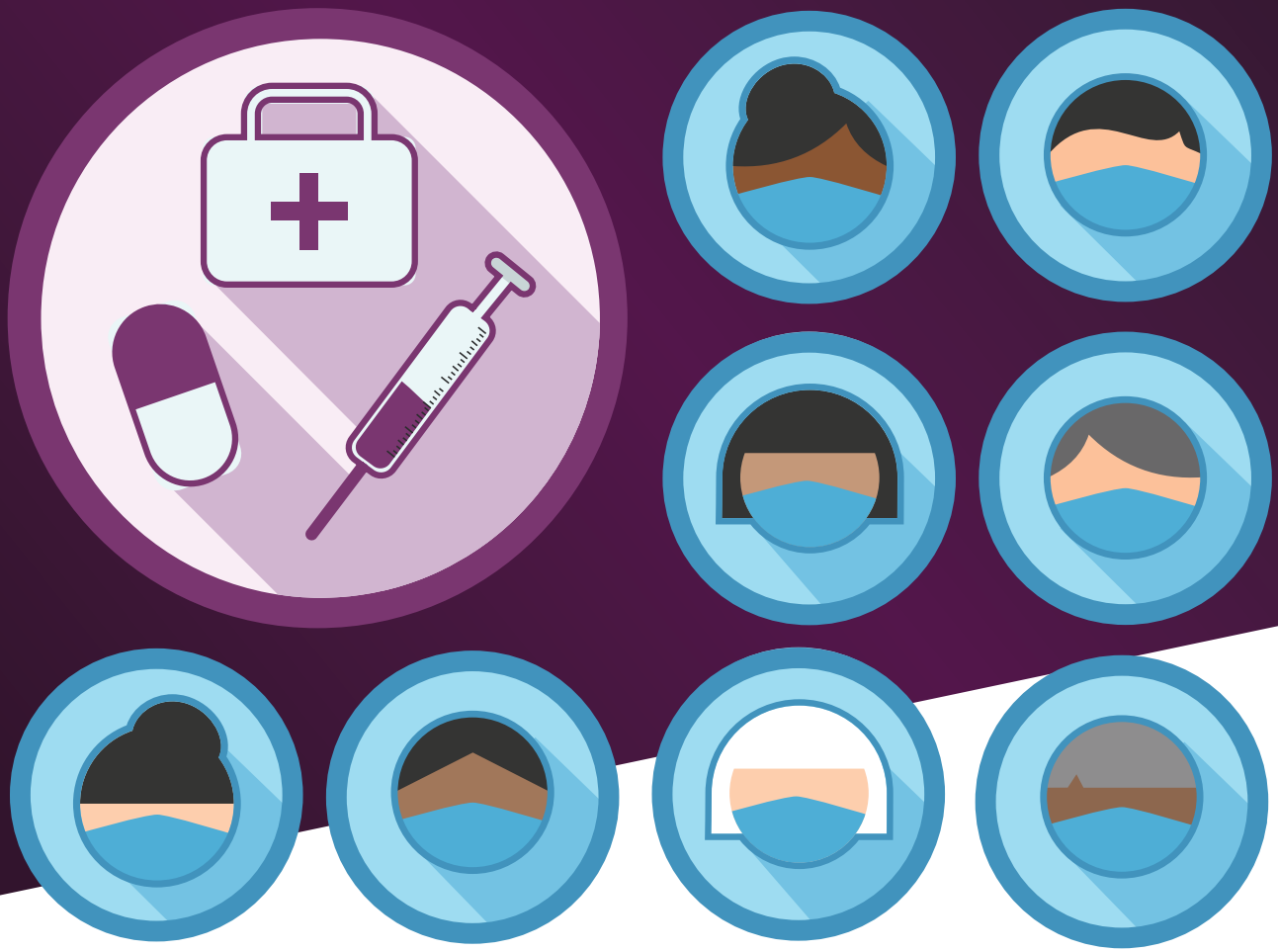
A Goal Within Our Reach:
What the COVID-19 Pandemic has Taught Us about Improving the Uptake of Influenza Vaccinations in Canada



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About the National Institute on Ageing

The National Institute on Ageing (NIA) is a public policy and research centre based at Toronto Metropolitan University (formerly Ryerson University). The NIA is dedicated to enhancing successful ageing across the life course. It is unique in its mandate to consider ageing issues from a broad range of perspectives, including those of financial, psychological, and social well-being.

The NIA is focused on leading cross-disciplinary, evidence-based, and actionable research to provide a blueprint for better public policy and practices needed to address the multiple challenges and opportunities presented by Canada's ageing population.

The NIA is committed to providing national leadership and public education to productively and collaboratively work with all levels of government, private and public sector partners, academic institutions, ageing related organizations, and Canadians.

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Introduction

Every year, seasonal influenza causes one billion infections, between three and five million cases of severe illness, and between 290,000 and 650,000 deaths worldwide.[1] In Canada, influenza causes an estimated 175,000 emergency department visits,[2] 12,200 hospitalizations and 3,500 deaths every year,[3] and is one of the country's top causes of death. Together with pneumonia, influenza currently ranks as the eighth leading cause of death in Canada,[4] and before the COVID-19 pandemic, it was Canada's leading vaccine-preventable cause of death.[5]

Despite the significant and chronic burden of influenza, uptake of the seasonal influenza vaccine, or "flu shot," has remained frustratingly low among Canadians. According to the Public Health Agency of Canada (PHAC), only around 40% of adults in Canada have gotten their annual flu shot in recent years.[6]

Canada's goal is to vaccinate 80% of those at highest risk of infection and complications from the flu, including older adults (aged 65 years and older) and individuals aged 18 to 64 years with chronic medical conditions.[7] But according to PHAC estimates, only 38% of Canadians aged 18 to 64 years with chronic medical conditions received the flu shot during the 2021-22 season. While vaccination coverage was higher among older Canadians, it was still below the 80% target during the 2021-22 flu season, at 71%.[8] What makes matters worse is that vaccination rates among older Canadians have also stagnated in recent years, with only 70% of Canadians aged 65 years and older vaccinated against the flu during both the 2019-20 and 2020-21 seasons.[9]

In contrast, Canada's COVID-19 vaccination campaign, focused on getting Canadians to complete a primary series of vaccines, showed a markedly different outcome, helping Canada achieve one of the world's highest vaccination rates against the SARS-CoV-2 virus that causes COVID-19.[10] As of Oct. 9, 2022, Canada has successfully vaccinated more than 90% of its population aged 12 years and older with at least one dose of a COVID-19 vaccine and 89% with two doses. Moreover, Canada was able to achieve this high vaccination rate within less than a year,[11] demonstrating that widespread immunization in a timely manner is an achievable goal.

Annual influenza vaccination remains our best defence against the flu. The flu shot reduces one's risk of getting the flu and spreading it to others. Moreover, when vaccinated against influenza, people who get the flu are less likely to suffer severe complications and hospitalizations. As Canada enters what is expected to be our worst flu season in recent years while still in the midst of the COVID-19 pandemic, it is more important than ever that Canadians get vaccinated against influenza. In the past two years, many of the mitigation measures previously in place to curb the spread of COVID-19, such as masking and

physical distancing, also contributed to a lower incidence of influenza cases: the 2020-21 and 2021-22 flu seasons were virtually non-existent compared to pre-pandemic levels.[12,13] This year, however, while the risk of COVID-19 is still present, many of these restrictions have been lifted and flu cases are expected to rise significantly, as Australia experienced during its most recent flu season.[14]

We are also seeing the worst surge of respiratory syncytial virus (RSV) cases in recent years. RSV tends to cause severe illness among those at the opposite ends of the age spectrum, and for which no vaccine exists.[15,16] Therefore, getting vaccinated this flu season will be very important both to reduce the risk of being infected with influenza, COVID-19 and RSV at the same time — and experiencing the potentially severe complications that could arise — and to prevent a "tripledemic" of influenza, COVID-19 and RSV from overwhelming Canada's health care system.

As we enter the 2022-23 flu season, which will likely last until the spring, it is important to get a better understanding of where Canadians stand on influenza vaccination, their previous vaccine uptake, and how the COVID-19 pandemic may have impacted overall vaccine uptake. Examining influenza vaccine uptake, perceptions and intentions can provide insights into vaccine intentions for this flu season, which groups are more or least likely to get their flu shot, and strategies to boost overall influenza vaccine coverage in Canada in anticipation of this and future flu seasons.

The COVID-19 vaccine rollout demonstrated that when vaccination is adequately promoted and prioritized, we can mobilize to quickly get Canadians vaccinated. This report, produced by the National Institute on Ageing (NIA) in collaboration with Seqirus and Leger, provides insights on Canadians' behaviours and views related to influenza vaccination. Based on the results of an online survey conducted in August 2022, this report estimates immunization rates in Canadian adults during the 2021-22 influenza season and discusses how the COVID-19 pandemic has impacted influenza vaccination intentions and uptake. In addition, it documents Canadians' perspectives of enhanced influenza vaccines and the simultaneous administration of COVID-19 and influenza vaccines.

As we enter another flu season, following the high uptake of COVID-19 vaccines among Canadians, we have a unique opportunity to increase influenza vaccine uptake and reduce the overall burden of influenza in Canada. Based on our survey findings, the NIA has identified five recommendations that would allow us to seize that opportunity and narrow Canada's longstanding influenza vaccination gap.

About the NIA Survey on Influenza Vaccination

The basis of this report is a survey developed by the NIA to gain critical insights into Canadians' perspectives and behaviours around influenza vaccination. The national survey was conducted online with 1,503 Canadians aged 18 years and older using the Leger LEO Panel and was completed between Aug. 2-12, 2022. The panel is representative of Canada's population and data was weighted by age, region and gender based on 2016 census data from Statistics Canada to ensure representativeness of the sample. The findings have a margin of error of +/- 2.53%, 19 times out of 20.

The NIA survey was composed of about 50 questions for respondents focused on their reported influenza and COVID-19 vaccine uptake, future vaccination intentions, and knowledge and perspectives about vaccines. Given the importance of adequately understanding influenza vaccine uptake and knowledge among the Canadian population, the NIA aligned the design of its questionnaire with that of the Public Health Agency of Canada's Seasonal Influenza Vaccination Coverage Survey, which is conducted annually to estimate flu vaccine coverage and beliefs and attitudes about the vaccine across Canada. Conducting a second, comparable national survey, that is representative of the population, allowed the NIA to provide an additional source of reliable data from which estimates can be generated to better understand the Canadian context. Moreover, administering the NIA's survey in the summer months, following the completion of the 2021-22 flu season, allowed the NIA to supplement the findings from PHAC's survey, conducted in the winter months, by getting the perspectives of Canadians once peak flu activity had ended.

Many of the questions in the NIA's survey were intentionally aligned with or reproductions of the questions asked in PHAC's annual survey to support the comparability of the findings among both surveys. However, the NIA also made adjustments to the language used in certain PHAC survey questions with the intention of gaining more precise responses to those questions.

The NIA's online survey response rate was about 14%, which is in line with the average response rate among active LEO panel members, and comparable to the typical response rates of 15-16% for PHAC's telephone surveys. Additional information about the survey and methodology, including the full questionnaire and panel demographics, can be found in Appendix 1 and 2.

Influenza Vaccination Rates Remain Low Despite High Rates of COVID-19 Vaccine Uptake in Canada

Influenza infections occur year-round, but are more common during "flu season," which typically runs from November to April each year. While anyone can get sick from influenza and most cases are typically mild, certain populations are at greater risk of severe illness and influenza-related complications, including children under the age of five, pregnant women, individuals with certain chronic health conditions and older adults.[17] Older adults suffer disproportionately from the burden of influenza in Canada. While accounting for a fifth of Canada's population, they represent more than half of the hospitalizations and 70% of deaths related to influenza.[18,19]

Canada's National Advisory Committee on Immunization (NACI) recommends that Canadians aged six months and older get the influenza vaccine each year. New influenza vaccines are developed annually because the virus is constantly evolving. Vaccines for upcoming influenza seasons in Canada are developed based on year-over-year changes in viruses observed circulating in the southern hemisphere, and the specific strains of the influenza virus that are expected to be present during the northern hemisphere's forthcoming flu season.[20] While it is preferable to get the flu shot before the onset of flu season to receive its maximal benefit, Canadians can still benefit from getting their annual flu shot at any point until the end of the season.

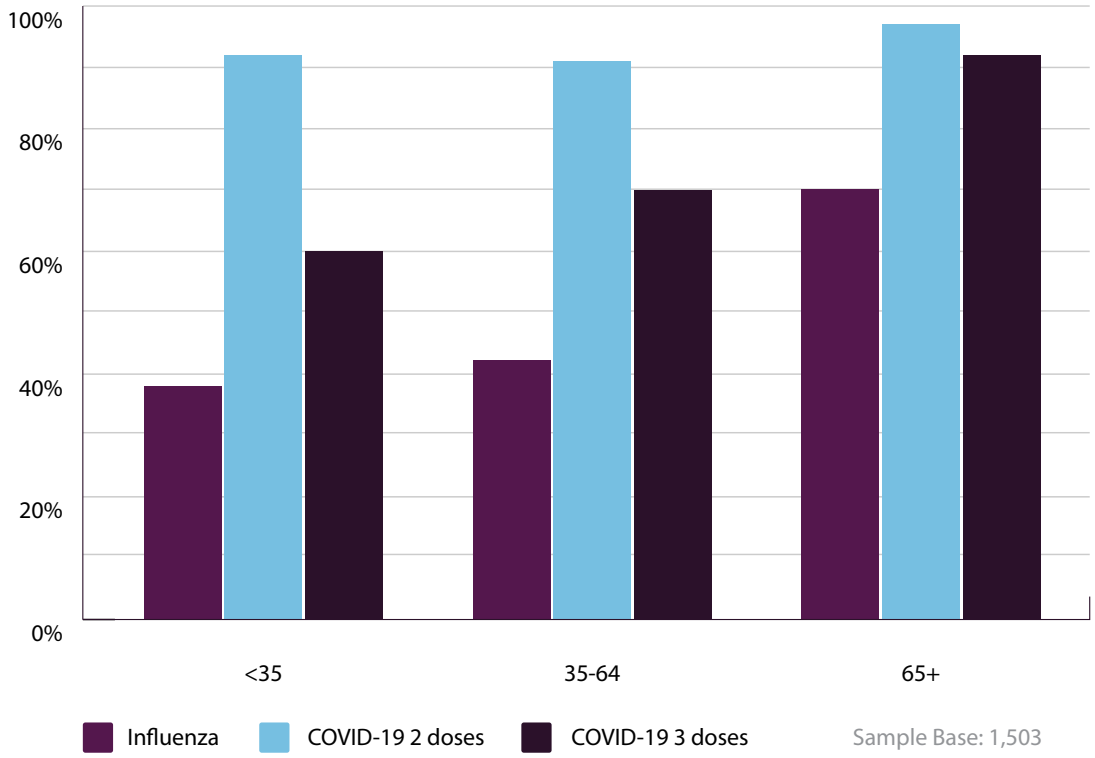
As we enter another flu season — predicted to be one of the worst in recent years — while simultaneously fighting a recent surge in COVID-19 and RSV cases, it is critical that we get a better understanding of Canadians' overall vaccination behaviours, including influenza vaccine uptake during last year's 2021-22 flu season, and the reasons why they do or do not get their annual vaccines. Examining these factors can provide valuable insights into what can be done to improve vaccine coverage levels during this upcoming and future flu seasons.

The NIA's survey found that:

- Influenza vaccine uptake in adult Canadians remained low during the 2021-22 flu season, especially relative to the high vaccination rates against COVID-19. Only **48%** of adult Canadians reported getting the flu vaccine last fall, while **93%** reported having at least two doses of a COVID-19 vaccine and **73%** reported having three doses or more.
- Despite only **48%** of adult Canadians reporting that they had received their influenza vaccine, **83%** reported that they were up-to-date on their recommended vaccines.

- Vaccination rates for both influenza and COVID-19 were found to be higher among older Canadian respondents (aged 65 years and older): **70%** of older Canadians reported getting the flu vaccine last fall, while **97%** reported having at least two doses of a COVID-19 vaccine and **92%** reported having received three or more doses **(Figure 1).**
- Although reported influenza vaccination rates were higher in older Canadians compared to the rest of the adult population, they still remain stubbornly below PHAC's national flu vaccination coverage goal of **80%** for adults aged 65 years and older. [21]
- Moreover, influenza vaccine uptake among older Canadians appears to have stayed relatively consistent with pre-pandemic levels.
  - According to PHAC's Seasonal Influenza Vaccination Coverage Survey, **70%** of Canadians aged 65 years and older got the flu shot during both the 2019-20 and 2020-21 flu seasons, while **71%** got the flu shot during the 2021-22 flu season.[22] Our survey also found that **70%** of Canadians aged 65 years and older got the flu shot in the fall of 2021 (between September and December of 2021).
- On the other hand, whereas PHAC's Seasonal Influenza Vaccination Coverage Survey shows that influenza vaccine uptake has been decreasing among the

Figure 1. Influenza & COVID-19 Vaccine Uptake by Age Group



overall Canadian adult population, our survey suggests it may have increased since the beginning of the COVID-19 pandemic.

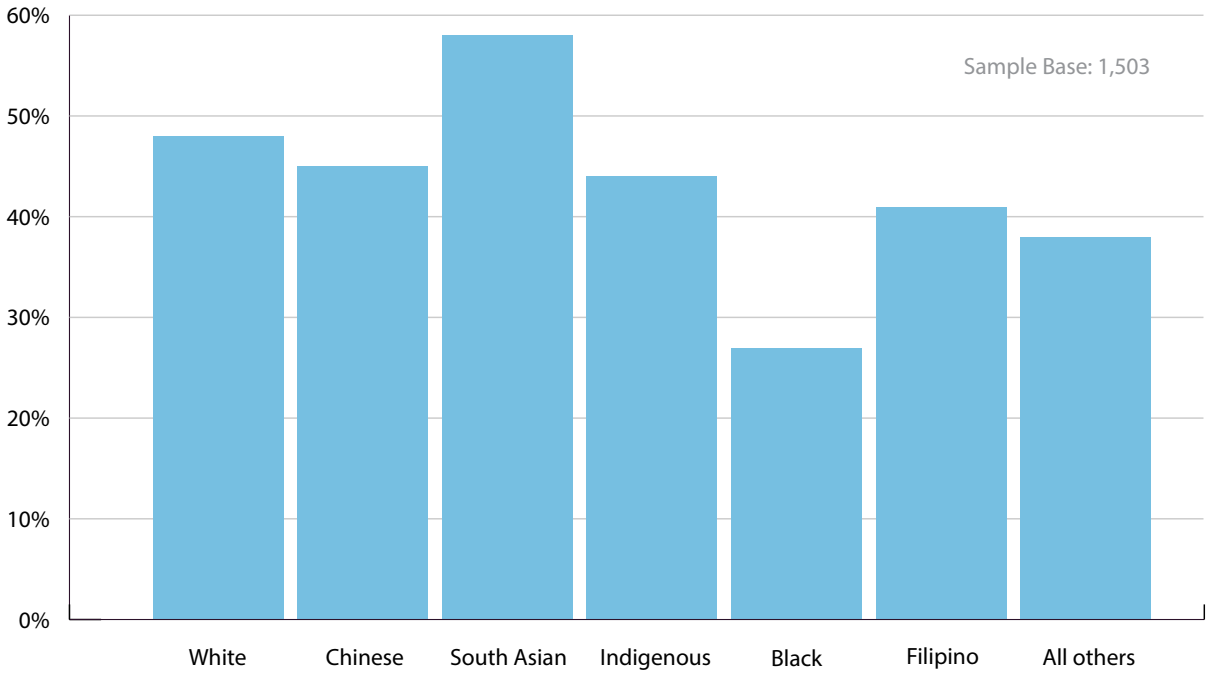
- According to PHAC's survey, **42%** of Canadians aged 18 years and older got the flu shot during the 2019-20 flu season and **40%** got the flu shot during the 2020-21 flu season. This figure reportedly decreased to **39%** during 2021-22 flu season. The NIA's survey, however, found that **48%** of Canadians aged 18 years and older got the flu shot in the fall of 2021 (between September and December of 2021).

In addition to age differences, the NIA's survey found differences in influenza vaccination coverage across other key subgroups within the Canadian population. These variations present opportunities to increase influenza vaccination coverage through improved vaccination efforts, targeted and tailored to populations that have lower influenza vaccine uptake.

The NIA's survey found that:

- Women had slightly higher influenza vaccination rates than men, with **49%** of Canadian women compared to **46%** of Canadian men reporting that they got the flu shot in the fall of 2021 (between September and December of 2021).
- Adult Canadians in poorer health had higher influenza vaccination rates than those reportedly in better health. However, influenza vaccine uptake was still nowhere near Canada's **80%** coverage goal for those at higher risk of influenza-related complications or hospitalizations.[23]
- Among Canadians aged 18 years and older who rated their health as poor or fair, **65%** and **57%**, respectively, got the flu shot in the fall of 2021 (between September and December of 2021). On the other hand, only **38%** of Canadians who rated their health as excellent got the flu shot, and **47%** of those who rated their health as very good or good got the flu shot in the fall of 2021.
- There were also considerable differences in influenza vaccine uptake across specific ethno-racial groups and within the immigrant population **(Figure 2).**
- Overall, South Asian Canadians reported the highest influenza vaccine uptake during the 2021-22 flu season, with **58%** getting the flu shot in the fall of 2021. Black Canadians reported the lowest coverage rate, with only **27%** reporting that they got the flu shot in the fall of 2021.
- Recent immigrants had slightly lower influenza vaccine uptake than the overall Canadian adult population, with **44%** of recent immigrants (in Canada for less than 28 years) getting the flu shot in the fall of 2021, compared to **48%** of the overall Canadian adult population. Conversely, among longer-term immigrants (in Canada for 28 years or longer), reported influenza vaccine uptake was higher, with **55%** reporting that they got the flu shot in the fall of 2021.

Figure 2. Influenza Vaccine Uptake by Ethno-Racial Group in the Fall of 2021



Reasons for getting or not getting the flu shot

In addition to gaining better insights about influenza vaccination coverage among Canadians, it is critical to get a better understanding of the reasons why Canadians have or have not been getting their annual flu shots. Understanding Canadians' perspectives on the influenza vaccine can help identify key issues and messaging that could be better emphasized or debunked in public health messages around vaccination.

The NIA's survey found that:

- A desire to prevent illness and the habit of routinely receiving an annual influenza vaccination appear to be the key drivers of influenza vaccine uptake among adult Canadians.
- Among the overall adult Canadian population, the desire to prevent illness was the most important reported reason for getting the flu shot: **59%** of Canadians aged 18 years and older who got their flu shot in the fall of 2021 reported wanting to prevent infection or not wanting to get sick as their reason for getting the flu shot **(Figure 3).**
- The habit of annually getting a flu shot was also important to adult Canadians: **54%** of adult Canadians who got the influenza vaccine last fall reported that they routinely get vaccinated **(Figure 3).**
- Among older Canadians specifically, routinely receiving an annual influenza

vaccination was the most frequently reported reason for getting the flu shot, with **70%** of Canadians aged 65 years and older who received the influenza vaccine last fall reporting that they get the flu shot every year and/or getting the flu shot is just something they've always done **(Figure 4).**

- The desire to prevent illness was also important among older Canadians and the second most reported reason for getting the flu shot in the fall of 2021: **59%** of Canadians aged 65 years and older reported wanting to prevent infection or not wanting to get sick as a reason for receiving the flu vaccine last fall **(Figure 4).**

Figure 3. Top Reasons for Influenza Vaccination Among All Canadian Adults Who Got the Flu Vaccine in the Fall of 2021

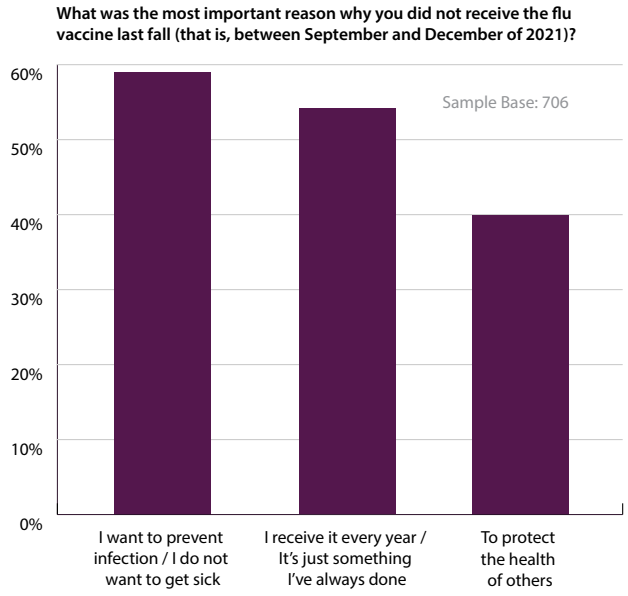
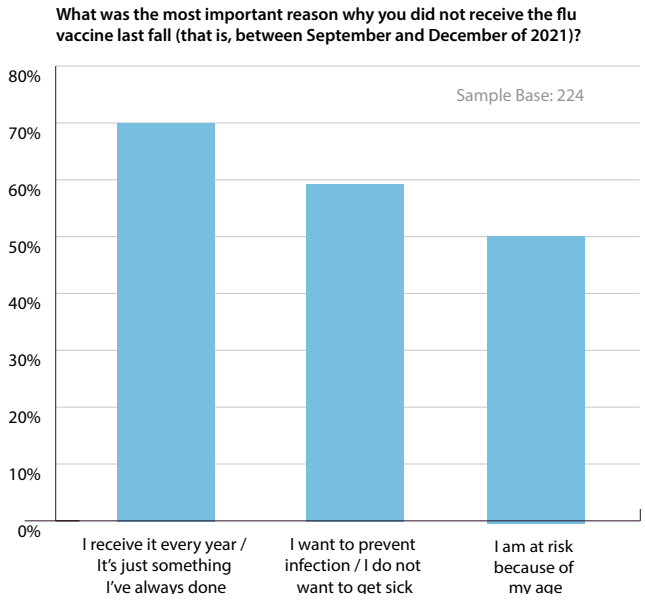


Figure 4. Top Reasons for Influenza Vaccination Among Older Canadians Who Got the Flu Vaccine in the Fall of 2021



- In terms of reasons why adult Canadians do not get the flu shot, influenza's perceived lack of risk and general ambivalence towards influenza vaccination appear to be contributing to its low uptake.
  - "No specific reason, I just didn't get it" was the most commonly reported reason for not getting the flu vaccine among both the overall adult population and Canadians aged 65 years and older: **30%** of Canadians aged 18 years and older said this was the most important reason why they did not get the flu shot in the fall of 2021, compared to **23%** of Canadians aged 65 years and older **(Figures 5 & 6).**
  - Among Canadians aged 18 years and older who did not receive the flu shot, the second main reason for not getting it, reported by **14%** of respondents, was

"not getting around to it" **(Figure 5).** This reason indicates that convenience and access likely remain important factors influencing vaccine uptake.

- Among older Canadians, the second most frequently reported reason for not getting the flu shot was the perception that they are healthy and/or they never get the flu **(Figure 6).** In fact, among those who didn't get the flu shot in the fall of 2021, nearly **1 in 5 (18%)** Canadians aged 65 years and older said the most important reason was that they are healthy and/or never get the flu, compared to **1 in 8 (12%)** Canadians aged 18 years and older.

Figure 5. Top Reasons for Not Getting Vaccinated Among All Canadian Adults Who Did Not Get the Flu Vaccine in the Fall of 2021

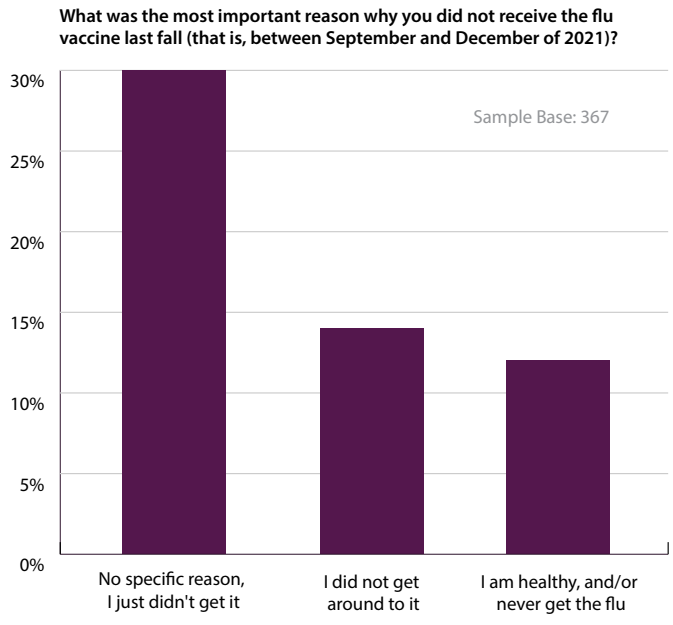
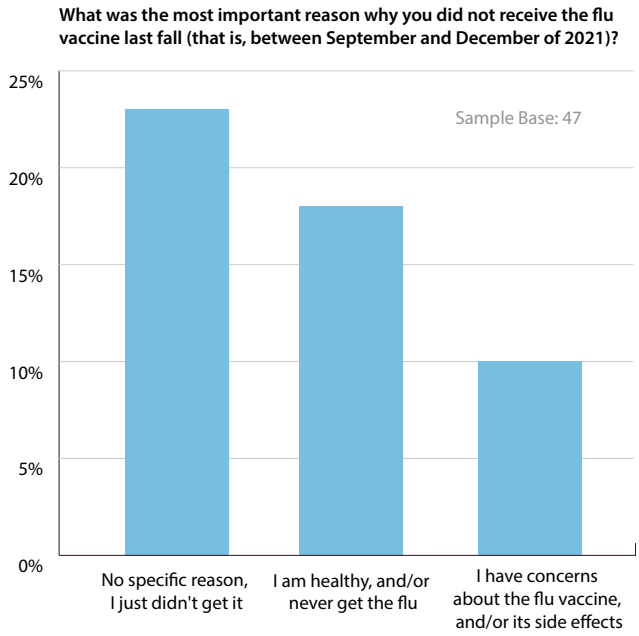


Figure 6. Top Reasons for Not Getting Vaccinated Among Older Canadians Who Did Not Get the Flu Vaccine in the Fall of 2021



The COVID-19 Pandemic has Shifted Canadians' Attitudes about Vaccines and Vaccination Intentions

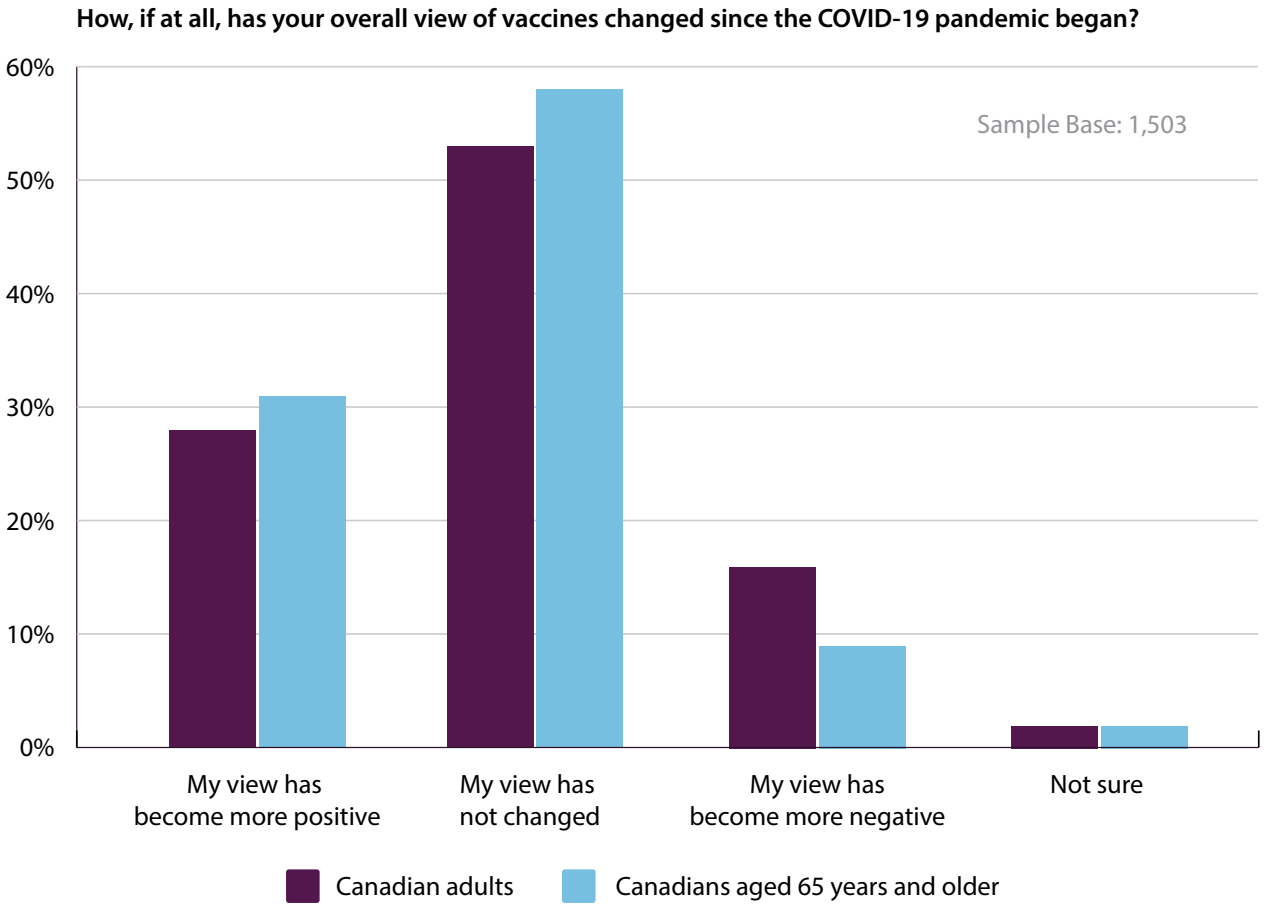
In addition to determining influenza vaccine coverage, it is critical to get a better sense of whether there have been shifts in Canadian attitudes and their willingness to receive the flu shot in the context of the pandemic and Canada's COVID-19 vaccination efforts. Canada's COVID-19 vaccine rollout put the topic of vaccination front and centre in the minds of Canadians, who demonstrated both a strong understanding about the risks of COVID-19 and their willingness to get vaccinated. Canada successfully vaccinated 90% of its population aged 12 years and older with at least one dose of a COVID-19 vaccine and 87% with two doses in less than a year.[24]

Understanding how the COVID-19 pandemic has impacted Canadians' attitudes about vaccination and their willingness to get a flu shot can help provide further insights into vaccine decision-making, and whether the public awareness about the importance of vaccination seen during the pandemic has translated to influenza vaccination. This knowledge could help to better inform future vaccination strategies, especially as the 2022-23 influenza vaccination campaign is now under way.

In terms of attitudes about vaccines, our survey found that:

- For most Canadians, the COVID-19 pandemic has not changed their overall view of vaccines. But for many, it has improved their overall perceptions about vaccines.
    - More than half of adult Canadians (**53%**) stated that their overall view of vaccines has not changed since the COVID-19 pandemic began. The share was even higher among older Canadians, with **58%** of those aged 65 years and older reporting that their view of vaccines has not changed **(Figure 7).**
    - On the other hand, more than a quarter of adult Canadians (**28%**) report now holding more positive views of vaccines. Among older Canadians, **31%** report that their views of vaccines have become more positive since the COVID-19 pandemic began **(Figure 7).**
- Contrary to popular belief, only a small share of Canadians have developed more negative views of vaccines in light of the COVID-19 pandemic.
    - **16%** of adult Canadians reported that their overall view of vaccines has become more negative since the COVID-19 pandemic began. Reported growing negative sentiment was even

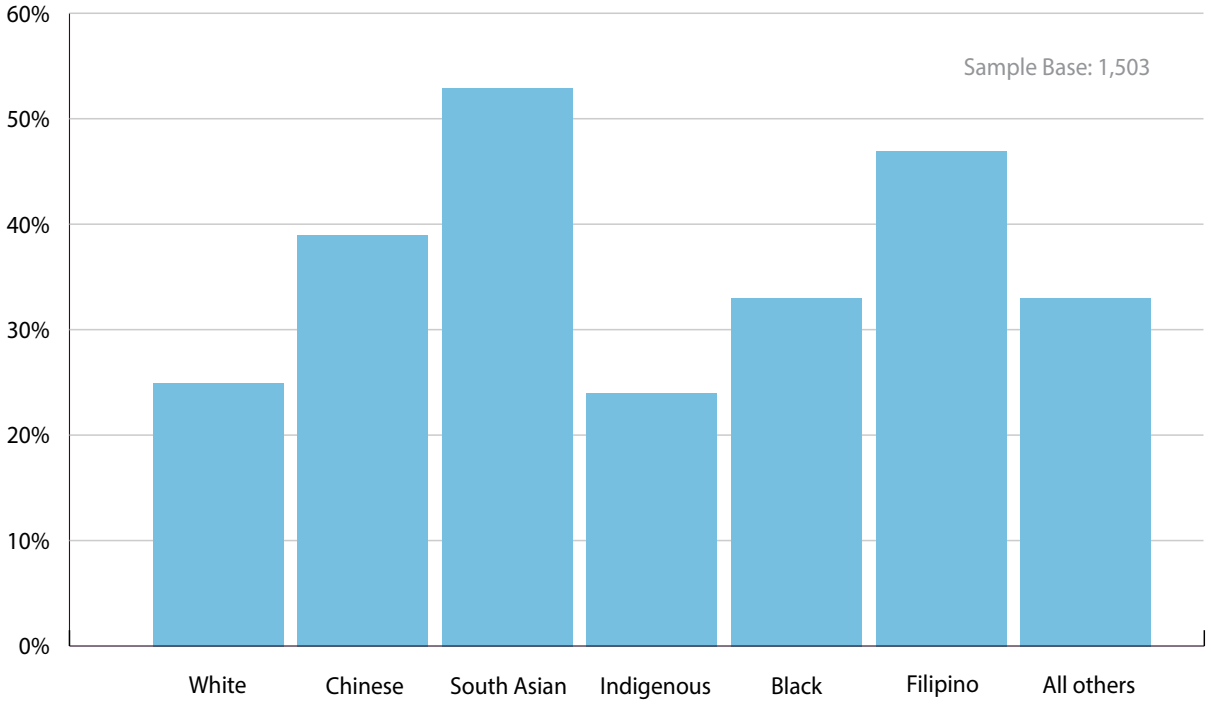
Figure 7. Impact of COVID-19 on Perceptions About Vaccines Among Adult Canadians and Older Canadians



lower among older Canadians, with only 9% of those aged 65 years and older reporting that their view of vaccines had become more negative.

- The COVID-19 pandemic appears to have led to large shifts in reported attitudes about vaccination across specific ethno-racial groups and within the immigrant population.
  - Overall views of vaccines have reportedly improved considerably among adult Canadians of South Asian, Filipino and Chinese ethno-racial backgrounds. More than half (**53%**) of South Asian Canadian respondents reported that their view of vaccines had become more positive since the COVID-19 pandemic began, along with **47%** of Filipino-Canadians and **39%** of Chinese-Canadians **(Figure 8).**
  - A considerable proportion of Canadian immigrants now also report holding more positive views of vaccines: **41%** of recent and **34%** of long-term adult immigrants reported that their overall view of vaccines had become more positive since the COVID-19 pandemic began.

Figure 8. Proportion Reporting A More Positive View of Vaccines Since the COVID-19 Pandemic Began Across Ethno-Racial Groups

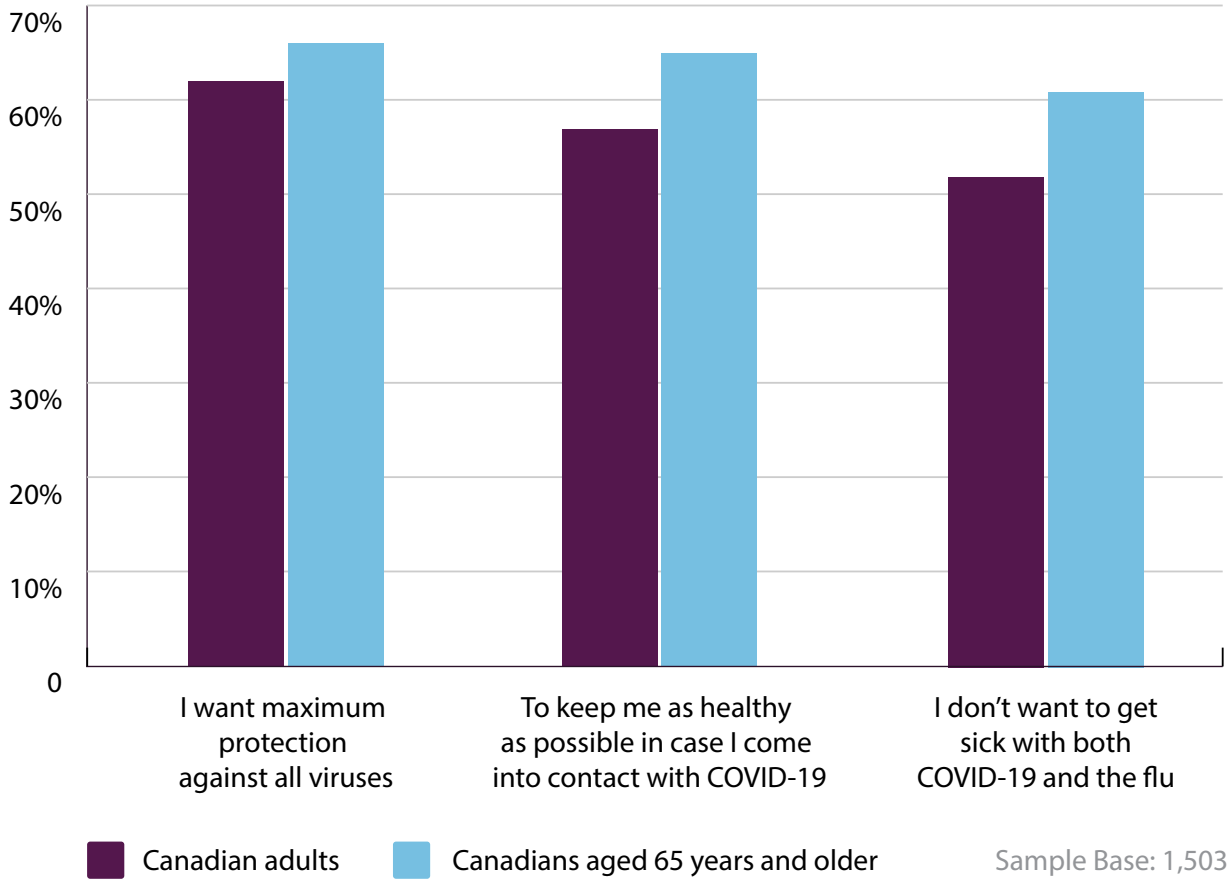


In terms of reported vaccination intentions, our survey found that:

- More than half of the population (**58%**) reported that the COVID-19 pandemic had no impact on their likelihood of getting the flu shot this coming fall.
- However, one in four adult Canadians (**24%**) reported that the COVID-19 pandemic had made it more likely that they will get the flu shot this coming fall. Among older Canadians, **29%** reported that the COVID-19 pandemic had made it much more likely that they will get the flu shot this coming fall.
- Further, the desire to prevent infection appears to be the main factor responsible for the increased reported willingness to get a flu vaccine.
    - When asked about why the pandemic made it more likely that they would get the flu shot in the fall of 2022, the top reasons reported by all adult Canadians and older Canadians specifically were around wanting maximum protection against all viruses, to be kept as healthy as possible in case of coming in contact with COVID-19, and not wanting to get sick with both COVID-19 and the flu **(Figure 9).**

Figure 9. Top Reasons Why COVID-19 Pandemic has Increased Likelihood of Getting the Flu Shot in the Fall of 2022

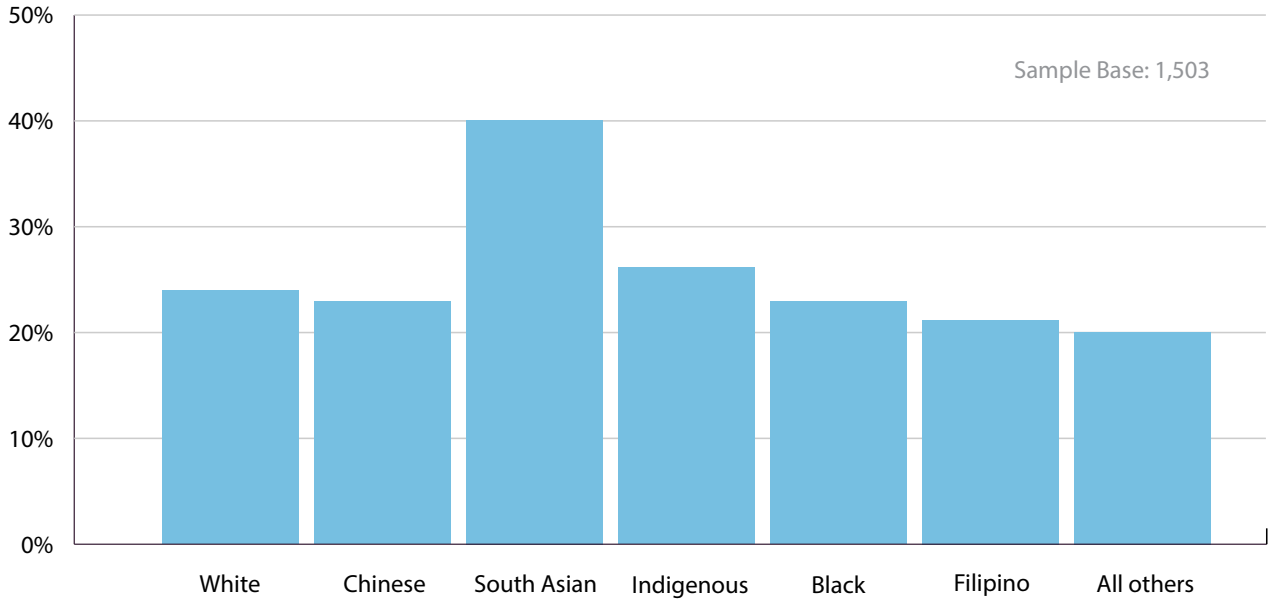
Please tell us why the COVID-19 pandemic has made it more likely that you will get the flu shot this coming fall (that is, between September and December of 2022)?



Sample Base: 1,503

- Despite varying levels of improvement in reported vaccine perceptions among Canadians of varying ethno-racial backgrounds, vaccine intentions were found to be similar across different groups.
  - Whereas the proportions reporting that their view of vaccines has become more positive since the COVID-19 pandemic began ranged from **24%** to **53%** across different ethno-racial groups, about 1 in 4 adult Canadians across all ethno-racial backgrounds reported that the pandemic had made it more likely that they will get the flu shot in the fall of 2022. Canadians of South Asian background were the exception, among which **40%** reported that the pandemic had increased their likelihood of getting a flu shot this coming fall **(Figure 10)**.

Figure 10. Proportion Reporting the COVID-19 Pandemic Has Made it More Likely They Will Get the Flu Shot in the Fall of 2022 by Ethno-Racial Groups



Co-Administration and Enhanced Vaccines are Key Strategies to Boost Influenza Vaccination Rates Among Canadians

Given the continued low uptake of influenza vaccines among adult Canadians, it is clear that additional strategies to help boost uptake are needed. Based on the findings of the NIA's survey that have been highlighted thus far, well-known approaches, established by existing research, are evidently needed. For example, previous studies have established the importance of improved public health messaging,[25,26] and the NIA's survey results also show the need for better public health messaging and education about the importance and benefits of getting the flu shot and the overall safety of influenza vaccines. However, given the persistently low uptake of influenza vaccines, new approaches to help increase influenza vaccination coverage across Canada are also needed. The NIA's survey identified two such opportunities: co-administration and enhanced vaccines.

Co-administration

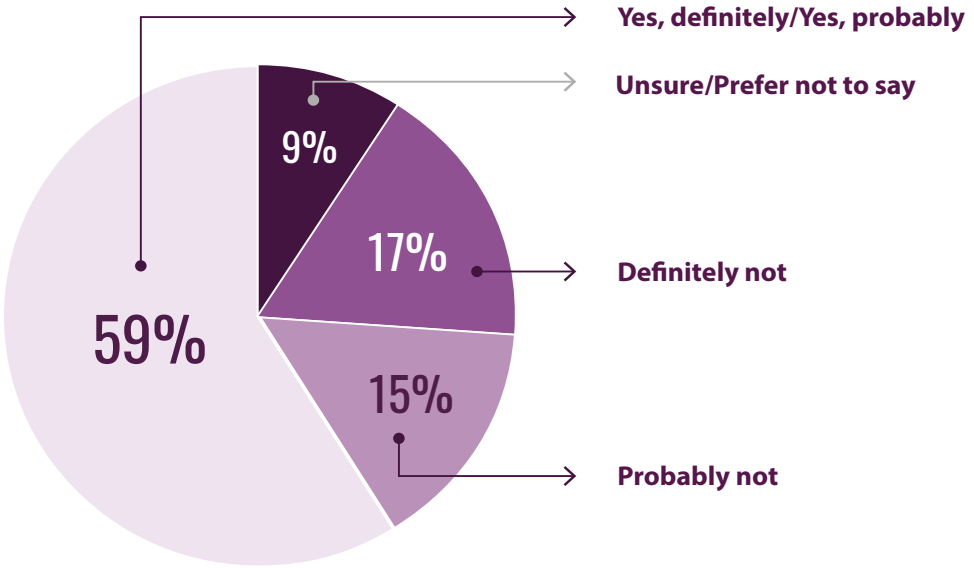
Canada's National Advisory Committee on Immunization (NACI) recommends that COVID-19 vaccines can be safely administered at the same time as influenza vaccines, or any time before or after. (The same is true for other vaccines for older adults, such as pneumococcal or shingles vaccines, according to NACI.)[27] The co-administration of COVID-19 vaccines could be therefore leveraged to make the uptake of influenza vaccines more convenient for Canadians. Convenience is one of the primary factors impacting the overall uptake of vaccines.[28] Research shows that inconvenience limits vaccine uptake when vaccination is not perceived as important enough to actively overcome access barriers.[29] If influenza vaccines were offered and administered at the same time as COVID-19 boosters or other vaccines for older adults, this would help overcome inconveniences that likely prevented many Canadians from getting the flu shot last season — such as having to go to vaccination clinics on multiple separate occasions or at different locations.

The NIA's survey found that:

- Most Canadians are comfortable with vaccine co-administration and would get a flu shot and COVID-19 vaccine at the same time if it was offered:
  - **59%** of adult Canadians reported that they would get a COVID-19 booster and flu vaccine at the same time. Less than a third of adult Canadians reported that they would probably not (**15%**) or definitively not (**17%**) receive a COVID-19 booster and influenza vaccine at the same time (Figure 11).

Figure 11. Comfort with Co-Administration of COVID-19 Booster and Flu Vaccine

Canadian public health authorities have said getting a flu vaccine at the same time as a COVID-19 booster is safe and effective for adults. If you could receive a COVID-19 booster shot and a flu vaccine at the same time, would you?

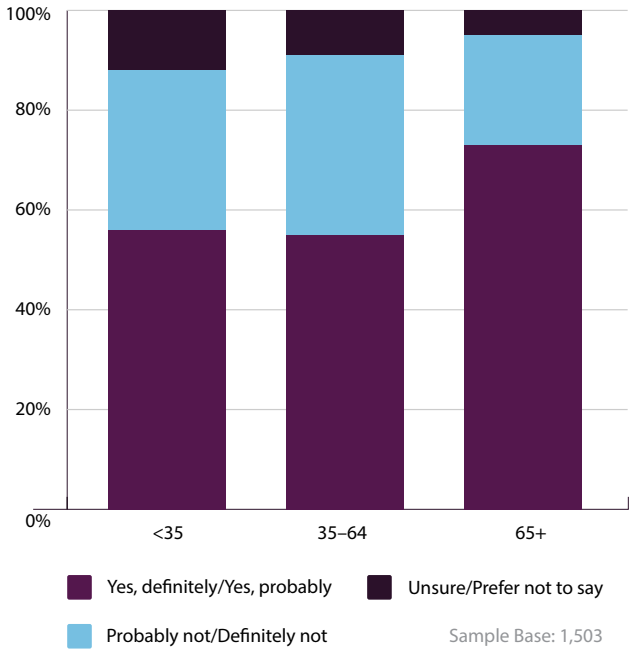


Sample Base: 1,503

- Older Canadians were also found to be more comfortable with the co-administration of influenza and COVID-19 vaccines than younger Canadians:
  - The majority of Canadians aged 65 years and older (**73%**) said that if they could, they would get a COVID-19 booster shot and their flu vaccine at the same time. The share was lower among middle-aged (35-64 years) and younger adults (18-34 years), at **55%** and **56%**, respectively (Figure 12).
- The main reasons older Canadians who were open to co-administration gave for their comfort with the idea was to support their own health, protection and safety, and because it is recommended and they trust health authorities. Among middle-aged Canadians (aged 35-64 years) who said they would receive both vaccines at the same time, their own health, protection and safety was also their most commonly stated reason. On the other hand, among young Canadian adults (aged 18 to 34 years), their most common reason was the convenience of co-administration.

Figure 12. Comfort with Co-Administration of COVID-19 Booster and Flu Vaccine by Age

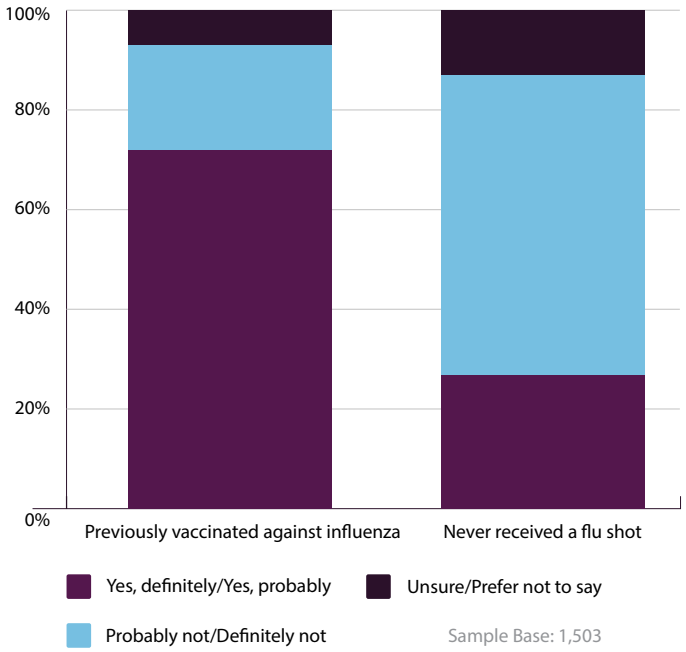
Canadian public health authorities have said getting a flu vaccine at the same time as a COVID-19 booster is safe and effective for adults. If you could receive a COVID-19 booster shot and a flu vaccine at the same time, would you?



- Canadians who have previously been vaccinated against the flu were also found to be more comfortable with co-administration.
  - Among Canadians who have previously been vaccinated against the flu, **72%** reported that they would get the COVID-19 booster shot and a flu vaccine at the same time. In comparison, only **27%** of those who have not previously gotten a flu shot say they would get a COVID-19 booster and flu vaccine at the same time **(Figure 13)**.

Figure 13. Comfort with Co-Administration of COVID-19 Booster and Flu Vaccine by Previous Influenza Vaccine Uptake

Canadian public health authorities have said getting a flu vaccine at the same time as a COVID-19 booster is safe and effective for adults. If you could receive a COVID-19 booster shot and a flu vaccine at the same time, would you?



- Although most Canadians are comfortable with co-administration, there is a need for more information about its safety:
  - **33%** of adult Canadians said that they worry that getting a flu shot on top of a COVID-19 vaccine might overload their immune system.
- Older Canadians appear to be better informed about the safety of co-administration:
  - Only **24%** of Canadians aged 65 years and older said they worry that getting a flu shot and COVID-19 vaccine may

overload their immune system, while **39%** of Canadians aged 18-34 years and **34%** among Canadians aged 35-64 years shared this worry.

Overall, the NIA's survey has clearly demonstrated that the majority of Canadians, and especially older Canadians, are comfortable with the simultaneous administration of COVID-19 vaccines and influenza vaccines, highlighting a clear opportunity to better optimize the uptake of flu shots during the 2022-23 influenza vaccination campaign.

Enhanced Vaccines

Canadians can get standard influenza vaccines or enhanced influenza vaccines. Enhanced influenza vaccines encourage the body to create a stronger immune response and are therefore well-suited for individuals with weaker immune systems, such as older adults, for whom standard dose vaccines may not elicit as strong of a response and overall level of immunity. Enhanced vaccines, therefore, offer older adults better protection against the flu compared to standard influenza vaccines, making them a preferred choice for adults aged 65 years and older.

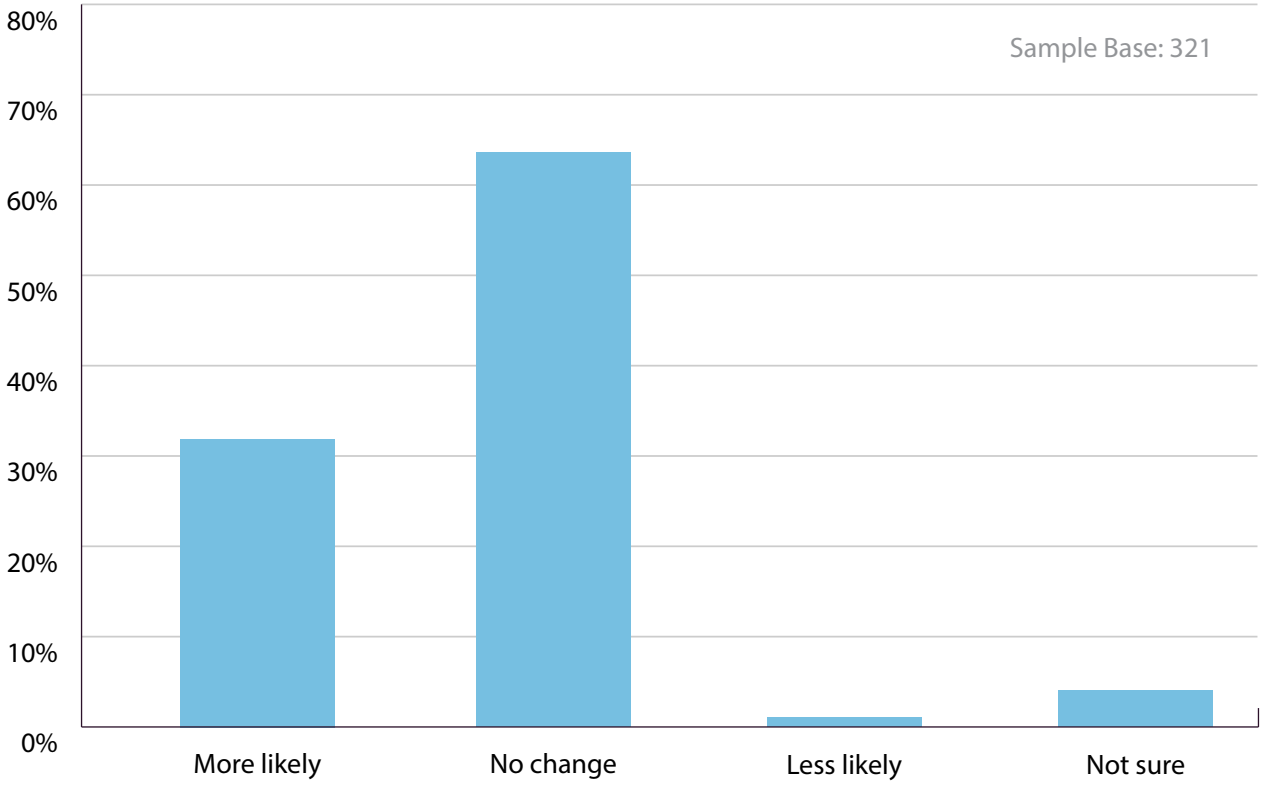
However, enhanced influenza vaccines are not consistently available to Canada's entire older population as part of existing publicly funded seasonal influenza vaccine programs. The result is that for Canadians aged 65 years and older who wish to receive the additional protection afforded by enhanced influenza vaccines, many will have to pay out-of-pocket to receive one, depending on where they live.

The NIA's survey found that:

- Canadians recognize the benefits and importance of enhanced vaccines **62%** of adult Canadians reported knowing that there are different influenza vaccines made for younger adults and for people aged 65 years and older. The proportion was even higher among older Canadians, at **73%** of those aged 65 years and older.
    - **63%** of adult Canadians agreed that enhanced vaccines help better protect older adults from the seasonal flu. Among Canadians aged 65 years and older, the proportion was **71%**.
    - In addition, **77%** of adult Canadians reported thinking it is important that older Canadians have access to enhanced vaccines and **82%** reported thinking that enhanced vaccines should be available free of charge to older Canadians. The proportions were even higher among older Canadians: **83%** of those aged 65 years and older reported thinking it is important that older Canadians have access to enhanced vaccines, and **90%** said enhanced vaccines should be available free of charge to older Canadians.

Figure 14. Impact of Province/Territory Offering Enhanced Influenza Vaccines on Vaccine Uptake Among Older Canadians

If your province/territory offered enhanced influenza vaccines, would it make you more likely to get vaccinated against the flu?



- Offering older Canadians enhanced vaccines may help improve vaccination rates in Canada.
  - While **63%** of older Canadians said it would make no difference, **32%** of Canadians 65 years and older reported that they would be more likely to get vaccinated against the flu if their province/territory offered free access to enhanced influenza vaccines **(Figure 14).**

Overall, the NIA's survey has demonstrated that Canadians, and especially older Canadians, recognize the importance of enhanced vaccines, and making them publicly available across Canada may help further boost influenza vaccination levels among older adults closer to PHAC's **80%** coverage goal.

Five Strategies to Improve Influenza Vaccine Uptake in Canada

The findings of the NIA's survey demonstrate that influenza vaccination rates have continued to remain stubbornly low among Canadians during the COVID-19 pandemic. While influenza vaccine uptake has been consistently higher among older Canadians, it is still below PHAC's national coverage target of 80%. However, this survey also shows that the COVID-19 pandemic has positively shifted attitudes about vaccines and vaccination intentions, with Canadians reporting better overall perspectives on vaccines and an increased willingness to get the flu shot this upcoming flu season.

To implement more effective and efficient influenza immunization strategies, Canada's provinces and territories should build on the important insights and lessons generated from Canada's COVID-19 vaccine rollout and the findings of this survey. To enable this, the NIA has identified five specific strategies to further inform vaccination approaches and improve influenza vaccine uptake among adult Canadians in general, and older Canadians in particular.

1. Improve messaging about the importance of flu vaccines, especially among older Canadians

The NIA's survey found that despite most respondents indicating they were up-to-date on their recommended vaccines, less than half had actually received their annual influenza vaccine. This lack of knowledge on recommended vaccines has also been apparent in other Canadian surveys.[30,31] However, not only is evidence-based, reader-friendly information about vaccines available to the public from organizations such as Immunize Canada and Public Health Agency of Canada,[32] but all provinces and territories have been found to provide information online regarding influenza vaccination.[33] Similarly, a recent high-level overview of Canada's influenza campaign found information being distributed through multiple online and offline channels, but also found a gap in tailored information for at-risk populations (e.g., older Canadians) and a lack of interactive communication. This highlights that an improved messaging approach is needed.

Based on this survey's findings, improved messaging should specifically focus on the importance of influenza vaccines and the perceived risk of the disease. This is evident

in the reasons given by both adult Canadians and older Canadians specifically for not getting the influenza vaccine: two of the three most frequently responses had to do with the perception that the vaccine was not necessary, with Canadians who didn't get vaccinated reporting that "they just didn't get around to it" or that "they are healthy, and/or never get the flu."

The need to focus more on the perceived risks of a vaccine-preventable disease is further emphasized by research indicating that this is an important predictor of vaccination behaviour.[35,36,37] When the perceived risks of a disease seem low, individuals are more likely to remain unvaccinated.[38,39,40,41,42] When the perceived risk of illness increases, vaccine intention and uptake is higher.[43,44] A 2022 systematic review of vaccine acceptability factors among Canadians found that this was especially the case within high-risk groups, including older adults. Increased perceived severity and perceived susceptibility or risk have an evident positive influence on the overall acceptability of seasonal influenza vaccines among high-risk groups.[45]

Beyond sharing information through health care organizations and government sites, health care providers (e.g., primary care providers, as well as physicians, nurses, and pharmacists) should also provide this information to their patients. In one survey, the majority of Canadian respondents (71%) agreed that the advice provided by their family doctor, general practitioner, nurse practitioner or other health specialists plays a vital role in their decision to receive the seasonal influence vaccine.[46] Similarly, another survey found most adult Canadians (75%) consider pharmacists as a trusted source of information on vaccines.[47] In terms of high-risk groups, including older adults, research has shown that discussion and recommendations from health care providers influence their likeliness to accept seasonal influenza vaccines.[48] Numerous studies have also shown that advice or a reminder letter from health care providers were strongly associated with an increase in seasonal influenza vaccine uptake among older adults.[49]

2. Improve access to vaccine co-administration opportunities

Another key strategy to improving influenza vaccination coverage among Canadians is to administer flu shots at the same time as vaccines for COVID-19 or other common illnesses. The NIA's survey found that not only were the majority of adult Canadians comfortable with co-administration of COVID-19 booster and flu vaccines (59%), but older adults were even more likely to feel comfortable (73%).

In terms of the co-administration process, all influenza vaccines may be given concurrently, or at any time before or after the administration of other vaccines, including COVID-19 vaccines.[50] NACI recommends this approach to ensure individuals are fully immunized.[51] The only precaution is that if more than one vaccine is given at the same time, injections should be administered in different areas on the body with separate equipment.[52]

Co-administration of these two vaccines is more convenient than delivering them separately, and convenience is one of the primary factors that impacts the uptake of vaccines.[53] For seasonal influenza vaccines specifically, previous research has found that the perceived inconvenience of transportation and long travel time was associated with lower vaccine willingness among older adults.[54] Studies have also shown that making vaccination more convenient influenced vaccine acceptability among high-risk groups, including older adults.[55]

In the coming months, provinces and territories should capitalize on their ongoing COVID-19 vaccination efforts to administer influenza vaccines, especially with the recent approval of four bivalent Omicron-containing mRNA COVID-19 vaccines.[56,57,58,59,60] NACI is currently recommending the bivalent Omicron-containing mRNA COVID-19 vaccines as the preferred booster doses for all adults, to be given at least three to six months after a previous dose or infection. Any upcoming efforts to administer COVID-19 booster shots or ensure the completion of a full COVID-19 primary series should also provide the opportunity to get the annual flu vaccine between now and April.

Beyond simply increasing available opportunities for co-administration, jurisdictions should also focus on public health messaging about the safety of co-administration, especially as safety concerns have been identified as one of the main causes of vaccine hesitancy among adults for both the influenza and COVID-19 vaccines.[61] This will also be important to counter the misinformation about COVID-19 vaccines that is common online.[62] Studies have shown that misinformation on social media influenced vaccine hesitancy and/or uptake.[63,64] A potential avenue for messaging is having various health care professionals more actively discuss co-administration with patients, especially considering the influence these professionals have on influenza uptake within both the general population and older adults in Canada.[65,66,67]

3. Provide enhanced influenza vaccines free of cost to all older Canadians

The NIA's survey respondents were very receptive to enhanced influenza vaccines. The majority of adult Canadians overall and older Canadians specifically reported knowing about enhanced vaccines, and believing it was important that older Canadians have access to them and that they should be provided free of charge to this group. Given that 32% of Canadians 65 years and older reported being more likely to get vaccinated against the flu if their province/territory offered free access to enhanced influenza vaccines, the NIA recommends that enhanced influenza vaccines be provided free to all older adults in Canada.

Enhanced influenza vaccines are meant to provide a better immune response and effectiveness compared to standard-dose influenza vaccines. This is done through either increasing the amount of antigen (high-dose

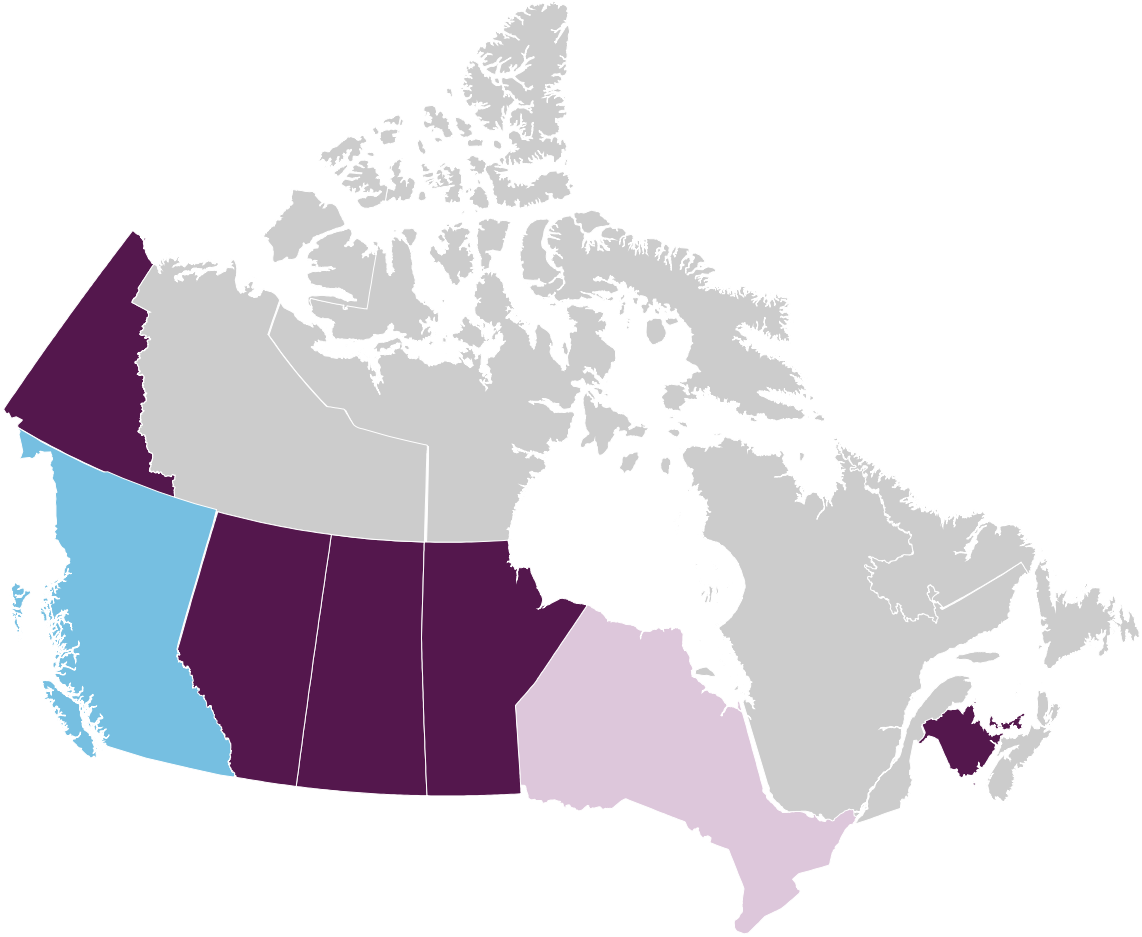
inactivated influenza vaccines), adding an adjuvant (adjuvanted inactivated influenza vaccines), or using a different development process that allows a better match between the antigen and prevalent strains (recombinant influenza vaccines).[68] NACI has not published a review of evidence on these types of vaccines since 2018,[69] but the United States' Advisory Committee on Immunization Practices (ACIP) released a more up-to-date systematic review earlier this year. ACIP found that enhanced vaccines consistently demonstrate a relative benefit when compared to standard-dose vaccines for adults 65 years and older, especially in regards to influenza-associated hospitalizations.[70]

These vaccines are especially important for older adults as they are particularly vulnerable to influenza. This is due to the process of immunosenescence, where changes that naturally weaken the immune system as individuals age result in an increased risk of infectious disease and decreased protection from standard vaccinations.[71] The increased effectiveness of enhanced vaccines may lead to a greater willingness to be vaccinated, as studies have shown that an increase in perceived vaccine effectiveness positively influences acceptability of seasonal influenza vaccines among high-risk groups, including older adults.[72] The NIA's survey results appear to endorse this finding.

Despite their benefits, access to publicly funded enhanced influenza vaccines varies across Canada. For the 2022-23 influenza season, there are three enhanced influenza vaccines authorized for older adults in Canada: Fluzone High-Dose Quadrivalent (high-dose inactivated influenza vaccine), Fluad (adjuvanted inactivated influenza vaccine), and Supemtek (recombinant influenza vaccine). [73] However, only Fluad and Fluzone High-Dose Quadrivalent are publicly funded for certain jurisdictions and groups. British Columbia offers Fluad to older adults living in the community.[74] Alberta, Manitoba, New Brunswick, Prince Edward Island, Saskatchewan and Yukon offer Fluzone High-Dose Quadrivalent for older adults living in the community.[75,76,77,78,79,80] Ontario is the only jurisdiction that offers both Fluzone High-Dose Quadrivalent and Fluad to community-dwelling older adults.[81] All other provinces and territories (Quebec, Newfoundland and Labrador, Nova Scotia, Northwest Territories and Nunavut) only offer standard-dose influenza vaccines for older adults living in the community.[82,83,84,84,86] It is important to note, however, that across all provinces and territories, older Canadians living in long-term care and other specific settings are able to receive publicly funded Fluzone High-Dose Quadrivalent.

Providing enhanced influenza vaccines free of cost to all older Canadians will remove financial barriers to accessing these vaccines and likely promote better uptake. Again, the NIA's survey found that 32% of older Canadians reported that they would be more likely to get the seasonal influence vaccine if their jurisdiction funded enhanced influenza vaccines. Similarly, studies have found that the likelihood of getting vaccinated against influenza is considerably higher for individuals

Four Different Approaches to the Publicly Covered Enhanced Influenza Vaccine Programs for Older Canadians



LEGEND

IIV-Adj influenza vaccines are available for community-dwelling older adults in British Columbia.

IIV-Adj and IIV-HD influenza vaccines are available for community-dwelling older adults in Ontario.

IIV-HD influenza vaccines are available for community-dwelling older adults in Alberta, Saskatchewan, Manitoba, New Brunswick, Prince Edward Island, Yukon, and Nationally for older Canadians living in long-term care and other specific settings.

IIV-SD (non-enhanced) influenza vaccines are available for community-dwelling older adults in Quebec, Newfoundland, Nova Scotia, NWT and Nunavut.

IIV-HD = Fluzone High-Dose Quadrivalent (high-dose inactivated influenza vaccine)
IIV-Adj = Fluad (adjuvanted inactivated influenza vaccine)

eligible for government-funded vaccines than for individuals who are ineligible for funding.[87]

Based on current evidence, any of the three enhanced vaccines listed above may be provided free of cost to all older Canadians. The recent ACIP systematic review concluded that available studies do not indicate that any one enhanced vaccine is more consistently beneficial than the others across multiple influenza seasons for older adults.[88] However, expanding access to more than one type of enhanced vaccine may ensure sufficient supply and availability of vaccines for older adults that offer them additional protection.

4. Make vaccinations more widely available through pharmacies, primary health care providers, community clinics and targeted homebound vaccination programs

The NIA's survey findings noted that the second most common reason for not getting the influenza vaccine among adult Canadians was not getting around to taking the vaccine. This potentially implies an issue with convenience, where barriers such as difficulty of access or lack of motivation impede vaccination uptake, prompting people to forgo vaccination to attend to other obligations.[89] To address these barriers, interventions should look to increase motivation and change structural factors to enable vaccination.[90]

For example, programs could focus on providing reminders to eligible individuals via postcards, text messages, letters and phone calls. Multiple studies have found that the use of reminders, either generic or personalized, increased influenza vaccination uptake among adults.[91,92] In particular, telephone calls that allow for direct personal contact were generally found to be more effective.[93,94] These findings suggest ways that health care providers could play a more active role in improving influenza vaccination uptake.

Research has also shown that vaccine uptake can be improved through measures that enable interactions between health care providers and patients. For example, programs that involve patients actively in the decision-making process with their health care providers are more impactful than programs that simply inform patients.[95] Similarly, a review of pharmacy programs looking to improve influenza vaccination acceptance found that the most successful programs were those where pharmacists were more involved in proactive conversations and regular checks of vaccine uptake.[96]

With regards to structural factors, research has shown that issues with transportation to vaccination clinics, as well as living with physical disabilities or limited physical activity, are barriers to vaccination.[97,98,99] In particular, many older Canadians have substantial issues accessing care due to complex and inter-related health problems that often render them frail and homebound. While Canadian data on the number of homebound older adults are unavailable, estimates suggest there

may be at least 100,000.[100] As such, vaccination campaigns must integrate programs designed to reach homebound individuals to increase coverage among older adults.

It is important to note that jurisdictions and governments that implemented homebound vaccination strategies during the COVID-19 pandemic now have more detailed data on homebound older adults. This information could be leveraged to support influenza vaccination among homebound older adults. Specifically, efforts should focus on strengthening mixed delivery systems, where primary health care providers, homecare nurses and community paramedics can more easily administer in-home vaccinations to those who need them.

Capitalizing on these efforts, outreach strategies can also be extended to neighborhoods with high concentrations of older adults, otherwise known as Naturally Occurring Retirement Communities (NORCs). Targeting NORCs would provide the opportunity to increase awareness about vaccination, while simultaneously making vaccination more convenient.

5. Create more multilingual and culturally inclusive resources that speak to individuals from diverse backgrounds

The NIA's survey found that recent immigrants reported lower influenza vaccine uptake compared to long-term immigrants. Recent studies on COVID-19 vaccine coverage in Ontario have also shown similar trends, with new immigrants having lower coverage compared to those who have been in Canada longer.[101] In addition, the NIA's survey found that immigrants were more comfortable with co-administration. All of these findings suggest that vaccine uptake could be better promoted and supported for recent immigrants.

The NIA's survey also found considerable differences in influenza vaccine uptake across ethno-racial groups, with South Asian Canadians reporting the highest influenza vaccine coverage rates (58%) and Black Canadians reporting the lowest (27%). Similar findings have also been seen in the Canadian Community Health Survey for both influenza and COVID-19 vaccination.[102,103]

A systematic review noted various types of barriers to immunization among newcomer immigrants, including vaccine hesitancy, cultural factors and knowledge barriers.[104] Studies have also pointed to low health literacy and language barriers as contributors to vaccine hesitancy among immigrants.[105] These factors have been targeted within influenza vaccination programs for immigrants and different racial and cultural groups (i.e., through bilingual materials and staff), which have been shown to be effective.[106] The importance of providing more communication and culturally inclusive resources are further seen in research that shows how interventions incorporating such components significantly improved COVID-19 vaccine uptake among Black populations,[107] a group with both low influenza and COVID-19 vaccination rates in Canada.

Despite the need for inclusive resources, information about influenza vaccines on PHAC's website is only available in English and French. This is also the case across most of Canada's provinces and territories, as other language options for information are limited. On the other hand, during the COVID-19 vaccine pandemic, the federal government, along with most provincial and territorial governments, took swift action to ensure that vaccine information, educational materials and booking options were available in many dozens of languages and media.

Governments and public health officials should take steps to create more inclusive influenza vaccine resources. For example, influenza vaccine information should be made more widely accessible by translating it into several languages. This tactic would be particularly effective in neighbourhoods with a high concentration of immigrants and/or Canadians from diverse racial and cultural groups, as proven throughout the COVID-19 pandemic. Moreover, governments should take more effort to design targeted influenza vaccination campaigns that actively promote vaccination and reduce barriers to access among groups that have typically had lower influenza vaccination coverage, such as Black and Filipino communities.

Conclusion

This NIA survey report shows that influenza vaccination rates remain stubbornly low among Canadians, and stubbornly below PHAC's national flu vaccination coverage goal of 80% for older Canadians. However, this survey also suggests that influenza vaccination rates among adult Canadians may have increased since the beginning of the COVID-19 pandemic, and that there are several opportunities to further improve influenza vaccine coverage rates during Canada's current flu season.

The COVID-19 pandemic has improved attitudes about vaccines and vaccination intentions among Canadians, especially among older adults and adult Canadians of South Asian backgrounds. The desire to prevent infection appears to be the main factor responsible for the increased reported willingness to get a flu vaccine. Moreover, contrary to popular belief, only a small share of Canadians have developed more negative views of vaccines in light of the COVID-19 pandemic.

This survey has also highlighted that co-administering influenza vaccines and COVID-19 boosters, and providing greater access to publicly funded enhanced vaccines to older adults, could help boost influenza vaccination levels. These strategies would not only have the benefit of improving overall influenza vaccination coverage in Canada, but may also help it to finally reach PHAC's 80% national coverage goal for older adults.

The COVID-19 vaccine rollout demonstrated that when vaccinations are adequately promoted and prioritized, we can mobilize to quickly get the vast majority of Canadians vaccinated. By applying the strategies the NIA has outlined in this report, provincial, territorial and federal governments can begin to achieve improved uptake of influenza vaccinations and reduce the burden of influenza across Canada.

APPENDIX 1:
NIA Survey Development Process, Methods, and Respondent Demographics

The survey questionnaire was developed and translated by the NIA and Seqirus researchers in collaboration with Leger. The questionnaire was programmed in both English and French. The overall study was approved by the Veritas IRB independent review board. The informed consent adhered to the IRB requirements, applicable laws and regulations and CSL Seqirus Canada requirements.

The target population for this survey was Canadian residents aged 18 years and older. Respondents were recruited using the Léger consumer panel, LEO. LEO is Canada's largest and highest quality consumer panel of highly engaged respondents, with nearly 400,000 active members. The panel is representative of the population and is mostly based on random selection using diversified recruitment methods, including traditional and mobile telephone methodologies: random recruitment by the Leger call centre (61%), partner programs (25%), recommendations from other panel members (5%), registration on the LEO website and via social media (5%), offline recruitment (4%).

An online survey methodology was used to conduct the survey. This methodology has the advantage of allowing respondents to complete the survey in their own time, taking breaks if desired. Since it was an online survey, respondents had an option to complete the survey on a computer, smartphone or a tablet.

The survey was 12 minutes and conducted from Aug. 2-12, 2022. Average length of survey for those who completed the survey was 11 minutes and 15 seconds. A total of 12,360 panel members were invited to participate in the study. At the end of the data collection period, a total of 1,503 respondents completed the questionnaire in full, representing a response rate of ~14%, which is in line with the average response rate among active LEO panel members. Demographic information for panel respondents is outlined in **Table 1.**

At the end of data collection, to make sure the sample is representative, data was weighted by age, region and gender, based on 2016 census data from Statistics Canada.

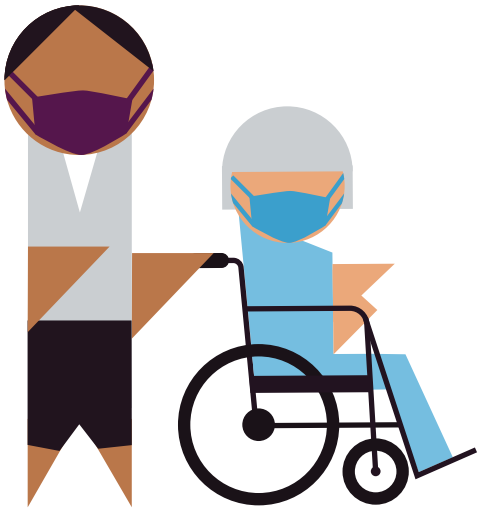


Table 1. Panel Demographics (N = 1,503)

Age	18–24	25–34	35–44	45–54	55–64	65–74	75+
	10%	17%	16%	16%	18%	16%	8%
Sex	**Male**	**Female**	**Non-Binary**				
	48%	51%	1%				
Regions	**British Columbia**	**Alberta**	**Saskatchewan**	**Manitoba**	**Ontario**	**Quebec**	**Atlantic**
	14%	11%	3%	3%	39%	23%	7%
Born in Canada	**Yes**	**No**	**Prefer not to say**				
	81%	19%	1%				
Income	**<$40,000**	**<$40,000–69,999**	**$70,000–99,999**	**$100,000–119,99**	**>$120,000**		
	19%	22%	19%	11%	20%		
Education	**High school or less**	**Some college or university**	**College graduate or CEGEP**	**Bachelor's degree**	**Master's/ PhD**		
	17%	17%	21%	30%	14%		

APPENDIX 2:
NIA Survey on Influenza Vaccination Questions and Answer Coding Guide

Section A: Vaccination In General

A1. As far as you know, are you up to date on your recommended vaccines?

Yes	1
No	2
Don't know/Not sure	98
Prefer not to say	99

A2. Please indicate the extent to which do you agree or disagree with the following statements about vaccines in general.

		Strongly disagree	Somewhat disagree	Somewhat agree	Strongly agree	Don't know/ Not sure	Prefer not to say
1	In general, I consider vaccines to be important for my health	1	2	3	4	98	99
2	I know enough about vaccines to make an informed decision about getting vaccinated	1	2	3	4	98	99

Section B: COVID-19 Vaccination

The next few questions will be around COVID-19 and your COVID-19 vaccination status…

B1. Have you been vaccinated against COVID-19?

Yes, one dose	1
Yes, two doses	2
Yes, three doses or more	3
No, but intend to	4
No, and do not intend to	5
Prefer not to say	99

B2.How likely are you to get an additional or booster dose of a COVID-19 vaccine if you are eligible to receive one?

Very unlikely	1
Somewhat unlikely	2
Somewhat likely	3
Very Likely	4
I already booked an appointment for my booster dose	5
Don't know/Not sure	98
Prefer not to say	99

PN: ASK IF CODES 1, 2 OR 98 SELECTED AT B2

B3. Please tell us why you are [PN: INSERT B2 RESPONSE] whether you will get an additional or booster dose of a COVID-19 vaccine? (Open-ended)

B4. Canadian public health authorities have said getting a flu vaccine at the same time as a COVID-19 booster is safe and effective for adults. If you could receive a COVID-19 booster shot and a flu vaccine at the same time, would you?

Yes, definitely	1
Yes, probably	2
Probably not	3
Definitely not	4
Don't Know/Not sure	98
Prefer not to say	99

PN: ASK IF CODE 1 OR 2 SELECTED AT B4

B5. Why did you say that you [INSERT "definitely" IF CODE 1 & "probably" IF CODE 2] would receive a COVID-19 booster shot and a flu vaccine at the same time?

PN: ASK IF CODE 3 OR 4 SELECTED AT B4

B6. Why did you say that you would [INSERT "probably" IF CODE 3 & "definitely" IF CODE 4] not receive a COVID-19 booster shot and a flu vaccine at the same time?

B7. If public health authorities recommend that Canadians receive another COVID-19 booster shot this fall, what would be your vaccination intention?

I will get both a COVID-19 booster and a flu shot in one visit	1
I will get both a COVID-19 booster and a flu shot, but at different times	2
I will get a COVID-19 booster but not a flu shot	3
I will get a flu shot but not a COVID-19 booster	4
I will get neither a COVID-19 booster nor flu shot	5
Unsure	98

How, if at all, has your overall view of vaccines changed since the COVID-19 pandemic began?

Overall, my view of vaccines has become …

Much more positive	1
A little more positive	2
Has not changed	3
A little more negative	4
A lot more negative	5
Don't know/Not sure	98
Prefer not to say	99

Section C: ADULT — Flu vaccination

We would now like to ask you some questions about the flu vaccine, and your vaccination status.

C1. Have you ever received the flu vaccine?

Yes	1
No	2

PN: ASK IF CODE 1 SELECTED AT C1

C2. Did you receive the flu vaccine last fall (that is, between September and December of 2021)?

Yes	1
No	2

PN: ASK IF CODE 1 SELECTED AT C1

C3. Have you ever received the flu vaccine in previous years (that is, in the fall of 2020 or before)?

Yes	1
No	2

PN: ASK IF CODE 1 SELECTED AT C3

C4. How many times?

Once	1
2–5 times	2
More than 5 times	3

PN: ASK IF CODE 1 SELECTED AT C2 OR C3

C5. Where did you receive your last flu shot? (Select only one)

Place of employment	1
Pharmacy	2
Physician's office or medical clinic	3
Hospital	4
Community-based public health clinic, such as in a shopping mall or library / CLSC **[ONLY FOR QC]**	5
Public Health Department	6
Other (Specify)	96
Can't remember	98
Prefer not to say	99

PN: ASK IF CODE 1 SELECTED AT C1

C6. Where would you prefer to get a flu shot? (Select as many as 3)

Place of employment	1
Pharmacy	2
Physician's office or medical clinic	3
Hospital	4
Community-based public health clinic, such as in a shopping mall or library / CLSC **[ONLY FOR QC]**	5
Public Health Department	6

Other (Specify)	96
Can't remember	98
Prefer not to say	99

PN: ASK IF CODE 1 SELECTED AT C2

C7. What are the reasons you decided to receive the flu vaccine last fall (that is, between September and December of 2021)? (Select all that apply)

PN: RANDOMIZE

I am worried about getting both the flu and COVID-19	1
I want to prevent infection / I do not want to get sick	2
I am at risk because of my health condition	3
I am at risk because of my age	4
I receive it every year / It's just something I've always done	5
To protect the health of others	6
It's recommended by my health care provider	7
It was encouraged by family members, colleagues or friends	8
It's free	9
Other (specify): _____	96
Don't know/Not sure	98
Prefer not to say	99

PN: ASK IF CODE 2 SELECTED AT C2

C8. What was the most important reason why you did not receive the flu vaccine last fall (that is, between September and December of 2021)?

PN: RANDOMIZE

I don't believe in vaccines	1
Flu vaccines don't work	2
I am healthy, and/or never get the flu	3

Getting the flu doesn't make me that sick	4
I did not get around to it	5
I have concerns about the flu vaccine, and/or its side effects	6
I have concerns about being exposed to COVID-19 while getting the flu vaccine	7
I got the flu before I had the opportunity to get the flu shot	8
It was too expensive (cost of the vaccine)	9
I was not able to get an appointment	10
No specific reason, I just didn't get it	11
Other (specify): _____	96
Don't know/Not sure	98
Prefer not to say	99

C9. Has the COVID-19 pandemic made it more or less likely that you will get the flu shot this coming fall (that is, between September and December of 2022)?

Much less likely	1
Somewhat less likely	2
No change in likelihood	3
Somewhat more likely	4
Much more likely	5
Don't know/Not sure	98
Prefer not to say	99

PN: ASK IF CODE 4 OR 5 SELECTED AT C9

C10. Please tell us why the COVID-19 pandemic has made it more likely that you will get the flu shot this coming fall (that is, between September and December of 2022)? (Select all that apply)

PN: RANDOMIZE

I've seen how sick people can get from a virus	1

I want maximum protection against all viruses	2
I don't want to get flu symptoms and have to get a COVID test	3
I don't want to get flu symptoms and have to quarantine	4
I don't want to get sick with both COVID-19 and the flu	5
I don't want to have to miss work or school	6
To keep me as healthy as possible in case I come into contact with COVID-19	7
Getting the flu shot could help make my COVID-19 vaccine more effective	8
Other (specify): _____	9
Don't know/Not sure	10

PN: ASK IF CODE 1 OR 2 SELECTED AT C9

C11. Please tell us why the COVID-19 pandemic has made it less likely that you will get the flu shot this coming fall (that is, between September and December of 2022)? (Select all that apply)

PN: RANDOMIZE

Because of social/physical distancing the seasonal flu almost disappeared last year	1
I don't want to be exposed to COVID-19 in the process of getting the flu shot.	2
I worry about getting multiple vaccines	3
Because of social distancing I won't be exposed to the seasonal flu	4
I Worry about potential side-effects	5
I Worry about how the flu shot could react with my COVID-19 vaccine	6
I Worry that it will make my COVID-19 vaccine less effective	7
Other (specify): _____	96
Don't know/Not sure	99

PN: ASK IF CODE 1 SELECTED AT C2

C12. Did you encounter any of the following difficulties in scheduling an appointment for getting the flu shot last fall (that is, between September and December of 2021) due to the COVID-19 pandemic? (Select all that apply)

PN: RANDOMIZE

Limited appointment availability	1
Transportation to get the appointment was a problem	2
I didn't know who to call to schedule an appointment	3
Concern about being exposed to COVID-19	4
No one could take care of my spouse/partner, children or other loved ones during the appointment	5
Lack of walk-in options	6
The vaccine was not offered at my usual/a convenient location	7
Other (specify): _____	96
I didn't encounter any difficulties in scheduling an appointment **[MUTUALLY EXCLUSIVE]**	97
I did not take any action to get vaccinated last fall **[MUTUALLY EXCLUSIVE]**	98
Don't know/Not sure **[MUTUALLY EXCLUSIVE]**	99
Prefer not to answer	99

C13. How worried, if at all, were you about getting the seasonal flu during the 2021-22 flu season (i.e., last flu season)?

Not at all worried 1	2	3	4	Very worried 5	Don't know/ Not sure 98	Prefer not to say 99

C14. Were you more worried or less worried about getting the seasonal flu during the 2021-22 flu season (i.e., last flu season) compared to previous flu seasons?

A lot more worried about getting the flu during the 2021-22 flu season (i.e., last flu season)	1
A bit more worried about getting the flu during the 2021-22 flu season (i.e., last flu season)	2
No change	3

A bit less worried about getting the flu during the 2021-22 flu season (i.e., last flu season)	4
A lot less worried about getting the flu during the 2021-22 flu season (i.e., last flu season)	5
Prefer not to say	98

C15. Do you intend to receive the flu vaccine this coming fall (that is, between September and December of 2022)?

Yes, definitely	1
Yes, probably	2
Probably not	3
Definitely not	4
Don't Know/Not sure	98
Prefer not to say	99

C.16 Moving forward, do you think you are more or less likely to get the flu vaccine over the next five years than you have in the past five years?

Much more likely	1
Somewhat more likely	2
No change	3
Somewhat less likely	4
Much less likely	5
Don’t know/Not sure	98
Prefer not to say	99

PN: ASK IF CODE 1, 2, 4 OR 5 SELECTED AT C16

C17. Please briefly explain why you think you are [PN: INSERT C16 RESPONSE] to get the flu vaccine over the next five years than you have in the past five years

Section D: Flu vaccine Knowledge and Awareness

We would now like to understand your awareness and perceptions of different types of flu vaccines.

D1. Did you know that each year more than one type of flu vaccine is approved for use in Canada?

Yes	1
No	2

D2. Did you know that there are different influenza vaccines made for younger adults and for people 65 years of age and older?

Yes, definitely	1
Yes, vaguely	2
No	

PN: SHOW THE BELOW ON A SEPARATE SCREEN AFTER D2

There are, in fact, different influenza vaccines made for younger adults and for people 65 years of age and older. Enhanced influenza vaccines are designed to give older adults better protection against the flu.

D3. Did you know that there is more than one type of enhanced influenza vaccine made specifically for people 65 years of age and older?

Yes, definitely	1
Yes, vaguely	2
No	

PN: SHOW THE BELOW ON A SEPARATE SCREEN AFTER D3

There is, in fact, more than one type of enhanced influenza vaccine specifically formulated and approved for use in for people 65 years of age and older.

D4. Please indicate whether you agree with each of the following statements about enhanced influenza vaccines.

		Strongly disagree	Somewhat disagree	Somewhat agree	Strongly agree	Don't know/ Not sure	Prefer not to say
1	Some enhanced vaccines are better than others	1	2	3	4	98	99
2	Enhanced vaccines help better protect older adults from the seasonal flu	1	2	3	4	98	99
3	It is important that older Canadians have access to enhanced vaccines	1	2	3	4	98	99
4	Enhanced vaccines should be available free of charge to any older Canadian who wants one	1	2	3	4	98	99

D5. If your province/territory offered enhanced influenza vaccines, would it make you more likely to get vaccinated against the flu?

Much more likely	1
Somewhat more likely	2
No change	3
Somewhat less likely	4
Much less likely	5
Don’t know/Not sure	98
Prefer not to say	99

D6. Please indicate whether you agree or disagree with each of the following statements about flu vaccination.

PN: RANDOMIZE

		Strongly disagree	Somewhat disagree	Somewhat agree	Strongly agree	Don't know/ Not sure	Prefer not to say
1	The flu vaccine does not protect you against getting the flu	1	2	3	4	98	99
2	Sometimes, you can get the flu from the flu vaccine	1	2	3	4	98	99
3	The opinion of my family doctor, general practitioner, nurse practitioner and/or other health specialists is an important part of my decision when it comes to getting the flu vaccine	1	2	3	4	98	99
4	The flu vaccine is safe	1	2	3	4	98	99
5	I understand why the flu vaccine is recommended annually	1	2	3	4	98	99

D7. Please indicate whether you agree or disagree with each of the following statements.

PN: RANDOMIZE

		Strongly disagree	Somewhat disagree	Somewhat agree	Strongly agree	Don't know/ Not sure	Prefer not to say
1	I trust the science behind COVID-19 vaccines	1	2	3	4	98	99
2	I trust the science behind vaccines	1	2	3	4	98	99
3	I trust the science behind flu vaccines	1	2	3	4	98	99
4	Vaccines are a lot more effective now than they used to be	1	2	3	4	98	99

5	I worry that COVID-19 vaccines are often rushed to market	1	2	3	4	98	99
6	I worry that flu vaccines are often rushed to market	1	2	3	4	98	99
7	I worry that getting a flu shot on top of a COVID-19 vaccine might overload my immune system	1	2	3	4	98	99

Section E: Demographics

E1. Please provide the first half of your postal code (e.g. K1K). [Open-end]

_____ (A2A)

E2. People living in Canada come from many different cultural and racial backgrounds. The following question will help us to better understand the experiences of the communities that we serve. Do you consider yourself to be . . . (Select all that apply)

First Nation	1
Inuit	2
Métis	3
Indigenous/Aboriginal (not included above)	4
Arab	5
Black (North American, Caribbean, African, etc.)	6
Chinese	7
Filipino	8
Japanese	9
Korean	10

Latin American	11
South Asian (East Indian, Pakistani, Sri Lankan etc.)	12
Southeast Asian (Vietnamese, Cambodian, Malaysian, Laotian, etc.)	13
West Asian (Iranian, Afghan, etc.)	14
White (North American, European, etc.)	15
Other (specify): _____	96
Prefer not to say	99

E3. Do you currently have a residential land-line telephone service at home?

Yes	1
No	2
Don't know/Not sure	98
Prefer not to say	99

E4. What is your current marital status?

Single / never married	1
Married	2
Common law	3
Separated	4
Divorced	5
Widowed	6
Prefer not to say	99

E5. Including yourself, how many people live in your household, counting adults and children?

_____ # people

☐ One person (myself)

☐ Prefer not to say

PN: ASK IF >1 AT E5

E6. How many people in each of the following age groups (if any) do you have living with you in your household?

<5 years old	____ #
5–17 years old	____ #
18–34 years old	____ #
35–44 years old	____ #
45–54 years old	____ #
55–44 years old	____ #
65 years of age or older	____ #
Prefer not to say	99

SUM=55

E7. What is the highest level of education you have completed?

Less than high school	1
High school	2
Some college or university	3
College graduate or CEGEP	4
Bachelor's degree	5
Master's or professional degree	6
Doctorate	7
Prefer not to say	99

E8. What is your current employment status?

Less than high school	1
High school	2
Some college or university	3
College graduate or CEGEP	4
Bachelor's degree	5
Master's or professional degree	6
Doctorate	7
Prefer not to say	99

E9. Which of the following best describes your current health insurance coverage?

Public / provincial coverage	1
Private insurance	2
No coverage	3
Don't know/Not sure	4
Prefer not to say	99

E10. What is your annual household income (from all sources before taxes)?

Less than $20,000	1
$20,000-$39,999	2
$40,000-$69,999	3
$70,000-$99,999	4
$100,000-$119,999	5
$120,000 or more	6
Prefer not to say	99

E11. Which of the following location descriptions best defines where you live? (Select one only)

Rural (population of less than 50,000)	1
Small town (population between 50,000 – 250,000)	2
Large city (population from 250,000 – 1 million)	3
Metropolitan (population of 1 million or more)	4
Don't know/Not sure	5
Prefer not to say	6

E12. Were you born in Canada?

Yes	1
No	2
Prefer not to say	99

E13. On a scale of one to five, with one being poor and five being excellent, how would you rate your health?

One (poor)	1
Two (fair)	2
Three (good)	3
Four (very good)	4
Five (excellent)	5
Don't know/Not sure	6
Prefer not to say	99

PN: ASK IF NO AT E12

E14. In what year did you move to Canada?

Record year: XXXX

☐ Don't know/Not sure

☐ Prefer not to say

PN: ASK IF NO AT E12

E15. In which country were you born?

Afghanistan	1
Algeria	2
Bangladesh	3
Belgium	4
China	5
Colombia	6
France	7
Germany	8
Greece	9
Guyana	10
Hong Kong	11
India	12
Iran	13
Italy	14
Jamaica	15
Korea, Republic of (South Korea)	16
Lebanon	17
Netherlands	18
Pakistan	19

Philippines	20
Poland	21
Portugal	22
Romania	23
Russia	24
Sri Lanka	25
Taiwan	26
Trinidad and Tobago	27
Turkey	28
Ukraine	29
United Kingdom	30
United States	31
Vietnam	32
Other (please specify) _____	96
Don't know/Not sure	98
Prefer not to say	99

Thank you for participating in the survey.

This brings us to the end of the survey.

References

[1] Government of Canada. (2022, October). Flu (influenza): For health professionals. Retrieved November 11, 2022, from: https://www.canada.ca/en/public-health/services/diseases/flu-influenza/health-professionals.html

[2] National Advisory Committee on Immunization. (2016, April). A Review of the Literature of High Dose Seasonal Vaccine for Adults 65 Years and Older. Retrieved November 14, 2022, from: https://www.canada.ca/en/public-health/services/immunization/national-advisory-committee-on-immunization-naci/a-review-literature-high-dose-seasonal-influenza-vaccine-adults-65-years-older.html

[3] Government of Canada. (2022, October). Flu (influenza): For health professionals. Retrieved November 11, 2022, from: https://www.canada.ca/en/public-health/services/diseases/flu-influenza/health-professionals.html

[4] Statistics Canada. (2022, January). Leading causes of death, total population, by age group. Retrieved November 11, 2022, from: https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1310039401

[5] BC Centre for Disease Control. (2013). BC Influenza Prevention Policy: A discussion of the evidence. Vancouver, British Columbia.

[6] Government of Canada. (2022, July 11). Seasonal Influenza (Flu) Vaccination Coverage Survey results, 2021-2022. Retrieved November 14, 2022, from: https://www.canada.ca/en/public-health/services/immunization-vaccines/vaccination-coverage/seasonal-influenza-survey-results-2021-2022.html

[7] Government of Canada. (2022, August). Vaccination Coverage Goals and Vaccine Preventable Disease Reduction Targets by 2025. Retrieved November 11, 2022, from: https://www.canada.ca/en/public-health/services/immunization-vaccine-priorities/national-immunization-strategy/vaccination-coverage-goals-vaccine-preventable-diseases-reduction-targets-2025.html#det21

[8] Government of Canada. (2022, July 11). Seasonal Influenza (Flu) Vaccination Coverage Survey results, 2021-2022. Retrieved November 14, 2022, from: https://www.canada.ca/en/public-health/services/immunization-vaccines/vaccination-coverage/seasonal-influenza-survey-results-2021-2022.html

[9] Government of Canada. (2022, July 11). Seasonal Influenza (Flu) Vaccination Coverage Survey results, 2021-2022. Retrieved November 14, 2022, from: https://www.canada.ca/en/public-health/services/immunization-vaccines/vaccination-coverage/seasonal-influenza-survey-results-2021-2022.html

[10] Government of Canada. (2022, November 14). Canada's COVID-19 vaccine supply and donation strategy. Retrieved November 15, 2022, from: https://www.canada.ca/en/public-health/services/diseases/coronavirus-disease-covid-19/vaccines/supply-donation.html

[11] The COVID-19 vaccination campaign began in Canada on Dec. 14, 2020. As of Dec. 11, 2021, 90% of Canada's population aged 12 years and older had received at least one dose of a COVID-19 vaccine, while 87% had received two doses.

[12] Groves, H. E., Piché-Renaud, P. P., Peci, A., Farrar, D. S., Buckrell, S., Bancej, C., ... & Morris, S. K. (2021). The impact of the COVID-19 pandemic on influenza, respiratory syncytial virus, and other seasonal respiratory virus circulation in Canada: A population-based study. The Lancet Regional Health-Americas. Retrieved from: https://doi.org/10.1016/j.lana.2021.100015

[13] Nwosu, A., Lee, L., Schmidt, K., Buckrell, S., Sevenhuysen, C., & Bancej, C. (2022). National Influenza Annual Report, Canada, 2022–2021. Retrieved from: https://www.canada.ca/en/public-health/services/reports-publications/canada-communicable-disease-report-ccdr/monthly-issue/2021-47/issue-10-october-2021/national-influenza-annual-report-canada-2020-2021.html

[14] Pendrey, C. (2022). Influenza Season, Australia 2022. WHO Collaborating Centre for Reference and Research on Influenza. Retrieved November 15, 2022, from: https://www.folkhalsomyndigheten.se/contentassets/c7827dea8df640f4b68dec219472eab3/2d-2022-australia-influenza-season-europe-oct-2022.pdf

[15] Shingler, B. (2022, October 26). What to know about RSV, a virus surging among young children in Canada. CBC News. Retrieved, November 15, 2022, from: https://www.cbc.ca/news/health/rsv-canada-children-virus-1.6628778

[16] Public Health Agency of Canada. (2022). Respiratory Virus Detection Report – October 30 to November 5, 2022. Retrieved November 15, 2022, from: https://www.canada.ca/content/dam/phac-aspc/documents/services/surveillance/respiratory-virus-detections-canada/2022-2023/week-44-ending-november-5-2022/week-44-ending-november-5-2022.pdf

[17] Government of Canada. (2022, October). Flu (influenza): For health professionals. Retrieved November 11, 2022, from: https://www.canada.ca/en/public-health/services/diseases/flu-influenza/health-professionals.html

[18] Statistics Canada. (2022). Older adults and population aging statistics. Retrieved November 15, 2022, from: https://www.statcan.gc.ca/en/subjects-start/older_adults_and_population_aging

[19] Government of Canada. (2021, March). FluWatch annual report: 2019-2020 influenza season. Retrieved November 15, 2022, from: https://www.canada.ca/en/public-health/services/publications/diseases-conditions/fluwatch/2019-2020/annual-report.html

[20] Public Health Agency of Canada. (2021, October). The Public Health Agency of Canada Webinar: Seasonal Influenza Immunization 2021-2022. Retrieved November 11, 2022, from: https://nccid.ca/wp-content/uploads/sites/2/2021/12/DATAPOST-Rev-EN-Seasonal-Influenza-Webinar-2021-2022_Nov-23.LFpptm.pdf

[21] Young, K., I. Gemmill, and R. Harrison, Summary of the NACI Seasonal Influenza Vaccine Statement for 2020-2021. Can Commun Dis Rep, 2020. 46(5): p. 132-137.

[22] Government of Canada. (2022, July 11). Seasonal Influenza (Flu) Vaccination Coverage Survey results, 2021-2022. Retrieved November 14, 2022, from: https://www.canada.ca/en/public-health/services/immunization-vaccines/vaccination-coverage/seasonal-influenza-survey-results-2021-2022.html

[23] Government of Canada. (2022, July 11). Seasonal Influenza (Flu) Vaccination Coverage Survey results, 2021-2022. Retrieved November 14, 2022, from: https://www.canada.ca/en/public-health/services/immunization-vaccines/vaccination-coverage/seasonal-influenza-survey-results-2021-2022.html

[24] The COVID-19 vaccination campaign began in Canada on Dec. 14, 2020. As of Dec. 11, 2021, 90% of Canada's population aged 12 years and older had received at least one dose of a COVID-19 vaccine, while 87% had received two doses.

[25] Wheelock, A., Miraldo, M., Thomson, A., Vincent, C., & Sevdalis, N. (2017). Evaluating the importance of policy amenable factors in explaining influenza vaccination: a cross-sectional multinational study. BMJ open. 7(7). Retrieved from: http://dx.doi.org/10.1136/bmjopen-2016-014668

[26] Nowak GJ, Sheedy K, Bursey K, Smith TM, Basket M. (2015). Promoting influenza vaccination: insights from a qualitative meta-analysis of 14 years of influenza-related communications research by U.S. Centers for Disease Control and Prevention (CDC). Vaccine. 33(24). Retrieved from: https://doi.org/10.1016/j.vaccine.2015.04.064

[27] Government of Canada. (2022, November 7). Influenza vaccine: Canadian Immunization Guide. Retrieved November 14, 2022, from: https://www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-4-active-vaccines/page-10-influenza-vaccine.html

[28] Schmid, P., Rauber, D., Betsch, C., Lidolt, G., & Denker, M. L. (2017). Barriers of influenza vaccination intention and behavior–a systematic review of influenza vaccine hesitancy, 2005–2016. PloS One, 12(1). Retrieved from: https://doi.org/10.1371/journal.pone.0170550

[29] Betsch, C., Böhm, R., & Chapman, G. B. (2015). Using behavioral insights to increase vaccination policy effectiveness. Policy Insights from the Behavioral and Brain Sciences, 2(1). Retrieved from: https://doi.org/10.1177/2372732215600716

[30] MacDougall, D. M., Halperin, B. A., MacKinnon-Cameron, D., Li, L., McNeil, S. A., Langley, J. M., & Halperin, S. A. (2015). The challenge of vaccinating adults: attitudes and beliefs of the Canadian public and healthcare providers. BMJ Open, 5(9). Retrieved from: https://doi.org/10.1136/bmjopen-2015-009062

[31] Public Health Agency of Canada. (2018, July). Vaccine uptake in Canadian adults: Results from the 2016 adult National Immunization Coverage Survey (aNICS). Government of Canada. Retrieved November 14, 2022, from: https://publications.gc.ca/collections/

collection_2018/aspc-phac/HP40-222-2018-eng.pdf

[32] Stratoberdha, D., Gobis, B., Ziemczonek, A., Yuen, J., Giang, A., & Zed, P. J. (2022). Barriers to adult vaccination in Canada: A qualitative systematic review. Canadian Pharmacists Journal : CPJ = Revue des Pharmaciens du Canada : RPC, 155(4). Retrieved from: https://doi.org/10.1177/17151635221090212

[33] CanAge. (2022, January). Adult vaccination in Canada: Cross-country report card 2022. Retrieved November 14, 2022, from: https://www.canage.ca/wp-content/uploads/2022/02/CanAge_VaccineReport22.pdf

[34] Zheng, Y., & Barratt, J. (2020, September). Changing the conversation on adult influenza vaccination. Vaccines4Life. Retrieved November 14, 2022, from: https://www.vaccines4life.com/wp-content/uploads/2020/10/Technical-Report_-Final.pdf

[35] Schmid, P., Rauber, D., Betsch, C., Lidolt, G., & Denker, M. L. (2017). Barriers of influenza vaccination intention and behavior–a systematic review of influenza vaccine hesitancy, 2005–2016. PloS One, 12(1). Retrieved from: https://doi.org/10.1371/journal.pone.0170550

[36] Betsch, C., Schmid, P., Heinemeier, D., Korn, L., Holtmann, C., & Böhm, R. (2018). Beyond confidence: Development of a measure assessing the 5C psychological antecedents of vaccination. PloS One, 13(12). Retrieved from: https://doi.org/10.1371/journal.pone.0208601

[37] Thomson, A., Robinson, K., & Vallée-Tourangeau, G. (2016). The 5As: A practical taxonomy for the determinants of vaccine uptake. Vaccine, 34(8). Retrieved from: https://doi.org/10.1016/j.vaccine.2015.11.065

[38] Thomson, A., Robinson, K., & Vallée-Tourangeau, G. (2016). The 5As: A practical taxonomy for the determinants of vaccine uptake. Vaccine, 34(8). Retrieved from: https://doi.org/10.1016/j.vaccine.2015.11.065

[39] Betsch, C., Schmid, P., Heinemeier, D., Korn, L., Holtmann, C., & Böhm, R. (2018). Beyond confidence: Development of a measure assessing the 5C psychological antecedents of vaccination. PloS One, 13(12). Retrieved from: https://doi.org/10.1371/journal.pone.0208601

[40] Bish, A., Yardley, L., Nicoll, A., & Michie, S. (2011). Factors associated with uptake of vaccination against pandemic influenza: a systematic review. Vaccine, 29(38). Retrieved from: https://doi.org/10.1016/j.vaccine.2011.06.107

[41] Brewer, N. T., Chapman, G. B., Gibbons, F. X., Gerrard, M., McCaul, K. D., & Weinstein, N. D. (2007). Meta-analysis of the relationship between risk perception and health behavior: the example of vaccination. Health Psychology, 26(2). Retrieved from: https://doi.org/10.1037/0278-6133.26.2.136

[42] Schmid, P., Rauber, D., Betsch, C., Lidolt, G., & Denker, M. L. (2017). Barriers of influenza vaccination intention and behavior–a systematic review of influenza vaccine hesitancy, 2005–2016. PloS One, 12(1). Retrieved from: https://doi.org/10.1371/journal.pone.0170550

[43] Caserotti, M., Girardi, P., Rubaltelli, E., Tasso, A., Lotto, L., & Gavaruzzi, T. (2021). Associations of COVID-19 risk perception with vaccine hesitancy over time for Italian residents. Social Science & Medicine, 272. Retrieved from: https://doi.org/10.1016/j.socscimed.2021.113688

[44] Dubé, E., Laberge, C., Guay, M., Bramadat, P., Roy, R., & Bettinger, J. A. (2013). Vaccine hesitancy: An overview. Human Vaccines & Immunotherapeutics, 9(8). Retrieved from: https://doi.org/10.4161/hv.24657

[45] Gates, A., Gates, M., Rahman, S., Guitard, S., MacGregor, T., Pillay, J., Ismail, S. J., Tunis, M. C., Young, K., Hardy, K., Featherstone, R., & Hartling, L. (2021). A systematic review of factors that influence the acceptability of vaccines among Canadians. Vaccine, 39(2). Retrieved from: https://doi.org/10.1016/j.vaccine.2020.10.038

[46] Government of Canada. (2022, July 11). Seasonal Influenza (Flu) Vaccination Coverage Survey results, 2021-2022. Retrieved November 14, 2022, from: https://www.canada.ca/en/public-health/services/immunization-vaccines/vaccination-coverage/seasonal-influenza-survey-results-2021-2022.html

[47] MacDougall, D., Halperin, B. A., Isenor, J., MacKinnon-Cameron, D., Li, L., McNeil, S. A., Langley, J. M., & Halperin, S. A. (2016). Routine immunization of adults by pharmacists: Attitudes and beliefs of the Canadian public and health care providers. Human Vaccines & Immunotherapeutics, 12(3), 623–631. Retrieved from: https://doi.org/10.1080/21645515.2015.1093714

[48] Gates, A., Gates, M., Rahman, S., Guitard, S., MacGregor, T., Pillay, J., Ismail, S. J., Tunis, M. C., Young, K., Hardy, K., Featherstone, R., & Hartling, L. (2021). A systematic review of factors that influence the acceptability of vaccines among Canadians. Vaccine, 39(2). Retrieved from: https://doi.org/10.1016/j.vaccine.2020.10.038

[49] Kan, T., & Zhang, J. (2018). Factors influencing seasonal influenza vaccination behaviour among elderly people: A systematic review. Public Health, 156. Retrieved from: https://doi.org/10.1016/j.puhe.2017.12.007

[50] Public Health Agency of Canada. (2022, June 8). Canadian Immunization Guide chapter on influenza and statement on seasonal influenza vaccine for 2022–2023. Government of Canada. Retrieved November 14, 2022, from: https://www.canada.ca/en/public-health/services/publications/vaccines-immunization/canadian-immunization-guide-statement-seasonal-influenza-vaccine-2022-2023.html

[51] Government of Canada. (2020, February 13). Timing of vaccine administration: Canadian Immunization Guide. Retrieved November 14, 2022, from: https://www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-1-key-immunization-information/page-10-timing-vaccine-administration.html

[52] Government of Canada. (2022, November 7). COVID-19 vaccine: Canadian Immunization Guide. Retrieved November 14, 2022, from: https://www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-4-active-vaccines/page-26-covid-19-vaccine.html

[53] Schmid, P., Rauber, D., Betsch, C., Lidolt, G., & Denker, M. L. (2017). Barriers of influenza vaccination intention and behavior–a systematic review of influenza vaccine hesitancy, 2005–2016. PloS One, 12(1). Retrieved from: https://doi.org/10.1371/journal.pone.0170550

[54] Kan, T., & Zhang, J. (2018). Factors influencing seasonal influenza vaccination behaviour among elderly people: A systematic review. Public Health, 156. Retrieved from: https://doi.org/10.1016/j.puhe.2017.12.007

[55] Gates, A., Gates, M., Rahman, S., Guitard, S., MacGregor, T., Pillay, J., Ismail, S. J., Tunis, M. C., Young, K., Hardy, K., Featherstone, R., & Hartling, L. (2021). A systematic review of factors that influence the acceptability of vaccines among Canadians. Vaccine, 39(2). Retrieved from: https://doi.org/10.1016/j.vaccine.2020.10.038

[56] Health Canada. (2022, September 1). SPIKEVAX Bivalent (Original / Omicron). Government of Canada. Retrieved November 14, 2022, from: https://pdf.hres.ca/dpd_pm/00067127.PDF

[57] Health Canada. (2022, October 7). COMIRNATY Original & Omicron BA.4/BA.5. Government of Canada. Retrieved November 14, 2022, from: https://pdf.hres.ca/dpd_pm/00067598.PDF

[58] Health Canada. (2022, October 21). COMIRNATY Original / Omicron BA.1. Government of Canada. Retrieved November 14, 2022, from: https://pdf.hres.ca/dpd_pm/00067818.PDF

[59] Health Canada. (2022, November 3). SPIKEVAX Bivalent (Original / Omicron BA.4/5). Government of Canada. Retrieved November 14, 2022, from: https://pdf.hres.ca/dpd_pm/00067971.PDF

[60] Public Health Agency of Canada. Summary of National Advisory Committee on Immunization (NACI) updates of November 3, 2022: Recommendations on the use of Moderna Spikevax BA.4/5 bivalent mRNA (50 mcg) COVID-19 booster vaccine in adults. Government of Canada. Retrieved November 14, 2022, from: https://www.canada.ca/en/public-health/services/publications/vaccines-immunization/summary-national-advisory-committee-immunization-november-3-2022-recommendations-use-moderna-spikevax-bivalent-mrna-50-mcg-covid-19-booster-vaccine-adults.html

[61] Kumar, S., Shah, Z., & Garfield, S. (2022). Causes of vaccine hesitancy in adults for the influenza and COVID-19 vaccines: A systematic literature review. Vaccines, 10(9). Retrieved from: https://doi.org/10.3390/vaccines10091518

[62] Garneau, K., & Zossou, C. (2021, February 2). Misinformation during the COVID-19 pandemic. Statistics Canada. Retrieved November 14, 2022, from: https://epe.lac-bac.gc.ca/100/201/301/weekly_acquisitions_list-ef/2021/21-06/publications.gc.ca/collections/collection_2021/statcan/45-28/CS45-28-1-2021-4-eng.pdf

[63] Skafle, I., Nordahl-Hansen, A., Quintana, D. S., Wynn, R., & Gabarron, E. (2022). Misinformation About COVID-19 vaccines on social media: Rapid review. Journal of Medical Internet

Research, 24(8). Retrieved from: https://doi.org/10.2196/37367

[64] Shakeel, C. S., Mujeeb, A. A., Mirza, M. S., Chaudhry, B., & Khan, S. J. (2022). Global COVID-19 vaccine acceptance: A systematic review of associated social and behavioral factors. Vaccines, 10(1). Retrieved from: https://doi.org/10.3390/vaccines10010110

[65] MacDougall, D., Halperin, B. A., Isenor, J., MacKinnon-Cameron, D., Li, L., McNeil, S. A., Langley, J. M., & Halperin, S. A. (2016). Routine immunization of adults by pharmacists: Attitudes and beliefs of the Canadian public and health care providers. Human Vaccines & Immunotherapeutics, 12(3), 623–631. Retrieved from: https://doi.org/10.1080/21645515.2015.1093714

[66] Gates, A., Gates, M., Rahman, S., Guitard, S., MacGregor, T., Pillay, J., Ismail, S. J., Tunis, M. C., Young, K., Hardy, K., Featherstone, R., & Hartling, L. (2021). A systematic review of factors that influence the acceptability of vaccines among Canadians. Vaccine, 39(2). Retrieved from: https://doi.org/10.1016/j.vaccine.2020.10.038

[67] Kan, T., & Zhang, J. (2018). Factors influencing seasonal influenza vaccination behaviour among elderly people: a systematic review. Public Health, 156. Retrieved from: https://doi.org/10.1016/j.puhe.2017.12.007

[68] Cowling, B. J., Thompson, M. G., Ng, T., Fang, V. J., Perera, R., Leung, N., Chen, Y., So, H. C., Ip, D., & Iuliano, A. D. (2020). Comparative reactogenicity of enhanced influenza vaccines in older adults. The Journal of Infectious Diseases, 222(8). Retrieved from: https://doi.org/10.1093/infdis/jiaa255

[69] National Advisory Committee on Immunization. (2018, May). Literature review update on the efficacy and effectiveness of high-dose (Fluzone High-Dose) and MF59-adjuvanted (Fluad) trivalent inactivated influenza vaccines in adults 65 years of age and older. Retrieved November 14, 2022, from: https://publications.gc.ca/collections/collection_2018/aspc-phac/HP40-210-2018-eng.pdf

[70] Grohskopf, L.A., Blanton, L.H., Ferdinands, J.M., Chung, J.R., Broder, K.R., Talbot, H.K., Morgan, R.L., & Fry, A.M. (2022). Prevention and control of seasonal influenza with vaccines: Recommendations of the Advisory Committee on Immunization Practices - United States, 2022-23 influenza season. MMWR. Recommendations and Reports : Morbidity and Mortality Weekly Report. Recommendations and Reports, 71(1). Retrieved from: https://doi.org/10.15585/mmwr.rr7101a1

[71] Government of Canada. (2022, September 16). Basic immunology and vaccinology: Canadian Immunization Guide. Retrieved November 14, 2022, from: https://www.canada.ca/en/public-health/services/publications/healthy-living/canadian-immunization-guide-part-1-key-immunization-information/page-14-basic-immunology-vaccinology.html

[72] Gates, A., Gates, M., Rahman, S., Guitard, S., MacGregor, T., Pillay, J., Ismail, S. J., Tunis, M. C., Young, K., Hardy, K., Featherstone, R., & Hartling, L. (2021). A systematic review of factors that influence the acceptability of

vaccines among Canadians. Vaccine, 39(2). Retrieved from: https://doi.org/10.1016/j.vaccine.2020.10.038

[73] Public Health Agency of Canada. (2022, June 8). Canadian Immunization Guide chapter on influenza and statement on seasonal influenza vaccine for 2022–2023. Government of Canada. Retrieved November 14, 2022, from: https://www.canada.ca/en/public-health/services/publications/vaccines-immunization/canadian-immunization-guide-statement-seasonal-influenza-vaccine-2022-2023.html

[74] BC Centre for Disease Control. (2022, August). Influenza vaccines for adults 65 years of age and older: Question and answer document: August 2022. Retrieved October 1, 2022, from: http://www.bccdc.ca/resource-gallery/Documents/Guidelines%20and%20Forms/Guidelines%20and%20Manuals/Immunization/Vaccine%20Info/Influenza-vaccines-adults-65-older-QandA.pdf

[75] Government of Alberta. (2022, August). Influenza vaccine: High-dose quadrivalent inactivated. Retrieved October 1, 2022, from: https://open.alberta.ca/dataset/58d31634-61d9-469d-b95f-f714719b923e/resource/951c0e8c-e151-4dc6-9140-c9238eb8734b/download/aip-bp-influenza-quadrivalent-inactivated-high-dose.pdf

[76] Manitoba Health. (2022, August). Manitoba's Seasonal Influenza Immunization Program Plan: 2022-23. Retrieved October 1, 2022, from: https://www.gov.mb.ca/health/flu/docs/seasonal_influenza_imm_program_plan.pdf

[77] Government of New Brunswick. (n.d.). Pharmacy administered publicly funded vaccines and testing program – Publicly funded seasonal influenza vaccine (2022-2023). Retrieved October 1, 2022, from: https://www2.gnb.ca/content/gnb/en/departments/health/MedicarePrescriptionDrugPlan/TheNewBrunswickPrescriptionDrugProgram/PharmacistAdministeredVaccine.html

[78] Government of Prince Edward Island. (2022, September 12). Universal Influenza Program frequently asked questions from immunizers. Retrieved October 1, 2022, from: https://www.princeedwardisland.ca/en/information/health-and-wellness/universal-influenza-program-frequently-asked-questions-from

[79] Government of Saskatchewan. (2022, September 6). Saskatchewan Influenza Immunization Policy 2022-2023. Retrieved October 1, 2022, from: https://formulary.drugplan.ehealthsask.ca/PDFs/Saskatchewan%20Influenza%20Immunization%20Policy%202022-23.pdf

[80] Government of Yukon. (2022). Find a flu shot clinic. Retrieved October 1, 2022, from: https://yukon.ca/en/health-and-wellness/health-concerns-diseases-and-conditions/find-flu-shot-clinic

[81] Ontario Ministry of Health. (2022, September 22). 2022/2023 Universal Influenza Immunization Program (UIIP). Retrieved October 1, 2022, from: https://health.gov.on.ca/en/pro/programs/publichealth/flu/uiip/#vaccine_products

[82] Gouvernement du Québec. (2022, September). Programme d'immunisation contre l'influenza du Québec: Information à l'intention des professionnels de la

santé. Retrieved November 14, 2022, from: https://publications.msss.gouv.qc.ca/msss/fichiers/2022/22-278-13W.pdf

[83] Government of Newfoundland and Labrador. (n.d.). Resources For health care professionals. Retrieved November 14, 2022, from: https://www.timefortheshot.ca/resources/

[84] Government of Nova Scotia. (2022, October 3). Publicly funded seasonal inactivated influenza vaccine: Information for health care providers: 2022-23. Retrieved November 14, 2022, from: https://novascotia.ca/dhw/cdpc/documents/Publicly-Funded-Seasonal-Inactivated-Influenza-Vaccine-Information.pdf

[85] Department of Health and Social Services. (n.d.). Influenza / flu. Retrieved November 14, 2022, from: https://www.hss.gov.nt.ca/en/services/influenza-flu

[86] National Institute on Ageing. (2022, January). The underappreciated burden of influenza among Canada's older population. And what we need to do about it. Retrieved November 14, 2022, from: https://static1.squarespace.com/static/5c2fa7b03917eed9b5a436d8/t/61fd8e3e508bdd6a9c173e56/1644006975965/Burden+of+Influenza+Report+-+Updated+Jan+2022+-+Final.pdf

[87] Kelly, D. A., Macey, D. J., & Mak, D. B. (2014). Annual influenza vaccination. Human Vaccines & Immunotherapeutics, 10(7). Retrieved from: https://doi.org/10.4161/hv.29071

[88] Grohskopf, L. A., Blanton, L. H., Ferdinands, J. M., Chung, J. R., Broder, K. R., Talbot, H. K., Morgan, R. L., & Fry, A. M. (2022). Prevention and control of seasonal influenza with vaccines: Recommendations of the Advisory Committee on Immunization Practices - United States, 2022-23 influenza season. MMWR. Recommendations and Reports : Morbidity and Mortality Weekly Report. Recommendations and Reports, 71(1). Retrieved from: https://doi.org/10.15585/mmwr.rr7101a1

[89] Betsch, C., Böhm, R., & Chapman, G. B. (2015). Using behavioral insights to increase vaccination policy effectiveness. Policy Insights from the Behavioral and Brain Sciences, 2(1). Retrieved from: https://doi.org/10.1177/2372732215600716

[90] Betsch, C., Böhm, R., & Chapman, G. B. (2015). Using behavioral insights to increase vaccination policy effectiveness. Policy Insights from the Behavioral and Brain Sciences, 2(1). Retrieved from: https://doi.org/10.1177/2372732215600716

[91] Thomas, R. E., & Lorenzetti, D. L. (2018). Interventions to increase influenza vaccination rates of those 60 years and older in the community. The Cochrane Database of Systematic Reviews, 5(5). Retrieved from: https://doi.org/10.1002/14651858.CD005188.pub4

[92] Okoli, G. N., Reddy, V. K., Lam, O., Abdulwahid, T., Askin, N., Thommes, E., Chit, A., Abou-Setta, A. M., & Mahmud, S. M. (2021). Interventions on health care providers to improve seasonal influenza vaccination rates among patients: A systematic review and meta-analysis of the evidence since 2000. Family Practice, 38(4). Retrieved from: https://doi.org/10.1093/fampra/cmaa149

[93] Jacobson Vann, J. C., Jacobson, R. M., Coyne-Beasley, T., Asafu-Adjei, J. K., & Szilagyi, P. G. (2018). Patient reminder and recall interventions to improve immunization rates. The Cochrane Database of Systematic Reviews, 1(1). Retrieved from: https://doi.org/10.1002/14651858.CD003941.pub3

[94] Lau, D., Hu, J., Majumdar, S. R., Storie, D. A., Rees, S. E., & Johnson, J. A. (2012). Interventions to improve influenza and pneumococcal vaccination rates among community-dwelling adults: A systematic review and meta-analysis. Annals of Family Medicine, 10(6). Retrieved from: https://doi.org/10.1370/afm.1405

[95] Sanftenberg, L., Kuehne, F., Anraad, C., Jung-Sievers, C., Dreischulte, T., & Gensichen, J. (2021). Assessing the impact of shared decision making processes on influenza vaccination rates in adult patients in outpatient care: A systematic review and meta-analysis. Vaccine, 39(2). Retrieved from: https://doi.org/10.1016/j.vaccine.2020.12.014

[96] Murray, E., Bieniek, K., Del Aguila, M., Egodage, S., Litzinger, S., Mazouz, A., Mills, H., & Liska, J. (2021). Impact of pharmacy intervention on influenza vaccination acceptance: a systematic literature review and meta-analysis. International Journal of Clinical Pharmacy, 43(5). Retrieved from: https://doi.org/10.1007/s11096-021-01250-1

[97] Matsui, D., Shigeta, M., Ozasa, K., Kuriyama, N., Watanabe, I., & Watanabe, Y. (2011). Factors associated with influenza vaccination status of residents of a rural community in Japan. BMC Public Health, 11. Retrieved from: https://doi.org/10.1186/1471-2458-11-149

[98] Takayama, M., Wetmore, C. M., & Mokdad, A. H. (2012). Characteristics associated with the uptake of influenza vaccination among adults in the United States. Preventive Medicine, 54(5). Retrieved from: https://doi.org/10.1016/j.ypmed.2012.03.008

[99] Sato, A. P., Antunes, J. L., Moura, R. F., de Andrade, F. B., Duarte, Y. A., & Lebrão, M. L. (2015). Factors associated to vaccination against influenza among elderly in a large Brazilian metropolis. PloS One, 10(4). Retrieved from: https://doi.org/10.1371/journal.pone.0123840

[100] Stall, N., Nowaczynski, M., & Sinha, S. K. (2013). Back to the future: Home-based primary care for older homebound Canadians: Part 1: Where we are now. Canadian Family Physician Medecin de Famille Canadien, 59(3). Retrieved November 14, 2022, from: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3596195/

[101] ICES. (2021, April 29). Vaccine coverage by neighbourhood COVID-19 risk in immigrants, refugees, and other newcomers, up to April 26, 2021. Retrieved November 14, 2022, from: https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&cad=rja&uact=8&ved=2ahUKEwj5nO-O-qb7AhVskYkEHZs1BKAQFnoECBcQAw&url=https%3A%2F%2Fwww.ices.on.ca%2F~%2Fmedia%2FFiles%2FCOVID-19%2FICES-Report-COVID-19-Vaccine-coverage-by-neighbourhood-risk-among-immigrants.ashx%3Fla%3Den-CA&usg=AOvVaw34dmUkrbWp4Cmz7ZpYhm6d

[102] Quach, S., Hamid, J. S., Pereira, J. A., Heidebrecht, C. L., Deeks, S. L., Crowcroft, N.

S., Quan, S. D., Brien, S., Kwong, J. C., & Public Health Agency of Canada/Canadian Institutes of Health Research Influenza Research Network Vaccine Coverage Theme Group. (2012). Influenza vaccination coverage across ethnic groups in Canada. CMAJ : Canadian Medical Association Journal = journal de l'Association Medicale Canadienne, 184(15). Retrieved from: https://doi.org/10.1503/cmaj.111628

[103] Government of Canada. (2022, June 17). COVID-19 vaccination coverage by ethnicity: Insight from the Canadian Community Health Survey (CCHS). Retrieved November 14, 2022, from: https://www.canada.ca/en/public-health/services/immunization-vaccines/vaccination-coverage/covid-19-vaccination-coverage-ethnicity-insight-canadian-community-health-survey.html

[104] Wilson, L., Rubens-Augustson, T., Murphy, M., Jardine, C., Crowcroft, N., Hui, C., & Wilson, K. (2018). Barriers to immunization among newcomers: A systematic review. Vaccine, 36(8). Retrieved from: https://doi.org/10.1016/j.vaccine.2018.01.025

[105] Deal, A., Crawshaw, AC., Salloum, M., Hayward, S. E., Knights, F., Goldsmith, L. P., Carter, J., Rustage, K., Mounier-Jack, S., & Hargreaves, S. (20220. Strategies to increase catch-up vaccination among migrants: A qualitative study and rapid review: Anna Deal. European Journal of Public Health, 32(3, Suppl.). Retrieved from: https://doi.org/10.1093/eurpub/ckac131.116

[106] Yong, A. G., Lemyre, L., Farrell, S. J., & Young, M. Y. (2016). Acculturation in preventive health for immigrants: A systematic review on influenza vaccination programs in a socio-ecological framework. Canadian Psychology = Psychologie Canadienne, 57(4). Retrieved from: https://doi.org/10.1037/cap0000075

[107] Adeagbo, M., Olukotun, M., Musa, S., Alaazi, D., Allen, U., Renzaho, A., Sekyi-Otu, A., & Salami, B. (2022). Improving COVID-19 vaccine uptake among Black populations: A systematic review of strategies. International Journal of Environmental Research and Public Health, 19(19). Retrieved from: https://doi.org/10.3390/ijerph191911971

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