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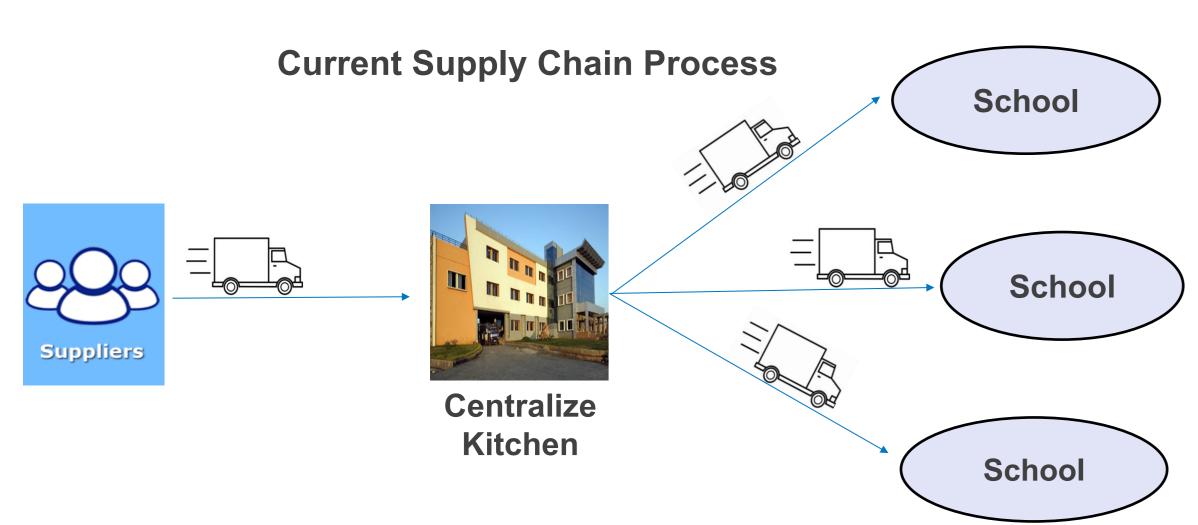
Advisor: Tim Russell Sponsor: Akshaya Patra

Network Design For Mid-day Meal Programme



Motivation / Background

- Increase the utilization of centralized kitchens' capacity.
- Minimize transportation cost and number of centralized kitchens.
- Reach out to more schools by resource optimization.



Key Question

What network design of centralized kitchens maximizes the number of children served with mid-day meal in 2020.

Relevant Literature

- Cyril Khamsi, and Veronica Steolear (2016). "Efficient supply chain design for highly perishable foods." MIT Thesis.
- Govindan et. al (2014). "Two echelon multiple-vehicle location routing problem with time windows for optimization of sustainable supply chain network of perishable food." International Journal of Production Economics 152: 9-28.
- D. Agustina et. al (2014). "Vehicle scheduling and routing at a crossdocking center for food supply chains." International Journal of Production Economics 152: 29-41.



The Problem

- · High number of centralized kitchens due to delivery time constraint of cooked food.
- High transportation and kitchen running costs to serve small order size.

Methodology

Analyze current supply chain network

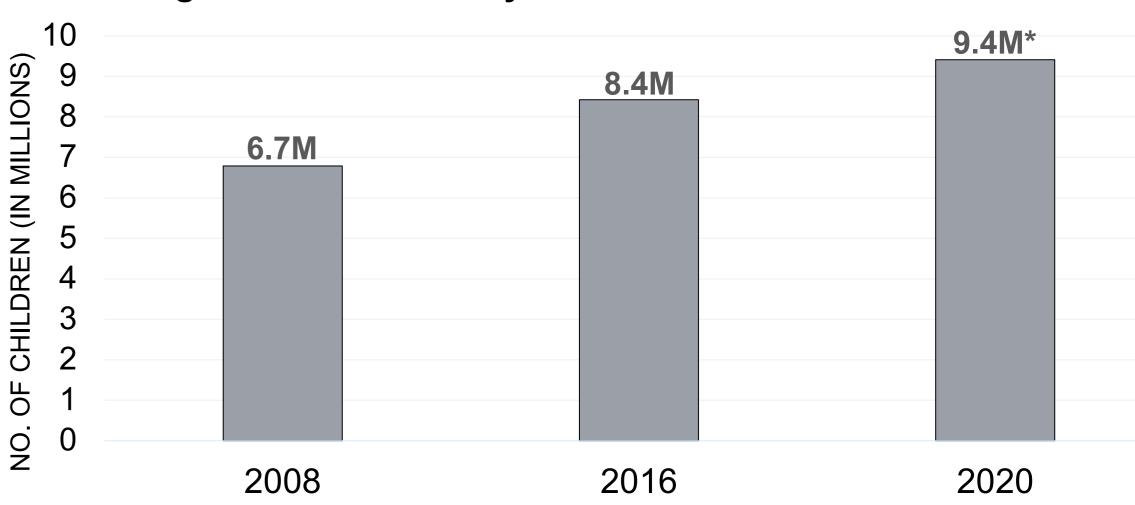
Interview
with sponsor
and collect
data

Locate
potential
sites for
centralized
kitchen

Formulate model using MIP for optimization Scenario test and present findings

Initial Results

Growing demand of mid-day meal



Feedback from sponsor company during interview

Mid-day meal program

Centralized & decentralized kitchen concept

Technology to speed up cooking process

Kitchen location vs transportation cost

Government rules on nutritional value

Delivery time vs food quality trade off

Road condition and traffic

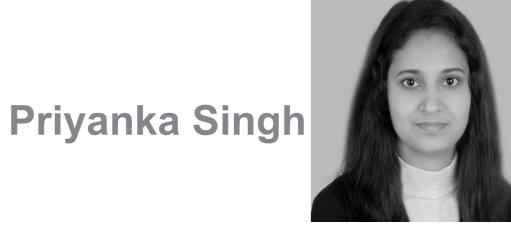
Sustainability challenge

Expected Contribution

Network design to serve maximum number of children in a state

Reduction in fixed cost of facility and transportation cost

Optimal utilization of centralized kitchens' capacity



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