

Integration of Online and Offline Channels in Retail

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Apple Store

Live Chat 1-800-MY-APPLE

Personal Pickup Help Account Cart

Introducing Personal Pickup

Buy online.
Pick up at any Apple Store.
We'll get you set up.

Place your order.

Now there's a whole new way to shop with Apple — no matter where you are. Make your purchase at the Apple Online Store or from the Apple Store app on your iPhone or iPod touch. Select "pick up" when you check out, then stop by your favorite Apple Retail Store to pick up your order in person.¹

Pick up at any Apple Store.

You'll receive a pickup notification when your order is ready. Just come into the [Apple Retail Store](#), and we'll have it waiting for you. You can be in and out right away. Or you can choose [Personal Setup](#), which is included with every new Apple Product.

We'll get you set up.

With Personal Setup, we'll help you get your Apple product up and running before you leave.



Select an Apple Store

Locate

Availability for: iPad with Wi-Fi 16GB - Black (3rd) ▾

Apple Store, Old Orchard
Skokie, IL

In Stock

Apple Store, Northbrook
Northbrook, IL

In Stock

Apple Store, Lincoln Park
Chicago, IL

In Stock

Apple Store, North Michigan Avenue
Chicago, IL

In Stock

Apple Store, Woodfield
Schaumburg, IL

In Stock

Next

Apple Store, Old Orchard

4999 Old Orchard Center
Skokie IL 60077
1-847-983 9230



[Driving Directions & Map](#) ▶

[Store Workshops and Events](#) ▶

Store hours:

Mon-Sat: 10:00 AM-9:00 PM

Sun: 11:00 AM-6:00 PM

Cancel

Update Cart

NORDSTROM



Crate&Barrel

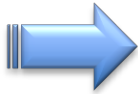
Walgreens

Sears

WAL★MART

★ macy's





2 hours



Shipping to: United States
[Change destination or currency](#)

Returns Made Easy | [About Store Pickup](#) | 800.967.6696

[Continue Shopping](#) ▾

[Store Pickup](#)

[Proceed to Checkout](#)

Select your pickup location

Display options near  | Display up to  locations

Old Orchard Center

Northbrook Court Outside the Mall

1775 Lake Cook Road
Northbrook, IL 60062
847.272.8920

[Select this location](#)

Eligible for pickup at this location



Ammara Pillow.
QTY:1

In Stock. Order by noon for same day pickup.

[Don't see your store?](#)



Secure Checkout
Shopping is always safe and secure.

[Store Pickup](#)

[Proceed to Checkout](#)

Challenges of “Buy Online, Pick up at Store”

- Sharing inventory information across online-offline channels in real time
- Inventory record inaccuracy
- Increased complexity of store execution
- Impact of “Buy Online, Pick up at Store” (???)

Research Question

We want to understand the impact of the **Store Pickup** decision:

- on the Online business
- on the B&M stores
- on the overall sales performance for the Company

Empirical Setting and Data

Implementation of store pickup capabilities in a major retail chain with more than 80 stores in North America



Data

- Online and B&M store level data
- Online channel [unit of observation: DMA* - day pairs]
 - Sales (includes “store pickup” orders)
 - Number of unique visitors
- Brick and mortar stores [unit of observation: store - day pairs]
 - Sales
 - Number of transactions
 - Traffic
- Six months of data before implementation and six months of data after implementation (October 2011)

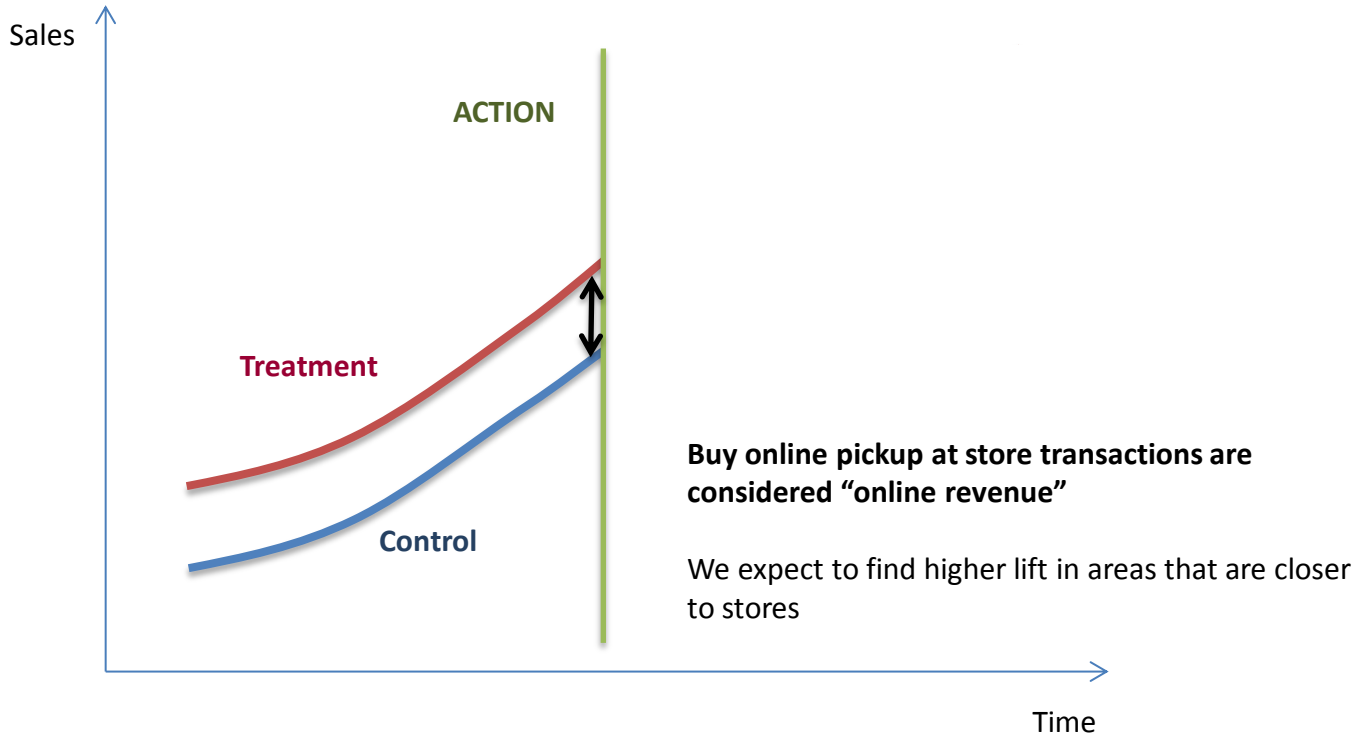
* DMA: Designated Market Areas (Nielsen)

First Question: Impact

How does the **Store Pickup** decision impact the **Online** business?

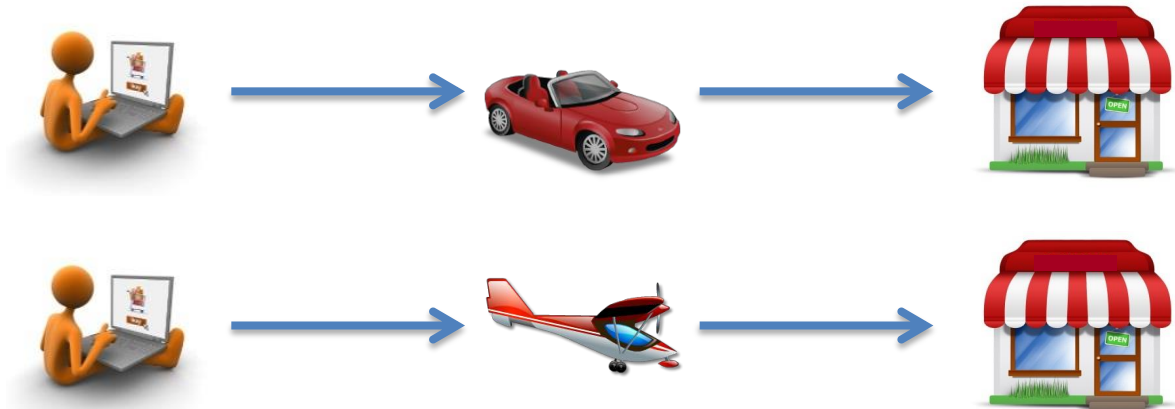


How to answer these question?



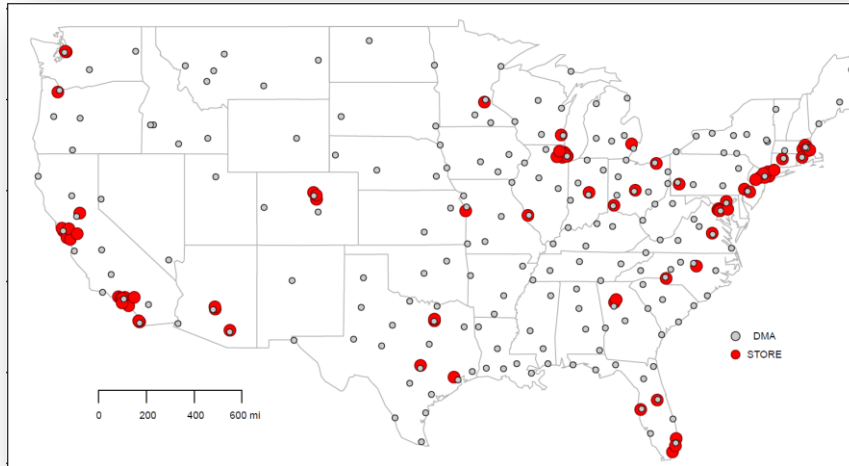
Impact of Store Pickup on Online Sales

- Naïve approach: compare online sales before and after
- Idea: use situations in which store pickup is not available as a control group



Impact of Store Pickup on Online Sales

Compare lift in sales after implementation between DMAs that are close to a store and DMAs that are not.



48 DMAs have a B&M store within 50 miles, 162 DMAs do not.
Buy online pickup at store transactions are considered online revenue.

Impact of Store Pickup on Online Sales

$$\text{LogSales}_{it} = \beta_0 + \beta_1 \cdot \# \text{Visitors}_{it} + \beta_2 \cdot \text{Store}_i + \beta_3 \cdot \text{After}_t + \beta_4 \cdot \text{Store}_i * \text{After}_t + \text{Controls}$$

	log(SALES)	log(SALES)
STORE_AFTER	-0.16*** (0.03)	-0.07** (0.03)
log(VISITORS)		1.41*** (0.07)
Fixed Effects	YES	YES
Week	YES	YES
<i>N</i>	10710	10710
<i>R</i> ²	0.87	0.89

Robust standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

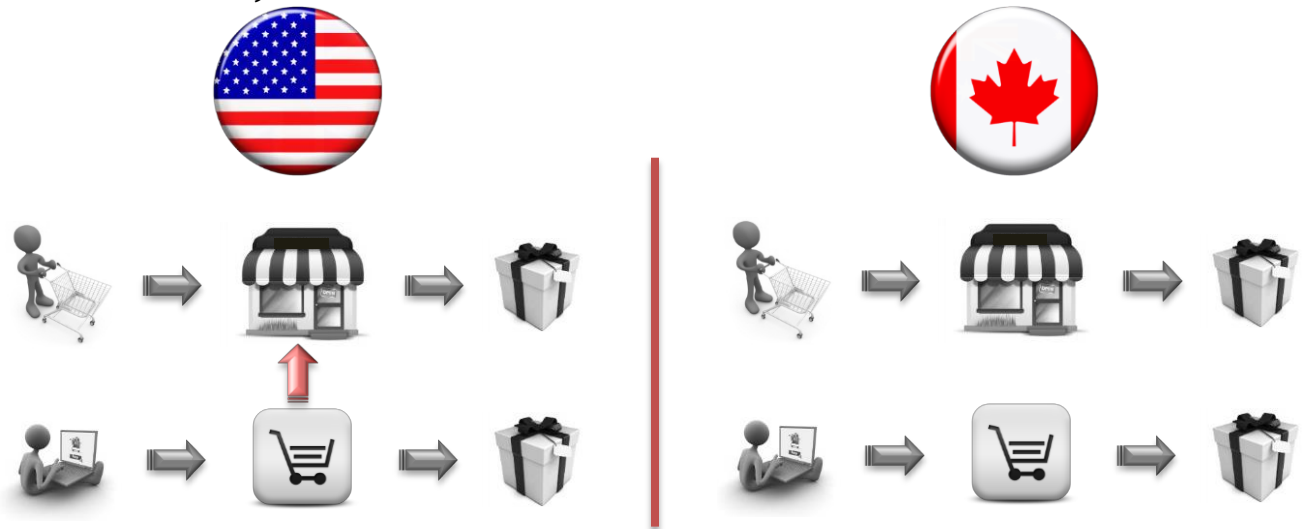
After the implementation, online sales **decrease** in DMAs close to stores ... despite online traffic **increased** in those DMAs

How does the **Store Pickup** decision impact the B&M stores?



Impact of Store Pickup on B&M Sales

- Store pickup is not available at stores in Canada.
- Use Canada as control group and compare lift in sales after implementation between stores in the U.S. and Canada (differences in differences)



Impact of Store Pickup on B&M Sales

$$\text{LogSales}_{it} = \beta_0 + \beta_1 \cdot \text{US}_i + \beta_2 \cdot \text{After}_t + \beta_3 \cdot \text{US}_i * \text{After}_t + \text{Controls}$$

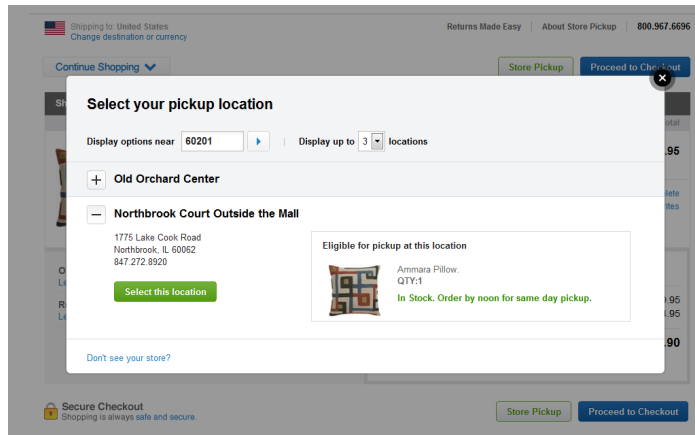
	log(TRAFFIC)	log(SALES)	log(SALES)
US*AFTER	0.13*** (0.03)	0.14*** (0.02)	0.06* (0.02)
log(TRAFFIC)			0.63*** (0.07)
Fixed Effects	YES	YES	YES
Macroeconomic Controls	YES	YES	YES
Time Effect	Week	Week	Week
<i>N</i>	4347	4497	4342
<i>R</i> ²	0.95	0.90	0.91

Robust standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

After implementation, store sales and store traffic **increase** more in the US than in Canada

Information on Inventory Availability



- Offering BOPS implies giving reliable product availability information
- Some customers may simply travel to a store to buy the product (ROPO, Research online, purchase offline)

Information on Inventory Availability

Proposed explanation: BOPS increases ROPO

A shock to the reliability of inventory information would reduce the cost of visiting the stores and would result in:

1. Increase in store visits to stores that share reliable inventory information
2. Increase in store sales in stores that share reliable inventory information
3. Decrease in online sales in DMAs that are close to stores

Additional hypotheses

1. Cart abandonment increases
2. Store traffic conversion increases
3. Online traffic conversion decreases

Cart Abandonment and Conversion

	ABAND	ABAND
STORE* <i>AFTER</i>	0.009** (0.003)	0.009** (0.003)
Fixed Effects	YES	YES
Time Effects	Week	Month
<i>N</i>	10920	10920
<i>R</i> ²	0.48	0.46

Robust standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

- Cart abandonment does increase in the areas near stores after the project implementation
- We do find evidence for an increase of B&M conversion and a decrease in Online conversion

Cross Selling Effect



Cross Selling Effect

	log(TRANS)	log(SALES)	log(SALES)
log(PICKUP_VISITS)	0.07* (0.03)	0.06*** (0.02)	0.05*** (0.01)
log(TRAFFIC)	0.35*** (0.10)		0.30*** (0.07)
Fixed Effects	YES	YES	YES
Week	YES	YES	YES
<i>N</i>	5088	5238	5083
<i>R</i> ²	0.92	0.78	0.82

Robust standard errors in parentheses

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

- Additional visits to a store are correlated with more sales

How did the **Store Pickup** decision impact the overall sales performance of the Company?



-2%

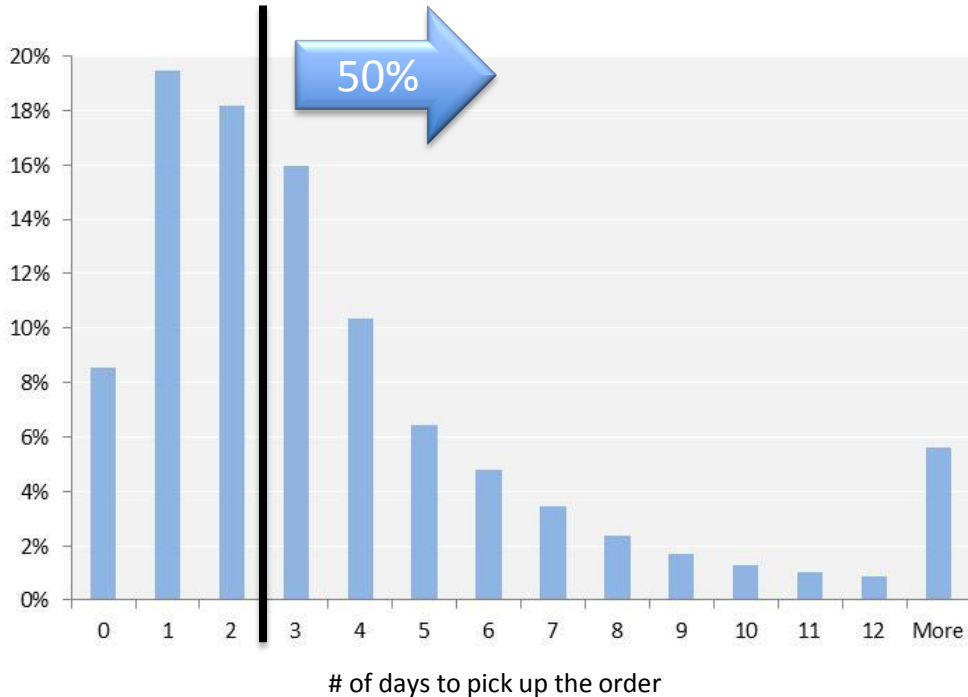


+6%



+4%

What about those who use BOPS?



Conclusions

- Analysis of pre and post implementation period of a “buy online, pickup at the store” project
 - Online sales decrease after implementation, relative to a control group
 - Store sales increase, relative to a control group
- Showing reliable inventory availability online reduces the stockout risk faced by customers and increases ROPO, resulting in additional store sales and traffic
- Challenges of analyzing channels independently

Information and Fulfillment

- Online retailers benefit from centralized fulfillment, but can “suffer” from limited ability to deliver information
- Conjecture
 - Generalists Retailers with commodity products—working on the fulfillment dimension (Amazon drones/delivery stations)





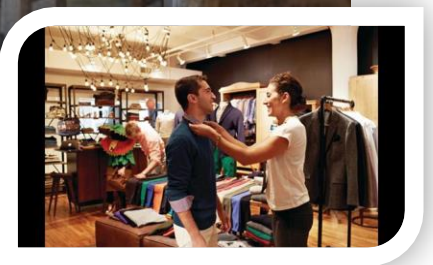
Information and Fulfillment

- Online retailers benefit from centralized fulfillment, but can “suffer” from limited ability to deliver information
- Conjecture
 - Generalists Retailers with commodity products—working on the fulfillment dimension (Amazon drones/delivery stations)
 - Vertical Retailers with unique products—working on informational dimension (Showrooms)

WARBY PARKER



BONOBOS



Conclusions

Traditional B&M Retailer that had established an online presence has the opportunity to leverage the benefits of an Omni-channel presence.