CORNELL TECH

EXPRESS SCRIPTS®

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About Express Scripts

Largest prescription drug home-delivery service in the US

295M

295 million adjusted prescriptions shipped annually direct to home

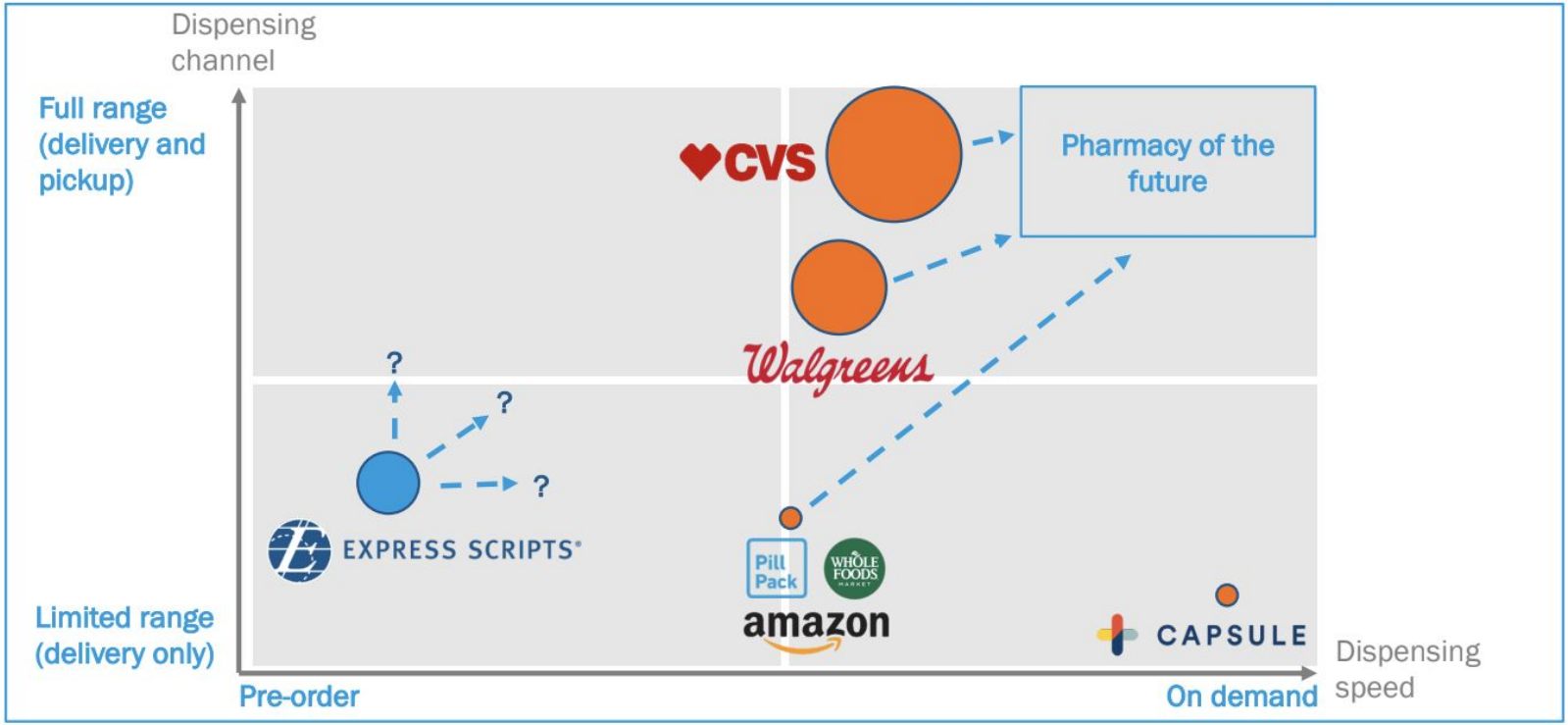
99.999%

99.999% Dispensing accuracy

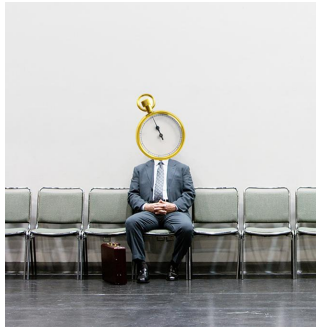
110B

Annual revenue

Pharmacy Trend: Fast, On-demand & Personalized



Express Scripts' Challenges

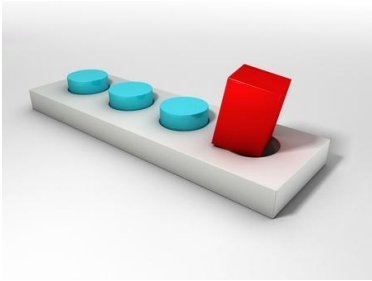


Long Approval Process

- 3-21 days to get prescription approved
- 30% go unfulfilled

Long Delivery

- 2-6 days to customers
- Competitors offer 1-day shipping



Lack of Personalization

- 1 plan doesn't fit all customer personas
- Lack of personal touch

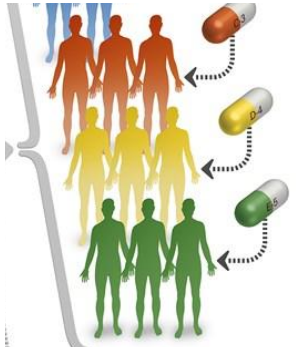
Most Critical: Delivery Time

High Customer Expectation

- Expect 1, 2-day delivery like Amazon

Fierce Competitors

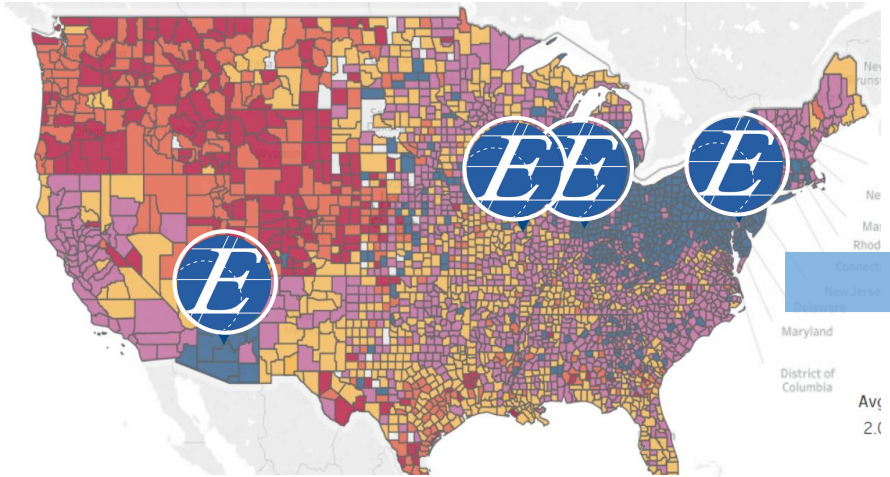
- Same-day delivery offer: CVS, Walgreen, Pill Pack Capsule

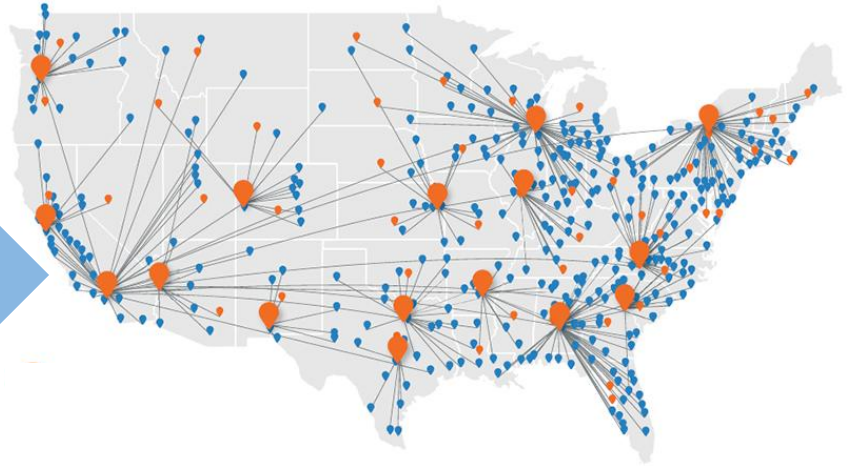


Enable Personalization

- Fast delivery enables responsive & personalized service

Solution: Express Cache (Micro Warehouses)





Avg. Transit TAT

2.00 6.00

(In days)

- 1-day delivery and on-demand pickup
- Costs 1% of running Retail outlets
- Automated fulfillment & predictive inventory using ML

Testing: Simulation

To optimize:

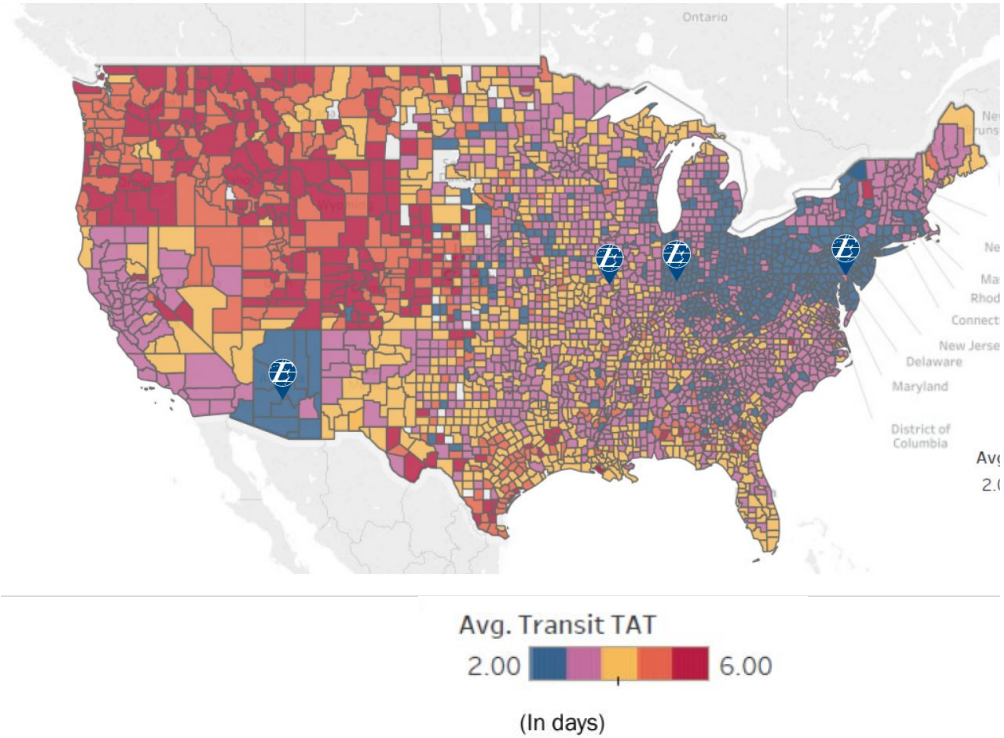
- Speed of delivery
- Precise demand forecasting

Under the Constraints:

- Cost of micro warehouses
- Availability of drug stock

Challenges and Next Steps

- Create Demand Forecast model
- Find, clean and explore Express Scripts and Cigna data
- Understand the relationships between location and delivery time



Any Question?

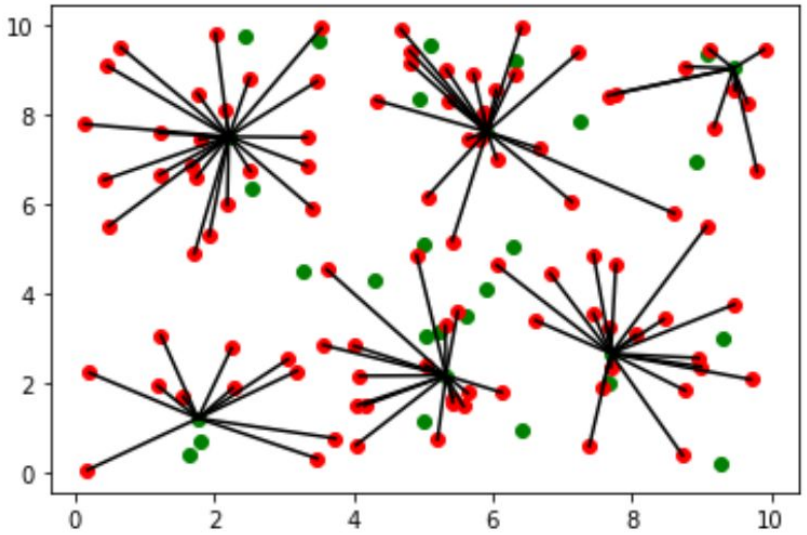
Appendix

Micro warehouse vs Retail Store : Cost of operations

Locations	20 @ 15,000 sqft	1 @ 5,000 sqft
Total Sqft	300,000	5,000
Type of Space	Retail (Prime)	Commercial
Rent/Sqft[1]	$6.00	$2.00
Total Fixed Overhead	$1.8 million/month	$10k/month

Basic Model

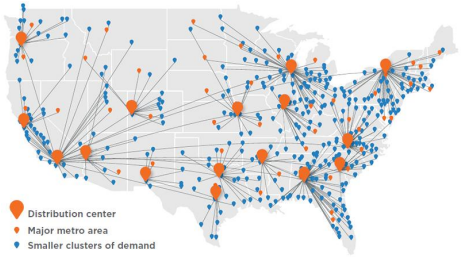
```
#initialize data
(num_fac, num_cust, dist, max_fac, loc_fac, loc_cust) = initializeData()

#create an empty model
pmedModel = Model()

#initialize vars
xVars = [0 for i in range(num_fac)]
yVars = [[0 for j in range(num_cust)]for i in range(num_fac)]

#call subroutines
constructVars()
constructObj()
constructConstrs()

#solve model
pmedModel.optimize()

#print optimal solution
printSolution()
```



Potential Solutions

Auto-verify Prescription

- Check drug database & recommend to doctors at initial prescription meet



Automated Micro Warehouses

- 1-day delivery
- On-demand pickup

Personal Healthcare App

- Monitor personal health
- Custom drug offering
- Remind to take drug