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Clearing the Backlog

The Cost to Return Wait Times to Pre-Pandemic Levels

October 2020

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Project Context

The Pandemic Brought Non-Essential Procedures to a Halt in April

As hospital beds began filling up with COVID-19 patients, procedure capacity was limited to life-and-limb surgeries, creating a significant backlog for non-essential surgeries when their procedure volumes plummeted in April.

- As COVID-19 cases began to rise in Canada, it became clear that additional strain would be placed on the healthcare system. In the early days when little was known about the magnitude of the virus's potential impact, all non-essential surgeries were brought to a halt in order to limit the spread of the virus and ensure hospitals had the capacity to respond if there was a surge in patients falling ill from COVID-19.
- In particular, procedures such as joint replacements, sight restoration, less essential heart surgeries, and diagnostic imaging faced significant delays, causing a sizable backlog of these procedures and a significant increase in wait times.
- As healthcare practitioners adjusted to the pandemic, non-essential procedures have begun to resume. However, there is now a sizeable backlog of procedures to clear, placing greater pressures on a system which is already strained.
- Although these procedures are deemed as non-essential compared to its life-and-limb counterparts that are critical to survival, these procedures have a considerable impact on an individual’s quality of life.

Moving forward policy makers will have to find ways to increase the procedural capacity

if they are to clear the backlog and bring wait times back to pre-pandemic levels

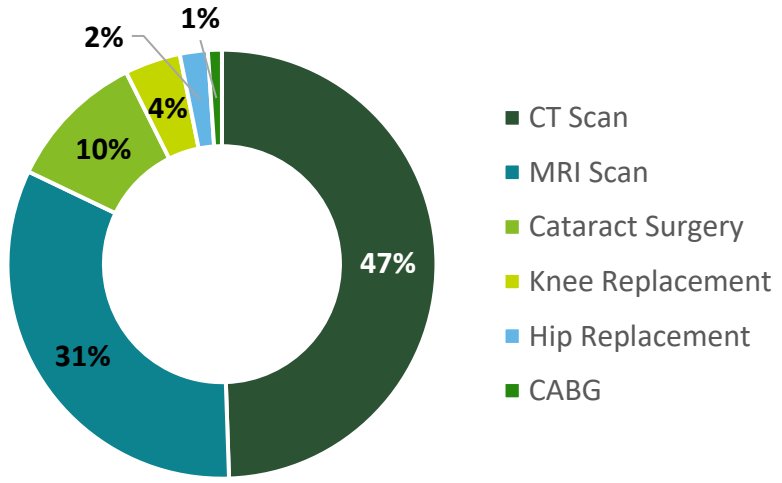
Project Objectives

As hospitals resources shifted in the spring of 2020 towards preparing for COVID-19, many procedures were cancelled to ensure adequate hospital capacity. In this research, we look specifically at six procedures to see how they were impacted by COVID-19 and what it will take to return their wait times back to pre-pandemic levels. [1]

Selected Procedures

- Coronary Artery Bypass Graft (CABG)
- Cataract Surgery
- Hip Replacement
- Knee Replacement
- MRI Scan
- CT Scan

Relative size of Selected Procedures[2]
Canada 2019, Canadian Institute of Health Information



1. Based on Ontario data, these six procedures represent about 78 per cent of the volume measured across 171 surgical and diagnostic procedures. The four surgical procedures represent about 28 per cent of the 167 surgical procedures.
2. Based on the list of priority procedures defined by the Canadian Federal Government's "10-Year Plan to Strengthen Health Care" in 2004 that established strategic investments to reduce wait times of these procedures.

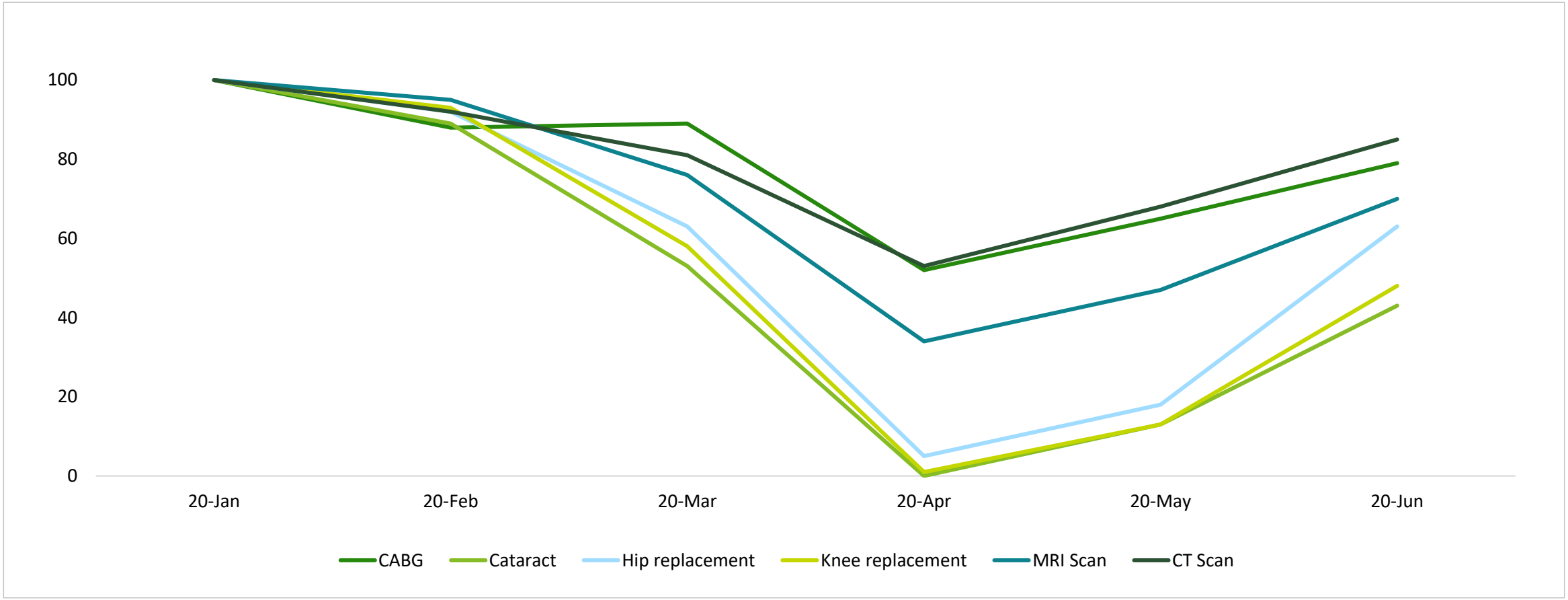
Impact of COVID-19

What Happened to Procedure Volumes When COVID-19 Hit

Impact of COVID-19 – Priority Procedures Canada Wide

Our analysis of the data shows that there was a considerable decline in volumes across all studied procedures, with cataract and knee replacement procedures dropping the most. A gradual restoration of capacity is underway, but considerable differences remain across procedure types.

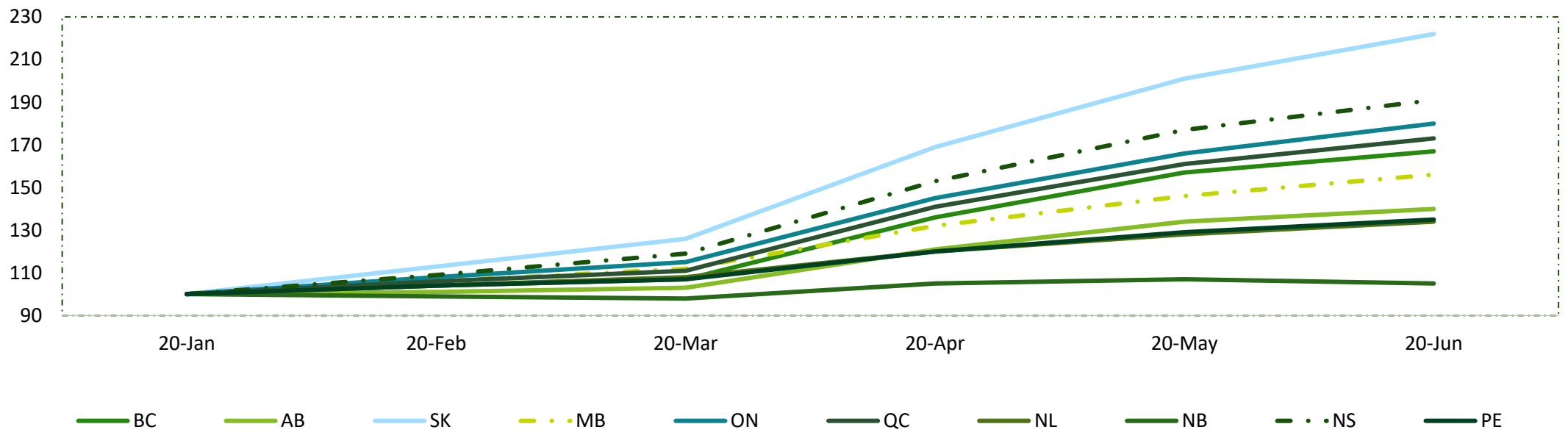
Decline in Procedure Volumes by Type (Index, Jan 2020 = 100)



Impact of COVID-19 – CABG Outstanding Procedures

- The volume declines in CABGs were not as severe as those in other procedures. Nevertheless, with a sharp decline in the number of procedures performed, the increases in outstanding procedures started ballooning in April in almost all provinces.
- Saskatchewan experienced the largest impact as their outstanding procedures more than doubled between January and June.
- New Brunswick, on the other hand, was able to manage their outstanding procedures, only seeing a 5% increase in June relative to January.

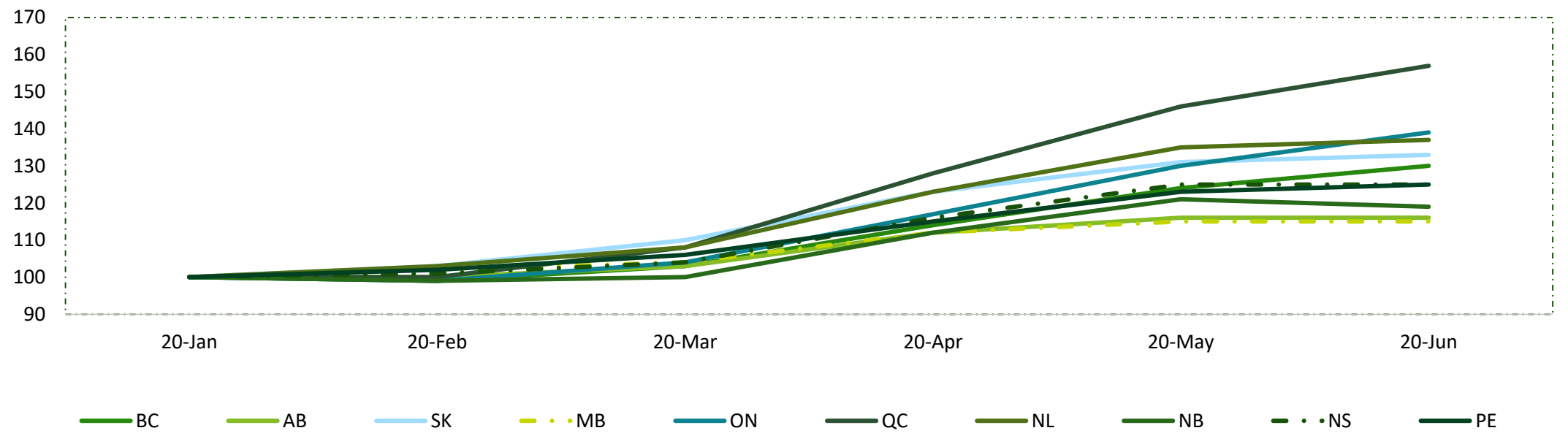
Increase in Outstanding CABG Procedure Volumes by Province (Index, Jan 2020 = 100)



Impact of COVID-19 – Cataracts Outstanding Procedures

- Almost no cataract procedures were performed across the country in April, as seen by the rising levels of outstanding procedures in May.
- As of June, the rise in outstanding procedures slowed, with the exception of Ontario and Quebec where outstanding procedures continued to rise, increasing by a further 7% and 11%, respectively, since May.
- Manitoba had the smallest increase in outstanding procedures over the first six months of the year. However the number of outstanding procedures in June was still up 15% from January.

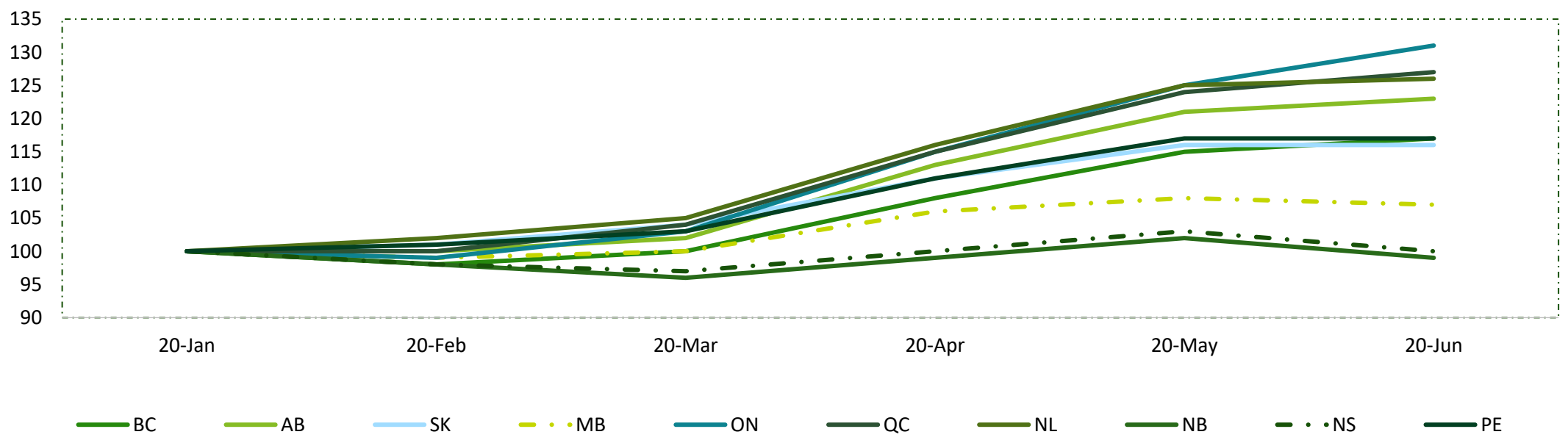
Increase in Cataract Outstanding Procedure Volumes by Province (Index, Jan 2020 = 100)



Impact of COVID-19 – Hip Replacements Outstanding Procedures

- Some provinces were able to continue performing hip replacements throughout the pandemic while other provinces saw the number of hip replacements fall close to zero in April.
- Hip replacement surgeries have been moving closer to pre-pandemic levels but there is significant variation across provinces. Indeed, Nova Scotia and New Brunswick were able to return outstanding procedures to normal levels by June.
- The return to normal is slowest in Ontario where outstanding procedures kept rising in June, for a total increase of 31% since January.

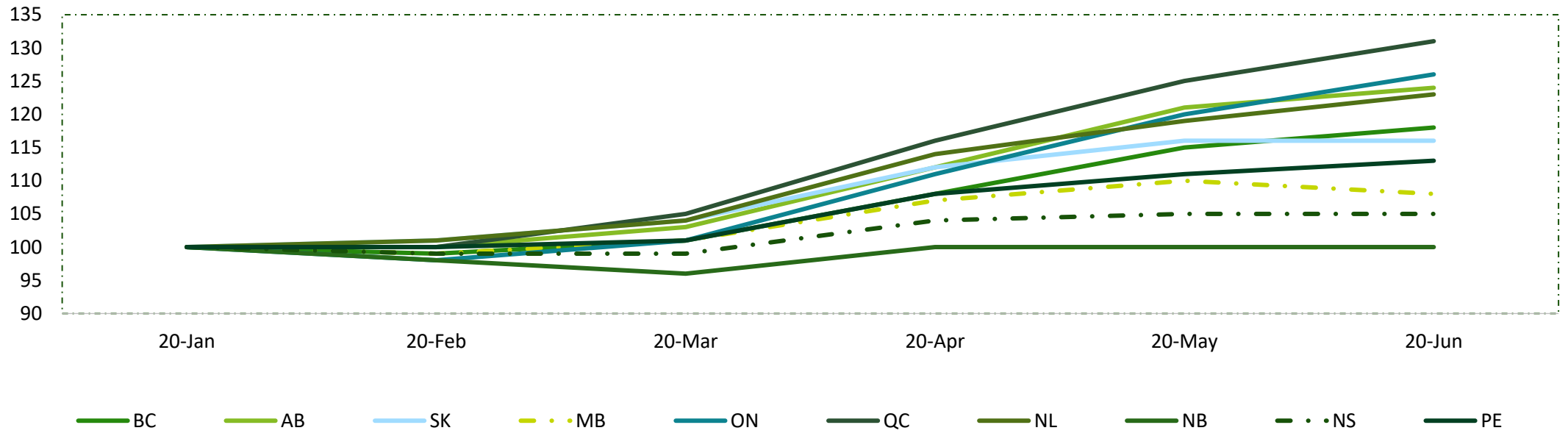
Increase in Outstanding Hip Replacement Procedure Volumes by Province (Index, Jan 2020 = 100)



Impact of COVID-19 – Knee Replacements Outstanding Procedures

- Across all provinces, the volume of knee replacement procedures fell to essentially zero in April.
- Since May, the rise in the number of outstanding procedures has leveled off in Saskatchewan, Nova Scotia and New Brunswick, and declined in Manitoba.
- As of June, outstanding procedures in Quebec were up the most compared to their January levels.

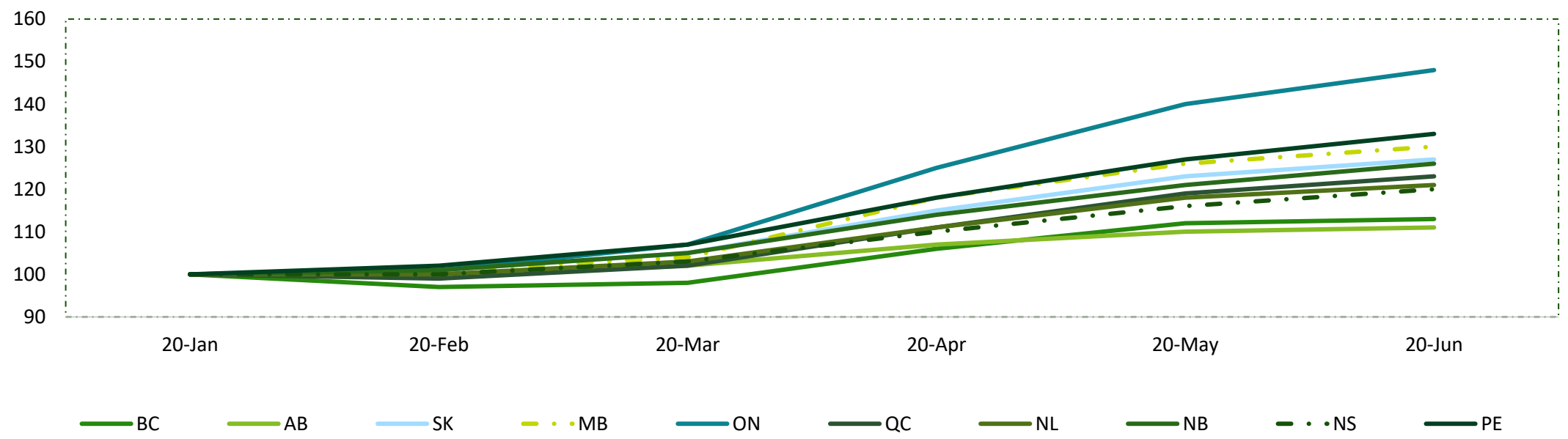
Increase in Outstanding Knee Replacement Procedure Volumes by Province (Index, Jan 2020 = 100)



Impact of COVID-19 – MRI Scans Outstanding Procedures

- Diagnostic procedure volumes fared better than surgical volumes during the beginning of the COVID-19 restrictions. However between the two main diagnostic procedures, MRI scan volumes experienced slightly larger declines during April.
- Most provinces experienced a similar level of decline in outstanding procedures in April, except for Ontario which experienced the largest rise.
- As of May, British Columbia and Alberta were able to stabilize outstanding procedures. Ontario has the most ground left to recover.

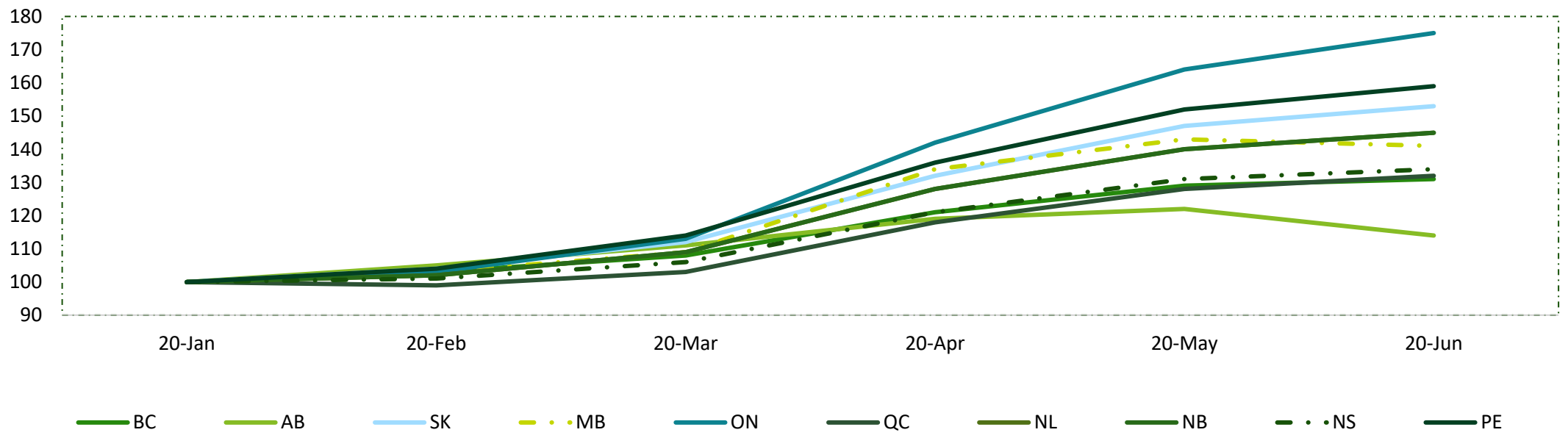
Increase in Outstanding MRI Scan Procedure Volumes by Province (Index, Jan 2020 = 100)



Impact of COVID-19 – CT Scans Outstanding Procedures

- Nationally, CT scan volumes fared well compared to other procedures in our study. However there is large variation among the provinces.
- As of June, eight provinces continued to see increases in outstanding procedures, with Ontario experiencing a 75% increase since January.
- Alberta fared the best, as seen by a drop in outstanding procedures of 8% from May to June, putting them 14% above January levels. Manitoba also showed the first signs of recovery in June, with outstanding procedures declining 1% over May.

Increase in Outstanding CT Scan Procedure Volumes by Province (Index, Jan 2020 = 100)



Methodology

Estimating the cost of clearing the backlog

Methodology – Main Assumptions

To estimate a range of costs necessary for returning to pre-COVID wait times for our studied procedures, we made several assumptions.

- This analysis considers the amount of backlogged procedures caused by COVID-19 and the amount of daily procedures required to **return to pre-pandemic wait times in one year**.
- Estimates were considered at the procedural and provincial level for six key procedures. The cost estimates for Canada are based on an aggregation of the provincial estimates for each procedure.
- Cost estimates were based on per-patient procedure costs for each province provided by the Canadian Institute for Health Information (CIHI) for surgical procedures. Diagnostic procedure costs were based on Canadian average per-patient costs from Canada Diagnostic.
- The estimates *do not* take into account:
  - Additional costs associated with acquiring additional PPE, additional cleaning measures, or any new policy guidelines that would further reduce capacity going forward. As such, the estimates presented in this document would likely be higher if these additional costs were included.
  - The feasibility of increasing the number of daily procedures over the next year to return to normal wait times.
- All of the estimated costs in this report are the costs associated with returning to the pre-COVID wait times for the selected procedures within a one-year period.

Methodology – Reduced Operating Capacity Assumptions

Given the devastation that COVID-19 has brought on hospitals, we make the additional assumption that hospitals are operating as reduced capacity and cannot perform as many procedures as they could in previous years.

Description

- While many hoped hospitals would be able to quickly return to normal levels of procedures, a common concern reported in our interviews was that the number of procedures is likely to remain below normal levels over the next year. The recent uptick in cases and public health guidelines to slow the spread of the virus may be limiting capacity to perform procedures.
- Such policy implementations may include increased cleaning of CT and MRI machines, adding time to each procedure, restrictions to the number of patients allowed in waiting rooms delaying the speed at which they can be processed, requirements to maintain physical distancing in recovery rooms, which could reduce capacity at some institutions or an increased acuity of cases due to delayed treatment which increases the time required with each patient.
- If less procedures are able to be performed per day with the current resourcing, it will require additional funding to return the wait times back to normal levels.

Assumptions

- We assume that hospitals will not be able to operate at historical levels of capacity.
- To simulate this, we reduce the status-quo number of procedures able to be performed pre-COVID by ten per cent, meaning hospitals are now operating at 90 per cent capacity for the selected procedures.
- This is a conservative assumption in light of interviews with medical experts who said some of the worst-affected hospitals were operating at 75 per cent capacity.

Methodology

Determining the additional costs resulting from COVID-19 relies on estimating the backlog of the selected procedures in each province. Below, we outline our approach

Step 1: Estimate the Volumes of Procedures

- To estimate the backlog in the selected procedures, we first estimated the number of procedures that were performed during the pandemic, and how many would have been performed in the absence of COVID-19.
- For the number of procedures performed during COVID-19, we used provincial health authorities reported volumes of procedures, where available.
- To estimate the number of procedures that would have occurred in absence of COVID-19, we looked at historical patterns using provincial data, where available and applied them to the CIHI procedure data.
- For provinces with missing data, we estimated the drop in procedures using the available data in other provinces.

Step 2: Estimate the Backlogged Procedures

- To estimate the number of outstanding procedures we combined the estimates of the volume of procedures with historical wait time data from CIHI.
- Using the estimates of the historical outstanding procedures, we estimated the number of new patients added to the wait list each month.
- To project the outstanding amount of procedures into the future, we combined the historical estimates with the estimates for new patients, less the estimates of the procedures performed that month. This exercise was performed twice, to account for the procedures complete during COVID, and in the absence of COVID.
- Finally, to estimate the backlog, we take the difference between the outstanding number of patients in the absence of COVID and the outstanding number of patients during COVID.

Step 3: Estimate the Additional Required Volume of Procedures

- In this step we estimate the number of daily procedures required to return to pre-COVID wait times in a one-year period starting from August 2020.
- This is done by using the outstanding number of procedures as a starting point and then calibrating the number of daily procedures until the wait times equal the pre-COVID levels.
- To come up with an estimate for current capacity we looked at the benchmark number of procedures that were performed historically. To simulate reduced capacity, we decrease this benchmark capacity by 10 per cent.
- To estimate the additional amount of procedures, we took the difference between the new procedure amounts and the reduced amount of daily procedures.

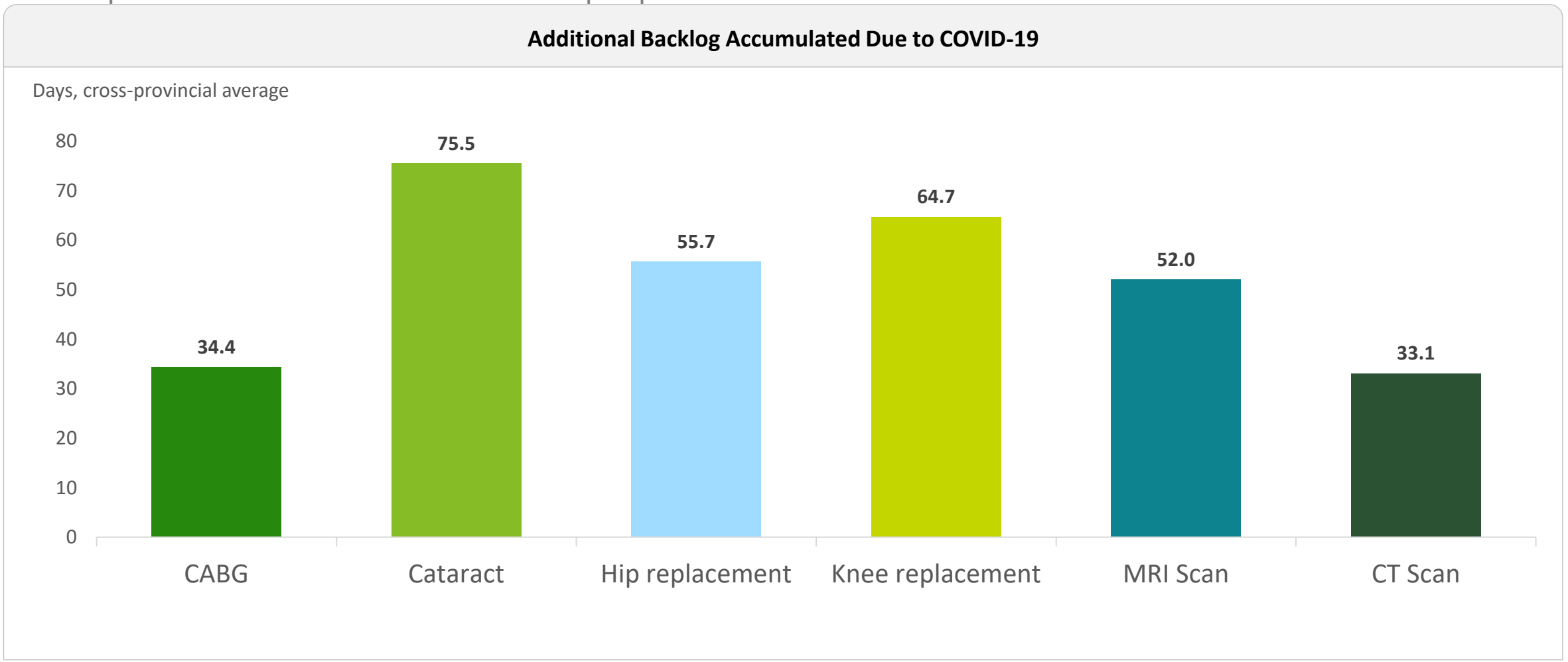
Step 4: Calculate the Cost of the Backlogged Procedures

- To calculate the cost of the backlogged procedures, we apply cost per patient data to the additional amount of daily procedures estimated in Step 3 to get benchmark costs and then adapt it to the reduced amount of daily procedures to determine a markup for the reduced capacity scenario.
- To calculate the per cent change in the additional costs, we compared the annual costs of the additional procedures to the annual costs associated with the historical benchmark level of procedures.
- The cost data from the Canadian Institute of Health Information (CIHI) includes the average cost per patient across all age categories for each procedure and province in 2018. The data was adjusted into 2019 dollars using the CPI.
- Canadian estimates are aggregates of the provincial data.

Results

Results - Additional Days Required to Clear the Backlog

The chart below summarizes the cross-provincial average additional backlog in days for each of the selected procedures. This represents the number of days lost to perform procedures during the spring due to COVID-19 that will need to be made up for in order to return wait times to pre-pandemic levels.



Results - Additional Funding Requirements by Procedure

Across all procedures, additional funding is required to return wait times to their pre-pandemic levels by August 2021.

- In our reduced capacity scenario, we estimate that an additional **$1.3 billion** in funding is required to meet the pent-up demand that accrued during the spring, combined with the lessened ability to treat patients.
- Given that our study only assesses six procedures, these estimate could be even higher if constraints caused by limited hospital capacity, limited machinery, and other COVID-19 policy costs were included in this exercise.
- The procedures that have the highest funding requirements are Cataract surgeries, MRI scans and CT scans.
    - This result is not surprising given the MRI and CT scans make up 78% of all procedures.
    - Cataract surgeries are the third most common procedure and volumes went to zero in April and have been the slowest to return to pre-COVID capacity, thus resulting in the largest backlog.

Additional Funding to Clear Backlog for Selected Procedures ($C Mil.)

	2019 Benchmark Cost Estimates	COVID-Induced Costs Estimates	Additional Funding Required
CABG	$592.0	$695.3	**$103.3**
Cataract	$1,887.4	$2,244.8	**$357.4**
Hip replacement	$355.6	$433.0	**$77.4**
Knee replacement	$523.2	$624.4	**$101.2**
MRI Scan	$1,600.1	$1,917.3	**$317.3**
CT Scan	$2,285.5	$2,662.5	**$377.0**
Totals	$7,243.8	$8,577.4	**$1,333.6**

Results - Additional Funding Required by Provinces

Funding requirements by province are driven by many different factors. On balance, the additional funding requirements are driven by population size and therefore, demand for health care.

- There are a number of factors that are driving funding requirements across the provinces.
  - The first is how big the accumulated backlog is in each province – provinces with bigger backlogs need to perform relatively more procedures to close the gap.
  - The second is how many procedures provinces are able to perform. Some provinces are able to perform more of certain procedures in relative terms, therefore the marginal cost of adding an additional procedure varies across provinces.
  - The cost of performing surgical procedure varies across provinces (diagnostic imaging was assumed to be the same across provinces).
- Given population sizes, it is not surprising that the additional funding requirements are highest in dollar-terms in Ontario and lowest in PEI.
- However, in relative terms, PEI requires the largest percentage increase in funding while Manitoba and New Brunswick require the smallest relative increase in funding, given their capacity capabilities.

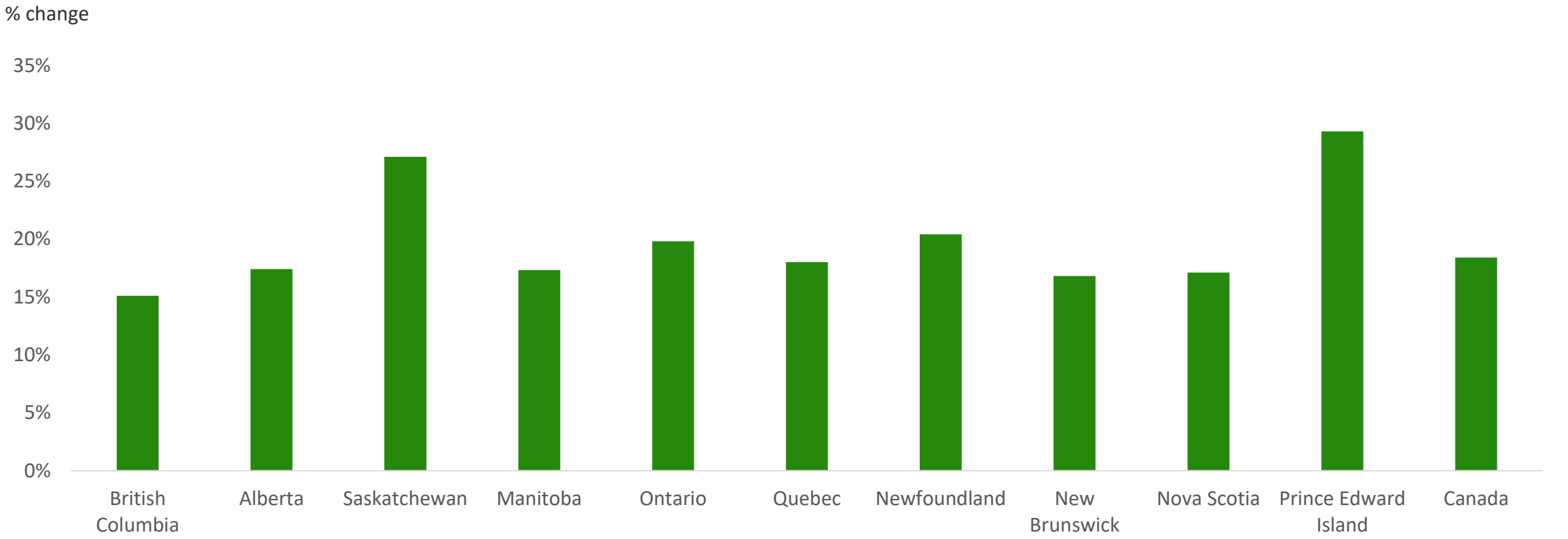
Additional Funding to Clear Backlog for Selected Procedures ($C Mil.)

	2019 Benchmark Cost Estimates	COVID-Induced Costs Estimates	Additional Funding Required
British Columbia	$1000.3	$1,151.4	**$151.0**
Alberta	$655.8	$769.7	**$113.8**
Saskatchewan	$172.7	$219.6	**$46.8**
Manitoba	$392.1	$460.1	**$68.0**
Ontario	$2669.3	$3,197.0	**$527.7**
Quebec	$1808.7	$2,134.4	**$325.7**
Newfoundland and Labrador	$136.2	$164.1	**$27.8**
New Brunswick	$204.8	$239.2	**$34.3**
Nova Scotia	$177.1	$207.5	**$30.3**
Prince Edward Island	$26.29	$34.0	**$7.7**
Total	$7243.7	$8577.3	**$1333.6**

Results - Additional Funding Required (selected Procedures)

All provinces will require at least 15 per cent more funding over baseline costs to return all six of the studied procedures back to regular wait times a year from now. Difference across provinces stems from the available capacity each province has and the variation in the costs of performing a particular procedure in that province.

Additional Funding to Clear Backlog – All Selected Procedures



Results - Summary

When it became clear in early spring that COVID-19 posed a public health threat, health authorities worked to free up hospital capacity. The resulting impact of this is that many procedures classified as non-essential were cancelled. Those cancellations led to a significant backlog of demand and, in this study, we quantified how much it would cost to eliminate that accrued backlog in one year given reduced operating capacity.

- Our study determined that eliminating the backlog for the six procedures studied within one year requires **at least $1.3 billion of additional funding** . Given that our analysis only considers six procedures, this number would likely be even higher when taking into account the other procedures that were not included.
- At the peak of capacity restrictions in April, the procedures in this study were operating at a low of 0% (cataract surgeries) to a high of 53% (CT scans) compared to their January volumes.
- The reduction in capacity, that spanned all procedures and lasted months, resulted in a significant backlog of patients awaiting treatment.
- Under the assumption used in this analysis, an additional 307,498 procedures need to be performed over a 12-month period to clear the backlog. This is a 6.1% increase compared to what we would have expected to be performed over the course of a year.
- Across procedures, MRI and CT scans require the largest additional funding, not surprising given that they make up nearly 80% of all procedures performed as these diagnostic procedures are often a precursor to many other procedures.
- All provinces will need significant funding to clear the total backlog. By province, the funding needs are greatest in Ontario and Quebec, given their larger populations. On a proportionate basis however, the funding needs are highest in Prince Edward Island given their capacity constraints.

Appendix

Sensitivity Analysis

We adapted the methodology to consider additional scenarios given the complexity of estimating procedure backlogs.

Unchanged Capacity Scenario

Description

- The methodology assumes that hospitals are only able to perform 90 per cent of procedures as they could in recent years. However, in this unchanged capacity scenario, hospitals are unaffected by new COVID policy measures and able to quickly return to the historical benchmark level of procedures.
- Given that the historical capacity volumes are higher than the reduced capacity scenario, more procedures are able to be performed per day with the current resourcing. Hence this scenario will require less additional funding to return the wait times back to normal levels.

Assumptions

- We still assume that wait times for the selected procedures return to normal levels in one year.
- In this scenario, we return the status-quo number of procedures able to be performed pre-COVID to their historical levels, meaning hospitals are now operating at their benchmark capacity for the selected procedures.

Reduced Waitlist Scenario

Description

- A key assumption in our methodology is that all the people who are currently on the wait list for the selected procedures, continue to seek treatment until they have completed the procedure.
- However, people who are currently seeking treatment may opt to drop off the wait list. From our consultations, we heard that some patients are seeking pharmaceutical alternatives to surgeries while other patients are opting to delay non-essential surgeries due to concerns around hospital capacity and safety.
- If patients choose to exit the wait list, the number of backlogged procedures will decline relative to the baseline and fewer additional procedures will need to be performed to return to normal wait times.

Assumptions

- As with the other scenarios, we continue to have the selected procedures return to normal wait times levels within a year.
- To implement this scenario, we adapt the methodology in Step 2 to reduce the number of outstanding procedures by five per cent, and have hospitals operating at historical capacity levels.
- This simulates five per cent of patients dropping off the wait list due to COVID-19 related concerns. This five-per cent drop is a conservative estimate based on the information we gathered from medical experts during the consultation process.

Results – Additional Procedures Across Scenarios

Different amounts of additional procedures to close the backlog across the three scenarios.

Reduced Waitlist Scenario

- In this scenario, **226,366 additional procedures** will need to be performed to clear the back-log that accumulated during the pandemic.
- This is lower than the other scenarios as patients are assumed to come off the waitlist either due to alternative treatments or reluctance to have the procedure while the virus is circulating.

Unchanged Capacity Scenario

- In this scenario, an **additional 307,489 procedures** need to be performed to reduce the wait times to pre-pandemic levels.
- This scenario assumes hospital are able to perform the same number of procedures as they could historically

Reduced Capacity Scenario

- The **number of procedures to clear the backlog is the same** as in the unchanged operating capacity scenario.
- Public health guidelines and/or increased acuity of patients result in **each patient taking longer to treat**, reducing the number of patients that can be treated per day. This increases the number of days required to clear the backlog.

Results - Additional Funding Requirements by Procedure

In all scenarios, additional funding is required to return wait times to their pre-pandemic levels by August 2021.

- In the unchanged capacity scenario, we estimate that an additional $475.8 million in funding is required to meet the pent-up demand that accrued during the spring.
- If 5% of patients are removed from the wait lists, the total additional funding requirements drop to $345 million.
- On the high end, if these procedures are only able to be performed at 90% of their historical capacity, the cost of clearing the backlog balloons to $1.3 billion.
- Our analysis suggests that capacity constraints to hospitals (e.g., not enough operating rooms, longer operating times, not enough medical machinery, etc.) has the most significant impact on funding requirements.

Additional Funding to Clear Backlog for Selected Procedures ($C Mil.)

	Reduced Waitlist	Unchanged Capacity	Reduced Capacity
CABG	$27.5	$33.8	$103.3
Cataract	$91.3	$133.0	$357.4
Hip replacement	$25.1	$34.1	$77.4
Knee replacement	$25.6	$38.7	$101.2
MRI Scan	$92.5	$125.5	$317.3
CT Scan	$83.1	$110.8	$377.0
Total Additional Funding for Selected Procedures	**$345.0**	**$475.8**	**$1,333.6**

Results - Additional Funding Required (selected Procedures)

All provinces will require at least 2-14% more funding (the low scenario) to return all six of the studied procedures back to regular wait times a year from now. This translates into between $345 million and $1.3 billion in additional funding requirements . Saskatchewan and PEI need the most additional funding in relative terms.

Additional Funding to Clear Backlog – All Selected Procedures

Results - Additional Funding Required by Provinces

Across the scenarios, all provinces see a significant increase in funding requirements as more outstanding procedures are accumulated, with the Reduced Waitlist having the least amount of additional procedures and the Reduced Capacity having the most.

Additional Funding to Clear Backlog for Selected Procedures ($C Mil.)

	Reduced Waitlist	Unchanged Capacity	Reduced Capacity
British Columbia	$14.4	$36.0	$151.1
Alberta	$26.1	$36.9	$113.9
Saskatchewan	$20.8	$24.9	$46.9
Manitoba	$13.6	$22.0	$68.0
Ontario	$162.1	$208.0	$527.7
Quebec	$82.5	$112.3	$325.7
Newfoundland and Labrador	$8.5	$11.4	$27.9
New Brunswick	$7.1	$10.4	$34.3
Nova Scotia	$6.3	$9.6	$30.3
Prince Edward Island	$3.7	$4.3	$7.7
Total	$345.0	$475.8	$1,333.6

Funding Estimates – Coronary Artery Bypass Graft (CABG)

The table below presents funding estimates of **CABG** returning to pre-COVID wait times in one year.

Summary of Total Additional Funding to Eliminate Backlogged Procedures

Scenario		Reduced Waitlist			Unchanged Capacity			Reduced Capacity		
	2019 Benchmark Cost Estimates ($C. Mil.)	Costs Including Additional Procedures ($C. Mil.)	Funding Required		Costs Including Additional Procedures ($C. Mil.)	Funding Required		Costs Including Additional Procedures ($C. Mil.)	Funding Required	
			Dollars ($C.mil)	Percent Increase		Dollars ($C.mil)	Percent Increase		Dollars ($C.mil)	Percent Increase
British Columbia	$69.98	$70.41	$0.43	0.62%	$71.10	$1.13	1.61%	$79.00	$9.03	12.90%
Alberta	$42.09	$43.23	$1.14	2.72%	$43.58	$1.49	3.54%	$48.42	$6.33	15.05%
Saskatchewan	$16.95	$18.91	$1.96	11.55%	$19.17	$2.23	13.13%	$21.30	$4.36	25.70%
Manitoba	$15.43	$18.55	$3.12	20.19%	$18.82	$3.39	21.96%	$20.91	$5.48	35.51%
Ontario	$194.10	$206.90	$12.80	6.60%	$208.79	$14.69	7.57%	$231.99	$37.89	19.52%
Quebec	$211.47	$216.26	$4.79	2.26%	$218.46	$6.99	3.31%	$242.74	$31.27	14.78%
Newfoundland	$14.64	$17.12	$2.48	16.92%	$17.48	$2.83	19.36%	$19.42	$4.78	32.62%
New Brunswick	$14.17	$14.25	$0.07	0.50%	$14.34	$0.17	1.19%	$15.94	$1.76	12.44%
Nova Scotia	$10.40	$10.98	$0.58	5.57%	$11.12	$0.72	6.91%	$12.35	$1.95	18.79%
Prince Edward Island	$2.78	$2.88	$0.10	3.74%	$2.93	$0.15	5.48%	$3.26	$0.48	17.20%
Canada	**$592.01**	**$619.48**	**$27.47**	**4.64%**	**$625.80**	**$33.79**	**5.71%**	**$695.34**	**$103.33**	**17.45%**

Funding Estimates – Cataract

The table below presents funding estimates of **cataract** surgery returning to pre-COVID wait times in one year.

Summary of Total Additional Funding to Eliminate Backlogged Procedures

Scenario		Reduced Waitlist			Unchanged Capacity			Reduced Capacity		
	2019 Benchmark Cost Estimates ($C Mil.)	Costs Including Additional Procedures ($C Mil.)	Funding Required		Costs Including Additional Procedures ($C Mil.)	Funding Required		Costs Including Additional Procedures ($C Mil.)	Funding Required	
			Dollars ($C Mil.)	Percent Increase		Dollars ($C Mil.)	Percent Increase		Dollars ($C Mil.)	Percent Increase
British Columbia	$345.21	$347.93	$2.72	0.79%	$357.06	$11.85	3.43%	$396.73	$51.52	14.92%
Alberta	$174.40	$185.36	$10.96	6.29%	$189.35	$14.96	8.58%	$210.39	$35.99	20.64%
Saskatchewan	$49.63	$56.55	$6.92	13.95%	$57.75	$8.12	16.37%	$64.17	$14.54	29.30%
Manitoba	$70.18	$77.24	$7.06	10.06%	$79.18	$9.01	12.83%	$87.98	$17.80	25.37%
Ontario	$658.55	$669.98	$11.43	1.74%	$683.21	$24.66	3.74%	$759.12	$100.57	15.27%
Quebec	$457.79	$501.19	$43.40	9.48%	$510.91	$53.12	11.60%	$567.68	$109.89	24.00%
Newfoundland	$14.79	$17.75	$2.96	20.02%	$18.14	$3.35	22.64%	$20.15	$5.36	36.27%
New Brunswick	$64.45	$65.11	$0.66	1.02%	$65.90	$1.46	2.26%	$73.23	$8.78	13.62%
Nova Scotia	$46.26	$49.17	$2.91	6.29%	$50.22	$3.96	8.56%	$55.80	$9.54	20.62%
Prince Edward Island	$6.11	$8.36	$2.26	36.92%	$8.60	$2.49	40.72%	$9.55	$3.44	56.35%
Canada	**$1,887.36**	**$1,978.64**	**$91.28**	**4.84%**	**$2,020.33**	**$132.96**	**7.04%**	**$2,244.81**	**$357.44**	**18.94%**

Funding Estimates – Hip Replacement

The table below presents funding estimates of **hip replacement** surgery returning to pre-COVID wait times in one year.

Summary of Total Additional Funding to Eliminate Backlogged Procedures

Scenario		Reduced Waitlist			Unchanged Capacity			Reduced Capacity		
	2019 Benchmark Cost Estimates ($C Mil.)	Costs Including Additional Procedures ($C Mil.)	Funding Required		Costs Including Additional Procedures ($C Mil.)	Funding Required		Costs Including Additional Procedures ($C Mil.)	Funding Required	
			Dollars ($C Mil.)	Percent Increase		Dollars ($C Mil.)	Percent Increase		Dollars ($C Mil.)	Percent Increase
British Columbia	$61.34	$61.66	$0.32	0.52%	$63.44	$2.10	3.43%	$70.49	$9.15	14.92%
Alberta	$46.00	$51.87	$5.87	12.76%	$53.00	$7.00	15.23%	$58.89	$12.89	28.03%
Saskatchewan	$15.21	$18.76	$3.56	23.39%	$19.27	$4.06	26.69%	$21.41	$6.20	40.77%
Manitoba	$13.39	$14.40	$1.00	7.50%	$14.76	$1.37	10.20%	$16.40	$3.01	22.45%
Ontario	$132.55	$140.04	$7.48	5.65%	$142.83	$10.27	7.75%	$158.70	$26.14	19.72%
Quebec	$57.80	$63.90	$6.10	10.56%	$65.55	$7.75	13.42%	$72.83	$15.04	26.02%
Newfoundland	$4.88	$5.26	$0.39	7.98%	$5.41	$0.53	10.90%	$6.01	$1.13	23.23%
New Brunswick	$11.69	$11.77	$0.08	0.65%	$12.07	$0.38	3.23%	$13.41	$1.72	14.70%
Nova Scotia	$11.09	$11.16	$0.08	0.71%	$11.39	$0.30	2.74%	$12.66	$1.57	14.16%
Prince Edward Island	$1.69	$1.94	$0.25	14.71%	$1.99	$0.30	17.91%	$2.21	$0.52	31.01%
Canada	**$355.62**	**$380.75**	**$25.12**	**7.06%**	**$389.70**	**$34.08**	**9.58%**	**$433.00**	**$77.38**	**21.76%**

Funding Estimates – Knee Replacement

The table below presents funding estimates of **knee replacement** surgery returning to pre-COVID wait times in one year.

Summary of Total Additional Funding to Eliminate Backlogged Procedures

Scenario		Reduced Waitlist			Unchanged Capacity			Reduced Capacity		
	2019 Benchmark Cost Estimates ($C Mil.)	Costs Including Additional Procedures ($C Mil.)	Funding Required		Costs Including Additional Procedures ($C Mil.)	Funding Required		Costs Including Additional Procedures ($C Mil.)	Funding Required	
			Dollars ($C Mil.)	Percent Increase		Dollars ($C Mil.)	Percent Increase		Dollars ($C Mil.)	Percent Increase
British Columbia	$84.38	$84.90	$0.51	0.61%	$87.07	$2.69	3.19%	$96.75	$12.37	14.65%
Alberta	$62.05	$68.37	$6.32	10.19%	$70.05	$8.00	12.89%	$77.83	$15.78	25.43%
Saskatchewan	$23.07	$27.97	$4.90	21.26%	$28.89	$5.82	25.21%	$32.10	$9.03	39.13%
Manitoba	$18.95	$19.73	$0.78	4.12%	$20.23	$1.29	6.79%	$22.48	$3.53	18.65%
Ontario	$213.42	$218.11	$4.68	2.19%	$222.72	$9.30	4.36%	$247.47	$34.04	15.95%
Quebec	$76.92	$84.28	$7.35	9.56%	$86.53	$9.60	12.48%	$96.14	$19.22	24.98%
Newfoundland	$8.01	$8.62	$0.61	7.60%	$8.86	$0.84	10.54%	$9.84	$1.83	22.82%
New Brunswick	$16.75	$16.84	$0.10	0.59%	$17.17	$0.42	2.51%	$19.07	$2.33	13.90%
Nova Scotia	$17.02	$17.14	$0.12	0.72%	$17.48	$0.46	2.68%	$19.42	$2.40	14.09%
Prince Edward Island	$2.62	$2.86	$0.24	9.28%	$2.93	$0.31	11.79%	$3.25	$0.63	24.21%
Canada	**$523.20**	**$548.83**	**$25.63**	**4.90%**	**$561.92**	**$38.72**	**7.40%**	**$624.36**	**$101.16**	**19.33%**

Funding Estimates – MRI Scan

The table below presents funding estimates of **MRI scans** returning to pre-COVID wait times in one year.

Summary of Total Additional Funding to Eliminate Backlogged Procedures

Scenario		Reduced Waitlist			Unchanged Capacity			Reduced Capacity		
	2019 Benchmark Cost Estimates ($C Mil.)	Costs Including Additional Procedures ($C Mil.)	Funding Required		Costs Including Additional Procedures ($C Mil.)	Funding Required		Costs Including Additional Procedures ($C Mil.)	Funding Required	
			Dollars ($C Mil.)	Percent Increase		Dollars ($C Mil.)	Percent Increase		Dollars ($C Mil.)	Percent Increase
British Columbia	$160.06	$160.97	$0.90	0.56%	$164.40	$4.33	2.71%	$182.66	$22.60	14.12%
Alberta	$152.88	$153.74	$0.85	0.56%	$156.81	$3.93	2.57%	$174.24	$21.35	13.97%
Saskatchewan	$27.00	$27.96	$0.95	3.53%	$28.58	$1.58	5.85%	$31.76	$4.75	17.61%
Manitoba	$86.45	$87.05	$0.60	0.69%	$89.41	$2.96	3.42%	$99.35	$12.89	14.91%
Ontario	$645.34	$712.85	$67.51	10.46%	$726.28	$80.94	12.54%	$806.98	$161.64	25.05%
Quebec	$436.97	$450.37	$13.41	3.07%	$458.26	$21.29	4.87%	$509.18	$72.21	16.52%
Newfoundland	$19.33	$20.36	$1.03	5.35%	$20.76	$1.43	7.40%	$23.07	$3.74	19.34%
New Brunswick	$42.56	$46.98	$4.42	10.37%	$48.13	$5.57	13.08%	$53.47	$10.91	25.64%
Nova Scotia	$24.63	$26.81	$2.18	8.85%	$27.36	$2.74	11.11%	$30.40	$5.78	23.46%
Prince Edward Island	$4.86	$5.48	$0.61	12.63%	$5.62	$0.75	15.47%	$6.24	$1.38	28.30%
Canada	**$1,600.09**	**$1,692.55**	**$92.46**	**5.78%**	**$1,725.61**	**$125.52**	**7.84%**	**$1,917.34**	**$317.25**	**19.83%**

Funding Estimates – CT Scan

The table below presents funding estimates of **CT scans** returning to pre-COVID wait times in one year.

Summary of Total Additional Funding to Eliminate Backlogged Procedures

Scenario		Reduced Waitlist			Unchanged Capacity			Reduced Capacity		
	2019 Benchmark Cost Estimates ($C Mil.)	Costs Including Additional Procedures ($C Mil.)	Funding Required		Costs Including Additional Procedures ($C Mil.)	Funding Required		Costs Including Additional Procedures ($C Mil.)	Funding Required	
			Dollars ($C Mil.)	Percent Increase		Dollars ($C Mil.)	Percent Increase		Dollars ($C Mil.)	Percent Increase
British Columbia	$279.34	$288.84	$9.50	3.40%	$293.19	$13.84	4.96%	$325.76	$46.42	16.62%
Alberta	$178.42	$179.32	$0.91	0.51%	$179.95	$1.53	0.86%	$199.94	$21.52	12.06%
Saskatchewan	$40.95	$43.44	$2.49	6.08%	$44.06	$3.11	7.60%	$48.95	$8.01	19.55%
Manitoba	$187.73	$188.79	$1.06	0.56%	$191.73	$4.01	2.13%	$213.04	$25.31	13.48%
Ontario	$825.36	$883.59	$58.23	7.06%	$893.52	$68.16	8.26%	$992.80	$167.44	20.29%
Quebec	$567.75	$575.20	$7.45	1.31%	$581.28	$13.53	2.38%	$645.87	$78.12	13.76%
Newfoundland	$74.64	$75.64	$0.99	1.33%	$77.09	$2.44	3.27%	$85.65	$11.01	14.75%
New Brunswick	$55.28	$57.05	$1.77	3.21%	$57.71	$2.43	4.39%	$64.12	$8.84	15.99%
Nova Scotia	$67.79	$68.26	$0.47	0.69%	$69.19	$1.40	2.07%	$76.87	$9.09	13.41%
Prince Edward Island	$8.24	$8.44	$0.20	2.42%	$8.56	$0.32	3.92%	$9.51	$1.27	15.47%
Canada	**$2,285.50**	**$2,368.57**	**$83.07**	**3.63%**	**$2,396.27**	**$110.77**	**4.85%**	**$2,662.52**	**$377.02**	**16.50%**

Data Sources

The table below describes all the procedure, wait time and cost data sources used for this analysis

Data Sources

Name	Institution	Metrics	Location Coverage	Range and Frequency
CIHI Wait Time Information in Priority Areas	Canadian Institute of Health Information	Procedure volume and wait time data for all selected procedures	• Canadian totals • Provincial totals • Regional totals	• 2015 – 2019 • Annual
Ontario Wait Times for Surgeries and Procedures	Health Quality Ontario	Procedure volume and wait time data for all selected procedures	• Ontario	• Aug. 2019 – June 2020 • Monthly
Manitoba Health Services Wait Time Information	Government of Manitoba	Procedure volume and wait time data for all selected procedures, except CABG	• Manitoba	• 2015 – June 2020 • Monthly
New Brunswick Surgical Wait Time	Government of New Brunswick	Procedure volume and wait time data for surgical procedures (does not include diagnostic procedures)	• New Brunswick	• April 2019 – June 2020 • Quarterly
Alberta Wait Times Reporting	Government of Alberta	Procedure volume and wait time data for Cataracts, CT Scan, MRI Scan, and limited information for Hip and Knee replacements	• Alberta	• Aug. 2019 – June 2020 • Monthly
CIHI Patient Cost Estimator	Canadian Institute of Health Information	Patient cost estimates for all selected procedures, by age group	• Canadian totals • Provincial totals	• 2015 – 2018 • Annual
Canada Diagnostic Fee Schedule	Canada Diagnostic	Cost data for 1.5 Tesla MRI and 128-slice CT	• Canada	• 2020 • Annual

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