

# Analysis of Adverse Event Rates

In this section we compare the rate of US and Global 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. Table 1 below shows the count of AE reported post vaccine in VAERS along with the mean rate of report over the time it has been available (18 months), the mean rate of report per billion doses given (XX billion), and the mean rate of report per billion people vaccinated (XX billion). 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 where the time is 281 months, number of doses given is XX billion, and the number of people vaccinated is XX billion.

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 180
Miscarriage	1232 259	68.4 0.922	2070 78.5	4740 863
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 3.33
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 6.67
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 66.7

<b>Adverse Event</b>	<b>US Count of AE reports post Vaccine</b>	<b>US Rate of reported AE (count/Month)</b>	<b>US Rate of reported AE (count/billion doses)</b>	<b>US Rate of reported AE (count/billion people vaccinated)</b>
Fetal abnormal surveillance	125	6.94	210	481
	36	0.128	10.9	120
Fetal placental thrombosis	5	0.278	8.39	19.2
	0	0.00	0.00	0.00
Fetal death (stillbirth)	168	9.33	282	646
	42	0.149	12.7	140

Table 1

<b>Adverse Event</b>	<b>Global Count of AE reports post Vaccine</b>	<b>Global Rate of reported AE (count/Month)</b>	<b>Global Rate of reported AE (count/billion doses)</b>	<b>Global Rate of reported AE (count/billion people vaccinated)</b>
Abnormal uterine bleeding (menstrual irregularity)	12843	714	1060	2460
	65	0.231	0.985	10.8
Miscarriage	3338	185	277	638
	325	1.16	4.92	54.2
Fetal chromosomal abnormalities	10	0.556	0.829	1.91
	0	0.00	0.00	0.00
Fetal malformation	22	1.22	1.82	4.21
	2	0.00712	0.0303	0.333
Fetal cystic hygroma	8	0.444	0.663	1.53
	0	0.00	0.00	0.00
Fetal cardiac disorders	18	1.00	1.49	3.44
	2	0.00712	0.0303	0.333
Fetal arrhythmia	5	0.278	0.414	0.956
	0	0.00	0.00	0.00
Fetal cardiac arrest	20	1.11	1.66	3.82
	0	0.00	0.00	0.00
Fetal vascular mal-perfusion	12	0.667	0.994	2.29
	0	0.00	0.00	0.00
Fetal growth abnormalities	188	10.4	15.6	35.9
	24	0.0854	0.364	4.00

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)
Fetal abnormal surveillance	178	9.89	14.7	34.0
	45	0.160	0.682	7.50
Fetal placental thrombosis	6	0.333	0.497	1.15
	0	0.00	0.00	0.00
Fetal death (stillbirth)	402	22.3	33.3	76.9
	64	0.228	0.970	10.7

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  $P$ .

$$n_i \leftarrow \text{Poisson}(r_i)$$

That is, we create a set of 1,000,000 tuples of event counts  $\{(n_1, n_2)_1, (n_1, n_2)_2, \dots, (n_1, n_2)_{1000000}\}$  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  $n_2$

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

The mean of  $R$  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.

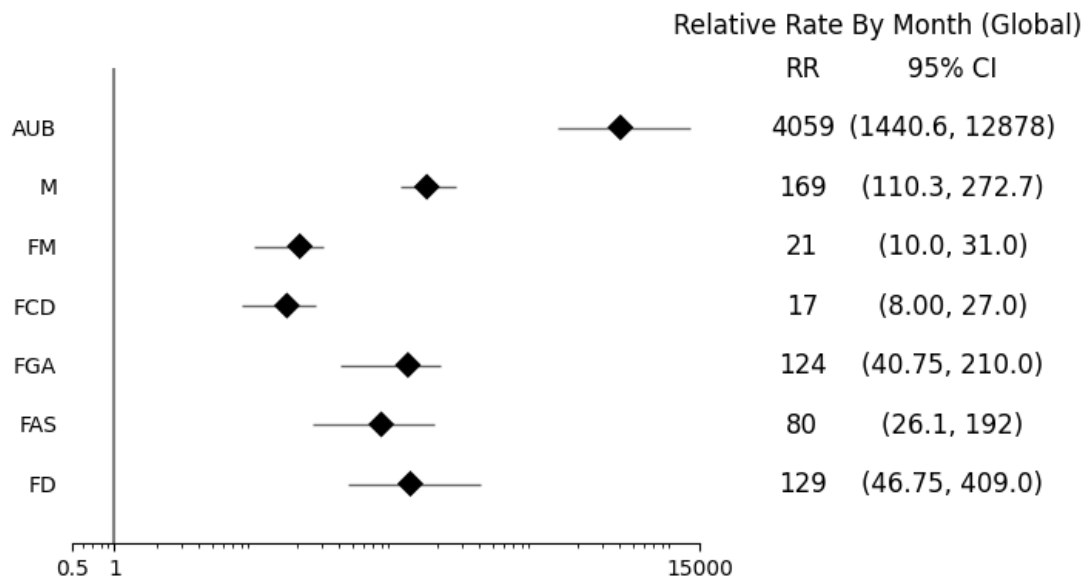
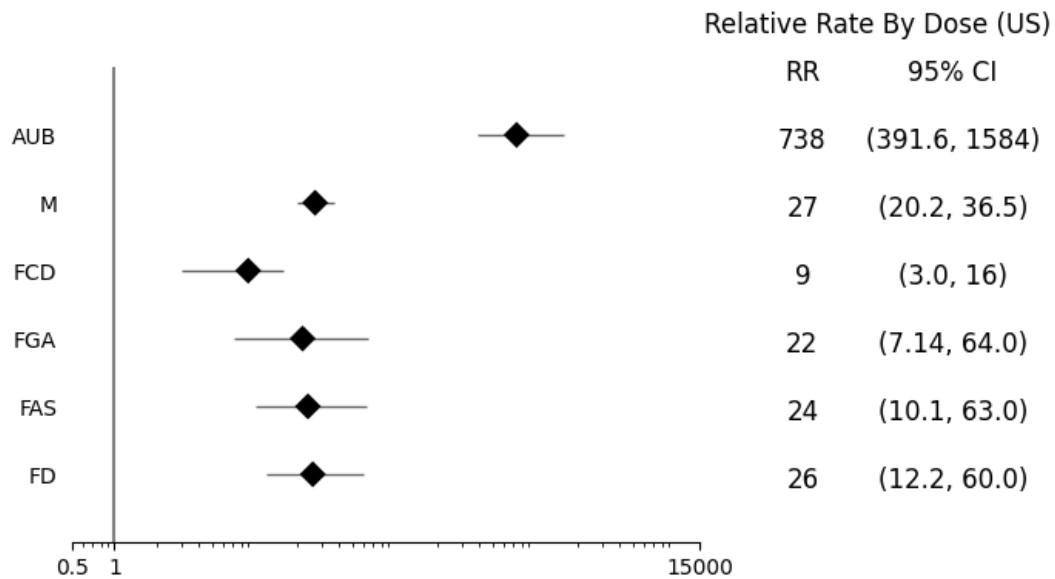
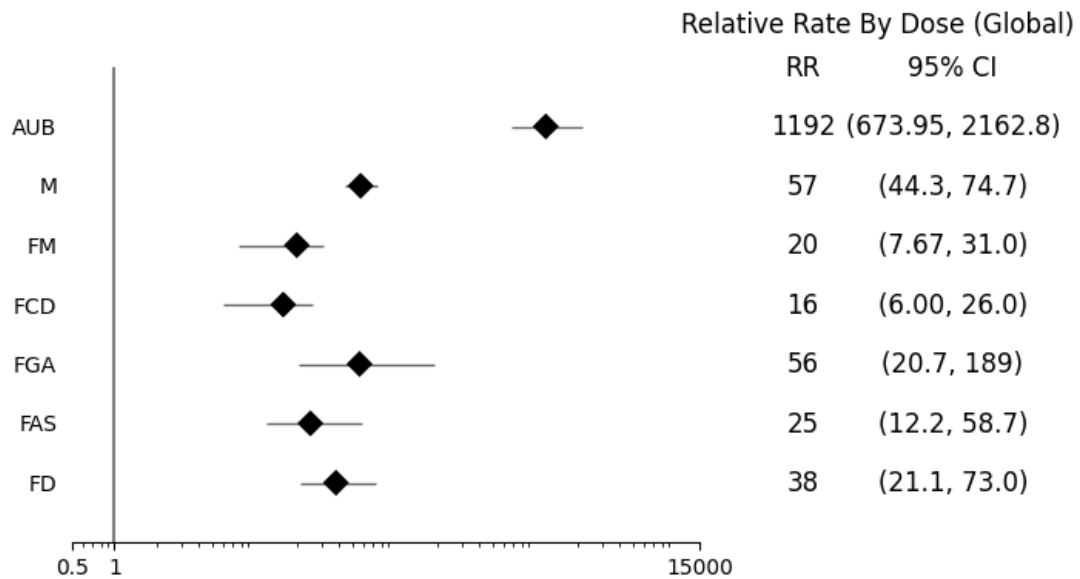
We report in Table 3 below the relative rate of post COVID-19 vaccine AE reports to post Flu vaccine AE report. Global values are the top line and US values are in the bottom line for each AE. A relative rate greater than 1 implies that there are more post COVID-19 vaccine AE reports than post Flu vaccine 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.

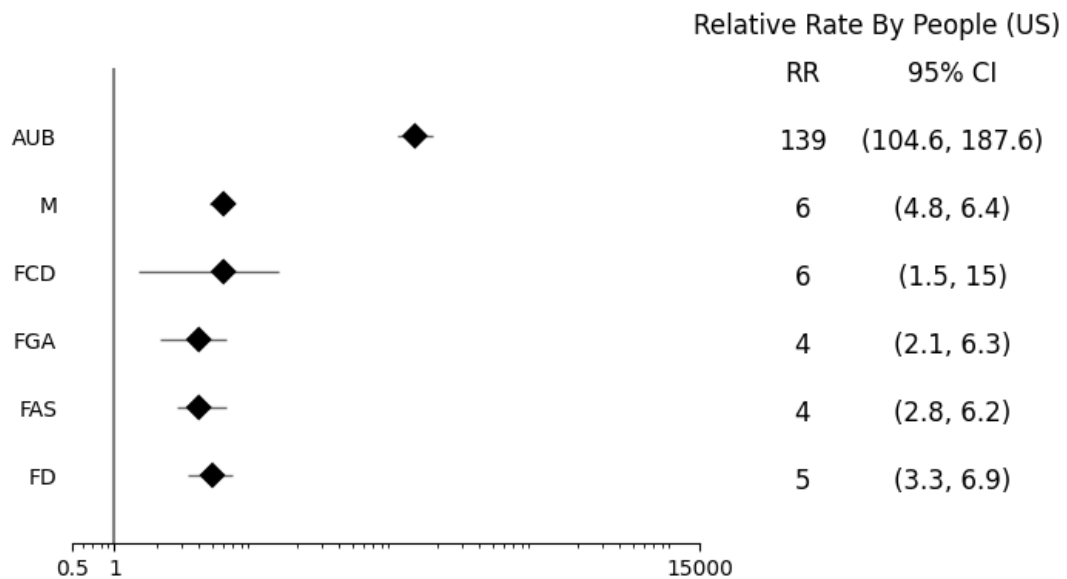
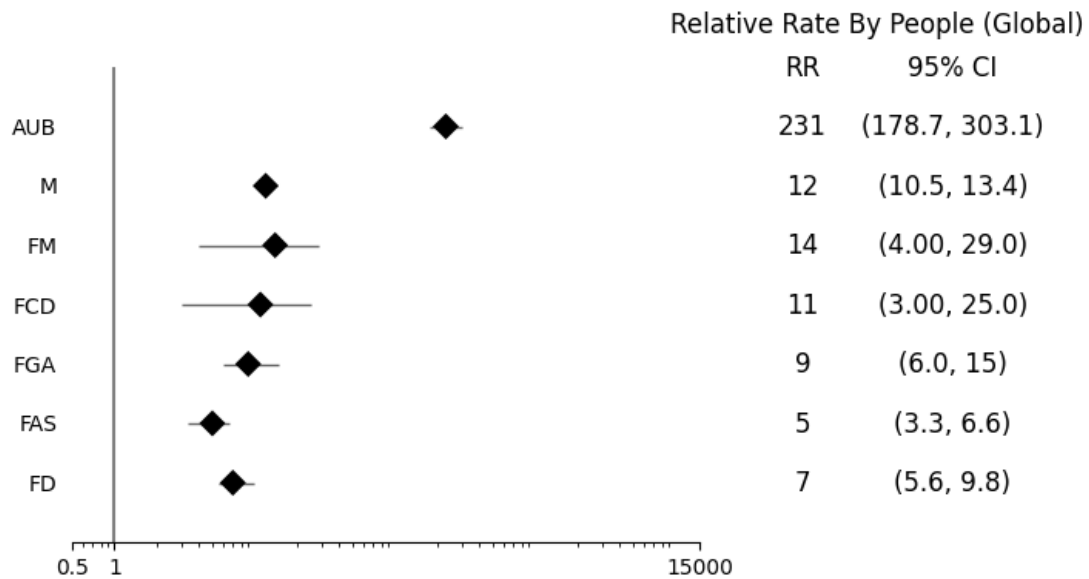
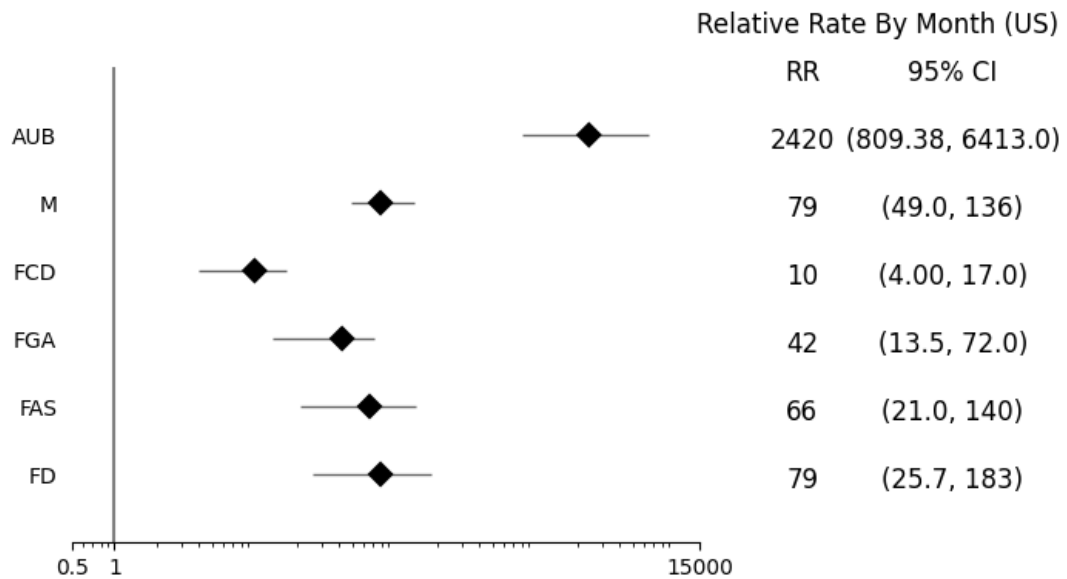
Adverse Event	Relative Rate (by time)	Relative Rate (by dose)	Relative Rate (by person vaccinated)
Abnormal uterine bleeding (menstrual irregularity)	4059 [1440.6-12878] p=0.0 2420 [809.38-6413.0] p=0.0	1192 [673.95-2162.8] p=0.0 738 [391.6-1584] p=0.0	231 [178.7-303.1] p=0.0 139 [104.6-187.6] p=0.0
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	12 [10.5-13.4] p=0.0 6 [4.8-6.4] 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 <sup>-07</sup> p=0.20	20 [7.67-31.0] p=1.9x10 <sup>-07</sup> p=0.20	14 [4.00-29.0] p=2.1x10 <sup>-06</sup> p=0.20
Fetal cystic hygroma	p=0.0024 p=0.020	p=0.0024 p=0.020	p=0.0024 p=0.020

Adverse Event	Relative Rate (by time)	Relative Rate (by dose)	Relative Rate (by person vaccinated)
Fetal cardiac disorders	17 [8.00-27.0] $p=2.6 \times 10^{-06}$ 10 [4.00-17.0] $p=0.00058$	16 [6.00-26.0] $p=2.6 \times 10^{-06}$ 9 [3.0-16] $p=0.00058$	11 [3.00-25.0] $p=2.7 \times 10^{-05}$ 6 [1.5-15] $p=0.0047$
Fetal arrhythmia	$p=0.020$ $p=0.088$	$p=0.020$ $p=0.088$	$p=0.020$ $p=0.088$
Fetal cardiac arrest	$p=6.9 \times 10^{-07}$ $p=0.088$	$p=6.9 \times 10^{-07}$ $p=0.088$	$p=6.9 \times 10^{-07}$ $p=0.088$
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] $p=0.0$	9 [6.0-15] $p=0.0$ 4 [2.1-6.3] $p=7.9 \times 10^{-07}$
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] $p=0.0$	5 [3.3-6.6] $p=0.0$ 4 [2.8-6.2] $p=0.0$
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] $p=0.0$	7 [5.6-9.8] $p=0.0$ 5 [3.3-6.9] $p=0.0$

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.





# 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
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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

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# \*\*\* 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		

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# \*\*\*\*\* Month (US) \*\*\*\*\*

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[('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

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\*\*\* RATES \*\*\*

Abnormal uterine bleeding (menstrual irregularity) 0.1922	6352	352.8889	54
Miscarriage 0.9217	1232	68.4444	259
Fetal chromosomal abnormalities 0.0000	7	0.3889	0
Fetal malformation 0.0036	2	0.1111	1
Fetal cystic hygroma 0.0000	5	0.2778	0
Fetal cardiac disorders 0.0071	10	0.5556	2
Fetal arrhythmia 0.0000	3	0.1667	0
Fetal cardiac arrest 0.0000	3	0.1667	0
Fetal vascular mal-perfusion 0.0000	5	0.2778	0
Fetal growth abnormalities 0.0712	59	3.2778	20
Fetal abnormal surveillance 0.1281	125	6.9444	36
Fetal placental thrombosis 0.0000	5	0.2778	0
Fetal death (stillbirth) 0.1495	168	9.3333	42

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\*\*\* 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

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\*\*\* RELATIVE RATES \*\*\*

Abnormal uterine bleeding (menstrual irregularity) 6413.0000	2419.6343	809.3750
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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		

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\*\*\*\*\* People (US) \*\*\*\*\*

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[('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= 0.3

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\*\*\* RATES \*\*\*

Abnormal uterine bleeding (menstrual irregularity)	6352	24434.5284	54
180.0000			
Miscarriage	1232	4739.1906	259
863.3333			
Fetal chromosomal abnormalities	7	26.9272	0
0.0000			
Fetal malformation	2	7.6935	1
3.3333			
Fetal cystic hygroma	5	19.2337	0
0.0000			

Fetal cardiac disorders	10	38.4675	2
6.6667			
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
66.6667			
Fetal abnormal surveillance	125	480.8432	36
120.0000			
Fetal placental thrombosis	5	19.2337	0
0.0000			
Fetal death (stillbirth)	168	646.2533	42
140.0000			

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#### \*\*\* 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	7.906e-07
Fetal abnormal surveillance	0.000e+00
Fetal placental thrombosis	1.976e-02
Fetal death (stillbirth)	0.000e+00

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#### \*\*\* RELATIVE RATES \*\*\*

Abnormal uterine bleeding (menstrual irregularity)	138.7452	104.6167
187.6176		
Miscarriage	5.5143	4.7835
6.3660		
Fetal chromosomal abnormalities	0.0000	0.0000
0.0000		
Fetal malformation	1.5961	0.0000
5.0000		
Fetal cystic hygroma	0.0000	0.0000
0.0000		
Fetal cardiac disorders	6.2254	1.5000
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 6.3333	3.6279	2.0800
Fetal abnormal surveillance 6.2000	4.1447	2.7805
Fetal placental thrombosis 0.0000	0.0000	0.0000
Fetal death (stillbirth) 6.8800	4.7502	3.3077

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\*\*\*\*\* Dose (Global) \*\*\*\*\*

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[('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

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\*\*\* RATES \*\*\*

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

Fetal death (stillbirth)	402	33.3057	64
0.9697			

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\*\*\* 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		

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\*\*\*\*\*

\*\*\*\*\* 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
```

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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= 6.0
*****

*** RATES ***
Abnormal uterine bleeding (menstrual irregularity)    12843  2455.6405   65
10.8333

```



Miscarriage	3338	638.2409	325
54.1667			
Fetal chromosomal abnormalities	10	1.9120	0
0.0000			
Fetal malformation	22	4.2065	2
0.3333			
Fetal cystic hygroma	8	1.5296	0
0.0000			
Fetal cardiac disorders	18	3.4417	2
0.3333			
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
4.0000			
Fetal abnormal surveillance	178	34.0344	45
7.5000			
Fetal placental thrombosis	6	1.1472	0
0.0000			
Fetal death (stillbirth)	402	76.8642	64
10.6667			

\*\*\*\*\*

\*\*\* 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)	230.7758	178.6944
303.1163		
Miscarriage	11.8249	10.4805
13.3710		
Fetal chromosomal abnormalities	0.0000	0.0000
0.0000		
Fetal malformation	13.6572	4.0000
29.0000		

Fetal cystic hygroma	0.0000	0.0000
0.0000		
Fetal cardiac disorders	11.1778	3.0000
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	9.4639	6.0000
15.3333		
Fetal abnormal surveillance	4.6591	3.2857
6.6429		
Fetal placental thrombosis	0.0000	0.0000
0.0000		
Fetal death (stillbirth)	7.3404	5.5507
9.7907		
*****		

Extra

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

