



Developing a vaccine delivery strategy

Author: Bakajic Misa

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Introduction

In this assignment, you're to imagine you are part of a sourcing and logistics team for a fictional health authority in British Columbia, Canada operating in 2021 during the Covid-19 pandemic. The key themes of the case are the sourcing and delivery of Covid-19 vaccines and the planning of a new facility. You'll find most of the information you need in the case material, but feel free to use other trusted sources.

The case details are given in a series of emails, providing crucial information to develop three levels of analysis and recommendations. The macro analysis should focus on sourcing and delivering vaccines to the Vancouver region. The meso analysis should consider demand trends at five existing facilities and recommend a location for a sixth. In the micro analysis, you need to analyze and redesign an existing Covid-19 facility and work out some simple flow rate metrics. Remember, the Valley Health CEO is your audience, they don't need background information about the company, just a summary of the problem is enough.

Here's what you need to submit for this assignment:

- A 5-page report outlining the three analysis levels: macro, meso, and micro.
- 10 presentation slides handed in along with the report.
- An in-class 10-minute presentation focusing on just one of the three solutions. The specific solution to focus on will be specified by the teacher after the report and slides are submitted.

Remember that this assignment is intended to simulate decision-making under uncertainty. Some tasks are purposefully vague to challenge your problem-solving abilities. Feel free to make reasonable assumptions about any missing but necessary information.

Email from the CEO of Valley Health

Dear Team,

Firstly, let me applaud your tenacity and resilience over the past year and a half. Our front-line workers have demonstrated exceptional commitment, which has allowed us to gain ground against the pandemic. While the situation has improved, the imminent winter flu season necessitates pre-emptive action and strategic planning for the distribution of future Covid-19 vaccines.

I am reaching out to tap into the expertise of our operations, supply chain, and logistics staff. We need your help to refine our supply chain and devise robust distribution strategies. Furthermore, we need to redesign an existing Covid-19 testing facility into an immunization center.

Our plan involves crafting strategies at three different levels to ensure the efficient delivery of vaccines to our local population. Here are the key contacts for each level:

Macro-level: Sourcing Director, John Cahill, will provide details on the macro perspective. We are currently using a third-party logistics provider to deliver the vaccine to Vancouver. However, we are looking to establish our own supply chain process and need ideas on how future vaccines would be delivered to the area.

Meso-level: Reach out to Logistics Manager for Lower Mainland, Laura Jenkins, for further details on the meso viewpoint. Her team is scouting for a new location for our sixth distribution center optimally placed within our service region.

Micro-level: Connect with Markus Jones, the Manager of the upcoming sixth healthcare facility, concerning the micro perspective. Markus seeks assistance in designing service delivery at the new site, using an existing layout from a similar facility as a starting point.

I understand the enormity of the tasks ahead might seem overwhelming; however, with our collective effort and conversation with these key personnel, I believe we will navigate the challenges successfully.

Thank you for your continued dedication,

Anita M. Rokoutus
CEO, Valley Health

Email from John Cahill Sourcing Director of Valley Health

Hello Operations and Logistics Team,

Anita has tasked me with shedding some light on our current operations. Currently, we use 3rd party logistics provider Freight Fast, but as we part ways, we need to develop our own comprehensive solution, which includes managing cold chain requirements. This calls for accurate vaccine volume forecasting, as well as strategic transport and storage planning.

We primarily source three vaccines: Pfizer-BioNTech, ModernaTX, and Oxford-AstraZeneca. Each has unique storage requirements that you can find detailed in the WHO report. Currently, about 35% of patients opt for Pfizer, another 35% for Moderna, the rest prefer Oxford-AstraZeneca. We do not monitor those who choose not to get vaccinated.

Right now, Pfizer vaccines come directly from the Kalamazoo, Michigan facility. The Moderna vaccine, initially produced in Lonza, Switzerland and Portsmouth, New Hampshire by the Swiss drug maker, is shifting production to a new facility in Mississauga, Ontario. Please factor this into your analysis. AstraZeneca sources are in Baltimore, US, and Mississauga, Ontario. We're working to shift exclusively to the Ontario source due to recurring issues with the Baltimore shipments. While we've explored precise ordering, Health Canada regulations prevent sharing patient data with international companies, causing recurring bullwhip effects.

For your analysis, I'm looking for high-level transport planning, no need for exact delivery addresses. At present, we receive weekly shipments, a frequency that can be altered provided stock levels maintain. To determine average demand, our existing clinics could serve as a good starting point. Please focus on the volumes of the shipments and determine approximately how many units we would need and the delivery schedule. If possible, explain how many crates, containers or reefers we need per week or month. Also recommend which modes of transport and any logistics partner that would be needed. This would help me negotiate contracts.

Before ending, just a quick note: our clinics serve an average of 100 patients per hour.

Let's navigate this together

Clinics Location	<u>Hours of Operation</u> (7 days per week)	Address
Delta	08:30-15:00	5800 Mountain View Blvd,
Surrey	08:00-20:00	13750 96 Ave
Burnaby	12:00-16:00	BCIT - 3700 Willingdon Avenue
Coquitlam	08:00-16:00	2900 Barnet Highway
Richmond	09:00 – 17:00	Bridgeport Industrial Park 12048 Vickers Way

John Cahill
Sourcing Director of Valley Health

Email from Laura Jenkins Logistics Manager for Lower Mainland

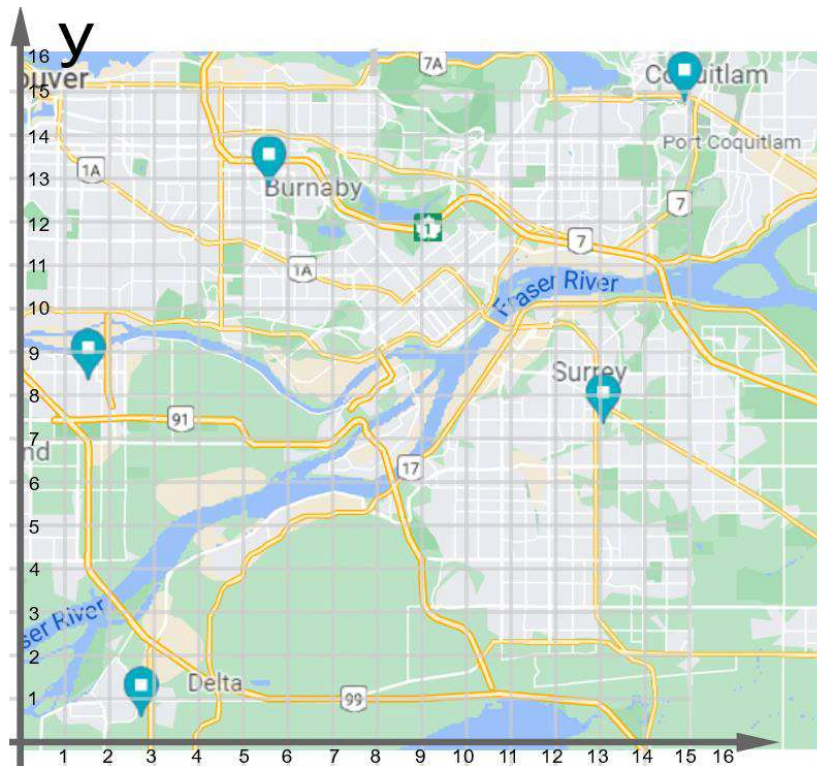
Hello Team,

We currently operate five clinics within our service network that function as our "distribution centers" due to their multi-functionalities (as indicated by green markers on the map). We're now seeking to establish our sixth distribution center.

Your opinion on the potential location for this sixth center is invaluable. As you're in contact with John Cahill, you'll likely have a handle on the demand figures for each existing location. However, I can tell you that the weekly demand at the Surrey clinic, where I'm based, is approximately 8400. Please bear in mind that we use finite loading, seeing as our clinics only operate 12 hours a day.

Considering this, it would be tremendously helpful to understand how regional demand and location might influence the development of a future distribution facility. Due to time constraints, we can assume that we won't be building a new facility from the ground up. We're considering either renovating an existing retail space or introducing prefabricated container office buildings and portable cooler units on an empty lot. Feel free to adopt whichever approach you deem best for making the recommendation. Once you identify a suitable neighborhood, please provide a precise location so I can commence cost analysis.

Here is a grid map which may help with the center of gravity analysis.



Best regards,

Laura Jenkins
Logistics Manager for Lower Mainland

Email from Markus Jones Healthcare Center Manager at Valley Health

Hello Team,

I hope this message finds you well.

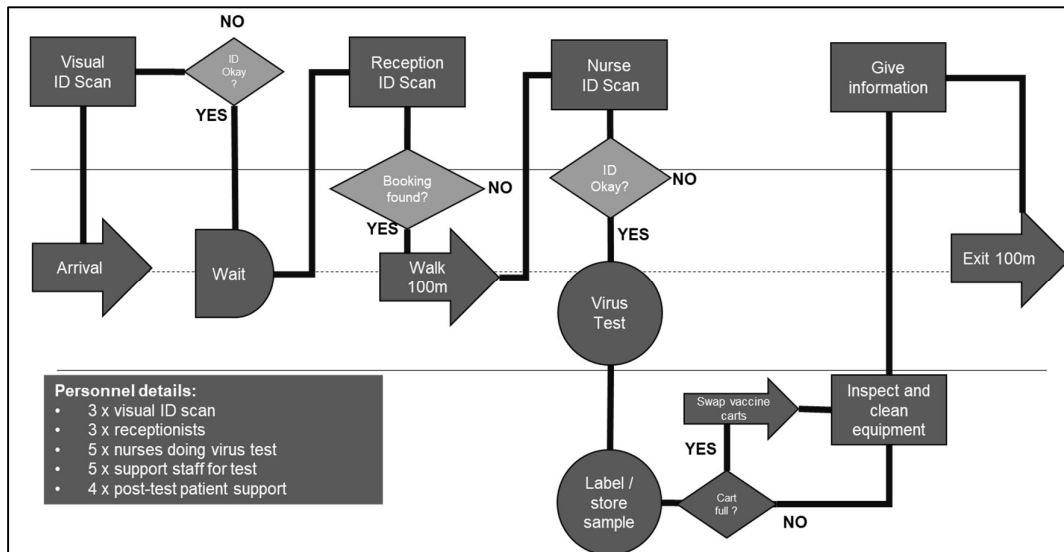
As attention turns towards our new distribution center, there's an area where your expertise will prove vital. We are yet to finalize the design process for our upcoming vaccination center, and this is where I need your advice. Supply and demand fluctuations complicate daily operations. Your global perspective and understanding of these dynamics will be crucial.

For clarity, I've attached a process map from an existing Covid-19 testing facility. This map provides an overview of the processes we're already managing. It's important to note, however, that our new center will focus solely on immunization. As this is fresh terrain, we could use some guidance on crafting the best layout.

Key to keep in mind is our staff number. Due to our commitments to the union, we're maintaining 20 personnel per clinic, all trained nurses filling various roles. You have the freedom to reallocate roles, as long as we maintain a total staff count of 20.

Our current process handles up to 100 patients per hour. Factoring in patient check-in, vaccination, and a 15-minute post-vaccination wait, patients on average spend around 20 minutes within our system. I would appreciate if you could estimate the average number of patients in the system using the new layout proposal.

I eagerly anticipate your insights as we navigate this project towards success.



Best regards,

Markus Jones
Healthcare Center Manager at Valley Health

References

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