



Pan-Canadian Demand and Supply Modeling of PPE

Collaborating to Support the Economic Reopening

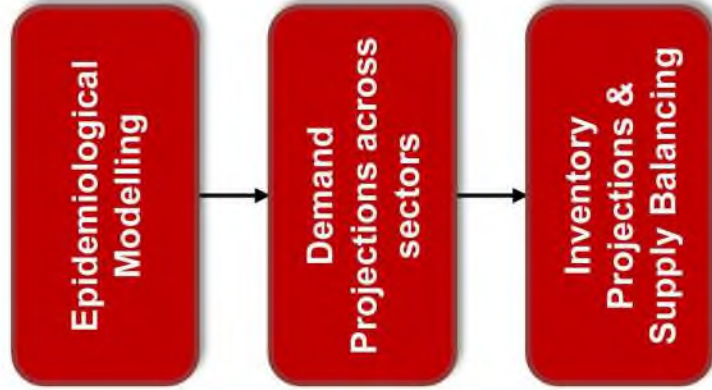
Federal Provincial Territorial Deputy Ministers of Health

July 14, 2020



YOUR HEALTH AND SAFETY... OUR PRIORITY.


The Pan-Canadian Demand and Supply Model overview



Epidemiological models used to project different disease progression scenarios for the next 12+ months by P/T

Unconstrained demand for PPE is projected based on epidemiological scenarios, PPE usage protocols, and time-phased reopening of the economy across 60+ sectors in each P/T, continuously refined against actual usage

Near real time on-hand and inbound supply data is gathered and netted against the demand projections to identify supply shortages and generate time-phased purchase requirements over the next 12+ months across 60+ sectors in each P/T



Sector examples :

- Hospitals
- Residential Care
- Police Services
- Fire Services
- Grocery Stores
- Public Administration
- Retail
- Hospitality
- Immuno-compromised Public
- General Public

Annual estimated demand forecasts by product

Demand Forecast for Jul'20 to Jun'21
Resurgence Scenario

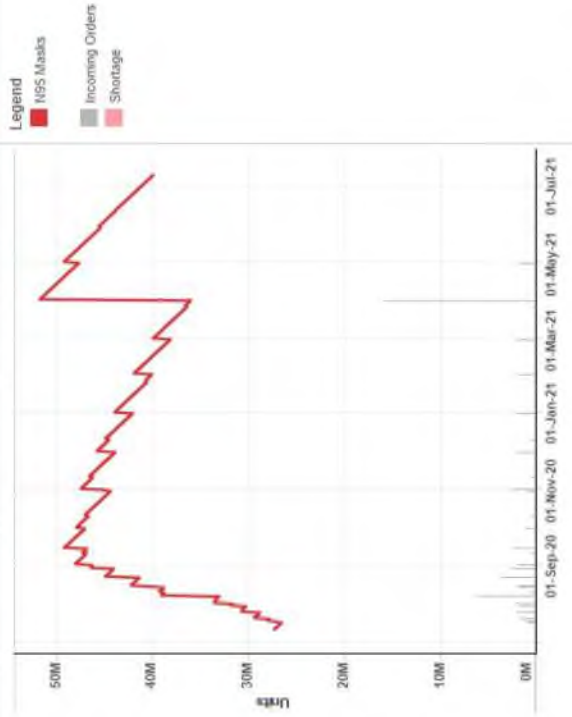
Category	Product	Public Health	Private Health	Entire Economy ⁴
Cleaning Products	Disinfectant	48 M	17 M	224 M
	Disinfectant Wipes ³	333 M	432 M	13,325 M
	Hand Sanitizer – Liquid ²	50 M	10 M	145 M
PPE	N95 Masks	88 M	40 M	181 M
	Nitrile Gloves ¹	2,355 M	1,369 M	4,587 M
	Surgical Masks	835 M	430 M	1,946 M
	Surgical Masks w/ Shield	53 M	15 M	68 M
	Face Shields	93 M	5 M	99 M
	Goggles	2 M	0.34 M	11 M
	Disposable Gowns	331 M	213 M	609 M
	Vinyl PF Gloves ¹	124 M	33 M	202 M

Notes: 1. Gloves are shown as **pairs**. 2. Demand forecasts for disinfectant and hand sanitizer are in liters. 3. Demand for disinfectant wipes is forecasted as number of wipes. 4. Delta between Public Health + Private Health and Entire Economy is the demand by other economic consumption segments.

Public health care sector inventory supply forecast against disease scenarios: N95

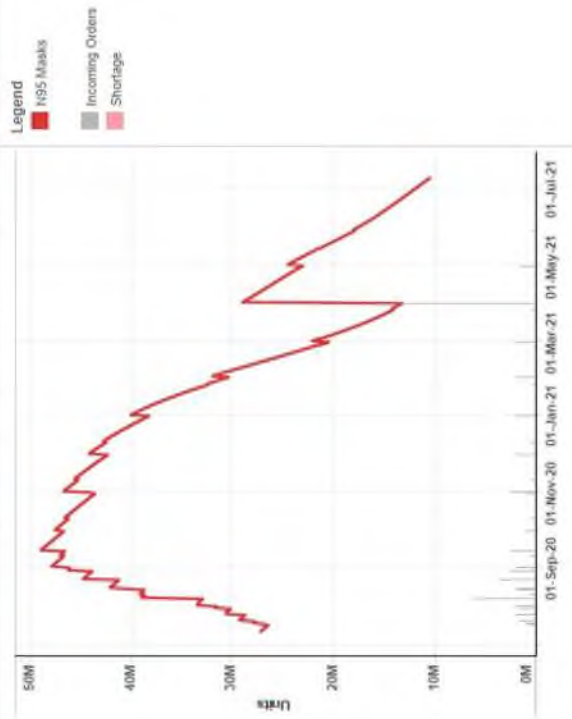
COVID Containment

Projected Inventory Over Time: High Risk Orders Excluded



Resurgence – Best Estimate

Projected Inventory Over Time: High Risk Orders Excluded



- If COVID-19 remains contained, FPT governments have enough incoming supply and inventories of N95s to meet health care sector demand over the next 12 months.
- If a resurgence occurs, stocks of N95 could drop very low, putting the health care sector at risk of experiencing a shortage.

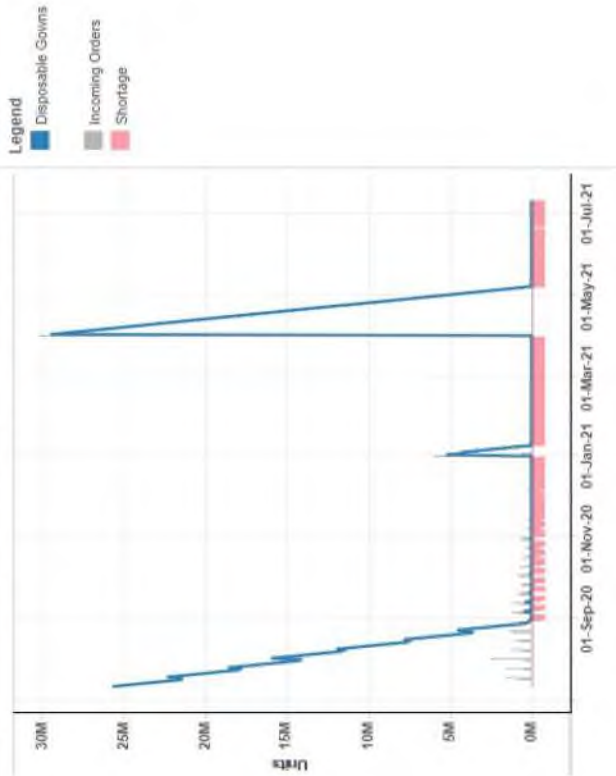
Based on demand in hospitals and public long term care facilities. Supply includes federal and provincial inventories for the health care sector, incoming supply through collaborative bulk procurement, and P/T on order information where provided. Federal orders deemed to be high risk have been excluded.

Public health care sector inventory forecast based on disease scenarios: Gowns

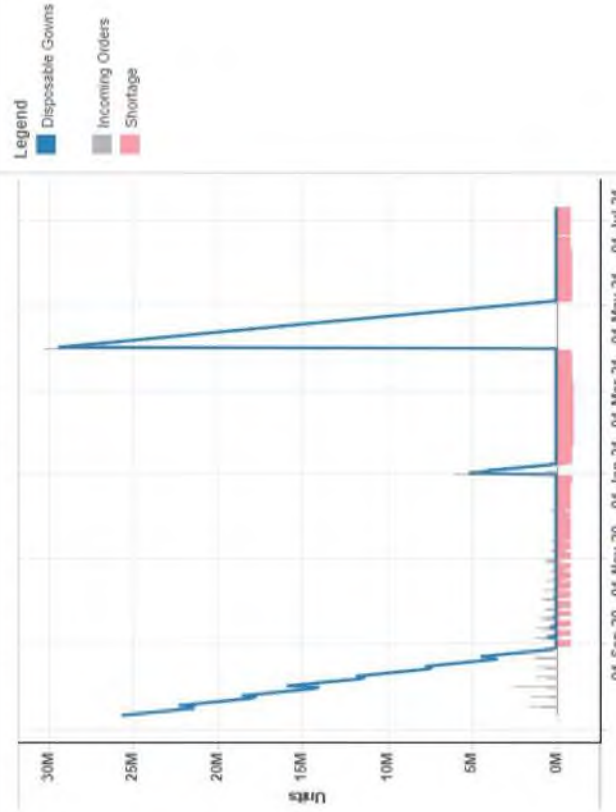
Resurgence – Best Estimate

COVID Containment

Projected Inventory Over Time: High Risk Orders Excluded



Projected Inventory Over Time: High Risk Orders Excluded



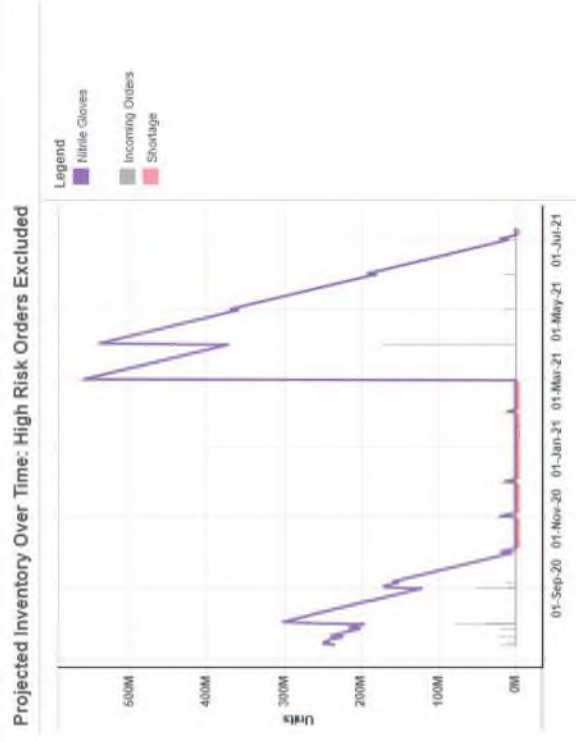
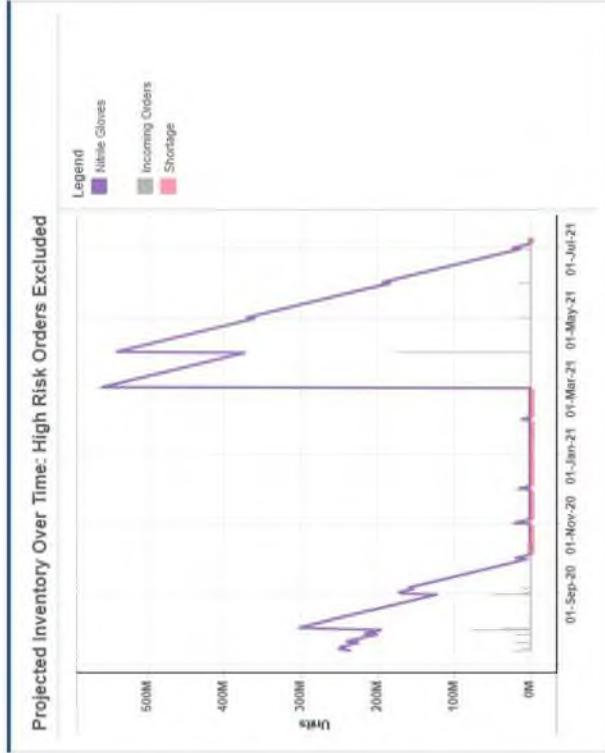
- In both COVID containment and resurgence scenarios, FPT governments' current incoming supply and inventories of gowns are insufficient to meet long term demand, with shortages potentially occurring as early as September. Spikes represent end of fiscal year-dated incoming supply.

Based on demand in hospitals and public long term care facilities. Supply includes federal and provincial inventories for the health care sector, incoming supply through collaborative bulk procurement, and P/T on order information where provided. Federal orders deemed to be high risk have been excluded.

Public health care sector inventory forecast based on disease scenarios: Nitrile Gloves

COVID Containment

Resurgence – Best Estimate








- The stock of nitrile gloves is not very sensitive to changes in the epidemiological scenario given that glove use is prophylactic, regardless of a resurgence.
- Given current delivery schedules for gloves, without additional orders, shortages are expected by November 2020. Spikes represent end of fiscal year-dated incoming supply.

Based on demand in hospitals and public long term care facilities. Supply includes federal and provincial inventories for the health care sector, incoming supply through collaborative bulk procurement, and P/T on order information where provided. Federal orders deemed to be high risk have been excluded.

Accuracy of insights depends on quality of data inputs

- Demand projections**
 - generated through protocol assumptions and epi modeling;
 - continuously validated
- Federal data:**
 - good visibility on federal inventories and anticipated deliveries
- PT Data:**
 - Good collaboration: most PTs already providing some level of PPE data to Health Canada for the health sector on a weekly basis
 - Biggest gaps with line of sight on incoming orders
 - Working with non-health procurement leads in PTs to provide picture and share data on of broader PPE procurement in your jurisdiction
- Private sector data** on usage and supply incoming from Statistics Canada survey

Consumption Segments	Functionality			Data Availability		
	Demand Projection	Inventory Projection	Actual Burn Rates	Inbound Supply Visibility	On-hand Inventory Visibility	
 Federal (Essential and Non-Essential)	█	█	█	█	█	
 P/T Health (Essential and Public)	█	█	█	█	█	Varies by P/T
 P/T Non-Health (Essential or Public)	█	█	█	█	█	
 Private Sector	█	█	█	█	█	
 General Population	█	█	█	█	█	n/a

Legend: Capability/ data exists Capability to be delivered/ data to be integrated

Conclusions and Next Steps

Conclusions

- Pan-Canadian PPE forecasting can:
 - Provide an early warning on products that are likely to be in shortage if there is a resurgence
 - Inform decisions about strategies to invest in domestic manufacturing for certain products
 - Inform public health policy to manage / conserve consumption

Next Steps

- Continue to engage bilaterally with PTs to:
 - Augment P/T data granularity to support more accurate forecasting
 - Share PT-specific projections with jurisdictions as requested
 - Increase linkage with non-health sector PT leads
- Collective discussion on action for key products, informed by model insights

Annexes

Two epidemiological scenarios

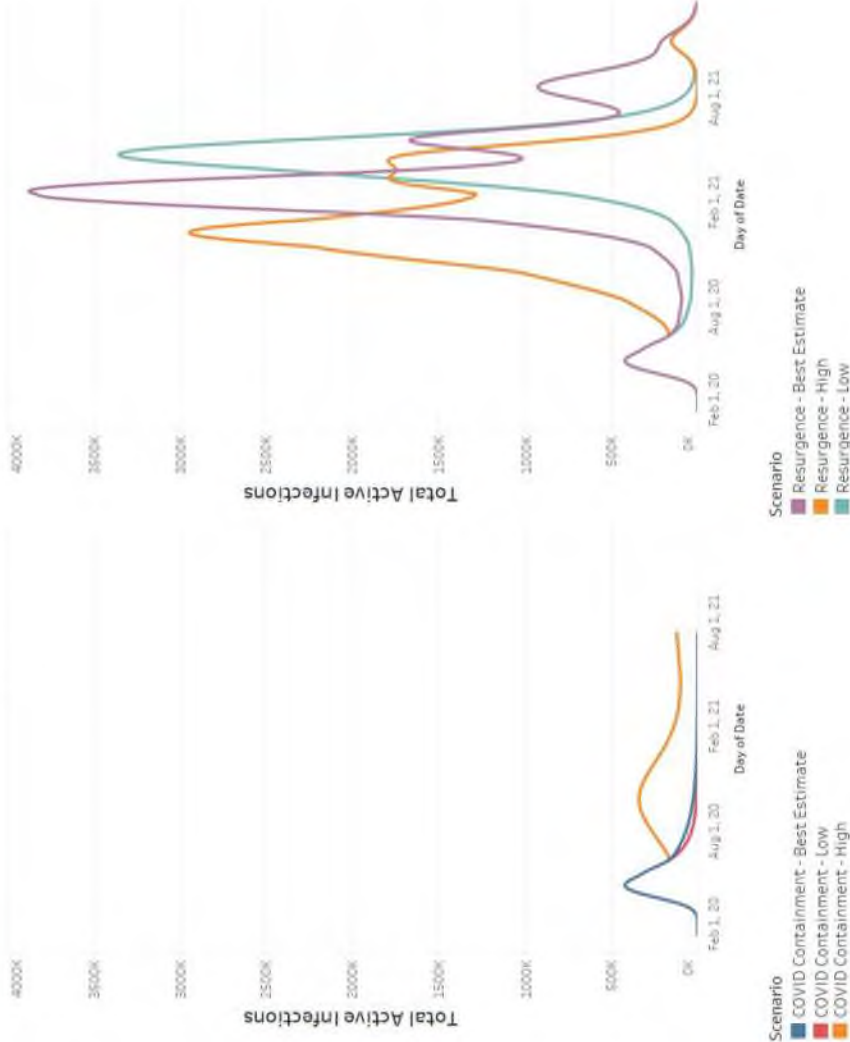
Containment

- Assumes the Rt remains on the same trajectory as current state
- 3 lines represent confidence intervals with best estimate in dark grey
- Given N95 use in health care settings, the model shows in a high scenario that demand for this product would increase

Resurgence

- Linked to P/T economic reopening scenarios, reproduction number R changes over time driven by operating %
- 3 lines represent confidence intervals with best estimate in dark grey

Epidemiological Curves



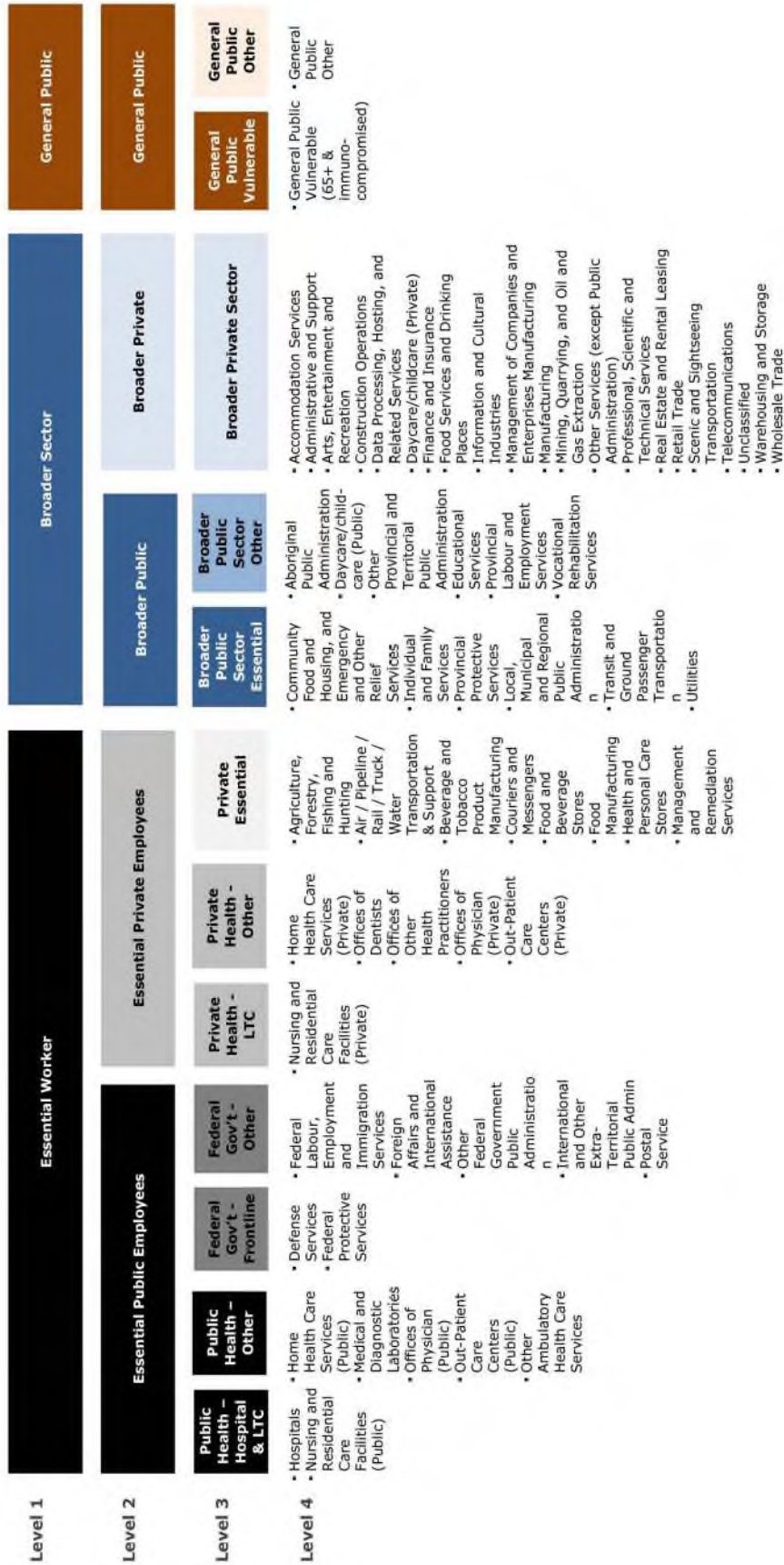
Early results : StatCan private sector survey

- Results from StatCan phone survey of 1,500 companies in the 10 industry sectors that are the highest consumers of PPE now integrated in the model. Broader survey now out in the field with results due back in August.

Insights from initial phone survey (see Annex A)

- **86.2%** of businesses in the 10 targeted industries require PPE in order to operate in accordance with COVID-related guidelines
- Businesses that need essential PPE perceive shortages in the next 3 months of:
 - **Disposable Gowns (39.4%)**
 - **Respirators** (e.g., N95 masks) **(31.1%)**
 - **Disinfectant Wipes (28.7%)**
- However, inventory numbers show that **Nitrile gloves** appear to face the greatest shortage risk over the next quarter
- Overall, businesses anticipate procuring less in August and future months than they did in July, which suggests they are currently stockpiling

Sectors covered in the model



Slide Notes

Slide 10:
Force of infection (near 1 for longer)