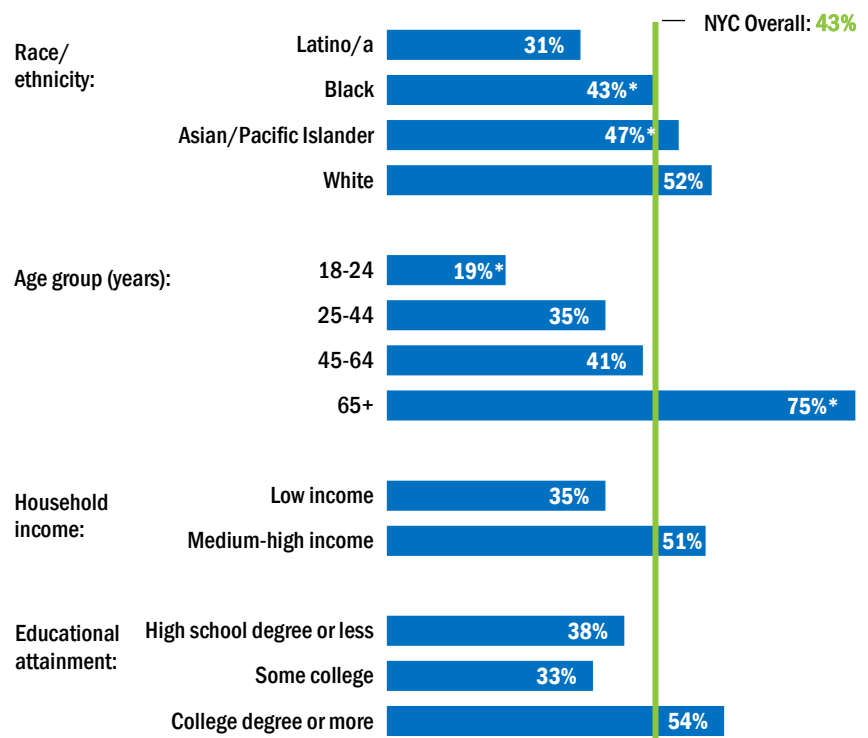## COVID-19 Vaccination Intentions, Uptake, Motivators, and Barriers — New York City, October and December 2020 and March 2021

A large portion of the population needs to be vaccinated against COVID-19 to mitigate the impact of the pandemic. The New York City (NYC) Health Department conducted Health Opinion Polls among adult New Yorkers in October and December 2020 and March 2021 to assess COVID-19 vaccination intentions and uptake, reasons for and against vaccination, and trusted sources of vaccine information to inform vaccine planning. In October and December, about half of New Yorkers intended to get a vaccine. Black and Latino/a people, despite being the most affected by the COVID-19 pandemic in NYC,[1] were less likely to say they intended to be vaccinated than White New Yorkers in these months, a response rooted in medical and government mistrust produced by longstanding systemic racism.[2] By March 2021, 43% of New Yorkers reported they had received at least one dose of a COVID-19 vaccine and an additional 39% said they intended to be vaccinated in the future.

About half of adult NYC residents intended to get a COVID-19 vaccine in October and December 2020, and more than 40% had received at least one dose in March 2021

- In October 2020, 53% of NYC residents intended to get a COVID-19 vaccination, with lower intentions among women (43% vs. 64% of men), Black (31%) and Latino/a (47%) adults (vs. 70% of White adults), and people in low-income households (41% vs. 59% in medium- or high-income households). In December, intent to receive a COVID-19 vaccination was unchanged (55%) and disparities in intentions were similar to those in October.

- In March 2021, 43% of respondents had received at least one dose of a COVID-19 vaccine. Prevalence of vaccination was lower among Latino/a New Yorkers, people living in low-income households, and those with lower educational attainment.

- Among New Yorkers who had not received any doses of a COVID-19 vaccine in March, 68% intended to be vaccinated in the future, 25% were unsure if they would get vaccinated, and 7% did not intend to be vaccinated.

Adults who had received at least one dose of a COVID-19 vaccine, by selected demographic characteristics — New York City, March 2021

NYC Overall: 43%

Race/ethnicity:
- Latino/a: 31%
- Black: 43%*
- Asian/Pacific Islander: 47%*
- White: 52%

Age group (years):
- 18-24: 19%*
- 25-44: 35%
- 45-64: 41%
- 65+: 75%*

Household income:
- Low income: 35%
- Medium-high income: 51%

Educational attainment:
- High school degree or less: 38%
- Some college: 33%
- College degree or more: 54%

*Estimate should be interpreted with caution. Estimate's Relative Standard Error (a measure of precision) is > 30% or the 95% Confidence Interval half-width is too large, or the sample size is too small, making the estimate potentially unreliable.
Asian/Pacific Islander, Black, White, and Multi-racial/Other categories exclude Latino/a ethnicity. Latino/a includes Hispanic or Latino/a of any race.
Household income: low = <200% Federal Poverty Line (FPL); medium to high = ≥200% FPL.
Source: New York City Health Opinion Poll, March 10-28, 2021.

Waiting to learn more about COVID-19 vaccines was a common reason for lack of vaccine confidence

- Among New Yorkers who intended to get a COVID-19 vaccine in October, commonly selected reasons for doing so were to prevent illness among others in the community (89%) or household (88%) and to end the pandemic (89%). These remained common reasons for intending to be vaccinated in December 2020 and March 2021.

- In all three months, among respondents who were unsure or who did not intend to get a COVID-19 vaccine, top reasons for lack of vaccine confidence were wanting to learn more about the vaccine before deciding and concerns that COVID-19 vaccines were being developed too quickly without enough information about safety and effectiveness.

- In all three months, compared with those who did not intend to get a COVID-19 vaccine, people unsure about getting it were more likely to report they were waiting to learn more about the vaccine before deciding. In both October and December, those who were unsure were more likely than those who did not intend to get a vaccine to say that their decision would depend on a doctor's recommendation (47% vs. 28% in October; 41% vs. 23% in December).

- In March, people unsure about getting a COVID-19 vaccine were more likely than those who did not intend to get it to say they were waiting for more people to be vaccinated (72% vs. 31%).

- In December, compared with those who were unsure, those who did not intend to get a COVID-19 vaccine were more likely to cite distrust of the government (31% vs. 51%) or drug companies (30% vs. 50%) or ethical, moral, or religious objections (10% vs. 27%) as reasons for not getting the vaccine.

Reasons for lack of COVID-19 vaccine confidence, among adults who said they were unsure or did not intend to get a vaccine, October and December 2020 and March 2021, New York City
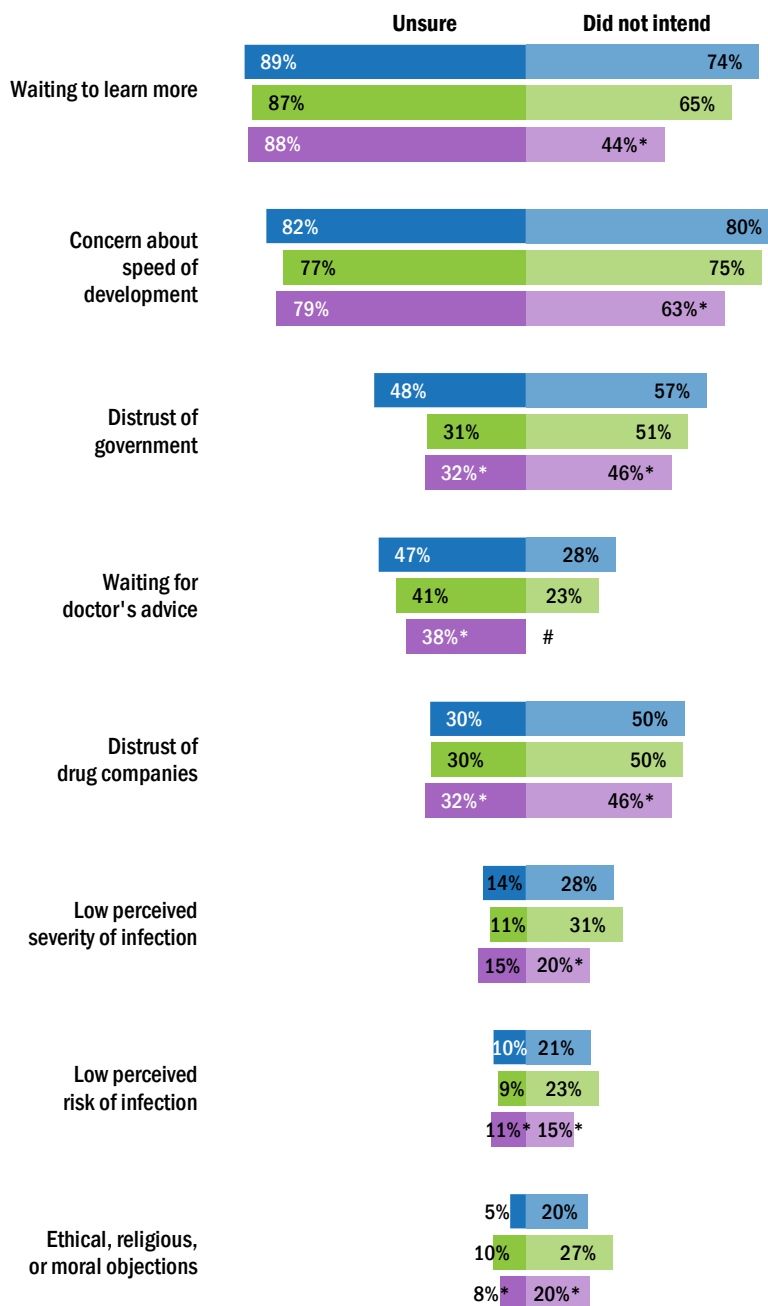
Categories not mutually exclusive

* Estimate should be interpreted with caution. Estimate's Relative Standard Error (a measure of precision) is > 30% or the 95% Confidence Interval half-width is too large, or the sample size is too small, making the estimate potentially unreliable.
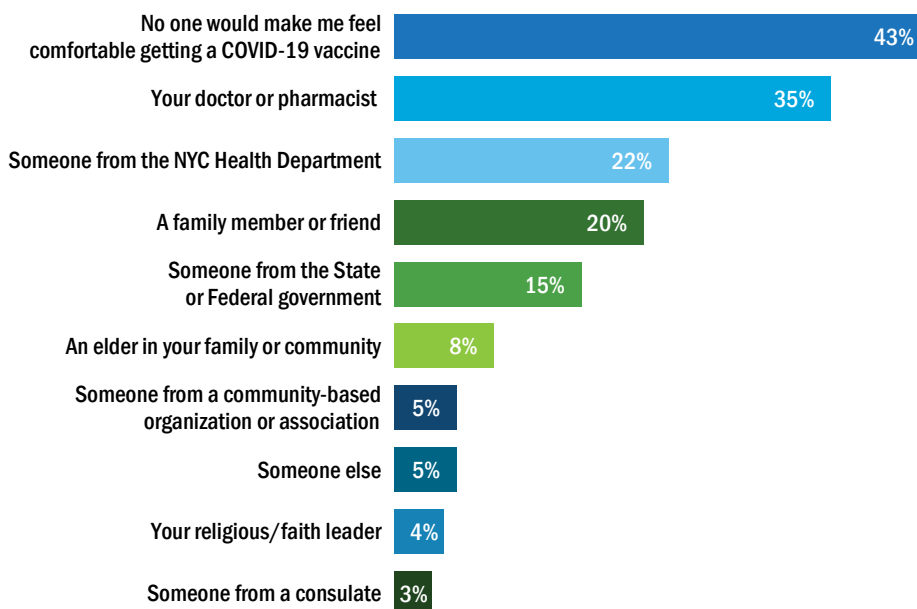
Unreliable estimate. Data suppressed.

Source: New York City Health Opinion Poll, October 3-14 and December 9-21, 2020, and March 10-28, 2021.

Personal doctor or pharmacist and the Health Department are trusted information sources

- In December, among those who were unsure or who did not intend to get a COVID-19 vaccine, 35% reported they would like to hear from their doctor or pharmacist to feel comfortable receiving the vaccine and 22% said they would like to hear from someone at the Health Department.
- Almost twice as many people who did not intend to get a COVID-19 vaccine (58%) as those who were unsure if they would get a COVID-19 vaccine (32%) reported that there was no one who could make them feel comfortable about receiving the vaccine.
- In March 2021, among those who intend to or were unsure if they will get a COVID-19 vaccine, a health care provider's office was the most commonly preferred site for getting the vaccine (23%), followed by a pharmacy (15%) or a mass vaccination site (14%).

Percentage of adults identifying information sources that would make them comfortable receiving the COVID-19 vaccine when available, among those who said they were unsure or did not intend to get a vaccine, December 2020, New York City

Source	Percentage
No one would make me feel comfortable getting a COVID-19 vaccine	43%
Your doctor or pharmacist	35%
Someone from the NYC Health Department	22%
A family member or friend	20%
Someone from the State or Federal government	15%
An elder in your family or community	8%
Someone from a community-based organization or association	5%
Someone else	5%
Your religious/faith leader	4%
Someone from a consulate	3%

Categories not mutually exclusive
Source: New York City Health Opinion Poll, December 9-21, 2020.

Implications

Widespread uptake of an effective COVID-19 vaccine will be necessary to achieve pandemic control. Slightly more than half of New Yorkers intended to be vaccinated in October and December 2020, and by March 2021, 43% of New Yorkers reported they had received at least one COVID-19 vaccine dose and an additional 39% intended to get vaccinated in the future. While this likely represents an increase in vaccine acceptability, this increase should be interpreted with caution due to a change in survey methodology between the December 2020 and March 2021 surveys (see box at right). The estimate that 43% of New Yorkers had received at least one dose of a COVID-19 vaccine was higher than the Citywide Immunization Registry-based estimate during this same time period (32%). The higher survey-

based estimate may be due to social desirability bias in survey response or differences between survey participants and otherwise comparable non-participants, which could overestimate intentions to be vaccinated and underestimate lack of vaccine confidence among New Yorkers. These data were also collected before the "pause" of the Johnson & Johnson/Janssen vaccine, which may have affected vaccine perceptions and subsequent intentions to be vaccinated.

Implementation of strategies to promote vaccination are still needed to ensure that vaccination coverage meets levels needed to achieve population immunity, especially among groups who indicate they are less likely to get vaccinated. The October and December surveys highlighted low vaccination intentions among groups that had already been disproportionately impacted by the COVID-19 pandemic, including Black and Latino/a New Yorkers and people living in low-income households. The inequities identified in these surveys helped inform the Health Department's vaccine equity plan and strategies. These have included placement of city-run COVID-19 Vaccine Hubs in the neighborhoods hit hardest by the COVID-19 pandemic, reducing barriers to access through promotion of walk-up appointments at all city-run sites, ensuring strong collaborations with community-based organizations, and channeling communication through trusted groups and individuals, including healthcare providers.

Despite these efforts, some of the disparities in intentions in October and December were reflected in inequitable receipt of vaccination in March, including lower vaccination uptake among Latino/a New Yorkers and individuals living in low-income households. To achieve vaccine equity, the Health Department will continue to identify opportunities to reduce structural barriers to accessing vaccination, tailor culturally sensitive and effective vaccine promotion messages, and repair and rebuild trust with marginalized communities. Additionally, future work will focus on understanding attitudes and intentions among recently-eligible groups to inform vaccination promotion strategies among these groups.

Health equity is attainment of the highest level of health and well-being for all people. Not all New Yorkers have the same opportunities to live a healthy life. Achieving health equity requires focused and ongoing efforts to address historical and contemporary injustices such as discrimination based on social position (e.g., class, immigration status) or social identities (e.g., race, gender, sexual orientation). For more information, visit the Centers for Disease Control and Prevention's Health Equity page.

Definitions: **COVID-19** is an infectious disease caused by a coronavirus, SARS-CoV-2. The virus is mainly transmitted when an infected person coughs, sneezes, or exhales.[3]
Race/ethnicity For the purpose of this publication, Latino/a includes persons of Hispanic or Latino/a origin, as identified by the survey question "Are you Hispanic or Latino/a?" and regardless of reported race. Black, White, Asian/Pacific Islander and Multi-racial/other categories exclude those who identified as Latino/a.
Household income Low income households had incomes less than 200% of the Federal Poverty Line (FPL); medium-to-high income households had incomes greater than or equal to 200% of FPL.

References:
1. Thompson CN, Baumgartner J, Pichardo C, et al. COVID-19 Outbreak—New York City, February 29–June 1, 2020. MMWR Morb Mortal Wkly Rep 2020;69:1725–9.
2. Bajaj SS, Stanford FC. Beyond Tuskegee—Vaccine distrust and everyday racism. N Engl J Med 2021;384:e12.
3. Coronavirus. https://www.who.int/emergencies/diseases/novel-coronavirus-2019. Accessed April 28, 2021.

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New York City Department of Health and Mental Hygiene

Epi Data Tables

COVID-19 Vaccination Intentions, Uptake, Motivators, and Barriers — New York City, October and December 2020 and March 2021

Data Tables

Table 1. Receipt of any doses of a COVID-19 vaccine or intent to receive a COVID-19 vaccine in the future, by selected demographic characteristics, New York City, October and December 2020 and March 2021

Table 2. Receipt of any doses of a COVID-19 vaccine, by selected demographic characteristics, New York City, March 2021

Table 3. Reasons to receive a COVID-19 vaccine cited by adult New York City residents who intend to get a COVID-19 vaccine when available, October and December 2020 and March 2021, New York City

Table 4. Reasons for hesitating to get a COVID-19 vaccine when available, among those who said they were unsure or would not get a vaccine, October and December 2020 and March 2021, New York City

Table 5. Information sources that would make New Yorkers comfortable receiving the COVID-19 vaccine when available, among those who said they were unsure or would not get a vaccine, December 2020, New York City

Data Source

NYC Health Opinion Poll (HOP) of adults ages 18 or older is implemented by the NYC Health Department to measure New Yorkers' knowledge, opinions, and experiences related to health. Three polls of about 1,200 adults each were fielded from October 3-14 and December 9-21, 2020, in English and Spanish, and from March 10-28, 2021, in English, Spanish, Chinese, and Russian. Data from October and December 2020 were collected via nonprobability online panels and weighted to match the NYC population on borough, race/ethnicity, age, sex, and educational attainment per the 2014-2018 American Community Survey. Data from March 2021 were collected from Healthy NYC, a probability-based panel, and were weighted to the same demographic characteristics. Because of this change in methodology, any change over time should be interpreted with caution. T-tests were used to compare prevalence of vaccination by demographic factors. Generalized linear Poisson models adjusted for a priori selected potential confounders were used to 1) test the association between intent to receive a COVID-19 vaccine (versus "don't know or unsure" and "no" combined) and demographic characteristics, and survey month, and 2) evaluate if reasons for vaccination hesitancy differed by whether a respondent was unsure about getting a COVID-19 vaccine versus would not get a COVID-19 vaccine. Online panels have limitations such as coverage and selection bias and low participation rates.

Table 1. Intent to receive a COVID-19 vaccine in the future (October and December 2020) and intent to receive or receipt of any doses of a COVID-19 vaccine (March 2021), by selected demographic characteristics – New York City

Source: New York City Health Opinion Polls (NYC HOP) waves 10, 11, and 12

Data from October and December 2020 are weighted to NYC borough, age X gender, borough X race/ethnicity, and education per the 2014-2018 US Census Bureau's ACS 5-year estimates. Data from March 2021 are weighted to the same distributions per the 2018 US Census Bureau's ACS 1-year estimates.

NYC HOP wave 10 fielded from October 3-14, 2020

NYC HOP wave 11 fielded from December 9-21, 2020

NYC HOP wave 12 fielded from March 10-28, 2021

	October 2020			December 2020			March 2021		
	Prevalence (%)	Adjusted prevalence ratio§ (Lower and Upper 95% Confidence Intervals)	p-value	Prevalence (%)	Adjusted prevalence ratio§ (Lower and Upper 95% Confidence Intervals)	p-value	Prevalence (%)	Adjusted prevalence ratio§ (Lower and Upper 95% Confidence Intervals)	p-value
Overall									
	52.6	—	—	55.3	—	—	81.6	—	—
Age group									
18–24	58.5	1.26 (1.00–1.60)	**0.049**	53.1	1.05 (0.82, 1.35)	0.674	54.2 *	0.63 (0.43, 0.93)	**0.018**
25–44	57.2	1.04 (0.88, 1.22)	0.654	55.0	0.97 (0.83, 1.12)	0.644	78.9	0.87 (0.78, 0.97)	**0.016**
45–64	40.4	0.73 (0.49, 0.91)	**0.005**	50.1	0.87 (0.74, 1.02)	0.087	84.5 U	0.95 (0.81, 1.06)	0.374
≥65	60.5	Reference	—	66.2	Reference	—	93.9	Reference	—
Gender									
Men	63.7	Reference	—	65.2	Reference	—	86.7	Reference	—
Women	43.1	0.70 (0.62, 0.79)	**<0.001**	46.8	0.74 (0.66, 0.83)	**<0.001**	76.9	0.90 (0.82, 0.99)	**0.038**
Transgender/gender nonbinary	49.2 *	0.91 (0.43, 1.92)	0.802	48.6 *	0.91 (0.45, 1.83)	0.788	^	—	—
Race and ethnicity^									
Asian/Pacific Islander	57.6	0.87 (0.72, 1.05)	0.138	56.6	0.82 (0.69, 0.97)	**0.024**	87.6	1.13 (1.02, 1.24)	**0.018**
Black	30.5 U	0.49 (0.38, 0.63)	**<0.001**	33.2	0.55 (0.44, 0.68)	**<0.001**	77.1	0.93 (0.81, 1.08)	0.365
Latino	46.9	0.70 (0.59, 0.84)	**<0.001**	51.4	0.76 (0.65, 0.89)	**<0.001**	77.5 D	1.05 (0.91, 1.21)	0.514
White	69.5 U	Reference	—	72.5 D	Reference	—	86.6	Reference	—
Multi-racial/Other	48.2 *	0.67 (0.43, 1.03)	0.069	50.5 U*	0.82 (0.57, 1.18)	0.292	74.1 *	0.99 (0.73, 1.33)	0.929
Borough									
Bronx	41.3	0.71 (0.54, 0.93)	**0.013**	53.9	0.93 (0.74, 1.16)	0.525	79.1	0.99 (0.81, 1.21)	0.900
Brooklyn	49.4	0.87 (0.75, 1.02)	0.078	48.6	0.92 (0.79, 1.06)	0.247	77.0	0.95 (0.82, 1.10)	0.490
Manhattan	63.8	Reference	—	65.8	Reference	—	89.4	Reference	—
Queens	54.3	0.93 (0.79, 1.08)	0.342	54.1	0.94 (0.81, 1.09)	0.388	85.3	0.99 (0.88, 1.12)	0.872
Staten Island	51.8	0.78 (0.57, 1.07)	0.123	62.3 *	0.94 (0.73, 1.22)	0.653	66.6 *	0.90 (0.76, 1.08)	0.256
Household income††									
Low income	41.2	0.82 (0.7, 0.97)	**0.018**	44.6	0.83 (0.72, 0.97)	**0.019**	74.1	0.83 (0.74, 0.94)	**0.004**
Medium or high income	59.0	Reference	—	62.6	Reference	—	91.1	Reference	—
Neighborhood poverty§§									
Low (<10%)	56.3	Reference	—	61.8	Reference	—	90.8	Reference	—
Medium (10%–<20%)	55.2	1.08 (0.92, 1.26)	0.356	60.3	1.01 (0.88, 1.17)	0.873	83.0	0.96 (0.88, 1.05)	0.356
High (20%–<30%)	45.5	0.99 (0.8, 1.23)	0.953	38.9	0.79 (0.64, 0.97)	**0.024**	79.2	0.94 (0.84, 1.06)	0.314
Very high (≥30%)	48.0	1.36 (1.04, 1.78)	**0.023**	54.4	1.09 (0.86, 1.38)	0.498	71.0 *	0.86 (0.69, 1.07)	0.175

Confidence Intervals are a measure of estimate precision: the wider the CI, the more imprecise the estimate.

Generalized linear Poisson models adjusted for *a priori* selected potential confounders were used to evaluate the association between intent to receive a COVID-19 vaccine (versus "don't know or unsure" and "no" combined) and demographic characteristics, seasonal flu vaccination behaviors and intentions, and survey month. Models are weighted and account for complex survey sampling in the March 2021 HOP.

P values are significant at the 0.05 level and are indicated in bold text.

§Estimates for the association between age and the outcome are adjusted for gender, race/ethnicity, household poverty, having a chonic health condition, and political affiliation (December 2020 and March 2021 only).

Estimates for the association between gender and the outcome are adjusted for age, household poverty, and political affiliation (December 2020 and March 2021 only).

Estimates for the association between race/ethnicity and the outcome are adjusted for age, borough of residence, household poverty, neighborhood poverty, having a chonic health condition, and political affiliation (December 2020 and March 2021 only).

Estimates for the association between borough of residence and the outcome are adjusted for race/ethnicity, household poverty, neighborhood poverty, and political affiliation (December 2020 and March 2021 only).

Estimates for the association between household income and the outcome are adjusted for gender, age, race/ethnicity, borough of residence, neighborhood poverty, and political affiliation (December 2020 and March 2021 only).

Estimates for the association between neighborhood poverty and the outcome are adjusted for race/ethnicity, borough of residence, household poverty, and having a chronic health condition.

*Estimate should be interpreted with caution. Estimate's Relative Standard Error (a measure of estimate precision) is greater than 30% or the 95% Confidence Interval half-width is too large, or the sample size is too small, making the estimate potentially unreliable.

U When reporting to nearest whole percent, round up

D When reporting to nearest whole percent, round down

^ White, Black, Asian/Pacific Islander race categories exclude Latino/a ethnicity. Latino/a includes Hispanic or Latino/a of any race.

††Low-income defined as household income less than 200% of the Federal Poverty Level.

§§Neighborhood poverty (based on self-reported ZIP code) is defined as the percentage of the population living below the Federal Poverty Line (FPL) based on the American Community Survey (2014-18 for HOP waves 10 and 11, and 2015-2019 for HOP wave 12). Neighborhoods are categorized into four groups as follows: "Low poverty" neighborhoods are those with <10% of the population living below the FPL; "Medium poverty" neighborhoods have 10-<20% of the population below FPL; "High Poverty" neighborhoods have 20-<30% of the population living below the FPL; "Very high poverty" neighborhoods have ≥30% of the population living below the FPL.

Table 2. Receipt of any doses of a COVID-19 vaccine, by selected demographic characteristics, New York City, March 2021

Source: New York City Health Opinion Polls (NYC HOP) wave 12

Data are weighted to NYC borough, age X gender, borough X race/ethnicity, and education per the 2018 US Census Bureau's ACS 1-year estimates.

NYC HOP wave 12 fielded from March 10-28, 2021

	Prevalence (%)	Lower 95% Confidence Interval	Upper 95% Confidence Interval	*p-value*
Overall				
	42.9	38.3	47.7	—
Age group				
18–24	18.7 *	10.4	31.4	**<0.001**
25–44	34.8	28.4	41.7	**<0.001**
45–64	41.4	33.1	50.3	**<0.001**
≥65	75.2 *	62.6	84.6	Ref.
Gender				
Men	45.9	38.2	53.7	Ref.
Women	40.2	34.5	46.2	0.255
Transgender/gender nonbinary	50.6 *	18.8	81.9	0.806
Race and ethnicity^				
Asian/Pacific Islander	46.7 *	36.2	57.6	0.418
Black	43.2 *	30.2	57.3	0.263
Latino	31.4	22.7	41.5	**<0.001**
White	51.8	46.1	57.4	Ref.
Multi-racial/Other	27.6 *	11.6	52.7	**0.034**
Household income††				
Low income	35.2	27.8	43.3	**0.001**
Medium or high income	51.5 ᵁ	45.6	57.4	Ref.
Educational attainment				
HS degree or less	38.0	28.6	48.3	**0.005**
Some college	33.4	25.5	42.3	**<0.001**
College degree or more	53.9	49.2	58.4	Ref.

Confidence Intervals are a measure of estimate precision: the wider the CI, the more imprecise the estimate.

T-tests that account for complex survey sampling were used to evaluate the association between receipt of any doses of a COVID-19 vaccine and demographic characteristics.

P values are significant at the 0.05 level and are indicated in bold text.

*Estimate should be interpreted with caution. Estimate's Relative Standard Error (a measure of estimate precision) is greater than 30% or the 95% Confidence Interval half-width is too large, or the sample size is too small, making the estimate potentially unreliable.

U When reporting to nearest whole percent, round up

^ White, Black, Asian/Pacific Islander race categories exclude Latino/a ethnicity. Latino/a includes Hispanic or Latino/a of any race.

††Low-income defined as household income less than 200% of the Federal Poverty Level.

Table 3. Reasons to receive a COVID-19 vaccine cited by adult New York City residents who intend to get a COVID-19 vaccine when available, October and December 2020 and March 2021, New York City

Source: New York City Health Opinion Polls (NYC HOP) waves 10, 11, and 12

Data from October and December 2020 are weighted to NYC borough, age X gender, borough X race/ethnicity, and education per the 2014-2018 US Census Bureau's ACS 5-year estimates. Data from March 2021 are weighted to the same distributions per the 2018 US Census Bureau's ACS 1-year estimates.

NYC HOP wave 10 fielded from October 3-14, 2020

NYC HOP wave 11 fielded from December 9-21, 2020

NYC HOP wave 12 fielded from March 10-28, 2021

	October 2020			December 2020				March 2021			
	Weighted percentage	Lower 95% Confidence Interval	Upper 95% Confidence Interval	Weighted percentage	Lower 95% Confidence Interval	Upper 95% Confidence Interval	*p-value* [Oct (ref.) vs. Dec]	Weighted percentage	Lower 95% Confidence Interval	Upper 95% Confidence Interval	*p-value* [Oct (ref.) vs. Mar]
Reasons:											
Want to keep others in their community from getting sick	89.0	86.3	91.8	91.7	89.3	94.1	0.148	89.6	83.7	93.5	0.843
Believe that getting vaccinated will help end the pandemic	88.7	85.8	91.6	88.8	86.1	91.5	0.981	86.5 U	79.9	91.2	0.498
Want to keep others in their household from getting sick	87.5 U	84.5	90.5	85.2	82.1	88.3	0.297	90.6	84.4	94.5	0.287
Worried about getting COVID-19	85.3	82.2	88.4	81.7	78.4	85.0	0.125	73.8	66.1	80.2	**0.003**
Believe that COVID-19 vaccines will be safe and effective	72.3	68.2	76.3	82.0	78.8	85.2	**<0.001**	78.3	71.5	83.9	0.108
Is a member of a high-risk group	47.5 D	43.0	52.0	47.7	43.5	52.0	0.938	23.0	17.2	30.0	**<0.001**
Is an essential worker	32.7	28.7	36.7	32.3	28.4	36.2	0.894	18.2	12.7	25.4	**<0.001**

Responses not mutually exclusive.

Z-scores were used to test for differences in the weighted percentages between October and December 2020 and March 2021.

P values are significant at the 0.05 level and are indicated in bold text. Ref = reference group.

U When reporting to nearest whole percent, round up

D When reporting to nearest whole percent, round down

Table 4. Reasons for hesitating to get a COVID-19 vaccine when available, among those who said they were unsure or would not get a vaccine, October and December 2020 and March 2021, New York City

Source: New York City Health Opinion Polls (NYC HOP) waves 10, 11, and 12

Data from October and December 2020 are weighted to NYC borough, age X gender, borough X race/ethnicity, and education per the 2014-2018 US Census Bureau's ACS 5-year estimates. Data from March 2021 are weighted to the same distributions per the 2018 US Census Bureau's ACS 1-year estimates.

NYC HOP wave 10 fielded from October 3-14, 2020

NYC HOP wave 11 fielded from December 9-21, 2020

NYC HOP wave 12 fielded from March 10-28, 2021

	October 2020 - unsure if they would get the vaccine		October 2020 - no, would not get the vaccine		p-value [unsure (ref.) vs. no]	December 2020 - unsure if they would get the vaccine		December 2020 - no, would not get the vaccine		p-value [unsure (ref.) vs. no]	March 2021 - unsure if they would get the vaccine		March 2021 - no, would not get the vaccine		p-value [unsure (ref.) vs. no]
	Prevalence (%)	95% Confidence Interval	Prevalence (%)	95% Confidence Interval		Prevalence (%)	95% Confidence Interval	Prevalence (%)	95% Confidence Interval		Prevalence (%)	95% Confidence Interval	Prevalence (%)	Lower 95% Confidence Interval	
Reasons:															
Waiting to learn more	89.3	(85.5, 93.0)	73.8	(67.6, 80.1)	**<0.001**	86.7	(82.4, 91.1)	65.2	(58.4, 71.9)	**<0.001**	87.9	(78.2, 93.6)	43.8 *	(23.5, 66.3)	**<0.001**
Concern about speed of development	82.4	(77.6, 87.2)	80.1	(74.5, 85.8)	0.551	76.8	(71.3, 82.4)	74.6	(68.4, 80.7)	0.589	79.2	(67.4, 87.5)	62.9 *	(36.8, 83.2)	0.234
Waiting until more people are vaccinated	—	—	—	—	—	—	—	—	—	—	72.2 *	(58.9, 82.5)	31.5 *, D	(16.0, 52.5)	**<0.001**
Distrust of government	48.1	(41.7, 54.5)	57.2	(50.1, 64.4)	0.063	31.3	(25.4, 37.2)	51.4	(44.2, 58.5)	**<0.001**	32.4 *	(21.1, 46.3)	46.2 *	(24.9, 68.9)	0.308
Waiting for doctor's advice	46.8	(40.3, 53.2)	28.3	(22.0, 34.7)	**<0.001**	41.1	(34.8, 47.5)	23.0	(17.0, 29.1)	**<0.001**	37.6 *	(26.1, 50.7)	— ^	—	—
Distrust of drug companies	30.4	(24.7, 36.2)	50.2	(43.0, 57.4)	**<0.001**	29.9	(24.1, 35.8)	49.7	(42.5, 56.9)	**<0.001**	32.0 *	(21.0, 45.5)	46.0 *	(24.8, 68.7)	0.301
Low perceived severity of infection	13.6	(8.9, 18.3)	27.8	(21.0, 34.6)	**<0.001**	11.4	(7.5, 15.4)	30.6	(23.8, 37.3)	**<0.001**	14.8 *	(8.2, 25.1)	19.8 *	(7.6, 42.5)	0.606
Low perceived risk of infection	10.3	(6.6, 14.0)	20.5 U	(14.6, 26.4)	**0.004**	8.8	(5.5, 12.1)	23.0	(16.8, 29.1)	**<0.001**	10.7 *	(5.2, 20.7)	15.1 *	(5.8, 33.9)	0.584
Ethical, religious, or moral objections	5.0	(2.5, 7.6)	19.7	(14.3, 25.0)	**<0.001**	10.2	(6.6, 13.9)	27.5 D	(21.0, 33.9)	**<0.001**	7.7 *	(3.3, 16.7)	20.2 *	(8.4, 40.9)	0.158
Concern about cost	7.7	(4.5, 10.9)	9.9	(5.6, 14.2)	0.414	9.1	(5.4, 12.8)	16.7	(11.1, 22.3)	**0.025**	13.4 *	(5.6, 28.8)	— ∞	—	—
Immune from prior infection	3.8 *	(1.5, 6.1)	10.4	(5.9, 14.9)	**0.008**	4.4	(2.0, 6.8)	16.5 U	(11.3, 21.8)	**<0.001**	9.9 *	(4.8, 19.5)	15.0 *	(5.8, 33.5)	0.517

Confidence Intervals are a measure of estimate precision: the wider the CI, the more imprecise the estimate.

Responses not mutually exclusive.

To test for differences in the weighted percentages between those unsure if they would get vaccinated and those who would not get vaccinated, generalized linear Poisson models were used in October and December 2020 and t-tests were used in March 2021.

P values are significant at the 0.05 level and are indicated in bold text. Ref= reference group

*Estimate should be interpreted with caution. Estimate's Relative Standard Error (a measure of estimate precision) is greater than 30% or the 95% Confidence Interval half-width is too large, or the sample size is too small, making the estimate potentially unreliable.

∞ No observation in category

U When reporting to nearest whole percent, round up

D When reporting to nearest whole percent, round down

Table 5. Information sources that would make New Yorkers comfortable receiving the COVID-19 vaccine when available, among those who said they were unsure or would not get a vaccine, December 2020, New York City

Source: New York City Health Opinion Poll (NYC HOP) wave 11

Data are weighted to NYC borough, age X gender, borough X race/ethnicity, and education per the 2014-2018 US Census Bureau's ACS 5-year estimates

NYC HOP wave 11 fielded from December 9-21, 2020

Information source:	Unsure and no, combined (%)	Unsure (%)	No (%)	p-value [unsure (ref.) vs. no]
Your doctor or pharmacist	34.7	46.2	18.7	**<0.001**
Someone from the NYC Health Department	22.5 D	27.5 D	15.5 U	**0.004**
Someone from the State or Federal government	14.8	18.0	10.3	**0.034**
Someone from a local community-based organization, resident or neighborhood association, or parent association (PA) or parent teacher association (PTA)	5.4	6.6	3.7 *	0.189
Your religious/faith leader	3.8	3.1 *	4.8 *	0.342
Someone from a consulate	2.6	2.5 U,*	2.7 *	0.916
An elder in your family or community	7.7	7.6	7.7	0.977
A family member or friend	19.6	21.6	16.8	0.206
Someone else	4.9	6.4	2.9 *	0.075
There is no one I could hear from who would make me feel comfortable receiving a COVID-19 vaccine	42.9	32.0	57.9	**<0.001**

Responses not mutually exclusive.

Generalized linear Poisson models were used to test for differences in the weighted percentages between the "Unsure" and "No" groups.

P values are significant at the 0.05 level and are indicated in bold text. Ref=reference group

*Estimate should be interpreted with caution. Estimate's Relative Standard Error (a measure of estimate precision) is greater than 30% or the 95% Confidence Interval half-width is too large, or the sample size is too small, making the estimate potentially unreliable.

U When reporting to nearest whole percent, round up

D When reporting to nearest whole percent, round down