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National chlamydia screening rate in young sexually active women using HEDIS measures in the United States, 2011–2020

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Abstract

Background: National guidelines recommend sexually active women under the age of 25 be screened annually for chlamydia. Our objective was to estimate the chlamydia screening rate of sexually active women aged 16–24 years from 2011–2020.

Methods: We analyzed the chlamydia screening rates among sexually active women aged 16–24 from 2011–2020 using the chlamydia measures in the Healthcare Effectiveness Data and Information Set (HEDIS) dataset. The annual national chlamydia screening rates was further stratified by census region and by patient age.

Results: Chlamydia screening rates among sexually active women aged 16–24 years ranged from 55.0% to 61.8% in Medicaid health plans and from 46.9% to 52.4% in commercial health plans during 2011–2020. The Northeast consistently had the highest screening rates among 4 geographic regions. The chlamydia screening rate among sexually active women aged 16–24 years decreased from 2019 to 2020: from 61.8% to 57.9% in Medicaid plans and from 52.4% to 48.4% in commercial health plans. The number of sexually active women aged 16–24 covered by commercial health plans decreased from 2019 to 2020, but the number covered by Medicaid increased from 2019 to 2020.

Conclusion: The chlamydia screening rates in the target population have increased little from 2011–2019. The decrease in chlamydia screening rates between 2019 and 2020 could be related to the COVID-19 pandemic and the reduced use of health services during that period. With recently suboptimal chlamydia screening rates in the United States, interventions of improving and assessing chlamydia screening rates are needed.

Summary:

Annual chlamydia screening rates among young sexually active women did not significantly improve from 2011–2020 and decreased between 2019–2020. The Northeast had the highest chlamydia screening rate among 4 United States regions during 2011–2020.

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Keywords

chlamydia screening; commercially insured health plans; Medicaid health plans; HMO and PPO; sexually active women aged 16–24 years

INTRODUCTION

Chlamydia is the most reported sexually transmitted disease (STD) in the United States. In 2020, an estimated 1.6 million new chlamydia cases were reported.(1) Chlamydia in women can cause pelvic inflammatory disease, which can lead to scar tissue formation, ectopic pregnancy, and infertility.(2) Because most chlamydia infections are asymptomatic in women, screening is of crucial importance. The Centers for Disease Control and Prevention (CDC) recommends annual chlamydia screening for sexually active women under 25 years of age and for women aged 25 years of age and older who are at increased risk of a sexually transmitted infection.(3)

The Healthcare Effectiveness Data and Information Set (HEDIS®) is one of the most widely used sets of healthcare performance measures in the United States, and chlamydia screening among young sexually active women has been measured in HEDIS since 2000.(4) HEDIS is maintained by the National Committee for Quality Assurance (NCQA). The annual chlamydia screening rates currently reported on the NCQA website are the average of screening rates across the health plans and are calculated at the plan level, which we call plan estimates; these rates are not weighted by the plan eligible population because the purpose of NCQA's calculated rate is to allow plan to plan comparison. As a result, the plan estimates do not reflect the screening rates on the population level. The objectives of this study are 1) to estimate chlamydia screening rates among sexually active women aged 16–24 years by weighting the number of sexually active women by type of health plans using HEDIS data, which we call population estimates, 2) to assess whether the numbers of sexually active women aged 16–24 years included in the percentages reported to NCQA using HEDIS specifications have changed over time, 3) to estimate chlamydia screening rates by census region, and 4) to examine how chlamydia screening rates changed from 2011–2020, particularly between 2019 and 2020 for the potential impacts of the COVID-19 pandemic on chlamydia screening.

MATERIALS AND METHODS

The HEDIS dataset is maintained by NCQA, a non-profit organization in the United States.(4) The NCQA gathers and monitors healthcare claims data annually from both Medicaid and commercial health plans. Commercial and Medicaid health plans report to NCQA HEDIS measures, including the chlamydia screening in women measure called "Chlamydia Screening in Women." The "Chlamydia Screening in Women" reports the percentage of women aged 16 to 24 who were identified as sexually active and who had at least one test for chlamydia during the measurement year. Sexual activity is identified through pharmacy data and claim/encounter data.(5) Members of commercial health plans with a gap in enrollment of more than 45 days or multiple gaps during the measurement year were excluded, as were members of Medicaid plans with a gap in enrollment of more than 2

months or multiple gaps during the measurement year.(5) Current chlamydia screening rates presented in NCQA's website are the average of health plan's chlamydia screening rates, regardless of the number of sexually active women aged 16–24 years in each of the health plan.

In this study, we focused on NCQA HEDIS data for chlamydia screening measures in the measurement years of 2011–2020. Health plans from United States territories were excluded from this study. To derive the population estimates over the study period, for each year from 2011–2020, we divided the number of sexually active women aged 16–24 years who had chlamydia tests from all health plans (the aggregated numerator of the chlamydia screening rate) by the number of sexually active women in this age group from all health plans (the aggregated denominator of the chlamydia screening rate). In short, the plan estimates on the NCQA website weight plans equally, and the population estimates in this study weight women equally. We compared these two different screening rates and stratified the results, as reported by NCQA, by commercially insured health maintenance organizations (HMO), commercially insured preferred provider organizations (PPO), and Medicaid (stratified information for Medicaid health plans into HMO or PPO were not available). We also conducted a regional analysis by dividing the United States into 4 geographic regions based on the US Census Bureau: West, Midwest, South, and Northeast.(6)

Analysis was performed in Python 3 using the Python library pandas.(7, 8) The population chlamydia screening rates were compared by age group using $\chi 2$ tests, and the population chlamydia screening rates were compared regionally within payer categories also using $\chi 2$ tests. $p < 0.05$ was considered statistically significant.

RESULTS

The number of sexually active women aged 16–24 years (the aggregated denominator) increased from 0.7 million in 2011 to 1.9 million in 2020 in Medicaid health plans and from 2.7 million in 2011 to 3.3 million in 2020 in commercial health plans (Table 1). Among sexually active women aged 16–24 years during 2011–2020, the proportion of sexually active women who were aged 21–24 years varied from 38.5%−42.1% in the Medicaid health plans and from 52.4%−55.2% in commercial health plans.

Overall chlamydia screening rates during 2011–2020 varied from 55.0% to 61.8% among sexually active women aged 16–24 years in the Medicaid health plans and from 46.9% to 52.4% in commercial health plans (Table 1). Compared to young sexually active women aged 16–20 years, sexually active women aged 21–24 years had higher screening rates (50.2%−57% vs. 42.3%−46.5% in commercial health plans and 60.0%−67.2% vs. 51.3% −58.3% in Medicaid health plans) respectively. In each year from 2011 to 2020, the chlamydia screening rate was significantly higher among sexually active women aged 21–24 years than for those aged 16–20 years ($p<0.05$).

Compared to the chlamydia screening rates reported on the NCQA website (or plan estimates), this study's estimated chlamydia screening rates (population estimates) were much higher among commercially insured HMOs: from 3.4 absolute percentage points

higher (from 47.7% to 51.1%) in 2020 to 8.8 percentage points higher (from 48.9% to 57.7%) in 2017 (Table 2), respectively. Although there were differences in chlamydia screening rates between the plan estimates and the population estimates among commercial PPOs or Medicaid plans, the percentage point differences were not large, ranging from 1.5% to 2.2% among commercial PPOs and from −0.8% to 3.8% among Medicaid plans, respectively.

Each year from 2011–2020, chlamydia screening rates (population estimates) were significantly higher among sexually active women aged 16–24 years who resided in the Northeast region than among those who did not reside in the Northeast. In 2020, the Northeast had the highest chlamydia screening rate among commercial health plans (55.7%), followed by the South (47.7%), West (47.2%) and Midwest (43.7%) (Figure 1A). In that same year, the Northeast had the highest chlamydia screening rates among Medicaid plans (65.2%), followed by the South (56.8%), West (58.1%) and Midwest (52.9%) (Figure 1B).

A marked decrease in chlamydia screening rates occurred from 2019 to 2020, with screening rates in Medicaid health plans decreasing from 61.8% to 57.9% and screening rates in commercial health plans decreasing from 52.4% to 48.4%. The number of sexually active women aged 16–24 years in commercial health plans who had chlamydia screening decreased from 1.86 million to 1.59 million during 2019–2020; however, the number of sexually active women in Medicaid health plans aged 16–24 years who had chlamydia screening increased from 1.02 million to 1.12 million. All regions experienced a decrease in chlamydia screening rates during 2019–2020, especially for the Northeast region having the greatest decrease in screening rates for commercial health plans from 60.9% down to 55.5%.

DISCUSSION

Our findings indicated that there was not much improvement in annual chlamydia screening rates in the United States from 2011–2020, even though the CDC has recommended offering opt-out chlamydia screening to increase screening rates and chlamydia detection for young, sexually active women since 1993 and the HEDIS chlamydia screening measure has been part of the HEDIS measure set since 2000.(9) Data analysis showed that overall chlamydia screening rates among sexually active women aged 16–24 years varied from 55.0%−61.8% in Medicaid health plans and from 46.9%−52.4% in commercial health plans during 2011–2020. Slow improvement in chlamydia screening rates may be more related to STD-related stigma and STD-related embarrassment for healthcare providers and young women.(10) According to the CDC, there is room for improvement on chlamydia screening rates in the United States, and new interventions to improve routine chlamydia screening are needed. The CDC recommends considering offering opt-out chlamydia screening to increase screening rates and chlamydia detection.

A comparison between the CDC chlamydia statistics in the “Sexually Transmitted Disease Surveillance 2020” report and our HEDIS chlamydia population analysis shows the differing purposes of each: the CDC chlamydia statistics studies screening in the US as a whole, but our HEDIS chlamydia statistics represents screening within health plans.(1) The CDC chlamydia screening rates includes non-sexually active women, but our screening rates

examine all sexually active women aged 16–24 within each health plan type, allowing study of the relationship between plan type and screening. Furthermore, the CDC chlamydia statistics cannot be directly compared to HEDIS measures because the HEDIS data collection has expanded greatly since 2011. The increase in the number of 16–24 year old women identified by HEDIS as sexually active from 3.5 million in 2011 to 5.2 million in 2020 reflects an improvement on chlamydia screening measure in the HEDIS data collection. The improvement may be due to better identification of sexually active women or more health plans having participated in HEDIS data collection.

Compared to the health plan average of chlamydia screening rates reported on the NCQA website, the population average of estimated chlamydia screening rates was much higher among commercial HMO plans. The difference between health plan average chlamydia screening rates and the population average rates we calculated is most likely the result of the distribution of the number of sexually active women aged 16–24 years in healthcare plans measured by the NCQA, especially for HMO groups. For commercial HMO plans, it is likely there are more health plans that are covering fewer sexually active women aged 16–24 years than health plans that are covering more sexually active women in the same age range. This would cause NCQA's chlamydia screening rates to be lower. It seems that consistent use of either method to report chlamydia screening rates is acceptable, although our estimates were more representative of the population-level chlamydia screening rates, because our estimates represent rates over the population of young sexually active women.

The pattern of the HEDIS chlamydia screening rates by Census region has not been updated recently. Our findings showed that the Northeast region had the highest chlamydia screening rate among the four regions in the United States for both commercial and Medicaid health plans. Interestingly, chlamydia screening rates were not much different between commercial and Medicaid health plans in the Northeast, while chlamydia screening rates were much higher among Medicaid health plans than among commercial health plans in the other three regions. The types of health plans available in each region do not appear to be the sole cause of this difference since the screening rates of commercial HMOs and PPOs differ in the Midwest region by less than one percentage points and in the South by less than three percentage points. Further study may be needed to identify the reasons for this pattern, such as the number of sexually active women aged 16–24 years and quality of the health plans by region This regional pattern may help state and local STD programs target populations, plans, and providers for improving chlamydia screening services.

The marked decrease in chlamydia screening rates from 2019 −2020 (from 61.8% to 57.9% in Medicaid plans and from 52.4% to 48,4% in commercial plans) could be attributed to the COVID-19 pandemic. Our result of a decreasing number of chlamydia screenings aligns with recently published articles about chlamydia screening. (11, 12) Many women might have been discouraged to visit healthcare providers due to state lockdown policies or had limited chlamydia screening available during the early stages of the COVID-19 pandemic. Our data also showed that sexually active women aged 16–24 years (the aggregated denominator) in commercial health plans decreased from 1.86 million to 1.59 million during 2019–2020. One reason for this decreased denominator may also be due to the COVID-19 pandemic. During the early stages of the COVID-19 pandemic, millions of Americans lost

their jobs, leading to a loss of workplace healthcare coverage. From July 2019 to July 2020, the labor participation rate in women aged 16–24 decreased from 11.3 million to 10.5 million.(13) In addition, many young women, in the studied age range, rely on their guardians for health insurance, and the unemployment rate for the entire labor force rose to 14.8% in April 2020.(14)

The loss of healthcare coverage for many Americans caused them to enroll in Medicaid programs, and several states also expanded their Medicaid programs in 2020, including Idaho, Nebraska, Oklahoma, and Missouri.(15) For Medicaid, the increase in the aggregated denominator of chlamydia screening from 2019–2020 coincides with an overall increase in Medicaid enrollment during that same period. In January 2020, Medicaid enrollment was reported as 64.1 million (16) and, in December 2020, Medicaid enrollment rose to approximately 74 million.(17) Although our data may not directly link these mentioned factors related to the chlamydia screening rates, further studies with more data resources are needed to assess how the COVID-19 pandemic impacted chlamydia screening rates.

This study has several limitations. First, HEDIS data are based on convenience samples and do not represent the entire population of the United States; the patients enrolled in the health plans that report to HEDIS may not be representative of all patients in the United States. Furthermore, HEDIS measurement criteria are restrictive and can exclude many patients, such as significant percentages of young sexually active women who were excluded due to gaps in healthcare coverage or no sexual-related claims.(18) Second, chlamydia screening rates were determined by using the increased denominators from 2011–2020 in both commercial and Medicaid health plans. Third, the HEDIS sample of sexually active women aged 16–24 years old may not be representative of all members of that demographic. For example, according to the national survey “National Survey of Family Growth” report, the proportion of women aged 21–24 years who were sexually active is higher than that of women aged 16–20 years.(19) However, there were a larger number of women aged 16–20 who were sexually active in the 2020 HEDIS measures for Medicaid health plans than those aged 21–24 years old in the same year and in Medicaid health plans. This could be explained by more women aged 16–20 years being enrolled in Medicaid, such as in the Children’s Health Insurance Program. Last, healthcare plans’ ability to report to NCQA may have been impacted by the COVID-19 pandemic, resulting in limited or incomplete data during that period.

Our data analysis indicated that annual chlamydia screening rates have not been significantly improved and that the Northeast region had the highest chlamydia screening rate among four regions in the past 10 years in the United States. The suboptimal chlamydia screening rates and lack of meaningful increase in chlamydia screening rates from 2011–2019 highlight the shortcomings of our current healthcare system’s support of the sexual health of young women. Because the marked decrease in chlamydia screening rates in both Medicaid and commercial plans for 2019–2020 might be related to the COVID-19 pandemic, continual study of chlamydia screening rates and interventions to improve chlamydia screening are needed.

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References

1. Centers for Disease Control and Prevention. Sexually Transmitted Disease Surveillance 2020. Accessed at https://www.cdc.gov/std/statistics/2020/default.htm. Accessed October 26 2022.
2. Centers for Disease Control and Prevention. Chlamydia – CDC Detailed Fact Sheet. Accessed at https://www.cdc.gov/std/chlamydia/stdfact-chlamydia-detailed.htm. Accessed June 13 2022.
3. Centers for Disease Control and Prevention. Sexually Transmitted Infections Treatment Guidelines, 2021. Accessed at https://www.cdc.gov/std/treatment-guidelines/screening-recommendations.htm. Accessed June 13 2022.
4. National Committee for Quality Assurance. HEDIS and Performance Measurement. Accessed at https://www.ncqa.org/hedis/. Accessed October 8 2022.
5. Hoover KW, Leichliter JS, Torrone EA, et al. Chlamydia screening among females aged 15–21 years—Multiple data sources, United States, 1999–2010. MMWR Suppl. 2014;63(2):80–8.
6. United States Census Bureau. Census Regions and Divisions of the United States. Accessed at https://www2.census.gov/geo/pdfs/maps-data/maps/reference/us_regdiv.pdf. Accesse
7. Python. Accessed at https://www.python.org/. Accessed October 8 2022.
8. pandas. Accessed at https://pandas.pydata.org/. Accessed October 8 2022.
9. 1993 Sexually transmitted diseases treatment guidelines. Atlanta, Georgia, 19–21 January 1993. Clin Infect Dis. 1995;20 Suppl 1:S1–109.
10. Cunningham SD, Kerrigan DL, Jennings JM, Ellen JM. Relationships between perceived STD-related stigma, STD-related shame and STD screening among a household sample of adolescents. Perspect Sex Reprod Health. 2009;41(4):225–30. [PubMed: 20444177]
11. Tao G, Dietz S, Hartnett KP, Jayanthi P, Gift TL. Impact of the COVID-19 Pandemic on Chlamydia and Gonorrhea Tests Performed by a Large National Laboratory—United States, 2019 to 2020. Sexually Transmitted Diseases. 2022;49(7):490. [PubMed: 35470348]
12. Pinto CN, Niles JK, Kaufman HW, et al. Impact of the COVID-19 pandemic on chlamydia and gonorrhea screening in the US. American journal of preventive medicine. 2021;61(3):386–93. [PubMed: 34020848]
13. United States Bureau of Labor Statistics. Employment And Unemployment Among Youth — Summer 2021. 2021. Accessed at https://www.bls.gov/news.release/archives/youth_08182021.pdf. Accessed October 26 2022.
14. Congressional Research Service. Unemployment Rates During the COVID-19 Pandemic. Accessed at https://crsreports.congress.gov/product/pdf/R/R46554/10. Accessed October 26 2022.
15. Kaiser Family Foundation. Status of State Medicaid Expansion Decisions: Interactive Map. Accessed at https://www.kff.org/medicaid/issue-brief/status-of-state-medicaid-expansion-decisions-interactive-map/. Accessed July 5, 2022.
16. Centers for Medicare & Medicaid Services. October and November Enrollment Trend Snapshot. 2020. Accessed at https://www.medicaid.gov/medicaid/national-medicaid-chip-program-information/downloads/october-november-medicaid-chip-enrollment-trend-snapshot.pdf. Accessed October 26 2022.
17. Centers for Medicare & Medicaid Services. December 2020 and January 2021 Medicaid and CHIP Enrollment Trends Snapshot. 2021. Accessed at https://www.medicaid.gov/medicaid/national-medicaid-chip-program-information/downloads/december-2020-january-2021-medicaid-chip-enrollment-trend-snapshot.pdf. Accessed October 26 2022.
18. Patel CG, Tao G. The significant impact of different insurance enrollment criteria on the HEDIS chlamydia screening measure for young women enrolled in Medicaid and commercial insurance plans. Sexually transmitted diseases. 2015;42(10):575.
19. Centers for Disease Control and Prevention. National Survey of Family Growth. Accessed at https://www.cdc.gov/nchs/nsfg/index.htm. Accessed March 5 2023.

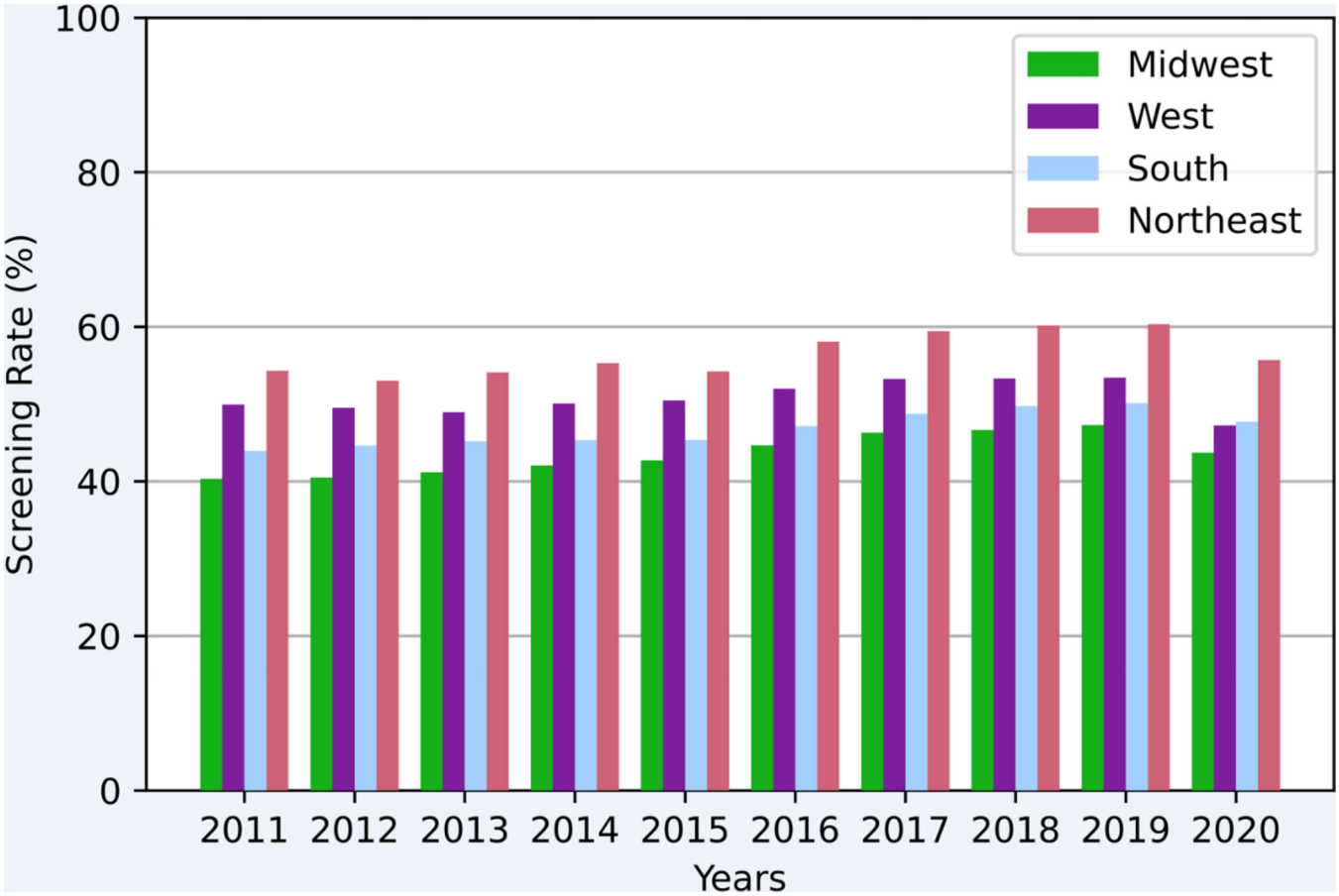

Figure 1A.
Chlamydia screening rates by region for commercially insured health plans.

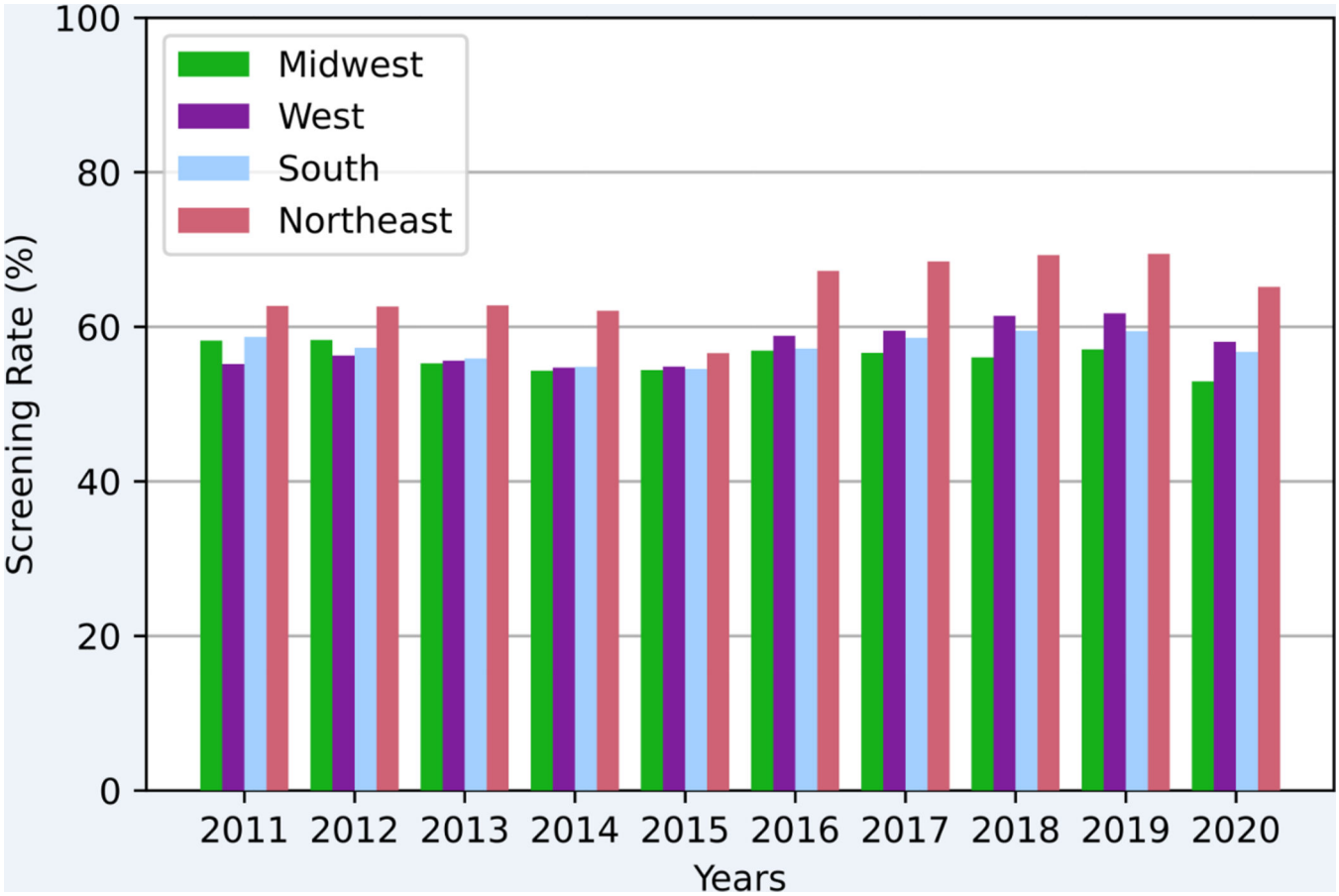

Figure 1B.
Chlamydia screening rates by region for Medicaid health plans.

Table 1.

Number of sexually active women 16–24 years of age and national chlamydia screening rates (population estimates), 2011–2020, Healthcare Effectiveness Data and Information Set (HEDIS)[1]

	Women aged 16–24 years			Women aged 16–20 years			Women aged 21–24 years		
	Number of sexually active women	Number of sexually active women who had chlamydia screening	Chlamydia screening rate, %	Number of sexually active women	Number of sexually active women who had chlamydia screening	Chlamydia screening rate, %	Number of sexually active women	Number of sexually active women who had chlamydia screening	Chlamydia screening rate, %
Commercial									
2011	2739023	1291028	47.1	1302750	570541	43.8	1436273	720487	50.2
2012	3087831	1447556	46.9	1421467	607602	42.7	1666364	839954	50.4
2013	3200226	1511435	47.2	1439853	609657	42.3	1760373	901778	51.2
2014	3124499	1496249	47.9	1399344	597365	42.7	1725155	898884	52.1
2015	3312392	1586652	47.9	1490244	632199	42.4	1822148	954453	52.4
2016	3354884	1680101	50.1	1517363	672573	44.3	1837521	1007528	54.8
2017	3461032	1732233	51.5	1535367	702329	45.7	1825665	1029904	56.4
2018	3464511	1802118	52.0	1593934	735602	46.2	1870577	1066516	57.0
2019	3548664	1859191	52.4	1641235	763332	46.5	1907429	1095859	57.5
2020	3287673	1590148	48.4	1505404	639429	42.5	1782269	950719	53.3
Medicaid									
2011	744462	436015	58.6	447180	245796	55.0	297282	190219	64.0
2012	777207	455414	58.6	465349	253293	54.4	311858	202121	64.8
2013	811330	465005	57.3	499061	264756	53.1	312269	200249	64.1
2014	1007922	566739	56.2	602106	315106	52.3	405816	251633	62.0
2015	965273	530653	55.0	559071	286775	51.3	406202	243878	60.0
2016	1434145	860865	60.0	829226	467949	56.4	604919	392916	65.0
2017	1506005	915239	60.8	871923	499410	57.3	634082	415829	65.6
2018	1573079	964866	61.3	926951	536424	57.9	646128	428442	66.3
2019	1653264	1022084	61.8	997018	581319	58.3	656246	440765	67.2
2020	1942003	1124487	57.9	1127553	616448	54.7	814450	508039	62.4

[1]All results across age group are statistically significant with $p < 0.001$.

Table 2.

Difference in chlamydia screening rates estimated by plan estimates from NCQA (average chlamydia screening rates for health plans) and by population estimates (the aggregated numerator/the aggregated denominator in this study), 2011–2020, Healthcare Effectiveness Data and Information Set (HEDIS)[2]

Measure year	Chlamydia screening rates among commercial HMOs			Chlamydia screening rates among commercial PPOs			Chlamydia screening rates among Medicaid		
	Plan estimates, %[†]	Population estimates, %	Difference in percentage points	Plan estimates, %[†]	Population estimates, %	Difference in percentage points	Plan estimates[†], %	Population estimates, %	Difference in percentage points
2011	45.0	52.4	7.4	42.4	43.9	1.5	58.0	58.6	0.6
2012	45.1	52.8	7.7	42.3	43.8	1.5	57.1	58.6	1.5
2013	46.2	53.3	7.1	42.2	43.9	1.7	54.9	57.3	2.4
2014	47.0	54.2	7.2	42.9	44.8	1.9	54.6	56.2	1.6
2015	47.4	53.8	6.4	43.4	44.9	1.5	55.2	55.0	−0.2
2016	48.3	56.5	8.2	44.9	47.0	2.1	57.3	56.5	−0.8
2017	48.9	57.7	8.8	46.9	48.6	1.7	57.6	57.7	0.1
2018	50.6	58.3	7.7	47.6	49.3	1.7	58.1	58.3	0.2
2019	51.5	56.2	4.7	47.2	49.4	2.2	58	61.8	3.8
2020	47.7	51.1	3.4	44.1	46.3	2.2	54.4	57.9	3.5

[†]Chlamydia screening rates reported on NCQA HEDIS chlamydia website; NCQA: National Committee for Quality Assurance. HMO: health maintenance organization. PPO: preferred provider organization.

[2]Results across health plan types are statistically significant with $p < 0.001$.