

SUPPLEMENTARY TABLE. Influenza and tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis vaccine hesitancy* among pregnant women by selected characteristics — Internet panel survey, United States, 2019–20 through 2022–23 influenza seasons

Characteristic	Influenza season											
	2019–20 Weighted % very hesitant [§] (95% CI)			2020–21 Weighted % very hesitant [§] (95% CI)			2021–22 Weighted % very hesitant [§] (95% CI)			2022–23 Weighted % very hesitant [§] (95% CI)		
	Total (weighted %) [†]	About influenza vaccination	About Tdap vaccination	Total (weighted %) [†]	About influenza vaccination	About Tdap vaccination	Total (weighted %) [†]	About influenza vaccination	About Tdap vaccination	Total (weighted %) [†]	About influenza vaccination	About Tdap vaccination
Overall	2264 (100)	17.5 (15.7–19.5)	15.1 (13.3–17.1)	2290 (100)	20.0 (17.5–22.6)	19.1 (16.3–22.1) [¶]	2485 (100)	17.2 (15.1–19.4)	14.7 (12.7–16.9)	2329 (100)	24.7 (22.5–27.0) [¶]	19.8 (17.8–22.0) [¶]
Age group (years)												
18–24	768 (23.5)	17.5 (13.5–22.0)	15.7 (11.9–20.1)**	716 (23.5)	23.0 (17.9–28.7)	22.5 (17.2–28.5) [¶]	456 (23.1)	16.5 (12.1–21.6)	14.6 (10.2–20.1)	413 (22.4)	27.0 (21.3–33.2) [¶]	23.5 (18.2–29.4) [¶]
25–34	1055 (56.2)	15.6 (13.2–18.3)**	12.3 (10.1–14.8)**	977 (56.2)	19.8 (16.6–23.3) [¶]	17.6 (14.1–21.6) [¶]	1272 (57.4)	17.7 (14.7–20.9)	14.7 (11.7–18.0)	1173 (57.7)	23.1 (20.3–26.1) [¶]	17.6 (15.0–20.4) ^{¶***}
35–49 (Ref)	441 (20.2)	23.0 (18.5–28.0)	22.3 (17.7–27.4)	597 (20.2)	16.9 (11.5–23.6)	19.2 (12.6–27.3)	757 (19.5)	16.5 (12.9–20.6) [¶]	14.9 (11.7–18.6) [¶]	743 (19.9)	26.8 (23.2–30.7)	22.3 (18.9–26.0)
Race and ethnicity^{††}												
White, NH (Ref)	1095 (49.2)	16.1 (13.7–18.8)	12.1 (10.0–14.5)	1018 (49.2)	18.4 (15.0–22.1)	17.0 (13.3–21.2) [¶]	1477 (49.5)	15.6 (13.6–17.8)	12.3 (10.2–14.7)	1296 (49.9)	23.7 (21.0–26.6) [¶]	16.7 (14.3–19.2) [¶]
Black, NH	392 (18.0)	26.9 (21.0–33.6)**	24.0 (18.4–30.4)**	363 (18.0)	29.4 (21.5–38.4)**	28.6 (20.3–38.2)**	295 (18.0)	26.2 (18.1–35.8)**	23.9 (16.3–32.9)**	306 (17.6)	34.8 (27.3–42.8)**	27.1 (20.2–35.0)**
Hispanic	538 (23.0)	14.5 (11.2–18.4)	15.5 (11.8–19.8)	707 (23.0)	18.5 (14.5–23.2)	17.9 (13.4–23.1)	549 (23.0)	15.7 (12.3–19.5)	14.8 (11.0–19.3)	537 (23.2)	21.6 (17.6–26.0) [¶]	23.2 (18.9–28.0) ^{¶***}
Other, NH	239 (9.8)	14.7 (9.9–20.8)	13.1 (7.7–20.5)	200 (9.7)	13.6 (8.6–20.1)	— ^{§§}	164 (9.6)	11.8 (6.4–19.2)	— ^{§§}	190 (9.3)	18.8 (13.1–25.7)	14.7 (9.5–21.4)
Education												
High school diploma or less	559 (25.1)	21.4 (17.2–26.0)**	17.1 (13.3–21.5)	576 (23.8)	22.2 (17.8–27.0)	18.3 (14.2–22.9)	611 (27.6)	21.3 (16.6–26.6)	20.5 (15.3–26.5)	662 (31.9)	30.9 (26.2–35.9) ^{¶***}	23.6 (19.3–28.3) [¶]
Some college, no degree	362 (16.9)	22.0 (16.8–28.0)**	20.7 (15.4–26.7)**	351 (16.7)	26.1 (18.8–34.6)	19.4 (12.2–28.6)	549 (23.5)	16.4 (12.3–21.3)	11.3 (7.8–15.5) [¶]	513 (22.8)	25.4 (21.2–29.9)	20.9 (16.9–25.3)
College degree	857 (38.1)	14.9 (12.0–18.0)	12.3 (9.7–15.4)	842 (36.8)	17.0 (13.0–21.7)	20.0 (15.2–25.6) [¶]	974 (36.5)	13.8 (10.7–17.5)	11.8 (8.8–15.4)	795 (32.7)	19.6 (16.4–23.2) [¶]	16.2 (13.1–19.8)
Higher than college degree (Ref)	486 (19.9)	14.1 (10.7–18.1)	13.2 (9.8–17.3)	519 (22.7)	18.1 (13.3–23.7)	18.1 (12.7–24.7)	351 (12.4)	19.2 (12.2–27.9)	16.9 (10.2–25.7)	359 (12.6)	21.1 (16.3–26.5) [¶]	17.7 (13.3–22.8)
Marital status												
Married (Ref)	1234 (54.8)	14.3 (12.2–16.6)	11.9 (10.0–14.1)	1334 (57.5)	18.1 (14.9–21.7)	18.3 (14.6–22.4) [¶]	1644 (59.2)	13.1 (11.0–15.5)	11.5 (9.4–13.8)	1217 (47.4)	20.1 (17.6–22.8) [¶]	17.2 (14.7–20.1) [¶]
Unmarried	1029 (45.2)	21.5 (18.2–25.0)**	19.0 (15.8–22.5)**	956 (42.5)	22.5 (18.6–26.7)	20.2 (16.2–24.6)	841 (40.8)	23.0 (18.7–27.7)**	19.4 (15.1–24.3)**	1110 (52.6)	28.7 (25.3–32.3) ^{¶***}	22.1 (19.0–25.5)**
Employment status												
Working (Ref)	1418 (63.0)	16.2 (14.0–18.7)	13.7 (11.5–16.0)	1408 (60.1)	16.5 (14.0–19.1)	18.2 (14.8–22.0) [¶]	1720 (68.7)	16.1 (13.7–18.7)	13.9 (11.6–16.5)	1599 (67.7)	21.5 (19.0–24.1) [¶]	18.5 (16.1–21.2) [¶]

Not working	845 (37.0)	19.8 (16.6–23.4)	17.6 (14.4–21.2)	880 (39.9)	25.1 (20.5–30.2)**	20.4 (15.8–25.7)	765 (31.3)	19.5 (15.4–24.1)	16.4 (12.0–21.6)	729 (32.3)	31.4 (27.1–36.0)¶**	22.6 (18.9–26.6)
Poverty status¶¶												
At or above poverty (Ref)	1750 (76.7)	16.7 (14.7–18.9)	14.2 (12.2–16.3)	1789 (76.4)	18.1 (15.4–21.1)	16.3 (13.4–19.4)	2022 (77.7)	13.9 (12.0–16.0)	11.8 (9.9–14.0)	1705 (70.5)	22.1 (19.7–24.6)¶	18.2 (15.8–20.7)¶
Below poverty	495 (23.3)	20.5 (16.1–25.5)	18.1 (13.8–23.1)	475 (23.6)	24.1 (18.7–30.2)	25.8 (19.0–33.7)**	451 (22.3)	28.2 (21.6–35.7)**	24.6 (18.1–32.1)**	613 (29.5)	30.7 (26.0–35.7)¶**	23.3 (19.2–27.8)**
Area of residence***												
Rural	319 (13.8)	19.5 (14.5–25.4)	17.3 (12.4–23.2)	289 (13.5)	22.9 (17.1–29.6)	16.8 (11.5–23.3)	356 (14.9)	19.8 (15.1–25.3)	10.8 (7.5–15.0)¶	461 (18.4)	31.8 (26.6–37.3)¶	24.2 (19.1–29.8)
Nonrural (Ref)	1945 (86.2)	17.2 (15.2–19.4)	14.8 (12.8–16.9)	2001 (86.5)	19.5 (16.8–22.4)	19.4 (16.4–22.8)¶	2129 (85.1)	16.7 (14.4–19.2)	15.4 (13.1–17.9)**	1868 (81.6)	23.1 (20.7–25.7)¶**	18.8 (16.6–21.2)¶
Region***												
Northeast (Ref)	460 (15.9)	16.5 (12.4–21.3)	12.5 (8.9–16.8)	457 (15.9)	16.9 (12.3–22.3)	18.1 (12.9–24.3)	457 (17.1)	12.6 (9.1–16.9)	12.1 (8.5–16.4)	349 (17.1)	23.2 (17.1–30.2)	22.0 (16.0–29.0)¶
Midwest	458 (20.8)	20.4 (15.7–25.8)	14.8 (10.6–19.9)	438 (20.7)	24.1 (17.6–31.6)	24.2 (16.6–33.3)¶	504 (20.4)	21.9 (17.0–27.4)**	17.4 (12.8–22.8)	520 (20.3)	27.4 (22.4–32.8)	19.0 (14.7–23.8)
South	928 (40.1)	18.5 (15.5–21.9)	16.4 (13.4–19.7)	935 (40.1)	21.1 (17.1–25.5)	21.5 (17.2–26.2)	1014 (39.0)	19.7 (15.7–24.1)**	16.1 (12.2–20.8)	966 (39.2)	26.1 (22.8–29.6)¶	20.7 (17.7–24.1)
West	418 (23.2)	14.1 (10.7–18.0)	15.0 (11.3–19.3)	460 (23.3)	16.5 (12.6–21.1)	11.0 (7.9–14.8)**	510 (23.6)	12.2 (9.0–16.0)	11.9 (8.2–16.5)	494 (23.4)	21.2 (17.1–25.8)¶	17.5 (13.7–21.8)
Prenatal insurance coverage§§§												
Private or military insurance only (Ref)	1077 (49.6)	13.6 (11.3–16.1)	11.1 (8.9–13.6)	1036 (45.5)	15.2 (12.1–18.8)	14.7 (11.2–18.7)	1060 (39.3)	13.3 (10.4–16.7)	12.4 (9.4–16.0)	971 (39.2)	20.2 (17.4–23.2)¶	17.0 (14.2–20.1)¶
Any public insurance	1039 (42.6)	20.8 (17.7–24.3)**	18.3 (15.3–21.6)**	1121 (48.3)	23.2 (19.4–27.2)**	21.3 (17.3–25.7)**	1282 (54.9)	20.3 (17.0–23.8)**	15.6 (12.5–19.1)	1268 (56.4)	27.2 (24.0–30.6)¶**	20.6 (17.7–23.8)
No insurance	147 (7.7)	25.0 (16.9–34.6)**	23.9 (15.5–34.0)**	132 (6.2)	30.2 (17.6–45.3)**	—§§	143 (5.8)	13.6 (7.7–21.6)¶	21.4 (11.5–34.4)	90 (4.4)	32.9 (20.7–47.1)	34.6 (22.1–48.8)**
Provider influenza vaccine recommendation/referral/offer¶¶¶												
Yes (Ref)	1770 (78.0)	14.7 (12.8–16.8)	N/A	1838 (78.8)	15.7 (13.5–18.2)	N/A	1895 (75.0)	14.1 (12.1–16.3)	N/A	1796 (76.8)	21.2 (19.0–23.6)¶	N/A
No	451 (22.0)	26.9 (21.7–32.6)**	N/A	436 (21.2)	35.0 (27.7–42.9)**	N/A	564 (25.0)	24.7 (19.4–30.6)**	N/A	488 (23.2)	35.9 (30.2–41.9)¶**	N/A
Provider Tdap vaccination recommendation/referral/offer												
Yes (Ref)	1411 (58.9)	N/A	10.0 (8.3–12.0)	1592 (67.8)	N/A	14.0 (10.9–17.4)¶	1578 (60.7)	N/A	10.0 (8.1–12.1)	1541 (64.7)	N/A	14.6 (12.4–17.1)¶
No	847 (41.1)	N/A	22.5 (18.9–26.4)**	694 (32.2)	N/A	29.8 (24.4–35.6)¶**	903 (39.3)	N/A	21.6 (17.1–26.7)**	786 (35.3)	N/A	29.3 (25.4–33.5)¶**
Number of provider visits since July 1st												
None	40 (1.6)	—§§	—§§	12 (0.4)	—§§	—§§	22 (1.3)	—§§	—§§	44 (2.3)	—§§	—§§
1–5	622 (27.9)	16.5 (13.2–20.2)	15.8 (12.3–19.9)	468 (24.3)	20.1 (14.4–26.8)	20.4 (14.1–28.0)	585 (24.2)	18.0 (13.6–23.1)	17.3 (12.6–22.8)	982 (44.9)	24.5 (20.9–28.4)¶	20.9 (17.5–24.7)¶

6–10	860 (35.3)	19.1 (15.8–22.8)	14.2 (11.2–17.7)	821 (33.8)	19.1 (15.1–23.6)	17.6 (13.7–22.2)	982 (37.8)	16.1 (13.3–19.1)	12.9 (10.4–15.8)	530 (22.4)	23.7 (19.3–28.5)	19.2 (15.0–24.0)
>10 (Ref)	742 (35.2)	16.4 (13.2–19.9)	14.7 (11.7–18.1)	989 (41.5)	20.2 (16.7–24.1)	19.0 (14.8–23.9)	896 (36.8)	16.6 (13.2–20.5)	13.8 (10.2–18.0)	770 (30.4)	25.5 (21.9–29.3) [¶]	17.6 (14.7–20.9)
High-risk condition for influenza****												
Yes (Ref)	950 (46.7)	21.1 (17.9–24.6)	N/A	956 (49.6)	22.6 (18.1–27.5)	N/A	995 (42.9)	20.3 (16.3–24.8)	N/A	1072 (48.5)	26.8 (23.4–30.4) [¶]	N/A
No	1016 (53.3)	14.2 (11.8–16.8)**	N/A	977 (50.4)	17.5 (14.7–20.7)	N/A	1411 (57.1)	14.7 (12.5–17.2)**	N/A	1158 (51.5)	23.1 (20.2–26.3) [¶]	N/A

Abbreviations: N/A = Not applicable; NH = non-Hispanic; Ref = referent group; Tdap = tetanus toxoid, reduced diphtheria toxoid, and acellular pertussis vaccine.

* Respondents were asked the following questions, "Overall, how hesitant are you about flu vaccination during your pregnancy?" and "Overall, how hesitant are you about Tdap vaccination during your pregnancy?" [1. Not at all hesitant, 2. Not that hesitant, 3. Somewhat hesitant, 4. Very hesitant].

† The total unweighted number and weighted proportion of respondents in the sample. All currently pregnant and recently pregnant respondents who completed the survey were included in the analysis.

§ Korn-Graubard 95% CI.

¶ Statistically significant differences compared with 2019–2020 influenza season.

** Statistically significant difference compared with referent group.

†† Race and ethnicity were self-reported. Respondents identified as Hispanic might be of any race. The "Other" race category included Asians, American Indians/Alaska Natives, Native Hawaiians or other Pacific Islanders, and women who selected "other" or multiple races; the "other" response option was removed from the survey in 2023.

§§ Estimates do not meet the NCHS standards of reliability. https://www.cdc.gov/nchs/data/series/sr_02/sr02_175.pdf

¶¶ Poverty status was defined based on the reported number of persons living in the household and annual household income, according to U.S. Census poverty thresholds. <https://www.census.gov/data/tables/time-series/demo/income-poverty/historical-poverty-thresholds.html>

*** Rurality was defined using zip codes where >50% of the population resides in a nonmetropolitan county, a rural U.S. Census tract, or both, according to the Health Resources and Services Administration's definition of rural population. <https://www.hrsa.gov/rural-health/about-us/definition/index.html>

††† *Northeast:* Connecticut, Maine, Massachusetts, New Hampshire, New Jersey, New York, Pennsylvania, Rhode Island, and Vermont. *Midwest:* Illinois, Indiana, Iowa, Kansas, Michigan, Minnesota, Missouri, Nebraska, North Dakota, Ohio, South Dakota, and Wisconsin. *South:* Alabama, Arkansas, Delaware, District of Columbia, Florida, Georgia, Kentucky, Louisiana, Maryland, Mississippi, North Carolina, Oklahoma, South Carolina, Tennessee, Texas, Virginia, and West Virginia. *West:* Alaska, Arizona, California, Colorado, Hawaii, Idaho, Montana, Nevada, New Mexico, Oregon, Utah, Washington, and Wyoming.

§§§ Respondents pregnant on their survey date were asked what medical insurance or medical care coverage they had; respondents who had already delivered were asked what they had during their most recent pregnancy. Women considered to have public insurance selected at least one of the following: Medicaid, Medicare, state-sponsored medical plan, or other government plan. Respondents considered to have private/military insurance selected private medical insurance and/or military medical care and did not select any type of public insurance.

¶¶¶ Excluded women from analyses who did not report having a provider visit since July 2019 (n=40), July 2020 (n=12), July 2021 (n=22) and July 2022 (n=45) for the 2020, 2021, 2022, and 2023 survey years, respectively.

**** Conditions other than pregnancy associated with increased risk for serious medical complications of influenza include chronic asthma, a lung condition other than asthma, a heart condition, diabetes, a kidney condition, a liver condition, obesity, sickle cell disease, a neurological or neuromuscular condition, or a weakened immune system. Women who were missing information were excluded from analysis (n = 298 in 2020, n = 357 in 2021, n = 79 in 2022, n = 99 in 2023).