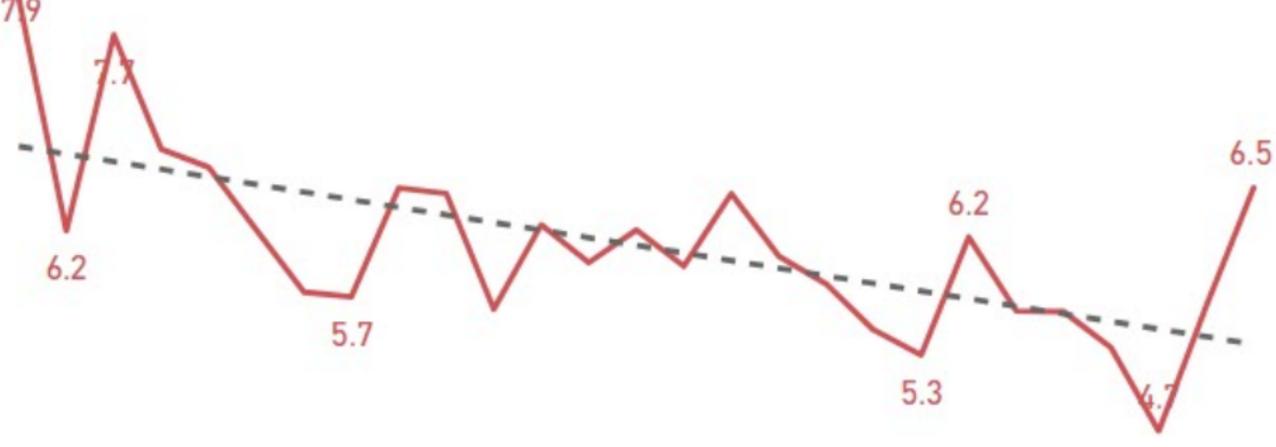
Customer Loyalty

Dec 2016

### Linh Nguyen (TUG37511) - Thai Huynh (TUG65322)

Nov 2016

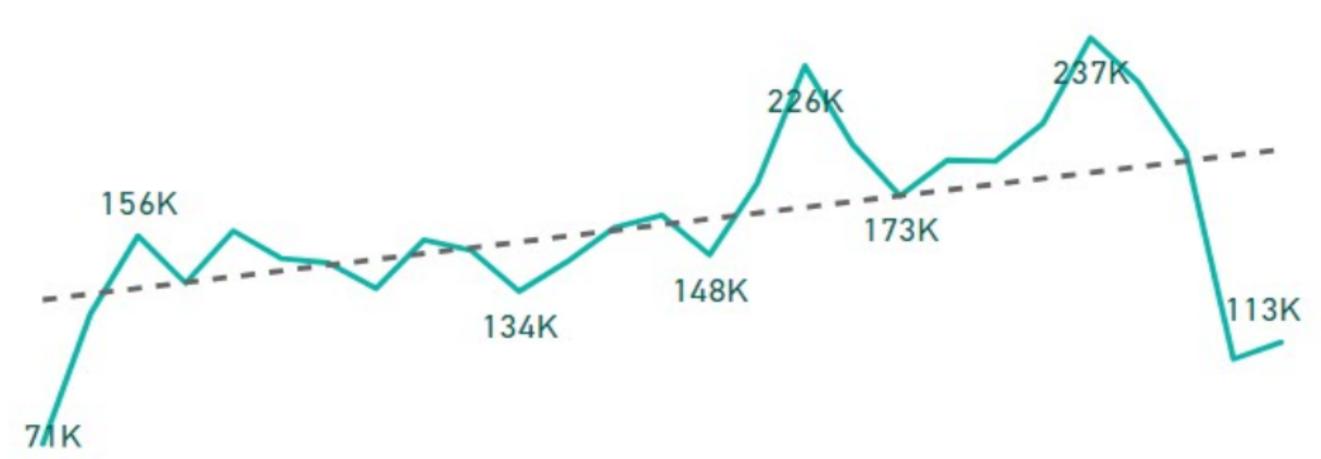




Sep 2016

Delivery Lag Time = Working days between Delivery Date & Order Date

**Delivery Lag Time Trend** represents the trend of average days it takes to complete a delivery from when an order is placed. The line shows a decline with an average of **0.05 day** or **1.3 hours** from July to December in a weekly basis. The lower the Lag Time is, the faster the delivery is.



Oct 2016

Sale Order = Count Distinct all Sale Order Number in weekly basis

Sale Order Trend represents the number of sale orders over weekly basis from July to December. The trend shows a surge with an average of **1,604 orders**. With decreasing Delivery Lag Time, we have increasing in Sale Order.

- Top Merchandise Type shows a descending Merchandise by Order Number with Conditional Format for Average Delivery Lag Time.
- Home Decor is the top selling merchandise type but appears to have the highest Delivery Lag Time and not sensitive with speed.

Health / Beauty Apparel Electronics Fun & Leisure Entertainment

Jul 2016

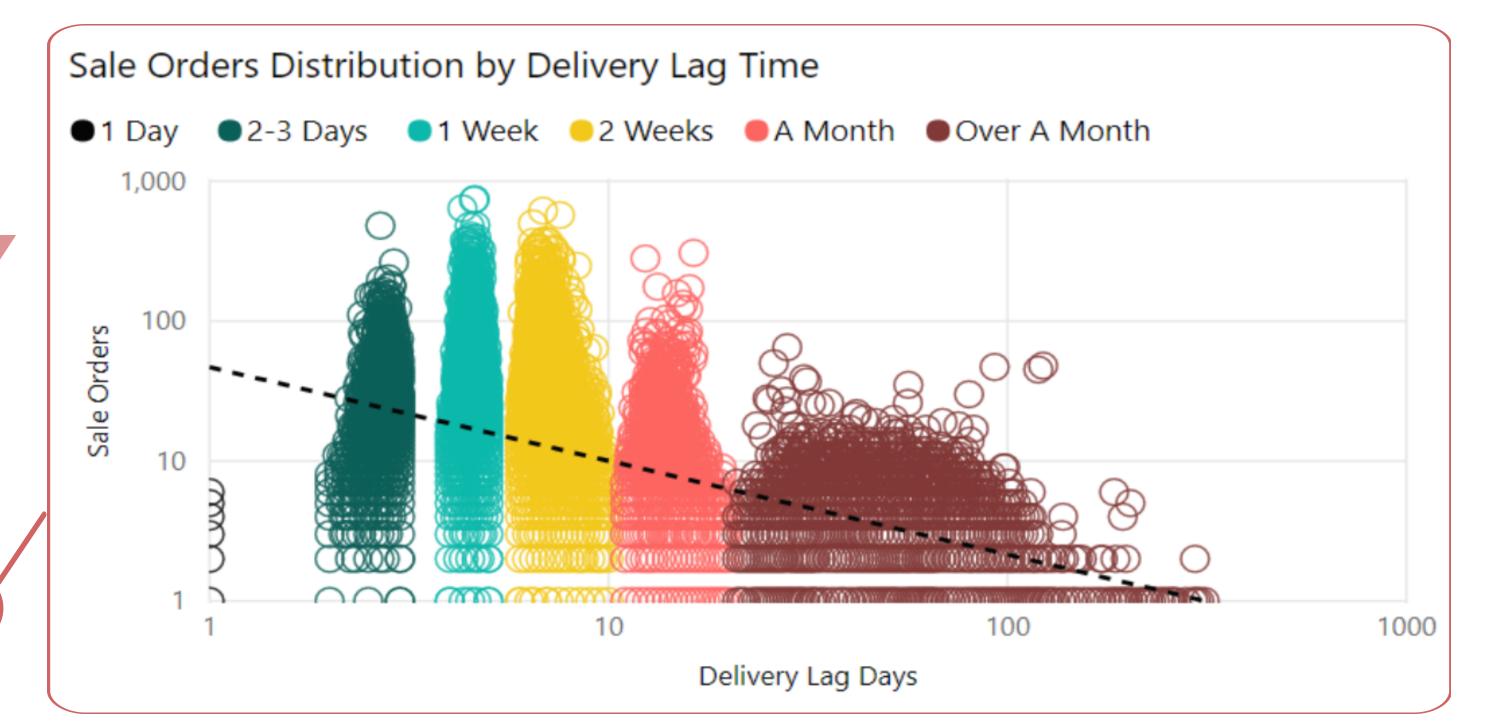
Aug 2016

Most sensitive and has strong negative relationship between Delivery Lag Time and Sale Order

- Scatter Plot shows relationship between
  Sale Orders and Delivery Lag Time (Days).
  Two scales are log scales because of skewed distribution. Each bubble represents a customer behavior.
- Sweet Spot are orders that delivered within 2 weeks or less. Sale Orders decrease as Lag Days increase.

The black trend line represents the relationship trend between Sale Order and Delivery Lag Days. Faster delivery will drive more sale.

Merchandise Type	Order Count	Amount	Avg Delivery Lag Time
Home Decor		1,027,667	7.33
Health/Beauty		752,194	5.49
Apparel		854,134	5.72
Accessories		472,723	5.76
Housewares		375,059	5.26
Electronics		206,492	5.35
Textile/Furnit		192,194	5.14
Jewelry		197,986	6.47
IQVC Divisional		78,769	5.41
Fun & Leisure		72,943	5.71
Entertainment		62,582	5.23





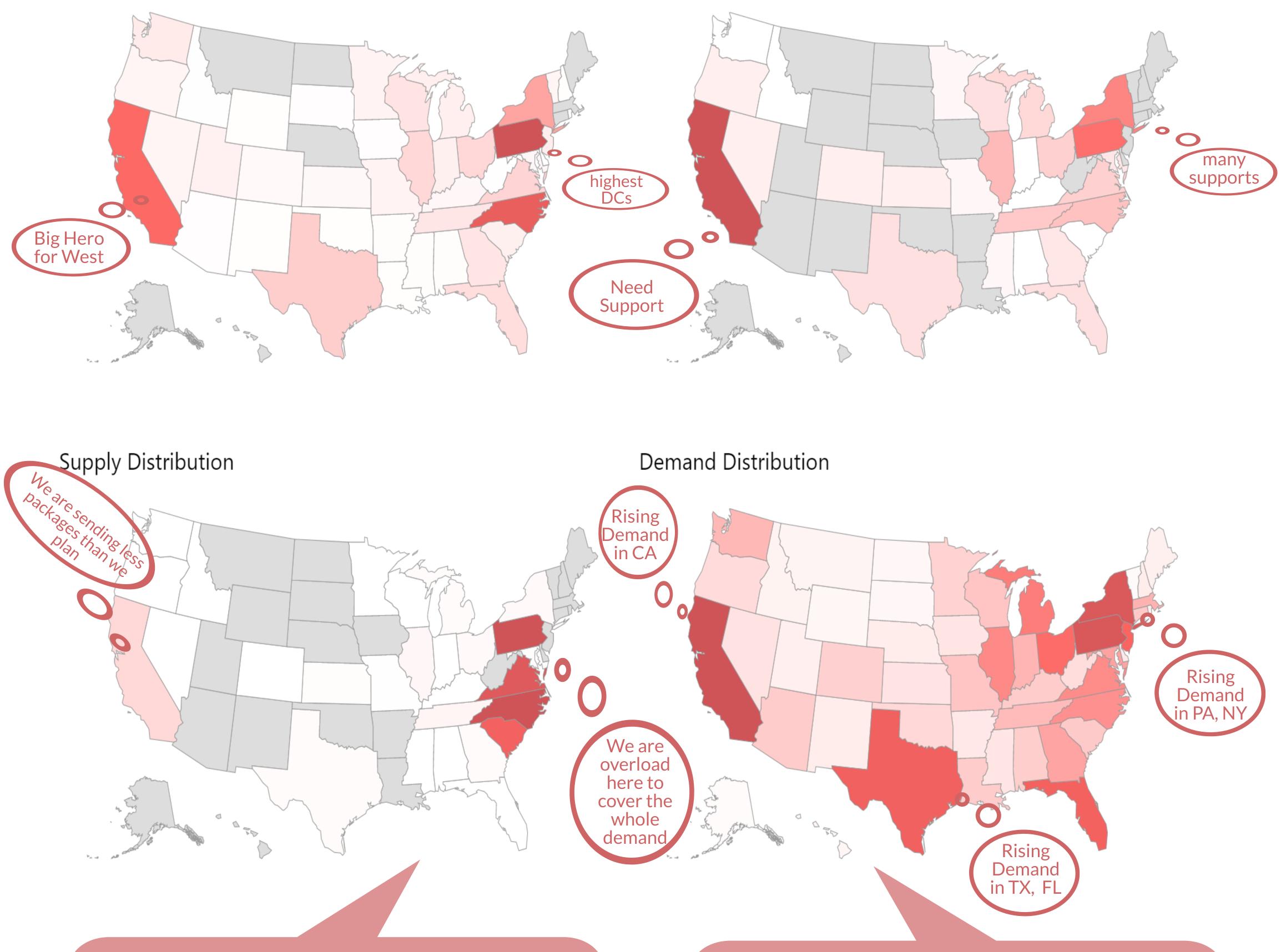


**The current network** of QVC Distribution Centers (DC) across States has Color saturation representing the number of DC in that state. Right now, the network relies on **PA** (424 DCs as 24% of total) and **NC** (298 DCs as 17% of total) from East Coast. West Coast with **CA** top (207 DCs as 12% of total). For maximize utility, this heatmap should smiliar to the Usage (right map) and Supply (below map) to fit and cover Demand map.

**The usage network** of QVC Distribution Centers (DC) across States shows how many DCs are actually being used to send packages. Top states are **PA** (20 DCs as 12%), **NC** and **CA** are being utilized frequently to cover the demand of 2 coasts. However, there are burden that need DCs from other states like **VA**, **IL**, **WI** to support. **CA** (now used 42 DCs as 24%) has the highest utilization of DCs as demand is surging and less support from surrounding DCs in West Coast.

#### Current Distribution Network

Usage of Distribution Network (Active Distribution Center)



**The Supply Distribution** represents the amount of packages actually sent from DCs in each states. It is a surprise that even with the current Distribution Network, QVC only send packages heavily from East Coast, especially **PA** (27%), **VA** (22%), **NC** (27%), **SC** (16%) while **CA** has a lot of DCs in use in West Coast but only delivered 3% of total package. This suggests that most deliveries across US were delivered only from East Coast and increase Lag Delivery Time a lot if deliver to West.

The Demand Distribution represents the amount of packages actually delivered across states, which is an estimate of demand for QVC. Although demands are all over states, we have some focus demand on East Coast: PA (8%), NY (8%) and FL (5%). In the Middle, TX (6%) has increasing demand and from the West, CA has become the top State with highest demand (9%). With current distribution and usage of DCs, it is hard to cover all demand with quick delivery time.

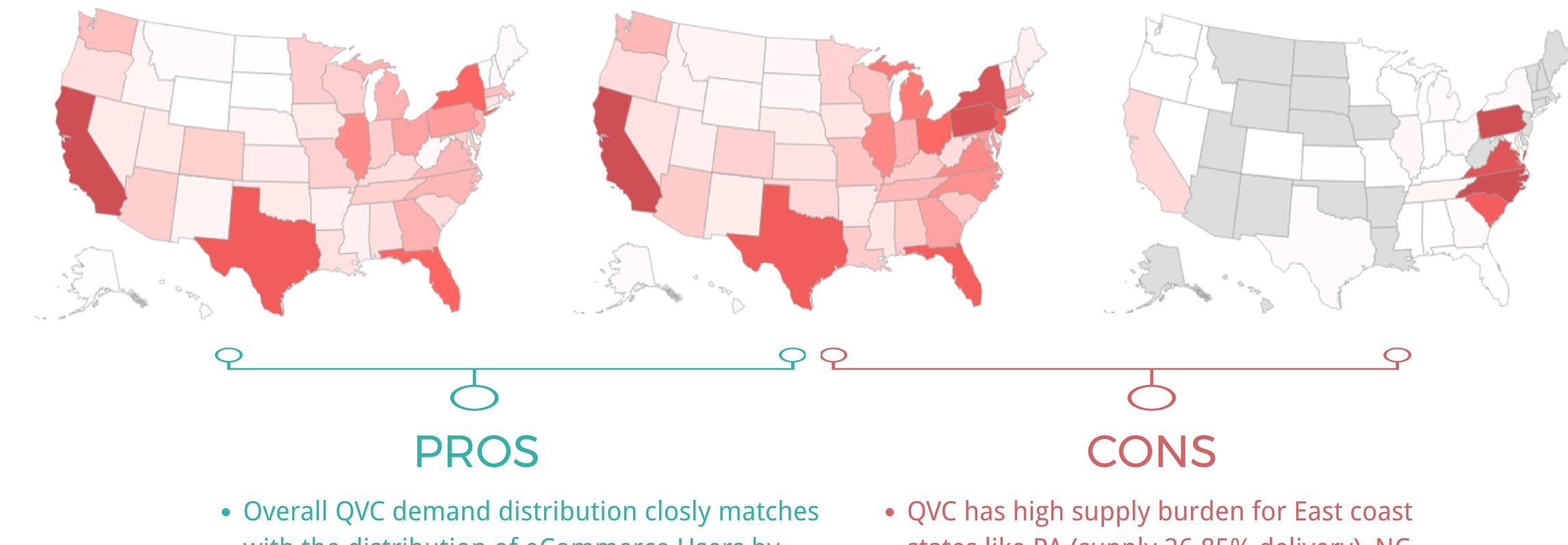


# Market Penetration

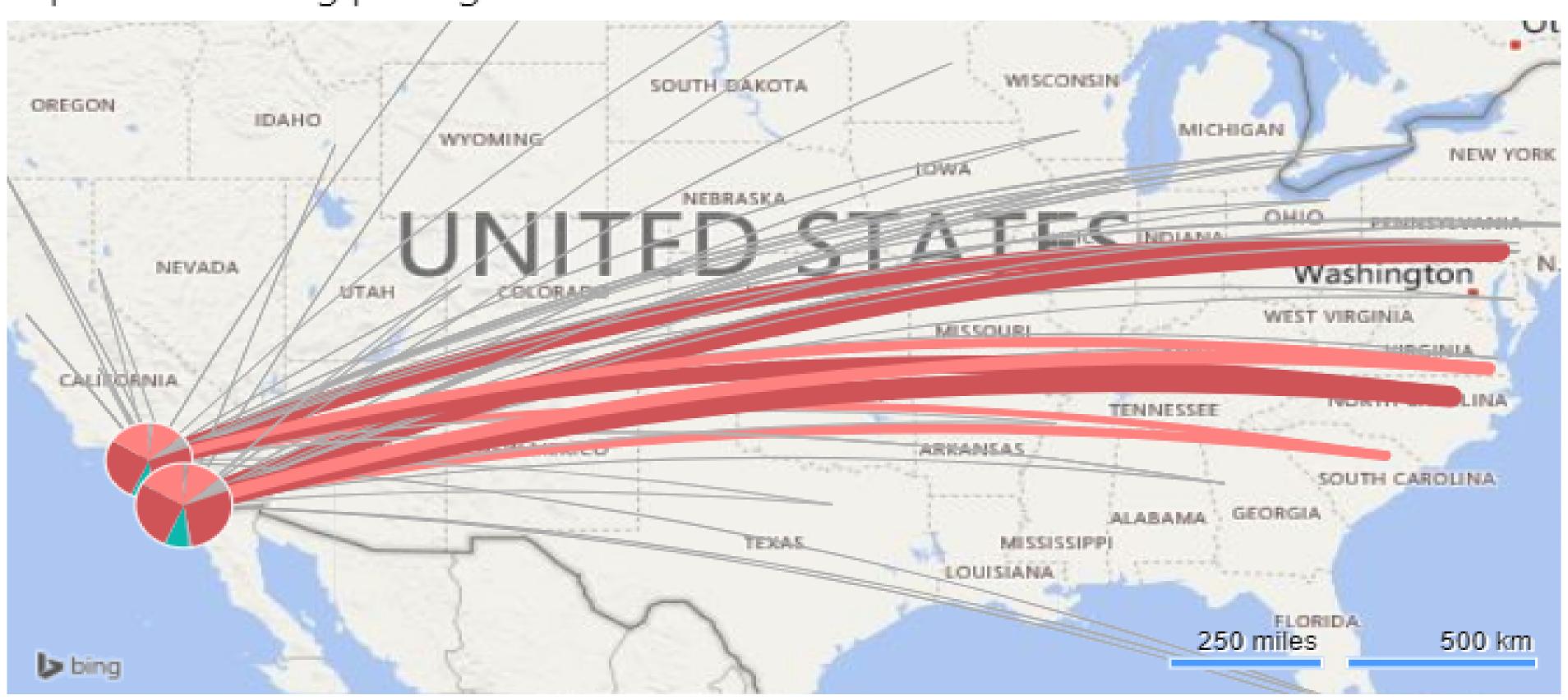
eCommerce Users by State in 2015 (NTIA data)

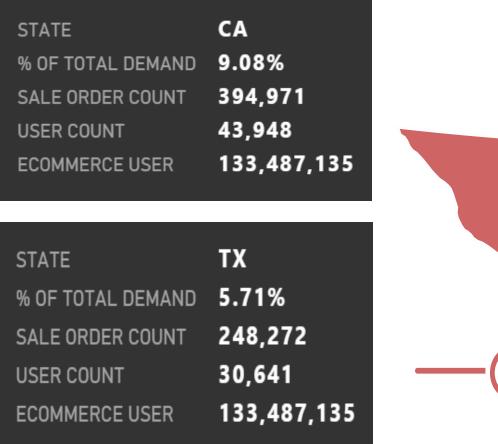
Demand Distribution

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Supply Distribution
```



- with the distribution of eCommerce Users by States in 2015 (National Telecommunacations & Information Administration) .
- CA has the highest demand (9.08% of total with 16 M eCommerce Users) while QVC customer from July - Dec 2016 is only 44 K.
- TX (5.71%) and FL (5.39%) are also rising in demand into 4th and 5th place of top states.
- QVC has high supply burden for East coast states like PA (supply 26.85% delivery), NC (27.08%), VA (22.02%) and SC (16.29%).
- Many demands from CA and TX are experiencing high Delivery Lag Time for shipping from East Coast states.
- While many Distribution Centers are utilized in CA (42 DCs) even higher than PA (20 DCs) and NY (17 DCs) but number of package sending is much smaller than other states.







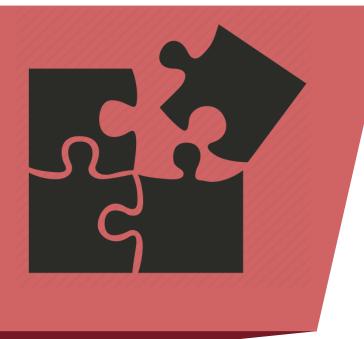
CA and TX offer good opportunity for market penetration. However, the supply is heavily based in West Coast. This will increase the waiting time for customer and negative impact on acquiring new sale and retaining customer loyalty.

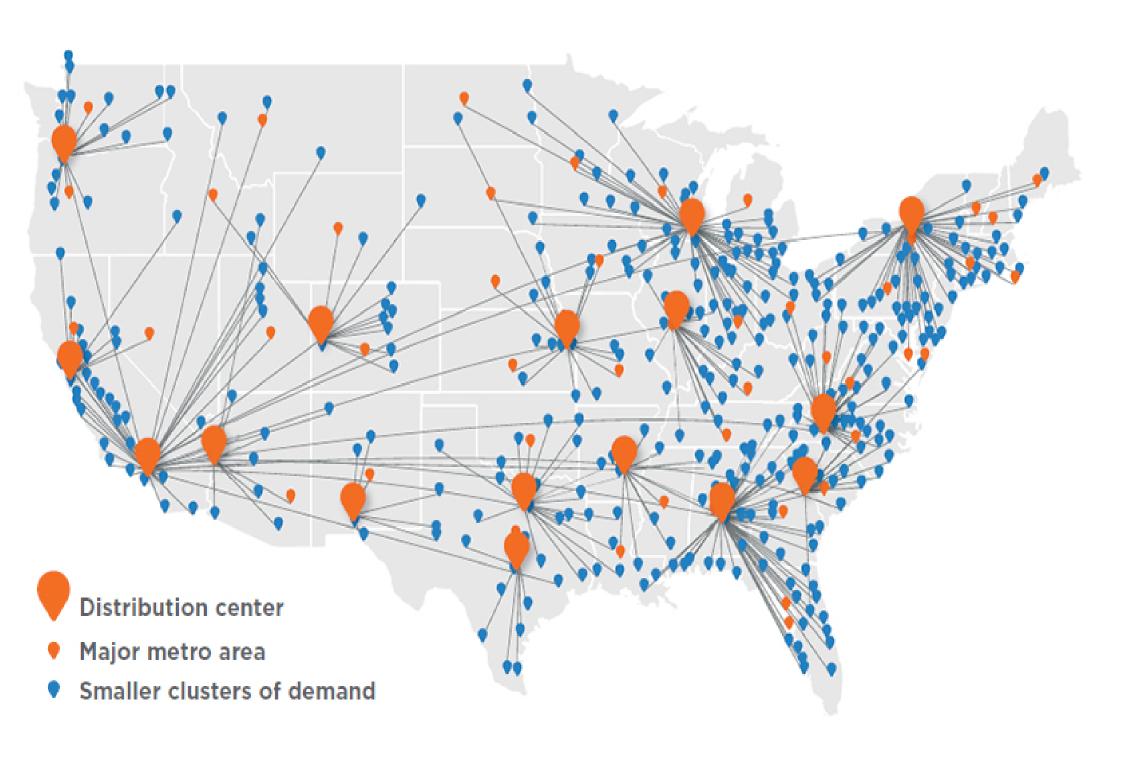
\*For detail and interactive Power BI dashboard, please click here!

### Top Cities sending package to CA



## Actions



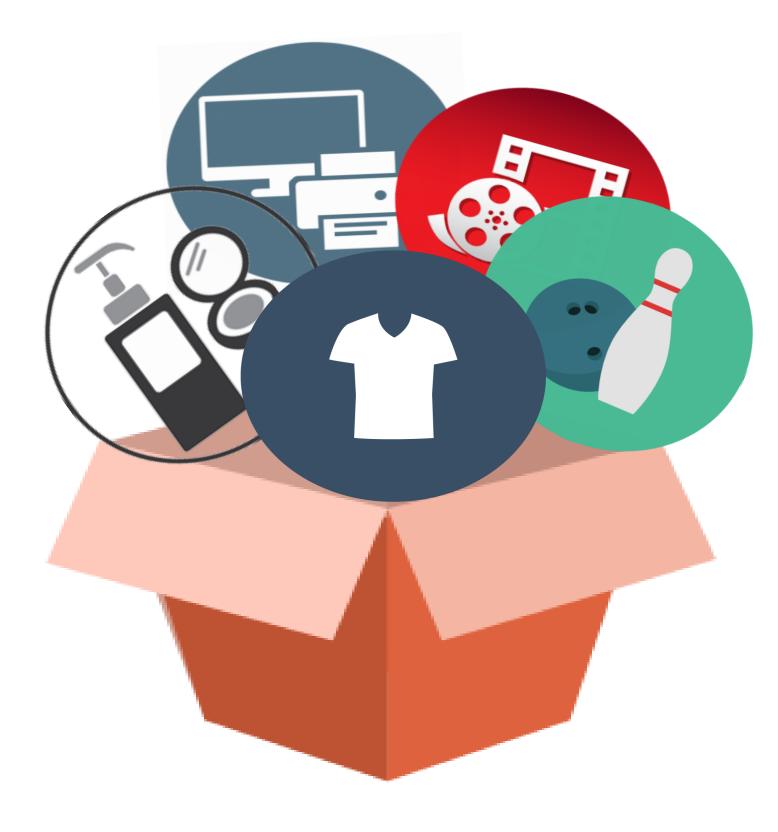


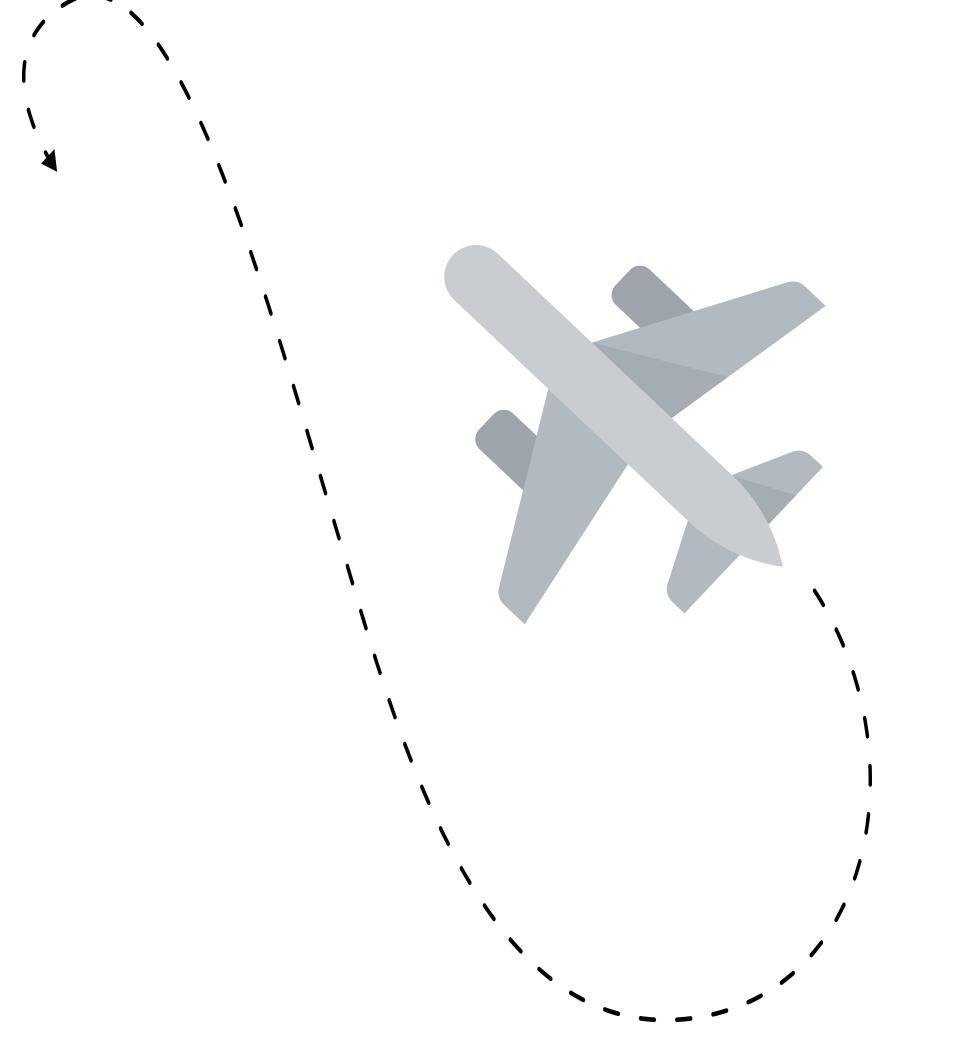
## Utilize Dynamic On-Demand warehouse

With the burden for distribution centers in East Coast, we need to stress out these shipments to reduce the Delivery Lag Time. Restructuring the shipment route will maximize the utilization of distribution center in other States not just PA. Adapt with the Dynamic On-Demand warehouse from Uber and Airb&b is a good solution for market with a small number of distribution centers but high demand.

### Forcus on high sensitive merchandise types

There are groups of merchandise that experience the negative impact of high Delivery Lag Time to Sale Orders. These are Health / Beauty, Apparel, Electronics, Entertainment and Leisure & Fun, which usualy demand for fast delivery. However, while filtering each of these merchandise type in Power BI Dashboard, we see that many demand from CA are shipped from East Coast. Focusing on these merchandise first to improve the delivery speed will provide faster market penetration.





## Potential vendor reroute

Vendor locations may be the reason for high Delivery Lag Time and burdern of many shipments for Distribution Centers in East Coast. If many original shipment from European or foreign countries, many shipments need to go through East Coast first and then land on the final delivery location in West Coast. The solution is to reroute the vendor to beter utilize Distribution Centers in West Coast for supply the high demand of CA and some in TX.