

A Practical Approach to Estimating Pregnancy Start Date in Taiwan Using the NHIRD

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Background & Objectives

Taiwan's Birth Reporting Database (BRD) reliably captures live births and stillbirths (≥ 500 g or ≥ 20 weeks), but pregnancy losses before 20 weeks are not recorded, leaving these outcomes without gestational information. Government-funded prenatal care visits in the NHIRD are claimed under payment codes tied to designated gestational weeks, offering a possible surrogate for estimating the pregnancy start date. The study objective was to evaluate whether the timing of prenatal care visits can serve as a proxy for inferring the pregnancy start date.

Methods

Data Source

- NHIRD is an administrative claims database that covers up to 99.6% of the Taiwanese population [1, 2].
- Pregnancy records were obtained from the BRD (2023) and linked via encrypted IDs to the NHIRD (2022-2023) for prenatal care visit records (Table 1).

Study design

- Pregnancy start dates were estimated from two approaches: BRD-derived and prenatal care-derived (Figure 1).

Study population

- Pregnancies with live births or stillbirths recorded in BRD in 2023 (one-year window to minimize multiple pregnancies)

Study outcomes

- Prenatal care utilization rate (%)
- Differences in derived pregnancy start dates

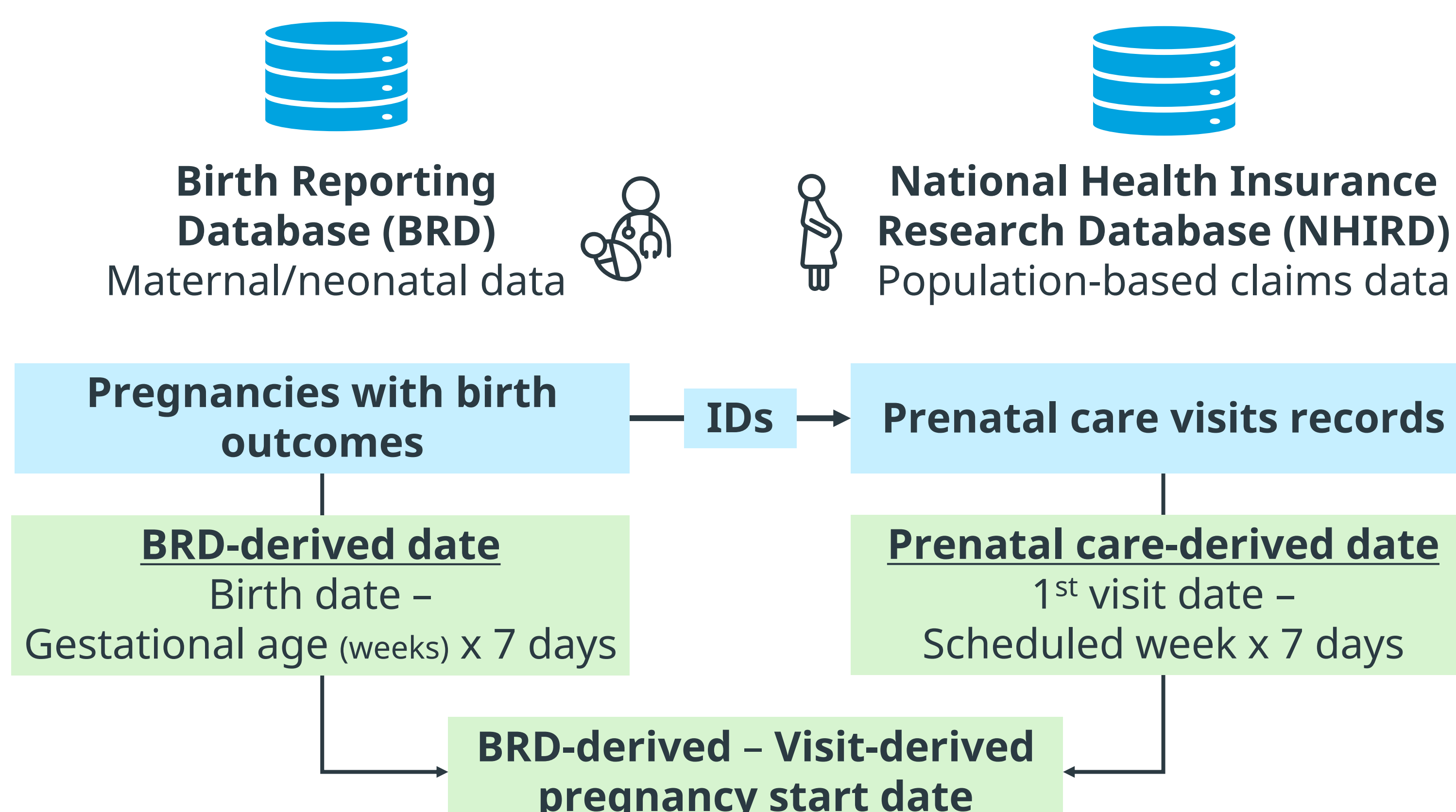
Statistical analysis

- Descriptive statistics (median and interquartile range, IQR)

Table 1. Schedule of government-funded prenatal examinations

Gestational Weeks	8	12	16	20	24	28	30	32	34	36	37	38	39	40
Prenatal care visit	1 st	2 nd	3 rd	4 th	5 th	6 th	7 th	8 th	9 th	10 th	11 th	12 th	13 th	14 th

Figure 1. Schematic study design



Results

136,436 pregnancies were identified from BRD

96.7% pregnancies with ≥ 1 prenatal care visit

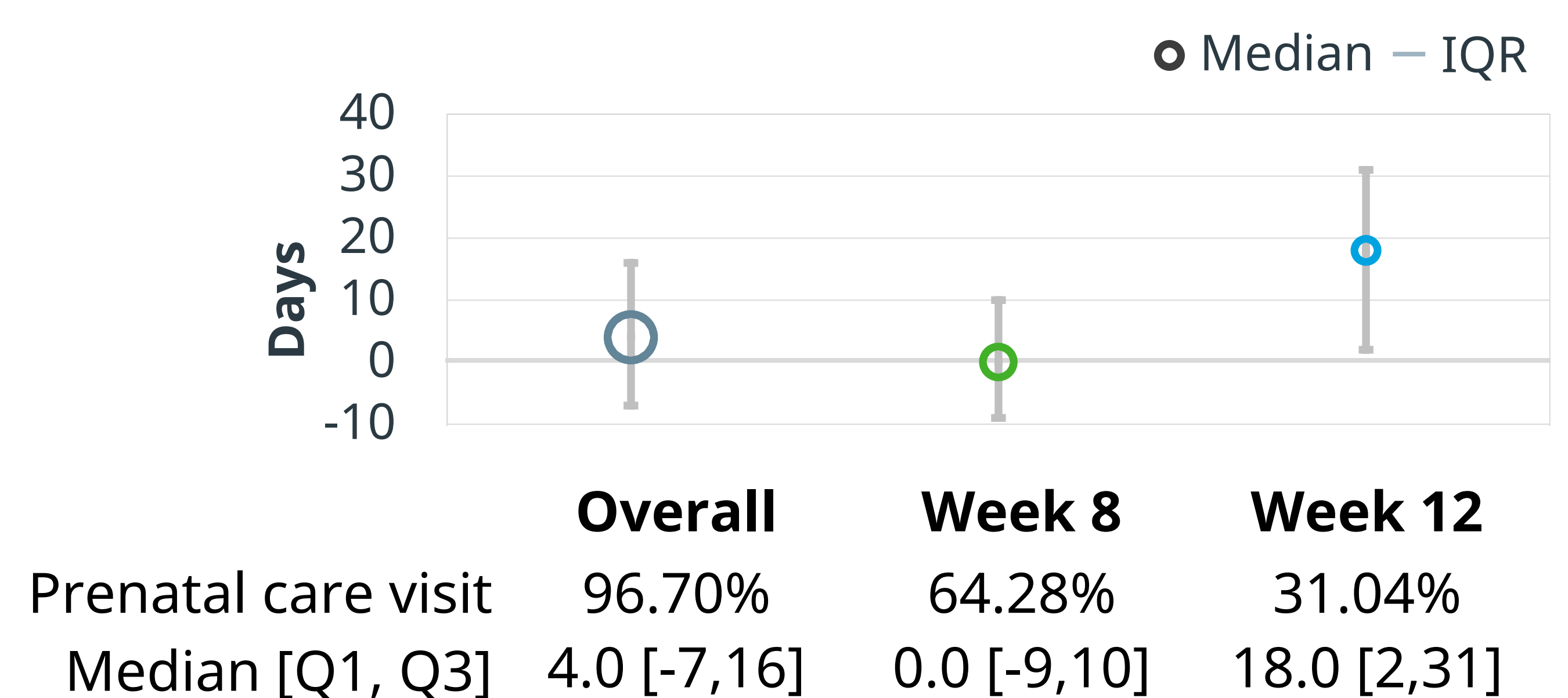
Timing of first prenatal care visit (total = 96.7%)

64.3% week 8 **31.0%** week 12

week 16+ (1.4%)

- A total of 136,436 pregnancies were identified; 99.3% resulted in live births and 96.7% had at least one prenatal visit.
- First visits clustered early, with 64.3% occurring at Week 8 and 31.0% at Week 12.
- Overall agreement between BRD-derived and Visit-derived pregnancy start date was high, with a median difference of 4 days (IQR: -7 to 16).
- Agreement was strongest among pregnancies with the first prenatal care visit at Week 8 (median difference: 0 days [IQR: -9 to 10]) and tended to decrease with later first prenatal care visits.
- Estimates for gestational weeks beyond Week 30 were based on a small proportion of pregnancies (<0.1% each).

Figure 2. Differences in pregnancy start dates



Conclusions

- Early prenatal visit dates showed good agreement with BRD-derived pregnancy start date. Given that 95.3% of prenatal visits occurred by Week 12 and discrepancies were generally small, prenatal care visit may serve as a practical surrogate when BRD-derived information is unavailable.
- Prior to 2021, Taiwan's prenatal care program included only eight scheduled visits; the applicability of this approach under the previous schedule warrants further evaluation.

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Reference

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