

# The epidemiological burden of preterm labour and delivery: A systematic literature review

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## Background

- Preterm birth (PTB) is the leading cause of mortality in children <5 years.<sup>1</sup>
- The rate of PTB and its variability by important factors like geographic location, gestational age (GA), race/ethnicity, and birth plurality have been documented.<sup>1,2</sup>
- Preterm labour (PTL), defined as regular uterine contractions with cervical dilation <37 weeks GA,<sup>3-5</sup> is a causal factor in nearly 50% of PTB.<sup>3</sup>
- Avoiding or delaying PTL could be a mechanism in alleviating the burden associated with PTB.<sup>6</sup>

## Objective

- To synthesize published data from the US and globally on the incidence and prevalence of PTL and PTB.

## Methods

- A systematic literature review of MEDLINE and Embase supplemented with web-based and grey literature searches was conducted to identify nationally representative incidence and prevalence estimates of PTL and PTB in countries selected *a priori*:
  - United States (US), Canada, Italy, France, Spain, Germany, United Kingdom (UK), Australia, Japan, and China.
- Abstracts and full-texts were reviewed according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA)<sup>7</sup> guidelines and Population, Exposure/Comparator, Outcomes and Study Design (PECOS) criteria (**Figure 1**).
- Estimates were reported by country and by GA, birth plurality, and race/ethnicity, where available.
- This review was registered with PROSPERO (CRD42022363314).

**Fig. 1: PECOS (Population, Exposure/Comparator, Outcomes, Study Design) criteria**

|              |                                                                                     |                                                                                                                                                |
|--------------|-------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|
| Population   |  | Pregnant women                                                                                                                                 |
| Exposure     |  | None                                                                                                                                           |
| Outcomes     |  | Incidence or prevalence of PTL or PTB reported at the national level*                                                                          |
| Study design |  | Real-world studies/reports published on or after January 2012 in the US, Canada, UK, France, Germany, Spain, Italy, Australia, China, or Japan |

Abbreviations: PTB, preterm birth; PTL, preterm labour; UK, United Kingdom; US, United States. Notes: Publications in English and published between 01/2012 and 07/2022 were of interest. \*Epidemiological estimates were tabulated by country and, if available, by gestational age, birth plurality, and race/ethnicity.

## Results

- Of 698 abstracts identified, 13 original research articles<sup>8-20</sup> and 12 grey literature sources<sup>21-32</sup> were included (**Figure 2**).

**Fig. 2: PRISMA flow diagram**

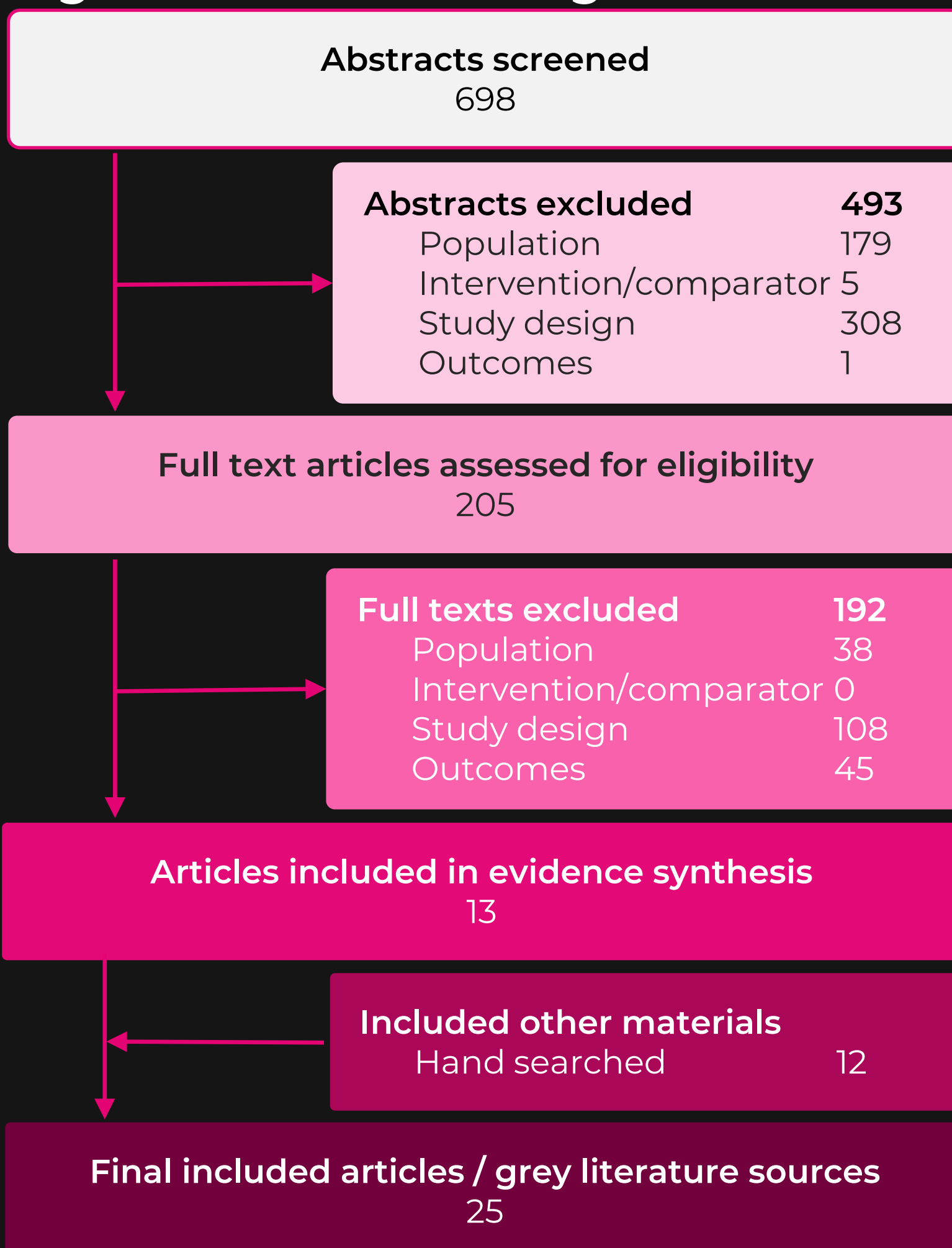
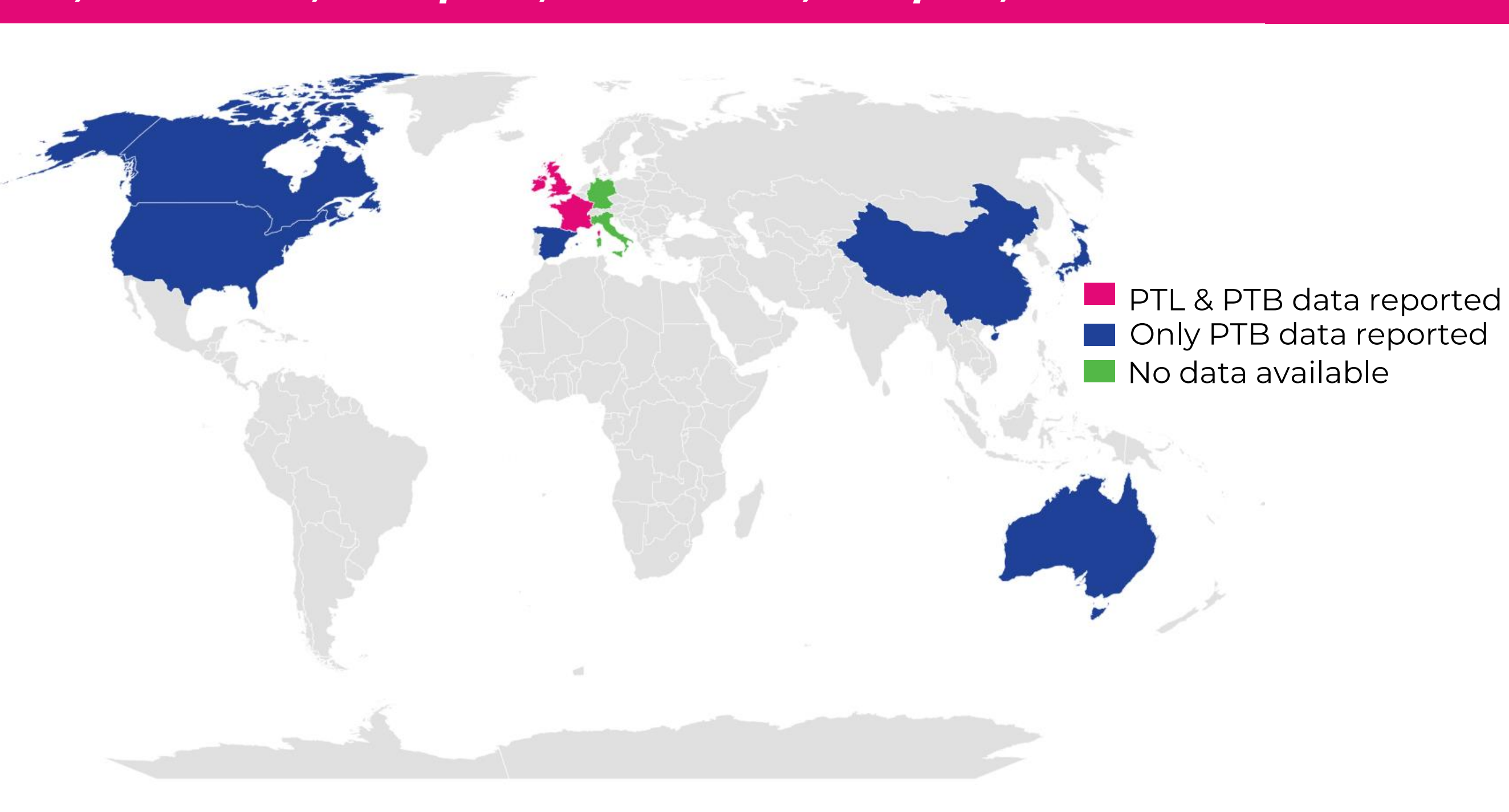


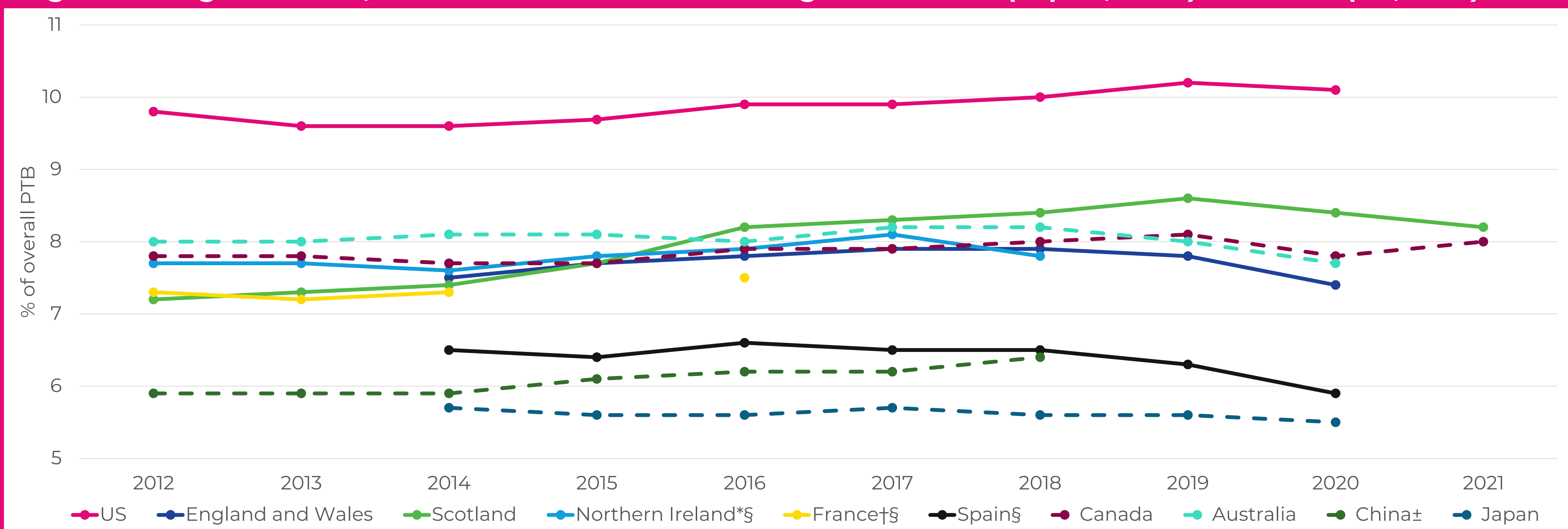
**Fig. 3: Rates of PTL and PTB were available for France<sup>13,25,28</sup> and the UK;<sup>14,17,21,31,32</sup> rates of PTB (and not PTL) were identified in the US,<sup>30</sup> Canada,<sup>23,29</sup> Spain,<sup>26</sup> Australia,<sup>22</sup> Japan,<sup>27</sup> and China<sup>24</sup>**



Abbreviations: PTB, preterm birth; PTL, preterm labour; UK, United Kingdom; US, United States. Notes: No rates were identified for Germany or Italy. Methods in national reports were more robust; thus, these were the focus of the PTB synthesis. Estimates of PTB prevalence were only identified for China (665,244 cases between 2012-2018).<sup>24</sup> PTL was the key contributor in 50% of PTBs.<sup>13,14,17</sup>

- Scotland reported the highest degree of fluctuation in rates of PTB (1.4% between 2012-2019)<sup>31</sup> while other countries had relatively stable rates (fluctuations between 0.2-0.7%) across years with reported data (**Figure 4**).

**Fig. 4: Among live births, the annual PTB incidence ranged from 5.5% (Japan, 2020)<sup>27</sup> to 10.2% (US, 2019)<sup>30</sup>**



Abbreviations: PTB, preterm birth; US, United States. Notes: No PTB estimates were identified for Germany or Italy. \*Estimates from Ireland are for fiscal years (e.g., 2012/13); we have displayed estimates in the primary year (e.g., 2012/13 results are presented for 2012). § Estimates from Spain, Northern Ireland, and France (except for 2016 data) are among all deliveries (as opposed to all live deliveries). †2016 data from France is from DREES and only among adult women with any birth, 2012 to 2014 data from L'état de santé de la population en France Rapport and all live births. ± Percent represents the number of liveborn preterm deliveries per 100 deliveries, adjusting for the sampling distribution.

## Stratified epidemiological estimates showed:

- Most PTBs occurred between **32 and <37 weeks**.

- PTBs increased with increasing birth plurality:

-  **5.3%<sup>24</sup> - 8.4%<sup>30</sup>** among **singleton** births
-  **46.8%<sup>24</sup> - 68.3%<sup>31</sup>** among **multiples**

  
Only the **US, England/Wales, and Northern Ireland** reported PTBs by race/ethnicity, whereby the incidence of **PTB was lower among white infants and mothers compared to those who identified as black**.<sup>21,30</sup>

## Discussion and conclusion

- Therapeutic options for PTL and the prevention of PTB are limited.

- With new potential therapies on the horizon, an understanding of the epidemiology of PTB and its underlying etiologies is necessary to estimate the potential impact of medical innovations.

- The synthesis presented here shows the continued burden of PTB in the US and globally, and shows that the epidemiology of PTL is not well characterized

- Future research on the epidemiology of PTL and the associated adverse outcomes, including PTB, is needed.



## Disclosures & Funding Statement

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## Key references

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