Analysis of Adverse Event Rates

In this section we compare the rate of Global and US reports of post-vaccination adverse events (AE), for the COVID-19 vaccine and the Flu vaccine. For each of the AE, we compare three relevant rates of reporting: i) the rate of reported AE per unit time, ii) the rate of reported AE per dose given, and iii) the rate of reported AE per person vaccinated.

In Table 0 below, we report the period used for normalizing the data, Global values are reported on the top line, US value on the second line.

Vaccine	Time Tracked	Billion Doses Given	Billion People Vaccinated
COVID-19	18 Months	12.07 0.596	5.23 0.260
Flu	281 Months	66 (estimated) 3.3	9.23 (simulated) 0.388 (simulated)

Table 0

Counting the number of people vaccinated with the COVID-19 vaccine is straightforward because there has only been one worldwide attempt at vaccination and the data has been tracked from day one. The Flu vaccine is harder because individuals are not tracked and there are yearly seasons where an individual may receive a subsequent vaccination each season. We run a Monte Carlo simulation to estimate the number of people since 1998 that have received at least one Flu vaccine in the US.

To allow simulation "burn in" for the stochastic nature of this experiment, we start in 1980 with a US population of 229,486,000 (reference: https://population.un.org/), each year a fraction of the total population is vaccinated (f_v), a fraction of the total population dies (f_d), and a new fraction of the population is born (f_b). By simulating the demographics change yearly, we can estimate the total number of people who have received at least one flu vaccine by 2022. We use the UN population data to estimate f_b and f_d each year (reference: https://population.un.org/) and the conditional probability of Flu vaccination from Kwong, et al. (reference: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC6961264/). Kwong reports that roughly 57% of the population in their study who receives a flu shot in one year repeats it a subsequet (33,234 out of 58,021) year. The CDC reports that approximately 50% of the population is vaccinated in any given year. We estimate $f_v = 0.57$ for previously vaccinated individuals and $f_v = 0.43$ for previously unvaccinated individuals, which will return the rough CDC approximation of 50% of the population being vaccinated any given year.

After running the simulation, the final tally for 2022 is a total US population of 289,107,000, with a total of 335,572,000 (116% of the current population) receiving at least one dose of the Flu vaccine since 1998. Our model does not account for migration into the US, and in 2022 the total population is 334,805,000, if we estimate the same fraction of 116% vaccinated since 1998, that results in roughly 388 million people in the US that have received at least one dose of flu vaccine. Using the same scaling factor for a world population of 7.95 billion, we get an estimate of 9.23 billion people worldwide who have received at least one dose of the flu vaccine since 1998. These are all rough estimates given the limited data available; however, even if these estimates are high by a factor of 2 (unlikely), the signals reported below are still significant.

Table 1 below shows the count of AE reported post vaccine in VAERS along with the mean rate of report over the time tracked, the mean rate of report per billion doses given, and the mean rate of report per billion people vaccinated. Report count and rates for the COVID-19 Vaccine are on the top line with the counts and rates for the Flu vaccine below them for each AE. The same data for global counts and rates is shown in Table 2.

Adverse Event	US Count of AE reports post Vaccine	US Rate of reported AE (count/Month)	US Rate of reported AE (count/billion doses)	US Rate of reported AE (count/billion people vaccinated)
Abnormal uterine bleeding (menstrual irregularity)	6352 54	353 0.192	10700 16.4	24400 139
Miscarriage	1232 259	68.4 0.922	2070 78.5	4740 668
Fetal chromosomal abnormalities	7 0	0.389 0.00	11.7 0.00	26.9 0.00
Fetal malformation	2 1	0.111 0.00356	3.35 0.303	7.69 2.58
Fetal cystic hygroma	5 0	0.278 0.00	8.39 0.00	19.2 0.00
Fetal cardiac disorders	10 2	0.556 0.00712	16.8 0.606	38.5 5.15
Fetal arrhythmia	3 0	0.167 0.00	5.03 0.00	11.5 0.00
Fetal cardiac arrest	3 0	0.167 0.00	5.03 0.00	11.5 0.00
Fetal vascular mal-perfusion	5 0	0.278 0.00	8.39 0.00	19.2 0.00
Fetal growth abnormalities	59 20	3.28 0.0712	99.0 6.06	227 51.5
Fetal abnormal surveillance	125 36	6.94 0.128	210 10.9	481 92.8
Fetal placental thrombosis	5 0	0.278 0.00	8.39 0.00	19.2 0.00
Fetal death (stillbirth)	168 42	9.33 0.149	282 12.7	646 108

Table 1

Adverse Event	Global Count of AE reports post Vaccine	Global Rate of reported AE (count/Month)	Global Rate of reported AE (count/billion doses)	Global Rate of reported AE (count/billion people vaccinated)
Abnormal uterine bleeding (menstrual irregularity)	12843 65	714 0.231	1060 0.985	2460 7.04
Miscarriage	3338 325	185 1.16	277 4.92	638 35.2
Fetal chromosomal abnormalities	10 0	0.556 0.00	0.829 0.00	1.91 0.00
Fetal malformation	22 2	1.22 0.00712	1.82 0.0303	4.21 0.217
Fetal cystic hygroma	8 0	0.444 0.00	0.663 0.00	1.53 0.00
Fetal cardiac disorders	18 2	1.00 0.00712	1.49 0.0303	3.44 0.217
Fetal arrhythmia	5 0	0.278 0.00	0.414 0.00	0.956 0.00
Fetal cardiac arrest	20 0	1.11 0.00	1.66 0.00	3.82 0.00
Fetal vascular mal-perfusion	12 0	0.667 0.00	0.994 0.00	2.29 0.00
Fetal growth abnormalities	188 24	10.4 0.0854	15.6 0.364	35.9 2.60
Fetal abnormal surveillance	178 45	9.89 0.160	14.7 0.682	34.0 4.88
Fetal placental thrombosis	6 0	0.333 0.00	0.497 0.00	1.15 0.00
Fetal death (stillbirth)	402 64	22.3 0.228	33.3 0.970	76.9 6.93

Table 2

For all AE, the rates of reports post COVID-19 vaccine are higher than the Flu vaccine across all three normalization methods: by unit time, by dose given, and by person vaccinated. We proceed with two analyses below: 1) compute the p-value to determine if the AE report rates are statistically different between the two vaccines, and 2) compute the relative rate and 95% CI of AE reports after the COVID-19 vaccine versus the Flu vaccine. That is, we answer the questions: 1) “Are the rate of AE reports post COVID-19 vaccine (statistically) different than the rates of report post

Flu vaccine?" and 2) "How much more frequently is an AE reported after the COVID-19 vaccine than after the Flu vaccine?"

Statistical Significance

We treat each AE report as discrete independent events occurring at the mean rate specified in the tables 1 and 2 which we model as a Poisson distribution. Given two rates r_1 and r_2 over a period, P, we perform a Poisson E-test [reference: https://userweb.ucs.louisiana.edu/~kxk4695/JSPI-04.pdf] to compute the p-value. The E-test is used for Poisson statistics analogous to the traditional t-test used for Gaussian statistics. The p-value is interpreted in the same way: the probability that the observed events came from the same probability distribution. Or stated another way: the probability that the means (in this case rates) are same by random chance.

We use the rates in table 1 and 2 above and normalize the event counts over each period, P: the 18-month-, 12 billion-dose-, or XX billion-people-vaccinated-window and report the p-values below in Table 3. Where there is sufficient data, the p-values are small, and where 0.0 is reported, it was too small to represent as a double precision floating point number in our E-test function [reference: https://github.com/nolanbconaway/poisson-etest].

Estimating Relative Reporting Rates

For the rates that are statically different ($p < 0.05$) and have non-zero counts in the reporting period, we compute ratio of rates of AE reports for each vaccine. That is, we compute how much more often a post COVID-19 vaccination AE is reported compared to post Flu vaccination. Consider a case were Event A is reported at a rate of 100 per month and Event B is reported at a rate of 10 per month. The naïve approach is to simply state that Event A is reported $\frac{100/month}{10/month} = 10$ times as often as Event B. However, events do not occur at uniform frequency, they occur at frequencies described by the Poisson distribution. We proceed by computing the ratio distribution, R, which is the distribution of the ratio of two different Poisson distributions. That is, given two Poisson distributions, $Poisson(r_1)$ and $Poisson(r_2)$, we aim to compute the ratio distribution, R, which represents the probability distribution of the ratio of the distribution of events.

$$R(r_1, r_2) = \frac{Poisson(r_1)}{Poisson(r_2)}$$

We estimate the shape of R for each AE and period, P, by performing Monte Carlo simulations. We draw 1,000,000 random samples from Poisson distributions with rates r_1 and r_2 resulting in a sample of paired event counts n_1 and n_2 , respectively, over the observation window P .

$$n_i \leftarrow Poisson(r_i)$$

That is, we create a set of 1,000,000 tuples of event counts $\{(n_1, n_2)_1, (n_1, n_2)_2, \ldots, (n_1, n_2)_{1000000}\}$ drawn from the two Poisson distributions. The ratio distribution, R, is built up from the ratio of the draws of each pair of n_1 and n_2

$$R(r_1, r_2) = \left\{ \left(\frac{n_1}{n_2}\right)_1, \left(\frac{n_1}{n_2}\right)_2, \ldots, \left(\frac{n_1}{n_2}\right)_{1000000} \right\}$$

The mean of R is is the expectation value for the ratio of the two Poisson distributions and the empirically-derived quantile function of R is used to estimate the 95% CI of the mean. All computed values have converged to a precision of 1% or better. For AE that are reported infrequently post Flu vaccine there is finite probability that n_2 is zero resulting in R being undefined. To mitigate this problem, we use the zero-truncated Poisson distribution [reference: https://www.jstor.org/stable/2527552] and only count instances of non-zero n_2 draws. This approach skews the R distribution to the left [reference: https://epubs.siam.org/doi/10.1137/0134043] and makes the AE rates for the COVID-19 vaccine actually look better. That is, in these cases, the AE rate is actually a lower bound.

We did these analyses using a custom-written Python script, and will make it available upon request.

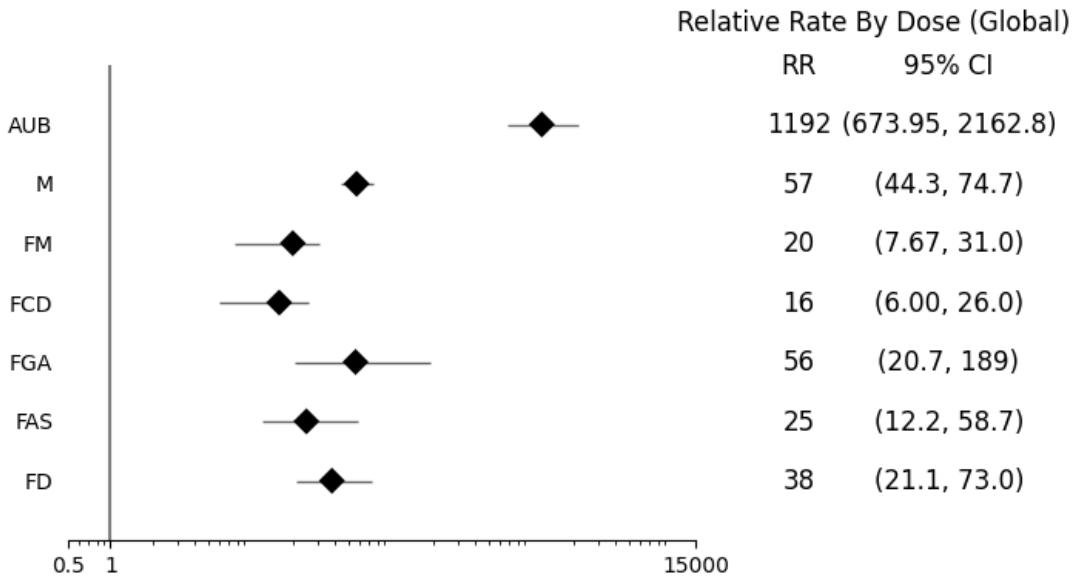
We report in Table 3 below the relative rate of post COVID-19 vaccine AE reports to post Flu vaccine AE report. Global values are the top line and US values are in the bottom line for each AE. A relative rate greater than 1 implies that there are more post COVID-19 vaccine AE reports than post Flu vaccine AE report. According to CDC's Standard Operating Procedures for COVID-19 [reference: https://www.cdc.gov/vaccinesafety/pdf/VAERS-v2-SOP.pdf] when doing a Proportional Reporting Ratio (PRR) analysis (which is analogous to the analysis presented here in this paper), a 2x increase in reporting is a sufficient signal to be concerned.

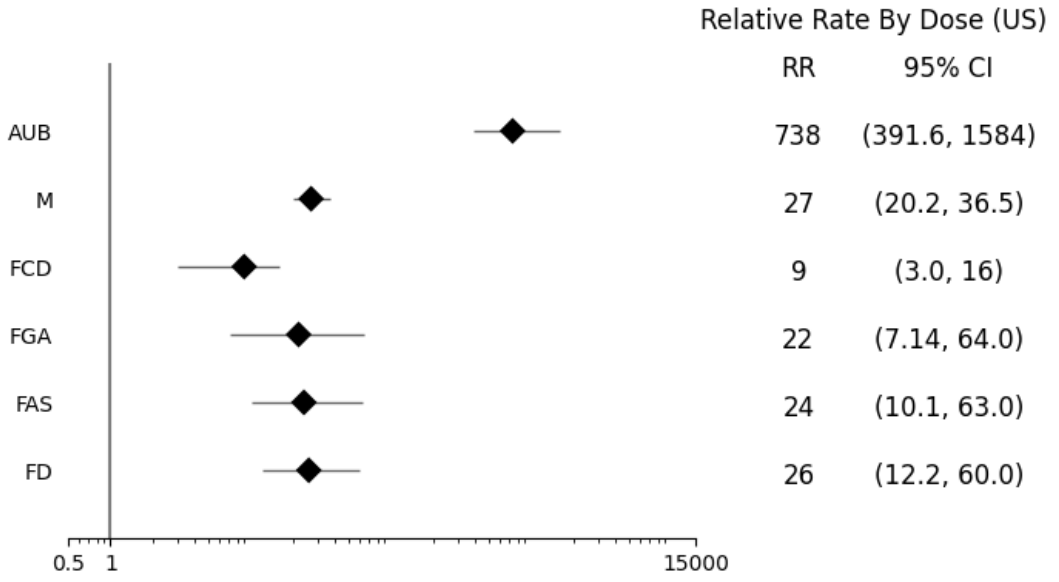
Adverse Event	**Relative Rate (by time)**	**Relative Rate (by dose)**	**Relative Rate (by person vaccinated)**
Abnormal uterine bleeding (menstrual irregularity)	4059 [1440.6-12878] p=0.0 2420 [809.38-6413.0] p=0.0	1192 [673.95-2162.8] p=0.0 738 [391.6-1584] p=0.0	359 [261.1-506.8] p=0.0 181 [131.1-255.1] p=0.0
Miscarriage	169 [110.3-272.7] p=0.0 79 [49.0-136] p=0.0	57 [44.3-74.7] p=0.0 27 [20.2-36.5] p=0.0	18 [15.7-21.2] p=0.0 7 [6.1-8.4] p=0.0
Fetal chromosomal abnormalities	p=0.00058 p=0.0048	p=0.00058 p=0.0048	p=0.00058 p=0.0048
Fetal malformation	21 [10.0-31.0] $p=1.9x10^{-07}$ p=0.20	20 [7.67-31.0] $p=1.9x10^{-07}$ p=0.20	16 [5.00-30.0] $p=2.1x10^{-06}$ p=0.20
Fetal cystic hygroma	p=0.0024 p=0.020	p=0.0024 p=0.020	p=0.0024 p=0.020
Fetal cardiac disorders	17 [8.00-27.0] $p=2.6x10^{-06}$ 10 [4.00-17.0] p=0.00058	16 [6.00-26.0] $p=2.6x10^{-06}$ 9 [3.0-16] p=0.00058	13 [4.00-25.0] $p=2.7x10^{-05}$ 7 [1.7-15] p=0.0047
Fetal arrhythmia	p=0.020 p=0.088	p=0.020 p=0.088	p=0.020 p=0.088
Fetal cardiac arrest	$p=6.9x10^{-07}$ p=0.088	$p=6.9x10^{-07}$ p=0.088	$p=6.9x10^{-07}$ p=0.088
Fetal vascular mal-perfusion	p=0.00015 p=0.020	p=0.00015 p=0.020	p=0.00015 p=0.020
Fetal growth abnormalities	124 [40.75-210.0] p=0.0 42 [13.5-72.0] p=0.0	56 [20.7-189] p=0.0 22 [7.14-64.0] p=0.0	15 [8.60-27.6] p=0.0 5 [2.6-9.1] $p=1.7x10^{-08}$

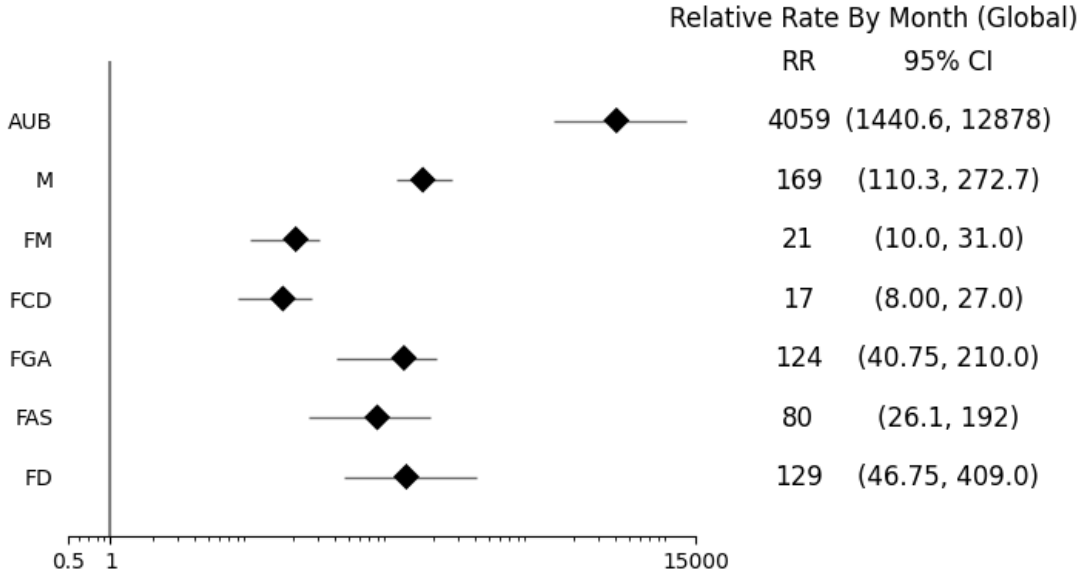
Adverse Event	Relative Rate (by time)	Relative Rate (by dose)	Relative Rate (by person vaccinated)
Fetal abnormal surveillance	80 [26.1-192] p=0.0 66 [21.0-140] p=0.0	25 [12.2-58.7] p=0.0 24 [10.1-63.0] p=0.0	7 [4.8-11] p=0.0 5 [3.5-8.6] p=0.0
Fetal placental thrombosis	p=0.0096 p=0.020	p=0.0096 p=0.020	p=0.0096 p=0.020
Fetal death (stillbirth)	129 [46.75-409.0] p=0.0 79 [25.7-183] p=0.0	38 [21.1-73.0] p=0.0 26 [12.2-60.0] p=0.0	11 [8.14-16.3] p=0.0 6 [4.1-9.4] p=0.0

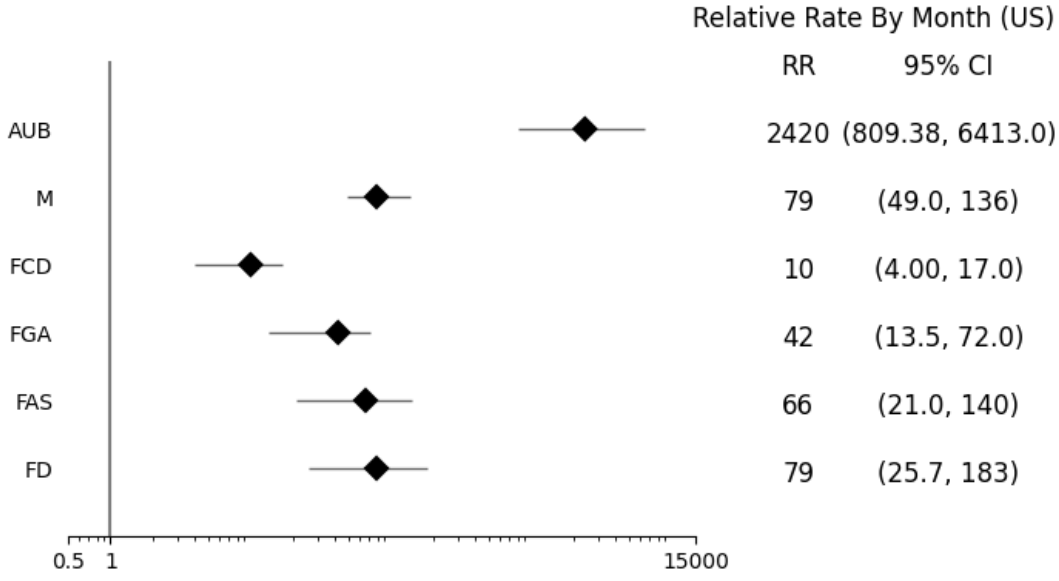
Table 3

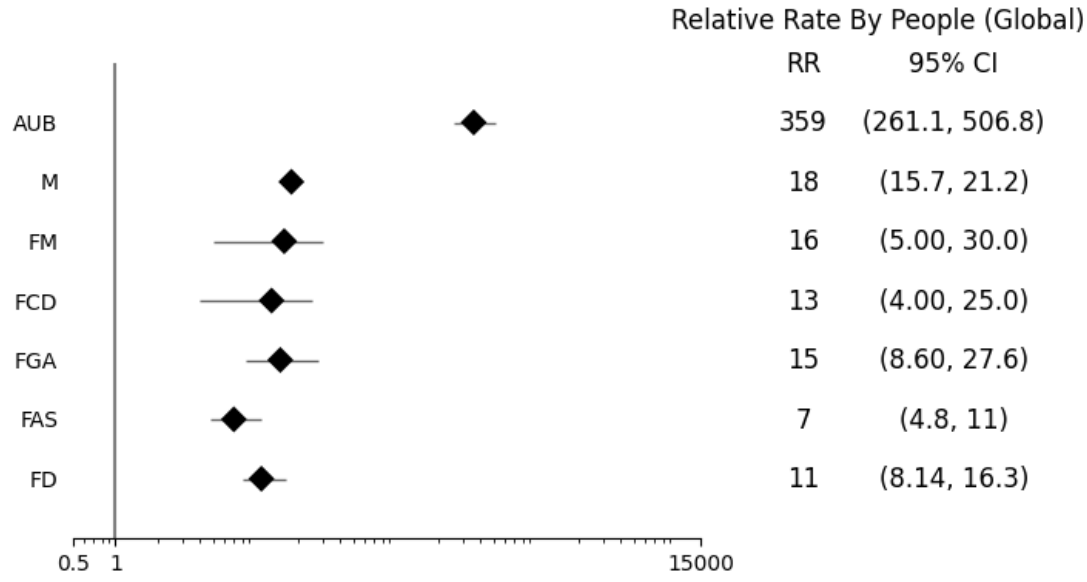
In the Figures below we show the US and Global relative rates of the reports of AE after the COVID-19 vaccine versus the Flu vaccine for the rates of AE by unit time, by dose given, and by person vaccinated. A value greater than 1 implies that the AE is reported more frequently after the COVID-19 vaccine than after the Flu vaccine. Note the log scale spanning multiple orders of magnitude indicating a large effect across many different AE - all (much) greater than 1.

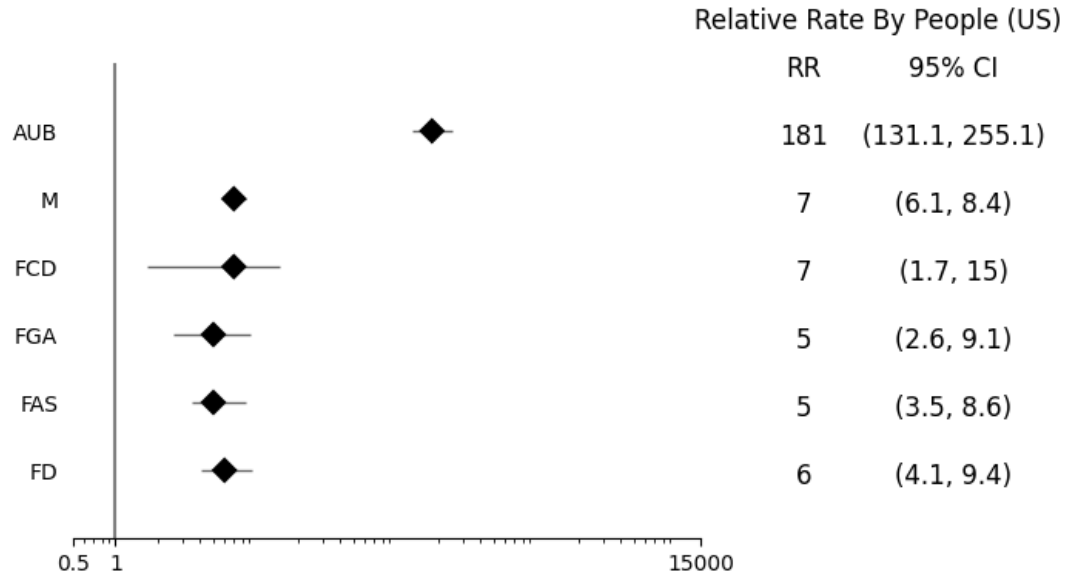



Relative Rate By Dose (US)
RR
95% CI
AUB
738
(391.6, 1584)
M
27
(20.2, 36.5)
FCD
9
(3.0, 16)
FGA
22
(7.14, 64.0)
FAS
24
(10.1, 63.0)
FD
26
(12.2, 60.0)
0.5
1
15000


Relative Rate By Month (Global)
RR
95% CI
AUB
4059
(1440.6, 12878)
M
169
(110.3, 272.7)
FM
21
(10.0, 31.0)
FCD
17
(8.00, 27.0)
FGA
124
(40.75, 210.0)
FAS
80
(26.1, 192)
FD
129
(46.75, 409.0)
0.5
1
15000


Relative Rate By Month (US)
RR
95% CI
AUB
2420
(809.38, 6413.0)
M
79
(49.0, 136)
FCD
10
(4.00, 17.0)
FGA
42
(13.5, 72.0)
FAS
66
(21.0, 140)
FD
79
(25.7, 183)
0.5
1
15000





Log

Output log from analysis code

```
******************************
***** Dose (US) *****
[('Abnormal uterine bleeding (menstrual irregularity)', 'AUB', 6352, 54),
('Miscarriage', 'M', 1232, 259), ('Fetal chromosomal abnormalities', 'FCM', 7, 0),
('Fetal malformation', 'FM', 2, 1), ('Fetal cystic hygroma', 'FCM', 5, 0), ('Fetal
cardiac disorders', 'FCD', 10, 2), ('Fetal arrhythmia', 'FA', 3, 0), ('Fetal
cardiac arrest', 'FCA', 3, 0), ('Fetal vascular mal-perfusion', 'FVMP', 5, 0),
('Fetal growth abnormalities', 'FGA', 59, 20), ('Fetal abnormal surveillance',
'FAS', 125, 36), ('Fetal placental thrombosis', 'FPT', 5, 0), ('Fetal death
(stillbirth)', 'FD', 168, 42)]
cperiod= 0.59623
cperiod= 3.3
******************************
```

```
** RATES **
Abnormal uterine bleeding (menstrual irregularity)        6352 10653.6068     54
16.3636
Miscarriage                                               1232  2066.3167    259
78.4848
Fetal chromosomal abnormalities                              7    11.7404      0
  0.0000
Fetal malformation                                           2     3.3544      1
  0.3030
Fetal cystic hygroma                                         5     8.3860      0
  0.0000
Fetal cardiac disorders                                     10    16.7721      2
  0.6061
Fetal arrhythmia                                             3     5.0316      0
  0.0000
Fetal cardiac arrest                                         3     5.0316      0
  0.0000
Fetal vascular mal-perfusion                                 5     8.3860      0
  0.0000
Fetal growth abnormalities                                  59    98.9551     20
  6.0606
Fetal abnormal surveillance                                125   209.6506     36
10.9091
Fetal placental thrombosis                                   5     8.3860      0
  0.0000
Fetal death (stillbirth)                                   168   281.7705     42
12.7273
******************************

** P VALUES **
Abnormal uterine bleeding (menstrual irregularity)      0.000e+00
Miscarriage                                             0.000e+00
Fetal chromosomal abnormalities                         4.759e-03
Fetal malformation                                      1.973e-01
Fetal cystic hygroma                                    1.976e-02
Fetal cardiac disorders                                 5.781e-04
Fetal arrhythmia                                        8.838e-02
Fetal cardiac arrest                                    8.838e-02
Fetal vascular mal-perfusion                            1.976e-02
Fetal growth abnormalities                              0.000e+00
Fetal abnormal surveillance                             0.000e+00
Fetal placental thrombosis                              1.976e-02
Fetal death (stillbirth)                                0.000e+00
******************************

** RELATIVE RATES **
Abnormal uterine bleeding (menstrual irregularity)        738.1339   391.6250
1583.5000
Miscarriage                                                26.9146    20.1833
36.5294
```

```
Fetal chromosomal abnormalities                              0.0000     0.0000
0.0000
Fetal malformation                                           1.9072     0.0000
5.0000
Fetal cystic hygroma                                         0.0000     0.0000
0.0000
Fetal cardiac disorders                                      9.1187     3.0000
16.0000
Fetal arrhythmia                                             0.0000     0.0000
0.0000
Fetal cardiac arrest                                         0.0000     0.0000
0.0000
Fetal vascular mal-perfusion                                 0.0000     0.0000
0.0000
Fetal growth abnormalities                                  21.5757     7.1429
64.0000
Fetal abnormal surveillance                                 23.5755    10.1111
63.0000
Fetal placental thrombosis                                   0.0000     0.0000
0.0000
Fetal death (stillbirth)                                    26.2801    12.2000
60.0000
******************************

******************************
***** Month (US) *****
[('Abnormal uterine bleeding (menstrual irregularity)', 'AUB', 6352, 54),
('Miscarriage', 'M', 1232, 259), ('Fetal chromosomal abnormalities', 'FCM', 7, 0),
('Fetal malformation', 'FM', 2, 1), ('Fetal cystic hygroma', 'FCM', 5, 0), ('Fetal
cardiac disorders', 'FCD', 10, 2), ('Fetal arrhythmia', 'FA', 3, 0), ('Fetal
cardiac arrest', 'FCA', 3, 0), ('Fetal vascular mal-perfusion', 'FVMP', 5, 0),
('Fetal growth abnormalities', 'FGA', 59, 20), ('Fetal abnormal surveillance',
'FAS', 125, 36), ('Fetal placental thrombosis', 'FPT', 5, 0), ('Fetal death
(stillbirth)', 'FD', 168, 42)]
cperiod= 18
cperiod= 281
******************************

** RATES **
Abnormal uterine bleeding (menstrual irregularity)        6352   352.8889     54
  0.1922
Miscarriage                                               1232    68.4444    259
  0.9217
Fetal chromosomal abnormalities                              7     0.3889      0
  0.0000
Fetal malformation                                           2     0.1111      1
  0.0036
Fetal cystic hygroma                                         5     0.2778      0
  0.0000
Fetal cardiac disorders                                     10     0.5556      2
  0.0071
```

```
Fetal arrhythmia                                    3     0.1667      0
  0.0000
Fetal cardiac arrest                                3     0.1667      0
  0.0000
Fetal vascular mal-perfusion                        5     0.2778      0
  0.0000
Fetal growth abnormalities                         59     3.2778     20
  0.0712
Fetal abnormal surveillance                       125     6.9444     36
  0.1281
Fetal placental thrombosis                          5     0.2778      0
  0.0000
Fetal death (stillbirth)                          168     9.3333     42
  0.1495
*****************************

** P VALUES **
Abnormal uterine bleeding (menstrual irregularity)      0.000e+00
Miscarriage                                             0.000e+00
Fetal chromosomal abnormalities                         4.759e-03
Fetal malformation                                      1.973e-01
Fetal cystic hygroma                                    1.976e-02
Fetal cardiac disorders                                 5.781e-04
Fetal arrhythmia                                        8.838e-02
Fetal cardiac arrest                                    8.838e-02
Fetal vascular mal-perfusion                            1.976e-02
Fetal growth abnormalities                              0.000e+00
Fetal abnormal surveillance                             0.000e+00
Fetal placental thrombosis                              1.976e-02
Fetal death (stillbirth)                                0.000e+00
*****************************

** RELATIVE RATES **
Abnormal uterine bleeding (menstrual irregularity)       2419.6343   809.3750
6413.0000
Miscarriage                                                79.4507    49.0000
136.3333
Fetal chromosomal abnormalities                             0.0000     0.0000
0.0000
Fetal malformation                                          1.9666     0.0000
5.0000
Fetal cystic hygroma                                        0.0000     0.0000
0.0000
Fetal cardiac disorders                                     9.6739     4.0000
17.0000
Fetal arrhythmia                                            0.0000     0.0000
0.0000
Fetal cardiac arrest                                        0.0000     0.0000
0.0000
Fetal vascular mal-perfusion                                0.0000     0.0000
0.0000
```

```
Fetal growth abnormalities                                  41.8154    13.5000
72.0000
Fetal abnormal surveillance                                 66.0033    21.0000
140.0000
Fetal placental thrombosis                                   0.0000     0.0000
0.0000
Fetal death (stillbirth)                                    79.3628    25.7143
183.0000
*****************************

*****************************
***** People (US) *****
[('Abnormal uterine bleeding (menstrual irregularity)', 'AUB', 6352, 54),
('Miscarriage', 'M', 1232, 259), ('Fetal chromosomal abnormalities', 'FCM', 7, 0),
('Fetal malformation', 'FM', 2, 1), ('Fetal cystic hygroma', 'FCM', 5, 0), ('Fetal
cardiac disorders', 'FCD', 10, 2), ('Fetal arrhythmia', 'FA', 3, 0), ('Fetal
cardiac arrest', 'FCA', 3, 0), ('Fetal vascular mal-perfusion', 'FVMP', 5, 0),
('Fetal growth abnormalities', 'FGA', 59, 20), ('Fetal abnormal surveillance',
'FAS', 125, 36), ('Fetal placental thrombosis', 'FPT', 5, 0), ('Fetal death
(stillbirth)', 'FD', 168, 42)]
cperiod= 0.25996
cperiod= 0.388
*****************************

** RATES **
Abnormal uterine bleeding (menstrual irregularity)        6352 24434.5284     54
139.1753
Miscarriage                                               1232  4739.1906    259
667.5258
Fetal chromosomal abnormalities                              7    26.9272      0
  0.0000
Fetal malformation                                           2     7.6935      1
  2.5773
Fetal cystic hygroma                                         5    19.2337      0
  0.0000
Fetal cardiac disorders                                     10    38.4675      2
  5.1546
Fetal arrhythmia                                             3    11.5402      0
  0.0000
Fetal cardiac arrest                                         3    11.5402      0
  0.0000
Fetal vascular mal-perfusion                                 5    19.2337      0
  0.0000
Fetal growth abnormalities                                  59   226.9580     20
51.5464
Fetal abnormal surveillance                                125   480.8432     36
92.7835
Fetal placental thrombosis                                   5    19.2337      0
  0.0000
Fetal death (stillbirth)                                   168   646.2533     42
108.2474
*****************************
```

```
** P VALUES **
Abnormal uterine bleeding (menstrual irregularity)      0.000e+00
Miscarriage                                             0.000e+00
Fetal chromosomal abnormalities                         4.759e-03
Fetal malformation                                      1.973e-01
Fetal cystic hygroma                                    1.976e-02
Fetal cardiac disorders                                 4.682e-03
Fetal arrhythmia                                        8.838e-02
Fetal cardiac arrest                                    8.838e-02
Fetal vascular mal-perfusion                            1.976e-02
Fetal growth abnormalities                              1.675e-08
Fetal abnormal surveillance                             0.000e+00
Fetal placental thrombosis                              1.976e-02
Fetal death (stillbirth)                                0.000e+00
******************************

** RELATIVE RATES **
Abnormal uterine bleeding (menstrual irregularity)        180.6712   131.0816
255.0800
Miscarriage                                                 7.1414     6.0950
8.3904
Fetal chromosomal abnormalities                             0.0000     0.0000
0.0000
Fetal malformation                                          1.6826     0.0000
5.0000
Fetal cystic hygroma                                        0.0000     0.0000
0.0000
Fetal cardiac disorders                                     6.9673     1.6667
15.0000
Fetal arrhythmia                                            0.0000     0.0000
0.0000
Fetal cardiac arrest                                        0.0000     0.0000
0.0000
Fetal vascular mal-perfusion                                0.0000     0.0000
0.0000
Fetal growth abnormalities                                  4.7970     2.5882
9.1111
Fetal abnormal surveillance                                 5.4187     3.4839
8.5625
Fetal placental thrombosis                                  0.0000     0.0000
0.0000
Fetal death (stillbirth)                                    6.1986     4.1429
9.3889
******************************

******************************
***** Dose (Global) *****
```

```
[('Abnormal uterine bleeding (menstrual irregularity)', 'AUB', 12843, 65),
('Miscarriage', 'M', 3338, 325), ('Fetal chromosomal abnormalities', 'FCM', 10,
0), ('Fetal malformation', 'FM', 22, 2), ('Fetal cystic hygroma', 'FCM', 8, 0),
('Fetal cardiac disorders', 'FCD', 18, 2), ('Fetal arrhythmia', 'FA', 5, 0),
('Fetal cardiac arrest', 'FCA', 20, 0), ('Fetal vascular mal-perfusion', 'FVMP',
12, 0), ('Fetal growth abnormalities', 'FGA', 188, 24), ('Fetal abnormal
surveillance', 'FAS', 178, 45), ('Fetal placental thrombosis', 'FPT', 6, 0),
('Fetal death (stillbirth)', 'FD', 402, 64)]
cperiod= 12.07
cperiod= 66
******************************

** RATES **
Abnormal uterine bleeding (menstrual irregularity)       12843  1064.0431     65
  0.9848
Miscarriage                                               3338   276.5534    325
  4.9242
Fetal chromosomal abnormalities                             10     0.8285      0
  0.0000
Fetal malformation                                          22     1.8227      2
  0.0303
Fetal cystic hygroma                                         8     0.6628      0
  0.0000
Fetal cardiac disorders                                     18     1.4913      2
  0.0303
Fetal arrhythmia                                             5     0.4143      0
  0.0000
Fetal cardiac arrest                                        20     1.6570      0
  0.0000
Fetal vascular mal-perfusion                                12     0.9942      0
  0.0000
Fetal growth abnormalities                                 188    15.5758     24
  0.3636
Fetal abnormal surveillance                                178    14.7473     45
  0.6818
Fetal placental thrombosis                                   6     0.4971      0
  0.0000
Fetal death (stillbirth)                                   402    33.3057     64
  0.9697
******************************

** P VALUES **
Abnormal uterine bleeding (menstrual irregularity)      0.000e+00
Miscarriage                                             0.000e+00
Fetal chromosomal abnormalities                         5.781e-04
Fetal malformation                                      1.855e-07
Fetal cystic hygroma                                    2.378e-03
Fetal cardiac disorders                                 2.618e-06
Fetal arrhythmia                                        1.976e-02
Fetal cardiac arrest                                    6.949e-07
Fetal vascular mal-perfusion                            1.473e-04
Fetal growth abnormalities                              0.000e+00
```

```
Fetal abnormal surveillance                                  0.000e+00
Fetal placental thrombosis                                   9.631e-03
Fetal death (stillbirth)                                     0.000e+00
******************************

** RELATIVE RATES **
Abnormal uterine bleeding (menstrual irregularity)       1191.8561   673.9474
2162.8333
Miscarriage                                                57.1421    44.3421
74.6591
Fetal chromosomal abnormalities                             0.0000     0.0000
0.0000
Fetal malformation                                         20.0241     7.6667
31.0000
Fetal cystic hygroma                                        0.0000     0.0000
0.0000
Fetal cardiac disorders                                    16.3892     6.0000
26.0000
Fetal arrhythmia                                            0.0000     0.0000
0.0000
Fetal cardiac arrest                                        0.0000     0.0000
0.0000
Fetal vascular mal-perfusion                                0.0000     0.0000
0.0000
Fetal growth abnormalities                                 56.1703    20.6667
189.0000
Fetal abnormal surveillance                                25.2665    12.1538
58.6667
Fetal placental thrombosis                                  0.0000     0.0000
0.0000
Fetal death (stillbirth)                                   37.9790    21.0526
73.0000
******************************

******************************
***** Month (Global) *****
[('Abnormal uterine bleeding (menstrual irregularity)', 'AUB', 12843, 65),
('Miscarriage', 'M', 3338, 325), ('Fetal chromosomal abnormalities', 'FCM', 10,
0), ('Fetal malformation', 'FM', 22, 2), ('Fetal cystic hygroma', 'FCM', 8, 0),
('Fetal cardiac disorders', 'FCD', 18, 2), ('Fetal arrhythmia', 'FA', 5, 0),
('Fetal cardiac arrest', 'FCA', 20, 0), ('Fetal vascular mal-perfusion', 'FVMP',
12, 0), ('Fetal growth abnormalities', 'FGA', 188, 24), ('Fetal abnormal
surveillance', 'FAS', 178, 45), ('Fetal placental thrombosis', 'FPT', 6, 0),
('Fetal death (stillbirth)', 'FD', 402, 64)]
cperiod= 18
cperiod= 281
******************************

** RATES **
Abnormal uterine bleeding (menstrual irregularity)       12843   713.5000     65
  0.2313
```

```
Miscarriage                                          3338   185.4444    325
  1.1566
Fetal chromosomal abnormalities                        10     0.5556      0
  0.0000
Fetal malformation                                     22     1.2222      2
  0.0071
Fetal cystic hygroma                                    8     0.4444      0
  0.0000
Fetal cardiac disorders                                18     1.0000      2
  0.0071
Fetal arrhythmia                                        5     0.2778      0
  0.0000
Fetal cardiac arrest                                   20     1.1111      0
  0.0000
Fetal vascular mal-perfusion                           12     0.6667      0
  0.0000
Fetal growth abnormalities                            188    10.4444     24
  0.0854
Fetal abnormal surveillance                           178     9.8889     45
  0.1601
Fetal placental thrombosis                              6     0.3333      0
  0.0000
Fetal death (stillbirth)                              402    22.3333     64
  0.2278
******************************

** P VALUES **
Abnormal uterine bleeding (menstrual irregularity)      0.000e+00
Miscarriage                                             0.000e+00
Fetal chromosomal abnormalities                         5.781e-04
Fetal malformation                                      1.855e-07
Fetal cystic hygroma                                    2.378e-03
Fetal cardiac disorders                                 2.618e-06
Fetal arrhythmia                                        1.976e-02
Fetal cardiac arrest                                    6.949e-07
Fetal vascular mal-perfusion                            1.473e-04
Fetal growth abnormalities                              0.000e+00
Fetal abnormal surveillance                             0.000e+00
Fetal placental thrombosis                              9.631e-03
Fetal death (stillbirth)                                0.000e+00
******************************

** RELATIVE RATES **
Abnormal uterine bleeding (menstrual irregularity)       4058.5702  1440.5556
12878.0000
Miscarriage                                               168.9349   110.2667
272.6667
Fetal chromosomal abnormalities                             0.0000     0.0000
0.0000
Fetal malformation                                         21.3257    10.0000
31.0000
```

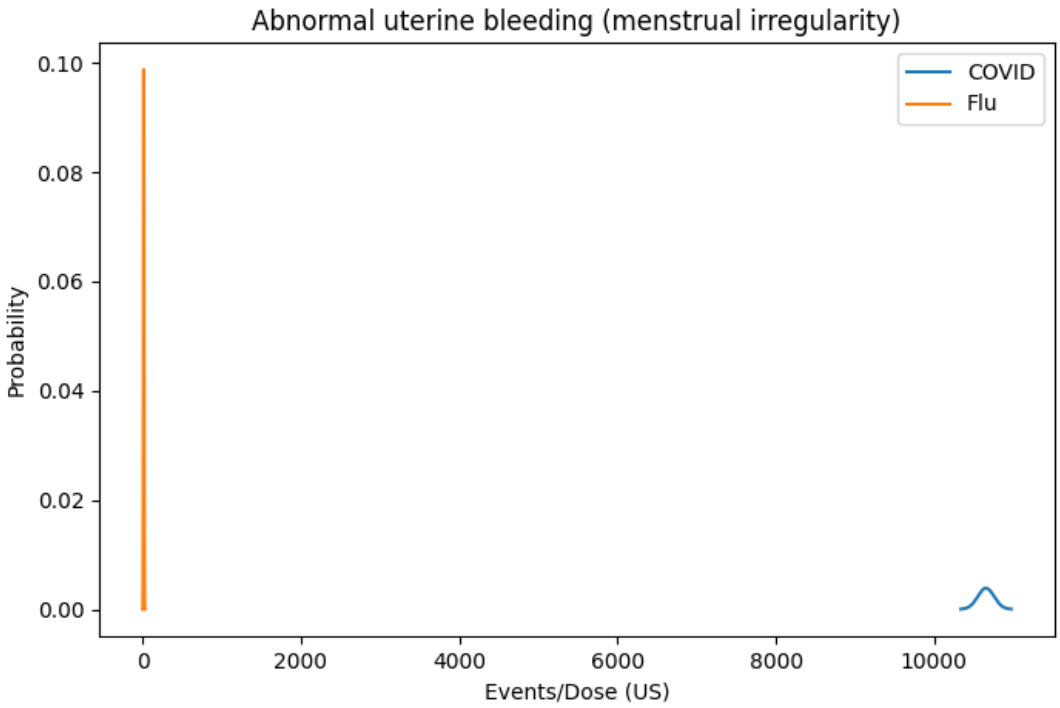
```
Fetal cystic hygroma                                    0.0000     0.0000
0.0000
Fetal cardiac disorders                                17.4372     8.0000
27.0000
Fetal arrhythmia                                        0.0000     0.0000
0.0000
Fetal cardiac arrest                                    0.0000     0.0000
0.0000
Fetal vascular mal-perfusion                            0.0000     0.0000
0.0000
Fetal growth abnormalities                            123.8733    40.7500
210.0000
Fetal abnormal surveillance                            79.6536    26.1429
192.0000
Fetal placental thrombosis                              0.0000     0.0000
0.0000
Fetal death (stillbirth)                              129.0915    46.7500
409.0000
******************************

******************************
***** People (Global) *****
[('Abnormal uterine bleeding (menstrual irregularity)', 'AUB', 12843, 65),
('Miscarriage', 'M', 3338, 325), ('Fetal chromosomal abnormalities', 'FCM', 10,
0), ('Fetal malformation', 'FM', 22, 2), ('Fetal cystic hygroma', 'FCM', 8, 0),
('Fetal cardiac disorders', 'FCD', 18, 2), ('Fetal arrhythmia', 'FA', 5, 0),
('Fetal cardiac arrest', 'FCA', 20, 0), ('Fetal vascular mal-perfusion', 'FVMP',
12, 0), ('Fetal growth abnormalities', 'FGA', 188, 24), ('Fetal abnormal
surveillance', 'FAS', 178, 45), ('Fetal placental thrombosis', 'FPT', 6, 0),
('Fetal death (stillbirth)', 'FD', 402, 64)]
cperiod= 5.23
cperiod= 9.23
******************************

** RATES **
Abnormal uterine bleeding (menstrual irregularity)       12843  2455.6405     65
  7.0423
Miscarriage                                               3338   638.2409    325
35.2113
Fetal chromosomal abnormalities                             10     1.9120      0
  0.0000
Fetal malformation                                          22     4.2065      2
  0.2167
Fetal cystic hygroma                                         8     1.5296      0
  0.0000
Fetal cardiac disorders                                     18     3.4417      2
  0.2167
Fetal arrhythmia                                             5     0.9560      0
  0.0000
Fetal cardiac arrest                                        20     3.8241      0
  0.0000
```

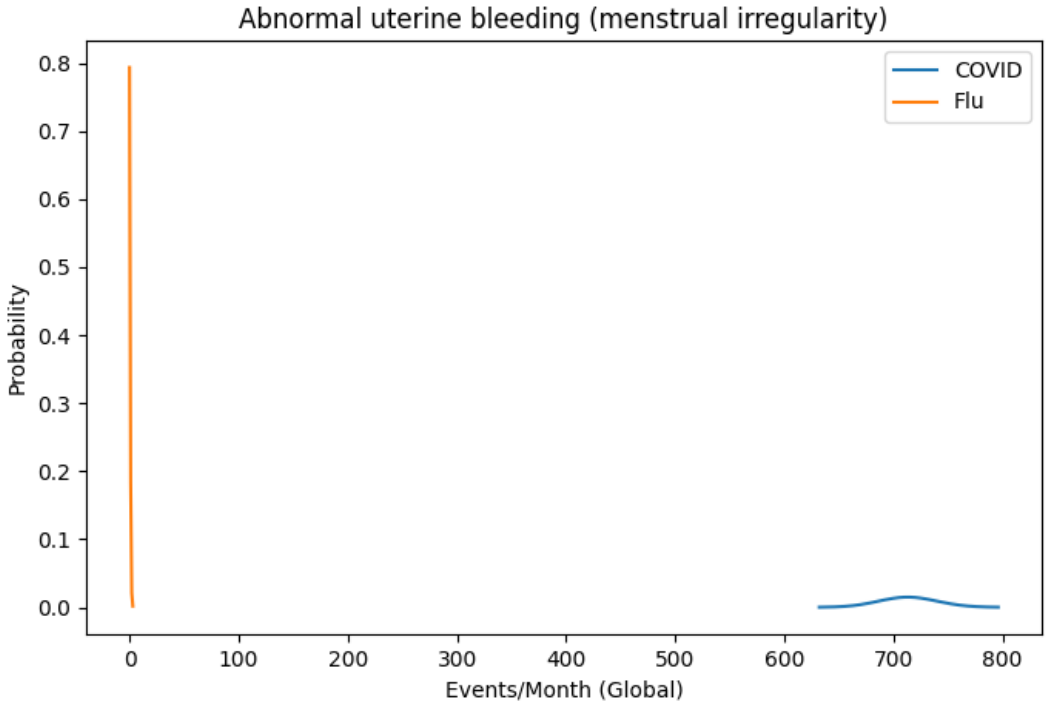
```
Fetal vascular mal-perfusion                                12     2.2945      0
  0.0000
Fetal growth abnormalities                                 188    35.9465     24
  2.6002
Fetal abnormal surveillance                                178    34.0344     45
  4.8754
Fetal placental thrombosis                                   6     1.1472      0
  0.0000
Fetal death (stillbirth)                                   402    76.8642     64
  6.9339
******************************

** P VALUES **
Abnormal uterine bleeding (menstrual irregularity)      0.000e+00
Miscarriage                                             0.000e+00
Fetal chromosomal abnormalities                         5.781e-04
Fetal malformation                                      2.096e-06
Fetal cystic hygroma                                    2.378e-03
Fetal cardiac disorders                                 2.707e-05
Fetal arrhythmia                                        1.976e-02
Fetal cardiac arrest                                    6.949e-07
Fetal vascular mal-perfusion                            1.473e-04
Fetal growth abnormalities                              0.000e+00
Fetal abnormal surveillance                             0.000e+00
Fetal placental thrombosis                              9.631e-03
Fetal death (stillbirth)                                0.000e+00
******************************

** RELATIVE RATES **
Abnormal uterine bleeding (menstrual irregularity)        358.6413   261.0816
506.7602
Miscarriage                                                18.2268    15.7302
21.1975
Fetal chromosomal abnormalities                             0.0000     0.0000
0.0000
Fetal malformation                                         16.2592     5.0000
30.0000
Fetal cystic hygroma                                        0.0000     0.0000
0.0000
Fetal cardiac disorders                                    13.2949     4.0000
25.0000
Fetal arrhythmia                                            0.0000     0.0000
0.0000
Fetal cardiac arrest                                        0.0000     0.0000
0.0000
Fetal vascular mal-perfusion                                0.0000     0.0000
0.0000
Fetal growth abnormalities                                 15.0360     8.6000
27.6250
Fetal abnormal surveillance                                 7.2770     4.7895
11.2667
```

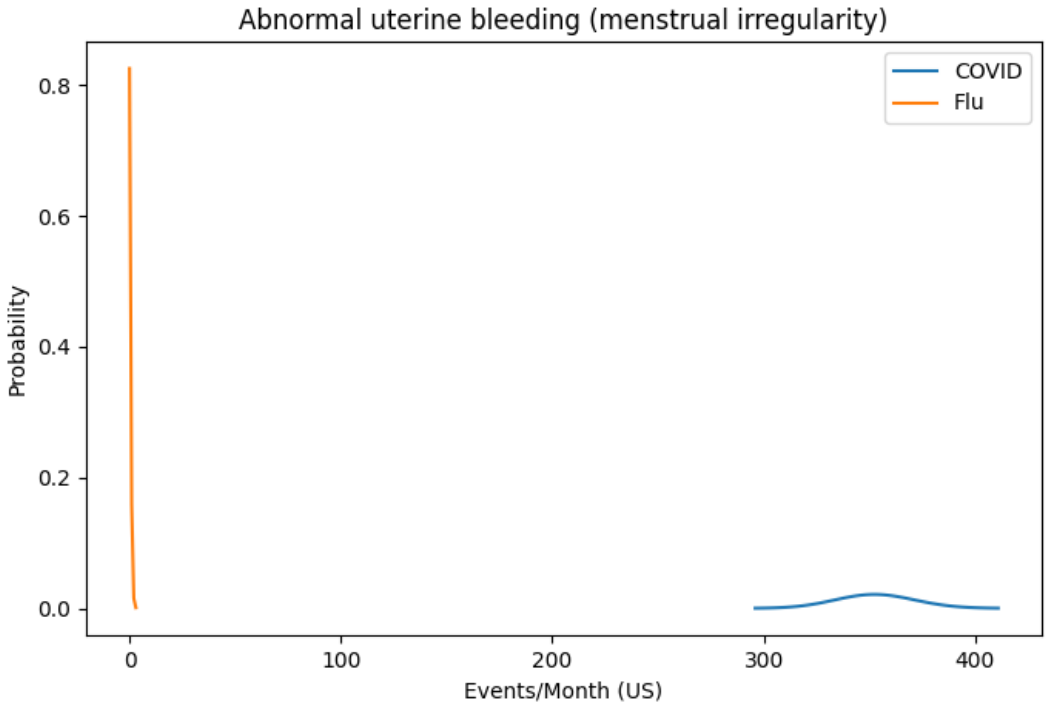
```
Fetal placental thrombosis                                0.0000     0.0000
0.0000
Fetal death (stillbirth)                                 11.4116     8.1364
16.2917
******************************
```

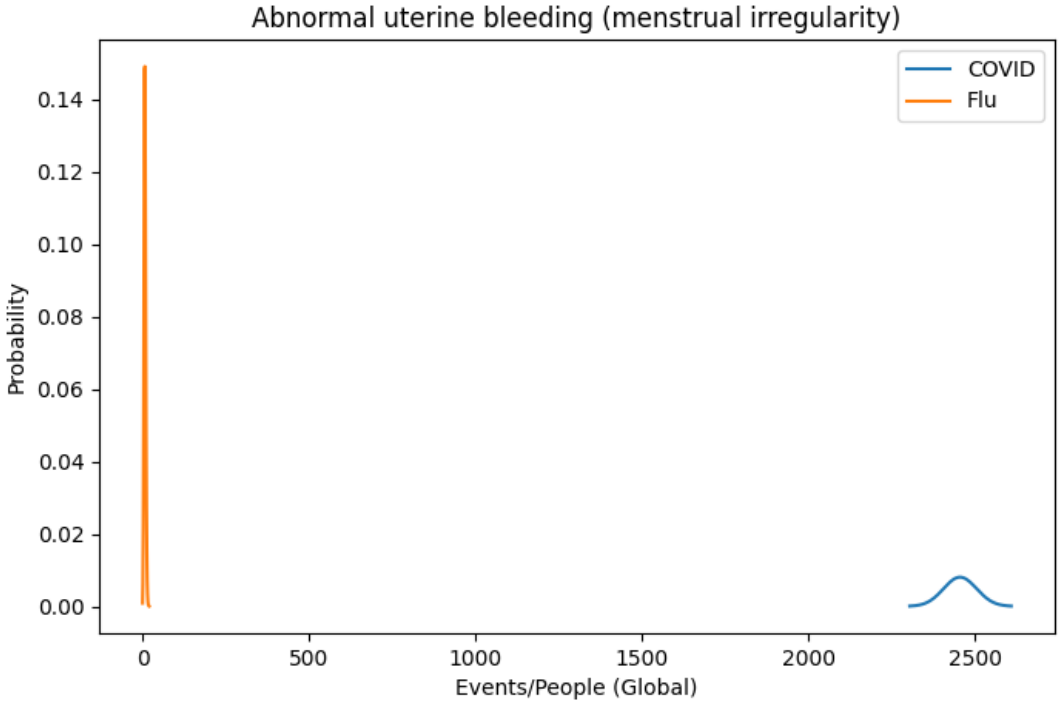
Extra

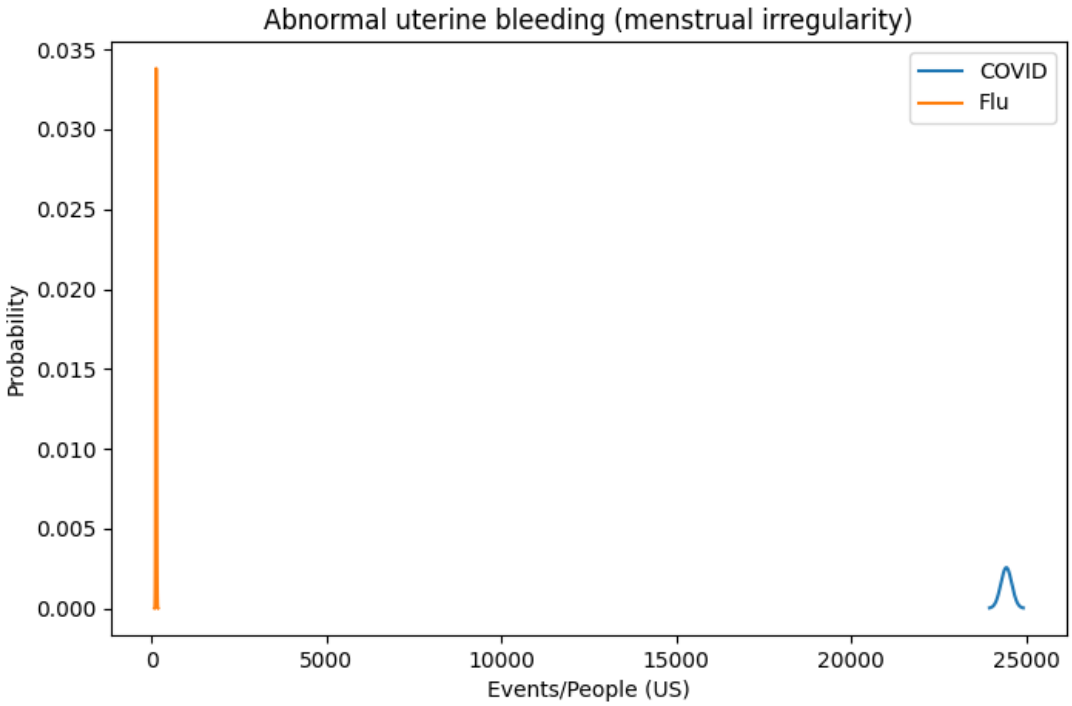
![Abnormal uterine bleeding (menstrual irregularity)-Dose (Global)

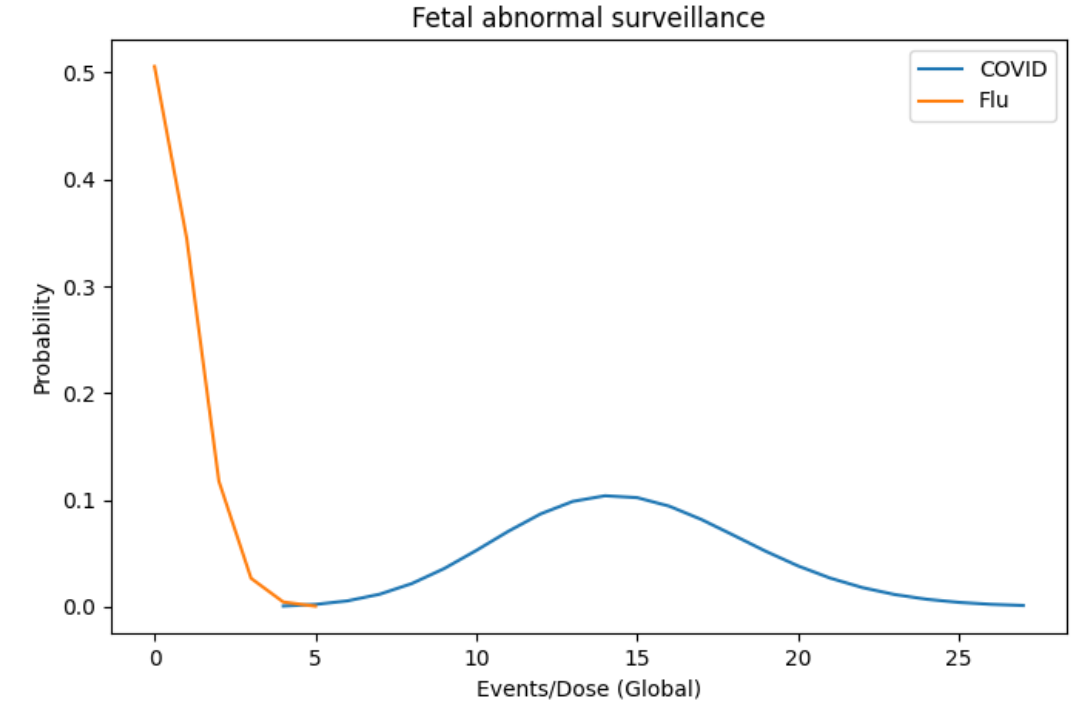


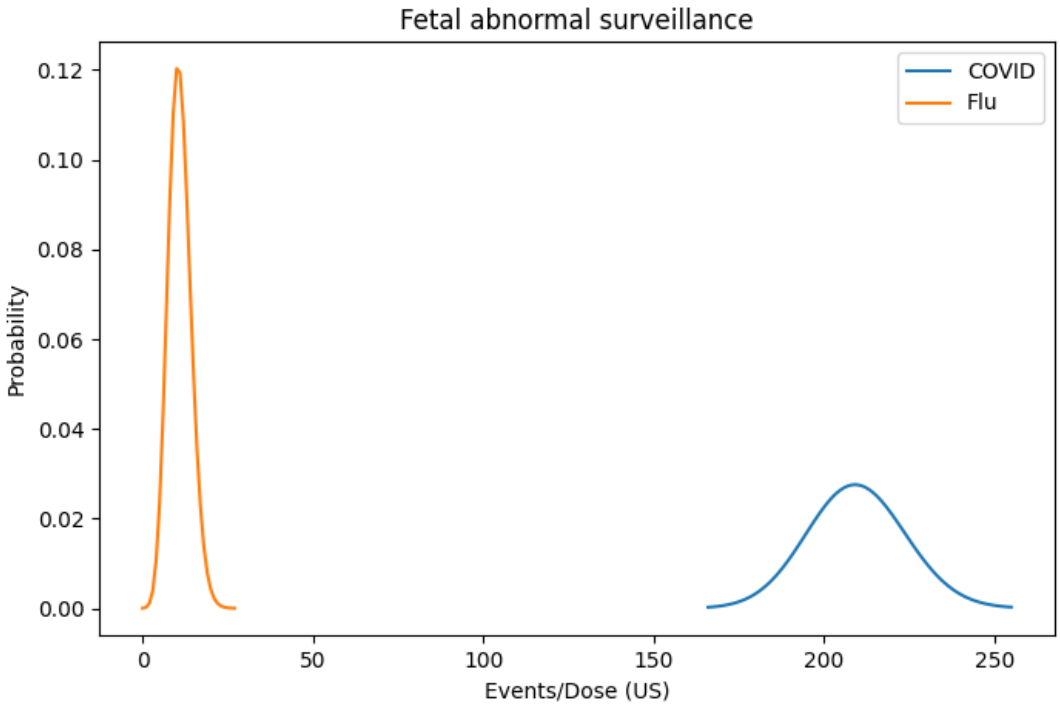


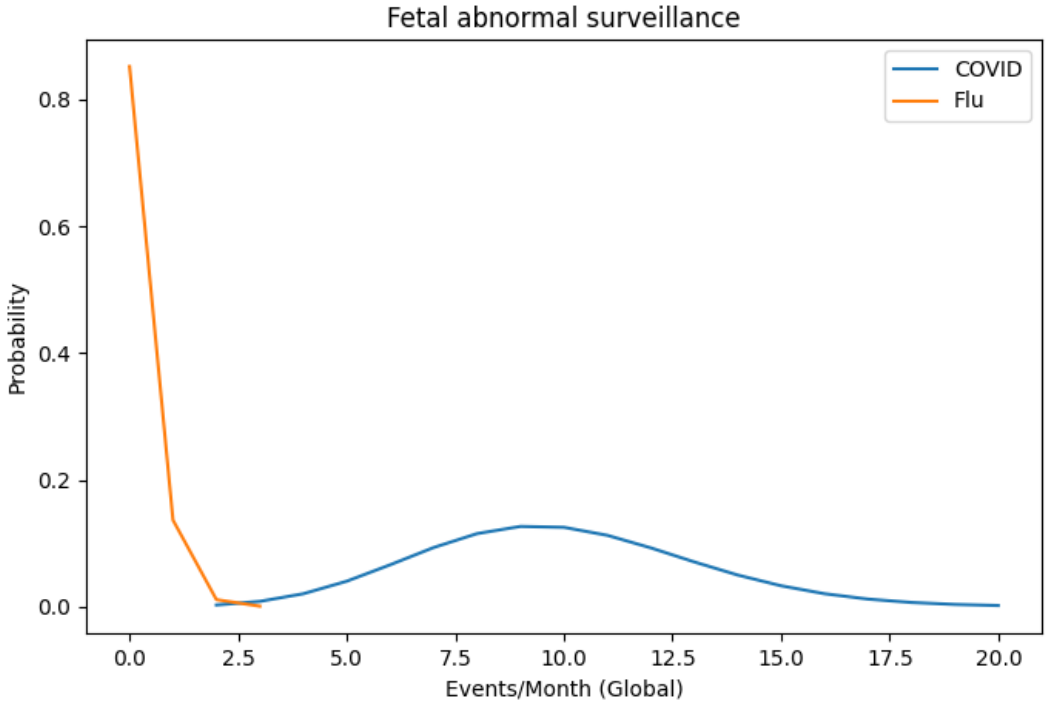

Abnormal uterine bleeding (menstrual irregularity)
COVID
Flu
Probability
0.0
0.2
0.4
0.6
0.8
0
100
200
300
400
Events/Month (US)

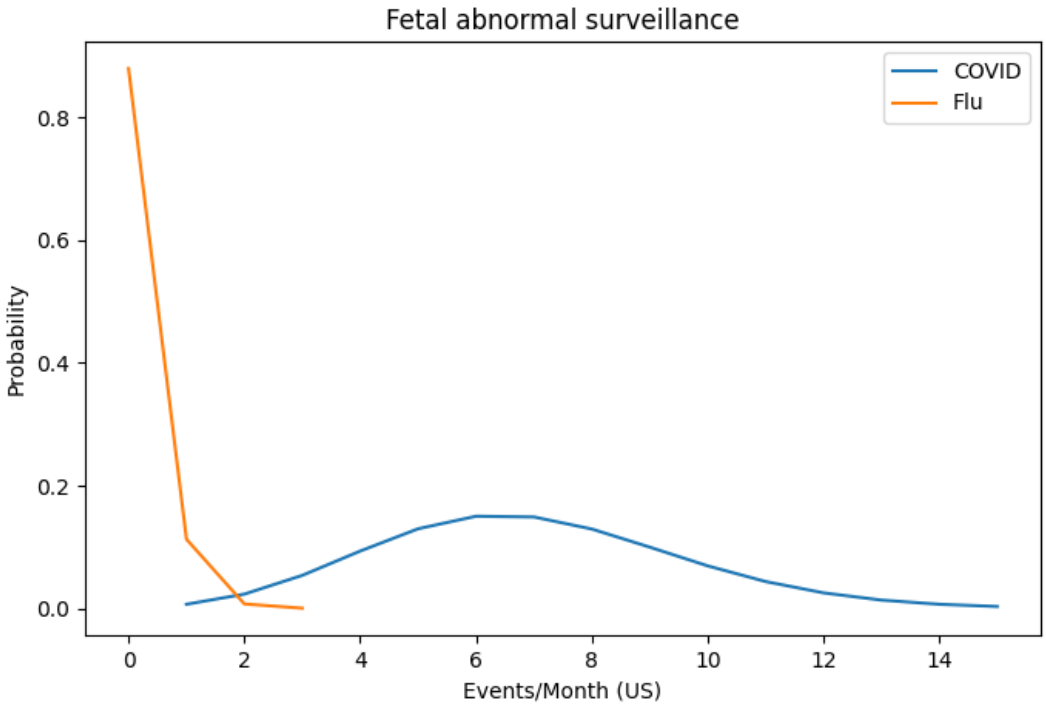

Abnormal uterine bleeding (menstrual irregularity)
COVID
Flu
Probability
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0
500
1000
1500
2000
2500
Events/People (Global)

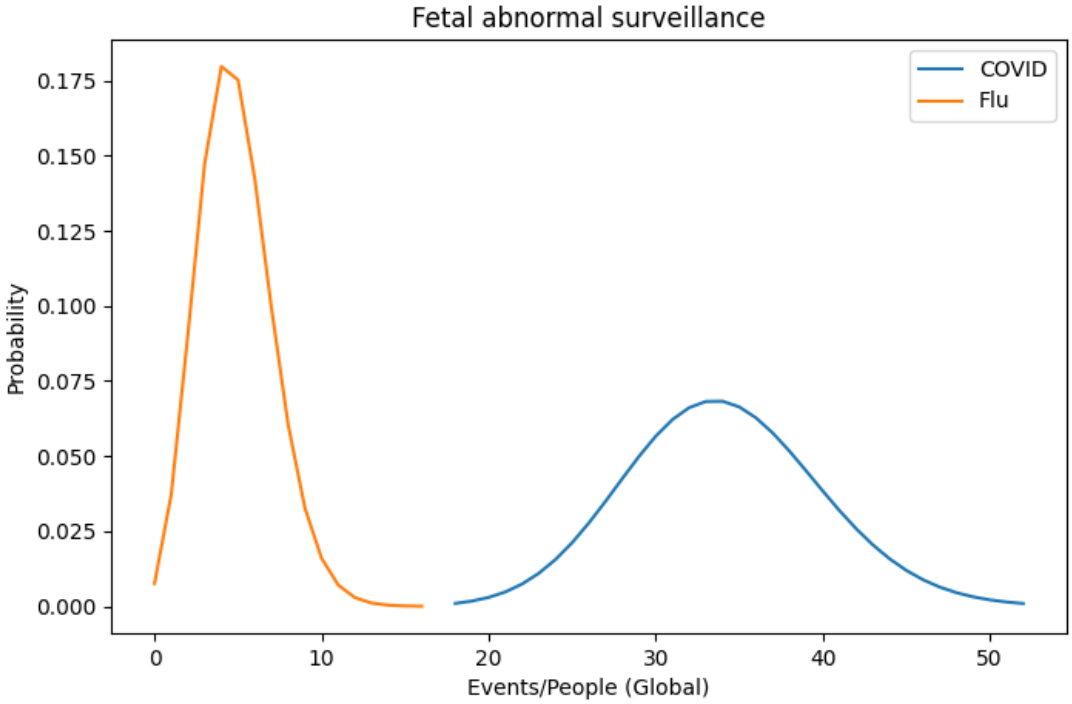

Abnormal uterine bleeding (menstrual irregularity)
COVID
Flu
Probability
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
0
5000
10000
15000
20000
25000
Events/People (US)

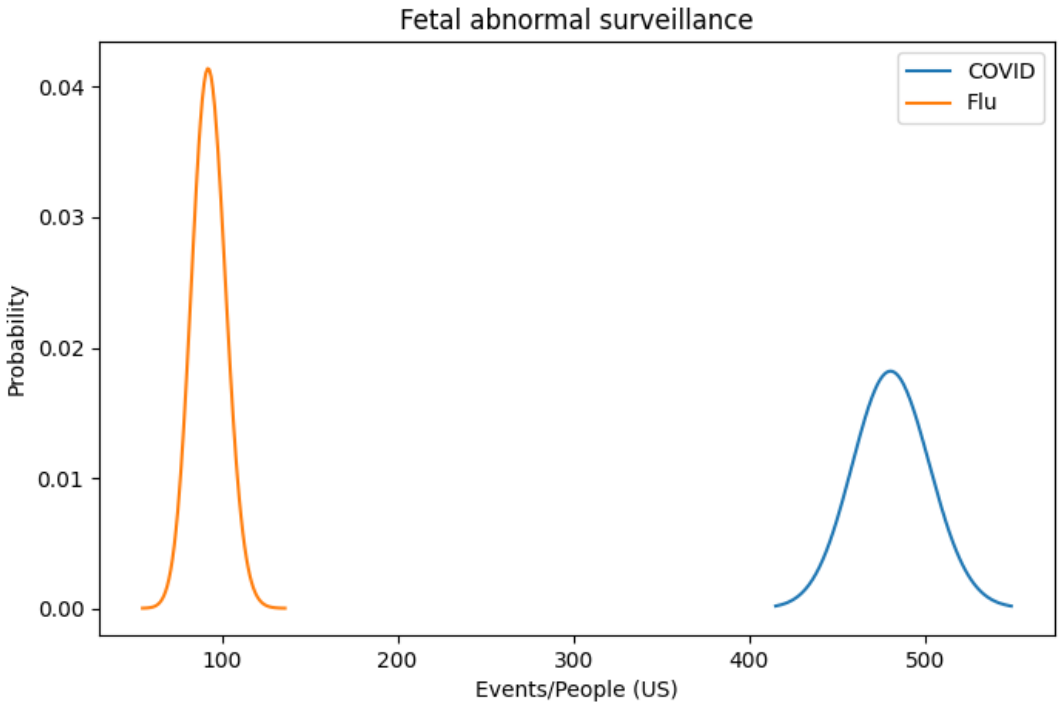

Fetal abnormal surveillance
COVID
Flu
Probability
0.5
0.4
0.3
0.2
0.1
0.0
0
5
10
15
20
25
Events/Dose (Global)

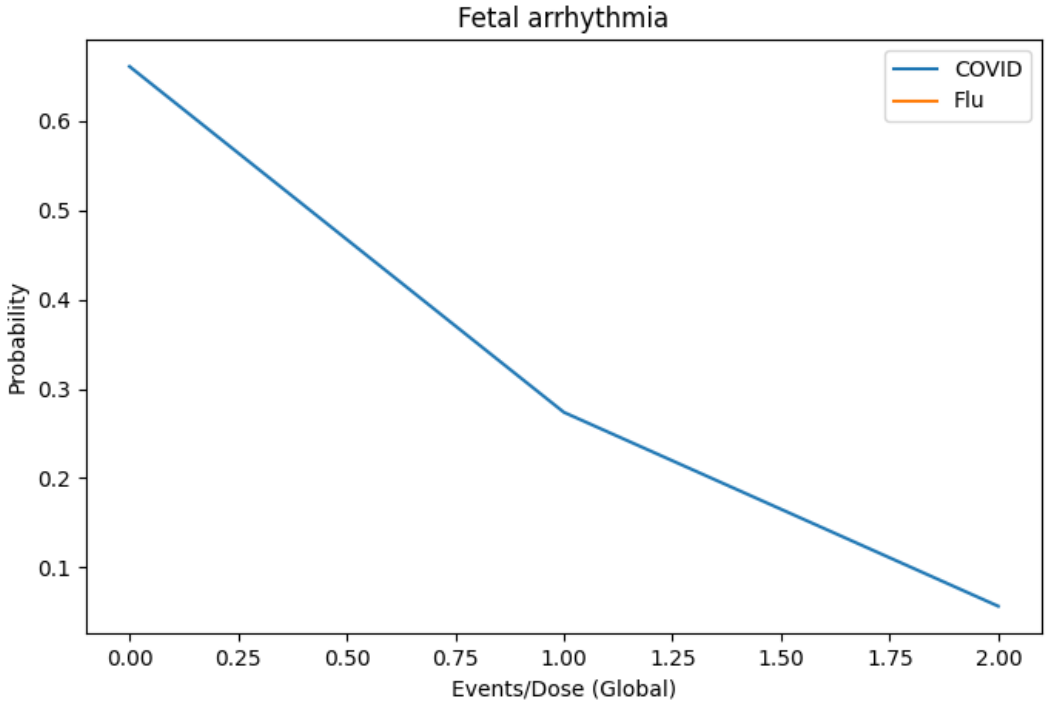

Fetal abnormal surveillance
COVID
Flu
Probability
0.12
0.10
0.08
0.06
0.04
0.02
0.00
0
50
100
150
200
250
Events/Dose (US)

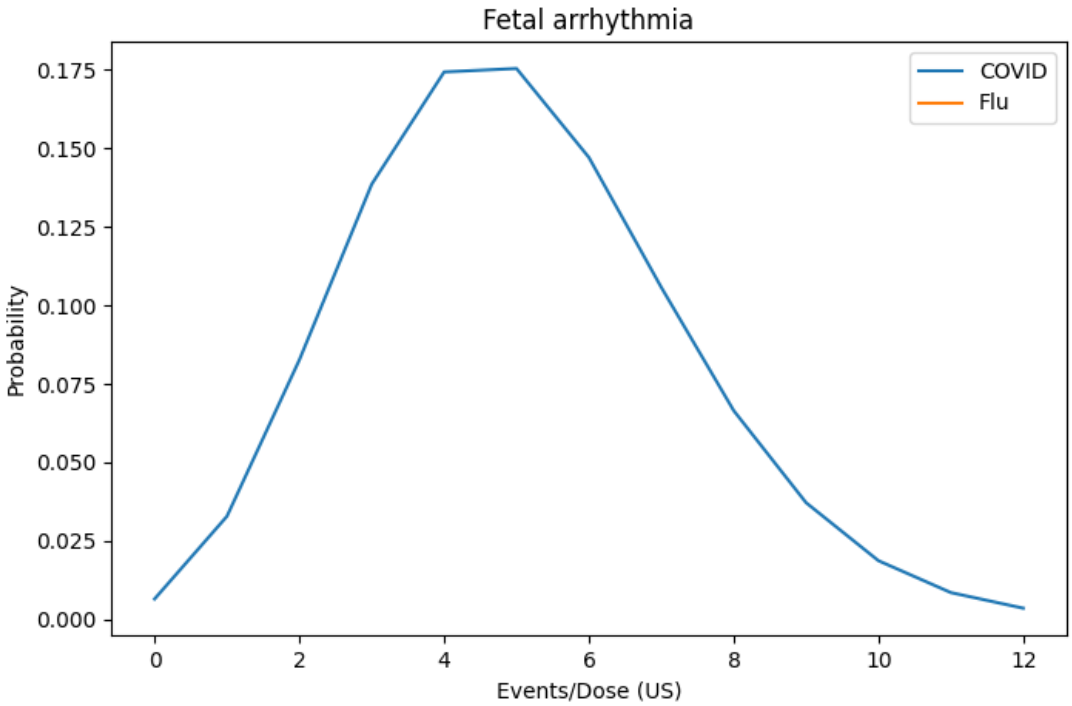

Fetal abnormal surveillance
COVID
Flu
Probability
0.8
0.6
0.4
0.2
0.0
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
Events/Month (Global)

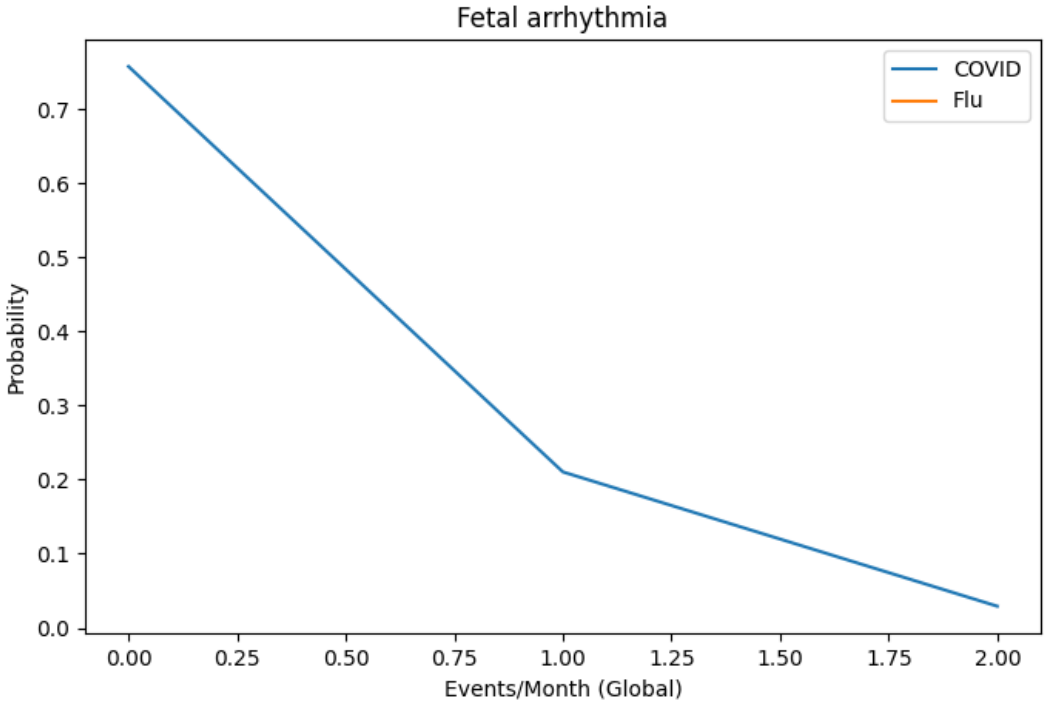

Fetal abnormal surveillance
COVID
Flu
Probability
0.0
0.2
0.4
0.6
0.8
0
2
4
6
8
10
12
14
Events/Month (US)

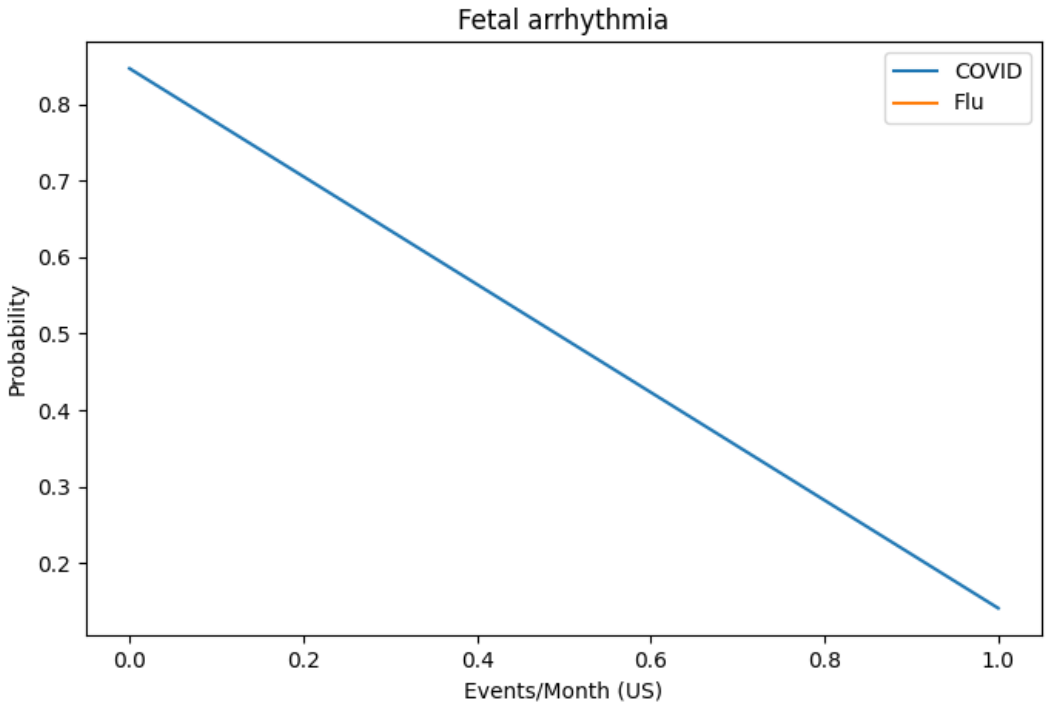

Fetal abnormal surveillance
COVID
Flu
Probability
0.000
0.025
0.050
0.075
0.100
0.125
0.150
0.175
0
10
20
30
40
50
Events/People (Global)

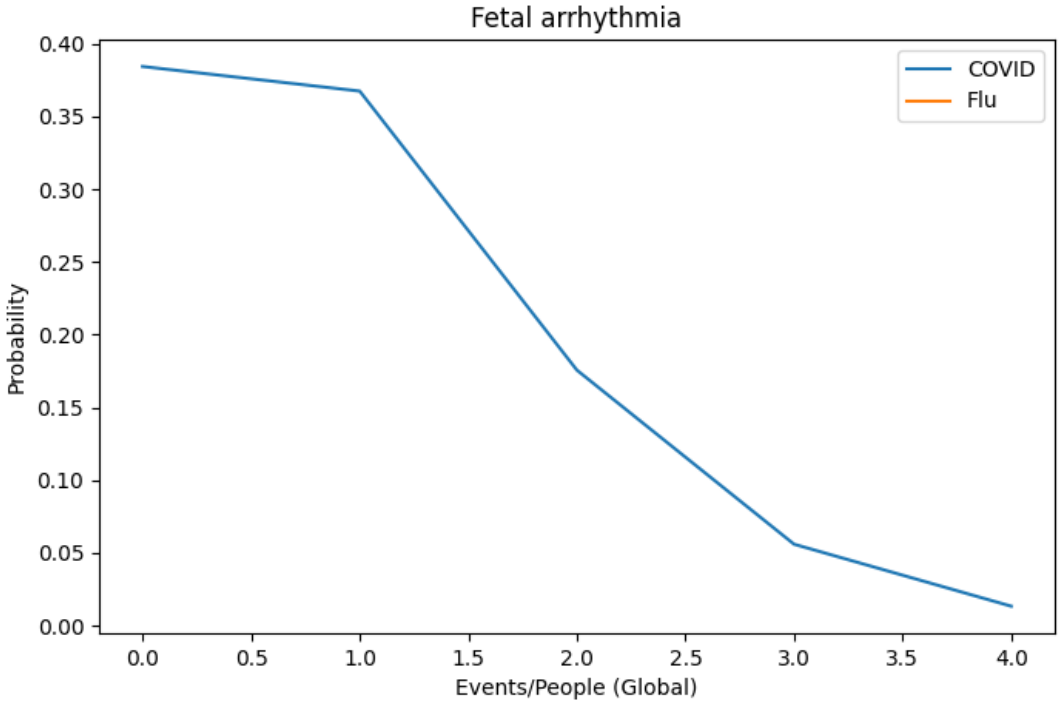

Fetal abnormal surveillance
COVID
Flu
0.04
0.03
0.02
0.01
0.00
Probability
100
200
300
400
500
Events/People (US)

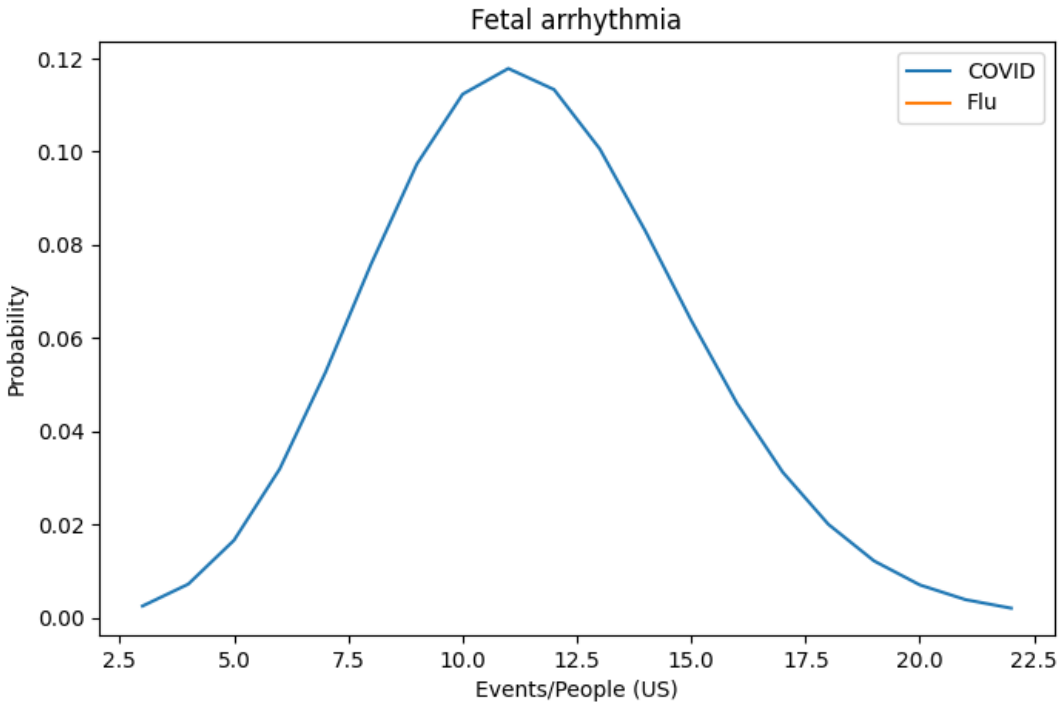

Fetal arrhythmia
COVID
Flu
0.6
0.5
0.4
0.3
0.2
0.1
Probability
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
Events/Dose (Global)

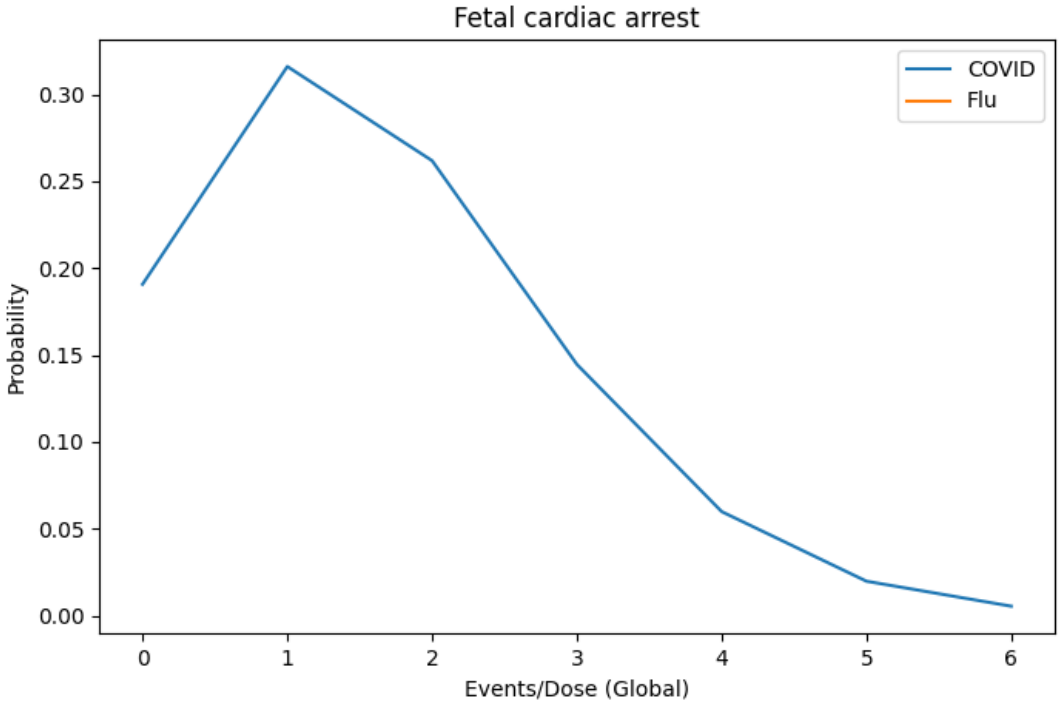

Fetal arrhythmia
COVID
Flu
Probability
0.175
0.150
0.125
0.100
0.075
0.050
0.025
0.000
0
2
4
6
8
10
12
Events/Dose (US)

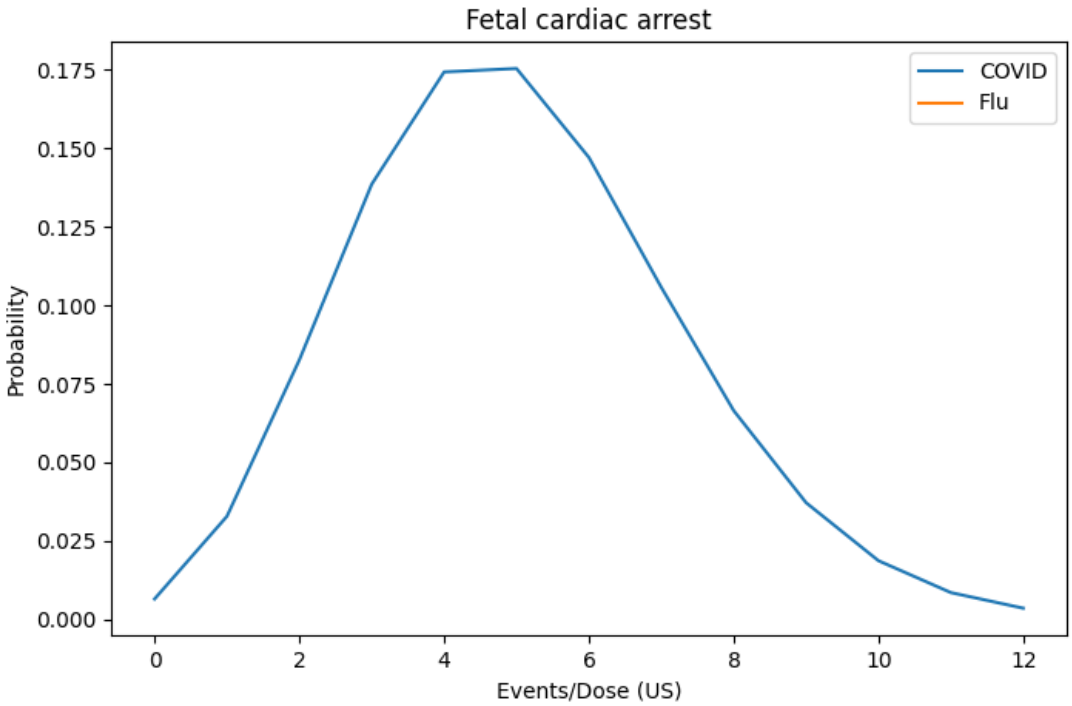

Fetal arrhythmia
COVID
Flu
Probability
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
Events/Month (Global)

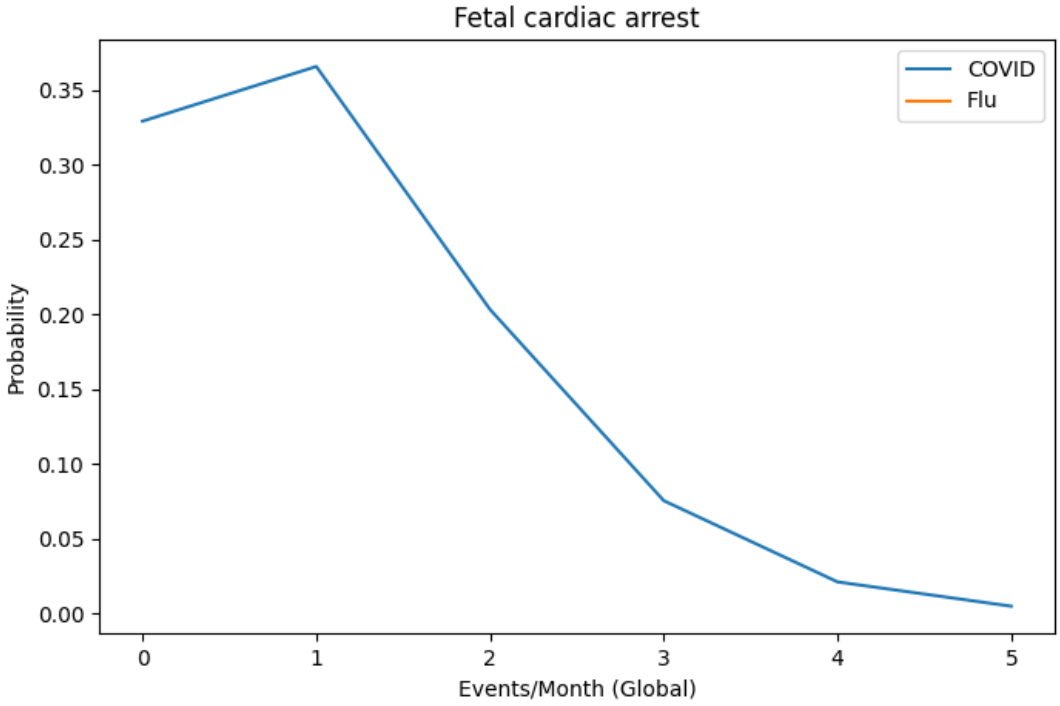

Fetal arrhythmia
COVID
Flu
Probability
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.0
0.2
0.4
0.6
0.8
1.0
Events/Month (US)

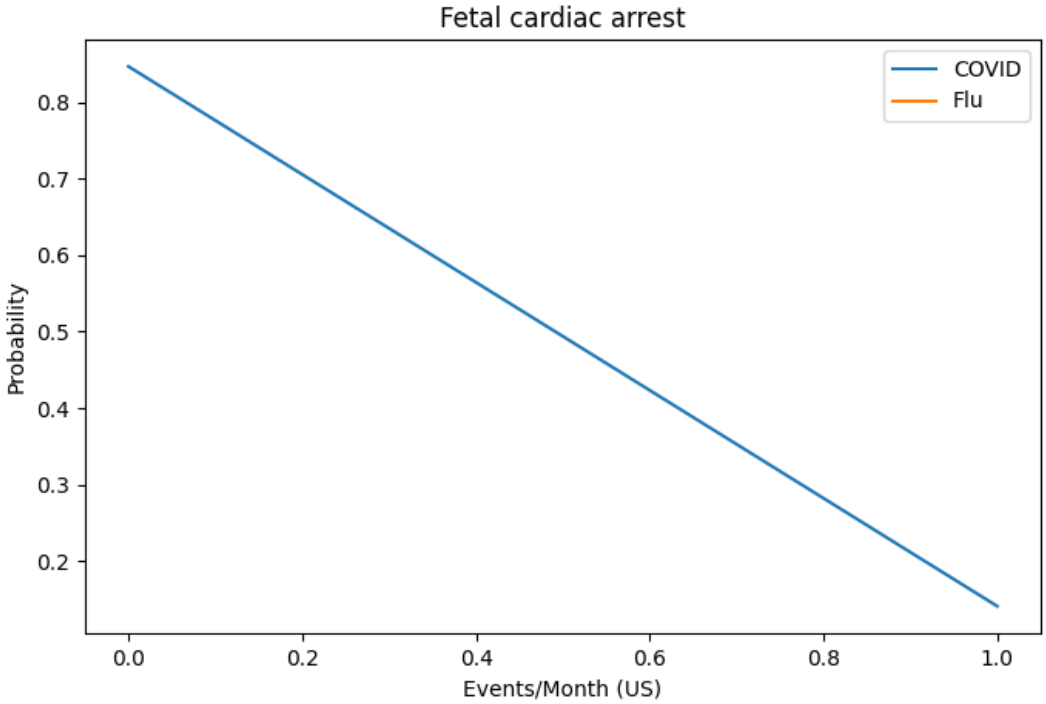

Fetal arrhythmia
COVID
Flu
Probability
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Events/People (Global)

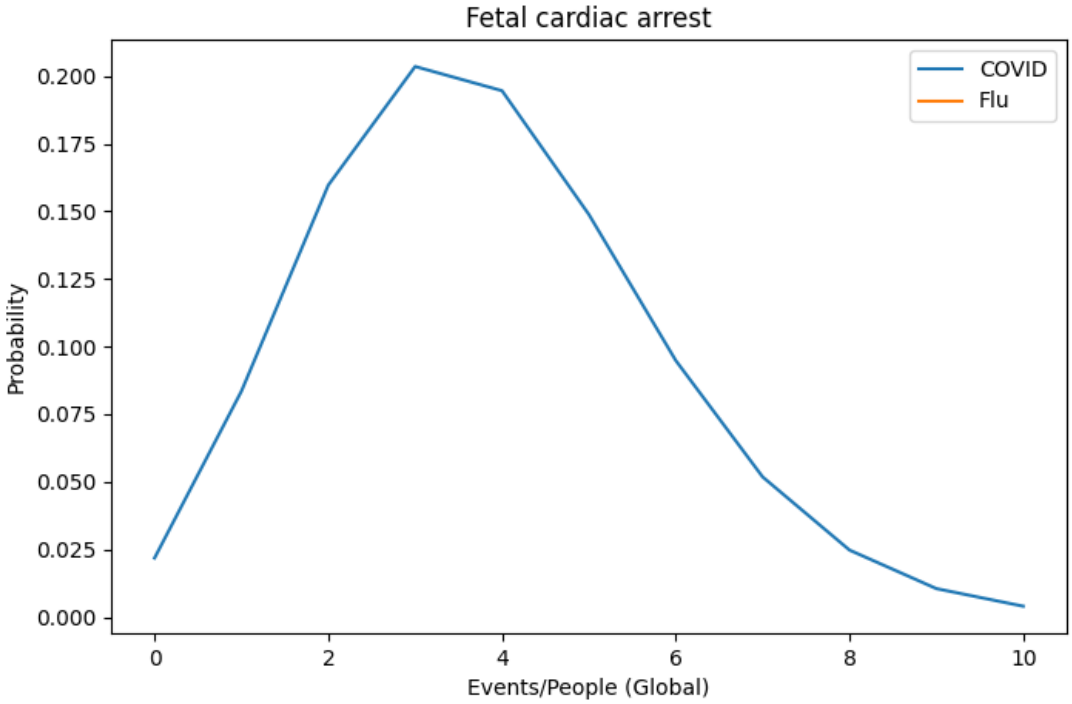

Fetal arrhythmia
COVID
Flu
Probability
0.12
0.10
0.08
0.06
0.04
0.02
0.00
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
22.5
Events/People (US)

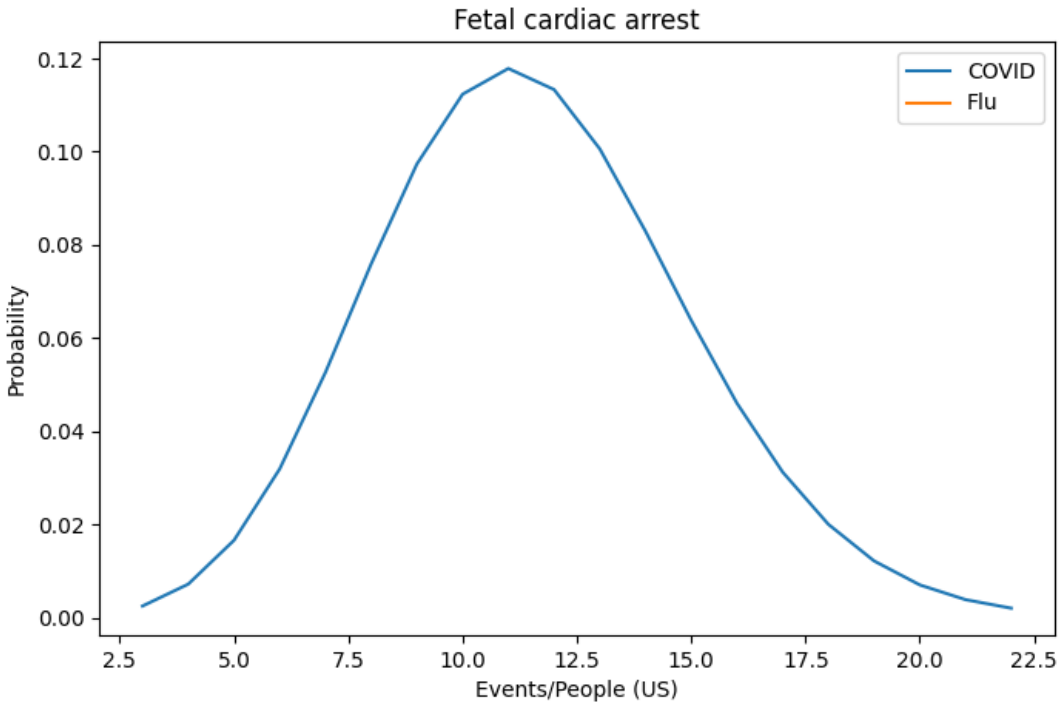

Fetal cardiac arrest
COVID
Flu
Probability
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0
1
2
3
4
5
6
Events/Dose (Global)

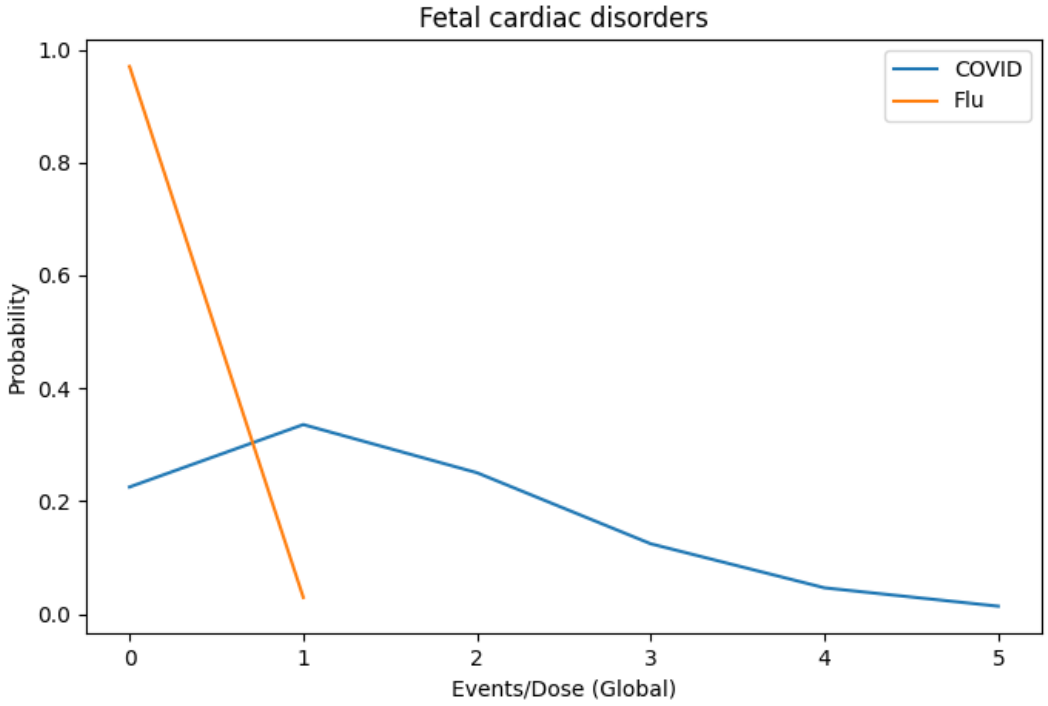

Fetal cardiac arrest
COVID
Flu
Probability
0.175
0.150
0.125
0.100
0.075
0.050
0.025
0.000
0
2
4
6
8
10
12
Events/Dose (US)

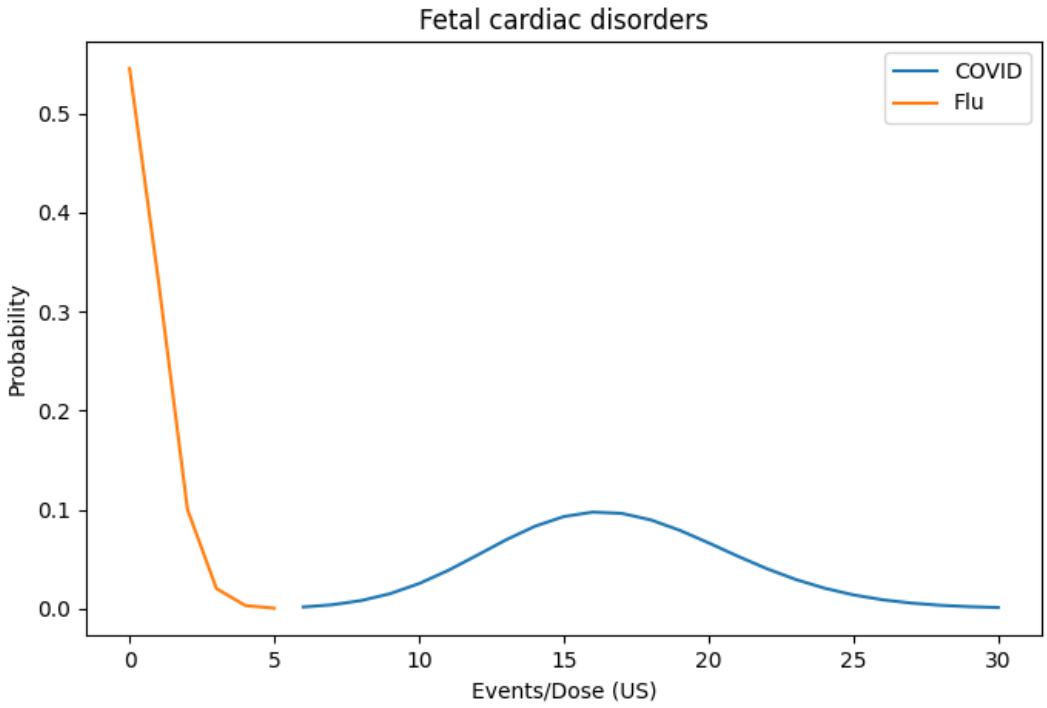

Fetal cardiac arrest
COVID
Flu
Probability
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0
1
2
3
4
5
Events/Month (Global)

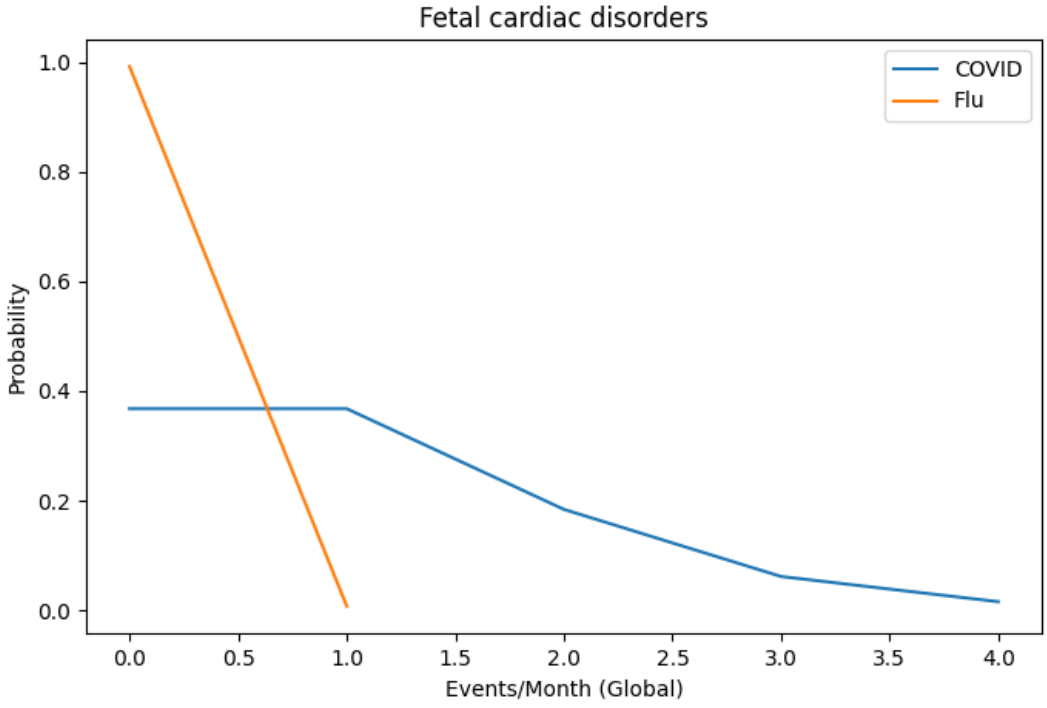

Fetal cardiac arrest
COVID
Flu
Probability
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.0
0.2
0.4
0.6
0.8
1.0
Events/Month (US)

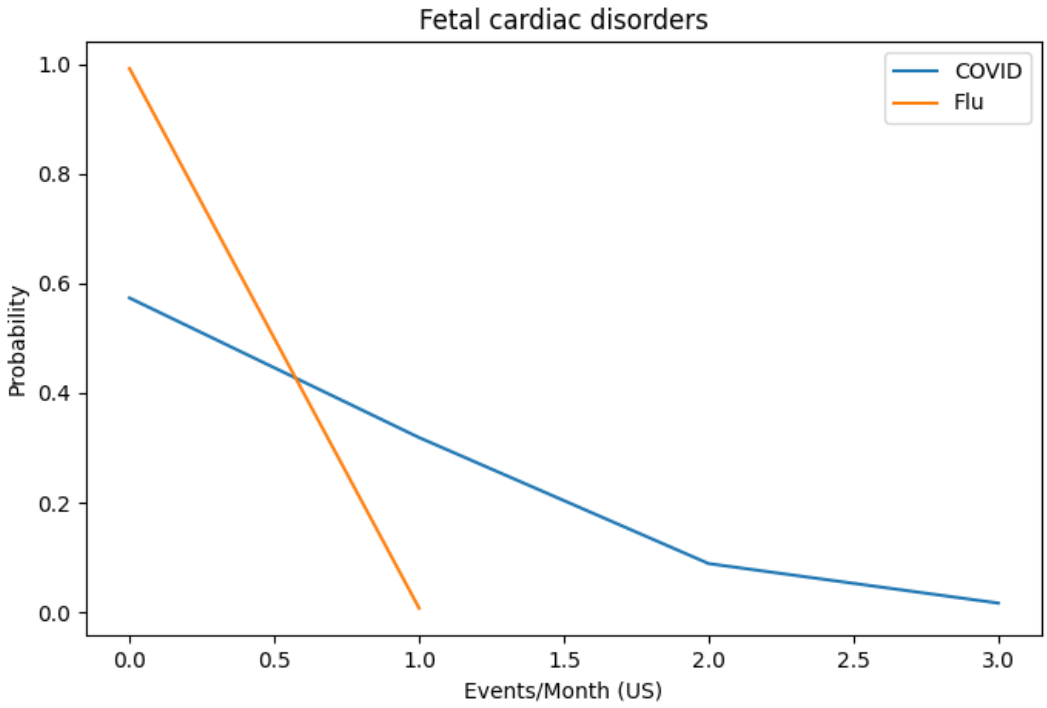

Fetal cardiac arrest
COVID
Flu
Probability
0.200
0.175
0.150
0.125
0.100
0.075
0.050
0.025
0.000
0
2
4
6
8
10
Events/People (Global)

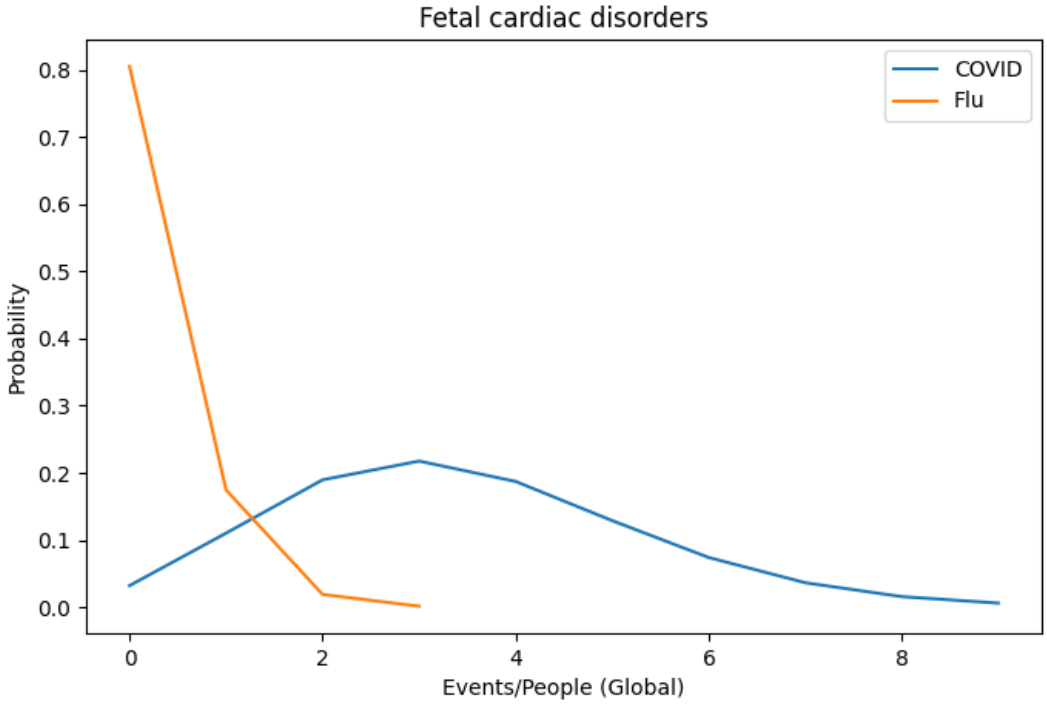

Fetal cardiac arrest
COVID
Flu
Probability
0.12
0.10
0.08
0.06
0.04
0.02
0.00
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
22.5
Events/People (US)

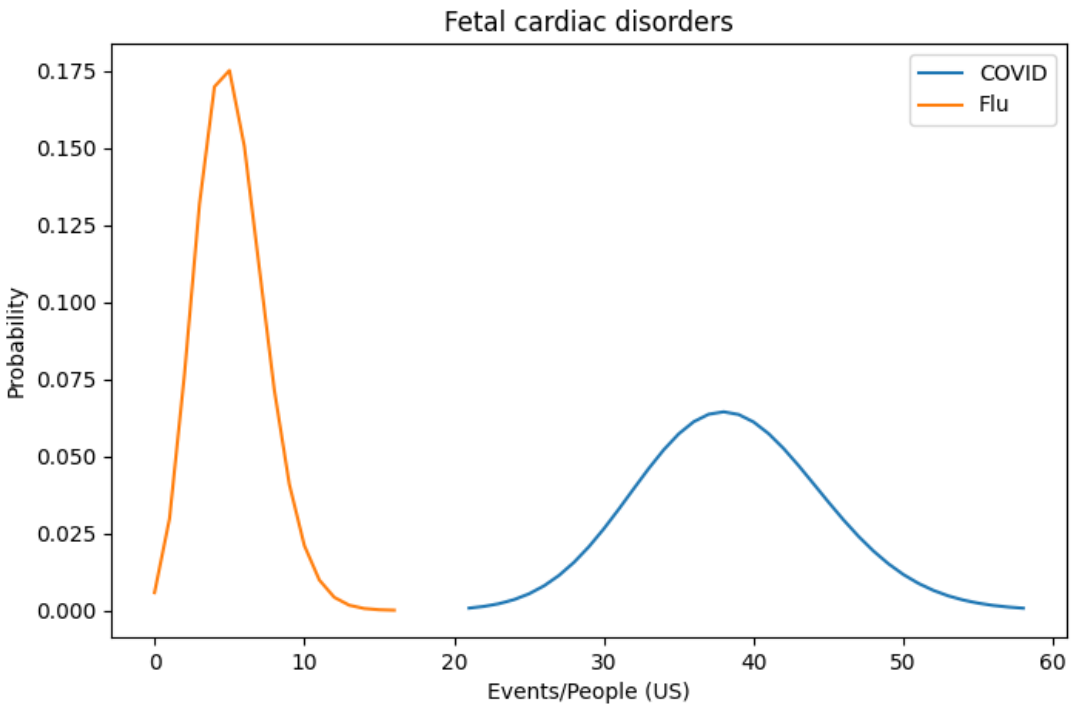

Fetal cardiac disorders
COVID
Flu
Probability
1.0
0.8
0.6
0.4
0.2
0.0
0
1
2
3
4
5
Events/Dose (Global)

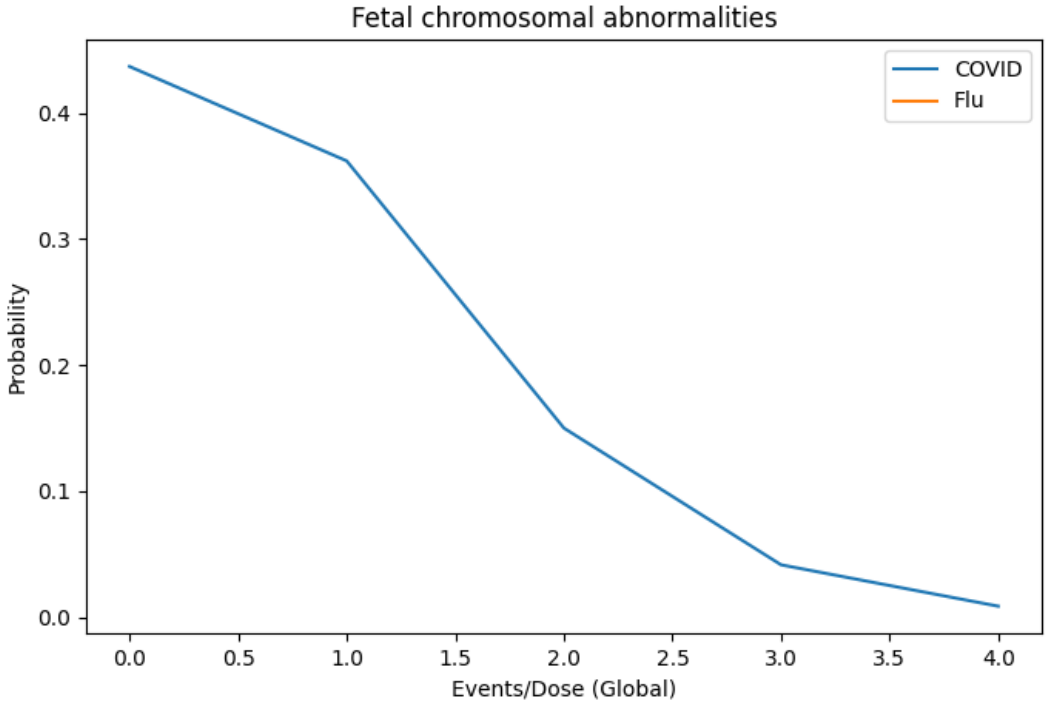

Fetal cardiac disorders
COVID
Flu
Probability
0.0
0.1
0.2
0.3
0.4
0.5
0
5
10
15
20
25
30
Events/Dose (US)

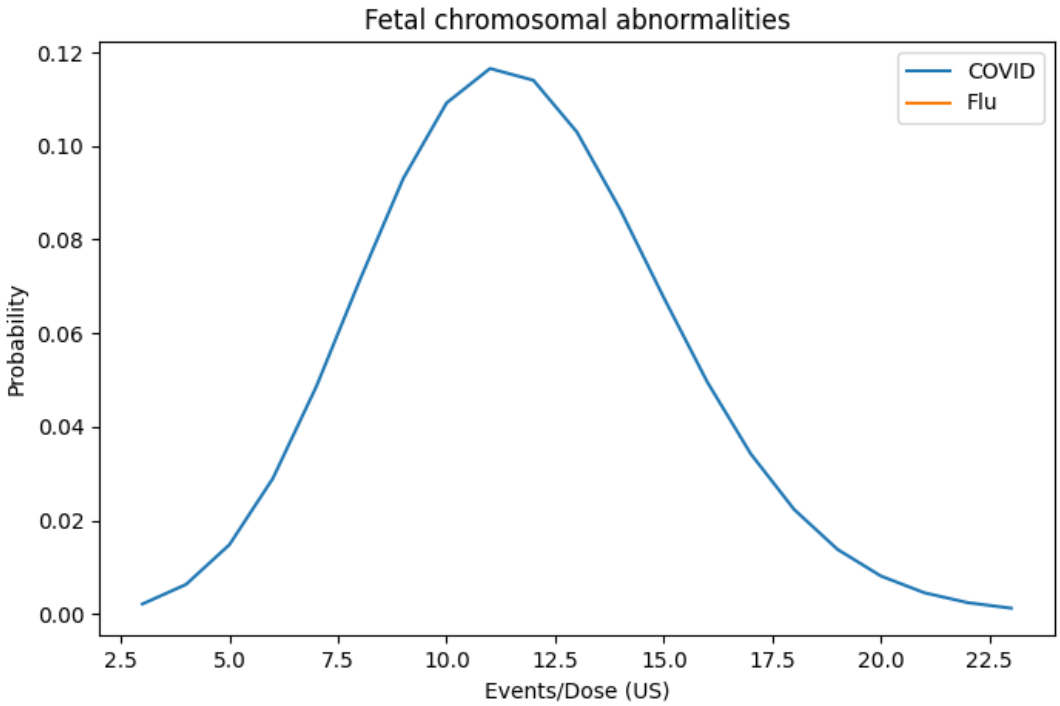

Fetal cardiac disorders
COVID
Flu
Probability
0.0
0.2
0.4
0.6
0.8
1.0
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Events/Month (Global)

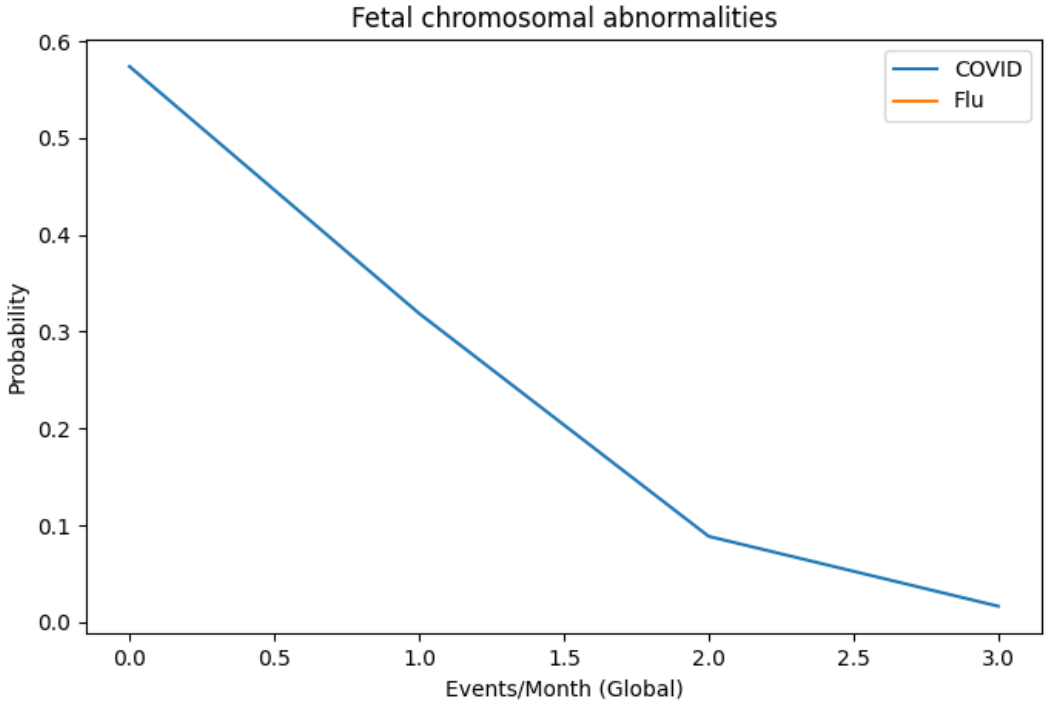

Fetal cardiac disorders
COVID
Flu
Probability
1.0
0.8
0.6
0.4
0.2
0.0
0.0
0.5
1.0
1.5
2.0
2.5
3.0
Events/Month (US)

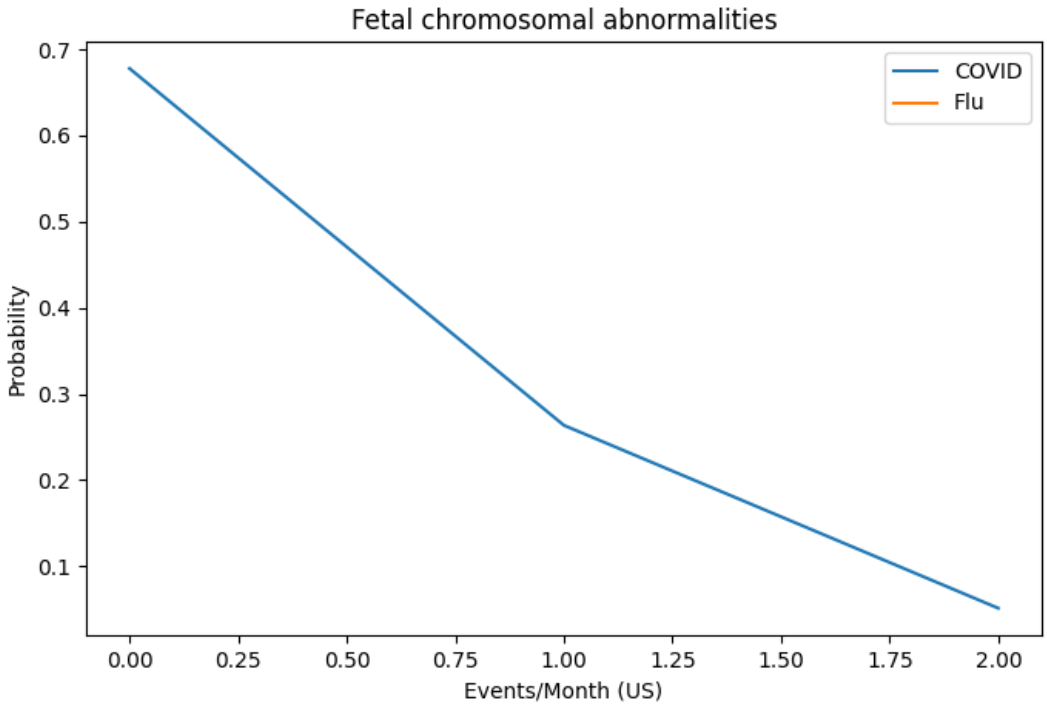

Fetal cardiac disorders
COVID
Flu
Probability
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0
2
4
6
8
Events/People (Global)

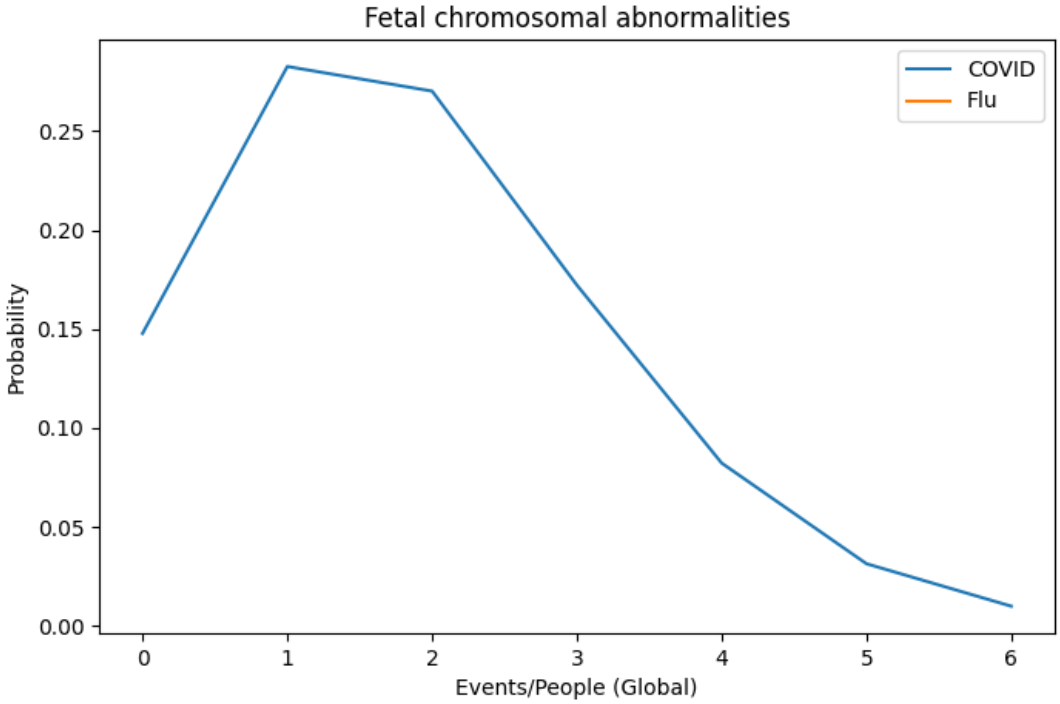

Fetal cardiac disorders
COVID
Flu
Probability
0.175
0.150
0.125
0.100
0.075
0.050
0.025
0.000
0
10
20
30
40
50
60
Events/People (US)

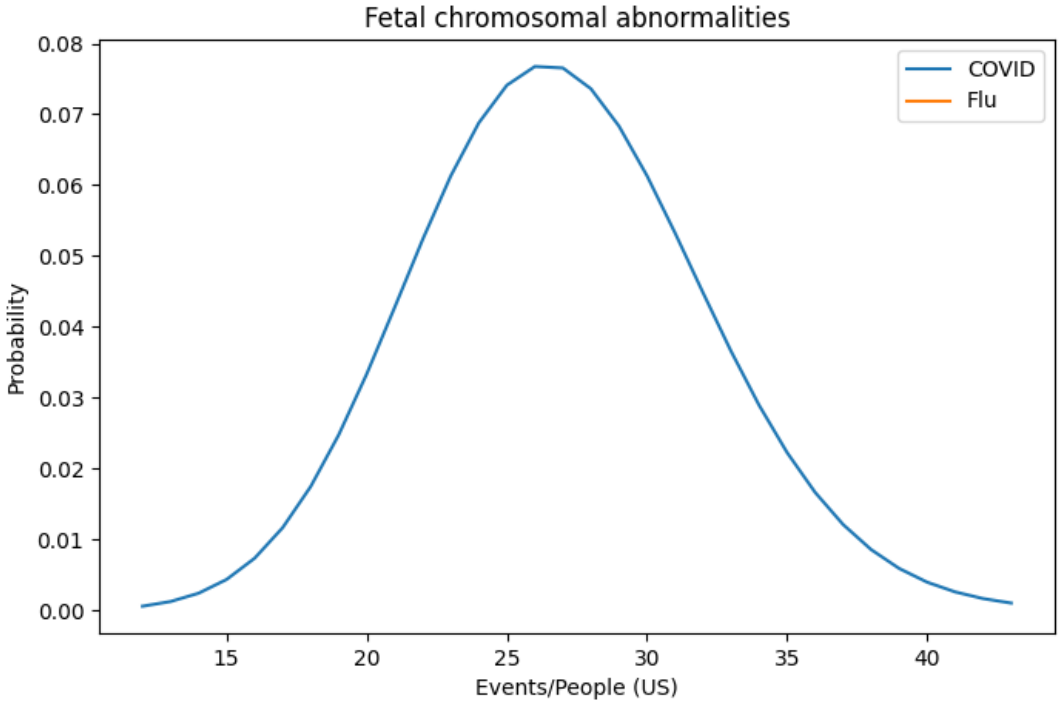

Fetal chromosomal abnormalities
COVID
Flu
Probability
0.4
0.3
0.2
0.1
0.0
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Events/Dose (Global)

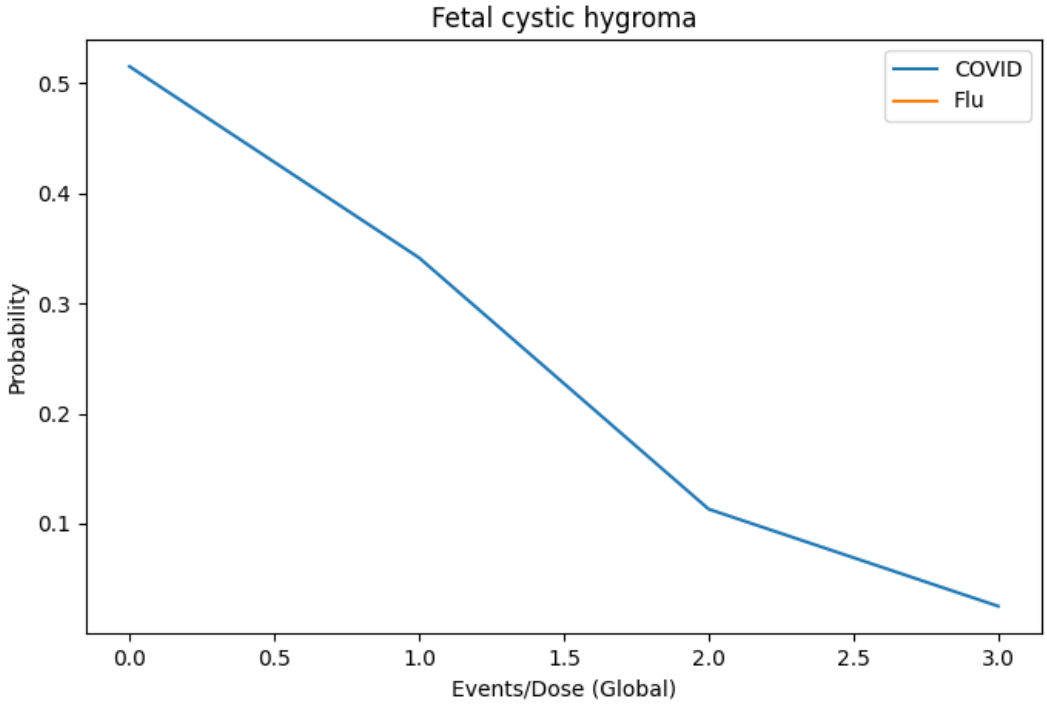

Fetal chromosomal abnormalities
COVID
Flu
Probability
0.12
0.10
0.08
0.06
0.04
0.02
0.00
2.5
5.0
7.5
10.0
12.5
15.0
17.5
20.0
22.5
Events/Dose (US)

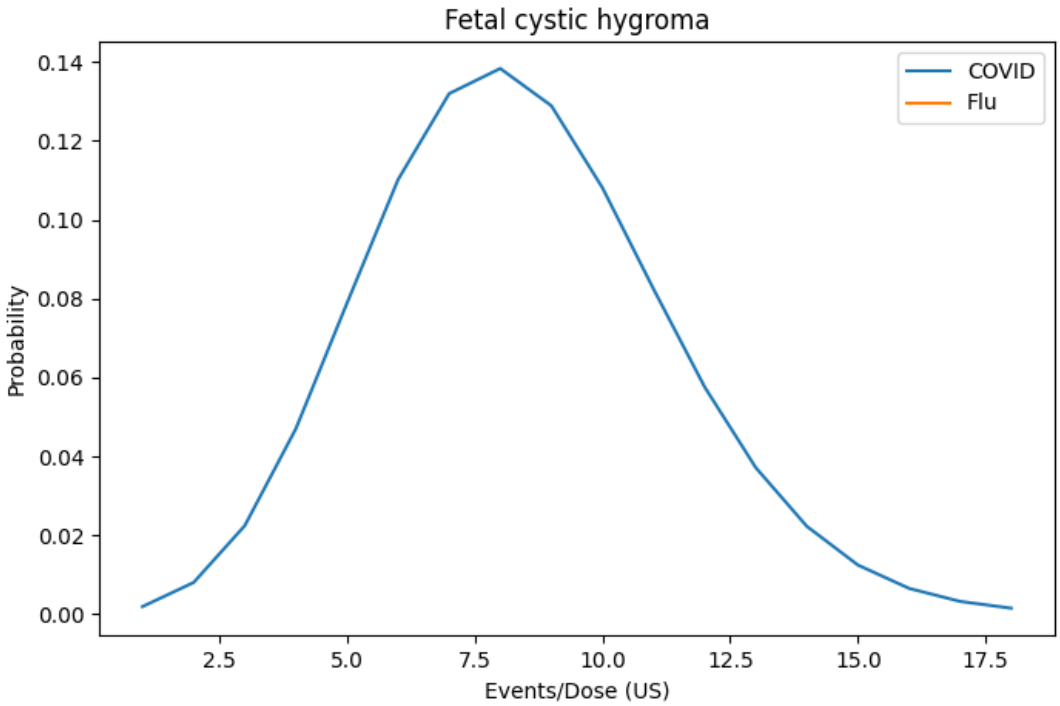

Fetal chromosomal abnormalities
COVID
Flu
Probability
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.0
0.5
1.0
1.5
2.0
2.5
3.0
Events/Month (Global)

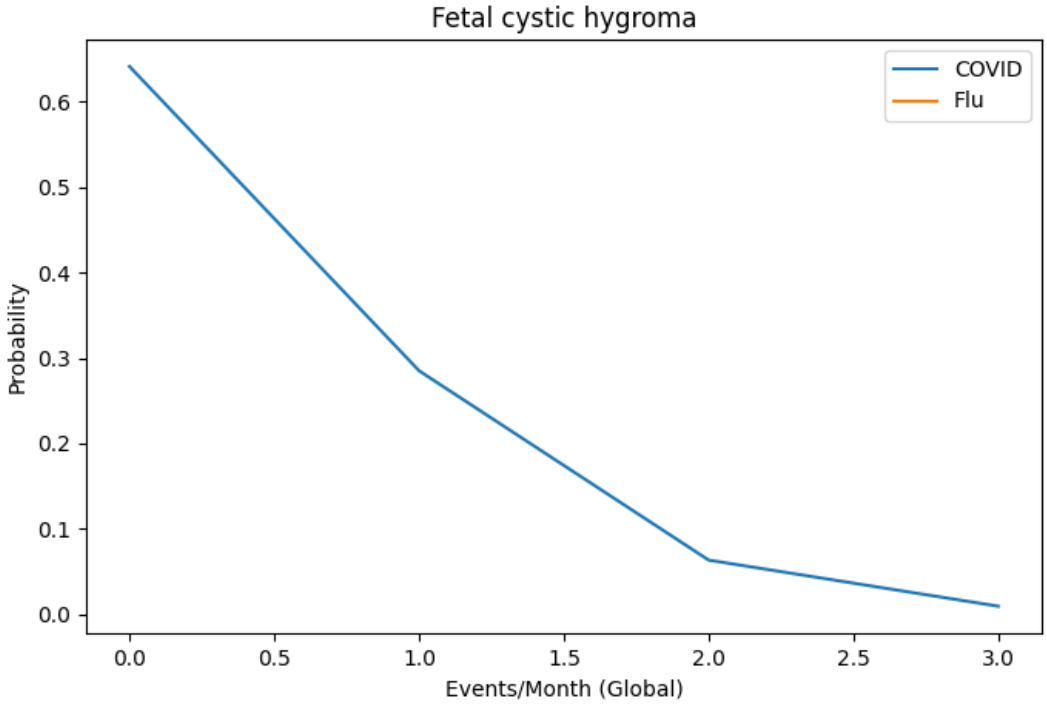

Fetal chromosomal abnormalities
COVID
Flu
Probability
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
Events/Month (US)

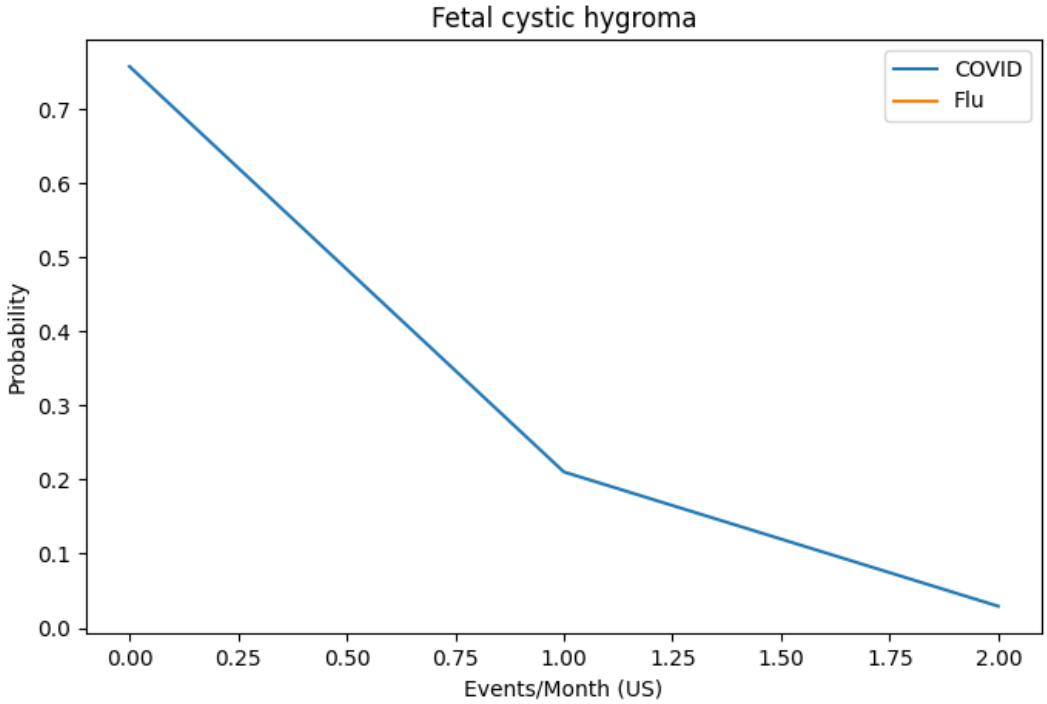

Fetal chromosomal abnormalities
COVID
Flu
Probability
0.25
0.20
0.15
0.10
0.05
0.00
0
1
2
3
4
5
6
Events/People (Global)

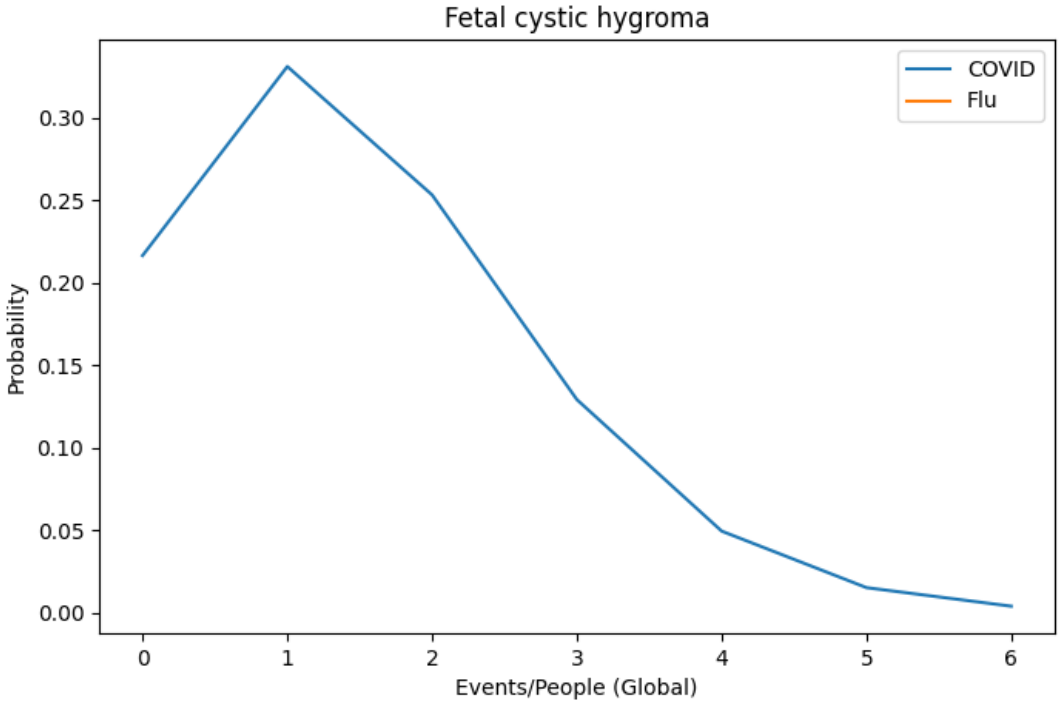

Fetal chromosomal abnormalities
COVID
Flu
Probability
0.08
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
15
20
25
30
35
40
Events/People (US)

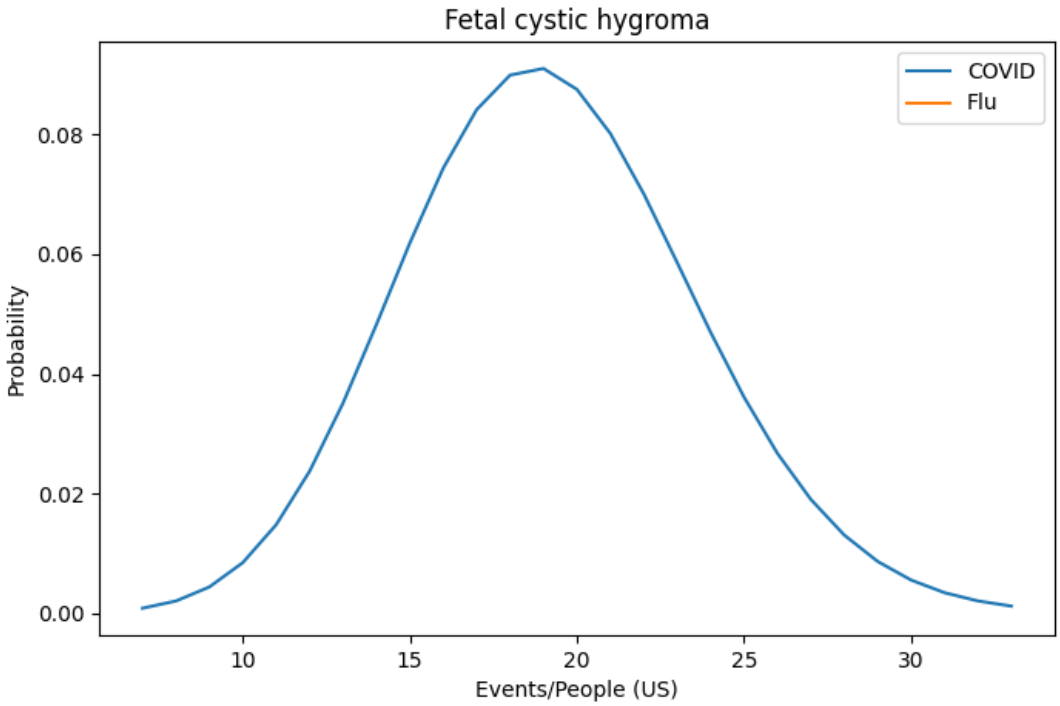

Fetal cystic hygroma
COVID
Flu
Probability
0.5
0.4
0.3
0.2
0.1
0.0
0.5
1.0
1.5
2.0
2.5
3.0
Events/Dose (Global)

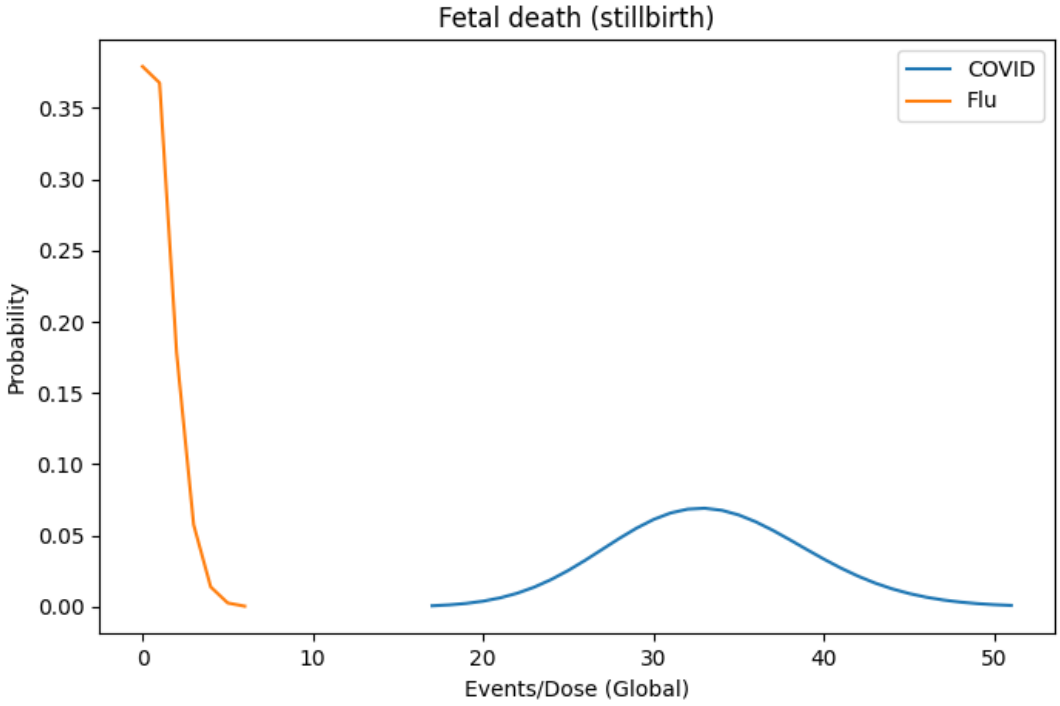

Fetal cystic hygroma
COVID
Flu
Probability
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
2.5
5.0
7.5
10.0
12.5
15.0
17.5
Events/Dose (US)

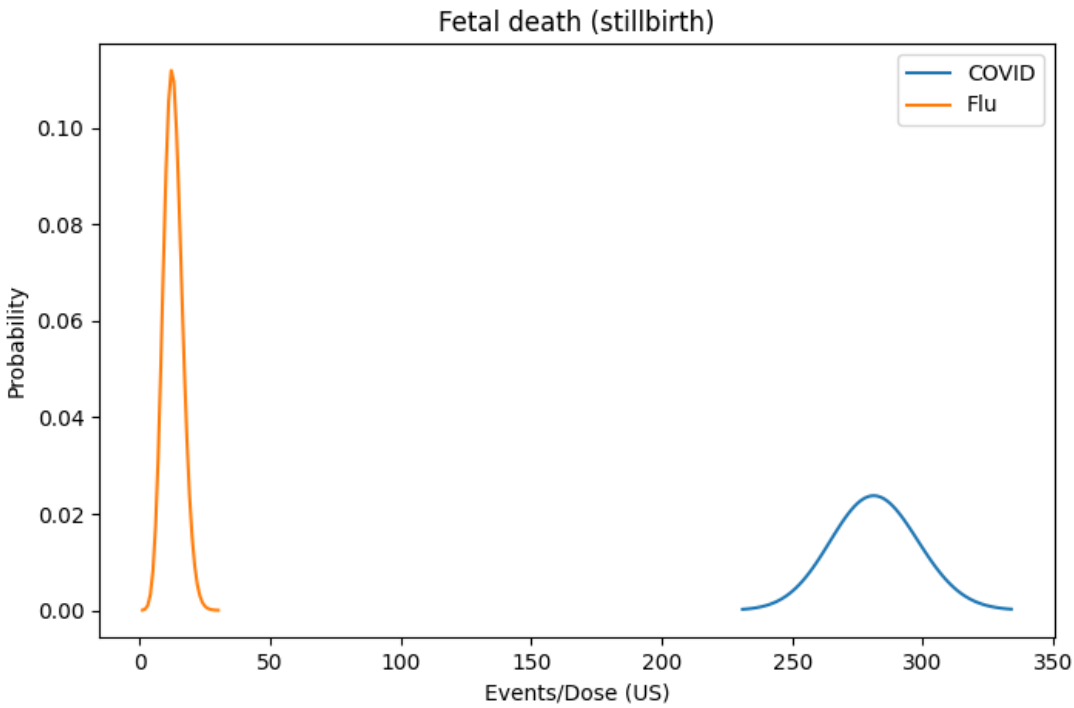

Fetal cystic hygroma
COVID
Flu
Probability
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.0
0.5
1.0
1.5
2.0
2.5
3.0
Events/Month (Global)

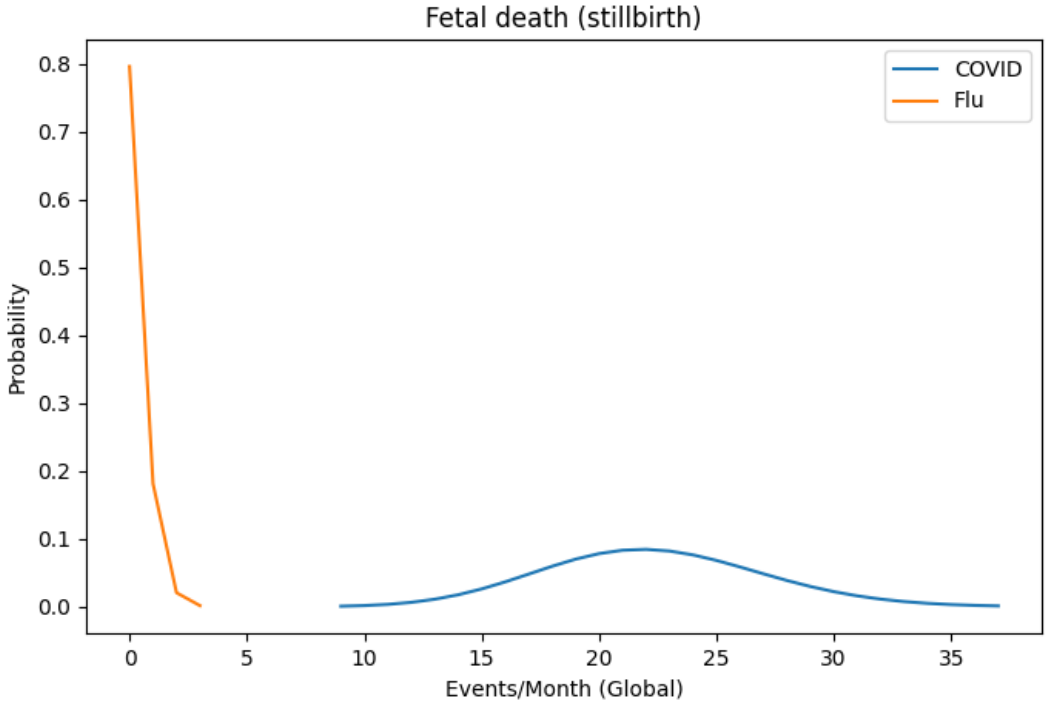

Fetal cystic hygroma
COVID
Flu
Probability
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
Events/Month (US)

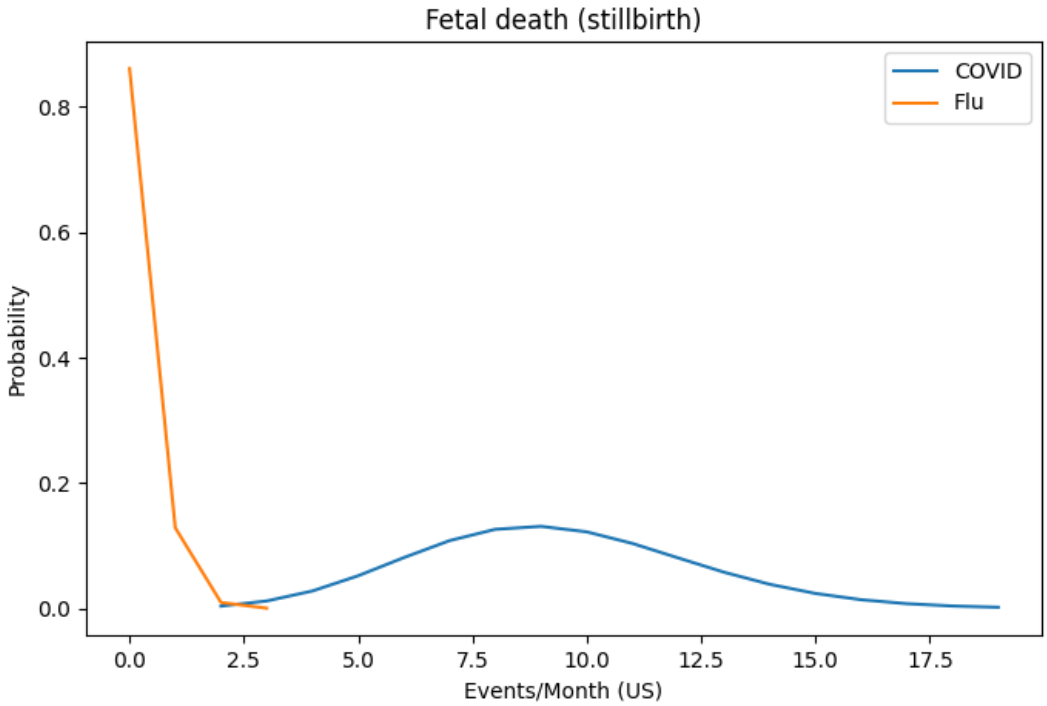

Fetal cystic hygroma
COVID
Flu
Probability
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0
1
2
3
4
5
6
Events/People (Global)

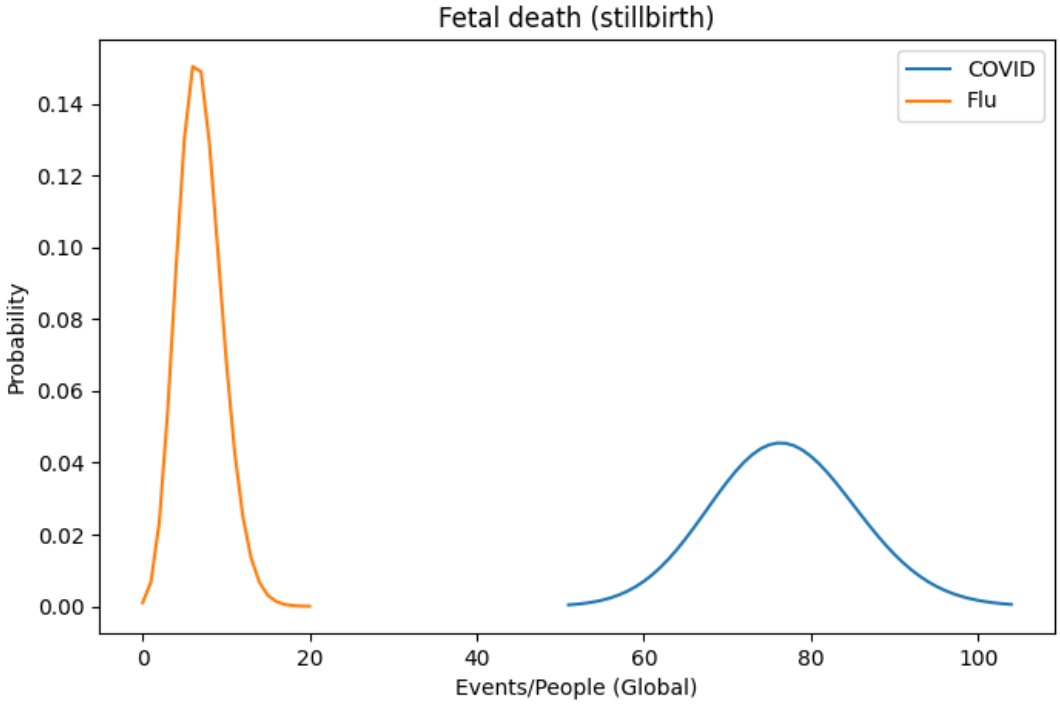

Fetal cystic hygroma
COVID
Flu
0.08
0.06
0.04
0.02
0.00
Probability
10
15
20
25
30
Events/People (US)

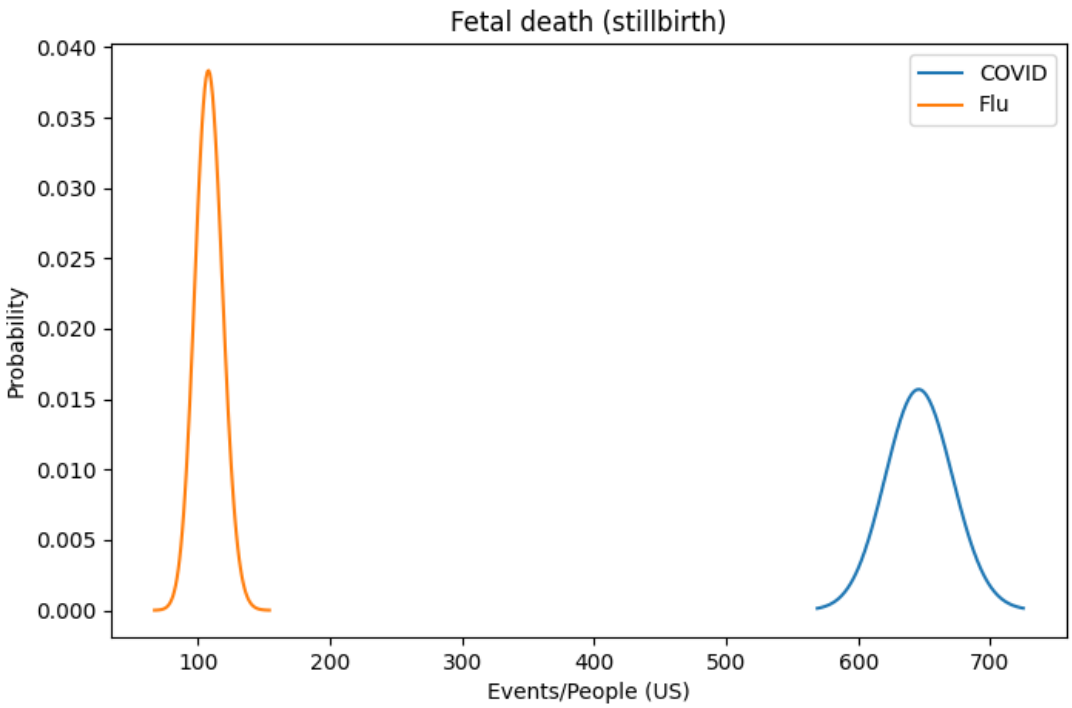

Fetal death (stillbirth)
COVID
Flu
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Probability
0
10
20
30
40
50
Events/Dose (Global)

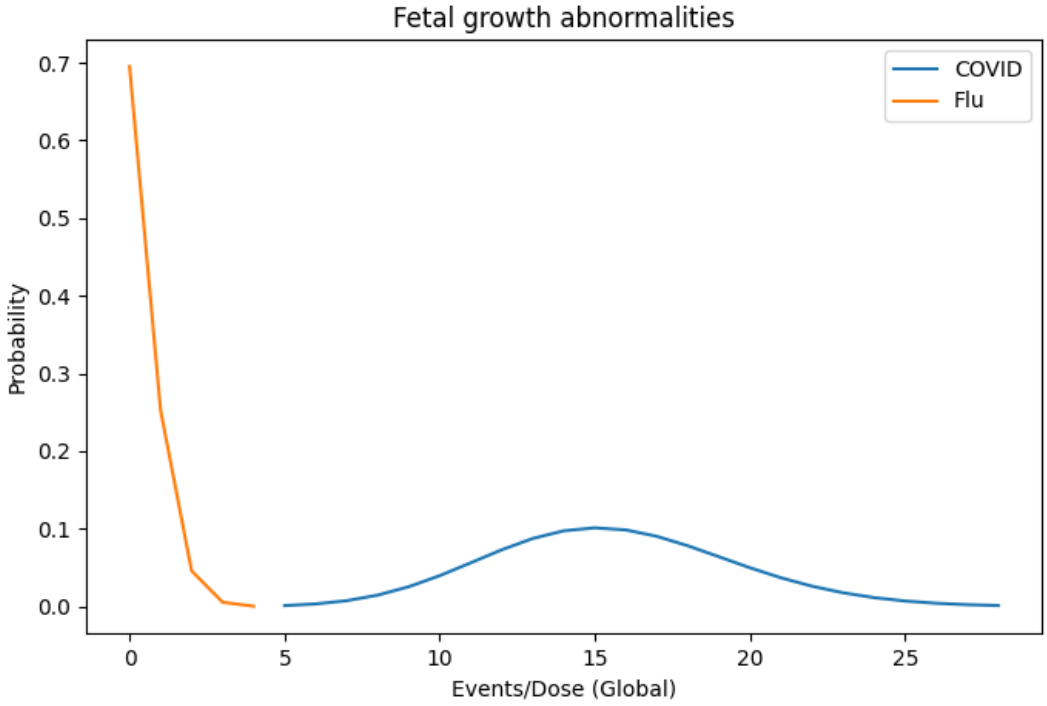

Fetal death (stillbirth)
COVID
Flu
Probability
0.10
0.08
0.06
0.04
0.02
0.00
0
50
100
150
200
250
300
350
Events/Dose (US)

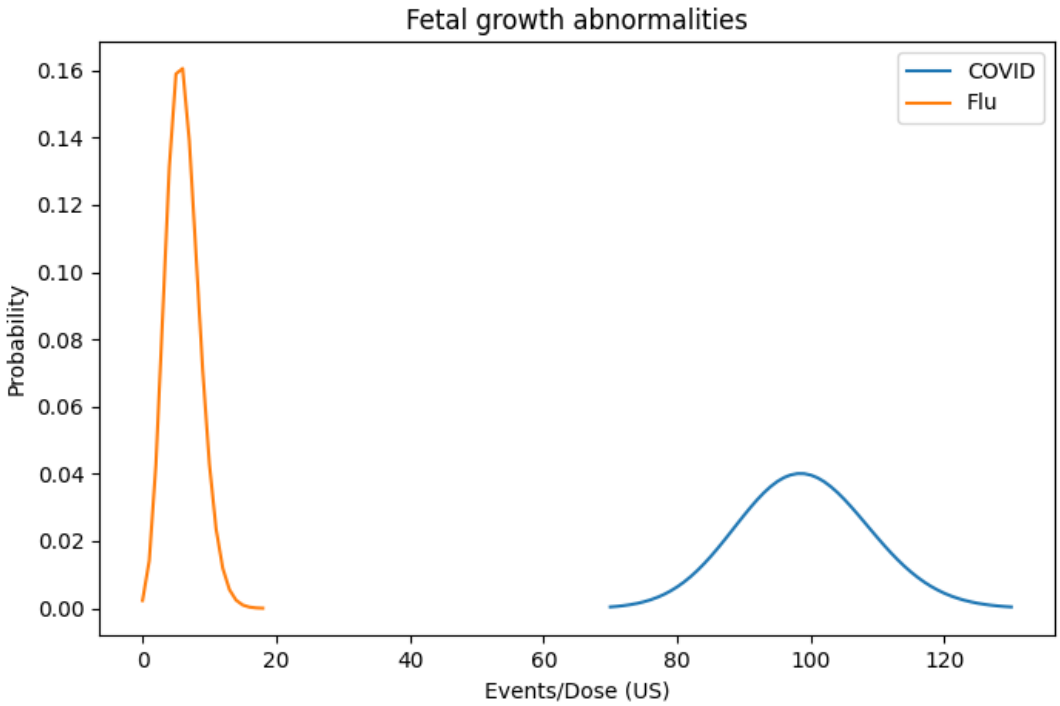

Fetal death (stillbirth)
COVID
Flu
Probability
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0
5
10
15
20
25
30
35
Events/Month (Global)

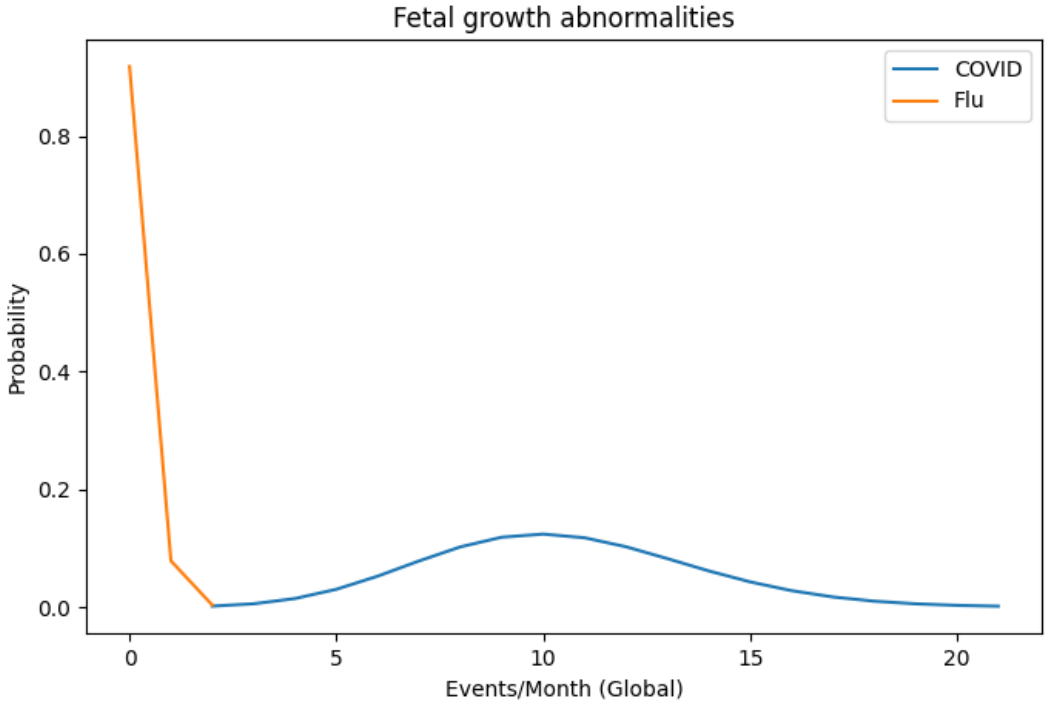

Fetal death (stillbirth)
COVID
Flu
Probability
0.0
0.2
0.4
0.6
0.8
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
Events/Month (US)

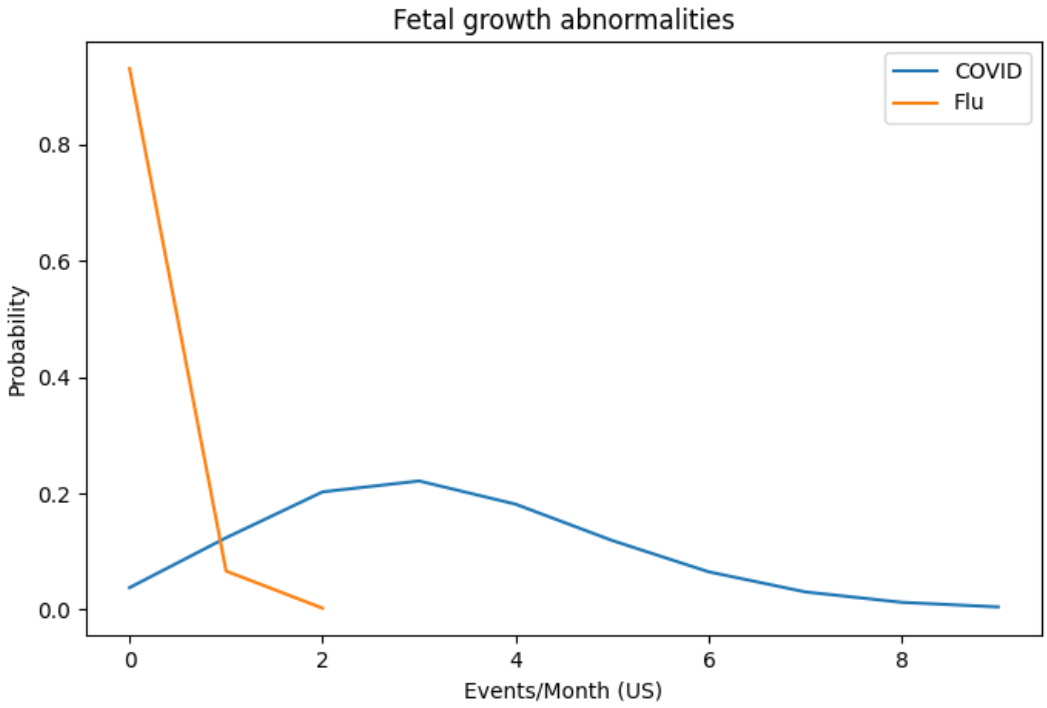

Fetal death (stillbirth)
COVID
Flu
Probability
0.00
0.02
0.04
0.06
0.08
0.10
0.12
0.14
0
20
40
60
80
100
Events/People (Global)

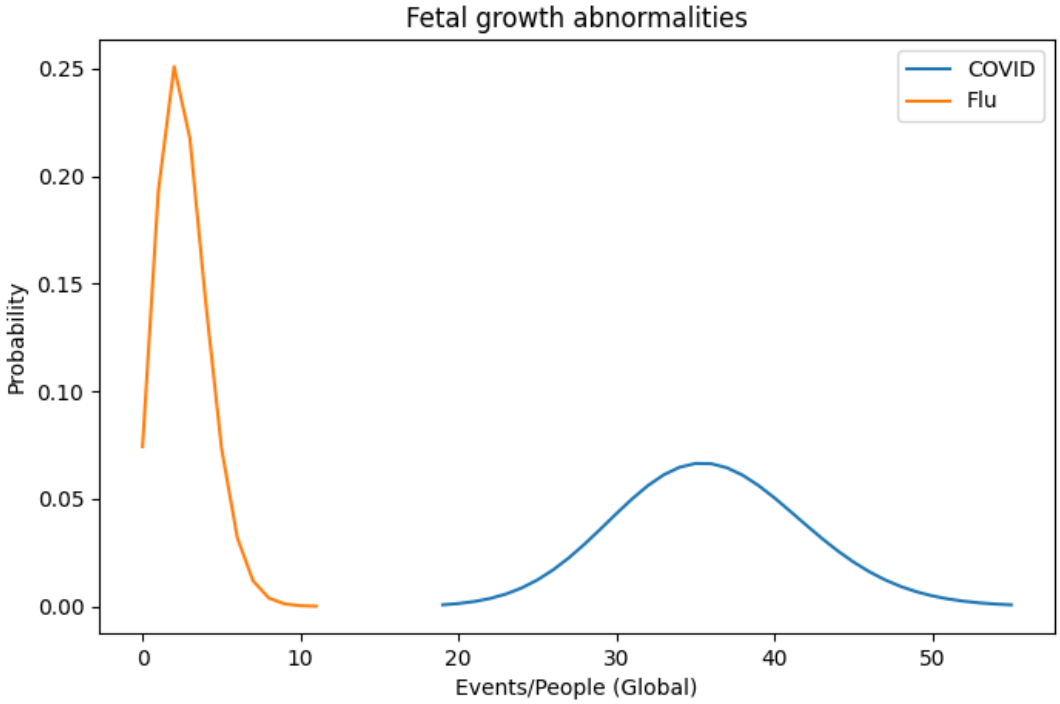

Fetal death (stillbirth)
COVID
Flu
Probability
0.040
0.035
0.030
0.025
0.020
0.015
0.010
0.005
0.000
100
200
300
400
500
600
700
Events/People (US)

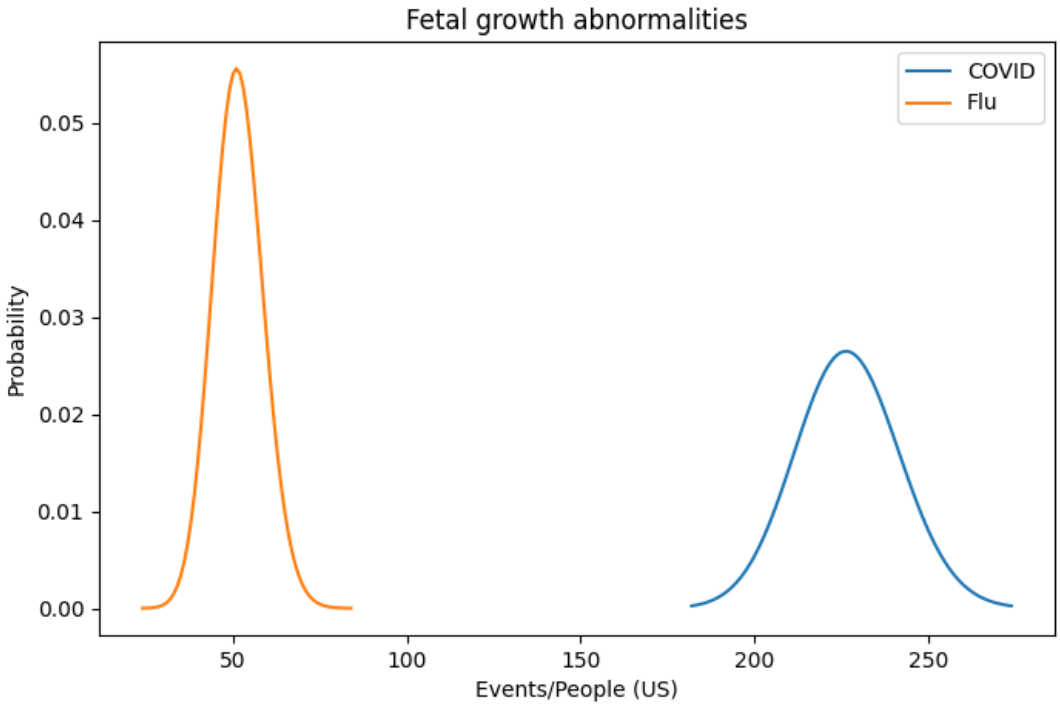

Fetal growth abnormalities
COVID
Flu
Probability
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0
5
10
15
20
25
Events/Dose (Global)

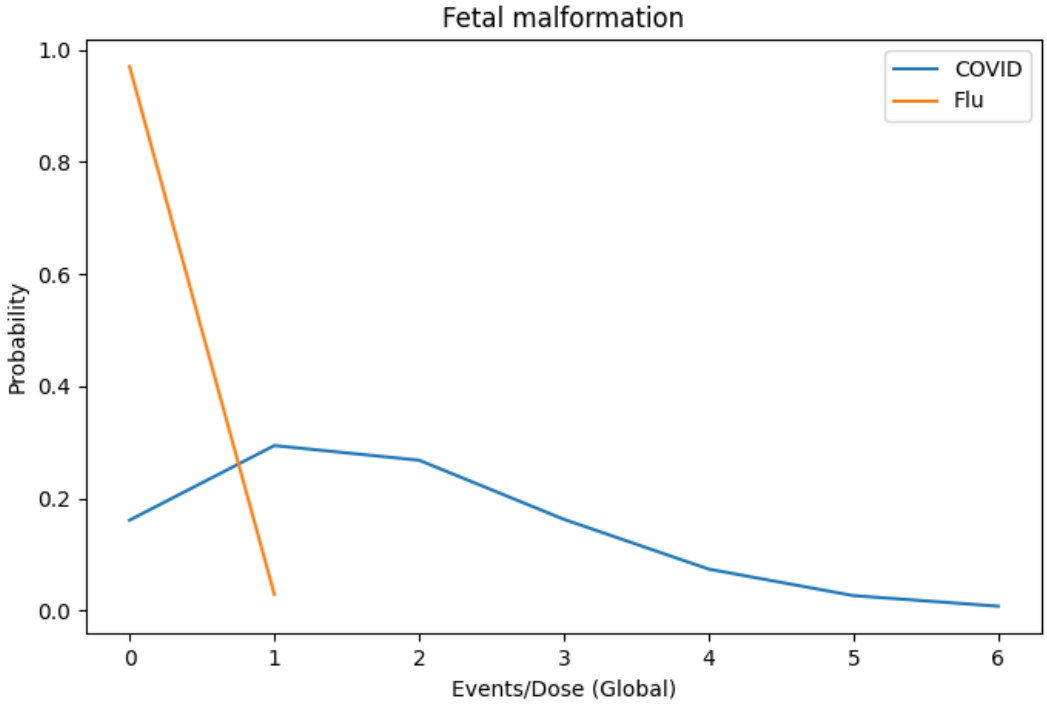

Fetal growth abnormalities
COVID
Flu
Probability
0.16
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
0
20
40
60
80
100
120
Events/Dose (US)

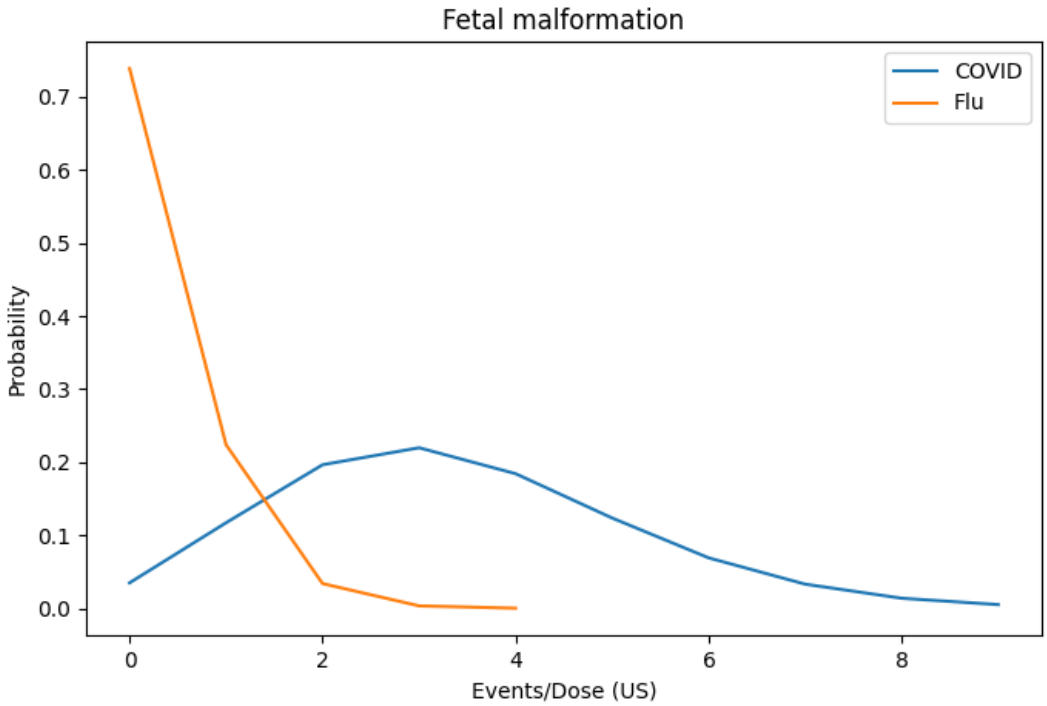

Fetal growth abnormalities
COVID
Flu
Probability
0.8
0.6
0.4
0.2
0.0
0
5
10
15
20
Events/Month (Global)

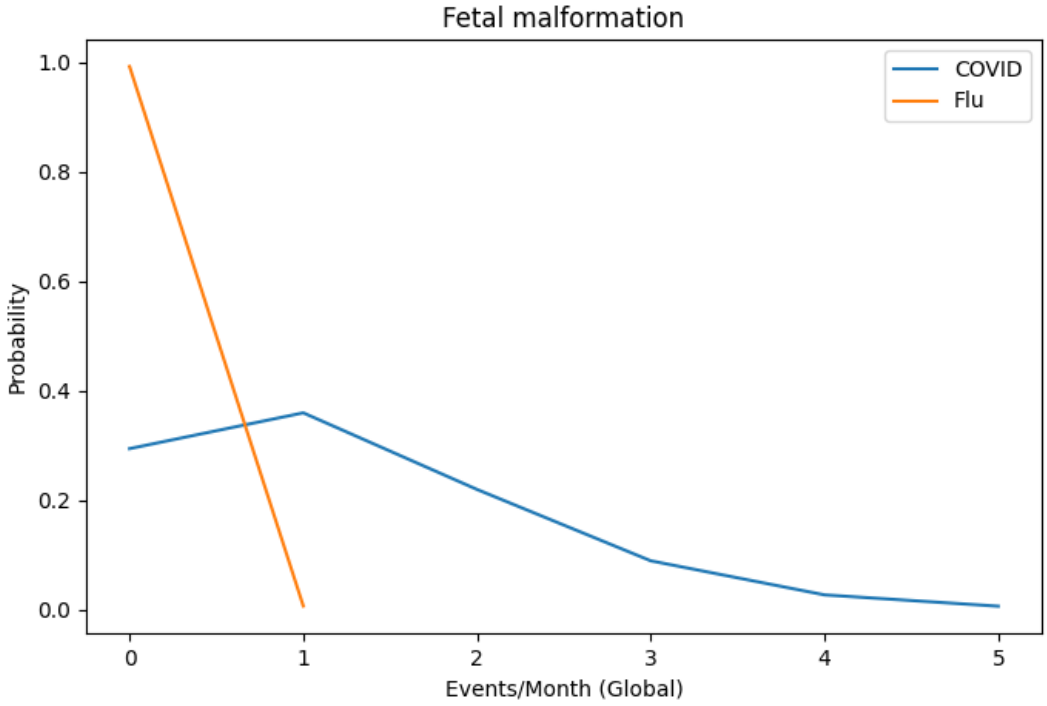

Fetal growth abnormalities
COVID
Flu
Probability
0.0
0.2
0.4
0.6
0.8
0
2
4
6
8
Events/Month (US)

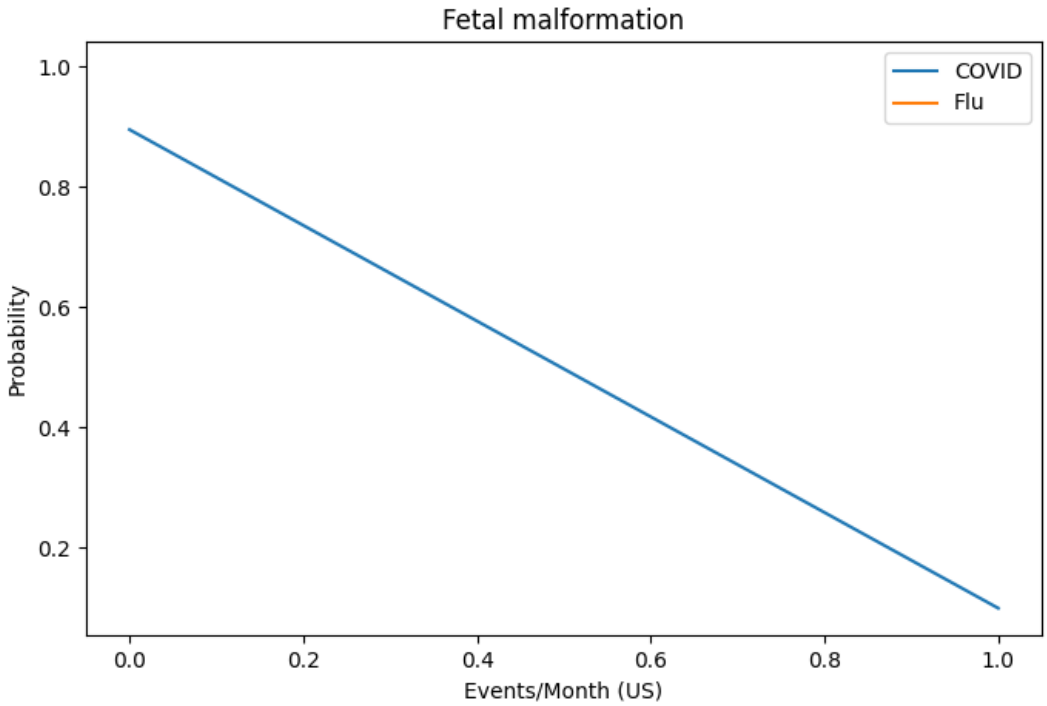

Fetal growth abnormalities
COVID
Flu
Probability
0.00
0.05
0.10
0.15
0.20
0.25
0
10
20
30
40
50
Events/People (Global)

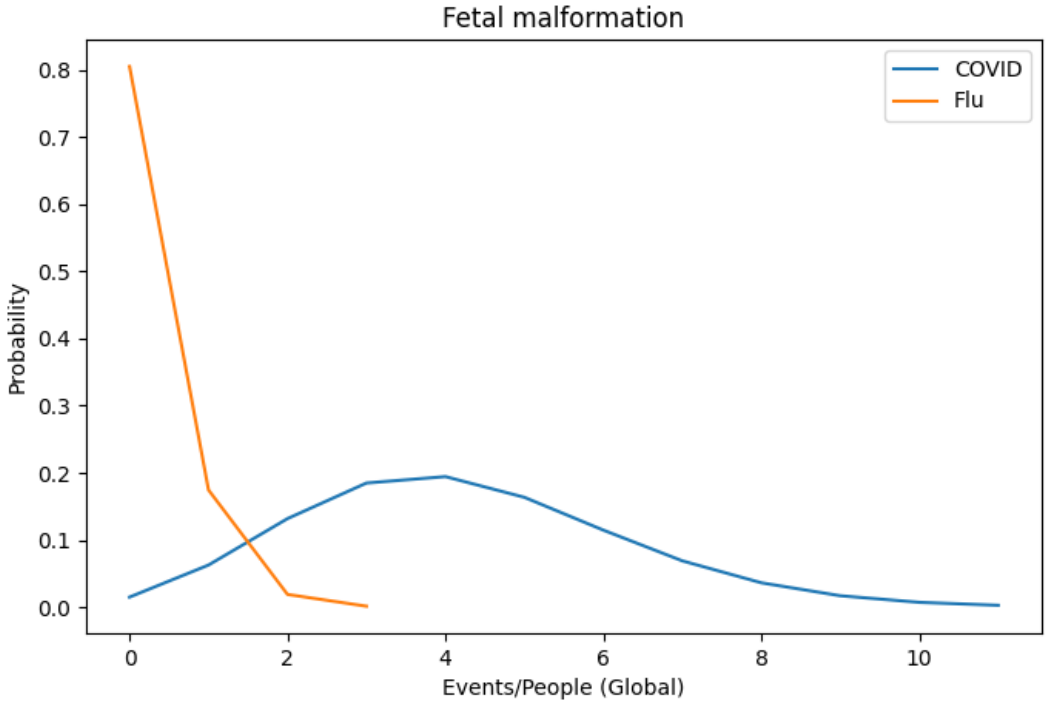

Fetal growth abnormalities
COVID
Flu
0.05
0.04
0.03
0.02
0.01
0.00
Probability
50
100
150
200
250
Events/People (US)

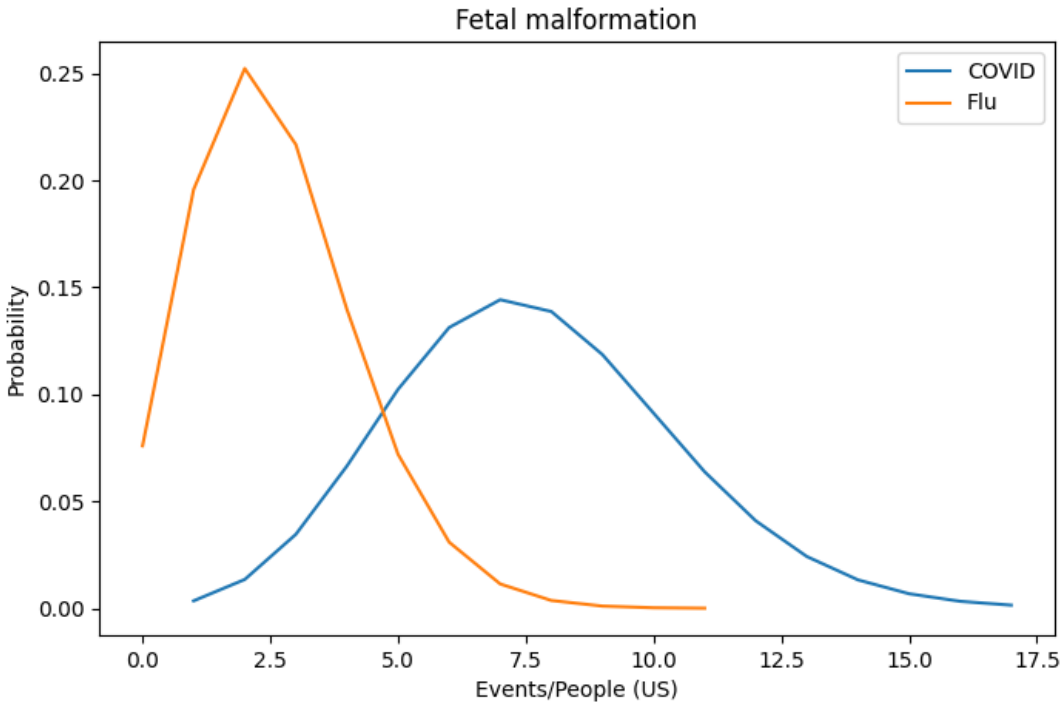

Fetal malformation
COVID
Flu
1.0
0.8
0.6
0.4
0.2
0.0
Probability
0
1
2
3
4
5
6
Events/Dose (Global)

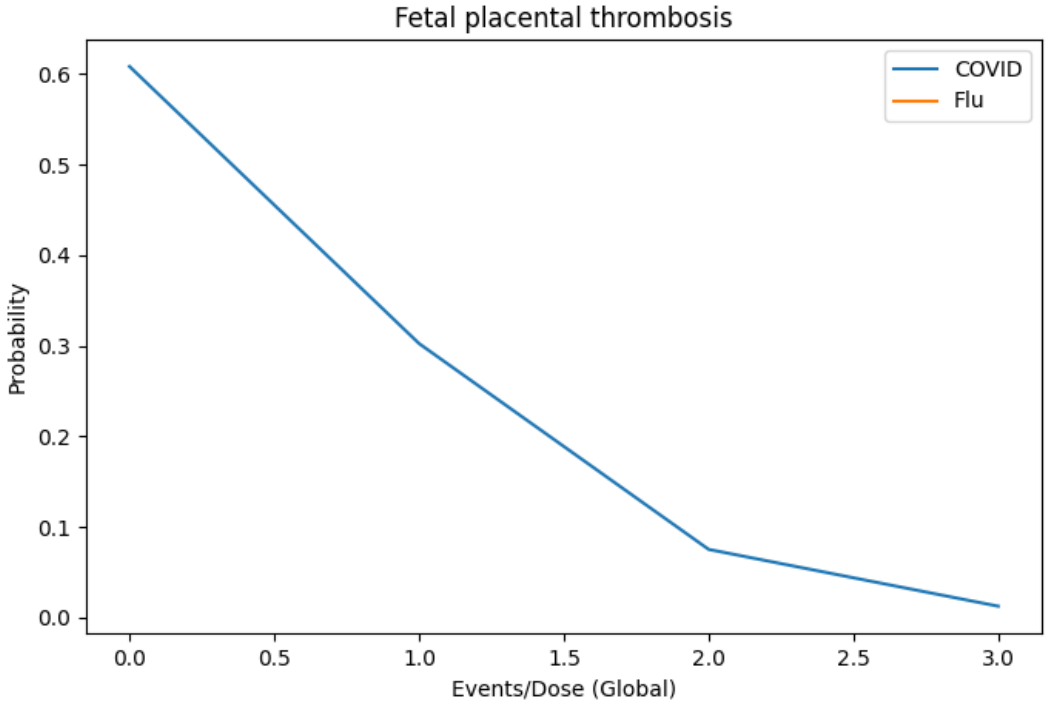

Fetal malformation
COVID
Flu
Probability
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0
2
4
6
8
Events/Dose (US)

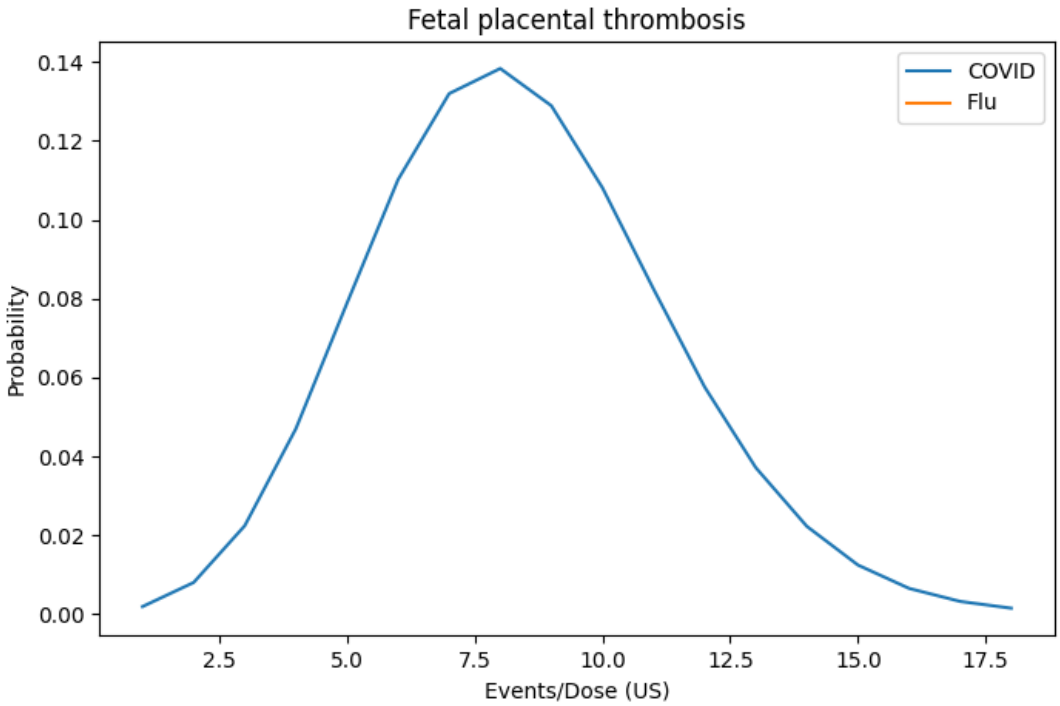

Fetal malformation
COVID
Flu
Probability
0.0
0.2
0.4
0.6
0.8
1.0
0
1
2
3
4
5
Events/Month (Global)

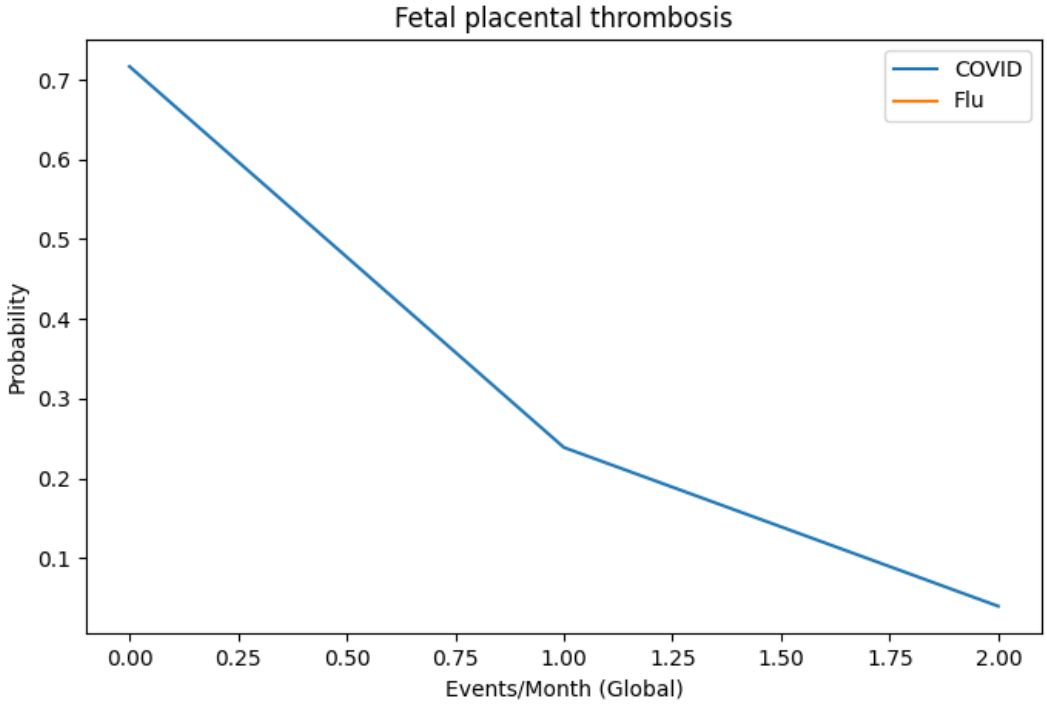

Fetal malformation
COVID
Flu
Probability
1.0
0.8
0.6
0.4
0.2
0.0
0.2
0.4
0.6
0.8
1.0
Events/Month (US)

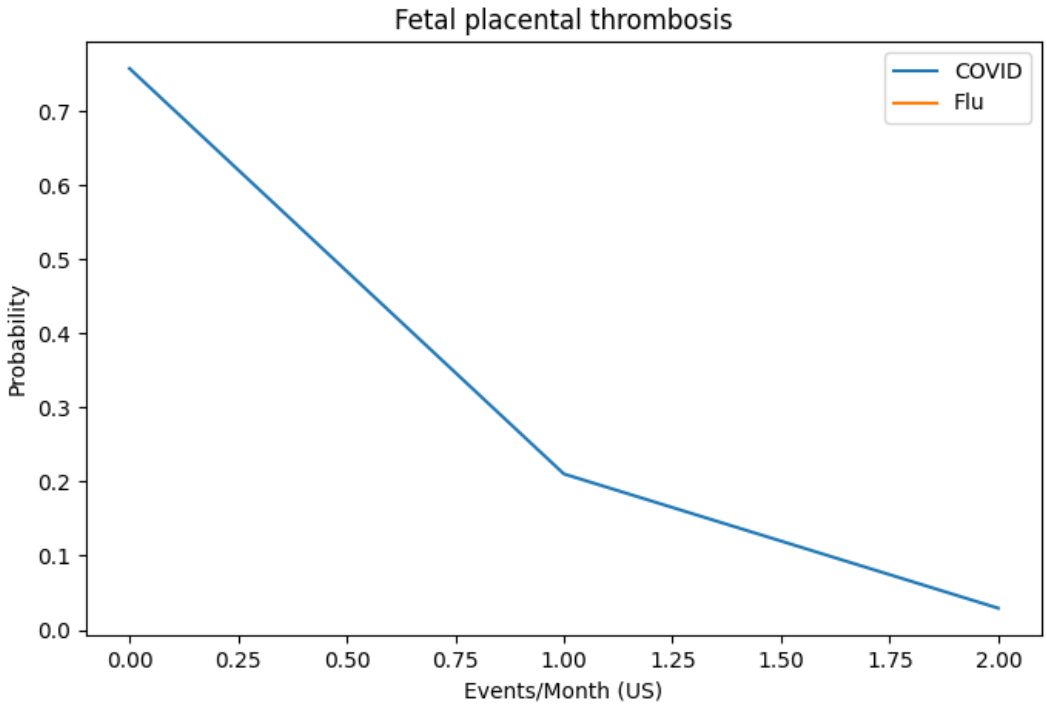

Fetal malformation
COVID
Flu
Probability
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0
2
4
6
8
10
Events/People (Global)

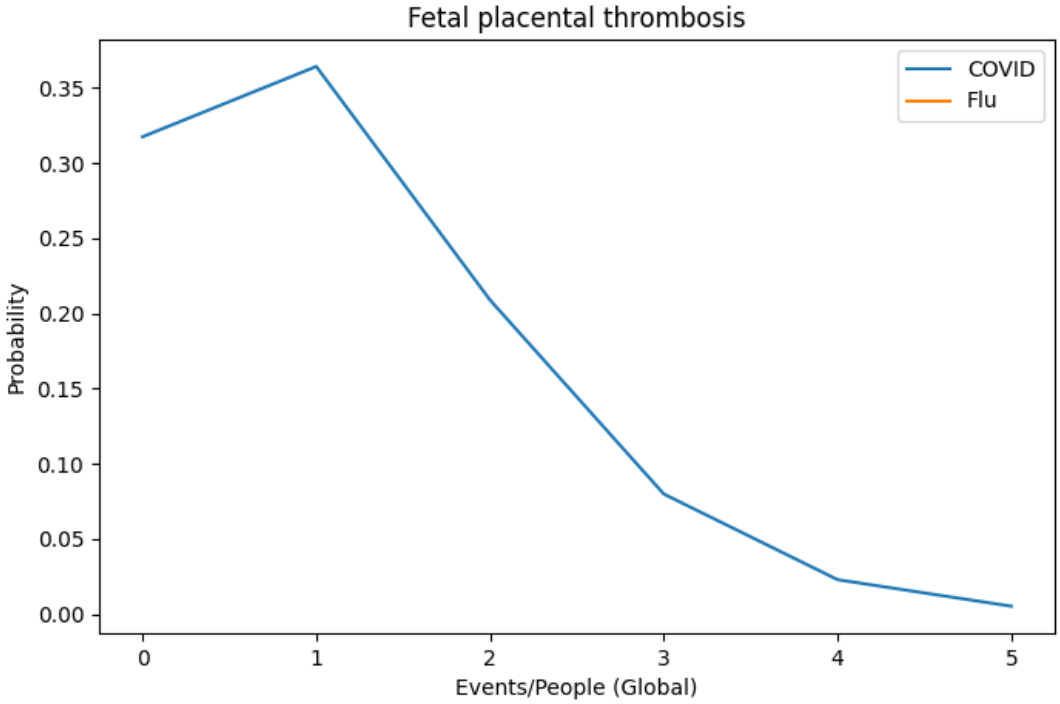

Fetal malformation
COVID
Flu
Probability
0.25
0.20
0.15
0.10
0.05
0.00
0.0
2.5
5.0
7.5
10.0
12.5
15.0
17.5
Events/People (US)

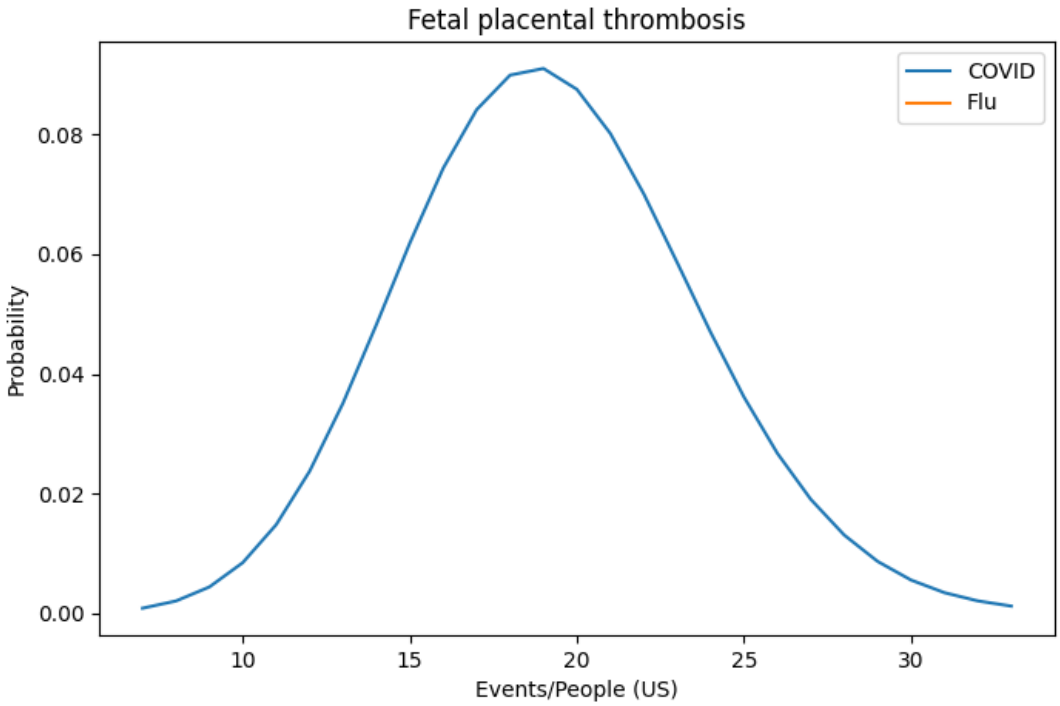

Fetal placental thrombosis
COVID
Flu
Probability
0.6
0.5
0.4
0.3
0.2
0.1
0.0
0.0
0.5
1.0
1.5
2.0
2.5
3.0
Events/Dose (Global)

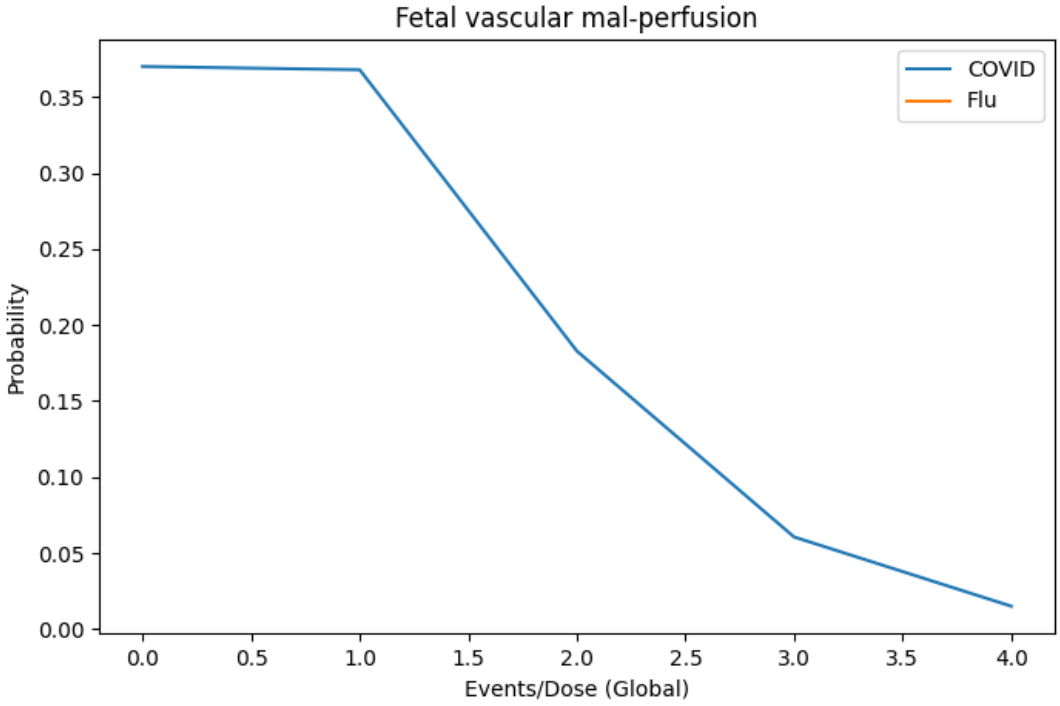

Fetal placental thrombosis
COVID
Flu
Probability
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
2.5
5.0
7.5
10.0
12.5
15.0
17.5
Events/Dose (US)

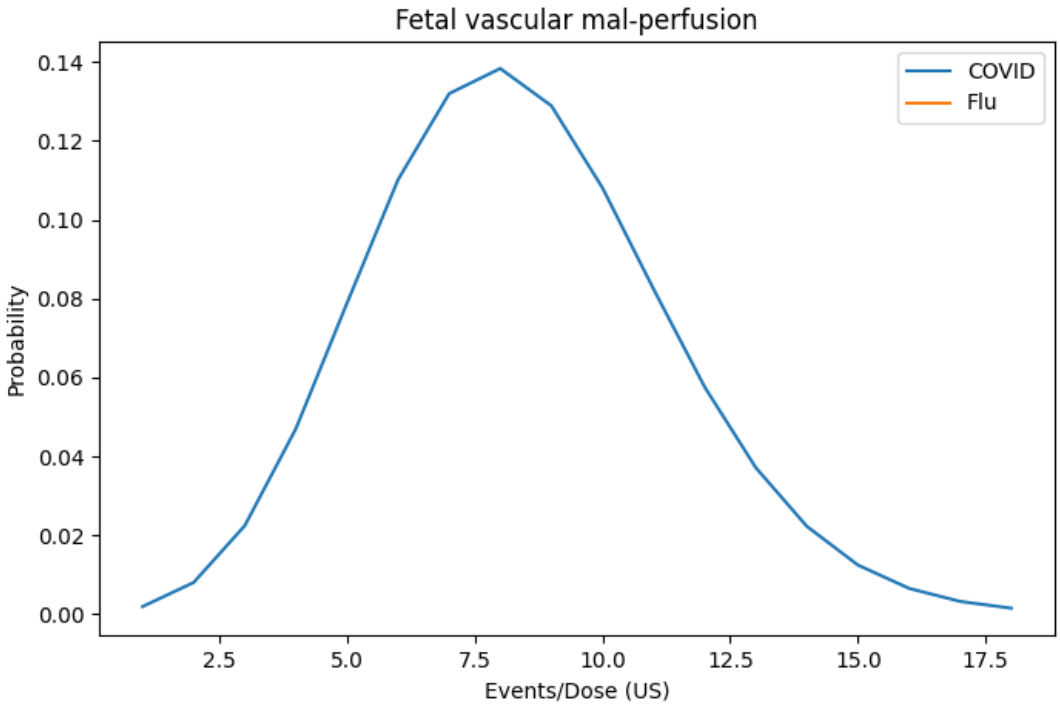

Fetal placental thrombosis
COVID
Flu
Probability
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
Events/Month (Global)

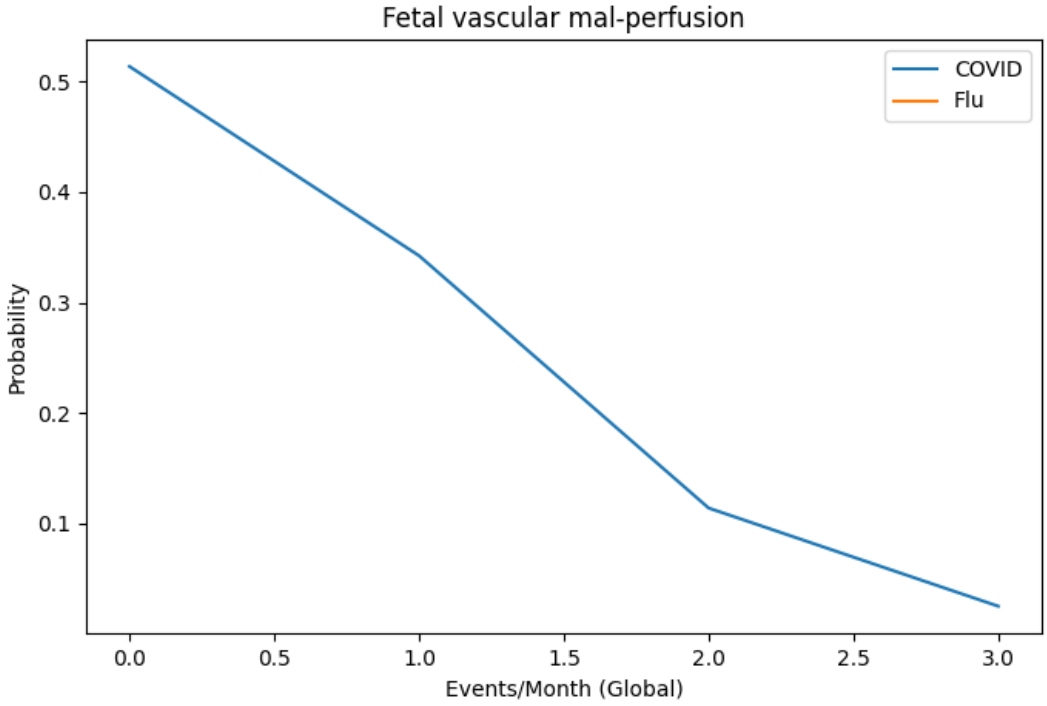

Fetal placental thrombosis
COVID
Flu
Probability
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
Events/Month (US)

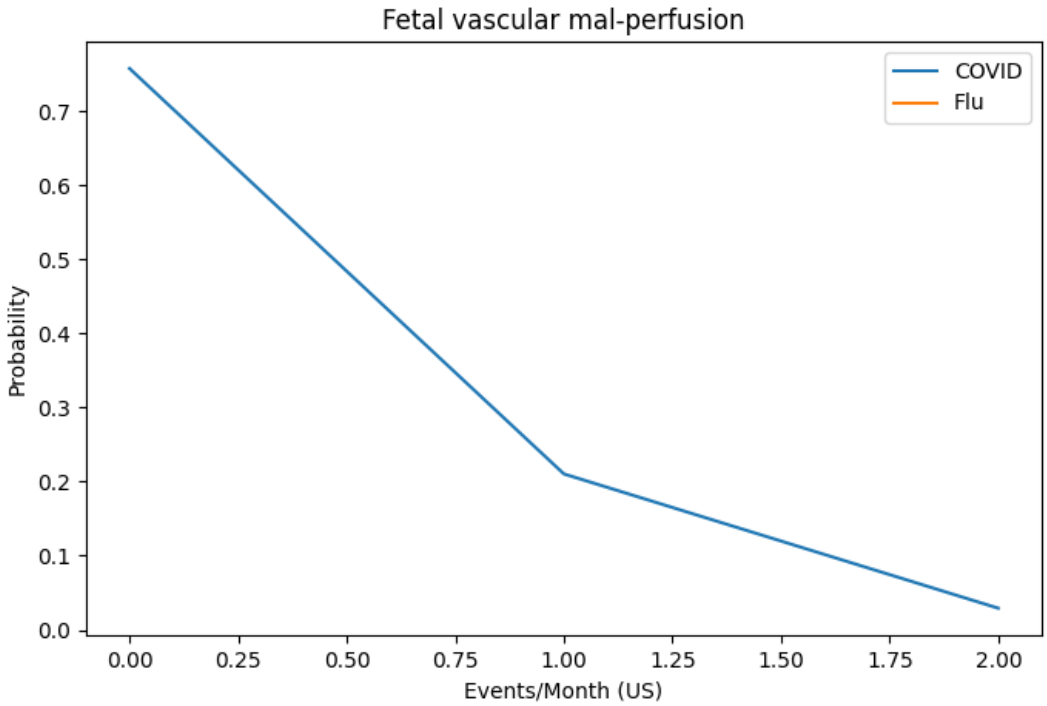

Fetal placental thrombosis
COVID
Flu
Probability
0.00
0.05
0.10
0.15
0.20
0.25
0.30
0.35
0
1
2
3
4
5
Events/People (Global)

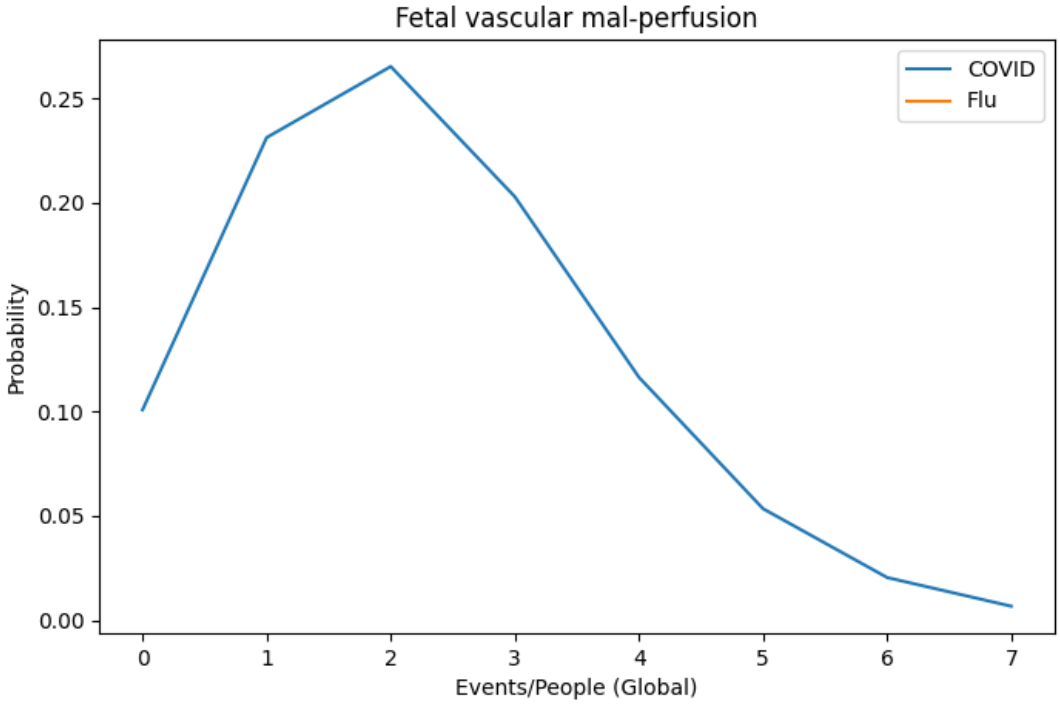

Fetal placental thrombosis
COVID
Flu
0.08
0.06
0.04
0.02
0.00
Probability
10
15
20
25
30
Events/People (US)

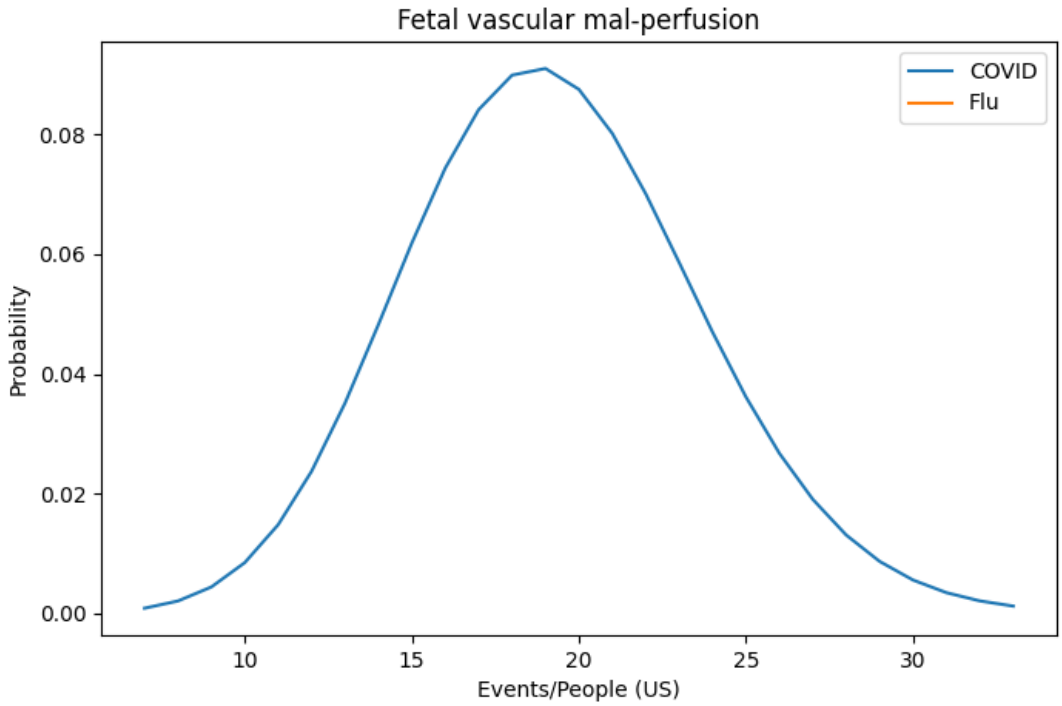

Fetal vascular mal-perfusion
COVID
Flu
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
Probability
0.0
0.5
1.0
1.5
2.0
2.5
3.0
3.5
4.0
Events/Dose (Global)

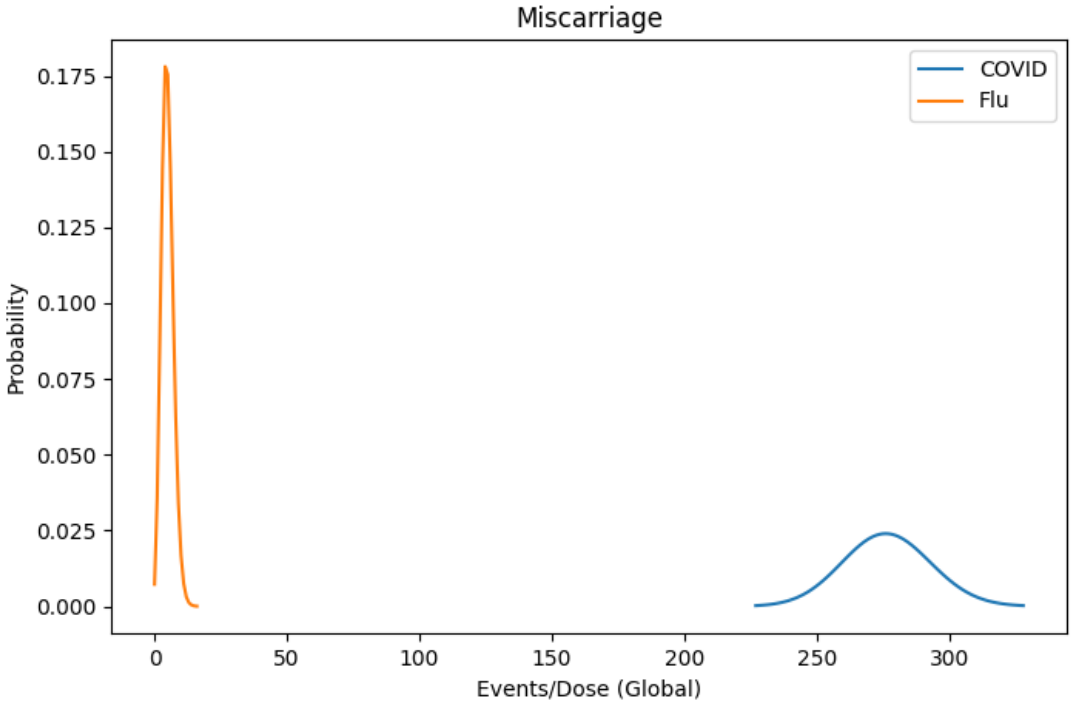

Fetal vascular mal-perfusion
COVID
Flu
Probability
0.14
0.12
0.10
0.08
0.06
0.04
0.02
0.00
2.5
5.0
7.5
10.0
12.5
15.0
17.5
Events/Dose (US)

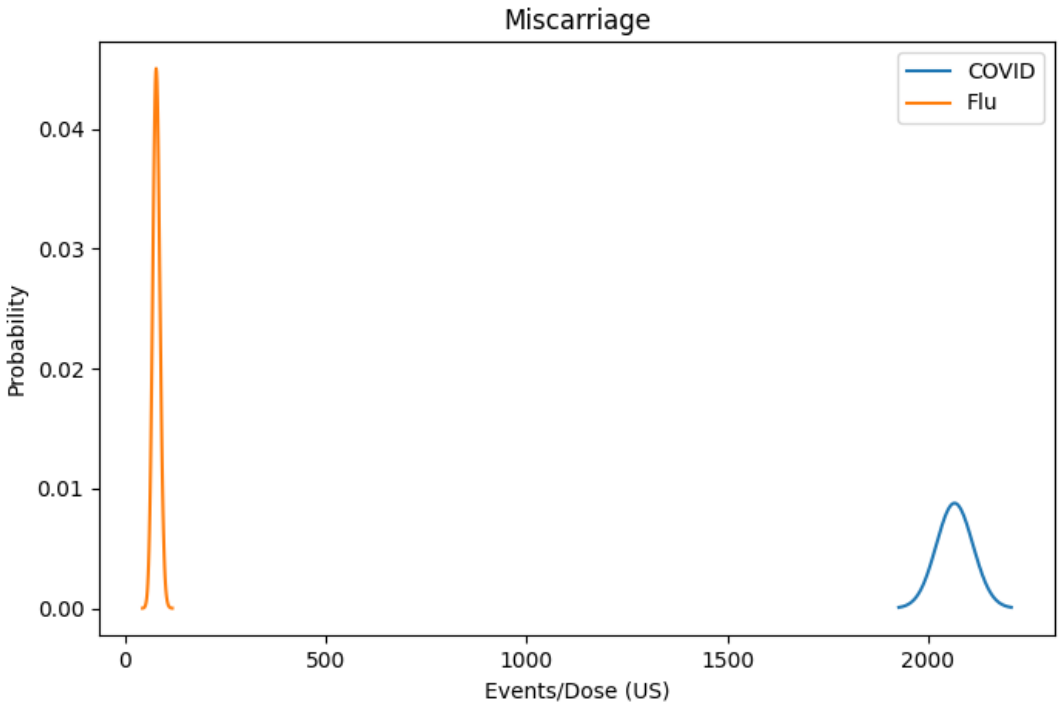

Fetal vascular mal-perfusion
COVID
Flu
Probability
0.5
0.4
0.3
0.2
0.1
0.0
0.5
1.0
1.5
2.0
2.5
3.0
Events/Month (Global)

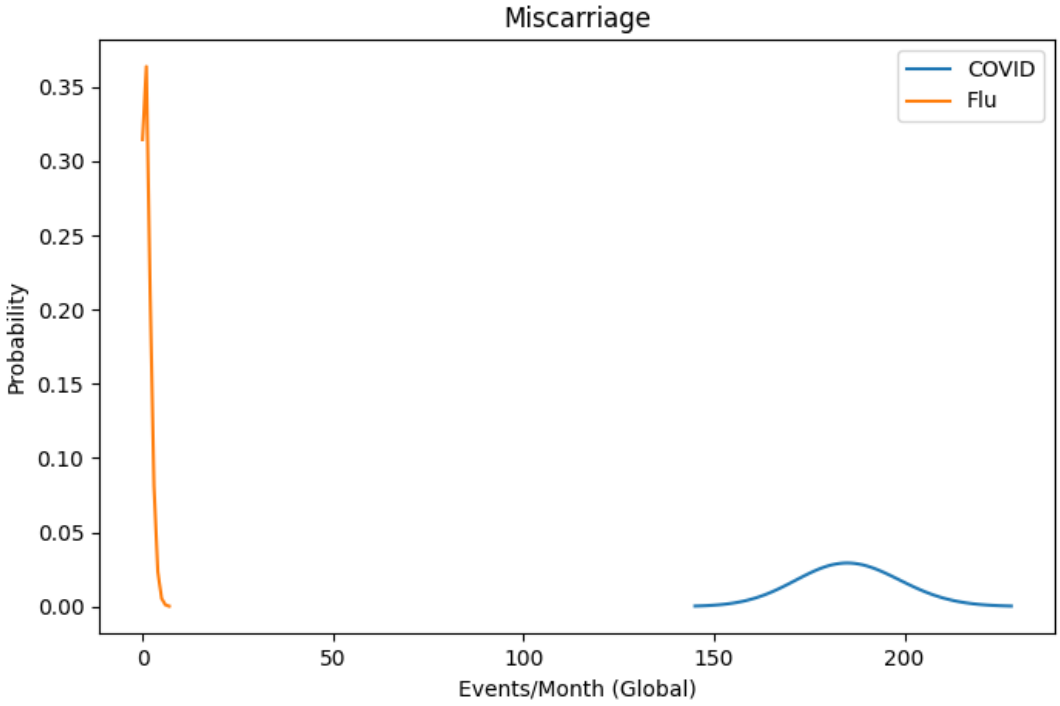

Fetal vascular mal-perfusion
COVID
Flu
Probability
0.0
0.1
0.2
0.3
0.4
0.5
0.6
0.7
0.00
0.25
0.50
0.75
1.00
1.25
1.50
1.75
2.00
Events/Month (US)

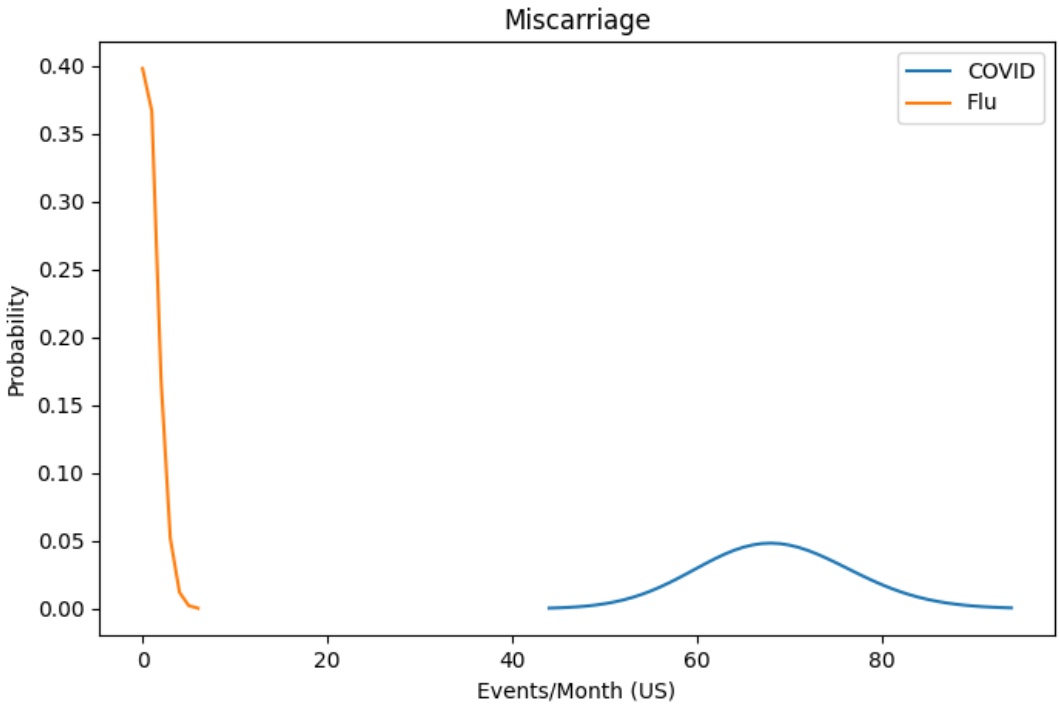

Fetal vascular mal-perfusion
COVID
Flu
Probability
0.00
0.05
0.10
0.15
0.20
0.25
0
1
2
3
4
5
6
7
Events/People (Global)

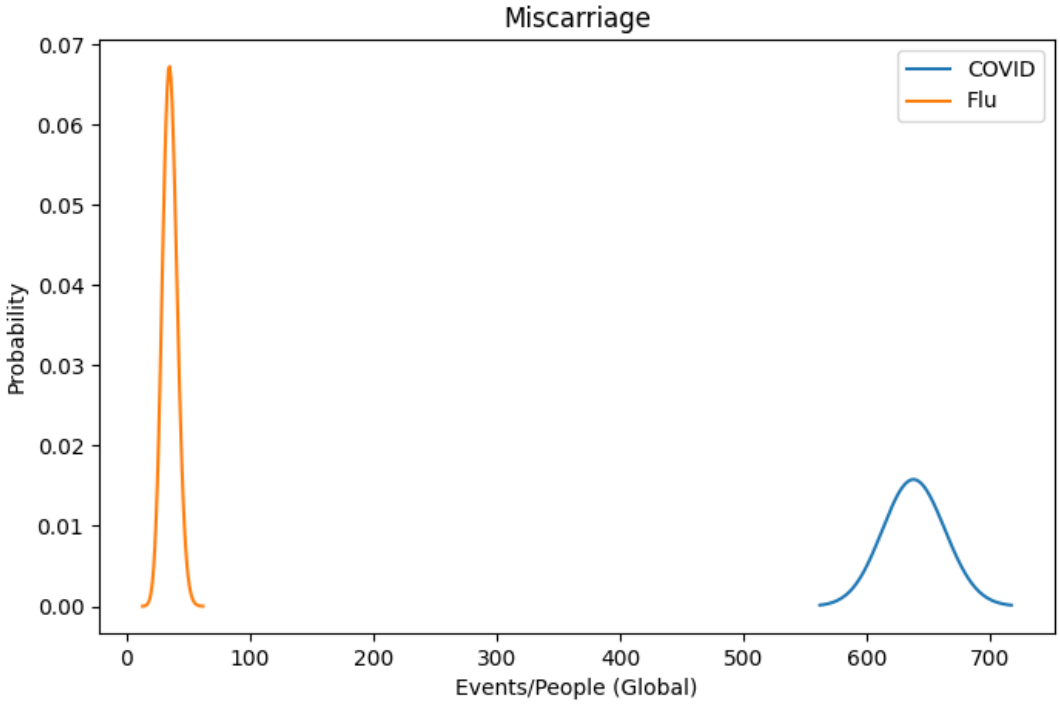

Fetal vascular mal-perfusion
COVID
Flu
0.08
0.06
0.04
0.02
0.00
Probability
10
15
20
25
30
Events/People (US)

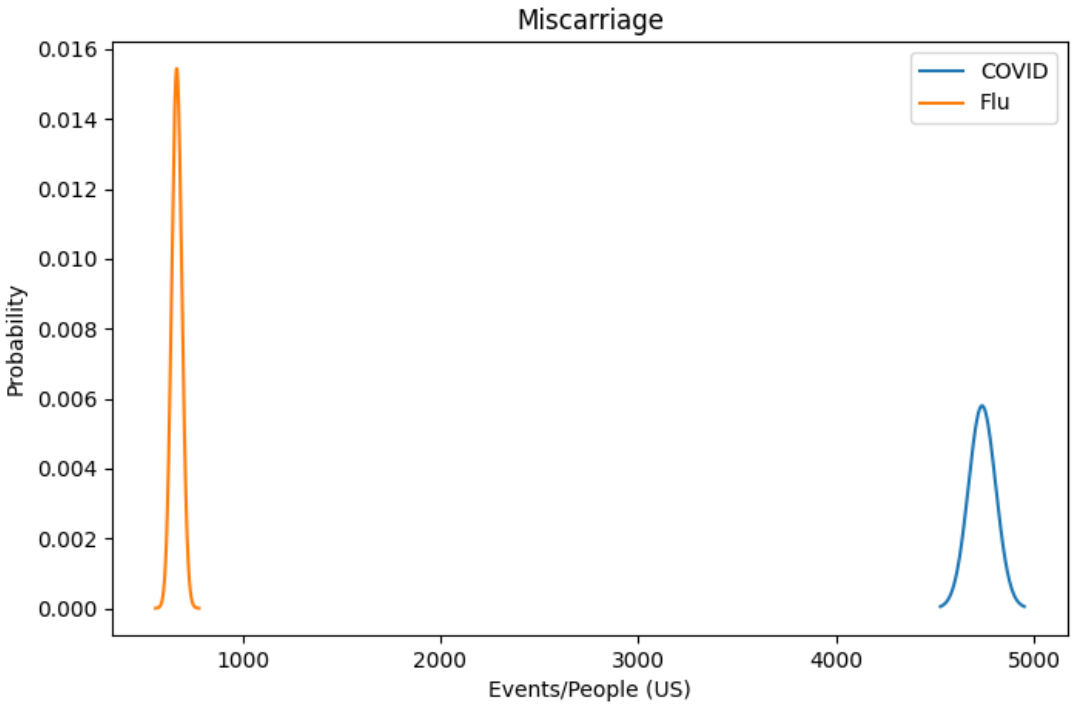

Miscarriage
COVID
Flu
0.175
0.150
0.125
0.100
0.075
0.050
0.025
0.000
Probability
0
50
100
150
200
250
300
Events/Dose (Global)


Miscarriage
COVID
Flu
Probability
0.04
0.03
0.02
0.01
0.00
0
500
1000
1500
2000
Events/Dose (US)


Miscarriage
COVID
Flu
Probability
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0
50
100
150
200
Events/Month (Global)


Miscarriage
COVID
Flu
Probability
0.40
0.35
0.30
0.25
0.20
0.15
0.10
0.05
0.00
0
20
40
60
80
Events/Month (US)


Miscarriage
COVID
Flu
Probability
0.07
0.06
0.05
0.04
0.03
0.02
0.01
0.00
0
100
200
300
400
500
600
700
Events/People (Global)


Miscarriage
COVID
Flu
Probability
0.016
0.014
0.012
0.010
0.008
0.006
0.004
0.002
0.000
1000
2000
3000
4000
5000
Events/People (US)