2024年 福島県立医科大学『県民健康調査』国際シンポジウム
公立大学法人福島県立医科大学放射線医学県民健康管理センター
国際シンポジウム事務局（広報・国際連携室）
✉ kenkani@fmu.ac.jp　Tel: 024-581-5454(平日9～17時)
2024 Fukushima Medical University International Symposium on the Fukushima Health Management Survey
Secretariat of International Symposium
Office of Public Communications and International Cooperation, Radiation Medical Science Center for the Fukushima Health Management Survey, Fukushima Medical University
✉ kenkani@fmu.ac.jp, TEL: +81-24-581-5454 (Weekday, 9a.m. - 5 p.m. JST)

Fukushima Health Management Survey:
Pregnancy and Birth Survey

Fukushima Medical University
Radiation Medical Science Center
for the Fukushima Health Management Survey
Director, Pregnancy and Birth Survey
Department of Obstetrics and Gynecology
Professor and Chairman
FUJIMORI Keiya

Current Survey and Support for Pregnant Women in Fukushima Prefecture

① FHMS Pregnancy and Birth Survey, FY 2011-FY 2020

② Follow-up Survey (to respondents from the original survey)

- 1st Round (4 years postpartum) FY2011-2014 Survey Respondents
- 2nd Round (8 years postpartum) FY2011-2013 Survey Respondents

③ Current Status of pregnancies in Fukushima Prefecture (incidences of spontaneous and induced abortion)

– Dept. of Obstetrics and Gynecology, Fukushima Medical University

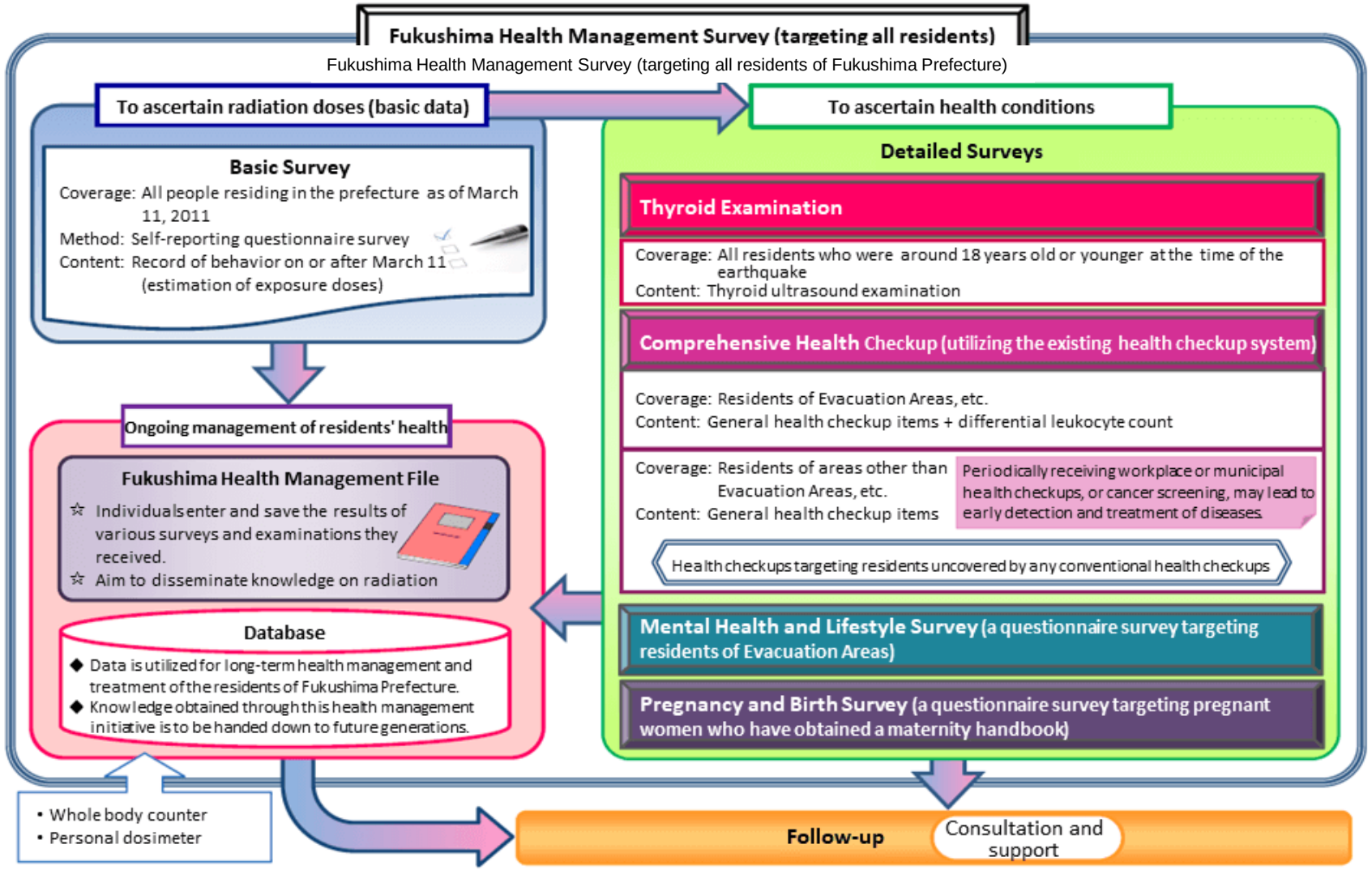
④ *Congenital anomaly monitoring across all prefectures by the Japan Association of Obstetrics and Gynecology*

→ *No report this time*

Overview of FHMS

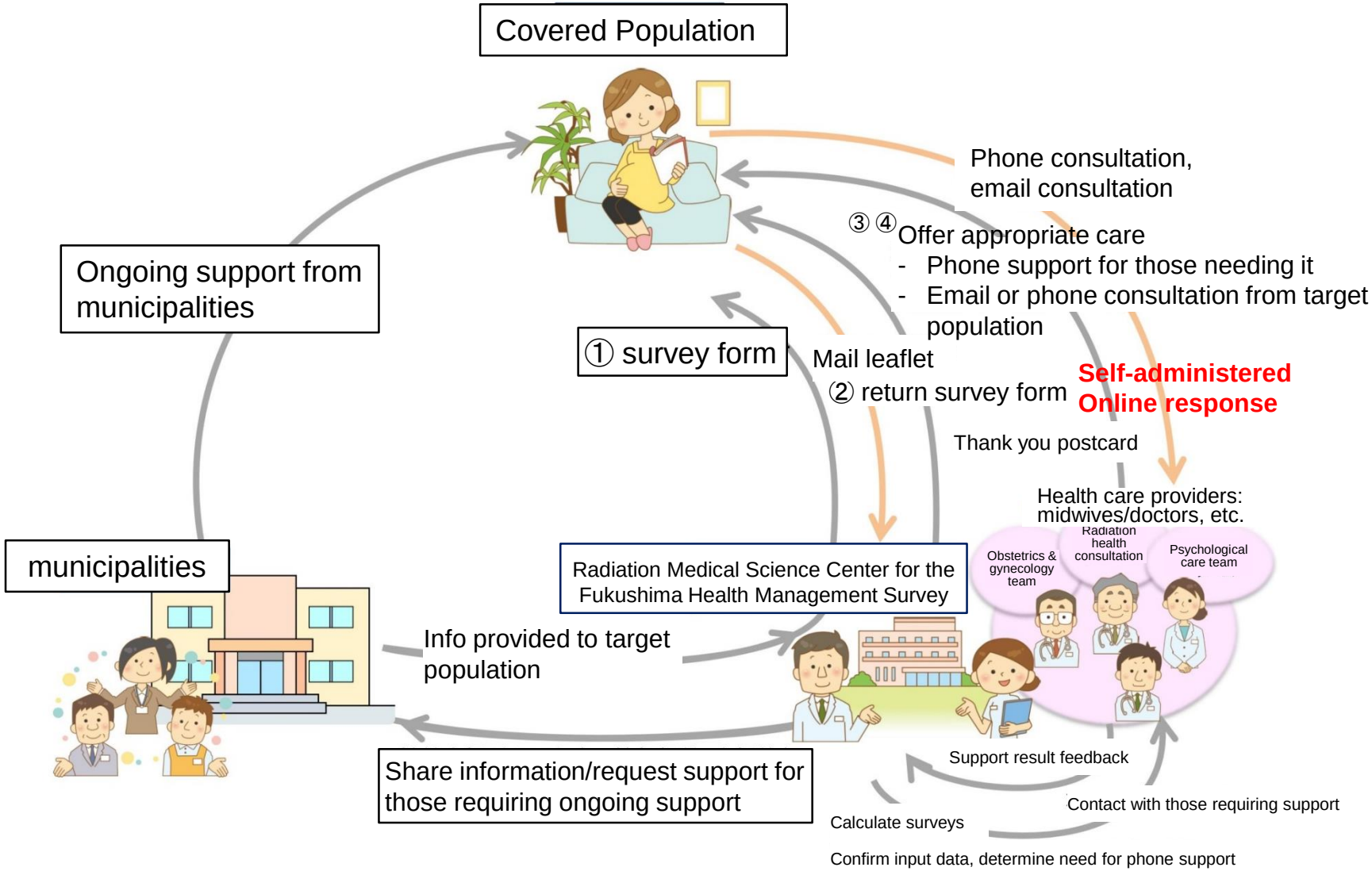
Outline of the Fukushima Health Management Survey

Fukushima Health Management Survey (Overview)



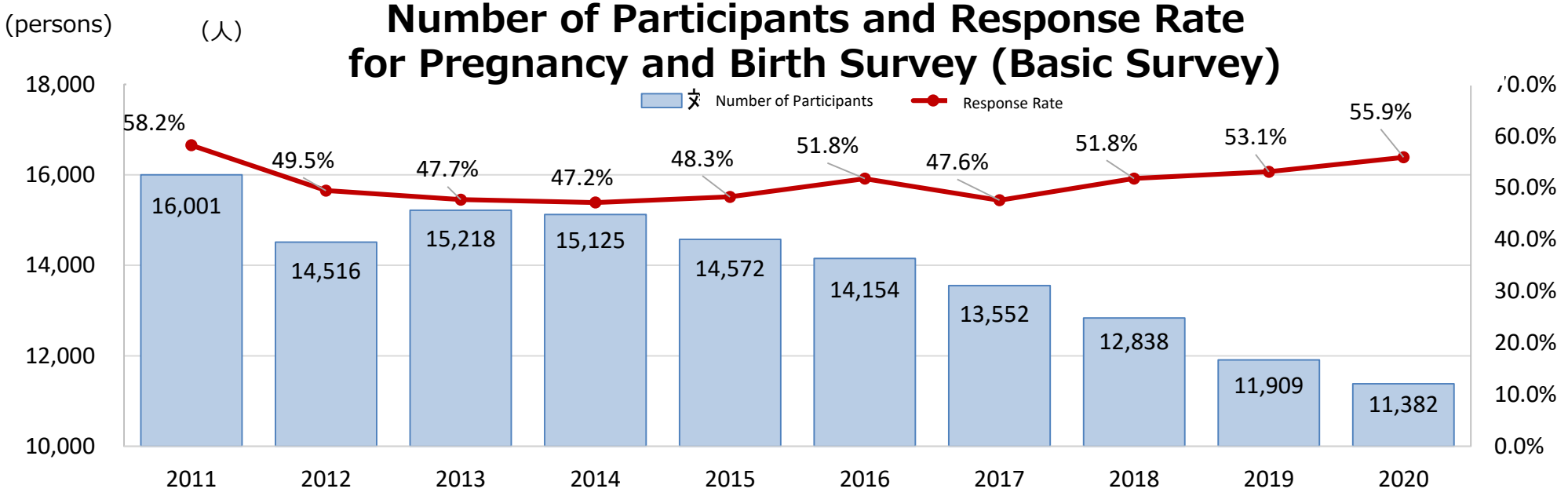
Prepared based on the outline of the "Fukushima Health Management Survey," Fukushima Prefecture

Support and Survey at the Office of the Pregnancy and Birth Survey

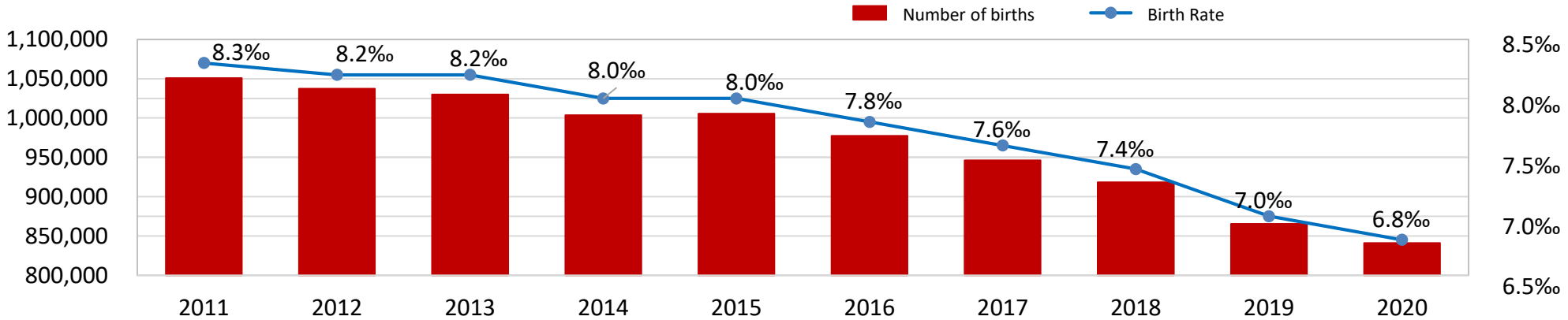


Radiation Medical Science Center
Office for the Pregnancy and Birth Survey

Number of Participants and Response Rate for Pregnancy and Birth Survey (Basic Survey)



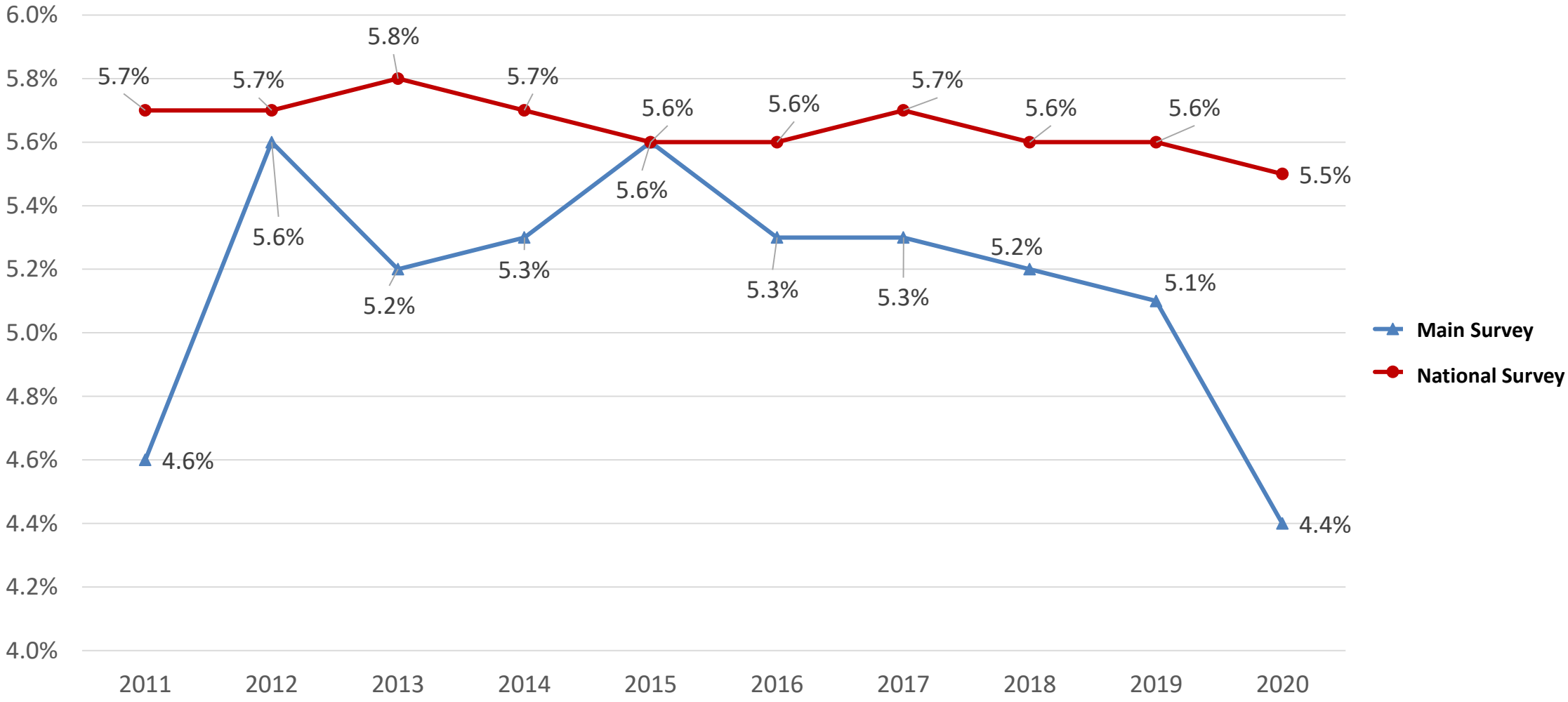
【Reference】 Ministry of Health Labor and Welfare List of Statistics Vital Statistics (Nationwide)



Birth rate: per 1,000 population

Preterm Delivery Rate

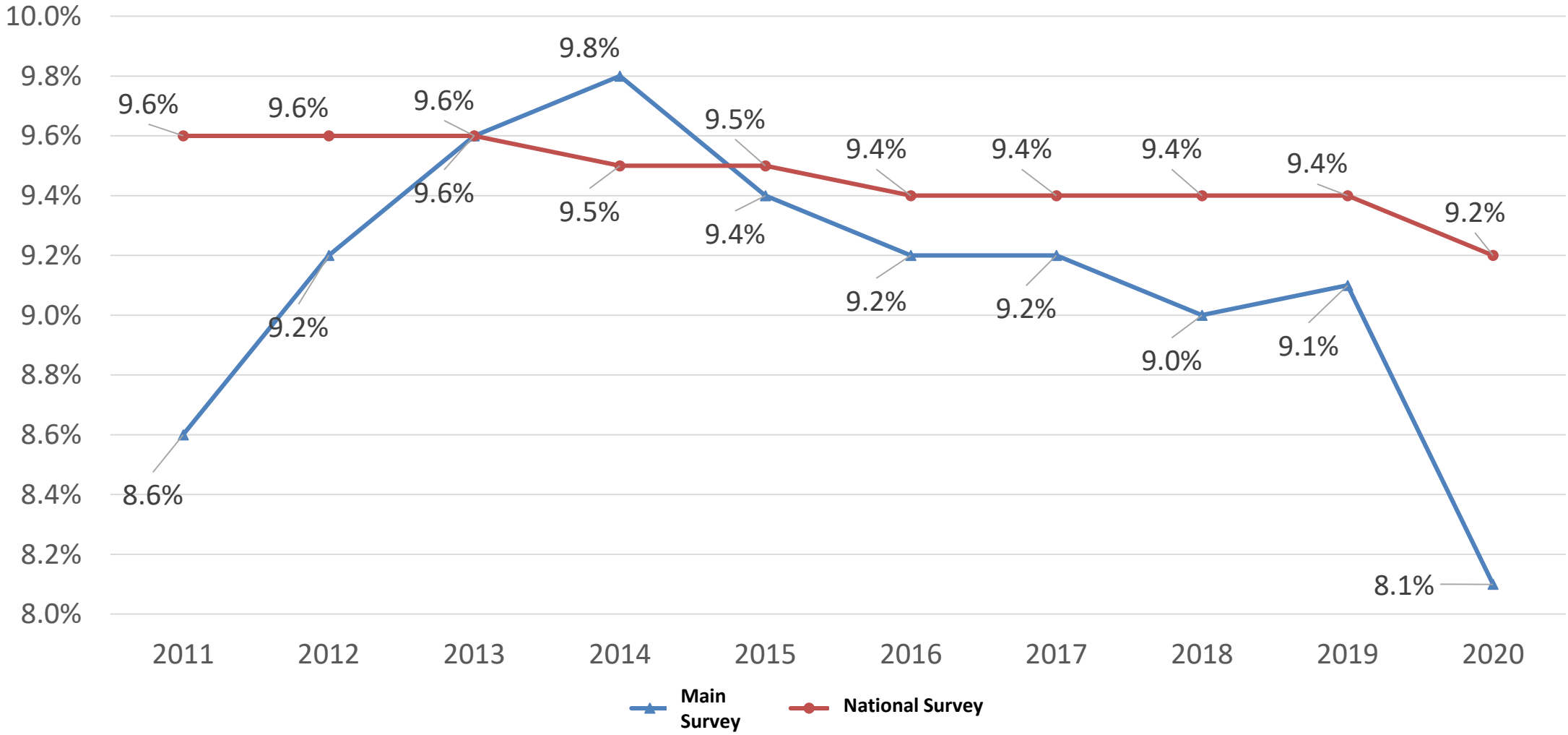
(Preterm birth at 22-37 weeks of gestation)



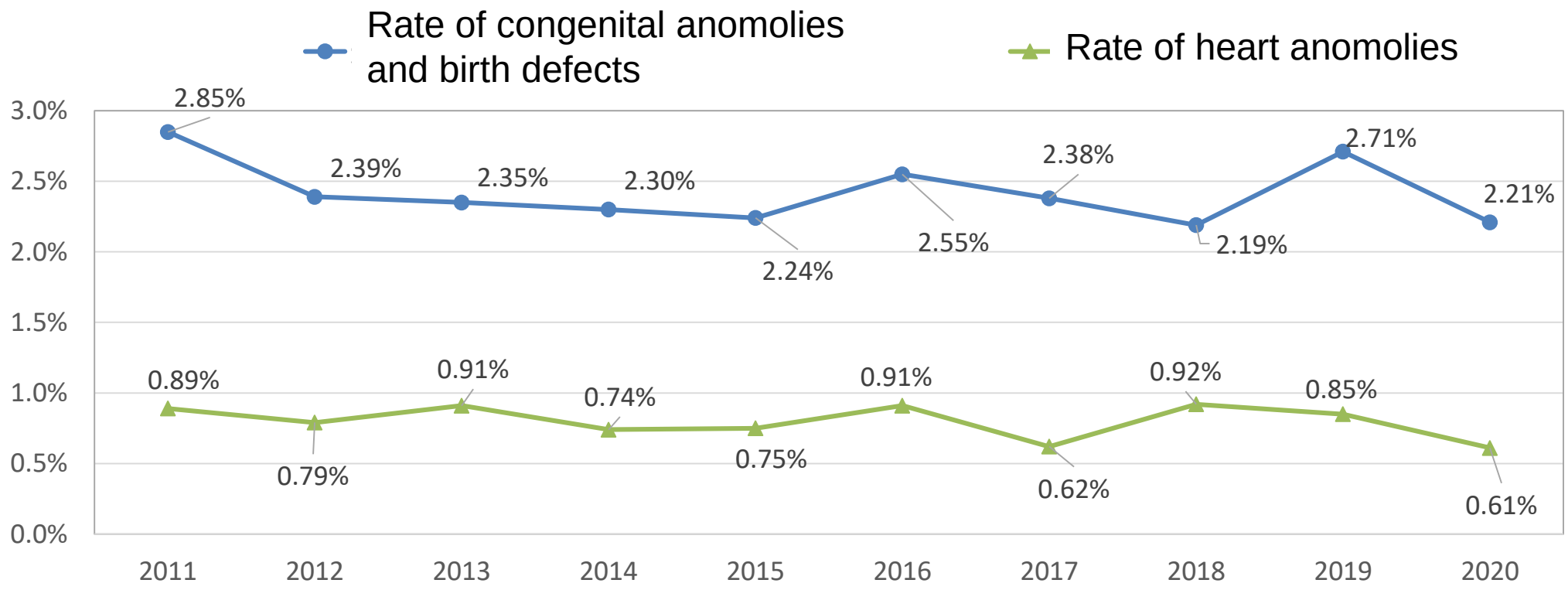
National Survey: Ministry of Health, Labor and Welfare Statistics List Demographic Surveys

Rate of Low Birth Weight Infants

(Low birth weight: 2500 g or less)



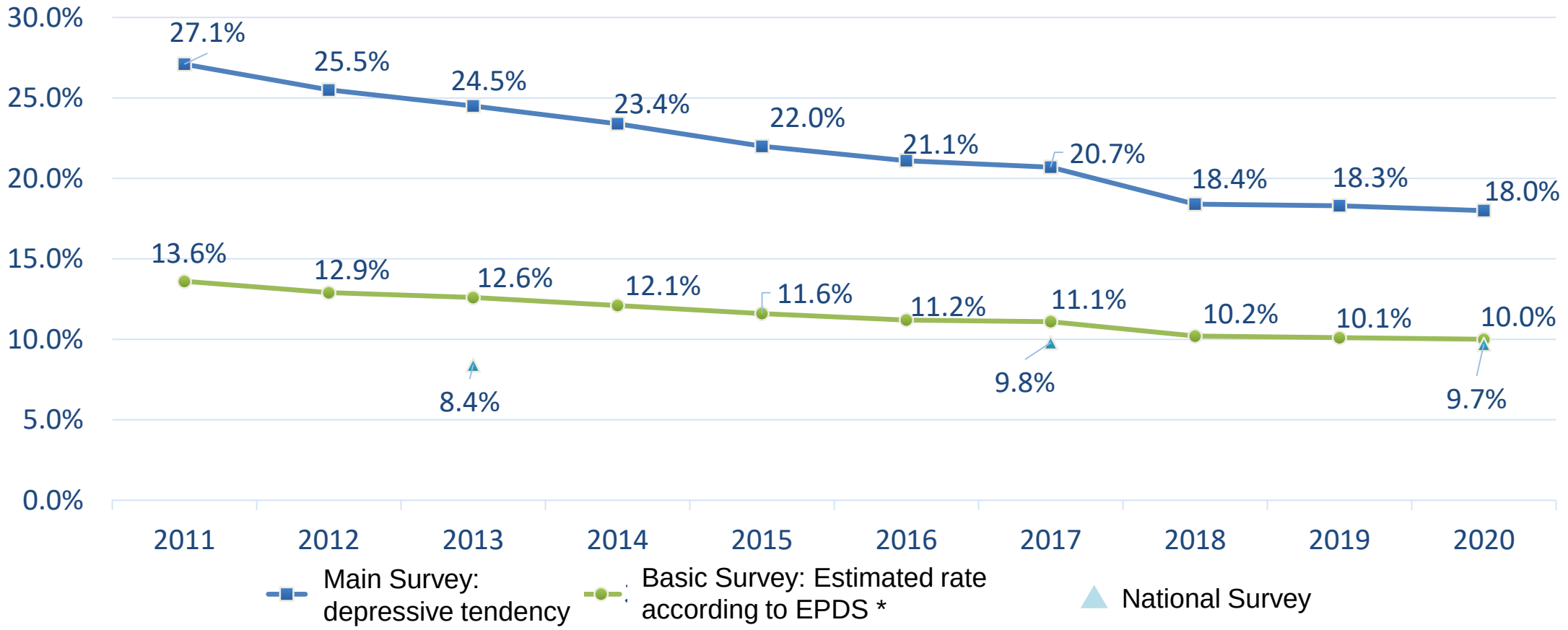
Rate of Occurrence of Congenital Anomalies and Birth Defects (singleton birth)



※Frequency of morphological abnormalities (fetal malformations) assessed at birth is 2-3%

(Guideline for Gynecological Practice Obstetrics Edition 2023)

Mental Health in Mothers (Postpartum Depressive Tendencies)



Depressive tendencies refers to those who responded "yes" to either of these survey questions:

- Have you often felt down or depressed in the past month?
- Have you lost interest in activities or found no pleasure in things in the past month?

* Mishina H, et al. Pediatr Int. 2009; 51: 48.

* * Healthy Parents and Children 21: 2nd National Survey 8.4% (2013), 9.8% (2017), 9.7% (2020)

Top 3 Topics in the Free-Write Section (by fiscal year)

	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
1	Effects of radiation on fetus/child 29.6%	Effects of radiation on fetus/child 26.4%	Feedback/ complaints about basic survey 16.8%	Enhancing childcare support services 15.0%	Childcare Inquiries 29.3%	Childcare Inquiries 27.2%	Childcare Inquiries 34.5%	Enhancing childcare support services 25.1%	Childcare Inquiries 28.1%	Childcare Inquiries 24.8%
2	Dissemination of information and publishing survey results 19.5%	Dissemination of information and publishing survey results 12.9%	Effects of radiation on fetus/child 12.9%	Childcare Inquiries 15.0%	Enhancing childcare support services 24.1%	Enhancing childcare support services 27.0%	Enhancing childcare support services 27.3%	Childcare Inquiries 23.7%	Enhancing childcare support services 25.6%	New coronavirus infection 24.7%
3	Effects of radiation on breastmilk/milk 17.9%	Feedback/ complaints about basic survey 10.5%	Poor physical condition of respondent 11.2%	Effects of radiation on fetus/child 9.5%	Enriching medical services and physical care 12.6%	Poor physical condition of respondent 13.3%	Poor mental condition of respondent 15.1%	Poor physical condition of respondent 11.5%	Poor physical condition of respondent 13.4%	Enhancing childcare support services 23.3%

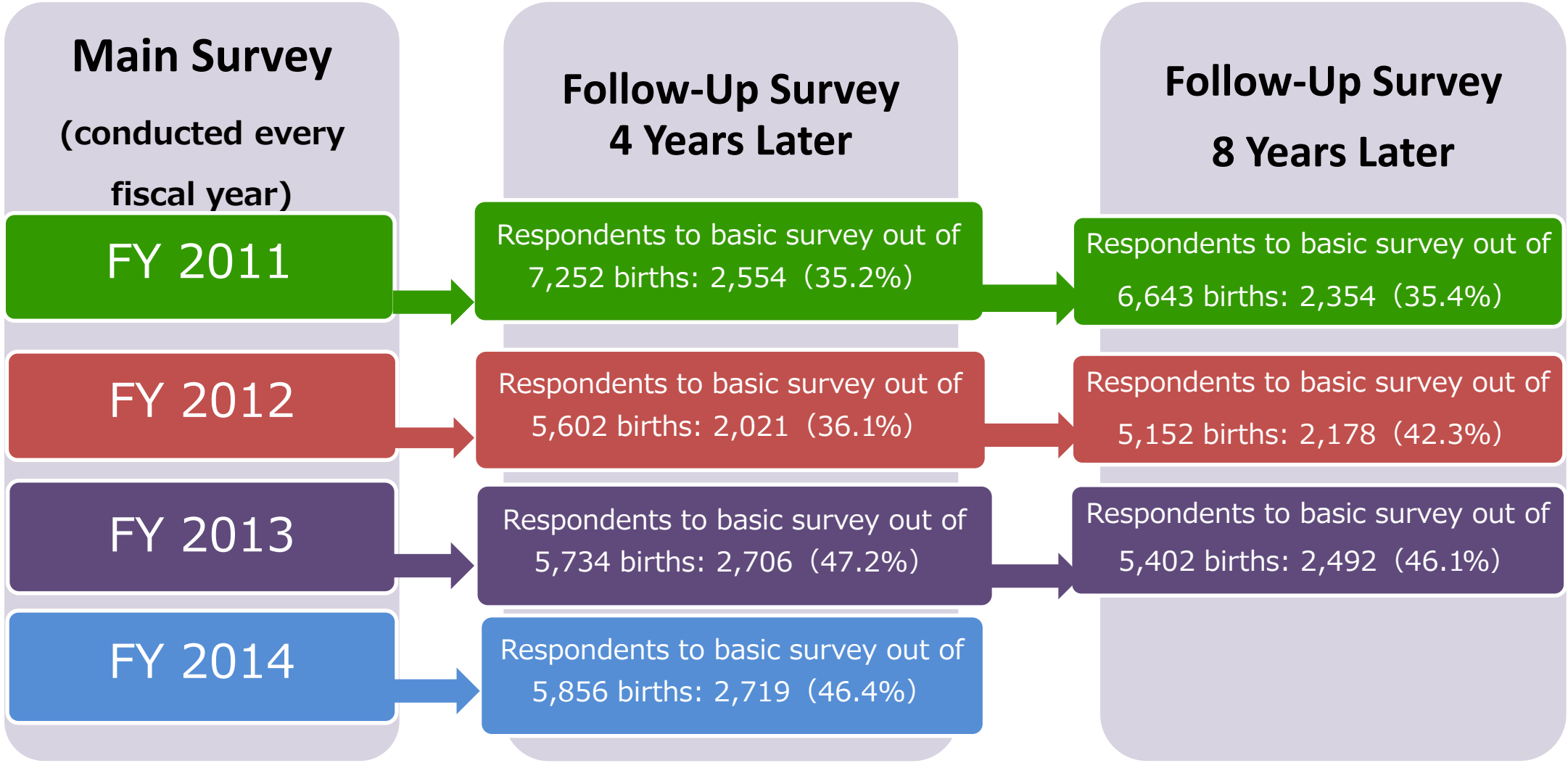
Proportion of “Effects of radiation on fetus/child”

2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
29.6%	26.4%	12.9%	9.5%	5.2%	6.1%	4.8%	1.8%	2.1%	0.5%

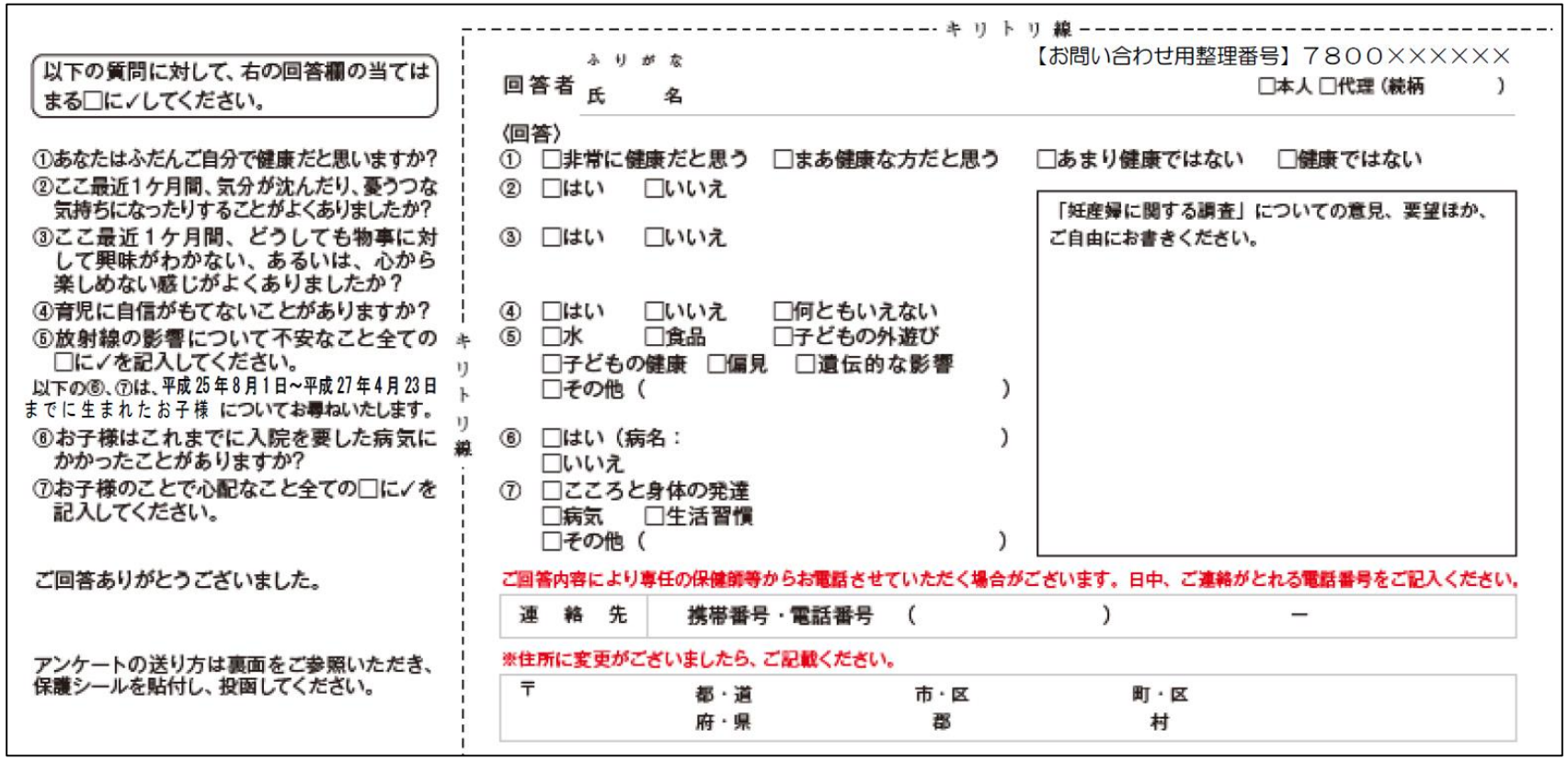
Follow-up Survey of FY2011-2014 Survey Respondents

The results of the FHMS Pregnancy and Birth Survey conducted by Fukushima Prefecture showed a particularly high proportion of respondents with depressive symptoms, with the free-comment portion of the survey also including serious concerns. Due to these responses and the possibility of new concerns arising as their children grew, a follow-up survey was conducted targeting respondents who were 4 or 8 years postpartum, in order to understand the state of their physical and mental health, reduce anxiety and provide necessary support.

Follow-Up Survey



Follow-Up Survey at 4・8 Years Postpartum



以下の質問に対して、右の回答欄の当てはまる□に✓してください。

①あなたはふだんご自分で健康だと思いますか?
②ここ最近1ケ月間、気分が沈んだり、憂うつな気持ちになったりすることがよくありましたか?
③ここ最近1ケ月間、どうしても物事に対して興味がわかない、あるいは、心から楽しめない感じがよくありましたか?
④育児に自信がもてないことがありますか?
⑤放射線の影響について不安なこと全ての□に✓を記入してください。
以下の⑥、⑦は、平成25年8月1日~平成27年4月23日までに生まれたお子様 についてお尋ねいたします。
⑥お子様はこれまでに入院を要した病気にかかったことがありますか?
⑦お子様のことで心配なこと全ての□に✓を記入してください。

ご回答ありがとうございました。

アンケートの送り方は裏面をご参照いただき、保護シールを貼付し、投函してください。

キリトリ線

キリトリ線

【お問い合わせ用整理番号】7800××××××

回答者 ふりがな 氏名 □本人 □代理(続柄)

〈回答〉
① □非常に健康だと思う □まあ健康な方だと思う □あまり健康ではない □健康ではない
② □はい □いいえ
③ □はい □いいえ
④ □はい □いいえ □何ともいえない
⑤ □水 □食品 □子どもの外遊び
□子どもの健康 □偏見 □遺伝的な影響
□その他( )
⑥ □はい(病名:)
□いいえ
⑦ □こころと身体の発達
□病気 □生活習慣
□その他( )

「妊産婦に関する調査」についての意見、要望ほか、ご自由にお書きください。

ご回答内容により専任の保健師等からお電話させていただく場合がございます。日中、ご連絡がとれる電話番号をご記入ください。

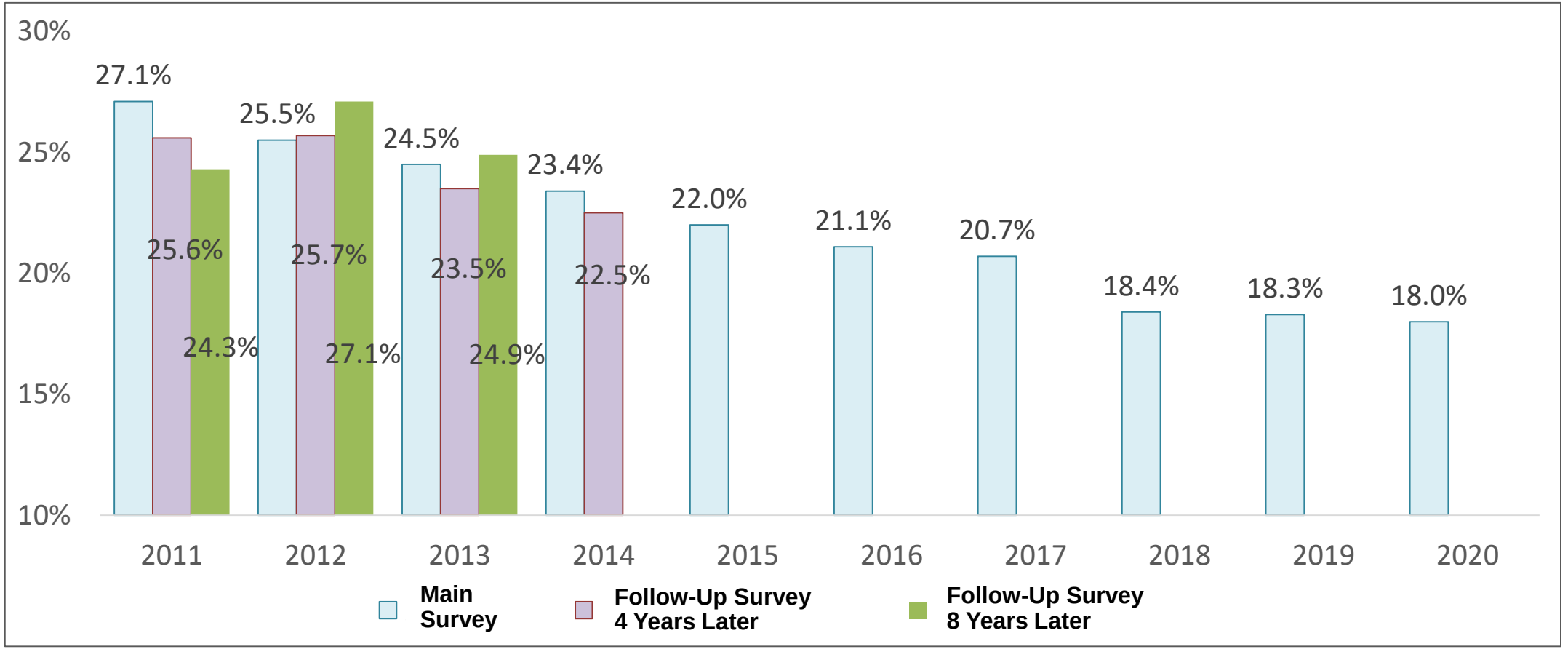
連絡先	携帯番号・電話番号 ( ) ー

※住所に変更がございましたら、ご記載ください。

〒	都・道 府・県	市・区 郡	町・区 村

Survey was administered in the form of a postcard with 7 questions

Proportion of Postpartum Depressive Tendencies in the Follow-Up Survey
(compared with regular survey of 4 or 8 years prior)



Depressive tendencies were found in those who answered "yes" to either of the following questions.

- Have you often felt down or depressed in the past month?
- Have you lost interest in activities or found no pleasure in things in the past month?

Number of respondents and contents of free-comment section for the 2011 to 2014 Follow-Up Survey

Survey Name	1st	2nd	3rd	4th	5th
FY 2011 Follow-Up Survey (4 Year)	Concerns about effects of radiation on fetus/child	Support for basic survey	Feedback/ complaints about basic survey	Requests to disclose survey results and disseminate radiation information	Requests for Thyroid Ultrasound Examination
	53 (13.8%)	47 (12.3%)	44 (11.5%)	37 (9.7%)	23 (6.0%)
FY 2012 Follow-Up Survey (4 Year)	Support for basic survey	Feedback/ complaints about basic survey	Concerns about effects of radiation on fetus/child	Questions about childcare	Requests for enhancement of childcare services
	33 (17.7%)	24 (12.9%)	23 (12.4%)	17 (9.1%)	14 (7.5%)
FY 2013 Follow-Up Survey (4 Year)	Support for basic survey	Feedback/ complaints about basic survey	Concerns about effects of radiation on fetus/child	Complaints about mental health	Requests for enhancement of childcare services
	36 (17.3%)	25 (12.0%)	24 (11.5%)	16 (7.7%)	15 (7.5%)
FY 2014 Follow-Up Survey (4 Year)	Support for basic survey	Feedback/ complaints about basic survey	Questions about childcare	Concerns about effects of radiation on fetus/child	Requests for enhancement of childcare services
	42 (21.2%)	26 (13.1%)	17 (8.6%)	14 (7.1%)	14 (7.1%)
FY 2011 Follow-Up Survey (8 Year)	Questions about childcare	Concerns about effects of radiation on fetus/child	Complaints about Physical health	Support for basic survey	Complaints about mental health
	82 (27.0%)	53 (17.4%)	36 (11.8%)	28 (9.2%)	26 (8.6%)
FY 2012 Follow-Up Survey (8 Year)	related to new coronavirus infections	Support for basic survey	Questions about childcare	Concerns about effects of radiation on fetus/child	Complaints about mental health
	54 (21.5%)	47 (19.0%)	44 (17.7%)	37 (14.9%)	30 (12.1%)
FY 2013 Follow-Up Survey (Year)	Questions about childcare	Related to new coronavirus infections	Complaints about mental health	Complaints about Physical health	Concerns about effects of radiation on fetus/child
	130 (43.3%)	57 (19.0%)	54 (18.0%)	39 (13.0%)	27 (9.0%)

Characteristics of 6,875 cases according to external radiation dose（2011）

		External radiation dose (mSv)					
		Toatal	(missing)	<1 mSv	1-2 mSv	≥2 mSv	
	Ñ	6,875 (100.0)	3,575 (52.0)	2,267 (33.0)	979 (14.2)	54 (0.8)	*P-value*
Maternal age	6,875	30.9 (5.0)	30.3 (5.2)	31.5 (4.6)	31.6 (4.7)	30.5 (5.4)	0.238
Child's length (cm)	6,783	49.1 (2.2)	49.1 (2.3)	49.1 (2.2)	49.2 (2.2)	49.1 (2.1)	0.397
Child's weight (g)	6,815	3,029 (403)	3,026 (412)	3,036 (395)	3,028 (391)	3,006 (382)	0.763
Low birth weight（<2500g）(%)	6,815	7.6	7.8	7.3	7.3	9.3	0.861
SGA（<10%）(%)	6,270	8.9	8.5	8.8	10.7	4.4	0.144
Congenital anomalies (%)	**6,600**	**2.9**	**3.1**	**2.9**	**2.0**	**0.0**	**0.163**
Stillbirth (%)	6,875	0.2	0.3	0.2	0.1	0.0	0.847
Preterm birth（<37 weeks） (%)	6,348	4.1	4.5	3.6	3.5	4.3	0.942
Forced to change health check-up facility (%)	6,809	32.4	32.3	45.6	23.7	20.4	<0.001

One-way ANOVA was used for continuous variables and χ2 test for categorical variables (except for missing dose values)

Yasuda S, Fujimori K, et al. J Epidemiol 2022; 32: S104-114.

External radiation doses by congenital malformations (2011)

	total	<1mSv	1-2mSv	≥2 mSv	missing
	n = 6,600	2,188	944	0	3,414
Total *	189 (2.86)	64	19	0	106
Cataract	1 (0.02)	0	1	0	0
Neural tube defects	3 (0.05)	1	2	0	0
Microcephaly	0 (0.00)	0	0	0	0
Cardiac malformations	57 (0.86)	20	4	0	33
Kidney/Urinary tract malformations	19 (0.29)	5	3	0	11
Hydrocephaly	1 (0.02)	1	0	0	0
Cleft lip/palate	12 (0.18)	1	3	0	8
Digestive tract atresia	5 (0.08)	3	0	0	2
Imperforate anus	4 (0.06)	1	0	0	3
Poly/syndactyly	18 (0.27)	7	1	0	10
Others	83 (1.26)	28	6	0	49

* Multiple answers were allowed.

Yasuda S, Fujimori K, et al. J Epidemiol 2022; 32: S104-114.

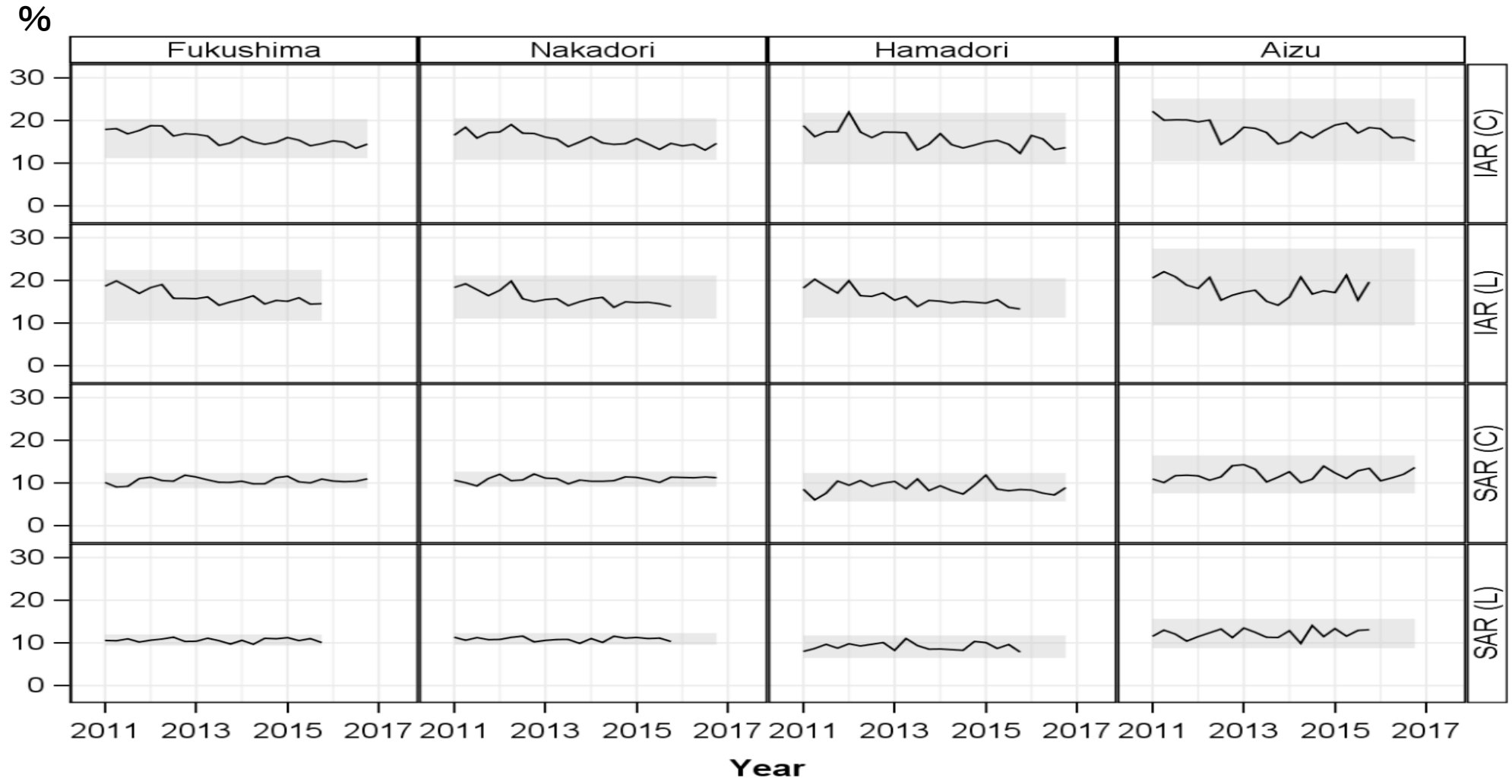
Summary #1 of the FHMS Pregnancy and Birth Survey

- The preterm birth rate and the low birth weight rate were similar to the national average, and the incidence of congenital malformations and birth defects was also at the same level as generally reported data.
- Regarding maternal mental health, the percentage of depressed mothers in this survey decreased over time from 27.1% in the 2011 survey to 18.0% in the 2020 survey.
- The percentage of respondents who stated "radiation effects on the fetus/child" in the free response section of this survey as a whole was 29.6% in the 2011 survey, but decreased over the years to 0.5% in the 2020 survey.

Summary #2 of the FHMS Pregnancy and Birth Survey

- In the follow-up survey conducted four years later, the percentage of respondents with depressive tendencies was 25.6% in FY 2011, 25.7% in FY 2012, and 22.5% in FY 2014, showing a high trend, although it has decreased over the years. The trend was high with an increase to 24.9% in FY2013.
- No association was found between external radiation doses from the baseline survey and the occurrence of congenital morphological abnormalities, preterm birth, low birth weight, and fetal growth failure.

Summary of Spontaneous/Induced Abortion Rate



Induced abortion Event

Induced abortion Month

Spontaneous abortion Event

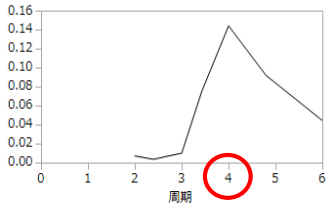
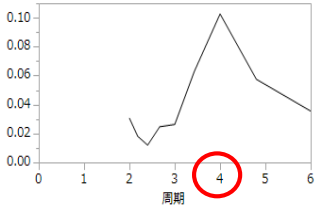
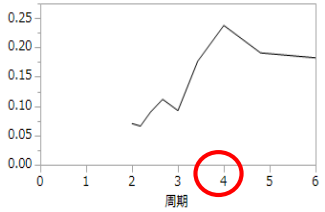
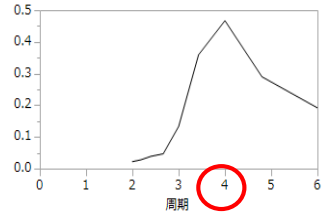
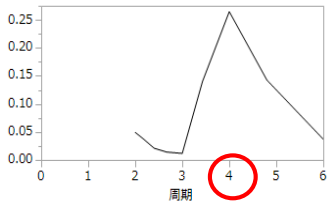
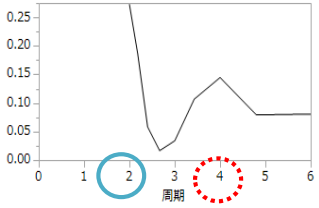
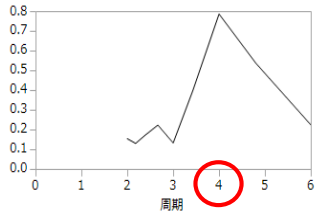
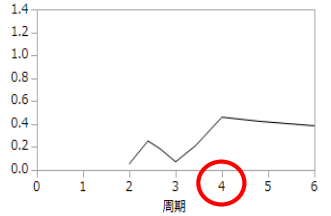
Spontaneous abortion Month

- Periodicity studied in spontaneous and induced abortion rate of 3-month units (January through March)
- A cross-sectional method is used for the event, and a longitudinal method is used for the month
- Shaded areas indicate upper and lower outliers calculated from quartiles

Inoue Y, Fujimori K, et al. JOGR 2023; 49: 812-827.

Results of Study of Periodicity

(Spontaneous/Induced Abortion rate based on the Month Event Occurred)

	Fukushima Prefecture	Nakadori	Hamadori	Aizu
Spontaneous Abortion				
Induced Abortion				

* Periodic study of miscarriage/abortion rate in 3-month units.
By multiplying the cycle by 3 (months), it can be converted into a monthly cycle.

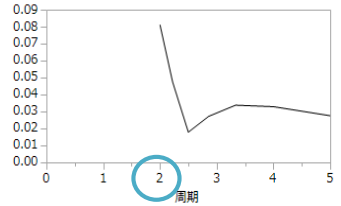
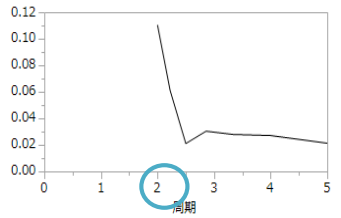
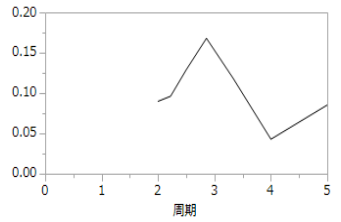
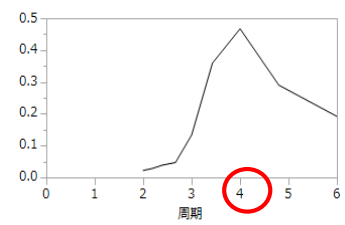
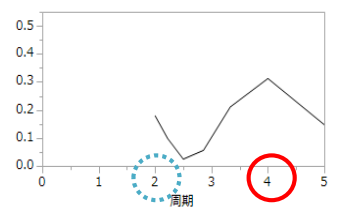
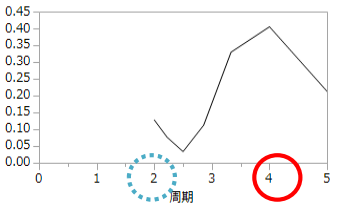
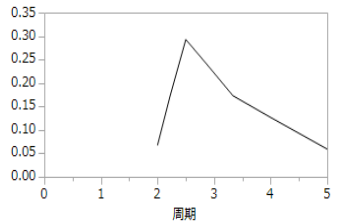
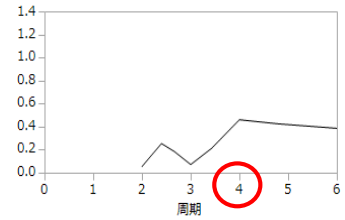
In the case of analysis based on month of event occurrence

- Spontaneous abortion rate and induced abortion rate were observed in a 6 or 12-month cycle.

Inoue Y, Fujimori K, et al. JOGR 2023; 49: 812-827.

Results of Study of Periodicity

(Spontaneous/Induced Abortion Rate based on the Month of Pregnancy)

	Fukushima Prefecture	Nakadori	Hamadori	Aizu
Spontaneous Abortion				
Induced Abortion				

* Periodicity studied in spontaneous and induced abortion rates of 3-month units.
It can be converted into a monthly cycle by multiplying the cycle by 3 (months)

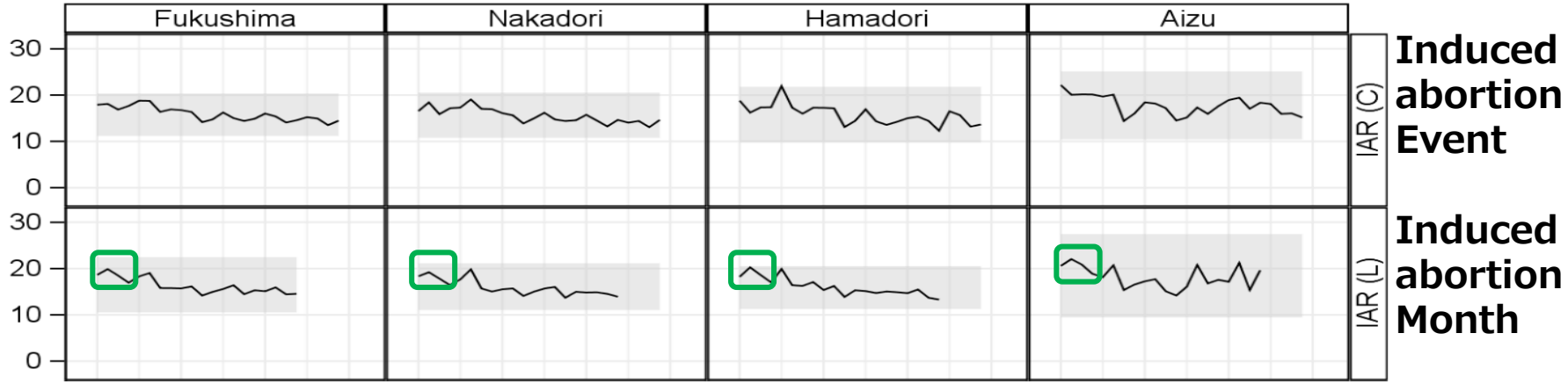
When Analyzing based on Month of Pregnancy

- Throughout Fukushima Prefecture, Nakadori, Aizu: spontaneous and induced rates are shown in 6 or 12-month cycles.
- Hamadori Region: Shown in 8 or 9-month cycles.

Inoue Y, Fujimori K, et al. JOGR 2023; 49: 812-827.

Summary

- Spontaneous and induced abortion rates did not show a significant increase following the earthquake.
- Induced abortion did increase immediately after the earthquake, but did not show a specific increase.
- From the periodicity results, the temporary increase following the earthquake may have overlapped with periodicity.



Inoue Y, Fujimori K, et al. JOGR 2023; 49: 812-827.

Future Issues for Pregnant Women in Fukushima Prefecture Following the Nuclear Disaster

- Regarding low-dose radiation exposure, scientific understanding on “safety” has not resulted in perceptions of “security.”
- While there is little objective data, in order to create an environment where people can live both safely and securely, we will conduct prefecture-wide surveys in order to support Fukushima residents. We believe it is important to proactively disclose objective scientific data in order to indicate safety.

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