

# Variations in the monthly spontaneous fetal mortality in Japan during the COVID-19 pandemic

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## The COVID-19 pandemic didn't increase the spontaneous fetal mortality in Japan.

### BACKGROUND

- We presented abnormal decreases in 4-month (12-15 weeks) pregnancies in May-Aug 2020, especially Jul 2020 in Japan, in the 34th Annual Meeting of the Japanese Epidemiological Association. However, it is unclear what caused the decreases.
- This study aimed to investigate the variation of spontaneous fetal mortality during the COVID-19 pandemic in Japan and to discuss what caused the abnormal decreases in 4-month pregnancies in certain months.

### METHODS

#### 1. Monthly spontaneous fetal mortality proportion (SFM)

- The monthly number of pregnancies (12 weeks of gestation or more) Jan 2013-Dec 2021 were estimated by retroactively adding the number of stillbirths and the number of live births from the Japanese national vital statistics.
- The monthly SFM were calculated as follows:

Monthly SFM

$$= \frac{\text{number of spontaneous stillbirths over 12 weeks}}{\text{number of pregnancies over 12 weeks}} \times 1,000$$

#### 2. Analysis of the monthly SFM

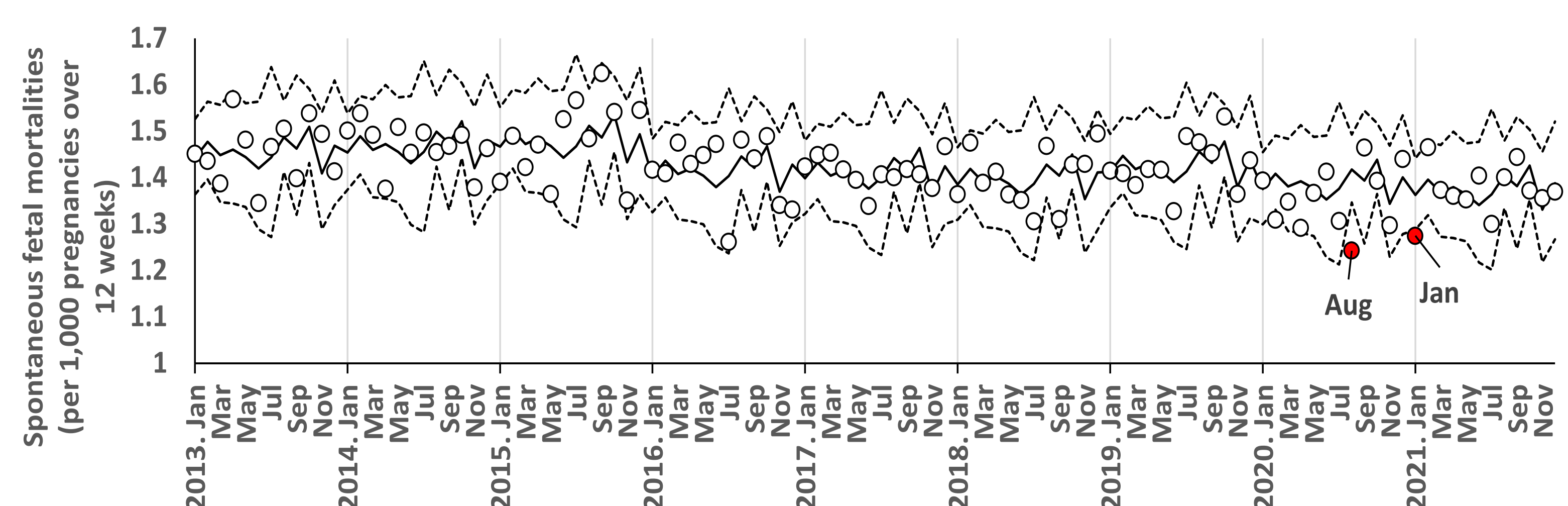
- The expected value (EV) and 95% range (reference ranges: RR) of normal SFM in each month were calculated using seasonal indices and SFM annual averages. The point estimates and ranges of excess SFM were estimated by comparing those values and the observed SFM values.

### RESULTS

- All monthly SFM values except Aug 2020 and Jan 2021 fell within the RRs.
- Although Aug 2020 and Jan 2021 were below the RRs, the decreases were slight.
- The number of excess spontaneous stillbirths in those months were -11.5 (range: -16.4, -6.9) in Aug 2020 and -6.5 (-12.3, -1.0) in Jan 2021.

### RESULTS CONTINUED

**Figure 1.** Variation in monthly spontaneous stillbirth proportion in Japan 2013-2021



**Table 1.** Observed number of monthly spontaneous stillbirths and estimated monthly excess spontaneous stillbirths in 2020 and 2021 (during the COVID-19 pandemic)

Month	2020		2021	
	Observed no.	Excess spontaneous stillbirth Point estimate (range)	Observed no.	Excess spontaneous stillbirth Point estimate (range)
Jan	729	1.4 ( -4.6 , 7.1 )	632	-6.5 ( -12.3 , -1.0 )
Feb	644	-7.0 ( -12.8 , -1.5 )	673	4.7 ( -0.8 , 9.9 )
Mar	716	-2.5 ( -10.3 , 4.8 )	712	0.4 ( -7.3 , 7.6 )
Apr	667	-7.1 ( -15.5 , 0.7 )	688	-1.3 ( -9.6 , 6.3 )
May	723	-0.7 ( -8.4 , 6.5 )	703	-0.8 ( -8.5 , 6.3 )
Jun	714	3.8 ( -4.9 , 11.7 )	703	4.1 ( -4.7 , 12.1 )
Jul	668	-4.4 ( -16.2 , 5.9 )	664	-4.2 ( -16.2 , 6.5 )
Aug	623	-11.5 ( -16.4 , -6.9 )	702	-0.3 ( -5.0 , 4.2 )
Sep	703	4.7 ( -5.3 , 13.8 )	687	3.9 ( -5.4 , 12.3 )
Oct	683	-3.3 ( -8.8 , 2.0 )	658	-3.5 ( -8.5 , 1.2 )
Nov	612	-3.1 ( -11.6 , 4.7 )	619	1.5 ( -6.2 , 8.5 )
Dec	706	2.9 ( -6.9 , 11.8 )	641	-1.2 ( -10.0 , 6.8 )

### CONCLUSIONS

- The results imply that the risk of spontaneous fetal death did not increase during the COVID-19 pandemic. Additionally, the Japanese government has reported that the number of abortions largely decreased from May to July in 2020, compared with the previous year.
- The results in this study support our hypothesis that many people may have avoided (postponed) getting pregnant during the initial outbreak in Japan.
- One of the limitation in this study was that EVs and RRs of normal SFM were estimated based on the data for only 7 years.

### Conflicts of Interest Declaration

We declare that we have no competing interests.