Sexually Transmitted Infection Surveillance 2021:
Gonococcal Isolate Surveillance Project Profile

Division of STD Prevention
December 2023

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CENTERS FOR DISEASE CONTROL AND PREVENTION
NATIONAL CENTER FOR HIV, VIRAL HEPATITIS, STD, AND TB PREVENTION
DIVISION OF STD PREVENTION
ATLANTA, GEORGIA 30329-4027

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Web Site

The online version of this report is available at https://www.cdc.gov/std/statistics/gisp-profiles/default.htm.

2021 Gonococcal Isolate Surveillance Project Clinical Sites and Years Participated

Albuquerque, New Mexico *(1987–2021)*	Greensboro, North Carolina *(2002–2021)*	New York, New York *(2006–2021)*
Anchorage, Alaska *(1987–2003, 2018–2021)*	Honolulu, Hawaii *(1987–2021)*	Orange County, California *(1991–2021)*
Birmingham, Alabama *(1987–2021)*	Indianapolis, Indiana *(2013–2021)*	Philadelphia, Pennsylvania *(1987–2021)*
Baltimore, Maryland *(1987–2013, 2019–2021)*	Jackson, Mississippi *(2018–2021)*	Phoenix, Arizona *(1987–2021)*
Buffalo, New York *(2014–2021)*	Kansas City, Missouri *(1991–2001, 2007–2021)*	Pontiac, Michigan *(2012–2021)*
Camden, New Jersey *(2019–2021)*	Las Vegas, Nevada *(2002–2021)*	Portland, Oregon *(1987–2021)*
Chicago, Illinois *(1996–2021)*	Los Angeles, California *(2003–2021)*	San Diego, California *(1987–2021)*
Cleveland, Ohio *(1991–2021)*	Miami, Florida *(1998–2013, 2018–2021)*	San Francisco, California *(1987–2021)*
Columbus, Ohio *(2012–2021)*	Milwaukee, Wisconsin *(2018–2021)*	Seattle, Washington *(1987–2021)*
Dallas, Texas *(2000–2021)*	Minneapolis, Minnesota *(1992–2021)*	Tripler Army Medical Center, Hawaii *(2001–2021)*
Denver, Colorado *(1987–2013, 2018–2021)*	New Orleans, Louisiana *(1987–2021)*	Washington, District of Columbia *(2018–2021)*

2021 Gonococcal Isolate Surveillance Project Regional Laboratories

Maryland Department of Health and Mental Hygiene *Baltimore, Maryland*
Tennessee Department of Health *Nashville, Tennessee*
Utah Department of Health *Salt Lake City, Utah*
Washington State Department of Health *Seattle, Washington*

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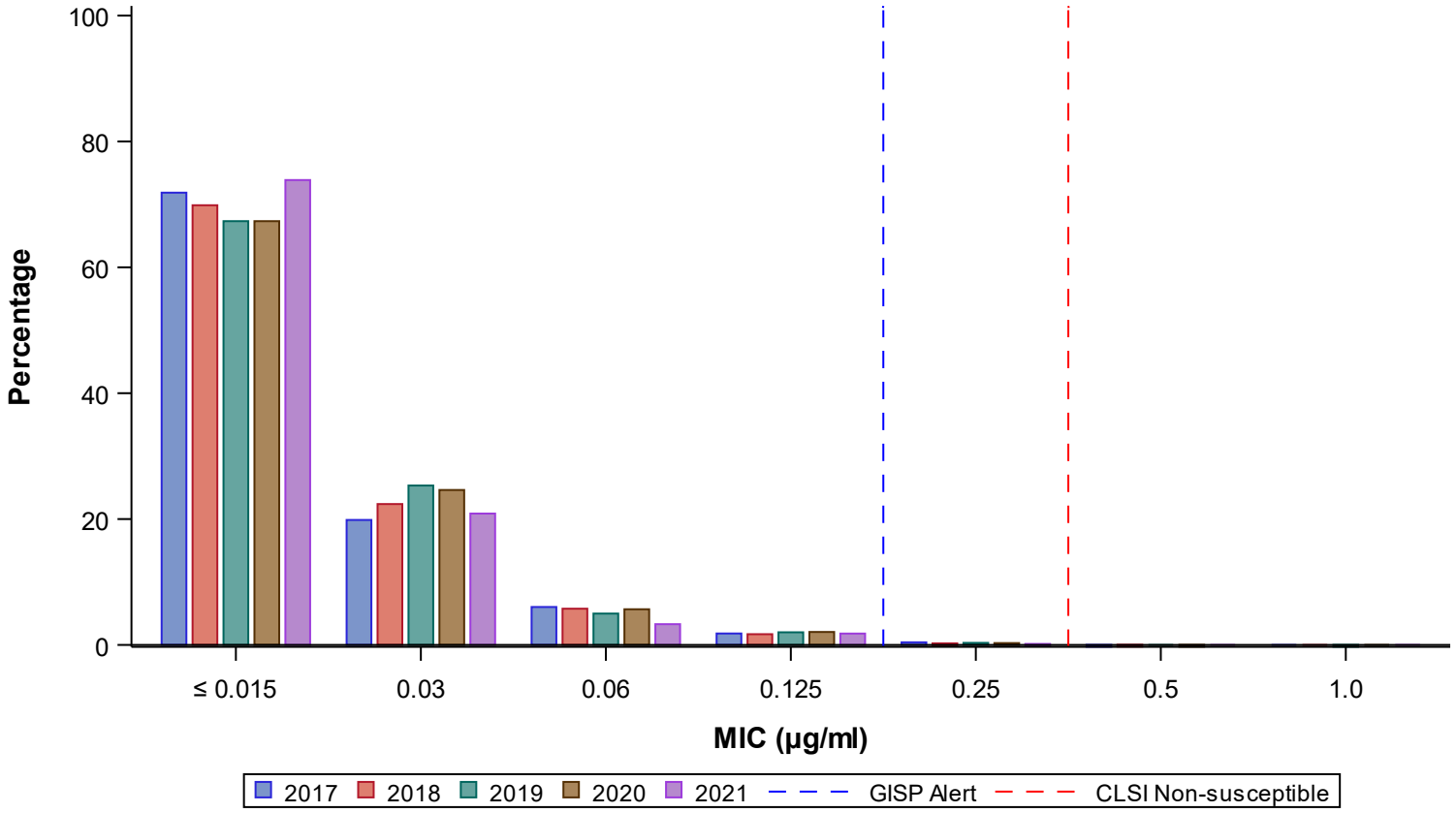
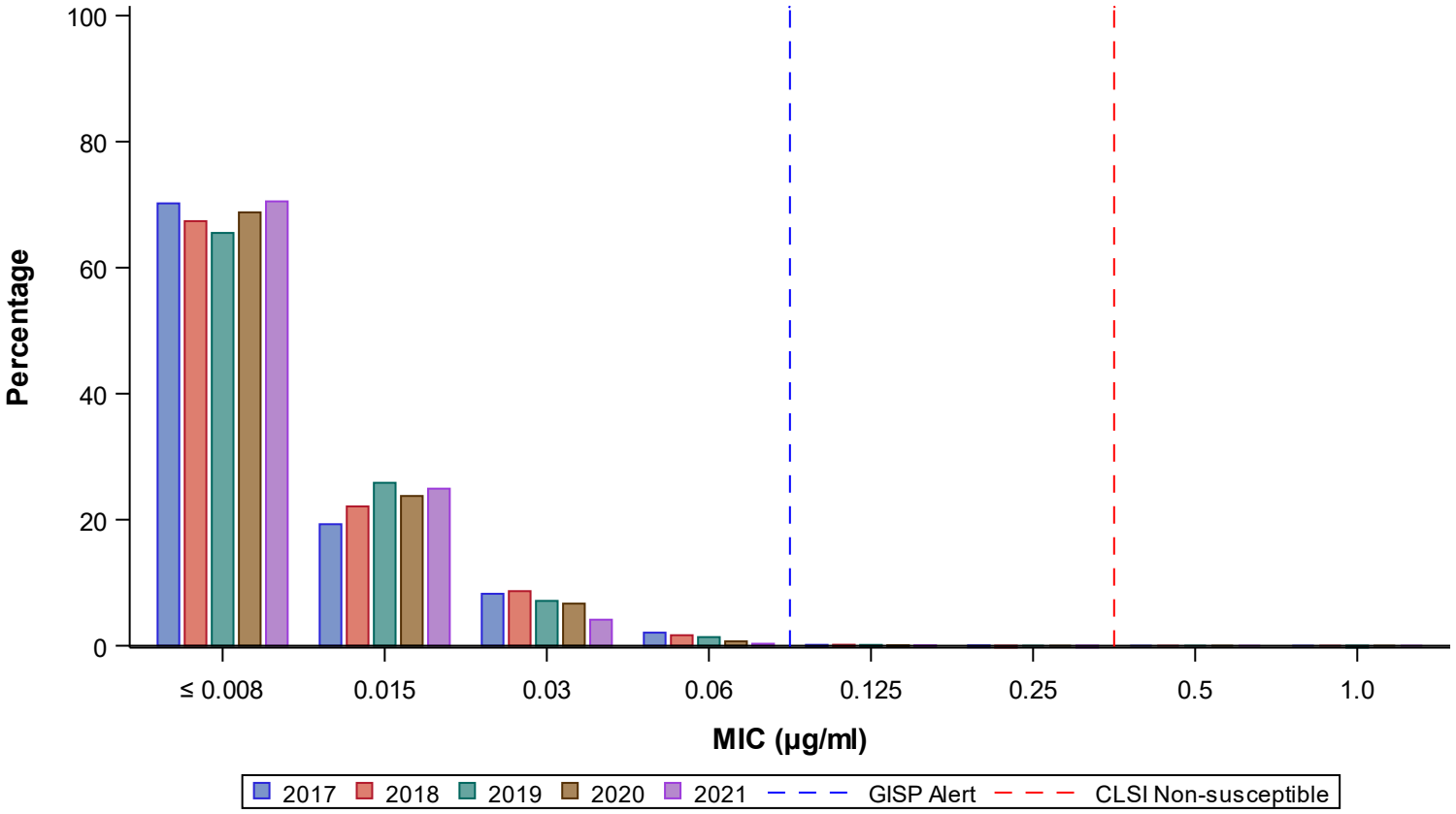
Figure 1. Distribution of Cefixime Minimum Inhibitory Concentrations (MICs) Among Neisseria gonorrhoeae Isolates, Gonococcal Isolate Surveillance Project (GISP), 2017-2021



Year	≤ 0.015 n (%)	0.03 n (%)	0.06 n (%)	0.125 n (%)	0.25 n (%)	0.5 n (%)	1.0 n (%)	Total
2017	3637 (71.9)	1005 (19.9)	305 (6.0)	92 (1.8)	21 (0.4)	1 (0.0)	0 (0.0)	5061
2018	3605 (69.9)	1155 (22.4)	297 (5.8)	88 (1.7)	13 (0.3)	2 (0.0)	0 (0.0)	5160
2019	3690 (67.3)	1388 (25.3)	273 (5.0)	110 (2.0)	18 (0.3)	0 (0.0)	1 (0.0)	5480
2020	2519 (67.3)	921 (24.6)	212 (5.7)	77 (2.1)	11 (0.3)	1 (0.0)	0 (0.0)	3741
2021	2824 (73.9)	798 (20.9)	126 (3.3)	69 (1.8)	6 (0.2)	0 (0.0)	0 (0.0)	3823

GISP Alert Value = Cefixime MIC ≥ 0.25 µg/mL; CLSI Non-susceptible = Cefixime: MIC ≥ 0.5 µg/mL.
CLSI = Clinical and Laboratory Standards Institute.
Non-susceptible = Category used for isolates when only a susceptible breakpoint has been designated and the MIC is above the susceptible breakpoint.
As of the end of 2021, the CLSI has not established a cefixime resistance breakpoint for *N. gonorrhoeae*.

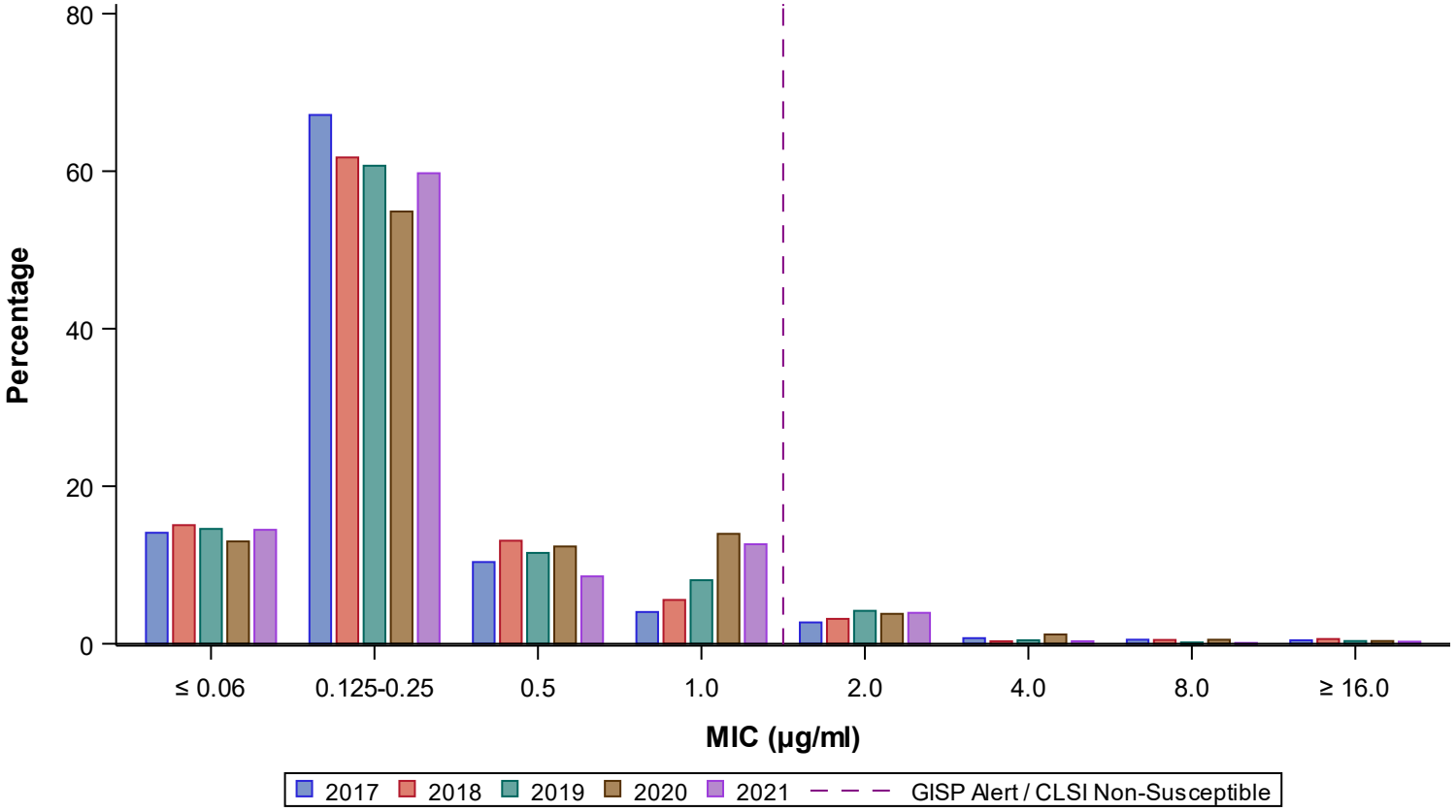
Figure 2. Distribution of Ceftriaxone Minimum Inhibitory Concentrations (MICs) Among *Neisseria gonorrhoeae* Isolates, Gonococcal Isolate Surveillance Project (GISP), 2017-2021



Year	≤ 0.008 n (%)	0.015 n (%)	0.03 n (%)	0.06 n (%)	0.125 n (%)	0.25 n (%)	0.5 n (%)	1.0 n (%)	Total
2017	3553 (70.2)	976 (19.3)	417 (8.2)	105 (2.1)	7 (0.1)	3 (0.1)	0 (0.0)	0 (0.0)	5061
2018	3477 (67.4)	1141 (22.1)	447 (8.7)	86 (1.7)	8 (0.2)	1 (0.0)	0 (0.0)	0 (0.0)	5160
2019	3590 (65.5)	1417 (25.9)	390 (7.1)	75 (1.4)	7 (0.1)	0 (0.0)	0 (0.0)	1 (0.0)	5480
2020	2573 (68.8)	889 (23.8)	250 (6.7)	26 (0.7)	3 (0.1)	0 (0.0)	0 (0.0)	0 (0.0)	3741
2021	2696 (70.5)	953 (24.9)	158 (4.1)	12 (0.3)	3 (0.1)	1 (0.0)	0 (0.0)	0 (0.0)	3823

GISP Alert Value = Ceftriaxone MIC ≥ 0.125 µg/mL; CLSI Non-susceptible = Ceftriaxone: MIC ≥ 0.5 µg/mL.
CLSI = Clinical and Laboratory Standards Institute.
Non-susceptible = Category used for isolates when only a susceptible breakpoint has been designated and the MIC is above the susceptible breakpoint.
As of the end of 2021, the CLSI has not established a ceftriaxone resistance breakpoint for *N. gonorrhoeae*.

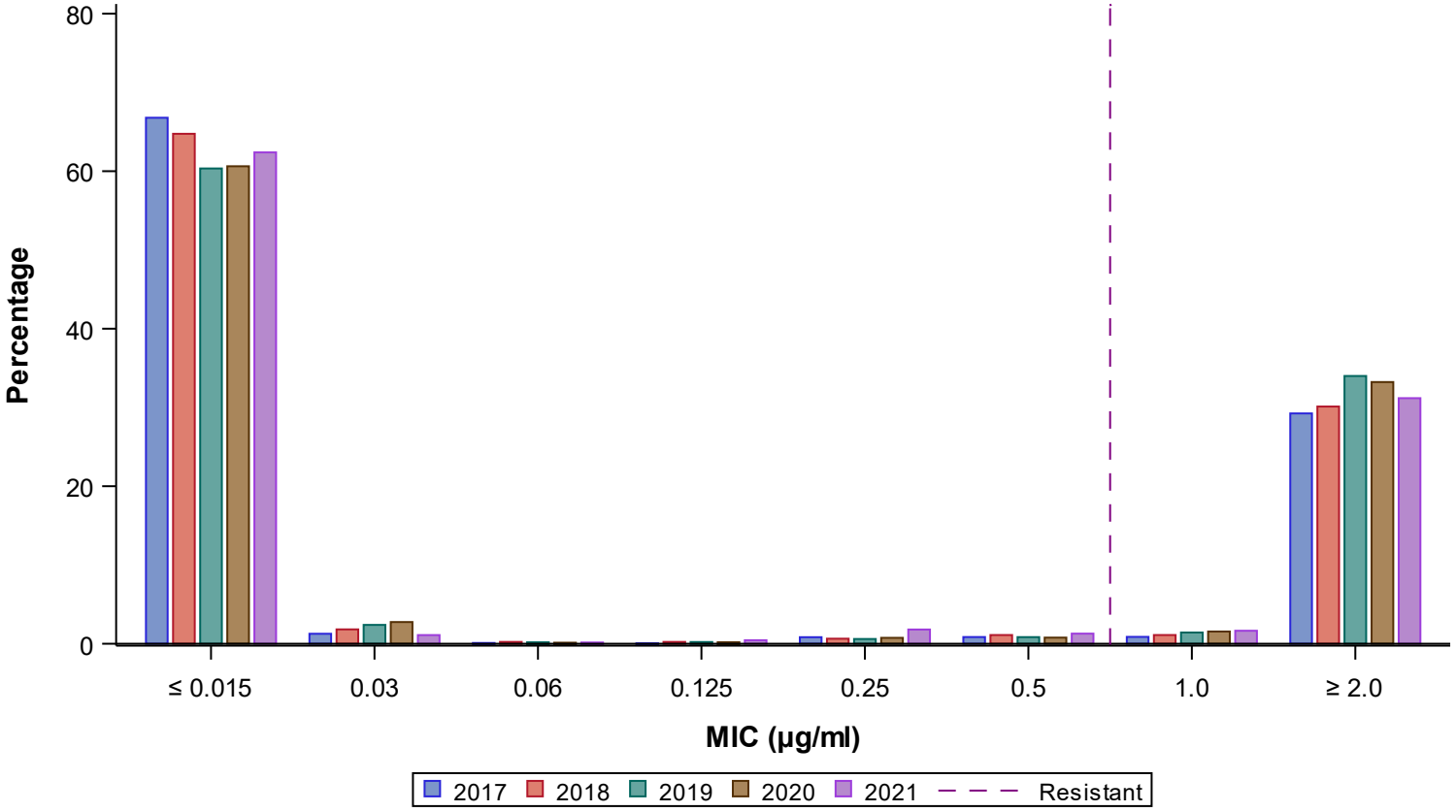
Figure 3. Distribution of Azithromycin Minimum Inhibitory Concentrations (MICs) Among *Neisseria gonorrhoeae* Isolates, Gonococcal Isolate Surveillance Project (GISP), 2017-2021



Year	≤ 0.06 n (%)	0.125-0.25 n (%)	0.5 n (%)	1.0 n (%)	2.0 n (%)	4.0 n (%)	8.0 n (%)	≥ 16.0 n (%)	Total
2017	713 (14.1)	3398 (67.1)	525 (10.4)	204 (4.0)	137 (2.7)	36 (0.7)	26 (0.5)	22 (0.4)	5061
2018	777 (15.1)	3186 (61.7)	675 (13.1)	287 (5.6)	163 (3.2)	16 (0.3)	25 (0.5)	31 (0.6)	5160
2019	799 (14.6)	3326 (60.7)	632 (11.5)	442 (8.1)	229 (4.2)	24 (0.4)	9 (0.2)	19 (0.3)	5480
2020	486 (13.0)	2053 (54.9)	462 (12.3)	522 (14.0)	142 (3.8)	44 (1.2)	19 (0.5)	13 (0.3)	3741
2021	553 (14.5)	2284 (59.7)	327 (8.6)	483 (12.6)	150 (3.9)	12 (0.3)	4 (0.1)	10 (0.3)	3823

GISP Alert Value: Azithromycin MIC ≥ 2.0 µg/mL; CLSI Non-susceptible = Azithromycin: MIC ≥ 2.0 µg/mL.
CLSI = Clinical and Laboratory Standards Institute.
Non-susceptible = Category used for isolates when only a susceptible breakpoint has been designated and the MIC is above the susceptible breakpoint.
As of the end of 2021, the CLSI has not established an azithromycin resistance breakpoint for *N. gonorrhoeae*.

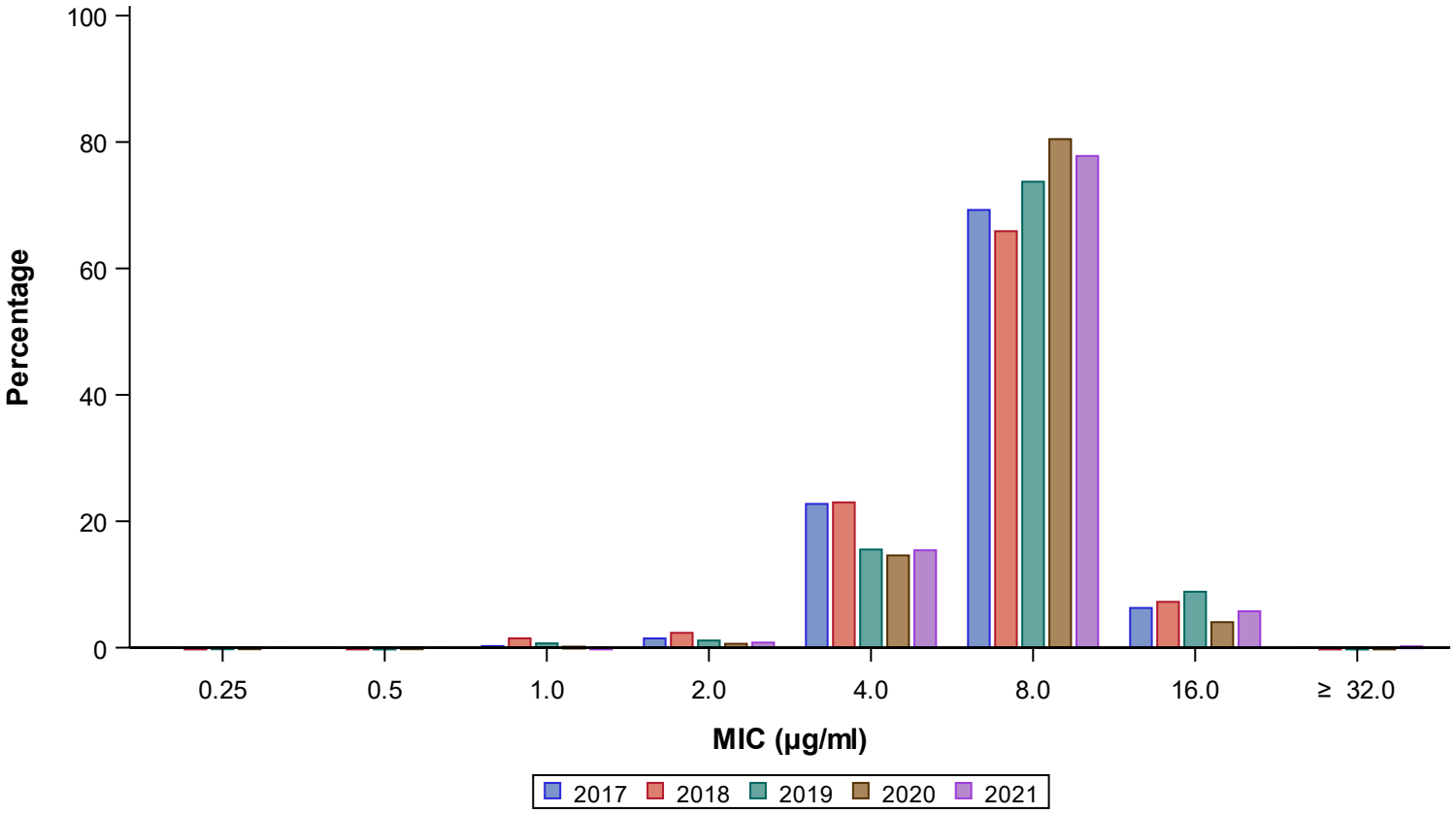
Figure 4. Distribution of Ciprofloxacin Minimum Inhibitory Concentrations (MICs) Among *Neisseria gonorrhoeae* Isolates, Gonococcal Isolate Surveillance Project (GISP), 2017-2021



Year	≤ 0.015 n (%)	0.03 n (%)	0.06 n (%)	0.125 n (%)	0.25 n (%)	0.5 n (%)	1.0 n (%)	≥ 2.0 n (%)	Total
2017	3380 (66.8)	64 (1.3)	5 (0.1)	3 (0.1)	42 (0.8)	43 (0.8)	44 (0.9)	1480 (29.2)	5061
2018	3341 (64.7)	94 (1.8)	12 (0.2)	12 (0.2)	33 (0.6)	57 (1.1)	57 (1.1)	1554 (30.1)	5160
2019	3307 (60.3)	131 (2.4)	10 (0.2)	12 (0.2)	33 (0.6)	46 (0.8)	78 (1.4)	1863 (34.0)	5480
2020	2268 (60.6)	103 (2.8)	5 (0.1)	7 (0.2)	28 (0.7)	29 (0.8)	58 (1.6)	1243 (33.2)	3741
2021	2385 (62.4)	42 (1.1)	6 (0.2)	17 (0.4)	69 (1.8)	49 (1.3)	63 (1.6)	1192 (31.2)	3823

Ciprofloxacin resistance MIC ≥ 1.0 µg/mL.

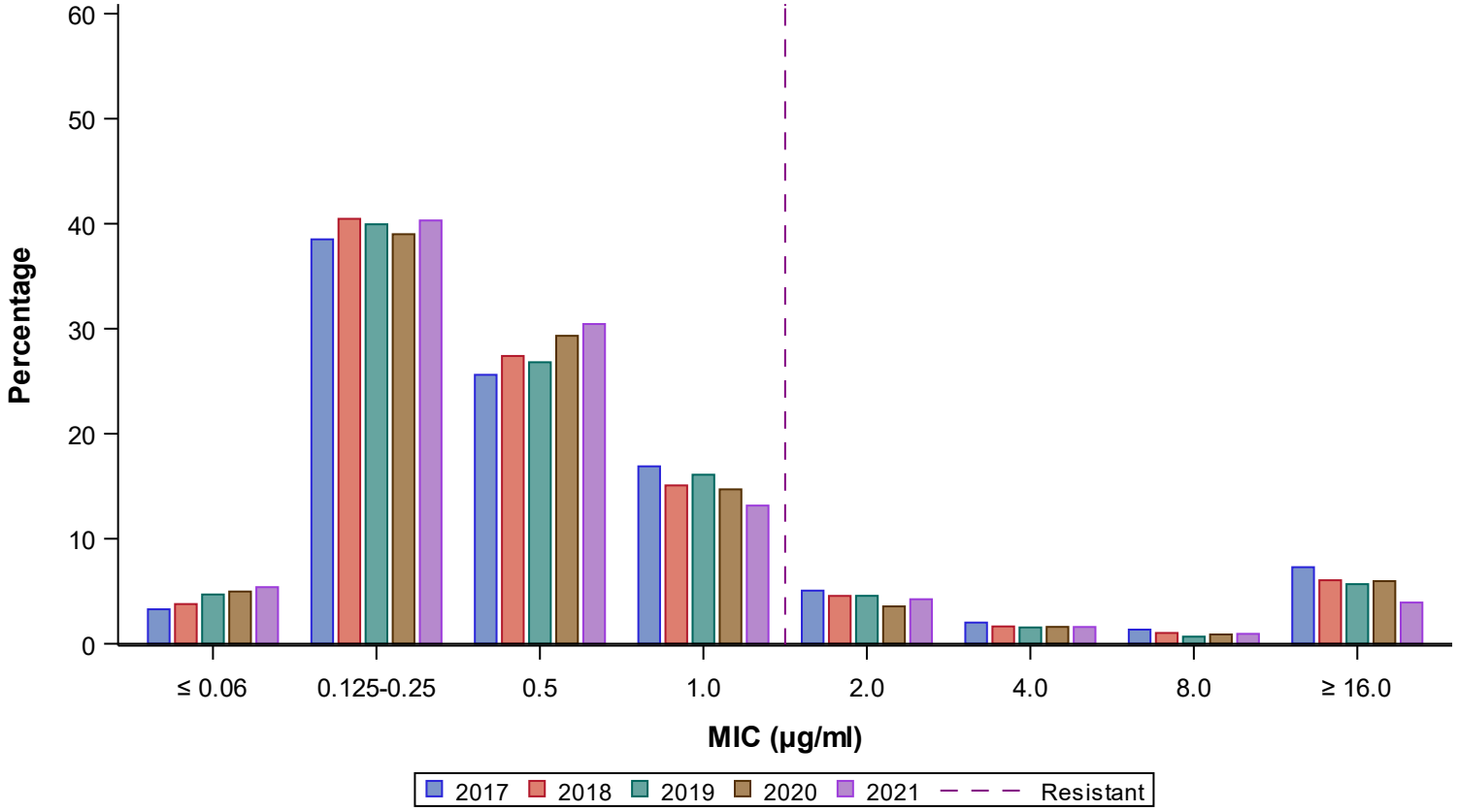
Figure 5. Distribution of Gentamicin Minimum Inhibitory Concentrations (MICs) Among *Neisseria gonorrhoeae* Isolates, Gonococcal Isolate Surveillance Project (GISP), 2017-2021



Year	0.25 n (%)	0.5 n (%)	1.0 n (%)	2.0 n (%)	4.0 n (%)	8.0 n (%)	16.0 n (%)	≥ 32.0 n (%)	Total
2017	0 (0.0)	0 (0.0)	13 (0.3)	74 (1.5)	1151 (22.7)	3505 (69.3)	318 (6.3)	0 (0.0)	5061
2018	1 (0.0)	1 (0.0)	76 (1.5)	121 (2.3)	1186 (23.0)	3400 (65.9)	374 (7.2)	1 (0.0)	5160
2019	3 (0.1)	1 (0.0)	37 (0.7)	62 (1.1)	851 (15.5)	4040 (73.7)	485 (8.9)	1 (0.0)	5480
2020	2 (0.1)	2 (0.1)	6 (0.2)	23 (0.6)	546 (14.6)	3010 (80.5)	151 (4.0)	1 (0.0)	3741
2021	0 (0.0)	0 (0.0)	1 (0.0)	31 (0.8)	589 (15.4)	2974 (77.8)	220 (5.8)	8 (0.2)	3823

As of the end of 2021, the Clinical and Laboratory Standards Institute (CLSI) criteria for susceptibility and resistance to gentamicin have not been established for *N. gonorrhoeae*. A GISP alert value for gentamicin has not been determined.
Note: Beginning in 2018, the antibiotic susceptibility testing range for gentamicin was expanded from MICs of 1 µg/mL–32 µg/mL in previous years to 0.25 µg/mL–64 µg/mL.

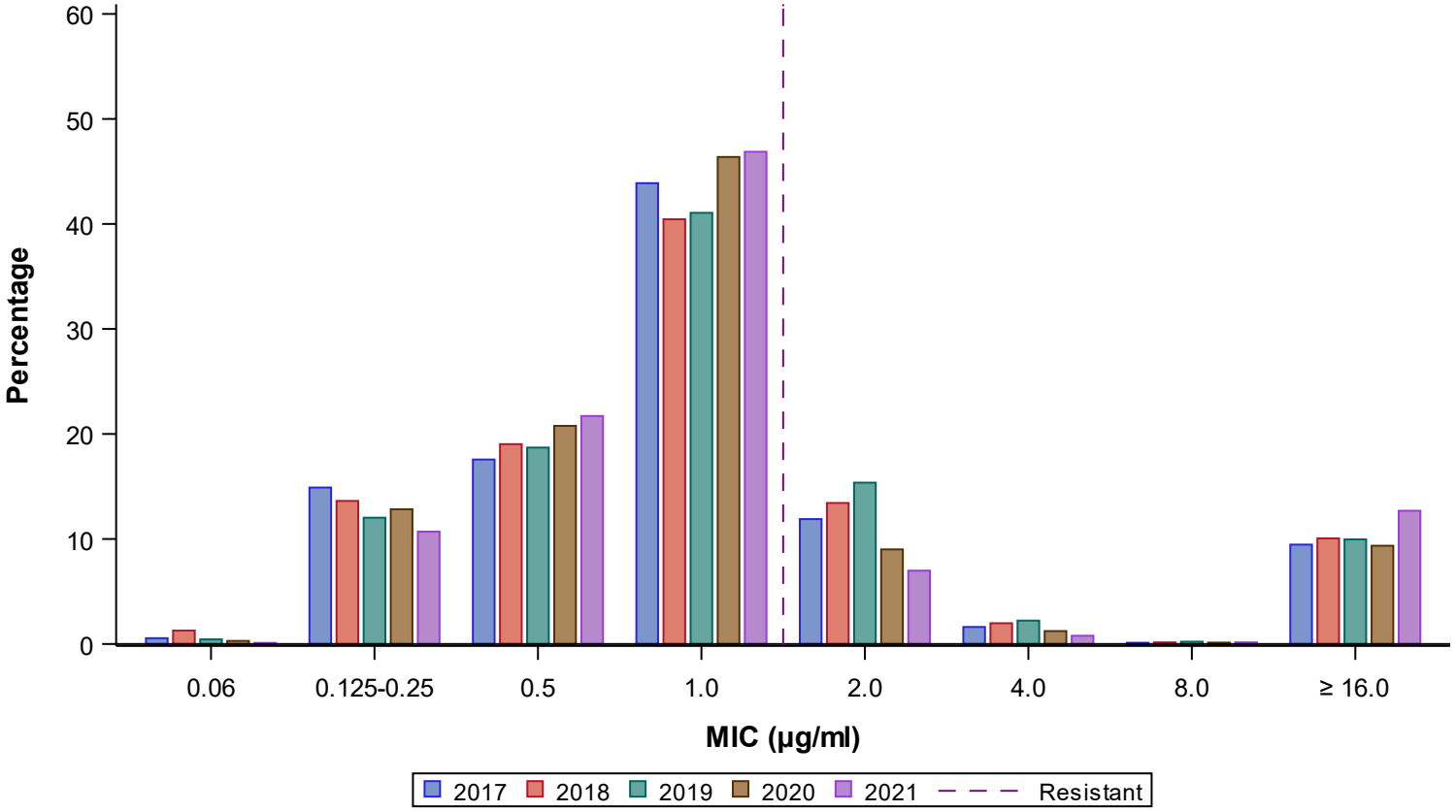
Figure 6. Distribution of Penicillin Minimum Inhibitory Concentrations (MICs) Among *Neisseria gonorrhoeae* Isolates, Gonococcal Isolate Surveillance Project (GISP), 2017-2021



Year	≤ 0.06 n (%)	0.125-0.25 n (%)	0.5 n (%)	1.0 n (%)	2.0 n (%)	4.0 n (%)	8.0 n (%)	≥ 16.0 n (%)	Total
2017	166 (3.3)	1949 (38.5)	1296 (25.6)	855 (16.9)	256 (5.1)	102 (2.0)	68 (1.3)	369 (7.3)	5061
2018	195 (3.8)	2088 (40.5)	1414 (27.4)	778 (15.1)	235 (4.6)	85 (1.6)	53 (1.0)	312 (6.0)	5160
2019	257 (4.7)	2189 (39.9)	1469 (26.8)	882 (16.1)	250 (4.6)	85 (1.6)	37 (0.7)	311 (5.7)	5480
2020	186 (5.0)	1459 (39.0)	1097 (29.3)	550 (14.7)	133 (3.6)	60 (1.6)	33 (0.9)	223 (6.0)	3741
2021	206 (5.4)	1541 (40.3)	1164 (30.4)	503 (13.2)	162 (4.2)	61 (1.6)	36 (0.9)	150 (3.9)	3823

Penicillin resistance MIC ≥ 2.0 µg/mL or Beta-lactamase positive.

Figure 7. Distribution of Tetracycline Minimum Inhibitory Concentrations (MICs) Among *Neisseria gonorrhoeae* Isolates, Gonococcal Isolate Surveillance Project (GISP), 2017-2021



Year	0.06 n (%)	0.125-0.25 n (%)	0.5 n (%)	1.0 n (%)	2.0 n (%)	4.0 n (%)	8.0 n (%)	≥ 16.0 n (%)	Total
2017	28 (0.6)	754 (14.9)	889 (17.6)	2221 (43.9)	602 (11.9)	82 (1.6)	6 (0.1)	479 (9.5)	5061
2018	66 (1.3)	703 (13.6)	982 (19.0)	2087 (40.4)	693 (13.4)	102 (2.0)	8 (0.2)	519 (10.1)	5160
2019	24 (0.4)	659 (12.0)	1025 (18.7)	2250 (41.1)	842 (15.4)	122 (2.2)	12 (0.2)	546 (10.0)	5480
2020	11 (0.3)	480 (12.8)	777 (20.8)	1735 (46.4)	337 (9.0)	46 (1.2)	5 (0.1)	350 (9.4)	3741
2021	4 (0.1)	409 (10.7)	830 (21.7)	1792 (46.9)	267 (7.0)	30 (0.8)	6 (0.2)	485 (12.7)	3823

Tetracycline resistance MIC ≥ 2.0 µg/mL.

Table 1: Antimicrobial Minimum Inhibitory Concentration Parameters
by 5-Year Periods in the Gonococcal Isolate Surveillance Project (GISP), 1997-2021

1A. Cefixime

Time Range	MIC 50* (µg/mL)	MIC 90** (µg/mL)	Min MIC (µg/mL)	Max MIC (µg/mL)	% with MIC ≥ 0.25	% with MIC ≥ 0.5
1997-2001	0.015	0.03	0.002	1.0	0.3	<0.1
2002-2006	0.008	0.03	0.001	0.5	<0.1	<0.1
2007-2011	0.015	0.03	0.008	0.5	1.2	<0.1
2012-2016	0.015	0.03	0.002	1.0	0.6	<0.1
2017-2021	0.015	0.03	0.002	1.0	0.3	<0.1

1B. Ceftriaxone

Time Range	MIC 50* (µg/mL)	MIC 90** (µg/mL)	Min MIC (µg/mL)	Max MIC (µg/mL)	% with MIC ≥ 0.125	% with MIC ≥ 0.5
1997-2001	0.004	0.015	0.001	0.5	0.3	<0.1
2002-2006	0.004	0.015	0.001	0.125	<0.1	0
2007-2011	0.008	0.015	0.001	0.25	0.2	0
2012-2016	0.008	0.03	0.001	0.5	0.2	<0.1
2017-2021	0.008	0.015	0.001	1.0	0.1	<0.1

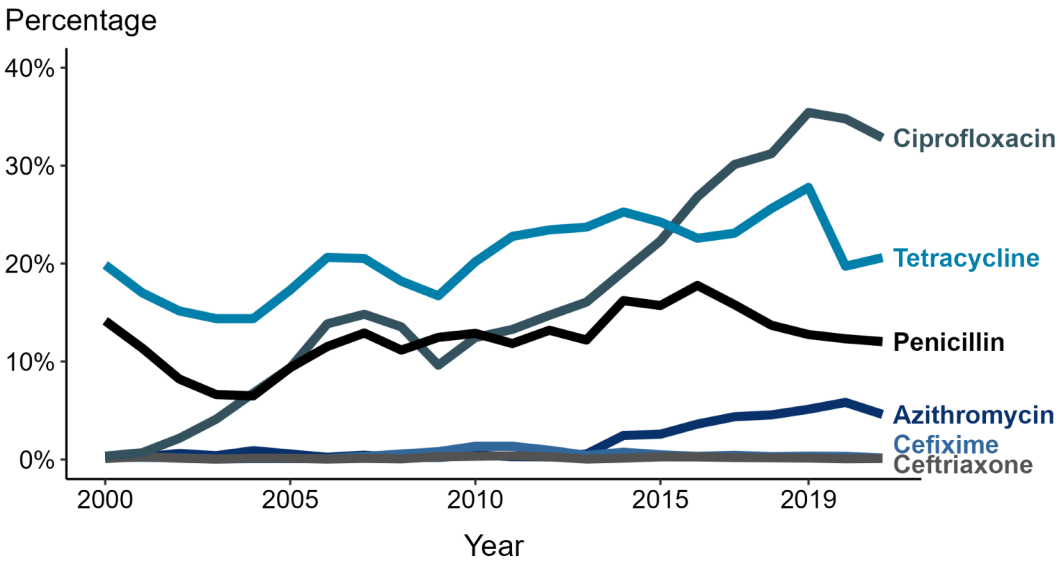
1C. Azithromycin

Time Range	MIC 50* (µg/mL)	MIC 90** (µg/mL)	Min MIC (µg/mL)	Max MIC (µg/mL)	% with MIC ≥ 1.0	% with MIC ≥ 2.0	% with MIC ≥ 16.0
1997-2001	0.125	0.25	0.001	8.0	0.3	0.1	0
2002-2006	0.125	0.5	0.004	16.0	1.6	0.3	<0.1
2007-2011	0.25	0.5	0.008	16.0	5.5	0.3	<0.1
2012-2016	0.25	0.5	0.015	64.0	6.1	1.8	0.2
2017-2021	0.25	1.0	0.008	16.0	13.2	4.9	0.4

*MIC 50: lowest concentration of an antimicrobial that inhibits the growth of 50% of the isolates.
**MIC 90: lowest concentration of an antimicrobial that inhibits the growth of 90% of the isolates.
The median MIC value represents the MIC 50 and the MIC value of 90% of isolates represents the MIC 90.
All MICs reported in GISP for each antimicrobial were combined for the noted time period.

Note: Cefixime susceptibility was not tested in 2007 and 2008.
Note: Azithromycin alert MIC changed from 1 µg/mL to 2 µg/mL starting in 2005 due to a media change.

Figure 8: Percentage of Tetracycline, Penicillin, or Ciprofloxacin Resistance* or Elevated Cefixime, Ceftriaxone, or Azithromycin Minimum Inhibitory Concentrations (MICs) † by Year, Gonococcal Isolate Surveillance Project (GISP), 2000–2021

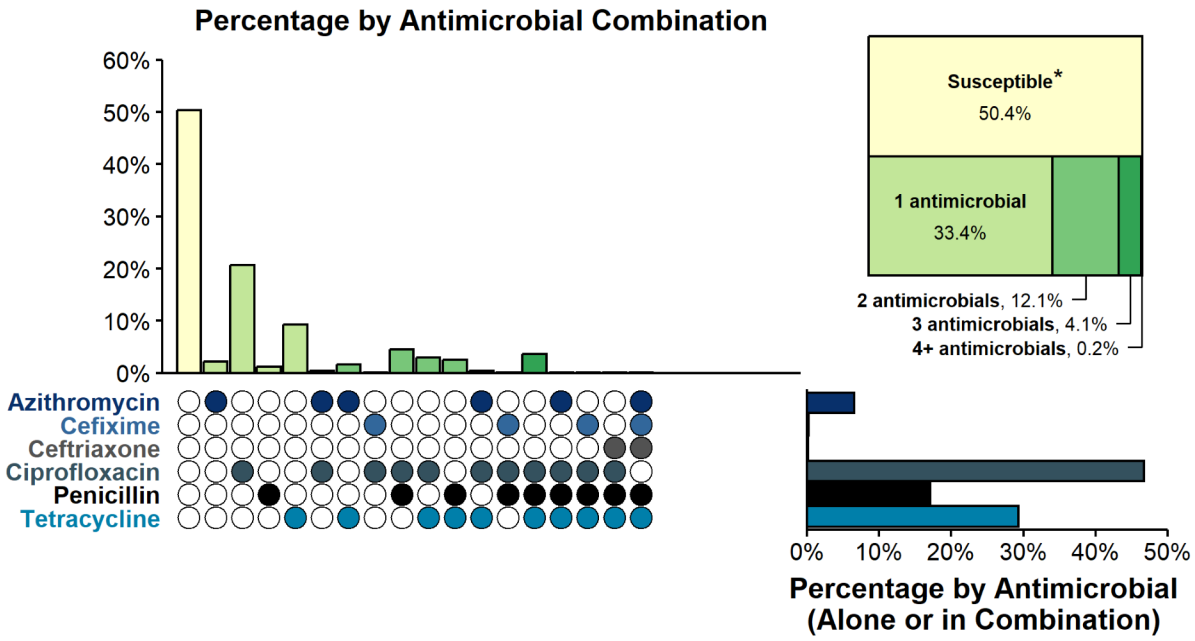


Antimicrobials	2000 n (%)	2001 n (%)	2002 n (%)	2003 n (%)	2004 n (%)	2005 n (%)	2006 n (%)	2007 n (%)	2008 n (%)	2009 n (%)	2010 n (%)
Azithromycin	19 (0.3)	15 (0.3)	33 (0.6)	26 (0.4)	57 (0.9)	35 (0.6)	14 (0.2)	27 (0.4)	11 (0.2)	12 (0.2)	27 (0.5)
Cefixime	10 (0.2)	12 (0.2)	9 (0.2)	4 (0.1)	6 (0.1)	6 (0.1)	5 (0.1)	N/A	N/A	45 (0.8)	77 (1.4)
Ceftriaxone	5 (0.1)	16 (0.3)	7 (0.1)	3 (0.0)	9 (0.1)	8 (0.1)	3 (0.0)	7 (0.1)	4 (0.1)	16 (0.3)	19 (0.3)
Ciprofloxacin	19 (0.3)	38 (0.7)	116 (2.2)	270 (4.1)	429 (6.8)	581 (9.4)	843 (13.8)	891 (14.8)	775 (13.5)	542 (9.6)	709 (12.5)
Penicillin	773 (14.2)	622 (11.4)	441 (8.2)	434 (6.6)	411 (6.5)	581 (9.4)	702 (11.5)	776 (12.9)	639 (11.2)	702 (12.5)	733 (12.9)
Tetracycline	1085 (19.9)	931 (17.0)	814 (15.2)	942 (14.4)	909 (14.4)	1073 (17.3)	1256 (20.6)	1233 (20.5)	1010 (18.2)	941 (16.7)	1149 (20.2)

Antimicrobials	2011 n (%)	2012 n (%)	2013 n (%)	2014 n (%)	2015 n (%)	2016 n (%)	2017 n (%)	2018 n (%)	2019 n (%)	2020 n (%)	2021 n (%)
Azithromycin	16 (0.3)	15 (0.3)	33 (0.6)	125 (2.5)	133 (2.6)	190 (3.6)	221 (4.4)	235 (4.6)	281 (5.1)	218 (5.8)	176 (4.6)
Cefixime	74 (1.4)	52 (0.9)	25 (0.4)	38 (0.7)	25 (0.5)	17 (0.3)	22 (0.4)	15 (0.3)	19 (0.3)	12 (0.3)	6 (0.2)
Ceftriaxone	21 (0.4)	15 (0.3)	3 (0.1)	7 (0.1)	14 (0.3)	14 (0.3)	10 (0.2)	9 (0.2)	8 (0.1)	3 (0.1)	4 (0.1)
Ciprofloxacin	726 (13.3)	809 (14.7)	955 (16.1)	978 (19.2)	1149 (22.3)	1409 (26.8)	1524 (30.1)	1611 (31.2)	1941 (35.4)	1301 (34.8)	1255 (32.8)
Penicillin	647 (11.8)	725 (13.2)	725 (12.2)	826 (16.2)	809 (15.7)	934 (17.8)	800 (15.8)	707 (13.7)	699 (12.8)	461 (12.3)	460 (12.0)
Tetracycline	1245 (22.8)	1288 (23.4)	1410 (23.7)	1287 (25.3)	1248 (24.2)	1187 (22.6)	1169 (23.1)	1322 (25.6)	1522 (27.8)	738 (19.7)	788 (20.6)

* Resistance: Ciprofloxacin: MIC ≥ 1.0 µg/mL; Penicillin: MIC ≥ 2.0 µg/mL or Beta-lactamase positive; Tetracycline: MIC ≥ 2.0 µg/mL;
† Elevated MICs: Azithromycin: MIC ≥ 1.0 µg/mL (2000–2004), MIC ≥ 2.0 µg/mL (2005–2021); Ceftriaxone: MIC ≥ 0.125 µg/mL; Cefixime: MIC ≥ 0.25 µg/mL.
Note: Cefixime susceptibility was not tested in 2007 and 2008.

Figure 9: Resistance or Elevated Minimum Inhibitory Concentration (MIC) Patterns of *Neisseria gonorrhoeae* Isolates to Antimicrobials, Gonococcal Isolate Surveillance Project (GISP), 2021

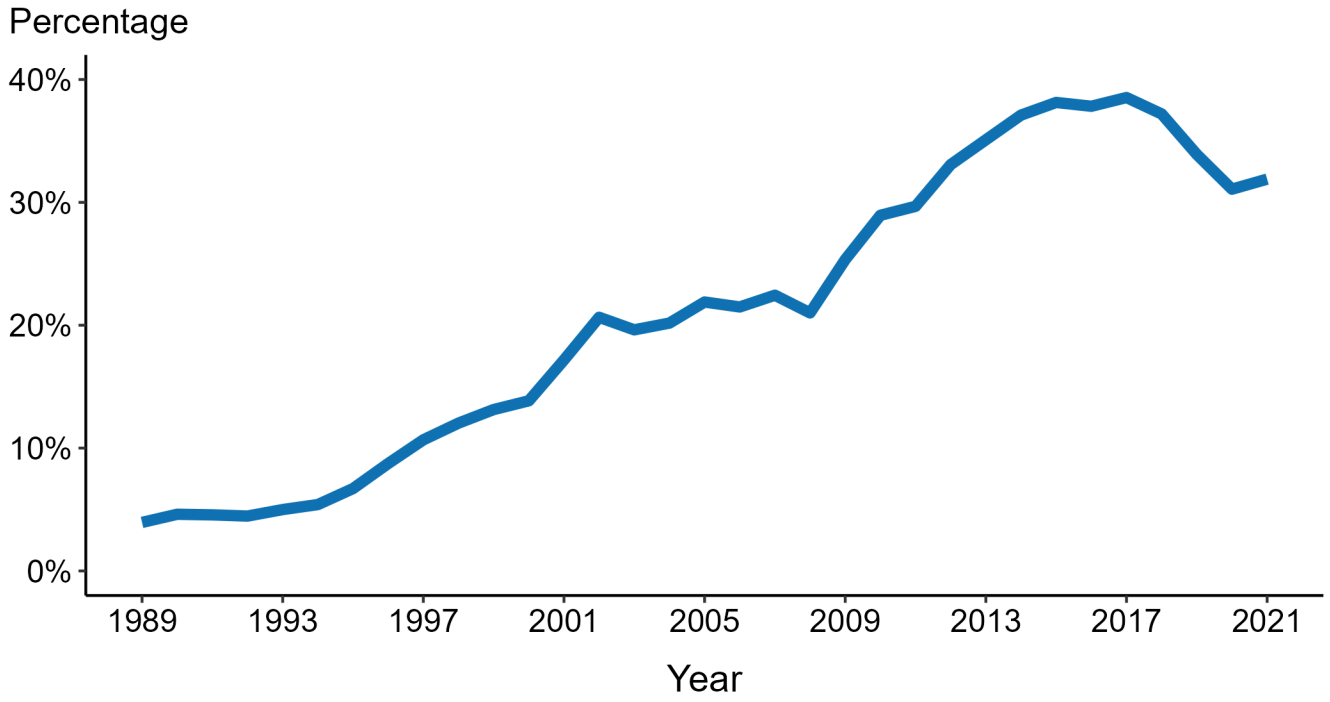


Total # Antimicrobials	Azithromycin	Cefixime	Ceftriaxone	Ciprofloxacin	Penicillin	Tetracycline	Isolate Count	% Total Isolates
0*							1925	50.4
1	✓						84	2.2
1				✓			791	20.7
1					✓		44	1.2
1						✓	356	9.3
2	✓			✓			14	0.4
2	✓					✓	61	1.6
2		✓		✓			3	0.1
2				✓	✓		173	4.5
2				✓		✓	114	3.0
2					✓	✓	97	2.5
3	✓			✓		✓	15	0.4
3		✓		✓	✓		1	0.0
3				✓	✓	✓	139	3.6
4	✓			✓	✓	✓	1	0.0
4		✓		✓	✓	✓	1	0.0
4			✓	✓	✓	✓	3	0.1
5	✓	✓	✓		✓	✓	1	0.0

* Susceptible category includes isolates with penicillin (or Beta-lactamase negative), tetracycline, and ciprofloxacin MIC values that are not considered resistant (i.e., susceptible and intermediate resistant) based on Clinical & Laboratory Standards Institute criteria and isolates with ceftriaxone, cefixime, and azithromycin MIC values that are not considered elevated based on GISP "alert" values.

Note: Elevated MICs = Ceftriaxone: MIC ≥ 0.125 µg/mL; Cefixime: MIC ≥ 0.25 µg/mL; Azithromycin: MIC ≥ 2.0 µg/mL.
Resistance = Tetracycline: MIC ≥ 2.0 µg/mL; Ciprofloxacin: MIC ≥ 1.0 µg/mL; Penicillin: MIC ≥ 2.0 µg/mL or Beta-lactamase positive.
In the figure or table, respectively, a filled circle or check mark reflects resistance or an elevated MIC to a specific antimicrobial; only antimicrobial combinations with non-zero percentages are shown.

Figure 10: Percentage of Isolates Obtained from MSM Attending Participating STD Clinics, Gonococcal Isolate Surveillance Project (GISP), 1989–2021

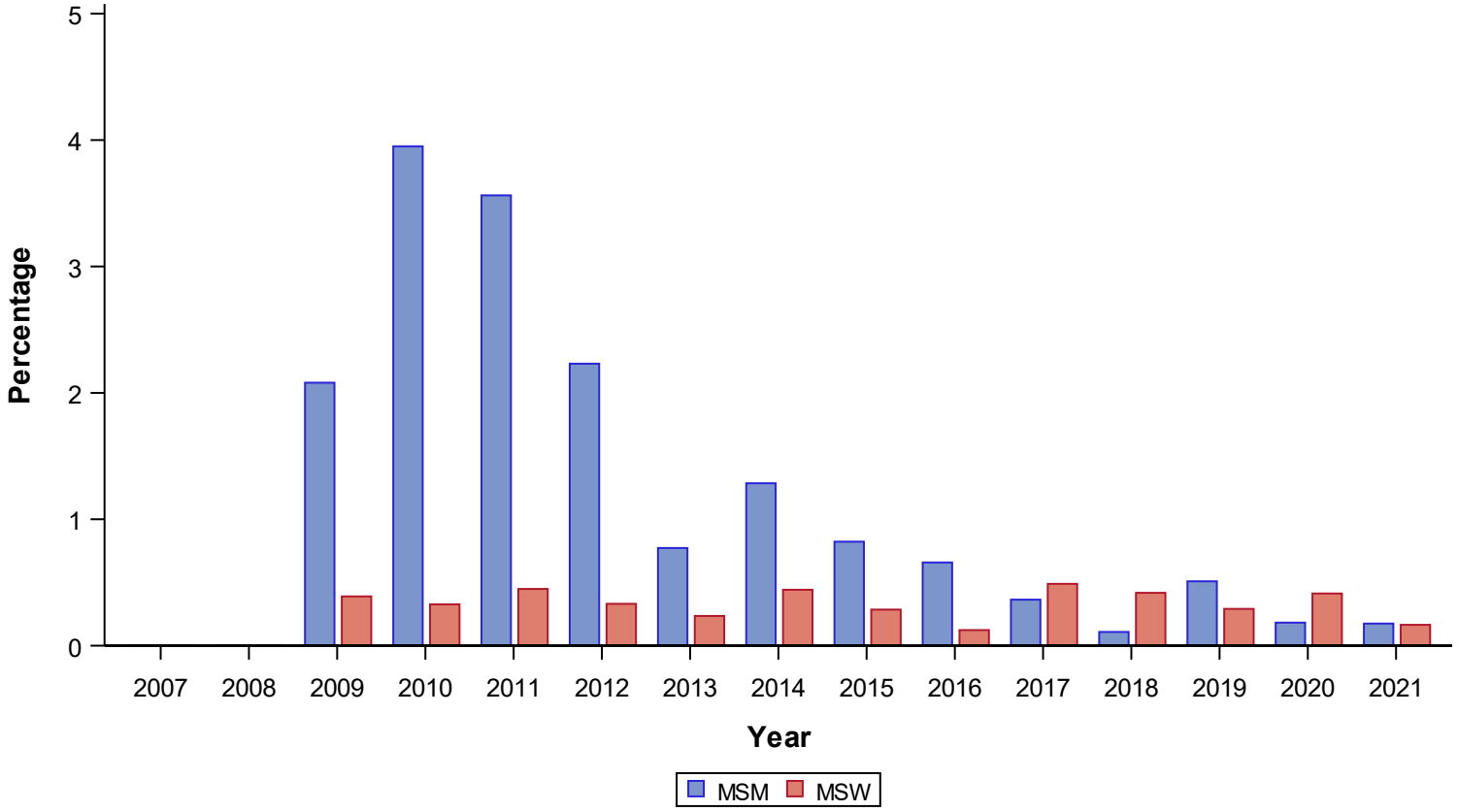


1989 n (%)	1990 n (%)	1991 n (%)	1992 n (%)	1993 n (%)	1994 n (%)	1995 n (%)	1996 n (%)	1997 n (%)	1998 n (%)	1999 n (%)	2000 n (%)	2001 n (%)	2002 n (%)	2003 n (%)	2004 n (%)	2005 n (%)
174 (3.9)	191 (4.6)	221 (4.6)	228 (4.5)	239 (5.0)	248 (5.4)	305 (6.7)	389 (8.7)	441 (10.7)	503 (12.0)	613 (13.1)	690 (13.8)	896 (17.2)	1069 (20.6)	1253 (19.6)	1202 (20.2)	1335 (21.9)

2006 n (%)	2007 n (%)	2008 n (%)	2009 n (%)	2010 n (%)	2011 n (%)	2012 n (%)	2013 n (%)	2014 n (%)	2015 n (%)	2016 n (%)	2017 n (%)	2018 n (%)	2019 n (%)	2020 n (%)	2021 n (%)
1281 (21.5)	1316 (22.4)	1173 (21.0)	1393 (25.3)	1619 (28.9)	1599 (29.7)	1792 (33.1)	2070 (35.1)	1867 (37.1)	1944 (38.1)	1974 (37.8)	1922 (38.5)	1842 (37.2)	1767 (33.9)	1096 (31.1)	1143 (31.9)

MSM = Gay, bisexual, and other men who have sex with men.

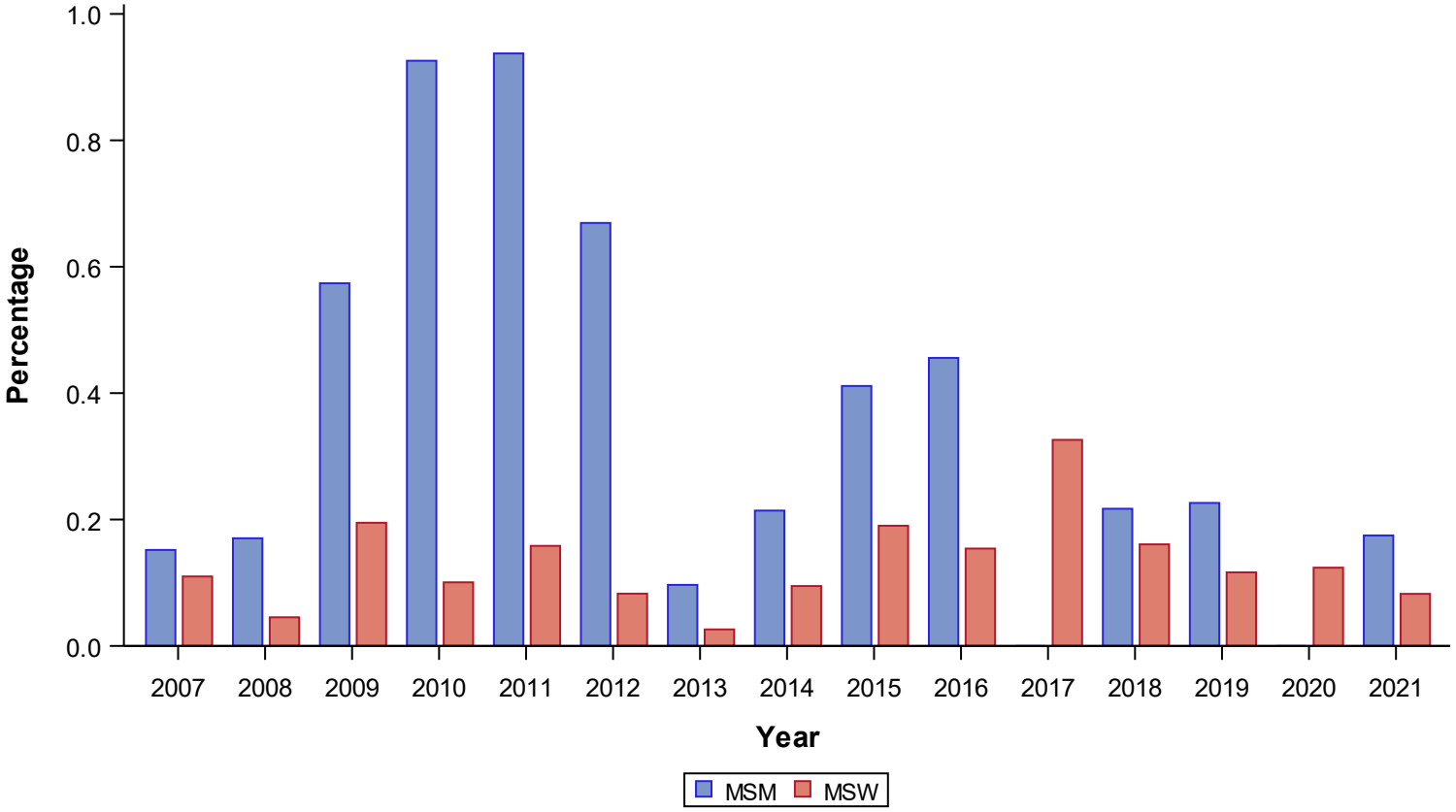
Figure 11. Percentage of *Neisseria gonorrhoeae* Isolates with an Elevated Minimum Inhibitory Concentration (MIC) to Cefixime by Reported Gender of Sex Partners, Gonococcal Isolate Surveillance Project (GISP), 2007-2021



Gender of Sex Partners	2007 n (%)	2008 n (%)	2009 n (%)	2010 n (%)	2011 n (%)	2012 n (%)	2013 n (%)	2014 n (%)	2015 n (%)	2016 n (%)	2017 n (%)	2018 n (%)	2019 n (%)	2020 n (%)	2021 n (%)
MSM	N/A	N/A	29 (2.1)	64 (4.0)	57 (3.6)	40 (2.2)	16 (0.8)	24 (1.3)	16 (0.8)	13 (0.7)	7 (0.4)	2 (0.1)	9 (0.5)	2 (0.2)	2 (0.2)
MSW	N/A	N/A	16 (0.4)	13 (0.3)	17 (0.4)	12 (0.3)	9 (0.2)	14 (0.4)	9 (0.3)	4 (0.1)	15 (0.5)	13 (0.4)	10 (0.3)	10 (0.4)	4 (0.2)

Note: MSM = Gay, bisexual, and other men who have sex with men; MSW = Men who have sex with women only.
Isolates were not tested for cefixime susceptibility in 2007-2008. Cefixime elevated MIC ≥ 0.25 µg/ml.

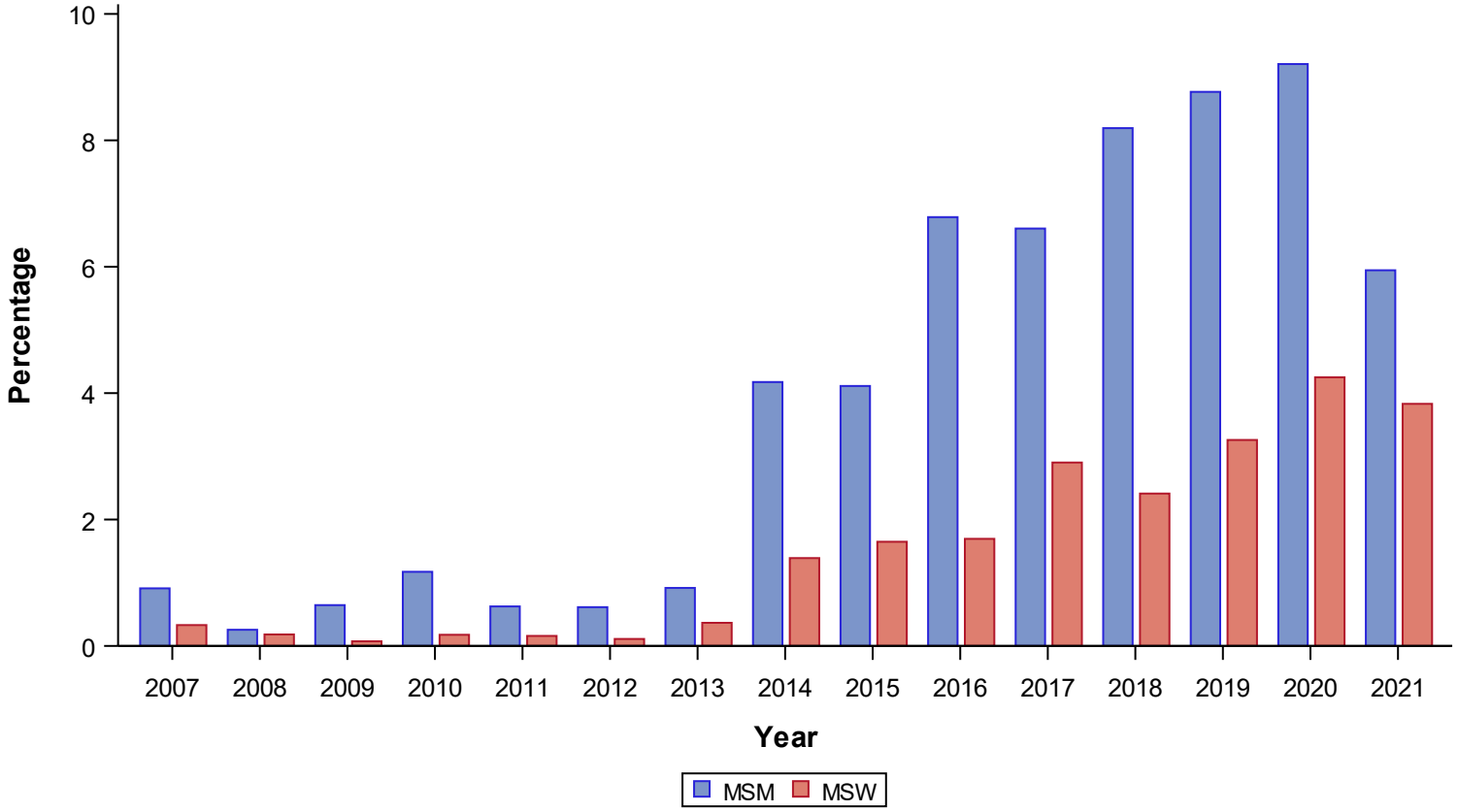
Figure 12. Percentage of *Neisseria gonorrhoeae* Isolates with an Elevated Minimum Inhibitory Concentration (MIC) to Ceftriaxone by Reported Gender of Sex Partners, Gonococcal Isolate Surveillance Project (GISP), 2007-2021



Gender of Sex Partners	2007 n (%)	2008 n (%)	2009 n (%)	2010 n (%)	2011 n (%)	2012 n (%)	2013 n (%)	2014 n (%)	2015 n (%)	2016 n (%)	2017 n (%)	2018 n (%)	2019 n (%)	2020 n (%)	2021 n (%)
MSM	2 (0.2)	2 (0.2)	8 (0.6)	15 (0.9)	15 (0.9)	12 (0.7)	2 (0.1)	4 (0.2)	8 (0.4)	9 (0.5)	0 (0.0)	4 (0.2)	4 (0.2)	0 (0.0)	2 (0.2)
MSW	5 (0.1)	2 (0.0)	8 (0.2)	4 (0.1)	6 (0.2)	3 (0.1)	1 (0.0)	3 (0.1)	6 (0.2)	5 (0.2)	10 (0.3)	5 (0.2)	4 (0.1)	3 (0.1)	2 (0.1)

Note: MSM = Gay, bisexual, and other men who have sex with men; MSW = Men who have sex with women only.
Ceftriaxone elevated MIC ≥ 0.125 µg/ml.

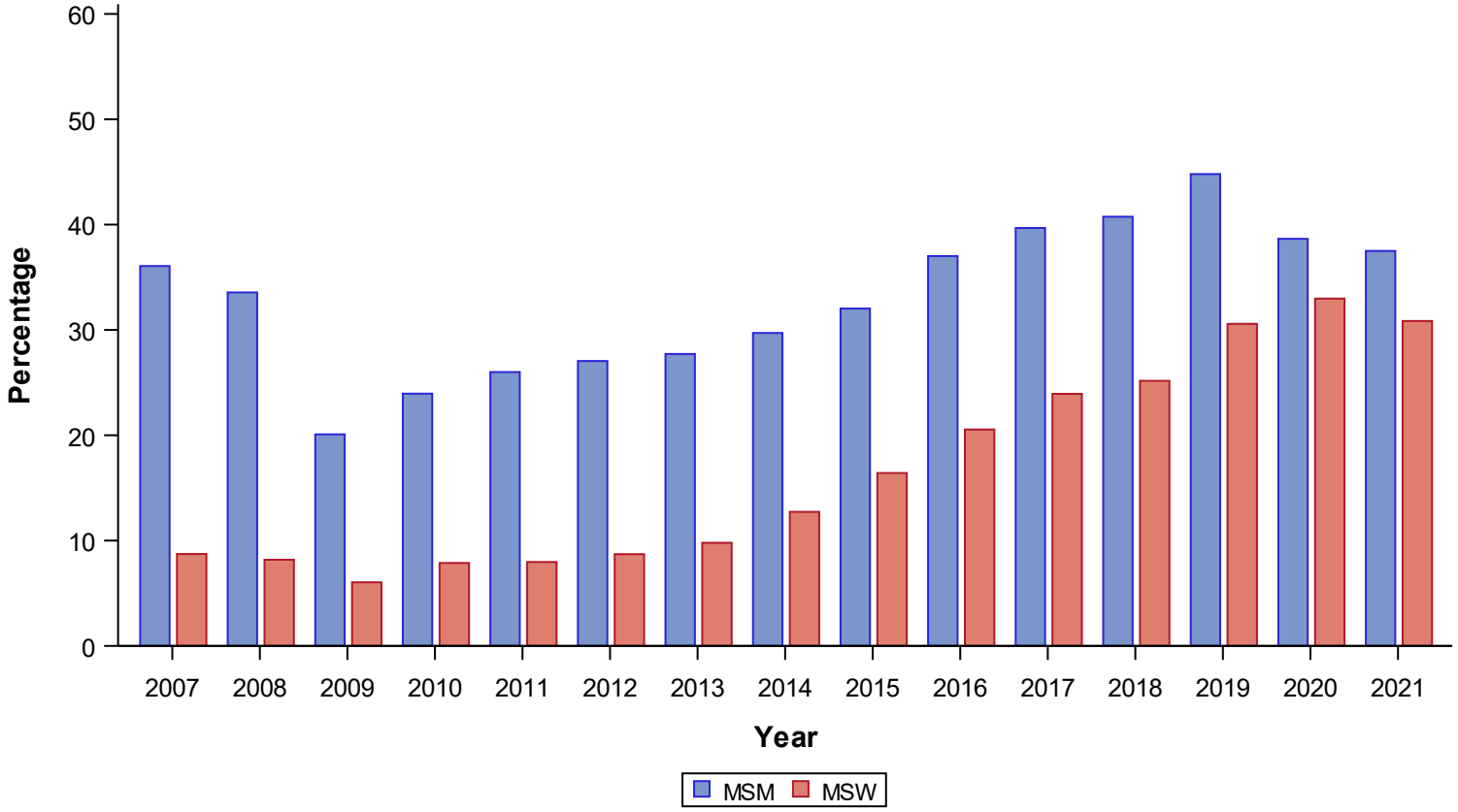
Figure 13. Percentage of *Neisseria gonorrhoeae* Isolates with an Elevated Minimum Inhibitory Concentration (MIC) to Azithromycin by Reported Gender of Sex Partners, Gonococcal Isolate Surveillance Project (GISP), 2007-2021



Gender of Sex Partners	2007 n (%)	2008 n (%)	2009 n (%)	2010 n (%)	2011 n (%)	2012 n (%)	2013 n (%)	2014 n (%)	2015 n (%)	2016 n (%)	2017 n (%)	2018 n (%)	2019 n (%)	2020 n (%)	2021 n (%)
MSM	12 (0.9)	3 (0.3)	9 (0.6)	19 (1.2)	10 (0.6)	11 (0.6)	19 (0.9)	78 (4.2)	80 (4.1)	134 (6.8)	127 (6.6)	151 (8.2)	155 (8.8)	101 (9.2)	68 (5.9)
MSW	15 (0.3)	8 (0.2)	3 (0.1)	7 (0.2)	6 (0.2)	4 (0.1)	14 (0.4)	44 (1.4)	52 (1.6)	55 (1.7)	89 (2.9)	75 (2.4)	112 (3.3)	103 (4.3)	93 (3.8)

Note: MSM = Gay, bisexual, and other men who have sex with men; MSW = Men who have sex with women only.
Azithromycin elevated MIC ≥ 2.0 µg/ml.

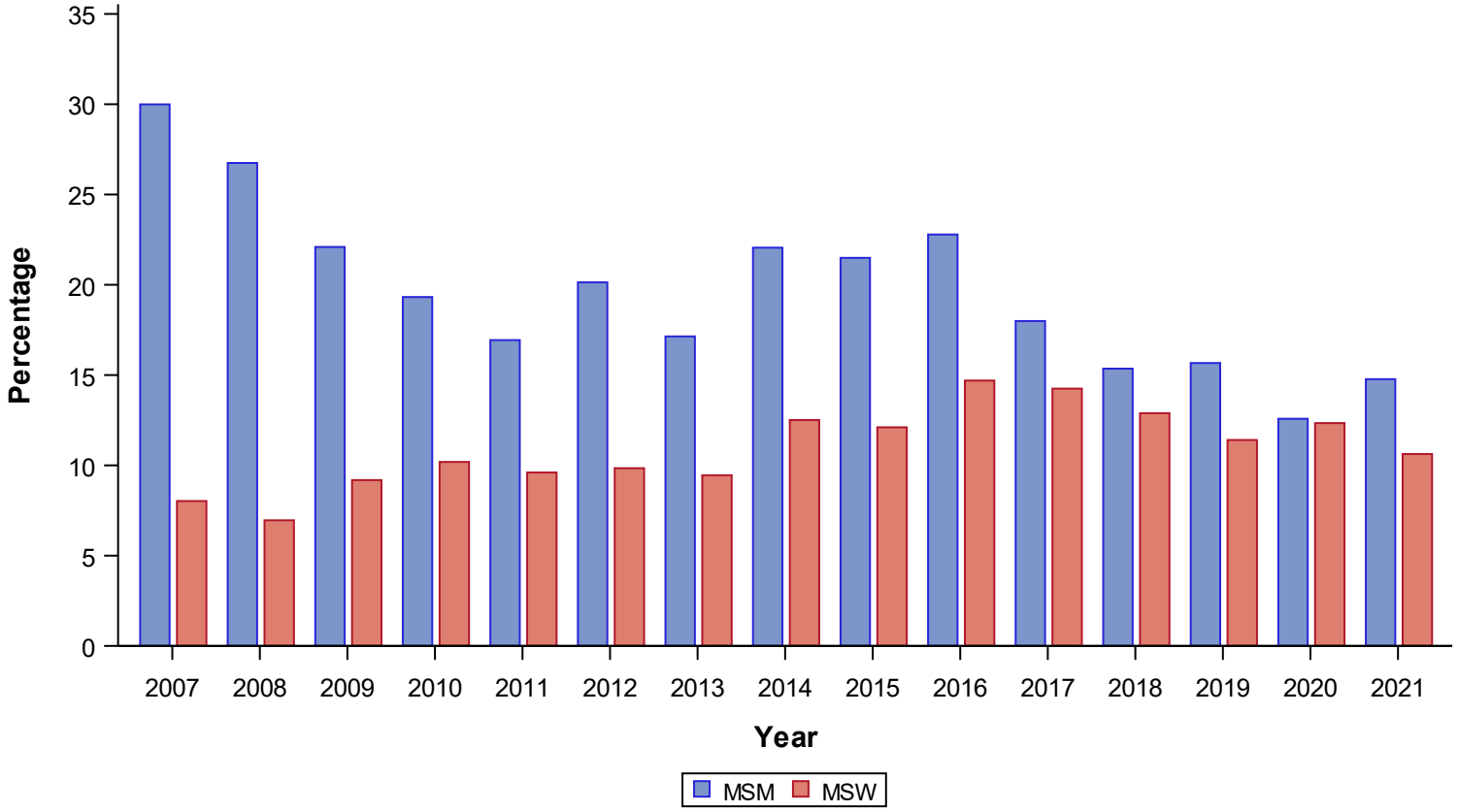
Figure 14. Percentage of *Neisseria gonorrhoeae* Isolates with Resistance to Ciprofloxacin by Reported Gender of Sex Partners, Gonococcal Isolate Surveillance Project (GISP), 2007-2021



Gender of Sex Partners	2007 n (%)	2008 n (%)	2009 n (%)	2010 n (%)	2011 n (%)	2012 n (%)	2013 n (%)	2014 n (%)	2015 n (%)	2016 n (%)	2017 n (%)	2018 n (%)	2019 n (%)	2020 n (%)	2021 n (%)
MSM	475 (36.1)	394 (33.6)	280 (20.1)	388 (24.0)	416 (26.0)	485 (27.0)	574 (27.7)	555 (29.7)	623 (32.0)	731 (37.0)	763 (39.7)	751 (40.7)	792 (44.8)	424 (38.7)	429 (37.5)
MSW	397 (8.7)	361 (8.2)	248 (6.0)	313 (7.9)	302 (8.0)	316 (8.7)	375 (9.8)	403 (12.7)	518 (16.4)	667 (20.5)	734 (23.9)	783 (25.2)	1051 (30.6)	799 (33.0)	749 (30.8)

Note: MSM = Gay, bisexual, and other men who have sex with men; MSW = Men who have sex with women only.
Ciprofloxacin resistance MIC ≥ 1.0 µg/ml.

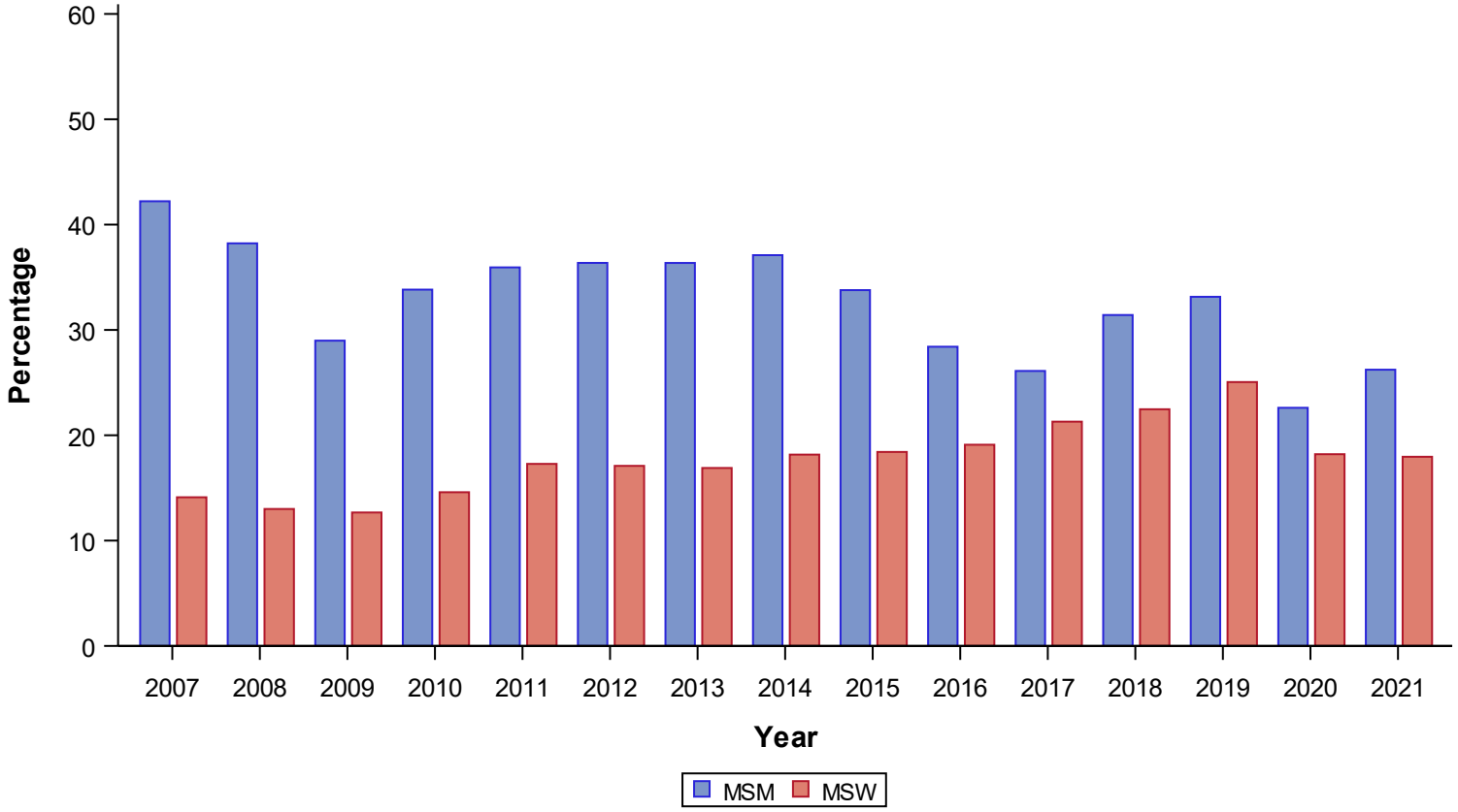
Figure 15. Percentage of *Neisseria gonorrhoeae* Isolates with Resistance to Penicillin by Reported Gender of Sex Partners, Gonococcal Isolate Surveillance Project (GISP), 2007-2021



Gender of Sex Partners	2007 n (%)	2008 n (%)	2009 n (%)	2010 n (%)	2011 n (%)	2012 n (%)	2013 n (%)	2014 n (%)	2015 n (%)	2016 n (%)	2017 n (%)	2018 n (%)	2019 n (%)	2020 n (%)	2021 n (%)
MSM	395 (30.0)	314 (26.7)	308 (22.1)	313 (19.3)	271 (16.9)	361 (20.1)	355 (17.1)	412 (22.1)	418 (21.5)	450 (22.8)	346 (18.0)	283 (15.4)	277 (15.7)	138 (12.6)	169 (14.8)
MSW	365 (8.0)	307 (7.0)	377 (9.2)	405 (10.2)	364 (9.6)	357 (9.8)	362 (9.5)	396 (12.5)	382 (12.1)	477 (14.7)	437 (14.2)	401 (12.9)	392 (11.4)	299 (12.3)	258 (10.6)

Note: MSM = Gay, bisexual, and other men who have sex with men; MSW = Men who have sex with women only.
Penicillin resistance ≥ 2.0 µg/ml or Beta-lactamase positive.

Figure 16. Percentage of *Neisseria gonorrhoeae* Isolates with Resistance to Tetracycline by Reported Gender of Sex Partners, Gonococcal Isolate Surveillance Project (GISP), 2007-2021



Gender of Sex Partners	2007 n (%)	2008 n (%)	2009 n (%)	2010 n (%)	2011 n (%)	2012 n (%)	2013 n (%)	2014 n (%)	2015 n (%)	2016 n (%)	2017 n (%)	2018 n (%)	2019 n (%)	2020 n (%)	2021 n (%)
MSM	556 (42.2)	438 (38.2)	404 (29.0)	548 (33.8)	575 (35.9)	652 (36.4)	753 (36.4)	693 (37.1)	657 (33.8)	561 (28.4)	502 (26.1)	579 (31.4)	586 (33.1)	248 (22.6)	300 (26.2)
MSW	642 (14.1)	555 (13.0)	520 (12.7)	580 (14.6)	655 (17.3)	620 (17.1)	647 (16.9)	575 (18.2)	581 (18.4)	620 (19.1)	653 (21.3)	699 (22.5)	861 (25.1)	441 (18.2)	436 (18.0)

Note: MSM = Gay, bisexual, and other men who have sex with men; MSW = Men who have sex with women only.
Tetracycline resistance ≥ 2.0 µg/ml.