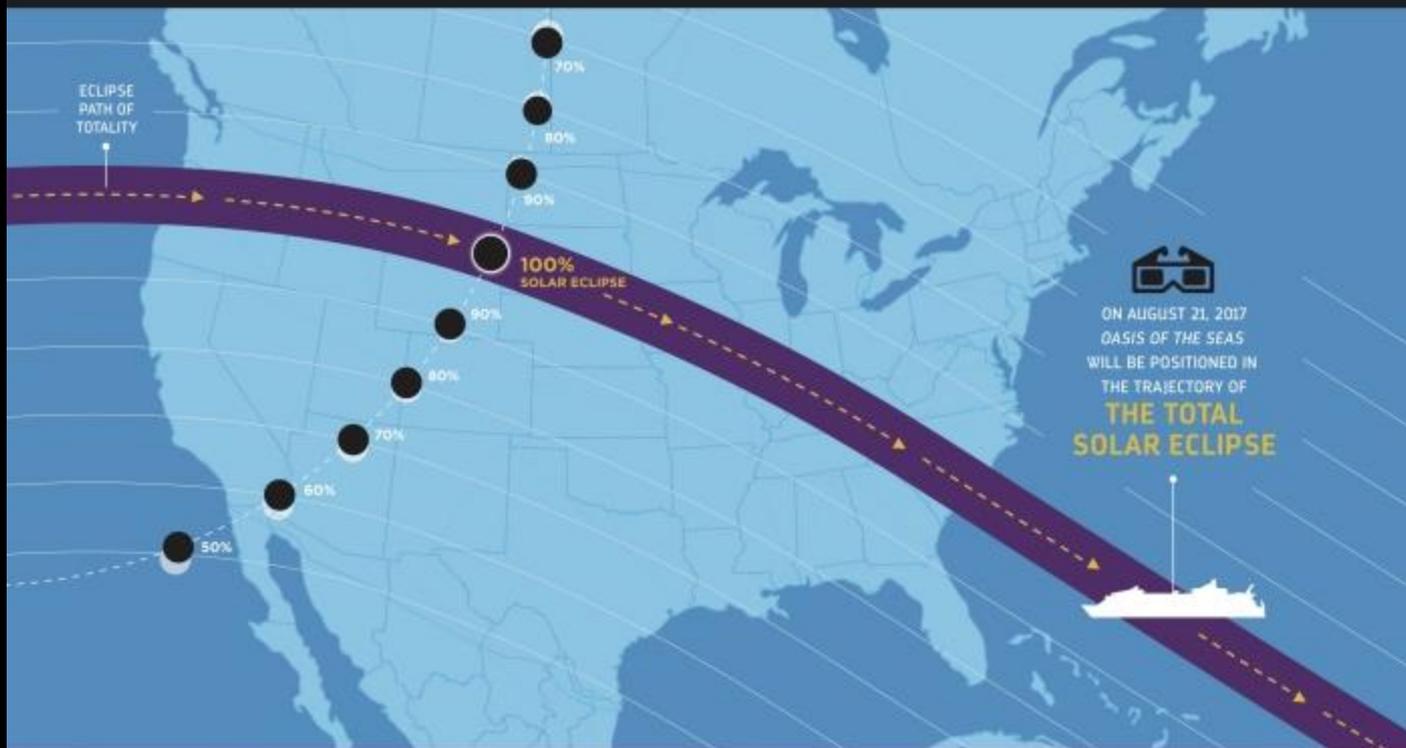
## Warby Parker, Amazon Shine Brightly With Solar Eclipse Engagement Strategies

Monday, 21 August 2017 12:50



# TOTAL ECLIPSE

AUGUST 20-27, 2017 • OASIS OF THE SEAS®



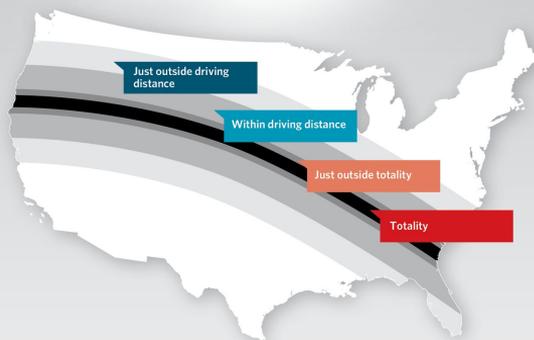
**THE GREAT AMERICAN ECLIPSE**  
IS THE FIRST TOTAL SOLAR ECLIPSE TO CROSS THE  
CONTINENTAL UNITED STATES IN 99 YEARS



THE MAXIMUM DURATION OF THE TOTAL ECLIPSE WILL BE ABOUT  
**2 MINUTES, 40 SECONDS**

## 2017 Solar Eclipse

## Retail Traffic Impact Report



Stores within totality saw a  
**247.96%**  
increase in traffic the morning  
of the eclipse

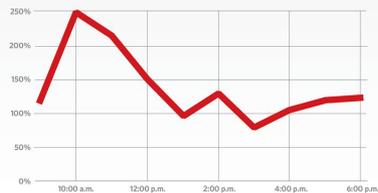
Stores just outside totality saw a  
**27.2%**  
increase in traffic the  
weekend before the eclipse

Stores within totality saw a  
**16.2%**  
increase in traffic the  
weekend before the eclipse

Retailers within driving distance  
of totality saw a  
**14.7%**  
average decrease in traffic

Stores just outside driving  
distance saw a  
**6.5%**  
decrease in traffic the day  
of the eclipse

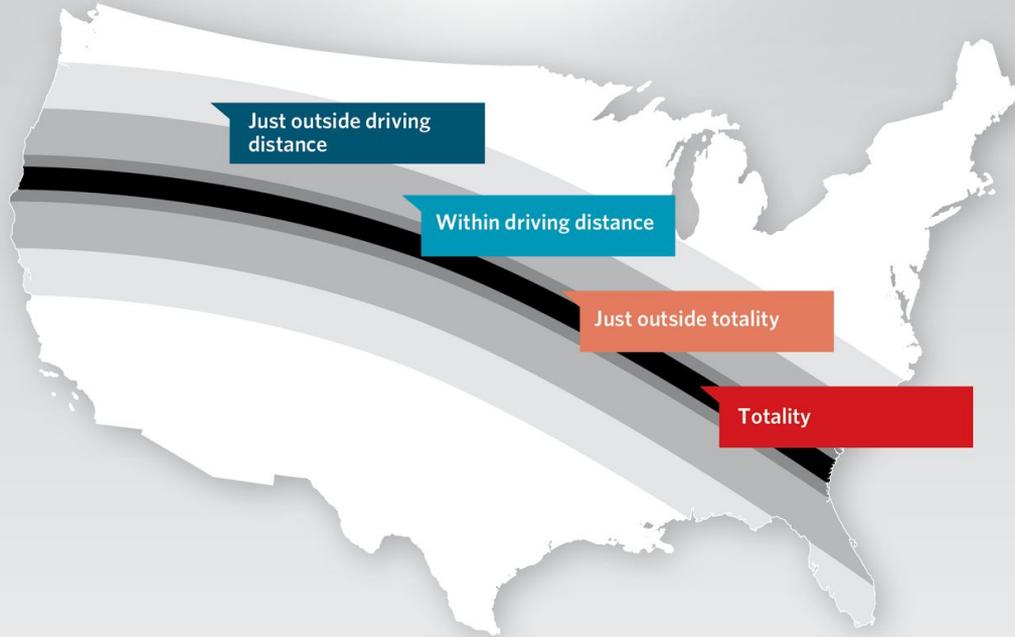
## Average hourly retail traffic within the totality zone on the day of the eclipse



Traffic for stores within totality on the day of the eclipse at an hourly level demonstrates the chaotic nature of visitor traffic to these stores. Monday's morning hours were by far the busiest for retailers with an average increase in traffic of 247.96%. Many retailers saw increases in foot traffic of almost eight times that of normal for the morning hours of eclipse day. This heightened traffic quickly decreased, though, with the peak eclipse hours seeing traffic rates of just 79.44% of normal. Post-totality customer traffic rebounded to 19.5% above normal to finish out the day.

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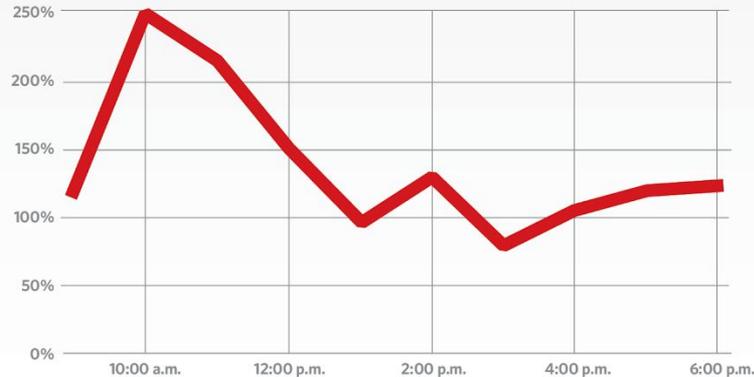
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# Weather and your store checklist

- Be aware
- Market to weather forecasts
- Understand weather and traffic/sales correlations
- Staff to predicted demand
- Measure store performance to sales forecasts

# Applets for the weather

If it begins to rain  
then change the  
light colors to blue

by Philips Hue

5k

works with

Every day at 6 AM,  
add today's  
weather report to  
your calendar

by Google

79k

works with

Always be  
prepared for the  
weather

by Weather Underground

9.4k

works with



Set a color on my  
Aurora when I  
really need  
sunscreen

Get a notification  
reminder to put on  
sunscreen when  
the UV index is  
high

Automatically turn  
your lights on at  
sunset

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 MY STARBUCKS REWARDS
 [Check Rewards Status](#)
[Send an eGift](#)
[Reload a Card](#)
[Check Balance](#)



It's a warm one today. Come in and cool off at Starbucks.

[Find a Store Nearby](#)

Hellooooo, spring! Take a break from frolicking outside and cool off at Starbucks today with a delightfully cold drink – like a creamy Iced Caramel Macchiato.



[Shop Online](#)
[Our Coffees](#)
[Find a Store](#)
[Your Account](#)
[Send to a Friend](#)

[About Us](#)
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[MEN](#)
[WOMEN](#)
[KIDS](#)
[SALE](#)
[FIND A STORE](#)

LIMITED TIME: FREE SHIPPING!\*

**WATER JUST GIVES UP.**  
 100% WATERPROOF  
 HYVENT® OUTERWEAR.  
[SHOP NOW >](#)

Stay dry in Lancaster this week

		
Mon	Tues	Wed



# 380%

## Native foot traffic lift

Walgreens reached and engaged consumers when and where weather influences symptoms were flaring up or prescriptions were most likely to be filled.

The Weather Company

“Promotional activities that temporarily reduce margins are less necessary when the weather is good and customers already have lower levels of negative affect, which increases willingness-to-pay.”

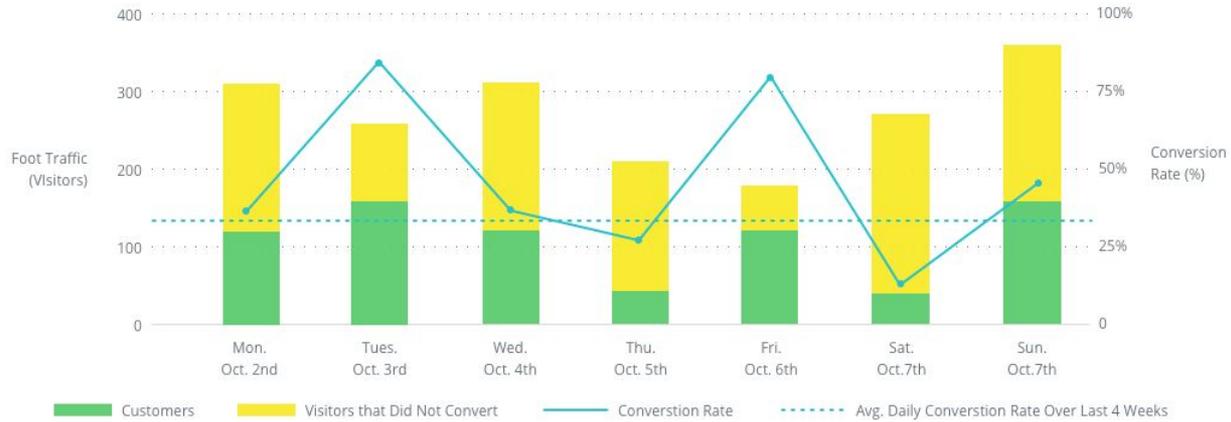
THE EFFECT OF WEATHER ON CONSUMER SPENDING

KYLE B. MURRAY\* FABRIZIO DI MURO ADAM FINN PETER POPKOWSKI LESZCZYC

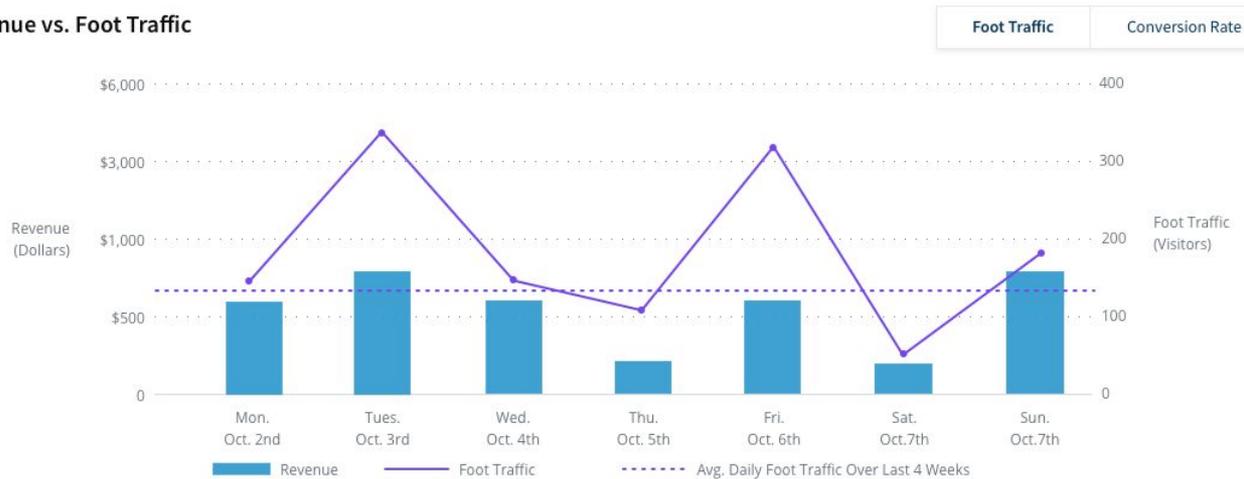
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## Conversion Rate vs. Foot Traffic



## Revenue vs. Foot Traffic



Harness our insights on your foot traffic data patterns and weather data to optimize your staffing for your location(s).

[Optimize your staffing to your foot traffic](#)

Dashboard

Sales

Staffing

Explore

Locations

### Foot Traffic Over the Past 4 Weeks

Monday, Sep. 4th - Sunday, Oct. 1st, 2017

Daily Avg. Foot Traffic

65

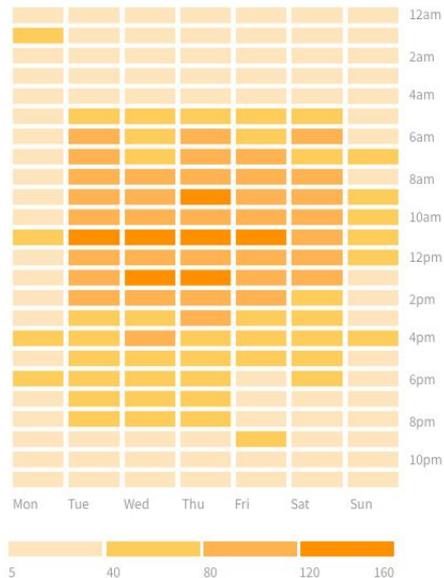
Most Trafficked Day

Thursdays

Least Trafficked Day

Mondays

Most and least trafficked Days based on highest and lowest daily averages over past 4 weeks.

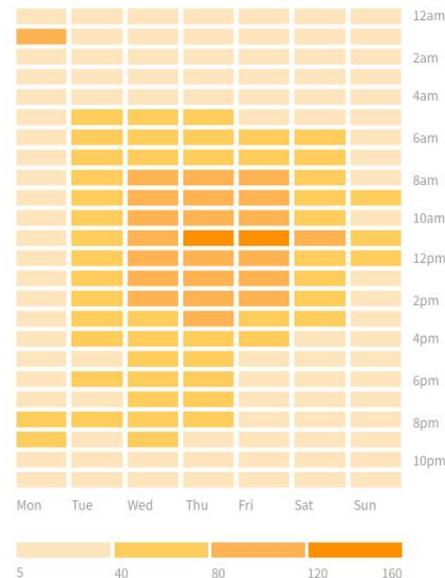


### Predicted Foot Traffic & Weather Forecast for Next Week

Monday, Sep. 4th - Sunday, Oct. 1st, 2017



Foot traffic % change for next week from past 4 weeks



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# Store Performance to Sales Forecasts

Weather is responsible for up to one-third of seasonally-adjusted monthly same-store sales variation.

Compensation & Performance

Demand Forecast: YoY + Weather

Inventory Management

Overall business health trends

# Weather Derivatives

Recent literature proposes weather derivatives as sophisticated protection against non-catastrophic weather risk (Brockett et al., 2005).

The purpose of weather derivatives application is to smooth revenues, cover excess costs, reimburse lost opportunity costs, stimulate sales and diversify investment portfolios (Leggio, 2007).

Weather derivatives are primarily hedge against non-catastrophic weather risk, i.e. small deviations from usual weather such as colder than usual summer or warmer than usual winter. Beside temperature deviations, weather derivatives can provide hedge against deviations from usual rainfall and snowfall, wind speed, number of sunshine hours, days in which frost or fog were recorded, etc.

# Weather Derivatives

Weatherproof Garment Company bought the protection against warm winters in the form of weather derivative (Morrison, 2009).

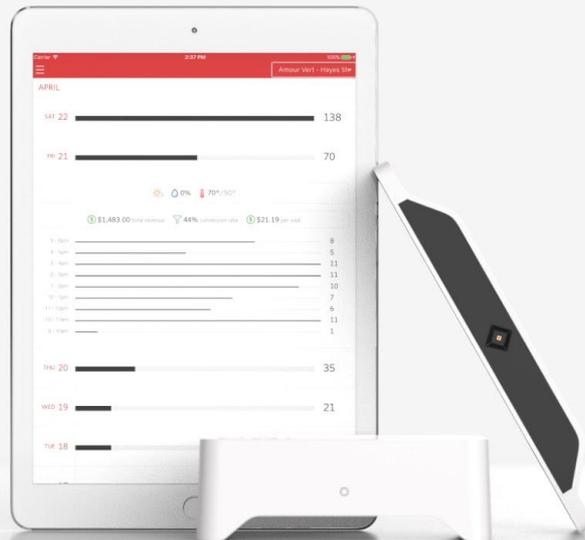
Canadian snowmobile manufacturer and retailer Bombardier promised its customers a discount of \$1,000 if the snowfall in certain parts of the country does not reach a predetermined level (Myers, 2008).

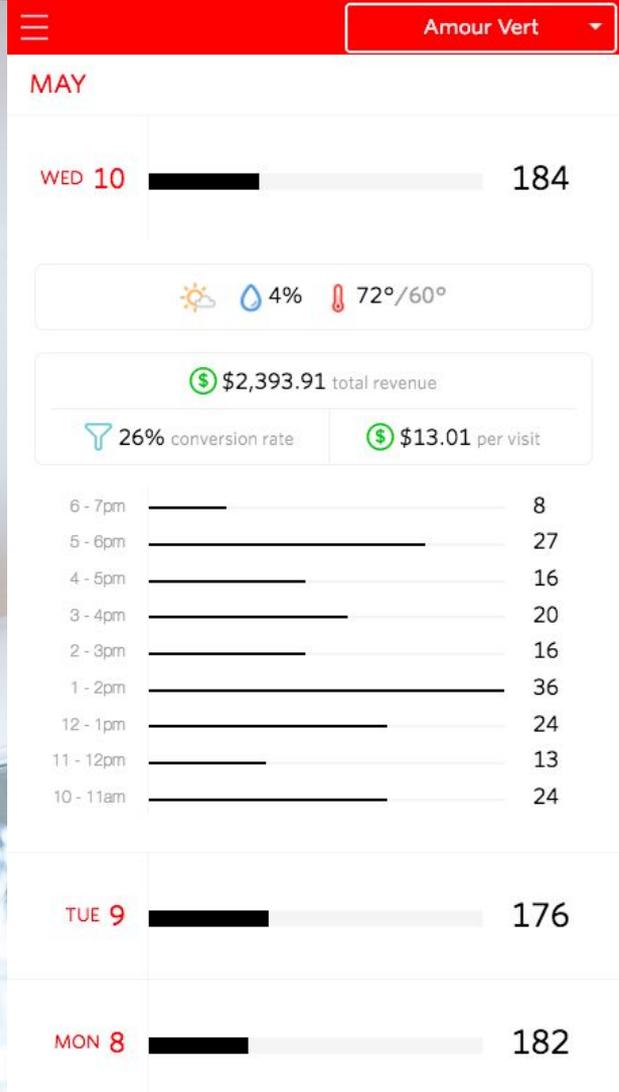
Michelin guaranteed its buyers of winter tires a refund in the amount of \$50 if the average winter temperature would not fall beneath 7°C. A refund was financed from indemnity paid by the weather derivative (Huault and Rainelle, 2011).

# dôr

Your store's complete  
foot traffic solution

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