		PR (95% CI)		
HPV type	2009–2010	2011–2012	2013–2014	2009–2010
	(n=1,955)	(n=1,767)	(n=1,985)	vs 2013–2014
Any type	42.8 (39.6–46.1)	39.6 (35.2–43.9)	39.8 (36.4–43.3)	0.88 (0.73–1.07)
Vaccine type (VT)	7.9 (6.5–9.4)	6.5 (5.0–7.9)	5.5 (3.8–7.3)	0.68 (0.47–0.99)
High-risk VT	6.4 (5.0–7.8)	5.1 (3.7–6.5)	4.4 (3.0–5.8)	0.67 (0.45–0.99)
Low-risk VT	1.9 (1.3–2.4)	1.5 (0.5–2.5)	1.2 (0.4–1.9)	0.62 (0.30–1.27)
HR non-VT	25.1 (22.2–28.0)	21.7 (18.3–25.1)	22.3 (19.7–24.8)	0.86 (0.70–1.05)

Appendix 1. Prevalence of Human Papillomavirus Infections Among Women 18–59 Years Old (N= 5,707)

Boldface indicates significance (p<0.05). CI, confidence interval; PR, prevalence ratio; HPV, human papillomavirus; VT, vaccine-type HPV. VT: vaccine type (HPV-6, -11, -16, -18); HR VT: high-risk vaccine type (HPV-16, -18); LR VT: low risk vaccine type (HPV-6, -

11); HR non VT: high-risk non-vaccine type (HPV-26, -31, -33, -35, -39, -45, -51, -52, -53, -56, -58, -59, -66, -68, -73, -82).

HPV type	Prevalence (95% CI)			PR (95% CI)
	2009–2010	2011–2012	2013–2014	2009–2010 vs
	(n=456)	(n=430)	(n=466)	2013–2014
Any type	58.2 (50.8–65.6)	52.3 (45.0–59.5)	48.7 (42.1–55.3)	0.68 (0.46–1.00)
Vaccine type (VT)	15.4 (11.1–19.7)	8.5 (4.4–12.5)	6.1 (2.8–9.3)	0.35 (0.19–0.67)
High-risk VT	13.1 (9.1–17.1)	6.5 (3.2–9.7)	5.0 (2.2–7.8)	0.35 (0.18–0.67)
Low-risk VT	3.5 (1.4–5.6)	2.2 (0-4.4)	1.1 (0–2.5)	0.31 (0.08–1.24)
HR non-VT	41.9 (35.9–47.9)	37.5 (29.5–45.4)	33.4 (26.2–40.7)	0.70 (0.47–1.03)

Appendix 2. Prevalence of Human Papillomavirus Infections Among Women 18–26 Years Old (N=1,352)

Boldface indicates significance (p<0.05). CI, confidence interval; PR, prevalence ratio; HPV, human papillomavirus; VT, vaccine-type HPV. VT: vaccine type (HPV-6, -11, -16, -18); HR VT: high-risk vaccine type (HPV-16, -18); LR VT: low risk vaccine type (HPV-6, -

11); HR non VT: high-risk non-vaccine type (HPV-26, -31, -33, -35, -39, -45, -51, -52, -53, -56, -58, -59, -66, -68, -73, -82).

	Prevalence (95% CI)			PR (95% CI)
HPV type	2009–2010	2011–2012	2013–2014	2009–2010 vs
	(n=364)	(n=320)	(n=344)	2013–2014
Any type	42.8 (36.4–49.3)	43.8 (37.4–50.2)	44.4 (36.5–52.3)	1.06 (0.71–1.59)
VT	9.1 (5.7–12.6)	8.4 (4.7–12.1)	7.7 (4.8–10.6)	0.83 (0.47–1.45)
High-risk VT	6.8 (3.4–10.2)	7.7 (4.3–11.2)	6.0 (3.5–8.5)	0.88 (0.45–1.72)
Low-risk VT	2.5 (0.4–4.5)	0.9 (0.04–1.7)	1.7 (0.2–3.1)	0.67 (0.20–2.19)
High risk non-VT	27.2 (20.3–30.1)	28.9 (25.1–32.8)	23.4 (18.7–28.1)	0.82 (0.54–1.25)

Appendix 3. Prevalence of Human Papillomavirus Infections Among Women 27–34 Years Old (N=1,028)

CI, confidence interval; PR, prevalence ratio; HPV, human papillomavirus; VT, vaccine-type HPV. VT: vaccine type (HPV-6, -11, -16, -18); HR VT: high-risk vaccine type (HPV-16, -18); LR VT: low risk vaccine type (HPV-6, -11); HR non VT: high-risk non-vaccine type (HPV-26, -31, -33, -35, -39, -45, -51, -52, -53, -56, -58, -59, -66, -68, -73, -82).

		PR (95% CI)		
HPV type	2009–2010	2011–2012	2013–2014	2009–2010 vs
	(n=491)	(n=410)	(n=504)	2013–2014
Any type	37.3 (33.2–41.4)	40.9 (34.9–47.0)	38.6 (31.1–46.2)	1.06 (0.75–1.50)
VT	6.1 (3.5–8.8)	7.4 (4.6–10.2)	5.1 (2.3–7.8)	0.82 (0.40–1.66)
High-risk VT	5.0 (3.1–6.9)	5.2 (2.5–7.9)	4.3 (1.6–6.9)	0.84 (0.41–1.74)
Low-risk VT	1.3 (0–2.6)	2.1 (0.4–3.8)	0.8 (0.3–1.3)	0.62 (0.19–1.96)
HR non-VT	20.6 (16.7–24.5)	20.0 (15.4–24.5)	20.9 (16.3–25.6)	1.02 (0.72–1.45)

Appendix 4. Prevalence of Human Papillomavirus Infections Among Women 35–44 Years Old (N=1,405)

CI, confidence interval; PR, prevalence ratio; HPV, human papillomavirus; VT, vaccine-type HPV. VT: vaccine type (HPV-6, -11, -16, -18); HR VT: high-risk vaccine type (HPV-16, -18); LR VT: low risk vaccine type (HPV-6, -11); HR non VT: high-risk non-vaccine type (HPV-26, -31, -33, -35, -39, -45, -51, -52, -53, -56, -58, -59, -66, -68, -73, -82).

Appendix 5. Prevalence of Human Papillomavirus Infections Among Women 45–59 Years Old (N=1,922)

	Prevalence (95% CI)			PR (95% CI)
HPV type	2009–2010	2011–2012	2013–2014	2009–2010 vs
	(n=644)	(n=607)	(n=671)	2013–2014
Any type	37.9 (31.0–44.7)	29.8 (22.7–36.9)	33.2 (28.4–38.1)	0.82 (0.58–1.16)
VT	4.3 (2.1–6.5)	4.0 (1.9–6.0)	4.4 (2.0–6.9)	1.03 (0.48–2.22)
High-risk VT	3.4 (1.5–5.3)	3.1 (1.2–4.9)	3.3 (1.0–5.7)	0.99 (0.41–2.38)
Low-risk VT	1.0 (0–2.1)	1.0 (0–2.3)	1.2 (0–2.5)	1.15 (0.26–5.13)
HR non-VT	17.7 (12.2–23.1)	10.7 (7.2–14.2)	16.0 (13.1–19.0)	0.89 (0.59–1.35)

CI, confidence interval; PR, prevalence ratio; HPV, human papillomavirus; VT, vaccine-type HPV. VT: vaccine type (HPV-6, -11, -16, -18); HR VT: high-risk vaccine type (HPV-16, -18); LR VT: low risk vaccine type (HPV-6, -11); HR non VT: high-risk non-vaccine type (HPV-26, -31, -33, -35, -39, -45, -51, -52, -53, -56, -58, -59, -66, -68, -73, -82).

Appendix 6. Characteristics Associated With the Prevalence of Vaccine-Type Human Papillomavirus Among Vaccinated

Women 18-59 Years Old (2009-2014) (N=634)

Factor	Frequency (%)*	Bivariable	Multivariable
NHANES cycle		PR (95% CI)	aPR (95%CI)†
2009–2010	162 (22.9)	Reference	
2011–2012	192 (31.6)	0.94 (0.27-3.19)	0.94 (0.28-3.22)
2013–2014	280 (45.5)	0.51 (0.25-1.01)	0.38 (0.13-1.18)
Race and ethnicity	I		
Hispanic	150 (15.0)	Reference	
Non-Hispanic White	227 (60.2)	0.77 (0.21-2.81)	0.72 (0.23-2.22)
Non-Hispanic Black	168 (15.6)	2.84 (1.20-6.71)	2.77 (0.82-9.36)
Non-Hispanic Other	89 (9.2)	1.26 (0.39-4.02)	1.58 (0.40-6.22)
Marital status	I		
Never married	255 (54.8)	Reference	
Married [‡]	196 (45.2)	1.51 (0.48-4.74)	1.96 (0.44-8.83)
Marijuana use	I		
Never	266 (40.9)	Reference	

Former	202 (39.9)	1.77 (0.59-5.32)	1.91 (0.61-6.02)
Fuinei	202 (39.9)	1.77 (0.59-5.52)	1.91 (0.01-0.02)
Current	119 (19.2)	0.69 (0.23-2.10)	0.70 (0.19-2.64)
Herpes simplex virus typ	pe 2		I
Negative	84 (12.5)	Reference	
Positive	537 (87.5)	1.87 (0.62-5.62)	0.86 (0.26-2.82)
Gonorrhea or chlamydia			
Negative	509 (96.9)	Reference	
Positive	18 (3.1)	1.14 (0.24-5.48)	
Age first performed sex	(any)		
Never performed sex	60 (9.9)	Reference	
≤18 years old	444 (76.1)	4.98 (0.60-41.22)	
>18 years old	83 (14.0)	1.42 (0.59-3.38)	
Ever performed vaginal	sex		
No	74 (12.1)	Reference	
Yes	514 (87.9)	5.54 (0.72-42.41)	
Number of lifetime vagir	al sex partners§		
0	74 (12.1)	Reference	

1–2	160 (24.3)	5.44 (0.69-43.28)			
≥3	351 (63.6)	5.61 (0.67-46.82)			
Number of vaginal sex partners in past 12 months [§]					
0–1	415 (70.9)	Reference			
≥2	171 (29.1)	0.71 (0.27-1.87)	0.88 (0.33-2.35)		

* All data were weighted, and %s and 95% confidence intervals (95% CI) were estimated using the weighted data.

⁺ Data were adjusted for NHANES cycle, race and ethnicity, marital status, marijuana use, and history of herpes simplex virus type 2 and number of vaginal sex partners in past 12 months. History of gonorrhea or chlamydia, age first performed sex, ever performed vaginal sex and number of lifetime vaginal sex partners were left out in multivariable analysis due to low frequency (n<5).

[‡] Includes living with partner, divorced, separated, and widowed.

Appendix 7. Characteristics Associated With the Prevalence of Vaccine-Type Human Papillomavirus Among Unvaccinated

Women 18-59 Years Old (2009-2014) (N=4,892)

Factor	Frequency (%)*	Bivariable	Multivariable
NHANES cycle		PR (95% CI)	aPR (95%CI)†
2009–2010	1758 (33.4)	Reference	
2011–2012	1507 (33.2)	0.80 (0.60-1.09)	0.78 (0.56-1.09)
2013–2014	1627 (33.4)	0.74 (0.51-1.07)	0.75 (0.48-1.17)
Race and ethnicity	<u> </u>		
Hispanic	1285 (16.0)	Reference	
Non-Hispanic White	1949 (63.6)	0.95 (0.68-1.34)	0.81 (0.53-1.23)
Non-Hispanic Black	1047 (12.6)	1.71 (1.15-2.55)	0.83 (0.51-1.36)
Non-Hispanic Other	611 (7.8)	1.37 (0.80-2.35)	1.19 (0.67-2.12)
Marital status			
Never married	988 (17.9)	Reference	
Married [‡]	3704 (82.1)	0.35 (0.27-0.45)	0.46 (0.33-0.66)
Marijuana use			
Never	2257 (45.7)	Reference	

Former	1561 (44.3)	1.48 (1.06-2.06)	1.35 (0.93-1.97)
Current	451 (10.0)	2.16 (1.43-3.26)	1.22 (0.78-1.92)
Herpes simplex viru	is type 2		
Negative	3657 (80.0)	Reference	
Positive	1016 (20.0)	1.62 (1.23-2.12)	1.38 (0.98-1.95)
Gonorrhea or chlam	lydia		
Negative	4019 (98.4)	Reference	
Positive	77 (1.6)	4.74 (2.26-9.93)	2.59 (1.21-5.52)
Age first performed	sex (any)		
Never performed sex	169 (2.8)	Reference	
≤18 years old	2947 (71.0)	10.34 (2.51-42.64)	
>18 years old	1149 (26.2)	6.63 (1.48-29.84)	
Ever performed vag	inal sex		
No	221 (3.6)	Reference	
Yes	4052 (96.4)	12.11 (2.86-51.36)	
Number of lifetime	aginal sex partners	§	
0	221 (3.7)	Reference	

1–2	1266 (27.1)	5.32 (1.25-22.61)	
≥3	2763 (69.2)	14.99 (3.52-63.87)	
Number of vaginal se	ex partners in past 12 mo	onths [§]	
0–1	3656 (87.1)	Reference	
≥2	600 (12.9)	4.64 (3.33-6.47)	3.13 (2.17-4.52)

* All data were weighted, and percentages and 95% confidence intervals were estimated using the weighted data.

[†] Data were adjusted for NHANES cycle, race and ethnicity, marital status, marijuana use, history of herpes simplex virus type 2, history of gonorrhea or chlamydia, and number of vaginal sex partners in past 12 months. Age first performed sex, ever performed vaginal sex and number of lifetime vaginal sex partners were left out in multivariable analysis due to low frequency (n<5).

[‡] Includes living with partner, divorced, separated, and widowed.

Appendix 8. Characteristics Associated With the Prevalence of Vaccine-Type Human Papillomavirus Among Unvaccinated

Women 27-34 Years Old (2009-2014) (N=900)

Factor	Frequency (%)*	Bivariable	Multivariable
NHANES cycle		PR (95% CI)	aPR (95%CI)†
2009–2010	339 (34.6)	Reference	
2011–2012	280 (34.0)	0.92 (0.5-1.70)	0.93 (0.46-1.89)
2013–2014	281 (31.4)	0.85 (0.46-1.59)	0.82 (0.39-1.70)
Race and ethnicity	I		
Hispanic	240 (20.0)	Reference	
Non-Hispanic White	360 (58.0)	0.74 (0.41-1.35)	0.57 (0.27-1.20)
Non-Hispanic Black	172 (13.1)	1.42 (0.69-2.93)	0.62 (0.25-1.57)
Non-Hispanic Other	128 (8.9)	0.81 (0.27-2.38)	0.73 (0.21-2.54)
Marital status			
Never married	238 (22.4)	Reference	
Married [‡]	661 (77.6)	0.40 (0.23-0.71)	0.43 (0.18-0.99)
Marijuana use	I		
Never	384 (46.5)	Reference	

Former	282 (41.8)	1.59 (0.85-2.95)	1.59 (0.81-3.13)
Current	99 (11.7)	1.01 (0.41-2.49)	0.78 (0.28-2.17)
Herpes simplex virus ty	/pe 2		
Negative	678 (78.3)	Reference	
Positive	208 (21.7)	1.23 (0.66-2.28)	0.72 (0.35-1.49)
Gonorrhea or chlamydi	a		
Negative	740 (98.9)	Reference	
Positive	10 (1.1)	NA	
Age first performed sea	c (any)		
Never performed sex	16 (1.9)	Reference	
≤18 years old	535 (71.3)	2.00 (0.25-16.02)	
>18 years old	215 (26.9)	2.47 (0.25-24.19)	
Ever performed vagina	l sex		
No	25 (2.7)	Reference	
Yes	741 (97.3)	3.11 (0.38-25.56)	
Number of lifetime vag	inal sex partners§		
0	25 (2.7)	Reference	

1–2	244 (31.5)	1.50 (0.18-12.39)		
≥3	496 (65.8)	3.94 (0.46-33.36)		
Number of vaginal sex partners in past 12 months [§]				
0–1	636 (85.5)	Reference		
≥2	129 (14.5)	3.24 (1.69-6.28)	2.54 (1.26-5.13)	

* All data were weighted, and percentages and 95% confidence intervals were estimated using the weighted data.

[†] Data were adjusted for NHANES cycle, race and ethnicity, marital status, marijuana use, history of herpes simplex virus type 2, and number of vaginal sex partners in past 12 months. Gonorrhea or chlamydia, age first performed sex, ever performed vaginal sex and number of lifetime vaginal sex partners were left out in multivariable analysis due to low frequency (n<5).

[‡] Includes living with partner, divorced, separated, and widowed.

Appendix 9. Characteristics Associated With the Prevalence of Vaccine-Type Human Papillomavirus Among Unvaccinated

Women 35-44 Years Old (2009-2014) (N=1,328)

Factor	Frequency	Bivariable	Multivariable
	(%*)		
NHANES cycle		PR (95% CI)	aPR (95%CI)†
2009–2010	470 (33.4)	Reference	
2011–2012	394 (31.5)	1.28 (0.73-2.24)	1.37 (0.70-2.67)
2013–2014	464 (35.1)	0.87 (0.44-1.70)	0.80 (0.35-1.83)
Race and ethnicity			
Hispanic	355 (18.0)	Reference	
Non-Hispanic White	535 (60.8)	0.99 (0.52-1.90)	0.86 (0.42-1.79)
Non-Hispanic Black	251 (12.6)	1.34 (0.67-2.70)	0.55 (0.23-1.35)
Non-Hispanic Other	187 (8.6)	0.70 (0.26-1.91)	0.44 (0.11-1.77)
Marital status			
Never married	191 (11.7)	Reference	
Married [‡]	1137 (88.3)	0.41 (0.20-0.84)	0.45 (0.19-1.10)
Marijuana use	I		

Berenson AB, Hirth JM, Chang M. Change in human papillomavirus prevalence among u.s. women aged 18–59 years, 2009–2014. Obstet Gynecol 2017; 130. The authors provided this information as a supplement to their article.

Never	623 (50.7)	Reference	
Former	383 (41.5)	1.36 (0.80-2.32)	1.31 (0.74-2.32)
Current	98 (7.8)	2.49 (0.99-6.29)	1.81 (0.67-4.90)
Herpes simplex virus ty	pe 2		
Negative	886 (71.4)	Reference	
Positive	419 (28.6)	1.94 (1.23-3.05)	1.60 (0.89-2.90)
Gonorrhea or chlamydia	a		
Negative	1067 (98.8)	Reference	
Positive	12 (1.2)	3.80 (0.67-21.58)	
Age first performed sex	(any)		
Never performed sex	23 (1.6)	Reference	
≤18 years old	760 (72.1)	NA	
>18 years old	318 (26.3)	NA	
Ever performed vaginal	sex	1	
No	28 (1.9)	Reference	
	1075 (98.1)	NA	

0	28 (1.9)	Reference		
1–2	321 (24.7)	NA		
≥3	749 (73.4)	NA		
Number of vaginal sex partners in past 12 months [§]				
0–1	962 (88.1)	Reference		
≥2	138 (11.9)	4.21 (1.81-9.80)	3.48 (1.39-8.72)	

* All data were weighted, and percentages and 95% confidence intervals were estimated using the weighted data.

⁺ Data were adjusted for NHANES cycle, race and ethnicity, marital status, marijuana use, history of herpes simplex virus type 2, and number of vaginal sex partners in past 12 months. Gonorrhea or chlamydia, age first performed sex, ever performed vaginal sex and number of lifetime vaginal sex partners were left out in multivariable analysis due to low frequency (n<5).

[‡] Includes living with partner, divorced, separated, and widowed.

Appendix 10. Characteristics Associated With the Prevalence of Vaccine-Type Human Papillomavirus Among Unvaccinated

Women 45-59 Years Old (2009–2014) (N=1,837)

Factor	Frequency (% [*])	Bivariable	Multivariable
NHANES cycle		PR (95% CI)	aPR (95%CI)†
2009–2010	621 (31.5)	Reference	
2011–2012	579 (34.4)	0.88 (0.39-1.99)	0.93 (0.42-2.06)
2013–2014	637 (34.1)	1.17 (0.54-2.53)	1.31 (0.56-3.05)
Race and ethnicity			
Hispanic	448 (11.3)	Reference	
Non-Hispanic White	784 (71.4)	0.92 (0.47-1.81)	0.93 (0.38-2.29)
Non-Hispanic Black	410 (11.1)	1.76 (0.94-3.29)	1.61 (0.80-3.23)
Non-Hispanic Other	195 (6.2)	1.16 (0.22-6.12)	1.72 (0.25-12.06)
Marital status			
Never married	203 (8.6)	Reference	
Married [‡]	1633 (91.4)	0.75 (0.38-1.47)	0.84 (0.38-1.83)
Marijuana use			
Never	871 (42.4)	Reference	

Former	662 (50.5)	1.50 (0.72-3.12)	1.48 (0.67-3.26)
Current	110 (7.1)	0.98 (0.31-3.11)	0.71 (0.20-2.57)
Herpes simplex virus ty	pe 2		
Negative	1372 (82.8)	Reference	
Positive	296 (17.2)	2.66 (1.33-5.32)	2.40 (1.10-5.23)
Gonorrhea or chlamydi	a		
Negative	1582 (99.6)	Reference	
Positive	11 (0.4)	1.99 (0.17-23.01)	
Age first performed sex	(any)		
Never performed sex	48 (1.6)	Reference	
≤18 years old	1084 (68.8)	3.30 (0.46-23.89)	
>18 years old	511 (29.6)	1.65 (0.20-13.99)	
Ever performed vaginal	sex		
No	60 (1.9)	Reference	
Yes	1588 (98.1)	3.47 (0.48-25.34)	
Number of lifetime vagi	nal sex partners [§]		
0	60 (1.9)	Reference	

1–2	466 (26.6)	1.26 (0.15-10.94)			
≥3	1108 (71.5)	4.33 (0.60-31.49)			
Number of vaginal sex partners in past 12 months [§]					
0–1	1496 (91.7)	Reference			
≥2	141 (8.3)	3.17 (1.33-7.55)	3.05 (1.28-7.23)		

* All data were weighted, and percentages and 95% confidence intervals were estimated using the weighted data.

⁺ Data were adjusted for NHANES cycle, race and ethnicity, marital status, marijuana use, history of herpes simplex virus type 2, and number of vaginal sex partners in past 12 months. Gonorrhea or chlamydia, age first performed sex, ever performed vaginal sex and number of lifetime vaginal sex partners were left out in multivariable analysis due to low frequency (n<5).

[‡] Includes living with partner, divorced, separated, and widowed.