Ghaznavi et al. Recent Changes in the Reporting of Sexually Transmitted Infections in Japan during the COVID-19 pandemic

Online Supplementary Material.

Table of Contents

Ghaznavi C, *et al. Sex Transm Infect* 2022;0:1–4. doi: 10.1136/sextrans-2021-055378

eTable 1. State of emergency declarations, by prefecture.

Prefecture	State of Emergency #1	State of Emergency #2	State of Emergency #3	State of Emergency #4
Hokkaido	4/16/2020 – 5/25/2020	5/16/2021 – 6/20/2021	8/27/2021 – 9/30/2021	
Aomori	4/16/2020 – 5/14/2020			
Iwate	4/16/2020 – 5/14/2020			
Miyagi	4/16/2020 – 5/14/2020	8/27/2021 – 9/12/2021		
Akita	4/16/2020 – 5/14/2020			
Yamagata	4/16/2020 – 5/14/2020			
Fukushima	4/16/2020 – 5/14/2020			
Ibaraki	4/16/2020 – 5/14/2020	8/20/2021 – 9/30/2021		
Tochigi	4/16/2020 – 5/14/2020	1/14/2021 – 2/7/2021	8/20/2021 – 9/30/2021	
Gunma	4/16/2020 – 5/14/2020	8/20/2021 – 9/30/2021		
Saitama	4/7/2020 – 5/25/2020	1/8/2021 – 3/21/2021	8/2/2021 – 9/30/2021	
Chiba	4/7/2020 – 5/25/2020	1/8/2021 – 3/21/2021	8/2/2021 – 9/30/2021	
Tokyo	4/7/2020 – 5/25/2020	1/8/2021 – 3/21/2021	4/25/2021 – 6/20/2021	7/12/2021 – 9/30/2021
Kanagawa	4/7/2020 – 5/25/2020	1/8/2021 – 3/21/2021	8/2/2021 – 9/30/2021	
Niigata	None			
Toyama	4/16/2020 – 5/14/2020			
Ishikawa	4/16/2020 – 5/14/2020			
Fukui	4/16/2020 – 5/14/2020			
Yamanashi	4/16/2020 – 5/14/2020			
Nagano	4/16/2020 – 5/14/2020			
Gifu	4/16/2020 – 5/14/2020	1/14/2021 – 2/28/2021	8/27/2021 – 9/30/2021	
Shizuoka	4/16/2020 – 5/14/2020	8/20/2021 – 9/30/2021		
Aichi	4/16/2020 – 5/14/2020	1/14/2021 – 2/28/2021	5/12/2021 – 6/20/2021	8/27/2021 – 9/30/2021
Mie	4/16/2020 – 5/14/2020	8/27/2021 – 9/30/2021		
Shiga	4/16/2020 – 5/14/2020	8/27/2021 – 9/30/2021		
Kyoto	4/16/2020 –	1/14/2021 –	4/25/2021 –	8/20/2021 –

	5/21/2020	2/28/2021	6/20/2021	9/30/2021
Osaka	4/7/2020 – 5/21/2020	1/14/2021 – 2/28/2021	4/25/2021 – 6/20/2021	8/20/2021 – 9/30/2021
Hyogo	4/7/2020 – 5/21/2020	1/14/2021 – 2/28/2021	4/25/2021 – 6/20/2021	8/20/2021 – 9/30/2021
Nara	4/16/2020 – 5/14/2020			
Wakayama	4/16/2020 – 5/14/2020			
Tottori	4/16/2020 – 5/14/2020			
Shimane	4/16/2020 – 5/14/2020			
Okayama	4/16/2020 – 5/14/2020	5/16/2021 – 6/20/2021	8/27/2021 – 9/12/2021	
Hiroshima	4/16/2020 – 5/14/2020	5/16/2021 – 6/20/2021	8/27/2021 – 9/30/2021	
Yamaguchi	None			
Tokushima	4/16/2020 – 5/14/2020			
Kagawa	4/16/2020 – 5/14/2020			
Ehime	4/16/2020 – 5/14/2020			
Kochi	4/16/2020 – 5/14/2020			
Fukuoka	4/7/2020 – 5/14/2020	1/14/2021 – 2/28/2021	5/12/2021 – 6/20/2021	8/20/2021 – 9/30/2021
Saga	4/16/2020 – 5/14/2020			
Nagasaki	4/16/2020 – 5/14/2020			
Kumamoto	4/16/2020 – 5/14/2020			
Oita	4/16/2020 – 5/14/2020			
Miyazaki	4/16/2020 – 5/14/2020			
Kagoshima	4/16/2020 – 5/14/2020			
Okinawa	4/16/2020 – 5/14/2020	5/23/2021 – 9/30/2021		

Supplemental Methods

Stratifications of STI surveillance data

Weekly/monthly STI surveillance reports do not include detailed demographic data such as age, sex, occupation, or sexual orientation for all diseases, but there are some exceptions. Chlamydia, gonorrhea, condyloma, and herpes data are available stratified by sex. HIV/AIDS data are available stratified by sex of sexual partners (sexual contact exclusively with the opposite sex, sexual contact exclusively with the same sex, and sexual activity with both men and women); however, the data are not stratified by sex (male/female). Furthermore, some cases are not classified into any of these sexual contact categories. Finally, syphilis data is stratified by stage (asymptomatic [i.e., incidentally positive RPR testing], stage 1, stage 2, late-stage, and congenital). Where stratifications were available, we have conducted stratified analyses that follow the same methodology as explained below. These findings are presented in the remainder of the Supplementary Material.

Sentinel surveillance of genital chlamydia, gonorrhea, condyloma acuminata, and genital herpes

Every year, approximately 900-1000 sentinel medical institutions are selected from across Japan, and monthly statistics detailing the average number of diagnoses per institution is made openly available. The location and number of sentinel medical

Ghaznavi C, *et al. Sex Transm Infect* 2022;0:1–4. doi: 10.1136/sextrans-2021-055378

institutions in each prefecture are determined by considering the relative population of each health center's area of jurisdiction and the ability to identify the incidence trends for the entire prefecture.[1, 2] In Japan, patients who suspect that they have an STI generally visit general hospitals, infectious disease clinics, urology clinics, obstetrics/gynecology clinics, general internal medicine clinics, or clinics specializing in sexually transmitted infections to be tested for STIs at the physician's discretion.

Sentinel sites specifically designated for STI surveillance include "medical facilities declaring that they have a gynecology and obstetrics department, obstetrics department or gynecology department (i.e., a gynecology and obstetrics specialty), a department whose name is combined with sexually transmitted infections (STIs) pursuant to the provisions of Article 3-2, paragraph 1, item (i), c and d (2) of the Enforcement Order of the Medical Care Act (Cabinet Order No. 326 of 1948), a urology department or dermatology department (i.e., medical facilities mainly providing medical services of the specialty so declared)…"[3]

Diagnostic criteria for nationally notifiable STIs and those monitored by sentinel surveillance

In order to count as part of notifiable disease surveillance, diagnoses of syphilis[4] require laboratory confirmation, and HIV/AIDS diagnoses require laboratory-confirmed HIV infection with or without AIDS-related infection or malignancy.[5] HIV diagnoses are listed as "asymptomatic carriers" and reported in aggregate with new AIDS diagnoses. In

Ghaznavi C, *et al. Sex Transm Infect* 2022;0:1–4. doi: 10.1136/sextrans-2021-055378

order to count as part of sentinel surveillance, diagnoses of chlamydia[6] and gonorrhea[7] are made via laboratory confirmation, whereas condyloma[8] and herpes[9] are diagnosed clinically. Please see eTable 2 for further details.

Regression Analysis: Farrington Approach

Weekly data comprised nationally reportable case numbers indicative of the true incidence of HIV/AIDS and syphilis; thus, the quasi-Poisson regression was applied to these numbers directly. However, the monthly data comprised the incidence of chlamydia, gonorrhea, condyloma acuminata, and herpes at sentinel sites only, and the number of sentinel institutions varied slightly for any given month. Between 2015-2019, the number of sentinel institutions ranged from 961 to 991 across all months (mean 985, clinic counts for 2020-2021 were unavailable but estimates suggest they do not differ from prior years). Any changes in the number of sentinels reporting monthly would proportionately affect the number of STI notifications; thus, we corrected for fluctuations in the number of sentinel institutions by calculating average monthly per institution diagnoses, multiplying the resultant value by 100, and rounding the value to the nearest integer; estimated results were rescaled by 100 in order to reobtain per institution values.

To account for seasonality, periods not included in the reference period were evenly divided into three or nine sub-periods for monthly or weekly data, respectively, and each was encoded as a binary dummy variable. Thus, the regression model is given by:[10]

$$\log\left(E(Y_t)\right) = \alpha + \beta t + f^T(t)\gamma_f, \qquad (1)$$

$$\mathrm{E(Y_t)} = \mu, \text{ and}$$

$$\mathrm{Var(Y_t)} = \phi\mu,$$

where Y_t is the monthly number of diagnoses for a certain week or month t, α and β are regression parameters, $\gamma_{f(t)}$ is a regression parameter vector to control for seasonality, and $f(t)$ is a vector of dummies for the aforementioned dummy variables. The regression coefficients and the overdispersion parameter ϕ were estimated using the quasi-likelihood method.

In order to estimate the baseline in Equation (1), we used data from 2013-2017 and predicted expected monthly case numbers for 2018-2021 using a 5-year moving window (e.g., predictions for 2020 were made using data from 2015-2019). By substituting the estimated regression parameters into Equation (1), the expected number was predicted for the week or month of interest t_0. We estimated two one-sided 95% prediction intervals (PI) with the assumption that $Y_{t_0} \sim NB(\widehat{Y_{t_0}}, \widehat{\nu_0})$, where NB is a negative binomial distribution, $\widehat{Y_{t_0}}$ is the mean of the distribution, and $\widehat{\nu_0} = \frac{\widehat{Y_{t_0}}}{\hat{\phi}-1}$ is the dispersion parameter. Observed values that fell above or below the upper or lower 95% prediction interval were regarded as statistically significant excesses or deficits, respectively. Additional information regarding the Farrington algorithm can be found elsewhere.[11, 12]

Sensitivity Analyses

When estimating the expectation, the algorithm restricts the time period of the observed data (defined as the *reference period*) based on several parameters. To estimate the expected number of cases for a given calendar week or month t, the algorithm uses only data from $t - w$ to $t + w$ weeks or months among years $h - b$ and $h - 1$, where h is the year of t and w and b are pre-fixed constants. For monthly data (i.e., sentinel STIs), b and w were set at 5 and 1, respectively; for weekly data (i.e., notifiable STIs), b and w were set at 5 and 3, respectively.[11]

In order to check the stability of our model, we varied the parameters of b and w for weekly and monthly regressions. For weekly data, we tested all combinations of $b = 3\ or\ 5$ and $w = 3\ or\ 4$. For monthly data, we tested all combinations of $b = 3\ or\ 5$ or $w = 1\ or\ 2$. Because sentinel STI reporting was based on a variable number of sentinel institutions every month, we adjusted for these changes by calculating per-institution rates, multiplying those rates by 100, conducting the regression, and rescaling down to per-institution values. We also tested whether the regression changed materially after multiplying average monthly per sentinel values by 1000 instead of 100.

Methodologic Limitations

First, the Farrington algorithm is intended to detect significant deviations in STI reporting when compared to historical trends. Thus, our results are based on temporal

Ghaznavi C, *et al. Sex Transm Infect* 2022;0:1–4. doi: 10.1136/sextrans-2021-055378

correlations with the pandemic; we are unable to make definitive assessments of causality. Second, the quasi-Poisson regression can passively capture gradual changes in trends over time but does not consider abrupt events that would dramatically alter reporting. Therefore, we are unable to assess the effect of unknown confounders which may have caused sudden shocks in the STI notification landscape. Third, because sentinel STI reporting was based on a variable number of sentinel institutions every month, we adjusted for these changes by calculating per-institution rates, multiplying those rates by 100, conducting the regression, and rescaling down to per-institution values. Our sensitivity analyses showed that using the 1000-based scale increased the sensitivity of our analyses; thus, the results presented in the main text of this study represent a conservative assessment of the trends in sentinel STIs. This limitation does not apply to the notifiable STIs.

Ghaznavi C, *et al. Sex Transm Infect* 2022;0:1–4. doi: 10.1136/sextrans-2021-055378

eTable 2. Case definitions and reporting criteria for STI per National Institute of Infectious Disease guidelines.

STI	Case Definition	Reporting Details
Chlamydia	The prescribed test methods include detection of C. trachomatis in specimens collected from the urethra or genitals, detection of C. trachomatis antigens or genes, or detection of antibodies in serum.	Reported monthly by participating sentinel institutions
Gonorrhea	Established testing methods include the detection of N. gonorrhoeae in materials collected from the urethra and genitals, ocular secretions, and pharyngeal swabs, or the detection of N. gonorrhoeae antigens or genes.	Reported monthly by participating sentinel institutions
Condyloma	The clinical symptoms required for notification are "characteristic papillary or corpus callosum-like lesions of light red or brown color in and around the genitals in both men and women.	Reported monthly by participating sentinel institutions
Herpes	The clinical symptoms required for notification are "one to many small painful bullous or shallow ulcerative lesions characteristic of herpes on the genitals or buttocks in both men and women.	Reported monthly by participating sentinel institutions
HIV/AIDS	The prescribed test methods include HIV antibody screening test using serum and antibody confirmation tests (Western Blot method, etc.) or HIV antigen test, virus isolation, and nucleic acid diagnostic methods (PCR, etc.).	All medical institutions report cases of HIV/AIDS within 7 days of diagnosis if the patient is "suspected of having HIV/AIDS based on clinical characteristics or is asymptomatic but diagnosed using the established testing methods." Data is aggregated weekly. Information to be reported includes gender, age, HIV type, suspected route of infection, clinical symptoms, CD4 level at the time of

		diagnosis, and method of diagnosis
Syphilis	Prescribed testing methods include detection of pathogens by PCR or other tests on lesions (early induration, induration chancre, condyloma flatum, mucosal rash), and serum tests using cardiolipin or T. pallidum antigens.	All medical institutions report cases of "suspected syphilis based on clinical features or asymptomatic but diagnosed by established laboratory methods" as syphilis within 7 days of diagnosis. Data is aggregated weekly. Information to be reported includes gender, age, stage, pregnancy status, clinical symptoms, diagnostic methods, suspected route and place of infection, and previous treatment for syphilis.

Results: Sensitivity Analyses

Sentinel STIs

Based on visual inspection, the variation of the parameters *b* and *w* did not elicit substantial changes in the fit of the quasi-Poisson regression models for chlamydia, gonorrhea, condyloma, or herpes. Multiplying per institution values by 1000 instead of 100 slightly increased the sensitivity of detecting diagnostic excesses or deficits for any given month.

Notifiable STIs

Based on visual inspection, the variation of the parameters *b* and *w* did not elicit substantial changes in the fit of the quasi-Poisson regression models for HIV/AIDS or syphilis.

eTable 3. Dates corresponding to week numbers, 2020-2021.

Week in 2020	Start Date	Week in 2021	Start Date
1	06-Jan-20	1	04-Jan-21
2	13-Jan-20	2	11-Jan-21
3	20-Jan-20	3	18-Jan-21
4	27-Jan-20	4	25-Jan-21
5	03-Feb-20	5	01-Feb-21
6	10-Feb-20	6	08-Feb-21
7	17-Feb-20	7	15-Feb-21
8	24-Feb-20	8	22-Feb-21
9	02-Mar-20	9	01-Mar-21
10	09-Mar-20	10	08-Mar-21
11	16-Mar-20	11	15-Mar-21
12	23-Mar-20	12	22-Mar-21
13	30-Mar-20	13	29-Mar-21
14	06-Apr-20	14	05-Apr-21
15	13-Apr-20	15	12-Apr-21
16	20-Apr-20	16	19-Apr-21
17	27-Apr-20	17	26-Apr-21
18	04-May-20	18	03-May-21
19	11-May-20	19	10-May-21
20	18-May-20	20	17-May-21
21	25-May-20	21	24-May-21
22	01-Jun-20	22	31-May-21
23	08-Jun-20	23	07-Jun-21
24	15-Jun-20	24	14-Jun-21
25	22-Jun-20	25	21-Jun-21
26	29-Jun-20	26	28-Jun-21
27	06-Jul-20	27	05-Jul-21
28	13-Jul-20	28	12-Jul-21
29	20-Jul-20	29	19-Jul-21
30	27-Jul-20	30	26-Jul-21
31	03-Aug-20	31	02-Aug-21
32	10-Aug-20	32	09-Aug-21
33	17-Aug-20	33	16-Aug-21
34	24-Aug-20	34	23-Aug-21
35	31-Aug-20	35	30-Aug-21
36	07-Sep-20	36	06-Sep-21
37	14-Sep-20	37	13-Sep-21
38	21-Sep-20	38	20-Sep-21
39	28-Sep-20	39	27-Sep-21
40	05-Oct-20	40	04-Oct-21
41	12-Oct-20	41	11-Oct-21
42	19-Oct-20	42	18-Oct-21
43	26-Oct-20	43	25-Oct-21
44	02-Nov-20	44	01-Nov-21
45	09-Nov-20	45	08-Nov-21
46	16-Nov-20	46	15-Nov-21
47	23-Nov-20	47	22-Nov-21
48	30-Nov-20	48	29-Nov-21
49	07-Dec-20	49	06-Dec-21
50	14-Dec-20	50	13-Dec-21
51	21-Dec-20	51	20-Dec-21
52	28-Dec-20	52	27-Dec-21

Ghaznavi C, *et al. Sex Transm Infect* 2022;0:1–4. doi: 10.1136/sextrans-2021-055378

eTable 4. Observed and expected number of genital chlamydia diagnoses per sentinel institution with 95% prediction intervals, 2018-2021. Parameters: b = 5 and w = 1.

Year	Month	Observed	Predicted	Scale by 100		Scale by 1000	
				95% PI upper bound	95% PI lower bound	95% PI upper bound	95% PI lower bound
2018	1	2.01	1.88	2.17	1.72	2.1	1.79
2018	2	1.88	1.9	2.2	1.74	2.14	1.8
2018	3	2.1	1.9	2.18	1.72	2.08	1.82
2018	4	1.88	1.98	2.28	1.81	2.21	1.88
2018	5	2.24	2.05	2.37	1.89	2.32	1.94
2018	6	2.24	2.14	2.44	1.95	2.33	2.06
2018	7	2.21	2.15	2.47	1.98	2.4	2.05
2018	8	2.31	2.17	2.49	2	2.44	2.06
2018	9	2.21	2.17	2.47	1.98	2.36	2.09
2018	10	2.37	2.13	2.45	1.96	2.37	2.03
2018	11	2.32	2.04	2.36	1.88	2.31	1.93
2018	12	2.09	1.98	2.27	1.8	2.17	1.9
2019	1	2.22	1.95	2.26	1.79	2.2	1.85
2019	2	2.04	1.97	2.28	1.81	2.24	1.86
2019	3	2.27	1.96	2.25	1.78	2.15	1.88
2019	4	2.17	2.05	2.36	1.88	2.3	1.94
2019	5	2.23	2.12	2.45	1.96	2.41	2
2019	6	2.32	2.24	2.55	2.05	2.46	2.14
2019	7	2.47	2.25	2.58	2.08	2.51	2.15
2019	8	2.39	2.28	2.62	2.12	2.59	2.16
2019	9	2.4	2.31	2.63	2.12	2.53	2.22
2019	10	2.57	2.28	2.61	2.11	2.55	2.18
2019	11	2.27	2.22	2.56	2.06	2.52	2.1
2019	12	2.34	2.16	2.47	1.98	2.37	2.07
2020	1	2.47	2.11	2.43	1.94	2.35	2.02
2020	2	2.36	2.15	2.48	1.99	2.43	2.04
2020	3	2.45	2.14	2.45	1.96	2.35	2.06
2020	4	2.24	2.23	2.55	2.05	2.46	2.14
2020	5	2.22	2.31	2.65	2.14	2.59	2.19
2020	6	2.37	2.42	2.74	2.23	2.64	2.33
2020	7	2.48	2.46	2.8	2.27	2.72	2.35
2020	8	2.49	2.49	2.85	2.32	2.8	2.37

Ghaznavi C, *et al. Sex Transm Infect* 2022;0:1–4. doi: 10.1136/sextrans-2021-055378

2020	9	2.48	2.54	2.88	2.35	2.78	2.44
2020	10	2.69	2.51	2.86	2.33	2.79	2.4
2020	11	2.28	2.45	2.8	2.28	2.76	2.32
2020	12	2.36	2.38	2.71	2.19	2.62	2.28
2021	1	2.38	2.34	2.67	2.16	2.6	2.23
2021	2	2.33	2.37	2.72	2.2	2.67	2.26
2021	3	2.56	2.34	2.67	2.16	2.58	2.25
2021	4	2.41	2.41	2.75	2.23	2.67	2.3
2021	5	2.52	2.47	2.83	2.3	2.78	2.35
2021	6	2.69	2.56	2.91	2.37	2.82	2.46
2021	7	2.76	2.61	2.96	2.42	2.9	2.49
2021	8	2.61	2.64	3.01	2.46	2.96	2.52
2021	9	2.59	2.69	3.04	2.49	2.93	2.59
2021	10	2.61	2.65	3.01	2.47	2.94	2.54
2021	11	2.53	2.60	2.96	2.42	2.90	2.48
2021	12	2.50	2.52	2.86	2.33	2.76	2.42

PI = prediction interval

eTable 5. Observed and expected number of gonorrhea diagnoses per sentinel institution with 95% prediction intervals, 2018-2021. Parameters: b = 5 and w = 1.

Year	Month	Observed	Predicted	Scale by 100		Scale by 1000	
				95% PI upper bound	95% PI lower bound	95% PI upper bound	95% PI lower bound
2018	1	0.69	0.62	0.79	0.53	0.74	0.57
2018	2	0.56	0.62	0.79	0.52	0.73	0.57
2018	3	0.67	0.6	0.76	0.5	0.7	0.55
2018	4	0.61	0.6	0.76	0.5	0.72	0.55
2018	5	0.72	0.6	0.77	0.51	0.71	0.56
2018	6	0.65	0.64	0.81	0.54	0.75	0.59
2018	7	0.71	0.67	0.84	0.57	0.79	0.62
2018	8	0.82	0.69	0.86	0.58	0.81	0.64
2018	9	0.72	0.68	0.85	0.57	0.79	0.63
2018	10	0.72	0.65	0.82	0.55	0.77	0.59
2018	11	0.67	0.6	0.77	0.51	0.71	0.56
2018	12	0.7	0.61	0.77	0.51	0.71	0.56
2019	1	0.76	0.59	0.76	0.5	0.72	0.54
2019	2	0.62	0.6	0.76	0.5	0.71	0.55
2019	3	0.67	0.57	0.73	0.48	0.68	0.53
2019	4	0.7	0.59	0.76	0.5	0.72	0.54
2019	5	0.72	0.6	0.76	0.5	0.72	0.55
2019	6	0.65	0.64	0.81	0.54	0.75	0.59
2019	7	0.77	0.68	0.86	0.58	0.82	0.63
2019	8	0.77	0.72	0.9	0.62	0.85	0.67
2019	9	0.72	0.72	0.9	0.61	0.83	0.67
2019	10	0.68	0.69	0.87	0.59	0.82	0.63
2019	11	0.6	0.66	0.84	0.56	0.78	0.62
2019	12	0.69	0.68	0.85	0.57	0.78	0.63
2020	1	0.79	0.65	0.82	0.55	0.77	0.6
2020	2	0.65	0.66	0.83	0.55	0.77	0.62
2020	3	0.61	0.63	0.8	0.53	0.73	0.59
2020	4	0.6	0.65	0.82	0.55	0.77	0.61
2020	5	0.55	0.65	0.82	0.55	0.75	0.61
2020	6	0.64	0.68	0.85	0.58	0.79	0.64
2020	7	0.79	0.72	0.9	0.61	0.84	0.67
2020	8	0.77	0.75	0.93	0.64	0.87	0.71
2020	9	0.79	0.74	0.92	0.63	0.85	0.7

2020	10	0.88	0.7	0.88	0.6	0.82	0.65
2020	11	0.79	0.67	0.84	0.57	0.78	0.63
2020	12	0.74	0.67	0.85	0.57	0.79	0.63
2021	1	0.85	0.66	0.83	0.56	0.78	0.61
2021	2	0.73	0.66	0.83	0.56	0.77	0.61
2021	3	0.8	0.63	0.8	0.53	0.74	0.59
2021	4	0.9	0.65	0.82	0.55	0.78	0.59
2021	5	0.85	0.66	0.84	0.56	0.79	0.61
2021	6	0.9	0.71	0.89	0.6	0.84	0.66
2021	7	1.02	0.76	0.95	0.66	0.91	0.7
2021	8	0.9	0.8	1	0.7	0.96	0.74
2021	9	0.85	0.81	1	0.7	0.95	0.75
2021	10	0.94	0.78	0.98	0.68	0.95	0.72
2021	11	0.92	0.77	0.97	0.67	0.94	0.71
2021	12	0.91	0.79	0.99	0.69	0.96	0.73

PI = prediction interval

Ghaznavi C, *et al. Sex Transm Infect* 2022;0:1–4. doi: 10.1136/sextrans-2021-055378

eTable 6. Observed and expected number of condyloma acuminata diagnoses per sentinel institution with 95% prediction intervals, 2018-2021. Parameters: b = 5 and w = 1.

Year	Month	Observed	Predicted	Scale by 100		Scale by 1000	
				95% PI upper bound	95% PI lower bound	95% PI upper bound	95% PI lower bound
2018	1	0.42	0.44	0.56	0.34	0.49	0.41
2018	2	0.38	0.45	0.58	0.36	0.52	0.42
2018	3	0.46	0.45	0.57	0.35	0.5	0.42
2018	4	0.47	0.47	0.6	0.37	0.53	0.44
2018	5	0.52	0.48	0.62	0.38	0.55	0.45
2018	6	0.54	0.5	0.63	0.4	0.56	0.47
2018	7	0.51	0.49	0.63	0.39	0.55	0.46
2018	8	0.5	0.48	0.62	0.39	0.56	0.45
2018	9	0.43	0.47	0.61	0.38	0.53	0.45
2018	10	0.55	0.46	0.6	0.37	0.52	0.44
2018	11	0.49	0.44	0.57	0.35	0.51	0.41
2018	12	0.42	0.43	0.56	0.34	0.49	0.4
2019	1	0.59	0.41	0.54	0.33	0.47	0.39
2019	2	0.44	0.43	0.56	0.34	0.5	0.4
2019	3	0.51	0.43	0.56	0.34	0.5	0.41
2019	4	0.47	0.46	0.59	0.37	0.53	0.43
2019	5	0.51	0.48	0.62	0.39	0.56	0.44
2019	6	0.58	0.5	0.64	0.4	0.57	0.47
2019	7	0.6	0.49	0.63	0.39	0.56	0.46
2019	8	0.54	0.49	0.64	0.4	0.59	0.45
2019	9	0.55	0.49	0.63	0.4	0.58	0.45
2019	10	0.56	0.49	0.63	0.4	0.58	0.45
2019	11	0.53	0.46	0.61	0.38	0.56	0.42
2019	12	0.49	0.46	0.6	0.37	0.55	0.42
2020	1	0.52	0.44	0.58	0.36	0.53	0.41
2020	2	0.44	0.47	0.62	0.39	0.57	0.43
2020	3	0.5	0.47	0.61	0.38	0.56	0.43
2020	4	0.43	0.51	0.66	0.42	0.6	0.47
2020	5	0.44	0.53	0.69	0.44	0.64	0.49
2020	6	0.58	0.56	0.71	0.46	0.65	0.52
2020	7	0.48	0.55	0.71	0.46	0.65	0.51
2020	8	0.47	0.54	0.7	0.45	0.65	0.5

Ghaznavi C, *et al. Sex Transm Infect* 2022;0:1–4. doi: 10.1136/sextrans-2021-055378

2020	9	0.53	0.53	0.69	0.44	0.63	0.5
2020	10	0.52	0.53	0.69	0.44	0.63	0.49
2020	11	0.41	0.51	0.66	0.42	0.62	0.46
2020	12	0.46	0.5	0.65	0.41	0.6	0.46
2021	1	0.45	0.48	0.62	0.39	0.57	0.44
2021	2	0.42	0.49	0.64	0.41	0.61	0.44
2021	3	0.47	0.47	0.62	0.39	0.58	0.43
2021	4	0.51	0.51	0.66	0.42	0.62	0.47
2021	5	0.49	0.53	0.69	0.44	0.65	0.48
2021	6	0.48	0.55	0.71	0.46	0.66	0.51
2021	7	0.48	0.55	0.71	0.46	0.66	0.5
2021	8	0.5	0.53	0.7	0.45	0.66	0.48
2021	9	0.46	0.53	0.69	0.44	0.64	0.48
2021	10	0.51	0.52	0.68	0.43	0.63	0.47
2021	11	0.49	0.50	0.66	0.42	0.62	0.45
2021	12	0.44	0.49	0.64	0.40	0.60	0.45

PI = prediction interval

Ghaznavi C, *et al. Sex Transm Infect* 2022;0:1–4. doi: 10.1136/sextrans-2021-055378

eTable 7. Observed and expected number of genital herpes diagnoses per sentinel institution with 95% prediction intervals, 2018-2021. Parameters: b = 5 and w = 1.

Year	Month	Observed	Predicted	Scale by 100		Scale by 1000	
				95% PI upper bound	95% PI lower bound	95% PI upper bound	95% PI lower bound
2018	1	0.75	0.77	0.95	0.65	0.86	0.74
2018	2	0.7	0.79	0.96	0.67	0.88	0.75
2018	3	0.77	0.78	0.96	0.66	0.87	0.75
2018	4	0.79	0.81	0.98	0.68	0.9	0.77
2018	5	0.81	0.82	1	0.7	0.92	0.78
2018	6	0.79	0.83	1.01	0.71	0.92	0.8
2018	7	0.83	0.83	1.01	0.71	0.92	0.79
2018	8	0.82	0.81	0.99	0.69	0.91	0.77
2018	9	0.69	0.8	0.97	0.68	0.89	0.76
2018	10	0.77	0.78	0.95	0.66	0.87	0.74
2018	11	0.78	0.77	0.94	0.65	0.86	0.73
2018	12	0.76	0.76	0.94	0.64	0.85	0.73
2019	1	0.74	0.76	0.94	0.65	0.85	0.73
2019	2	0.77	0.78	0.96	0.66	0.88	0.74
2019	3	0.8	0.78	0.96	0.66	0.87	0.75
2019	4	0.76	0.8	0.98	0.68	0.9	0.76
2019	5	0.79	0.81	0.99	0.69	0.91	0.77
2019	6	0.77	0.82	1	0.7	0.92	0.79
2019	7	0.82	0.82	1	0.69	0.91	0.78
2019	8	0.82	0.79	0.97	0.67	0.89	0.75
2019	9	0.87	0.78	0.95	0.66	0.87	0.75
2019	10	0.85	0.76	0.93	0.64	0.85	0.73
2019	11	0.78	0.76	0.93	0.64	0.86	0.72
2019	12	0.81	0.75	0.93	0.64	0.84	0.72
2020	1	0.82	0.75	0.93	0.64	0.84	0.72
2020	2	0.76	0.77	0.95	0.65	0.87	0.73
2020	3	0.76	0.78	0.95	0.66	0.86	0.74
2020	4	0.76	0.8	0.98	0.68	0.9	0.77
2020	5	0.62	0.82	1.01	0.7	0.92	0.78
2020	6	0.82	0.84	1.02	0.71	0.93	0.8
2020	7	0.76	0.84	1.02	0.72	0.93	0.8
2020	8	0.79	0.83	1.01	0.7	0.92	0.79
2020	9	0.78	0.82	0.99	0.69	0.9	0.78

Ghaznavi C, *et al. Sex Transm Infect* 2022;0:1–4. doi: 10.1136/sextrans-2021-055378

2020	10	0.82	0.79	0.97	0.67	0.88	0.75
2020	11	0.72	0.79	0.97	0.67	0.89	0.75
2020	12	0.76	0.76	0.94	0.65	0.87	0.72
2021	1	0.73	0.76	0.94	0.65	0.86	0.72
2021	2	0.64	0.76	0.94	0.65	0.87	0.72
2021	3	0.82	0.76	0.94	0.64	0.86	0.71
2021	4	0.71	0.76	0.94	0.65	0.87	0.72
2021	5	0.71	0.78	0.96	0.67	0.89	0.74
2021	6	0.79	0.79	0.97	0.67	0.9	0.75
2021	7	0.77	0.8	0.98	0.68	0.91	0.76
2021	8	0.76	0.78	0.97	0.67	0.89	0.74
2021	9	0.75	0.78	0.96	0.66	0.89	0.73
2021	10	0.79	0.76	0.95	0.65	0.87	0.72
2021	11	0.83	0.76	0.94	0.65	0.88	0.71
2021	12	0.81	0.74	0.92	0.63	0.85	0.69

PI = prediction interval

eTable 8. Observed and expected number of HIV/AIDS diagnoses with 95% prediction intervals, 2018-2021. Parameters: b = 5 and w = 3.

Year	Week	Observed	Predicted	95% PI upper bound	95% PI lower bound	Year	Week	Observed	Predicted	95% PI upper bound	95% PI lower bound
2018	1	3	13.43	24	8	2020	1	9	11.06	20	6
2018	2	11	12.72	23	7	2020	2	7	11.01	20	6
2018	3	13	12.12	22	7	2020	3	6	11.32	21	6
2018	4	15	13.13	23	8	2020	4	15	12.33	22	7
2018	5	14	13.51	24	8	2020	5	7	12.81	23	7
2018	6	22	13.86	24	8	2020	6	9	13.43	24	8
2018	7	11	14.85	26	9	2020	7	7	13.15	23	8
2018	8	16	14.36	25	9	2020	8	5	12.96	23	7
2018	9	13	14.35	25	9	2020	9	8	12.53	22	7
2018	10	13	14.06	24	8	2020	10	12	12.81	23	7
2018	11	15	14.21	25	8	2020	11	5	12.83	23	7
2018	12	17	14.68	25	9	2020	12	18	12.75	23	7
2018	13	10	14.39	25	9	2020	13	5	12.07	22	7
2018	14	13	13.27	23	8	2020	14	10	10.70	20	6
2018	15	10	12.38	22	7	2020	15	6	10.69	20	6
2018	16	14	12.75	22	7	2020	16	5	11.05	20	6
2018	17	13	13.72	24	8	2020	17	7	10.88	20	6
2018	18	3	14.53	25	9	2020	18	3	11.23	21	6
2018	19	15	14.62	25	9	2020	19	15	11.60	21	6
2018	20	22	15.26	26	9	2020	20	10	12.13	22	7
2018	21	10	15.82	27	10	2020	21	12	13.50	24	8
2018	22	22	17.57	29	11	2020	22	9	13.94	24	8
2018	23	15	17.71	29	12	2020	23	17	13.88	24	8
2018	24	16	17.91	30	12	2020	24	8	14.05	24	8
2018	25	17	17.56	29	11	2020	25	10	12.95	23	7
2018	26	15	16.67	28	11	2020	26	11	13.26	23	8
2018	27	13	15.86	27	10	2020	27	9	13.13	23	8
2018	28	17	15.56	26	10	2020	28	15	13.19	23	8
2018	29	6	14.88	25	9	2020	29	8	12.82	23	7
2018	30	22	14.47	25	9	2020	30	11	12.65	23	7
2018	31	16	14.45	25	9	2020	31	5	12.59	23	7
2018	32	24	14.85	25	9	2020	32	7	12.85	23	7
2018	33	15	15.41	26	10	2020	33	14	12.53	23	7
2018	34	17	15.81	27	10	2020	34	6	11.69	22	6

Ghaznavi C, *et al. Sex Transm Infect* 2022;0:1–4. doi: 10.1136/sextrans-2021-055378

2018	35	13	15.30	26	9	2020	35	11	11.38	21	6
2018	36	12	15.55	26	10	2020	36	8	11.09	21	6
2018	37	11	15.36	26	9	2020	37	14	10.97	20	6
2018	38	14	14.96	25	9	2020	38	7	11.13	21	6
2018	39	12	15.13	26	9	2020	39	10	11.18	21	6
2018	40	14	14.79	25	9	2020	40	15	10.56	20	5
2018	41	12	13.77	24	8	2020	41	15	10.77	20	6
2018	42	13	13.93	24	8	2020	42	8	10.61	20	6
2018	43	7	13.94	24	8	2020	43	8	10.44	20	5
2018	44	13	13.97	24	8	2020	44	12	10.30	20	5
2018	45	19	13.81	24	8	2020	45	16	10.35	20	5
2018	46	15	14.29	25	8	2020	46	10	10.88	20	6
2018	47	13	14.77	26	9	2020	47	7	11.34	21	6
2018	48	10	15.90	27	10	2020	48	14	10.88	20	6
2018	49	11	14.68	25	9	2020	49	12	9.85	19	5
2018	50	24	13.75	24	8	2020	50	11	9.68	19	5
2018	51	12	13.96	25	8	2020	51	11	9.43	18	5
2018	52	12	13.61	24	8	2020	52	2	8.99	18	4
2018	53	1	13.07	23	8	2021	1	2	8.61	17	4
2019	1	3	12.55	22	7	2021	2	6	8.37	17	4
2019	2	8	12.35	22	7	2021	3	12	8.17	16	4
2019	3	15	12.93	23	8	2021	4	8	9.15	18	4
2019	4	15	13.83	24	8	2021	5	7	9.29	18	5
2019	5	11	14.32	24	9	2021	6	9	9.61	18	5
2019	6	16	15.24	26	9	2021	7	3	9.65	18	5
2019	7	13	14.92	25	9	2021	8	3	9.45	18	5
2019	8	6	14.82	25	9	2021	9	4	9.38	18	5
2019	9	8	14.12	24	9	2021	10	13	9.52	18	5
2019	10	15	14.30	25	9	2021	11	15	9.53	18	5
2019	11	18	14.26	25	9	2021	12	16	9.64	18	5
2019	12	21	13.89	24	8	2021	13	12	9.22	18	4
2019	13	14	13.03	23	8	2021	14	7	8.20	17	4
2019	14	17	11.77	21	7	2021	15	9	8.10	16	4
2019	15	12	12.09	21	7	2021	16	13	8.27	16	4
2019	16	7	13.09	23	8	2021	17	7	8.30	16	4
2019	17	5	13.09	23	8	2021	18	4	8.60	17	4
2019	18	8	13.54	24	8	2021	19	9	8.93	18	4
2019	19	7	14.07	24	8	2021	20	13	9.55	19	5
2019	20	10	14.58	25	9	2021	21	11	10.36	19	5

Ghaznavi C, *et al. Sex Transm Infect* 2022;0:1–4. doi: 10.1136/sextrans-2021-055378

2019	21	16	16.47	27	11	2021	22	13	10.80	20	6
2019	22	10	16.69	28	11	2021	23	13	10.60	20	6
2019	23	21	16.44	27	10	2021	24	7	10.79	20	6
2019	24	13	16.72	28	11	2021	25	12	10.09	19	5
2019	25	17	15.54	26	10	2021	26	10	10.28	19	5
2019	26	12	15.23	26	9	2021	27	10	9.97	19	5
2019	27	10	15.15	26	9	2021	28	17	9.93	19	5
2019	28	8	14.87	26	9	2021	29	6	9.62	18	5
2019	29	16	14.52	25	9	2021	30	14	9.68	19	5
2019	30	19	14.66	25	9	2021	31	10	9.37	18	5
2019	31	18	14.81	25	9	2021	32	2	9.41	18	5
2019	32	9	15.20	26	9	2021	33	6	9.16	17	5
2019	33	8	15.12	26	9	2021	34	14	8.81	17	4
2019	34	9	14.54	25	9	2021	35	8	8.54	17	4
2019	35	10	14.38	25	9	2021	36	6	8.48	17	4
2019	36	12	13.99	24	8	2021	37	7	8.46	16	4
2019	37	12	13.65	24	8	2021	38	5	9.00	17	4
2019	38	13	13.94	24	8	2021	39	16	9.01	18	4
2019	39	10	13.95	25	8	2021	40	14	8.79	17	4
2019	40	7	13.09	23	8	2021	41	8	8.83	17	4
2019	41	10	13.63	24	8	2021	42	7	8.99	17	4
2019	42	12	13.72	24	8	2021	43	11	8.99	17	4
2019	43	13	13.42	24	8	2021	44	14	8.61	17	4
2019	44	15	13.20	24	8	2021	45	10	8.75	17	4
2019	45	11	13.34	24	8	2021	46	15	9.18	18	4
2019	46	15	13.92	24	8	2021	47	12	9.51	18	5
2019	47	11	14.43	25	9	2021	48	11	9.20	18	5
2019	48	17	13.43	24	8	2021	49	8	8.07	16	4
2019	49	14	12.28	22	7	2021	50	12	7.59	16	3
2019	50	16	12.37	23	7	2021	51	14	7.49	15	3
2019	51	20	11.93	22	7	2021	52	12	7.0	14	3
2019	52	1	11.70	21							

PI = prediction interval

eTable 9. Observed and expected number of syphilis diagnoses with 95% prediction intervals, 2018-2021. Parameters: b = 5 and w = 3.

Year	Week	Observed	Predicted	95% PI upper bound	95% PI lower bound	Year	Week	Observed	Predicted	95% PI upper bound	95% PI lower bound
2018	1	21	85.90	120	71	2020	1	66	87.08	131	65
2018	2	59	86.44	121	71	2020	2	75	84.36	127	63
2018	3	93	84.04	117	70	2020	3	72	86.15	129	65
2018	4	73	91.38	127	76	2020	4	88	95.85	141	74
2018	5	71	97.00	132	82	2020	5	57	101.20	149	78
2018	6	59	100.67	138	85	2020	6	51	102.12	150	79
2018	7	61	101.82	140	85	2020	7	53	98.90	146	76
2018	8	69	95.90	133	80	2020	8	45	99.00	146	76
2018	9	93	97.47	135	81	2020	9	49	101.12	147	78
2018	10	80	101.06	138	85	2020	10	60	100.86	148	77
2018	11	78	102.13	141	86	2020	11	44	99.38	146	76
2018	12	71	101.66	140	85	2020	12	58	96.17	142	73
2018	13	67	100.84	139	84	2020	13	35	93.82	139	71
2018	14	71	100.48	138	84	2020	14	47	86.51	128	65
2018	15	89	98.55	136	82	2020	15	45	89.65	134	68
2018	16	79	105.42	145	88	2020	16	50	91.66	137	69
2018	17	68	110.34	151	93	2020	17	39	92.93	138	70
2018	18	29	111.93	153	94	2020	18	21	95.48	141	73
2018	19	80	116.74	159	99	2020	19	75	95.67	142	72
2018	20	93	117.34	160	99	2020	20	68	98.37	145	75
2018	21	75	121.55	165	103	2020	21	75	108.92	157	85
2018	22	86	131.94	176	113	2020	22	78	111.11	160	87
2018	23	95	134.02	179	115	2020	23	66	110.34	158	86
2018	24	85	131.47	176	112	2020	24	97	108.82	157	85
2018	25	103	129.32	174	110	2020	25	72	102.44	149	79
2018	26	98	123.56	168	105	2020	26	76	101.36	147	78
2018	27	106	125.25	169	107	2020	27	64	97.08	144	73
2018	28	87	122.15	167	103	2020	28	55	93.02	139	70
2018	29	70	116.53	161	97	2020	29	33	86.88	130	65
2018	30	81	111.27	154	93	2020	30	64	87.62	131	65
2018	31	88	114.75	158	96	2020	31	36	90.29	133	68
2018	32	89	119.22	163	100	2020	32	45	93.78	139	71
2018	33	66	123.87	170	104	2020	33	56	92.20	137	69
2018	34	94	120.76	167	101	2020	34	45	88.42	132	66

Ghaznavi C, *et al. Sex Transm Infect* 2022;0:1–4. doi: 10.1136/sextrans-2021-055378

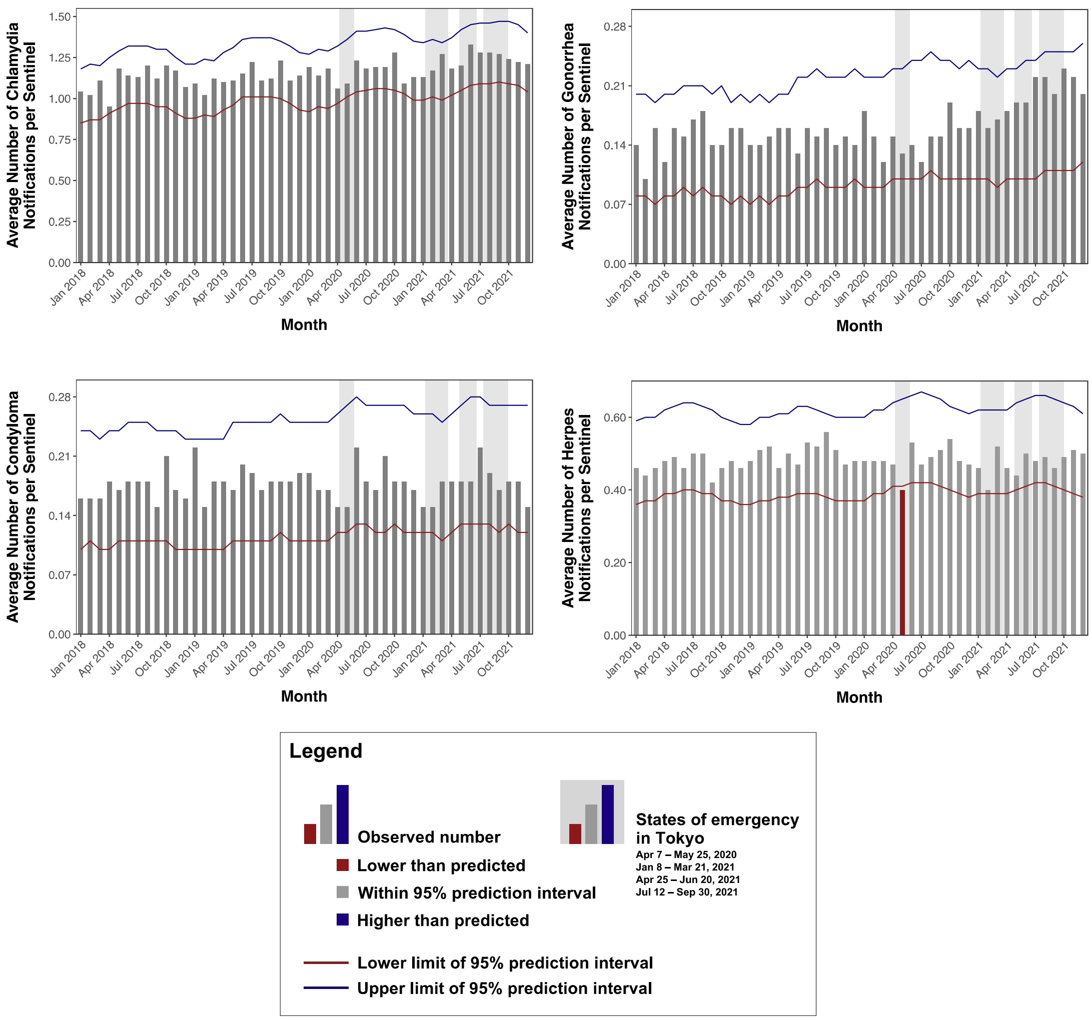
2018	35	82	116.82	162	97	2020	35	67	90.12	134	67
2018	36	91	122.58	168	103	2020	36	58	91.52	135	69
2018	37	81	122.01	167	103	2020	37	58	86.69	131	64
2018	38	62	115.73	161	96	2020	38	45	84.05	128	61
2018	39	88	113.62	158	94	2020	39	68	81.47	124	59
2018	40	81	110.46	154	91	2020	40	66	78.55	121	57
2018	41	74	107.31	150	89	2020	41	67	80.98	123	59
2018	42	96	112.72	156	94	2020	42	61	79.15	122	57
2018	43	84	109.30	153	90	2020	43	62	77.48	120	56
2018	44	76	108.33	153	89	2020	44	58	79.56	122	57
2018	45	97	110.49	156	90	2020	45	60	78.01	121	56
2018	46	87	109.87	156	90	2020	46	65	78.81	121	57
2018	47	77	109.85	155	90	2020	47	64	79.19	122	57
2018	48	98	113.22	160	92	2020	48	74	76.45	119	54
2018	49	79	106.30	153	86	2020	49	63	67.91	107	47
2018	50	97	99.23	143	80	2020	50	49	66.61	106	46
2018	51	79	99.72	144	80	2020	51	65	65.08	103	45
2018	52	64	99.66	143	80	2020	52	19	65.27	103	45
2018	53	6	101.55	146	81	2021	1	32	64.09	102	44
2019	1	58	101.33	146	81	2021	2	47	62.61	100	43
2019	2	61	98.61	142	79	2021	3	83	62.15	99	43
2019	3	86	102.87	147	83	2021	4	68	69.42	108	49
2019	4	62	110.43	156	90	2021	5	68	72.20	112	51
2019	5	66	115.71	163	94	2021	6	60	71.38	112	50
2019	6	69	115.62	164	94	2021	7	74	69.44	109	48
2019	7	94	110.53	157	89	2021	8	56	67.74	107	47
2019	8	102	111.21	158	90	2021	9	92	68.11	107	47
2019	9	88	113.25	159	92	2021	10	82	67.00	106	46
2019	10	92	114.13	162	93	2021	11	104	65.78	105	45
2019	11	62	114.86	163	93	2021	12	85	63.88	102	43
2019	12	80	112.07	159	91	2021	13	70	62.84	101	43
2019	13	64	110.62	157	89	2021	14	68	57.17	92	38
2019	14	70	105.33	150	85	2021	15	82	58.71	95	39
2019	15	85	110.77	157	89	2021	16	71	60.62	98	41
2019	16	71	116.20	164	94	2021	17	55	62.80	100	43
2019	17	13	117.52	165	96	2021	18	46	65.28	103	45
2019	18	60	121.21	170	99	2021	19	81	66.91	106	46
2019	19	69	122.36	171	100	2021	20	95	68.68	109	47
2019	20	78	126.40	176	104	2021	21	59	76.33	117	55

2019	21	91	138.46	189	115	2021	22	98	79.46	121	57
2019	22	103	140.78	192	117	2021	23	87	79.35	120	57
2019	23	92	139.35	190	116	2021	24	98	78.40	119	57
2019	24	82	138.20	189	115	2021	25	107	74.12	115	52
2019	25	97	132.26	182	109	2021	26	73	72.02	111	51
2019	26	78	131.85	181	109	2021	27	109	69.90	109	49
2019	27	70	128.08	180	104	2021	28	107	65.50	104	45
2019	28	52	121.87	173	98	2021	29	78	60.53	97	41
2019	29	85	115.03	165	92	2021	30	106	60.22	96	41
2019	30	62	116.32	166	93	2021	31	78	61.30	97	42
2019	31	69	118.23	167	95	2021	32	74	63.79	101	44
2019	32	48	123.22	175	99	2021	33	98	64.03	102	44
2019	33	90	120.56	172	97	2021	34	81	62.22	99	42
2019	34	99	115.97	166	92	2021	35	102	63.90	101	44
2019	35	73	120.12	170	97	2021	36	115	66.68	103	47
2019	36	81	120.45	170	97	2021	37	109	64.93	102	45
2019	37	59	114.41	165	91	2021	38	66	64.64	103	44
2019	38	71	112.71	163	89	2021	39	124	63.34	101	43
2019	39	86	109.57	158	87	2021	40	113	62.21	99	42
2019	40	54	106.07	153	84	2021	41	109	64.29	100	45
2019	41	65	111.20	159	89	2021	42	128	64.37	102	44
2019	42	59	108.65	157	86	2021	43	130	63.37	101	43
2019	43	74	106.95	155	84	2021	44	105	64.98	103	44
2019	44	50	108.85	159	85	2021	45	128	64.65	102	44
2019	45	76	106.73	157	83	2021	46	119	65.41	102	45
2019	46	77	106.87	156	83	2021	47	91	65.73	104	45
2019	47	80	108.96	160	85	2021	48	121	64.34	103	44
2019	48	72	102.45	152	79	2021	49	115	57.14	93	38
2019	49	70	92.73	139	70	2021	50	138	55.42	91	36
2019	50	65	91.64	137	69	2021	51	169	54.11	88	36
2019	51	75	88.92	133	67	2021	52	68	54.87	90	36
2019	52	5	89.97	135	68						

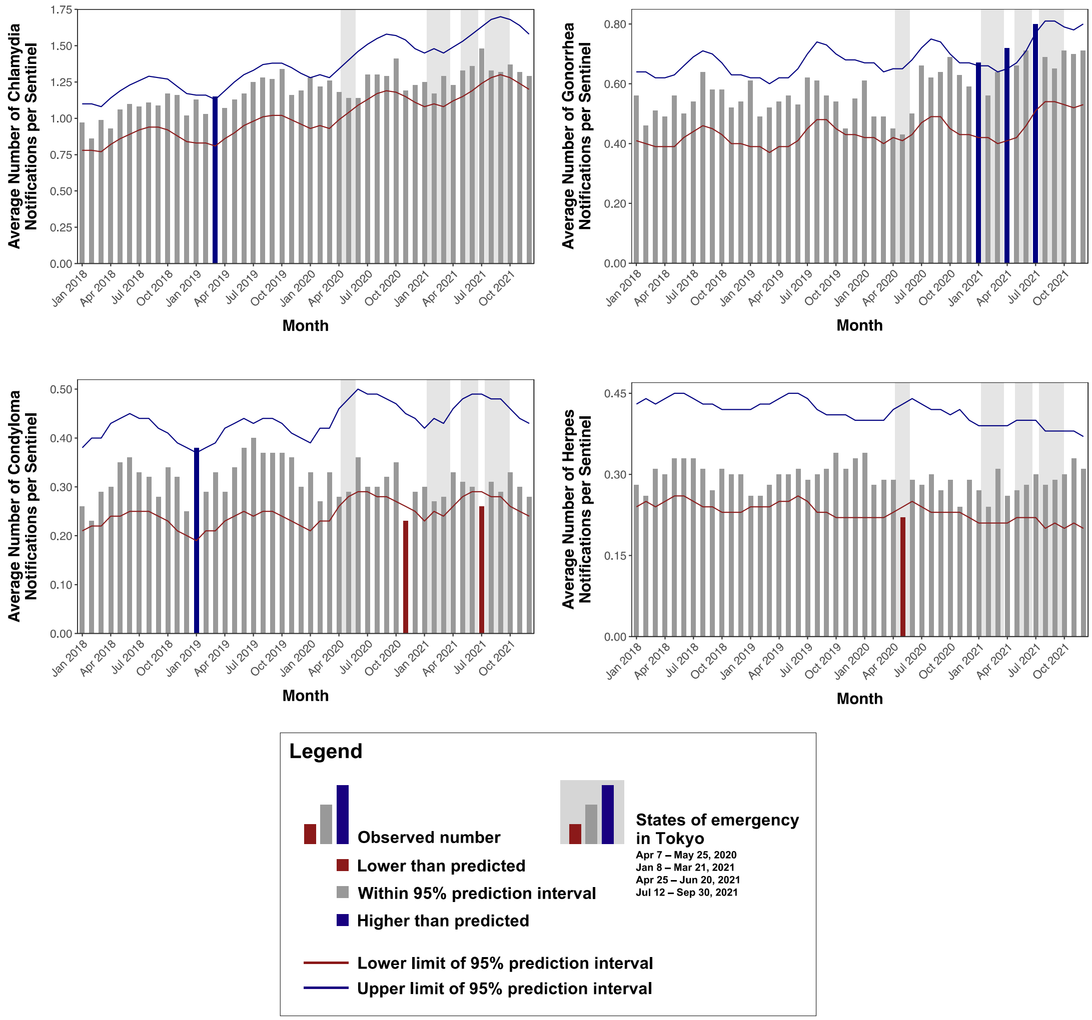
PI = prediction interval

Ghaznavi C, *et al. Sex Transm Infect* 2022;0:1–4. doi: 10.1136/sextrans-2021-055378

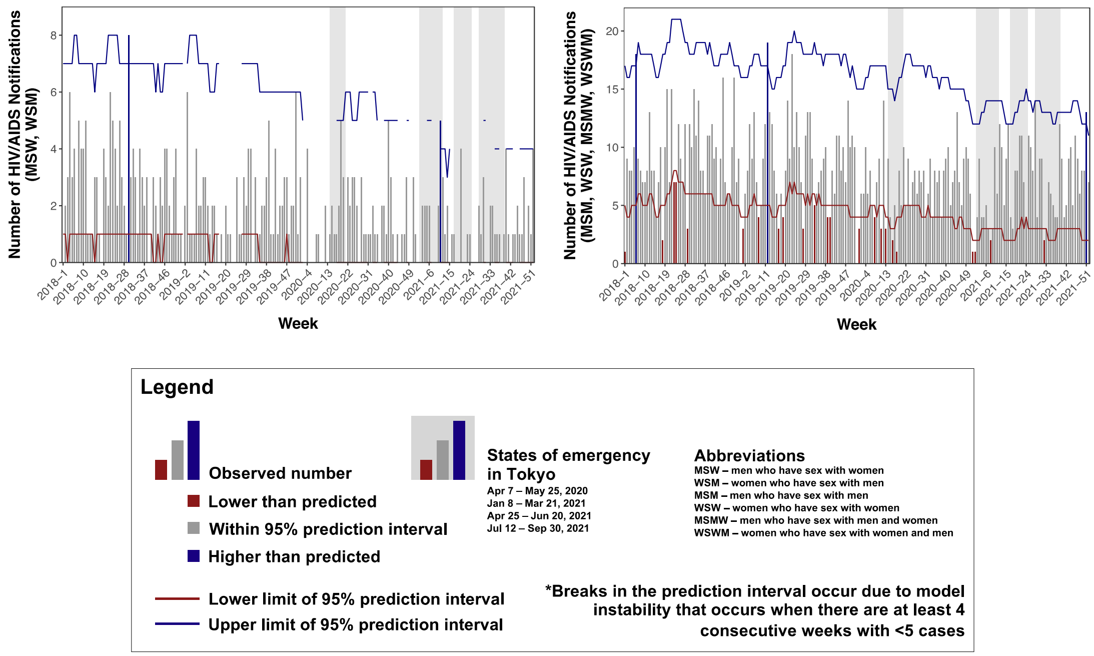
eFigure 1. Observed and expected number of chlamydia, gonorrhea, condyloma, and herpes diagnoses per sentinel institution with 95% prediction intervals, 2018-2021, women only. Parameters: b = 5 and w = 1.



eFigure 2. Observed and expected number of chlamydia, gonorrhea, condyloma, and herpes diagnoses per sentinel institution with 95% prediction intervals, 2018-2021, men only. Parameters: b = 5 and w = 1.

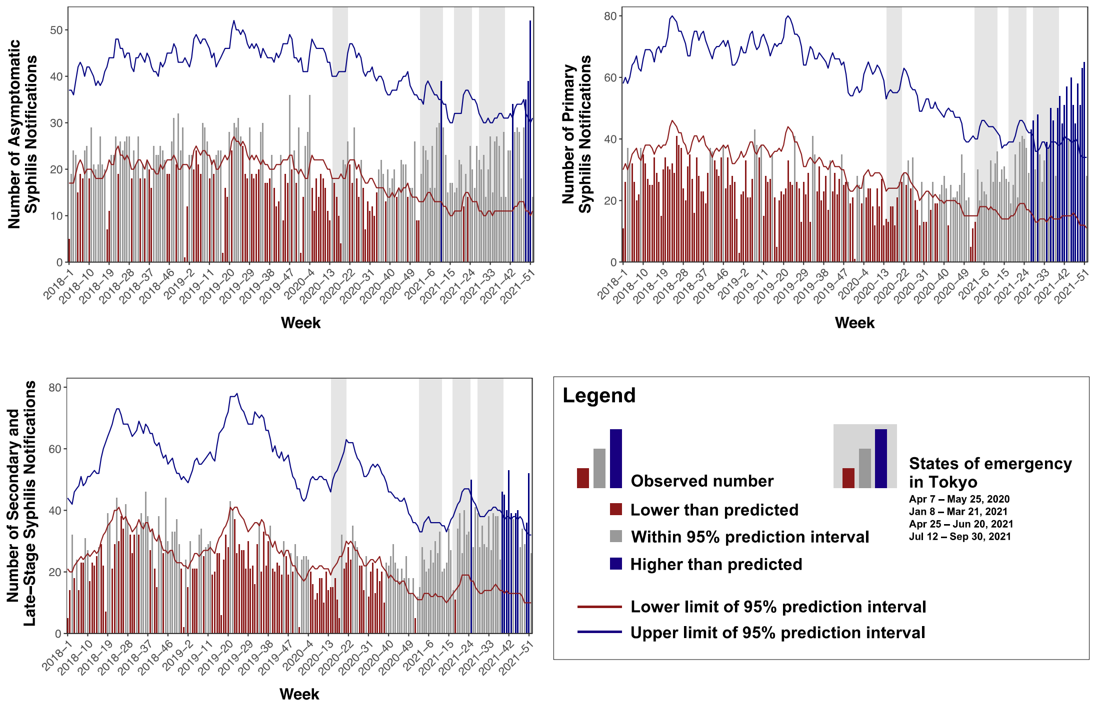


eFigure 3. Observed and expected number of HIV/AIDS diagnoses with 95% prediction intervals, 2018-2021, stratified by sex of sexual partners. Parameters: b = 5 and w = 3.



Ghaznavi C, *et al. Sex Transm Infect* 2022;0:1–4. doi: 10.1136/sextrans-2021-055378

eFigure 4. Observed and expected number of syphilis diagnoses with 95% prediction intervals, 2018-2021, stratified by stage at diagnosis. Parameters: b = 5 and w = 3.



Ghaznavi C, *et al. Sex Transm Infect* 2022;0:1–4. doi: 10.1136/sextrans-2021-055378

References

1. Infectious Disease Surveillance Center. *The National Epidemiological Surveillance of Infectious Diseases in compliance with the enforcement of the new Infectious Diseases Control Law*. Vol. 20(4). 1999. http://idsc.nih.go.jp/iasr/20/230/de2309.html

2. Kawado M, Hashimoto S, Ohta A, et al. Estimating nationwide cases of sexually transmitted diseases in 2015 from sentinel surveillance data in Japan. *BMC Infect Dis*. Jan 28 2020;20(1):77. doi:10.1186/s12879-020-4801-x

3. National Institute for Infectious Disease. *Implementation Manual for the National Epidemiological Surveillance of Infectious Diseases Program*. https://www.mhlw.go.jp/content/10900000/000488981.pdf

4. National Institute for Infectious Disease. *Syphilis, Japan*. Vol. 41. 2020. *Infectious Agents Surveillance Report*. https://www.niid.go.jp/niid/en/a-h7n9-en/865-iasr/9542-479te.html

5. National Institute for Infectious Disease. *Reporting Criteria of Acquired immunodeficiency syndrome Infectious Agents Surveillance Report*. https://www.niid.go.jp/niid/images/iasr/34/403/de4031.pdf

6. Ministry of Health Labour and Welfare. *Genital Chlamydia [Seiki kuramijia kansenshou, in Japanese]*. https://www.mhlw.go.jp/bunya/kenkou/kekkaku-kansenshou11/01-05-31.html

7. Ministry of Health Labour and Welfare. *Gonorrhea [Rinkin kansenshou, in Japanese]*. https://www.mhlw.go.jp/bunya/kenkou/kekkaku-kansenshou11/01-05-34.html

8. Ministry of Health Labour and Welfare. *Condyloma Acuminata [Seikei konjirooma, in Japanese)*. https://www.mhlw.go.jp/bunya/kenkou/kekkaku-kansenshou11/01-05-33.html

9. Ministry of Health Labour and Welfare. *Genital Herpes [Seiki herupesu uirusu kansenshou, in Japanese]*. https://www.mhlw.go.jp/bunya/kenkou/kekkaku-kansenshou11/01-05-32.html

10. Yoneoka D, Kawashima T, Makiyama K, Tanoue Y, Nomura S, Eguchi A. Geographically weighted generalized Farrington algorithm for rapid outbreak detection over short data accumulation periods. *Stat Med*. Dec 10 2021;40(28):6277-6294. doi:10.1002/sim.9182

11. Noufaily A, Enki DG, Farrington P, Garthwaite P, Andrews N, Charlett A. An improved algorithm for outbreak detection in multiple surveillance systems. *Stat Med*. Mar 30 2013;32(7):1206-22. doi:10.1002/sim.5595

12. Farrington CP, Andrews NJ, Beale AD, Catchpole MA. A statistical algorithm for the early detection of outbreaks of infectious disease. *J Roy Stat Soc a Sta*. 1996;159:547-563. doi:Doi 10.2307/2983331