

The Cambridge Systematics logo consists of three overlapping, slanted rectangular shapes in green, blue, and purple. Below the graphic, the text "CAMBRIDGE SYSTEMATICS" is written in a bold, black, sans-serif font.

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Think  Forward

Measuring the Impact of Future Supply Chains on Freight Travel Demand

presented to

*7th TRB Conference on
Innovations in Travel Modeling*

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presented by

*Cambridge Systematics, Inc.
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and

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Warehouse Robotics



Driverless Vehicles



IoT-based Logistics Solutions



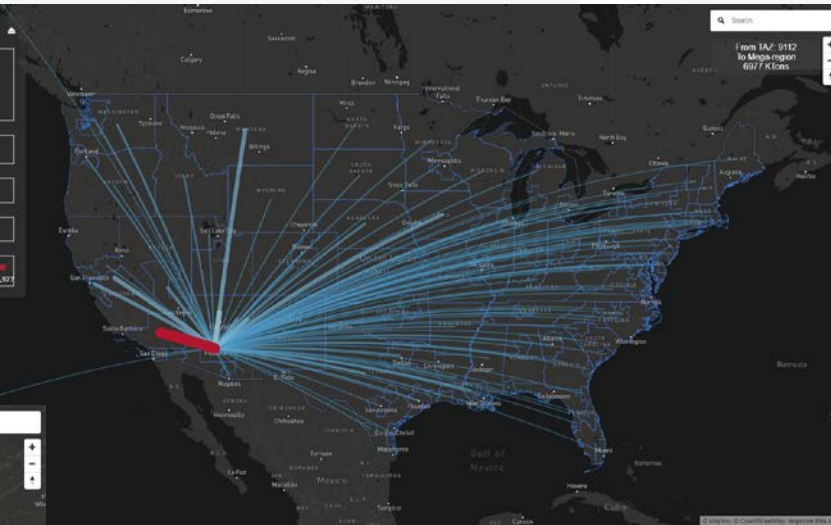
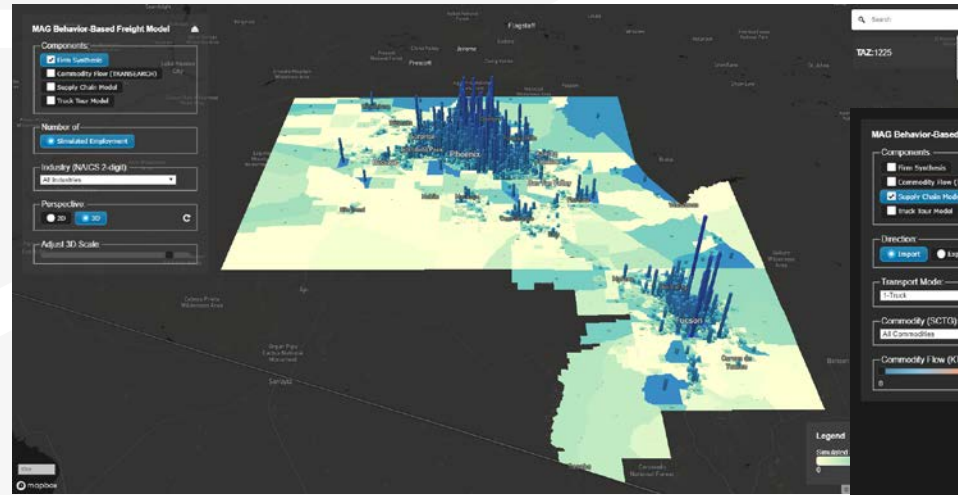
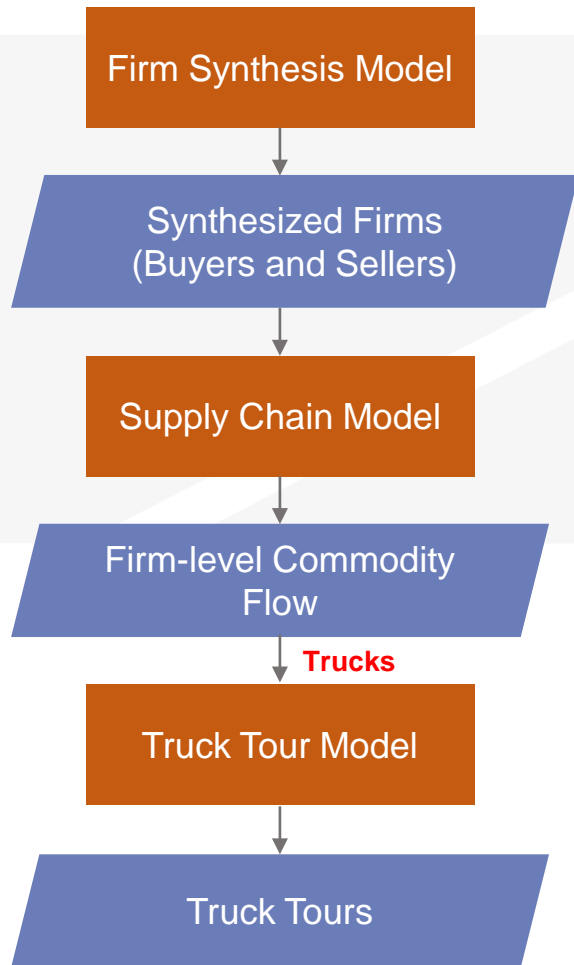
Integration of Logistics and Technology Services



Industrial Automation



Mega-Regional Multi-Modal Behavioral Freight Model



Expansion of POLA / POLB



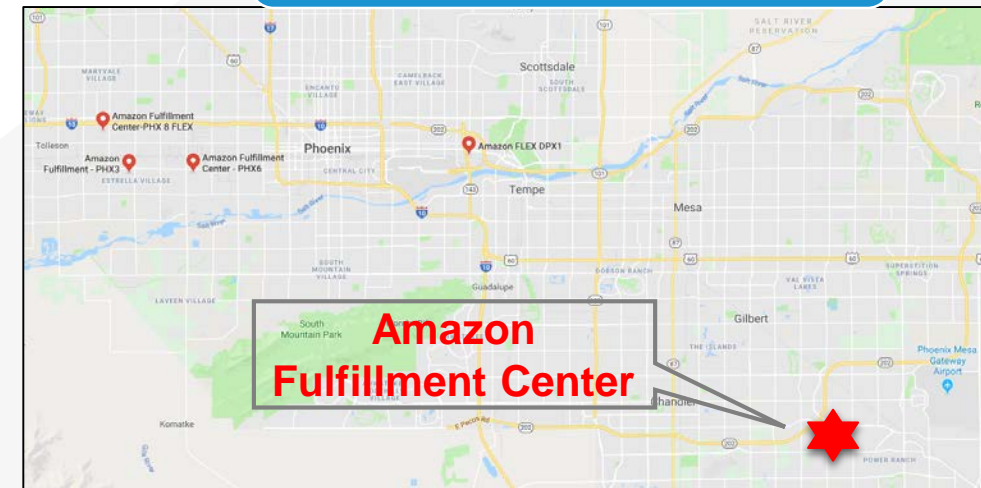
Revising Costs and Speeds



High Value Commodities



Amazon Fulfillment Center



Expansion of POLA / POLB

• Impact on Short-Haul

FAF District Band	Baseline 2015	Ports Expansion	Difference
≤ 500 miles	141,961	144,796	2,835
501 to 1000 miles	9,283	9,275	-8
1001 to 1500 miles	7,368	7,365	-3
1501 to 2000 miles	2,440	2,436	-4
2001 to 2500 miles	786	782	-4
> 2501 miles	14	14	0

Revising Costs and Speeds

• Impact on Mode Shares

Scenario/Mode	Baseline 2015	Revising Cost & Speed
Combined Rail	8.4%	9.8%
Combined Truck	76.7%	75.9%
Combined Air/Parcel	1.3%	0.8%
Pipeline	13.6%	13.4%
Total	100% (N=182,897 Ktons)	100% (N=184,892 Ktons)

High Value Commodities

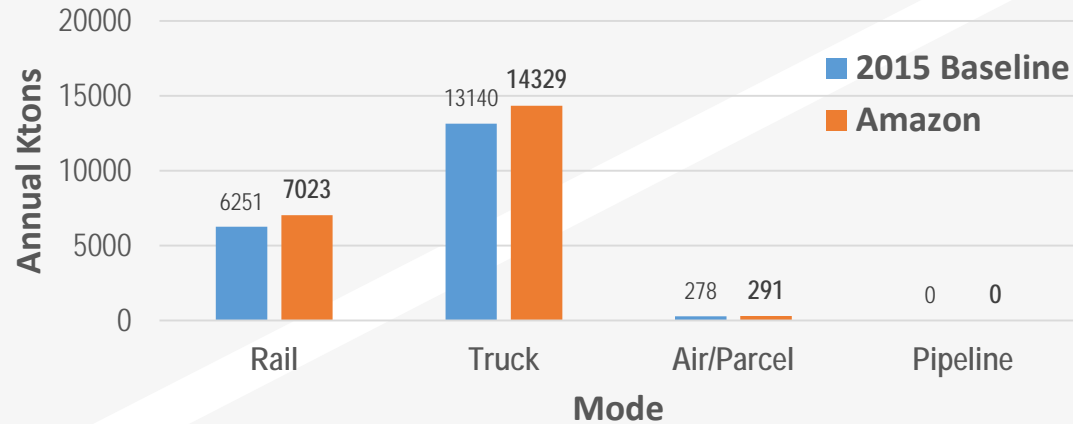
• Impact on Commodity Value

Type of Flow	Annual Flow (Ktons)	Total Value in (Million \$)	Increase in Ktons	Increase in Million \$
Internal-External	22,911	90,498	1,866	12,311
External-Internal	59,933	123,498	-15	-626
Internal-Internal	106,347	108,287	4,443	9,487
Total	189,191	322,283	6,294	21,172

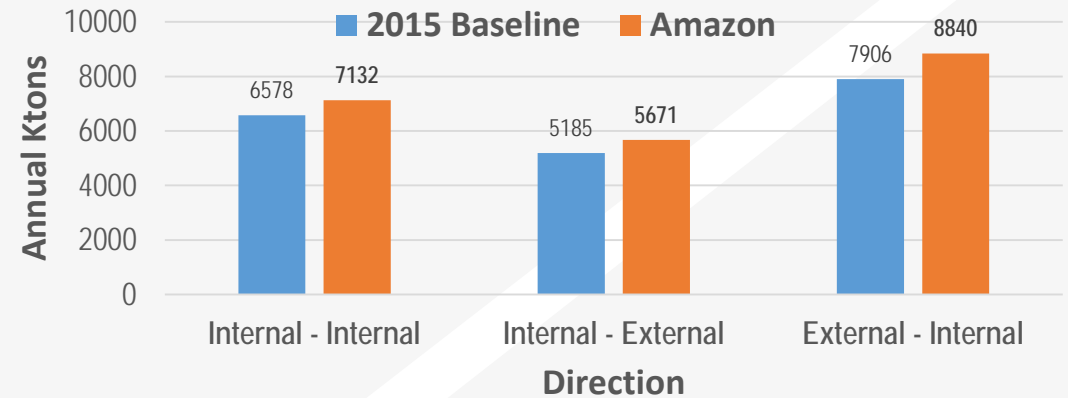
Amazon Fulfillment Center

Impact on Manufactured Goods and Truck Trips

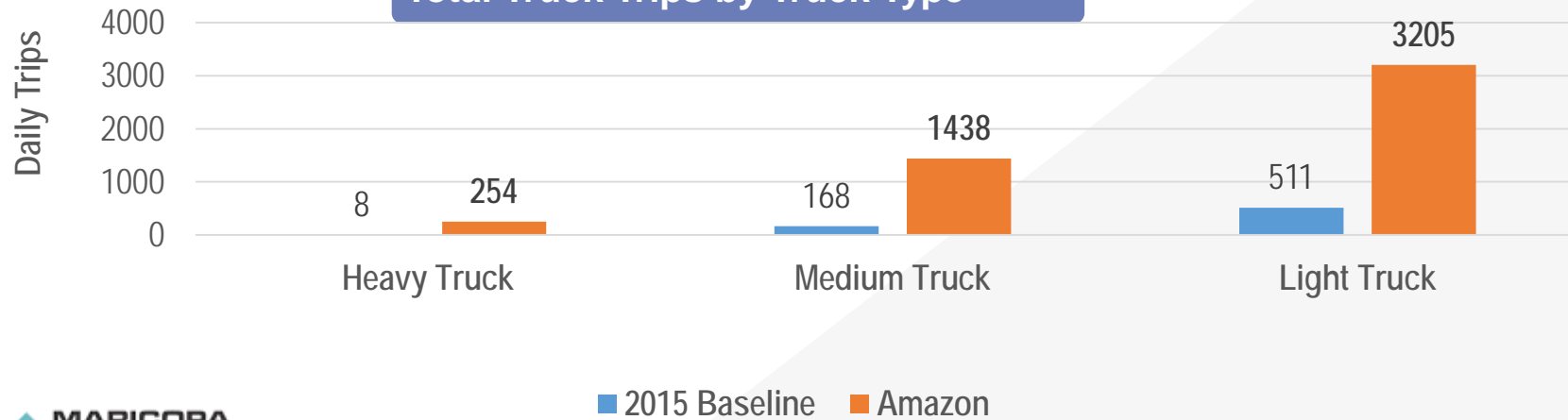
Manufactured Goods – By Mode



Manufactured Goods – By Direction



Total Truck Trips by Truck Type



Summary

- Mega-Regional Freight Model proved to be a Scenario Modeling Tool to test various policies
- Captures several macro-economic conditions in response to changes in parameters like employment, productivity, consumption
- Model displayed sensitivity to transport costs and times