

Gestational age patterns of feto-infant mortality

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FOR DEMOGRAPHIC RESEARCH

Age patterns and data quality

Gestational age Weeks since last LMP

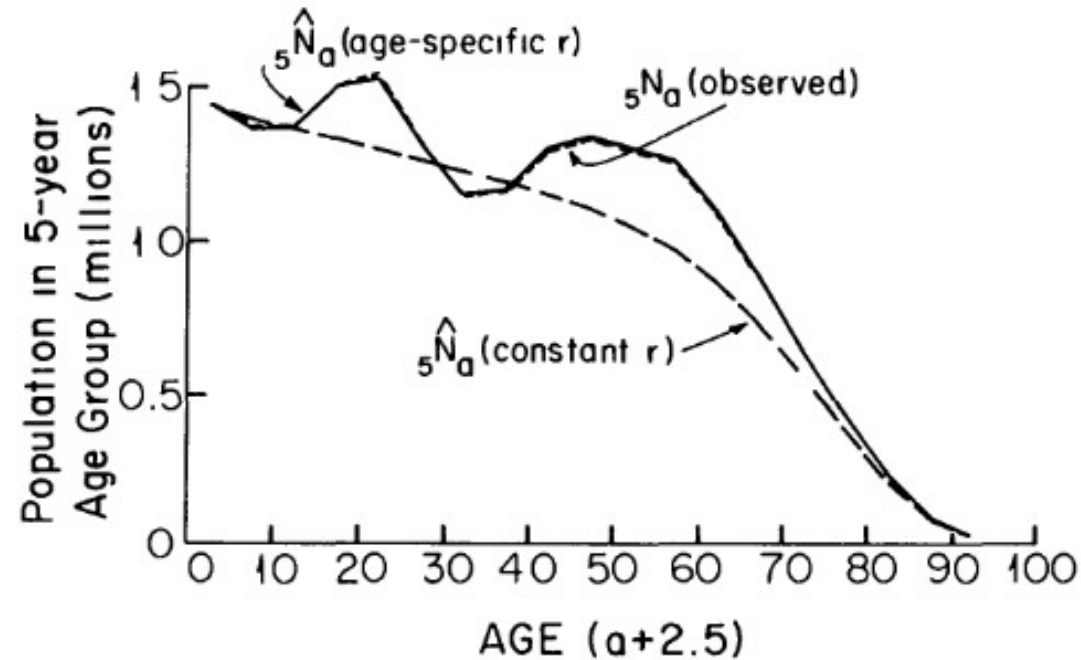
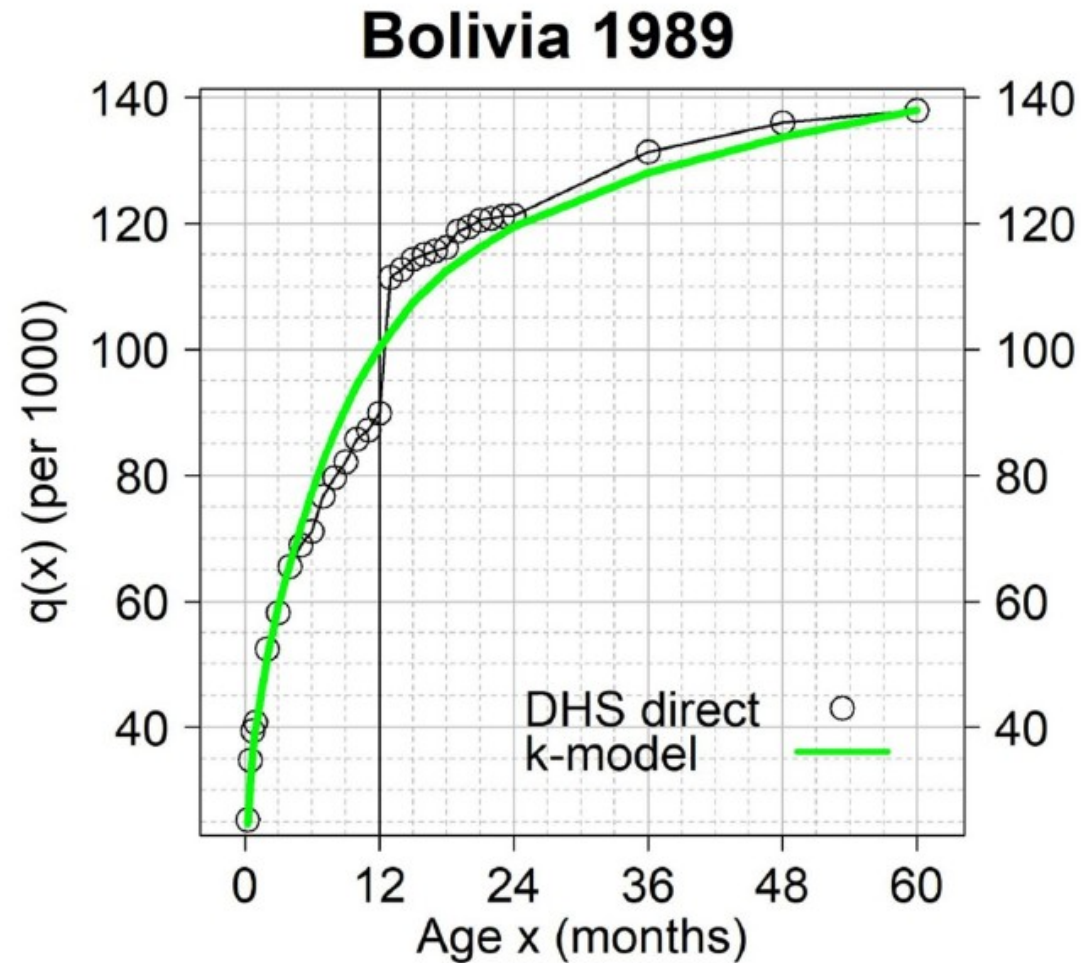


Figure 2: Comparison of observed and estimated age distributions, Swedish males, 1965-1970.

Bennett & Horiuchi et al. (1981). Estimating the completeness of death in a closed population. [10.2307/2736447](https://doi.org/10.2307/2736447)

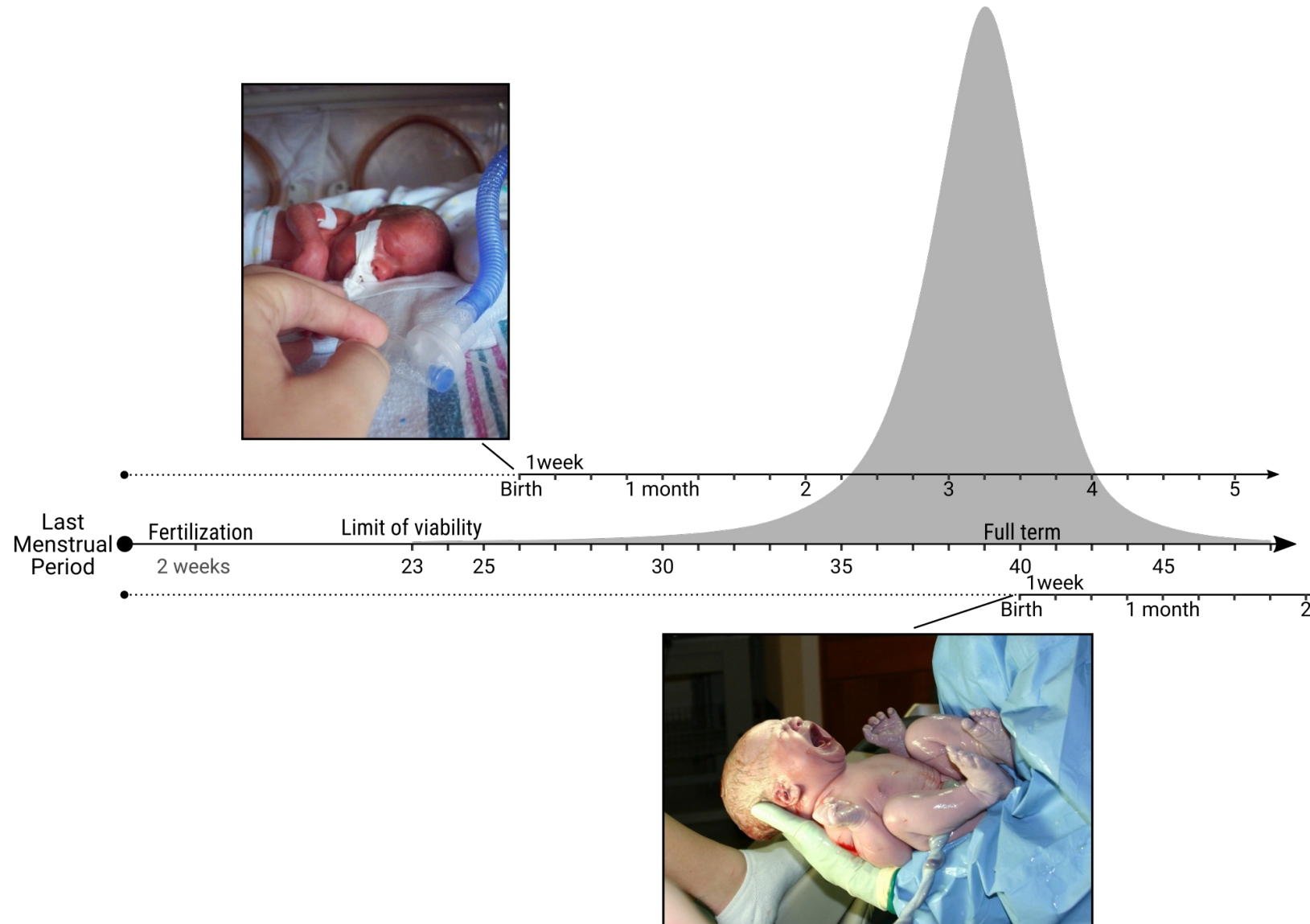
Gestational age Weeks since last LMP



Prieto, Verhulst, Guillot et al. (2021). Estimating the infant mortality rate from DHS birth histories in the presence of age heaping. [10.1371/journal.pone.0259304](https://doi.org/10.1371/journal.pone.0259304)

Gestational age

Gestational age Weeks since last LMP

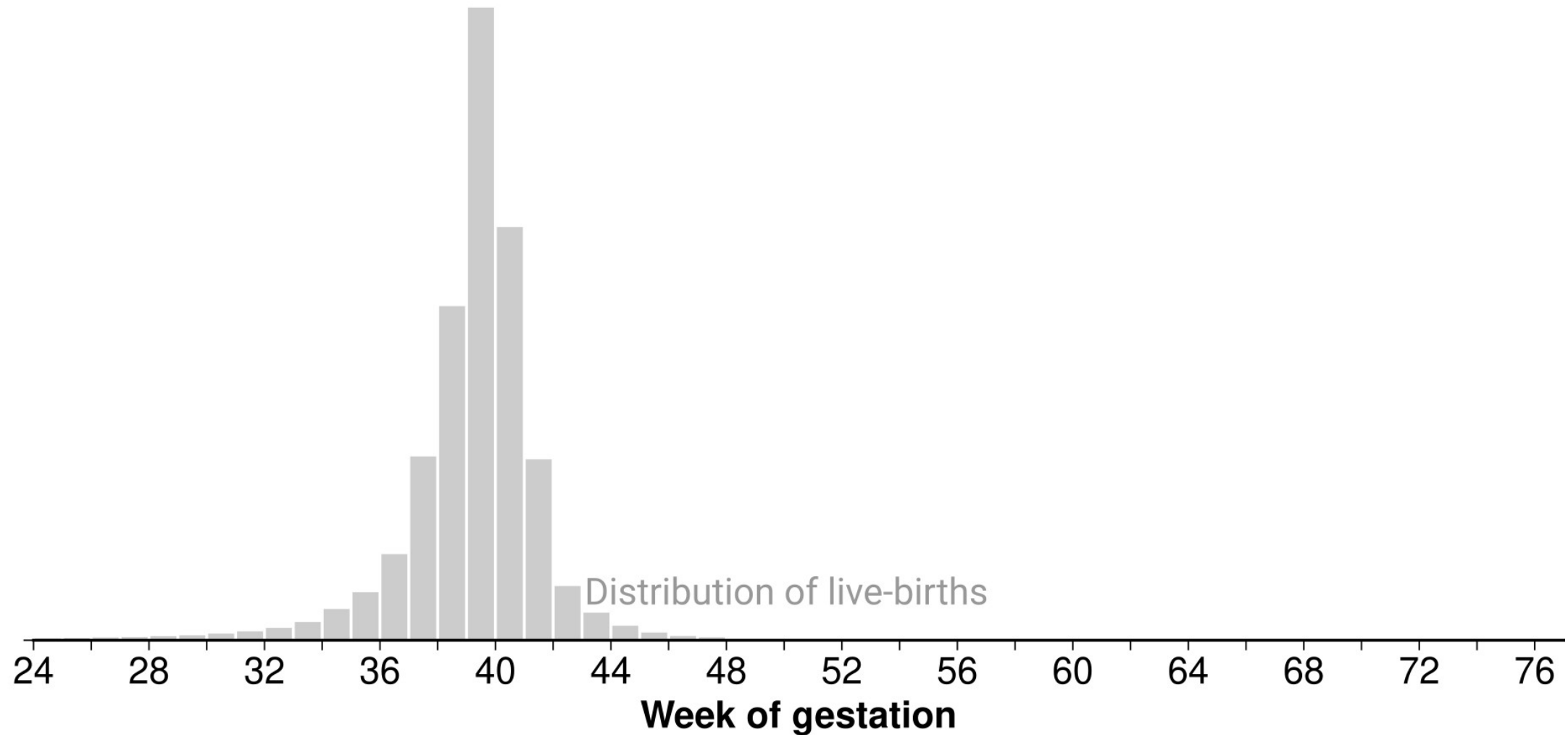


The age pattern of feto-infant mortality

Feto-infant mortality Ontogenescence and transitional risk

Combined feto-infant mortality by week of gestation among US conception cohort 2014.

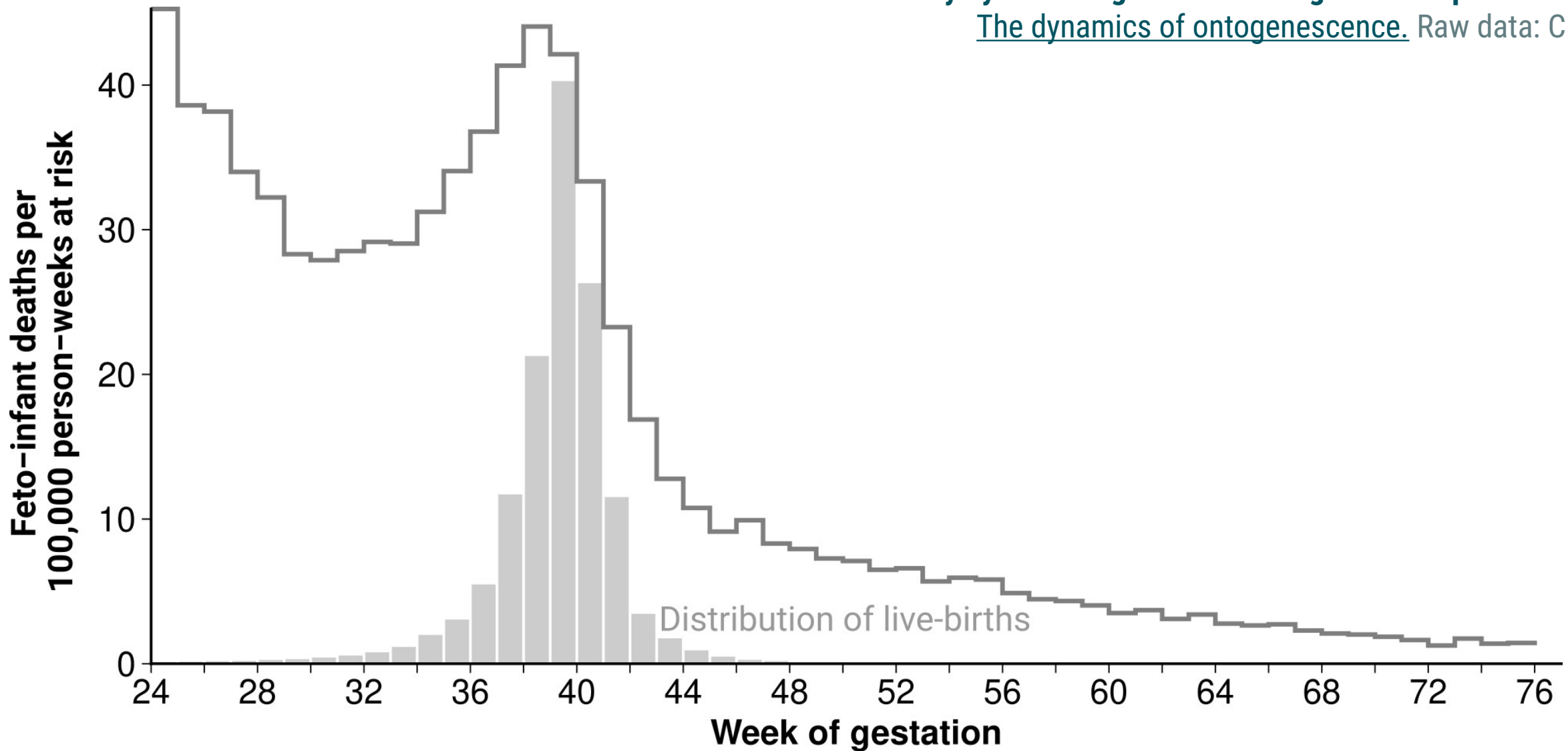
The dynamics of ontogenescence. Raw data: CDC/NCHS.



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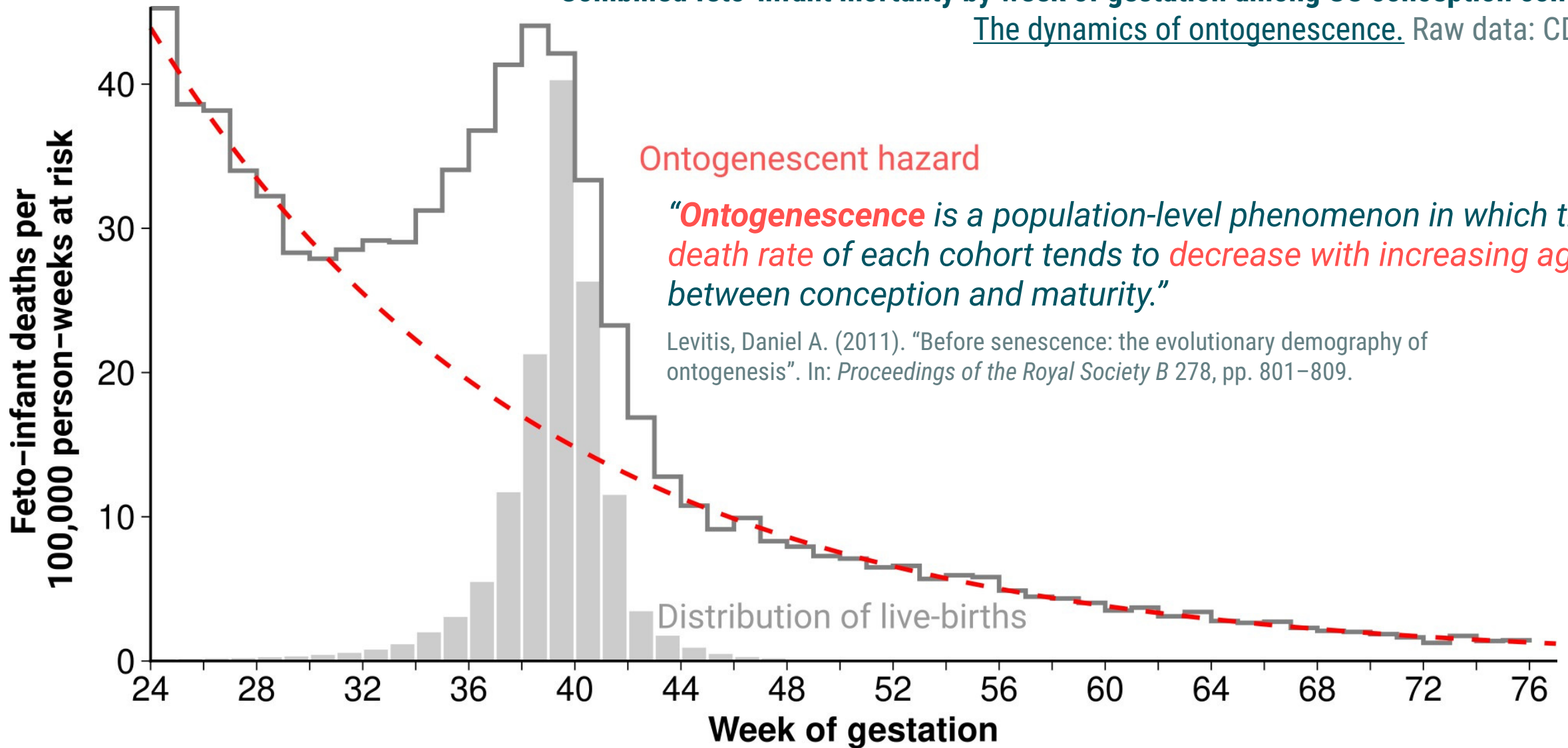
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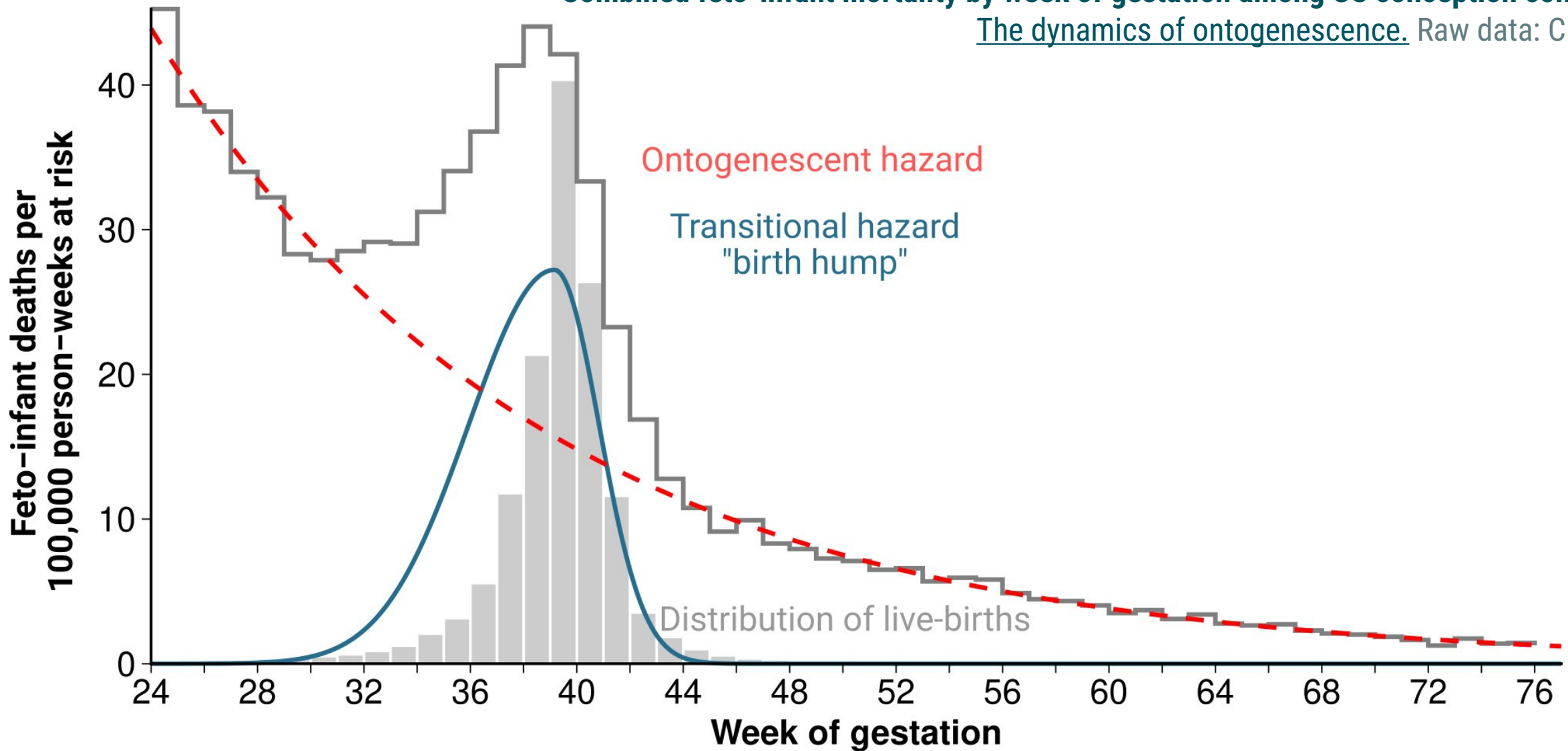
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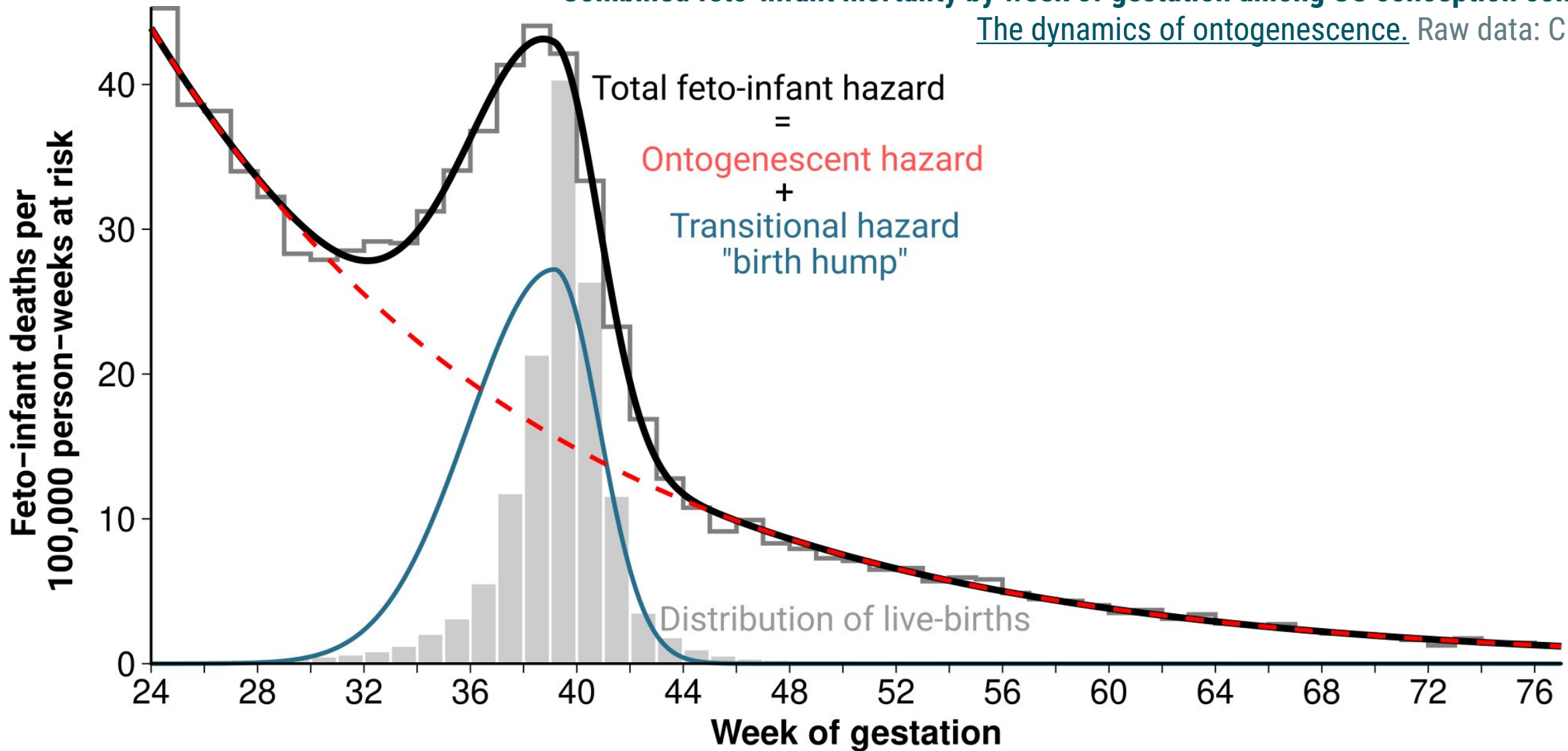
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Feto-infant mortality Ontogenesis and transitional risk

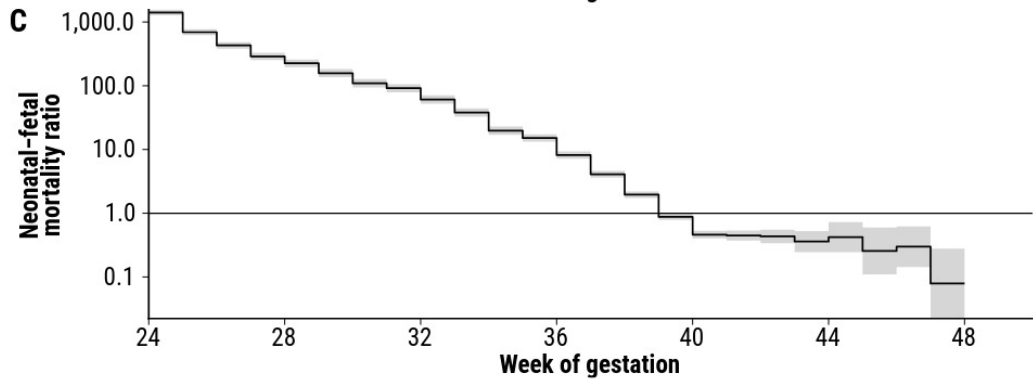
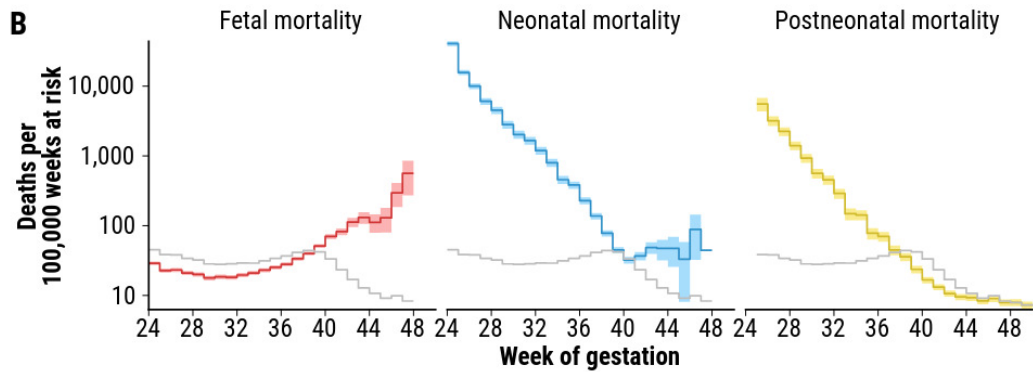
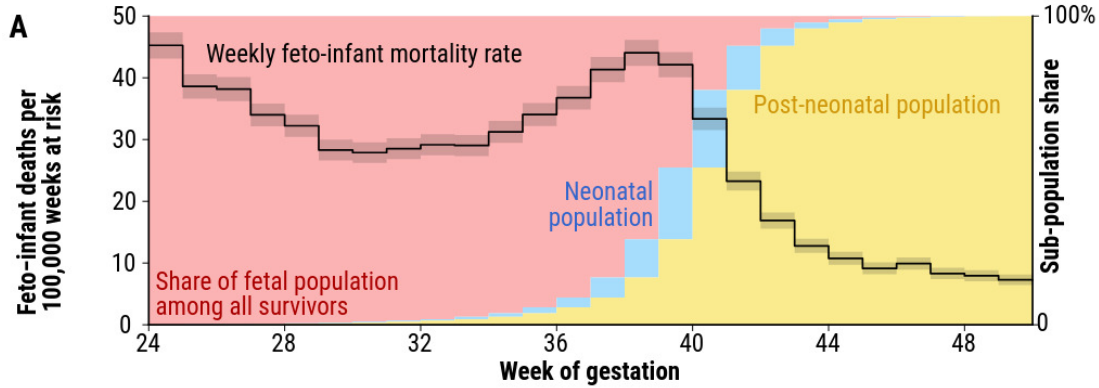
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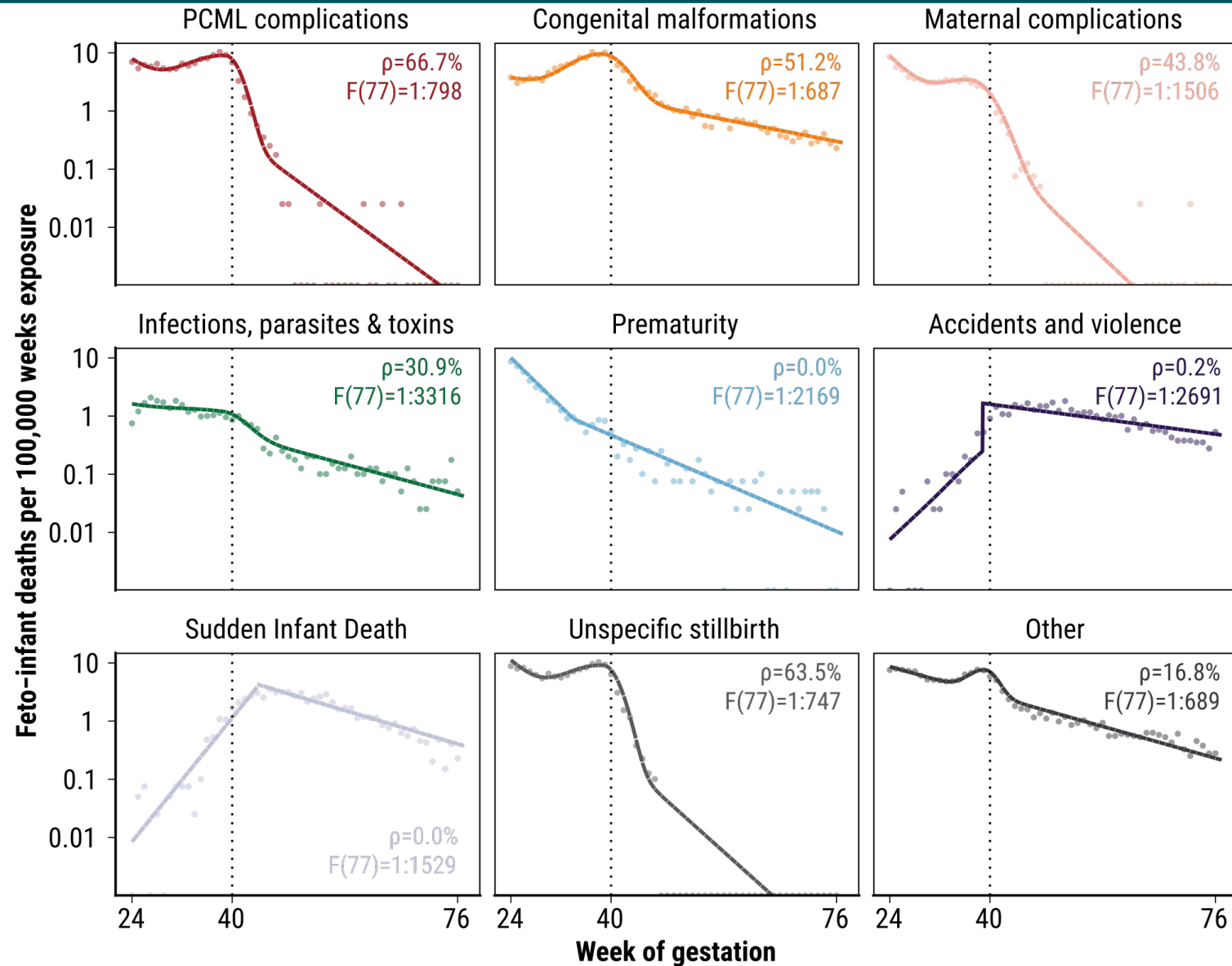
Perinatal population dynamics

Perinatal population dynamics



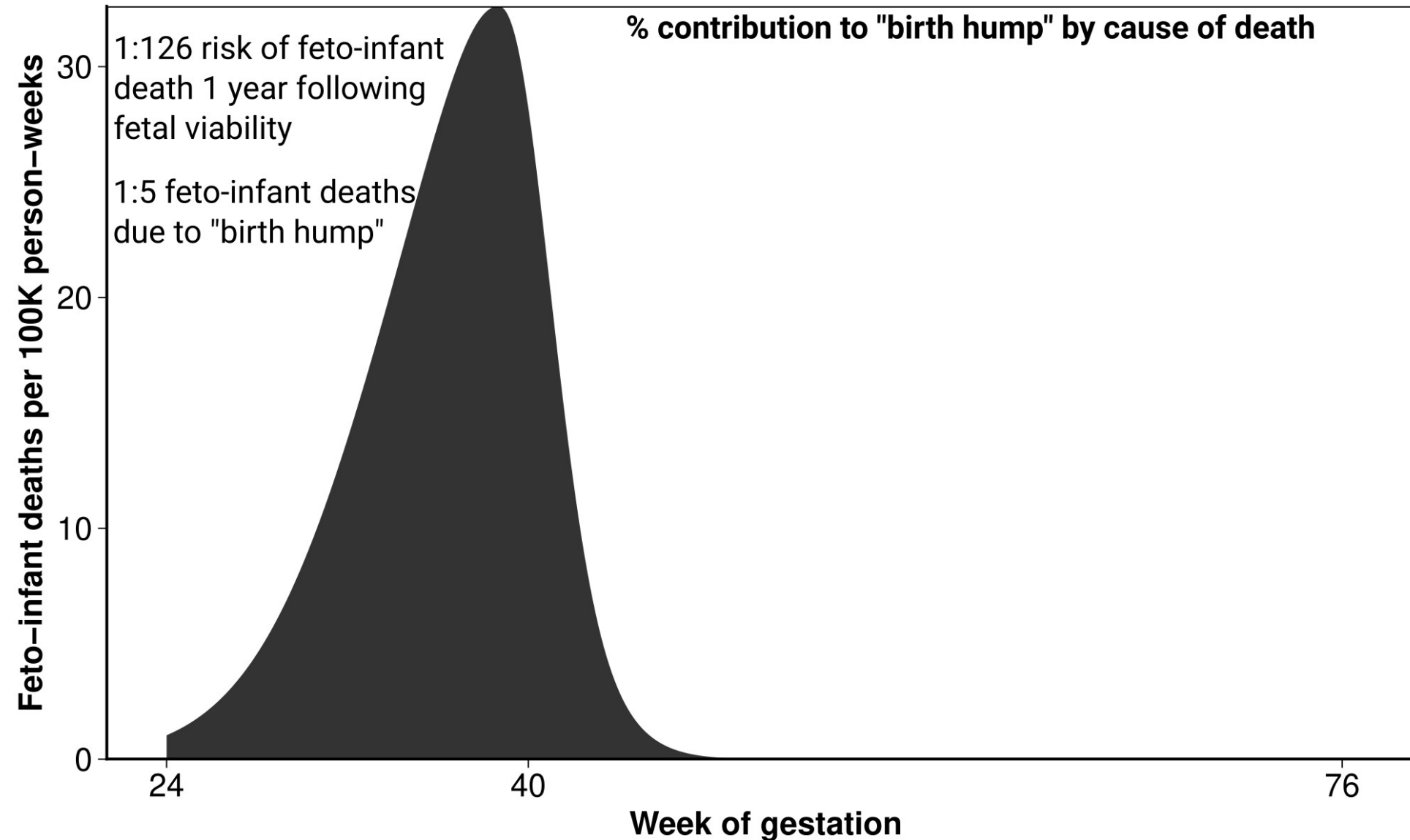
The birth hump

The birth hump



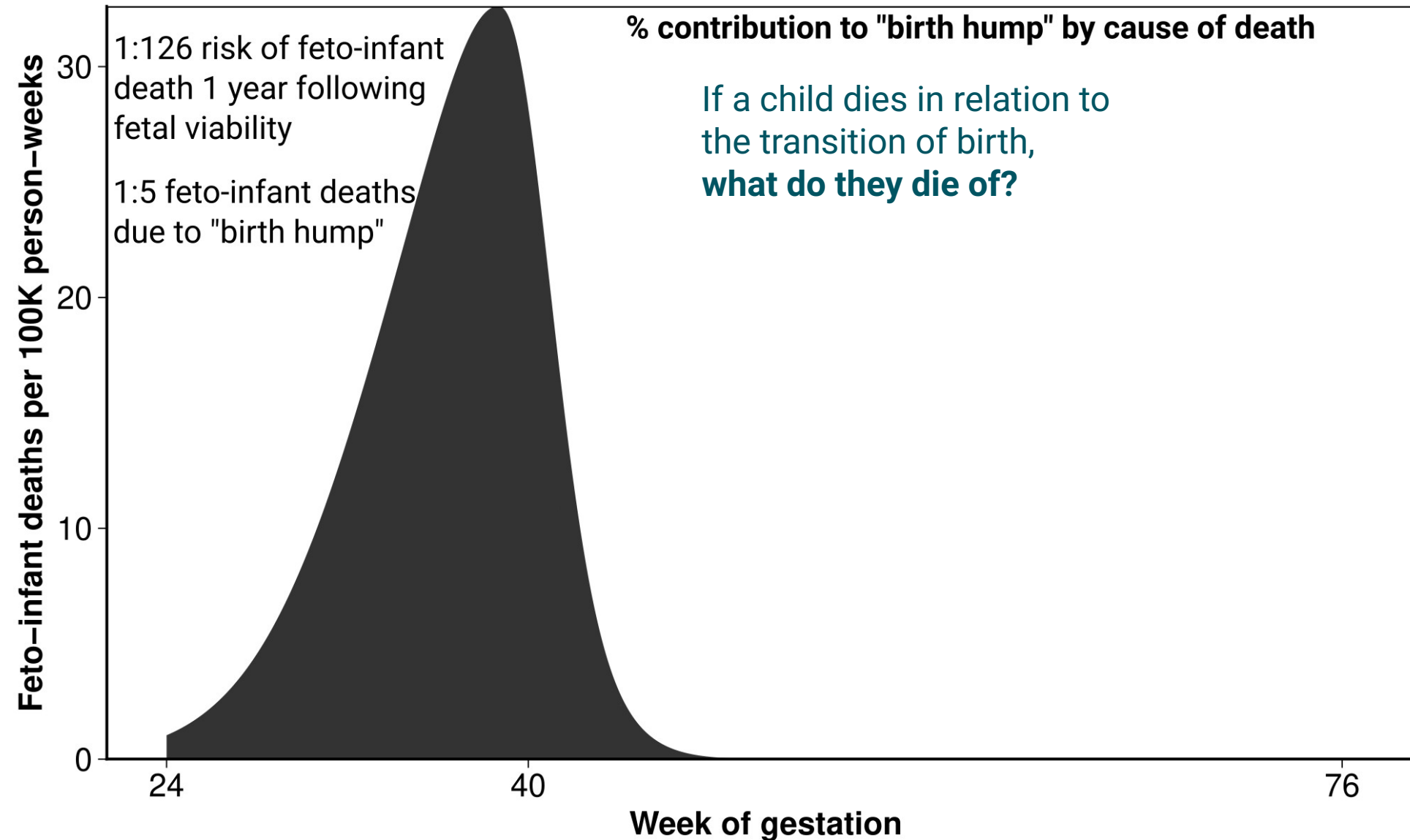
Cause specific Feto-infant death rates over gestational age among US conception cohort 2014. Schöley & Kniffka (2025). “The birth-hump”. A shape decomposition of perinatal excess mortality.

The birth hump by cause of death



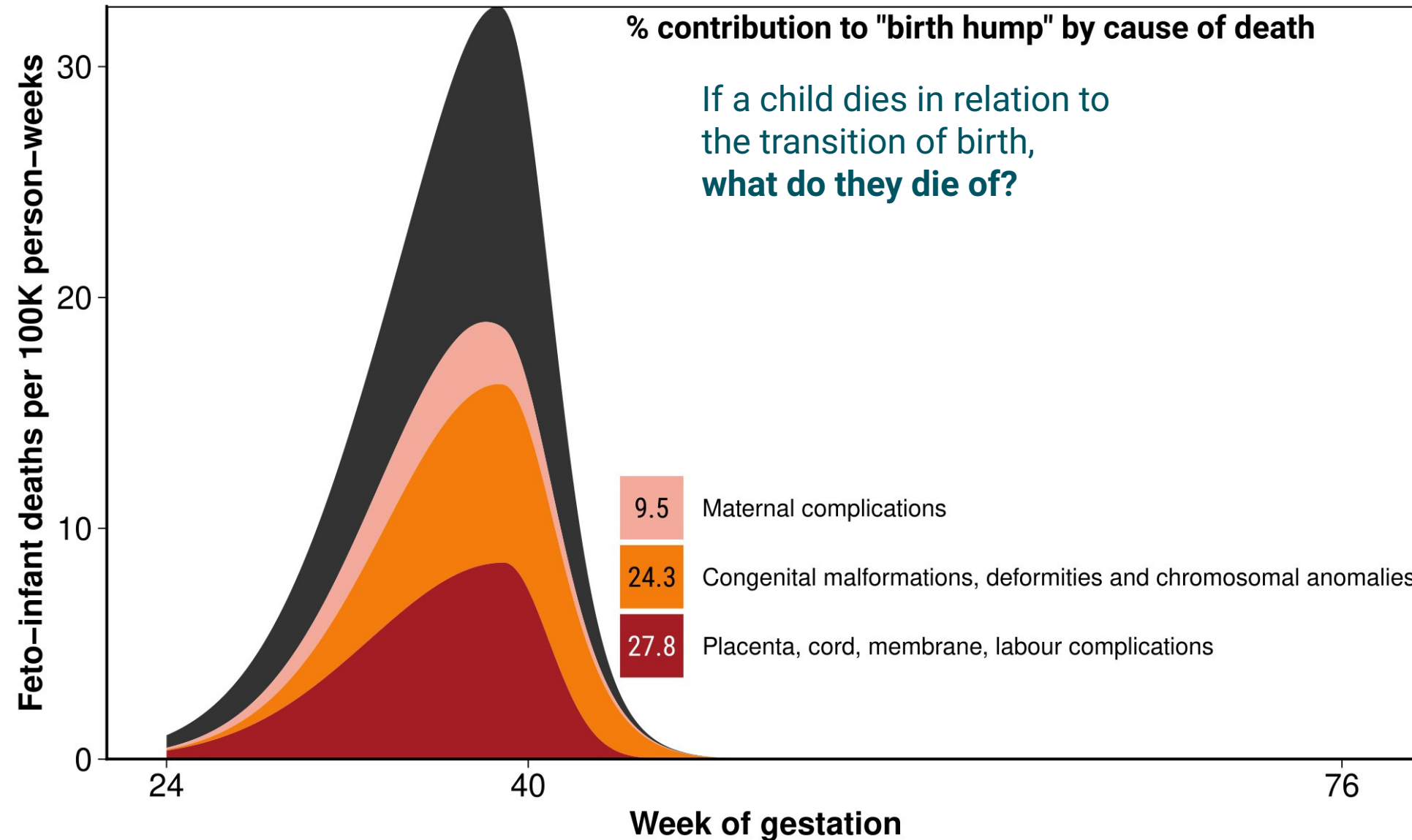
Cause of death decomposition of the "birth-hump" among US conception cohort 2014. Schöley & Kniffka (2025). "The birth-hump". A shape decomposition of perinatal excess mortality.

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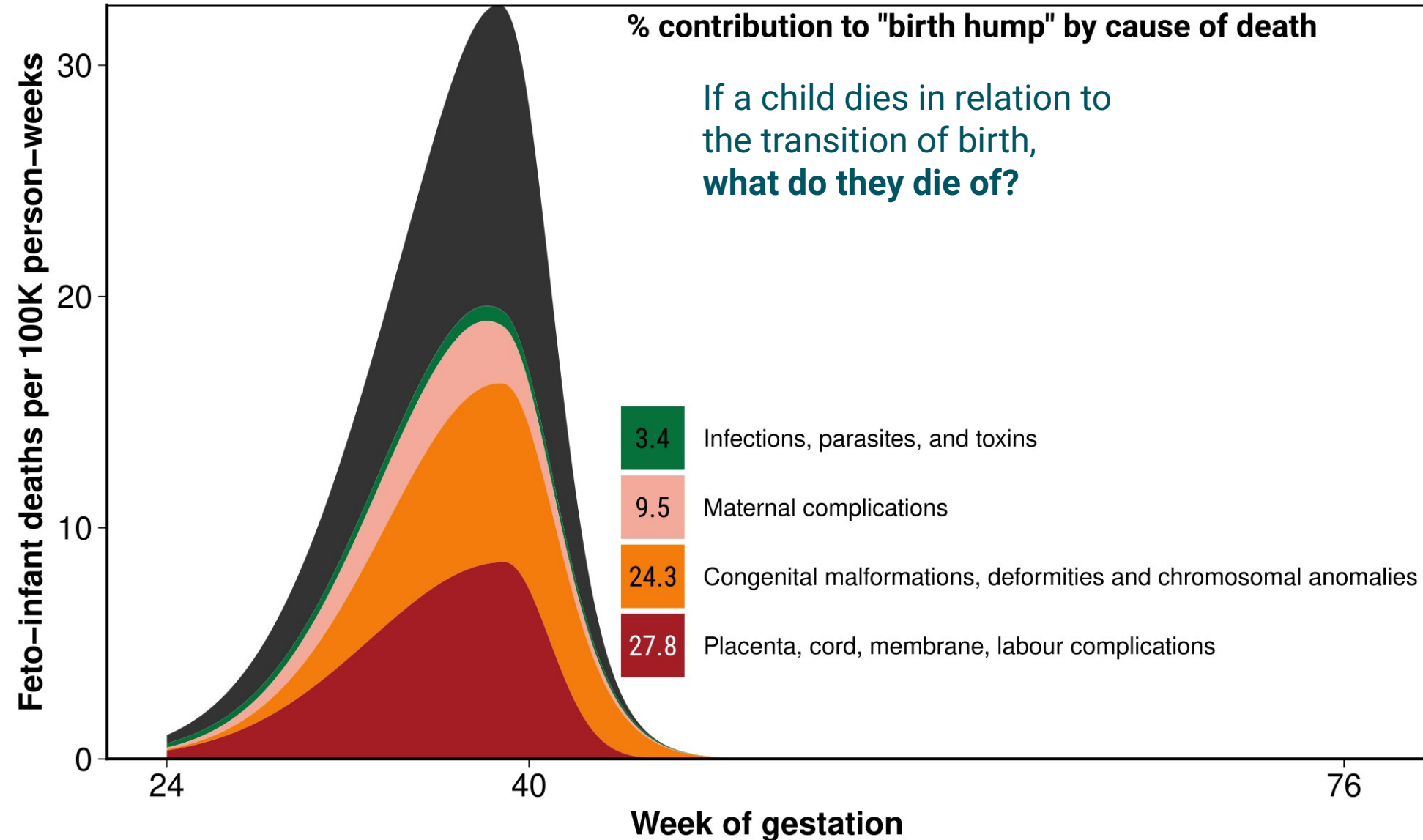
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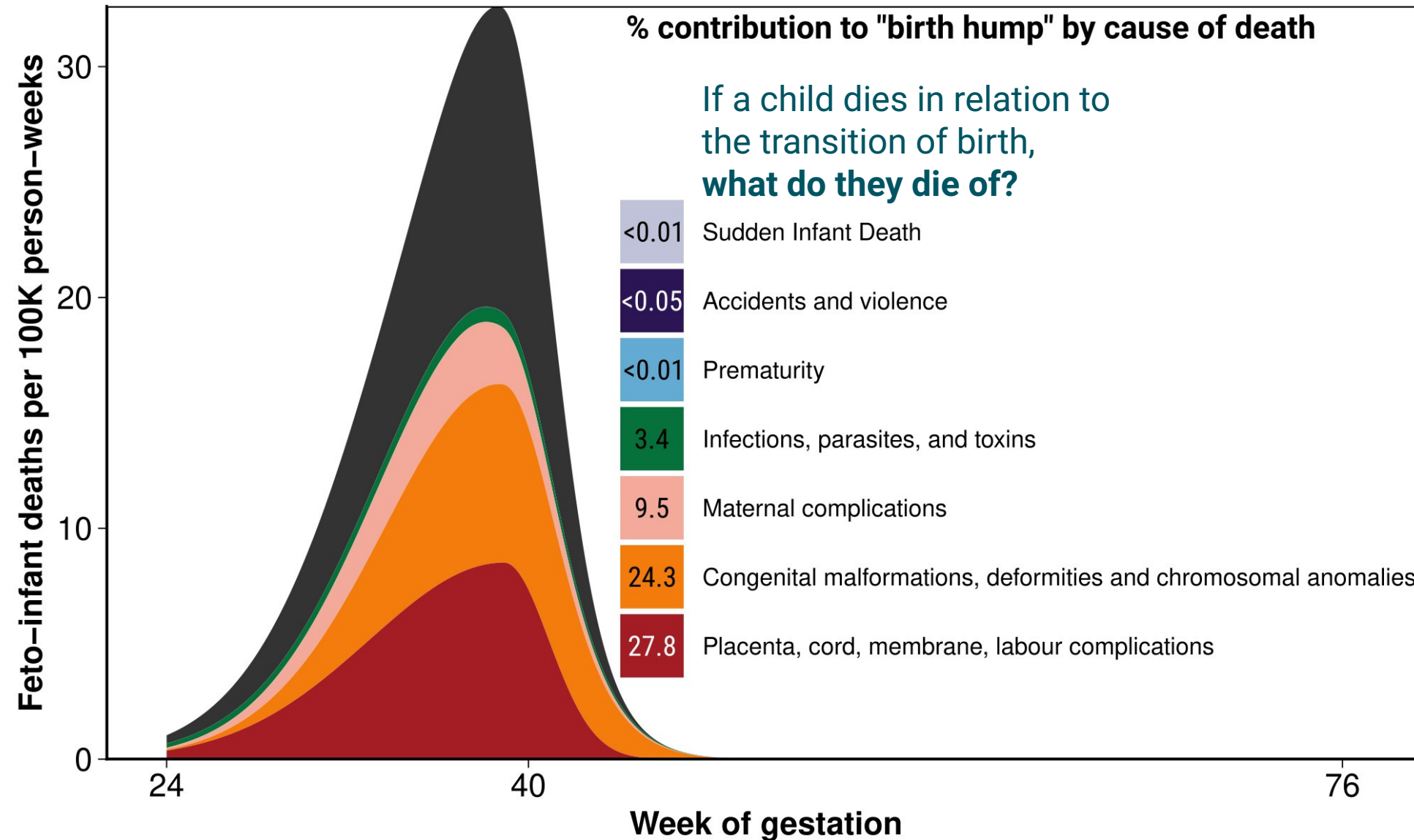
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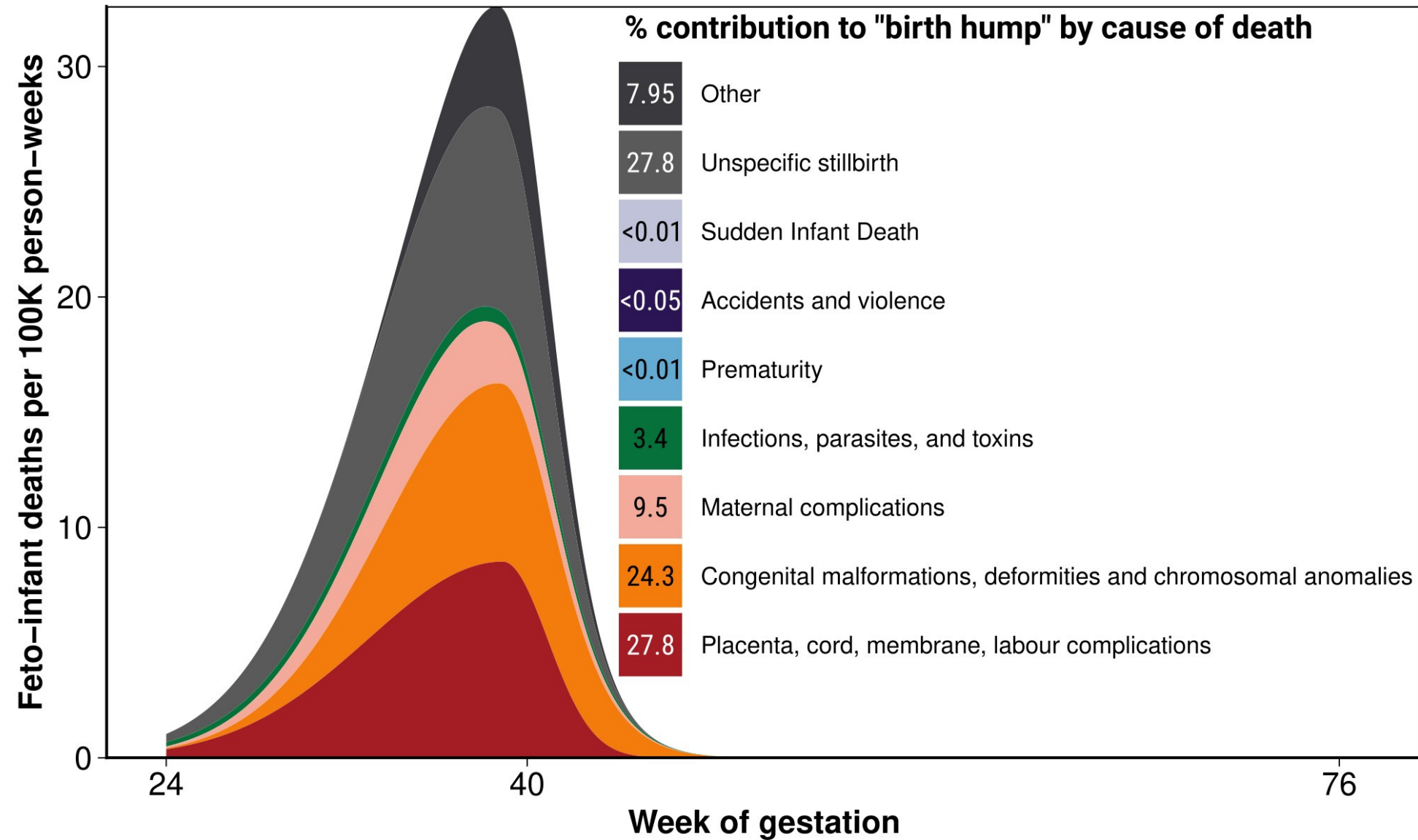
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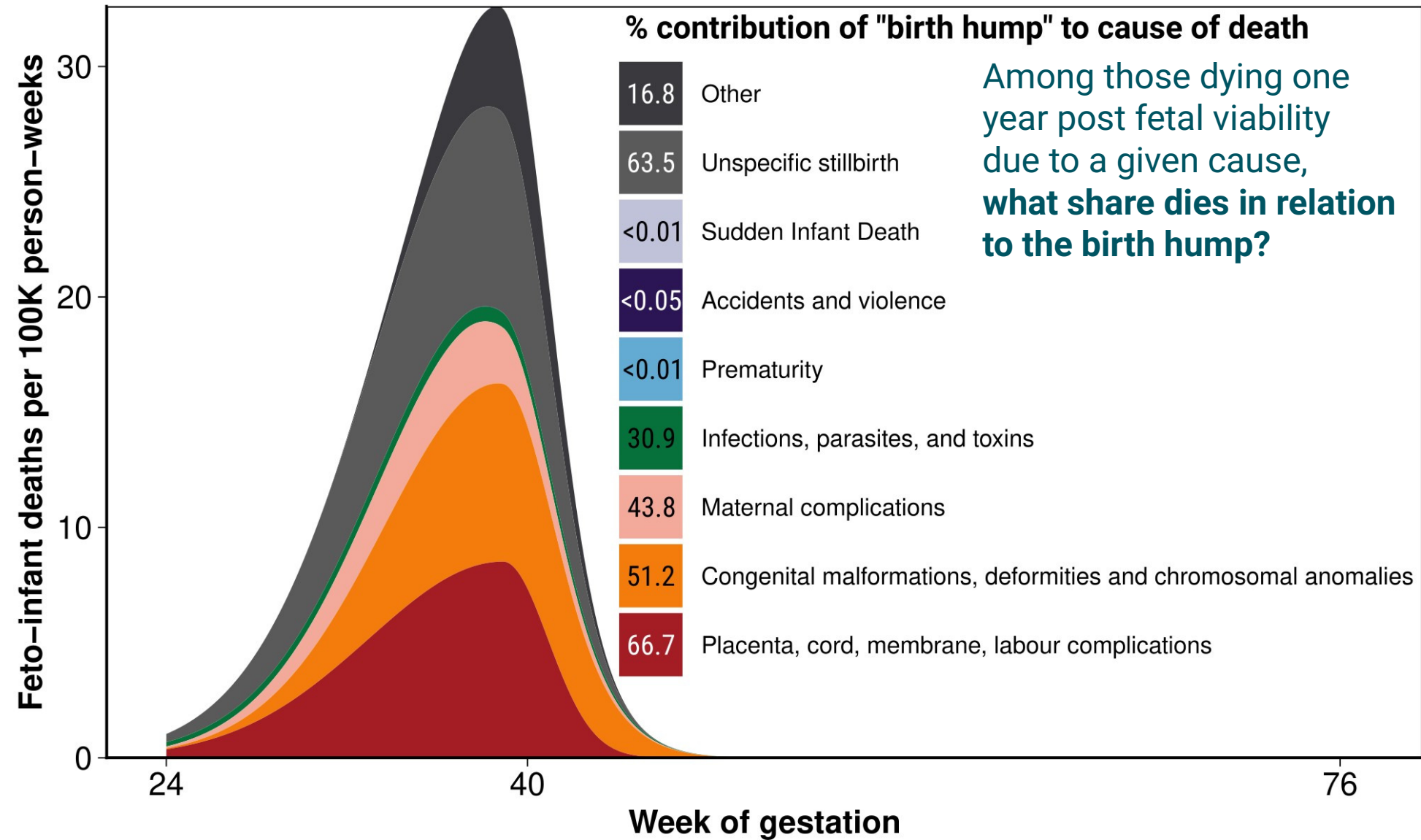
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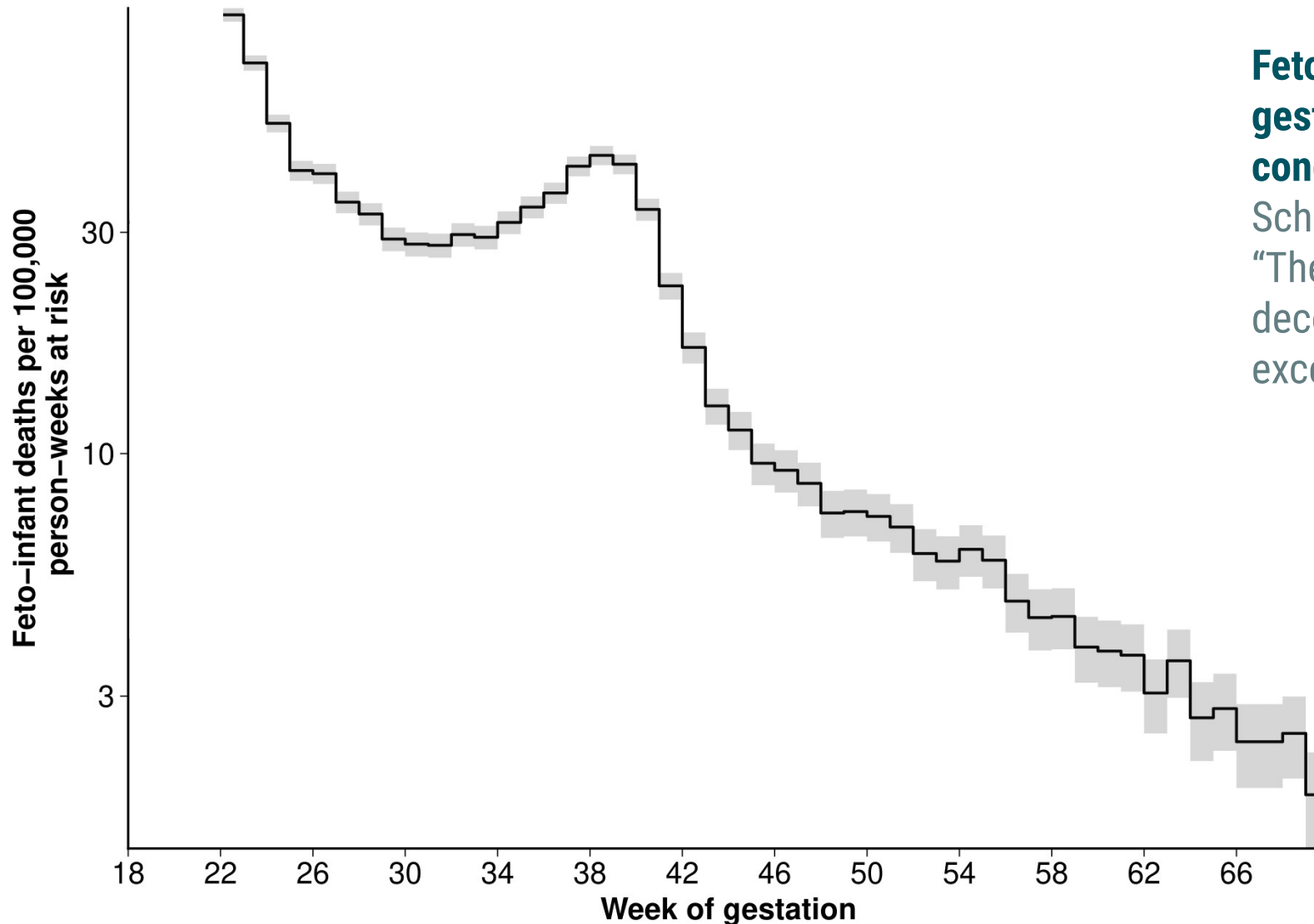
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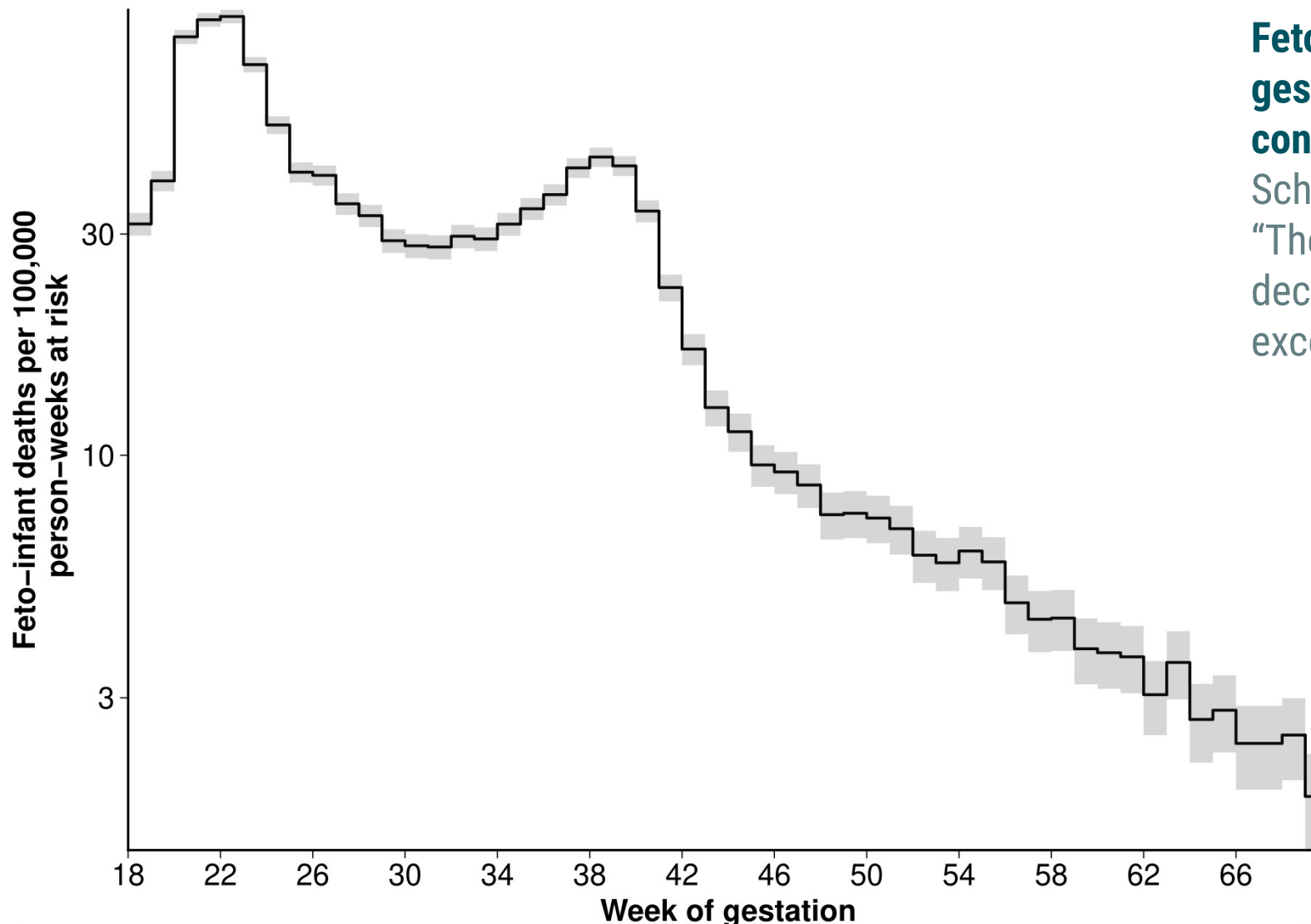
Age patterns and data quality

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Feto-infant death rates by gestational age among US conception cohort 2014. Schöley & Kniffka (2025). “The birth-hump”. A shape decomposition of perinatal excess mortality.

Age patterns and data quality



Feto-infant death rates by gestational age among US conception cohort 2014. Schöley & Kniffka (2025). “The birth-hump”. A shape decomposition of perinatal excess mortality.

Age patterns and data quality

Table 2: Cause of death contributions to the different components of feto-infant mortality.

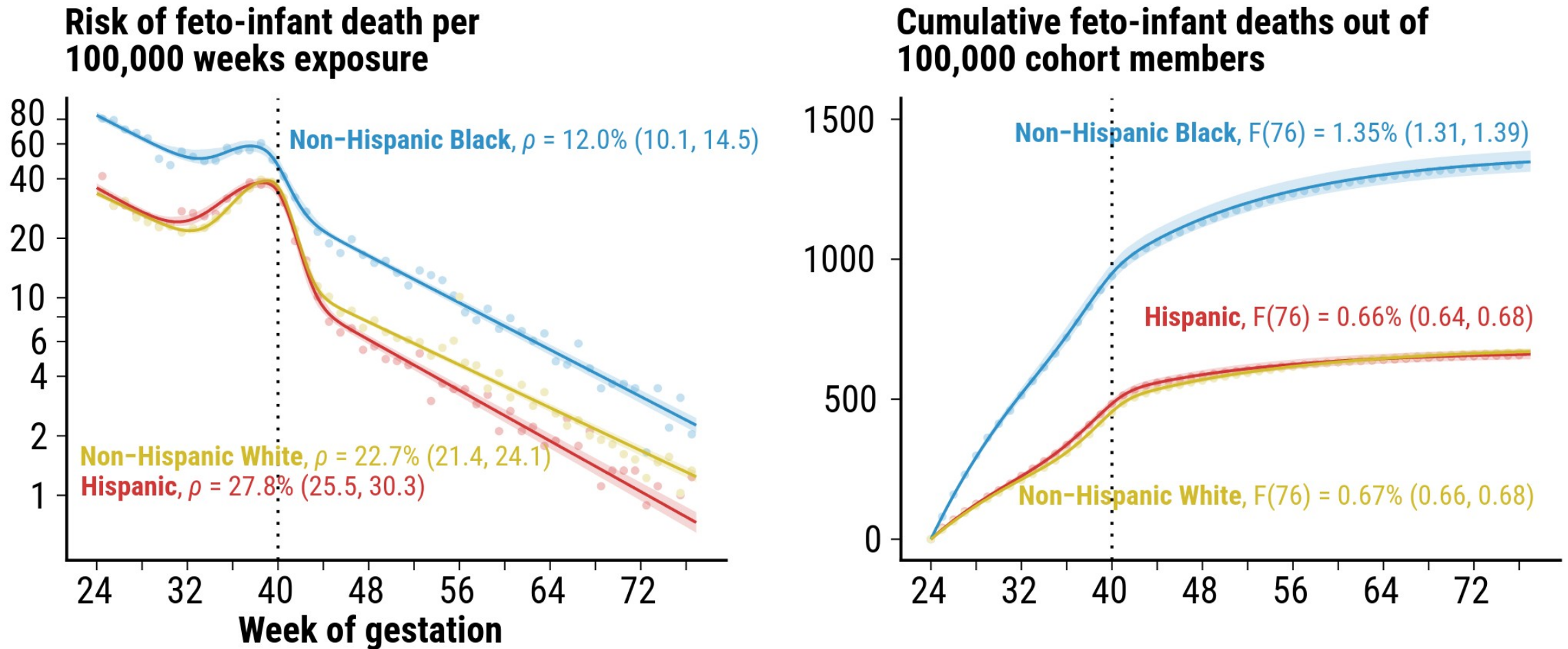
Cause-of-death category	Share on “birth hump” deaths (%)	Share on “ontogenescent deaths” (%)	Share on all feto-infant deaths (%)
PCML complications	30.6	9.9	16.3
Congenital malformations	22.6	11.9	15.2
Maternal complications	9.7	6.3	7.3
Infections, parasites & toxins	5.8	3.7	4.4
Prematurity	0.8	8.5	6.1
Accidents and violence	0.0	6.8	4.7
Sudden infant death	0.0	11.8	8.2
Unspecific stillbirth	15.1	17.6	16.8
Other	9.5	21.0	17.4

Cause of death decomposition of birth hump among US conception cohort 2014. Schöley & Kniffka (2025).

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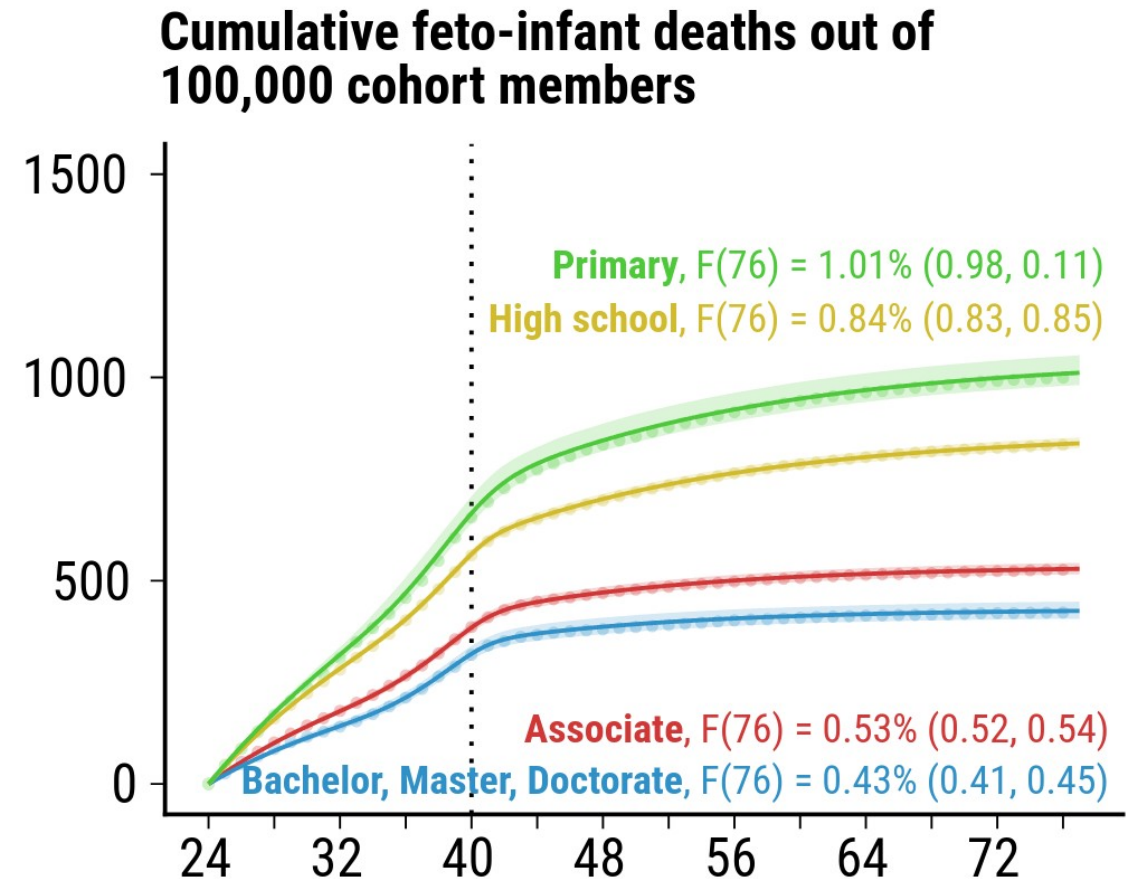
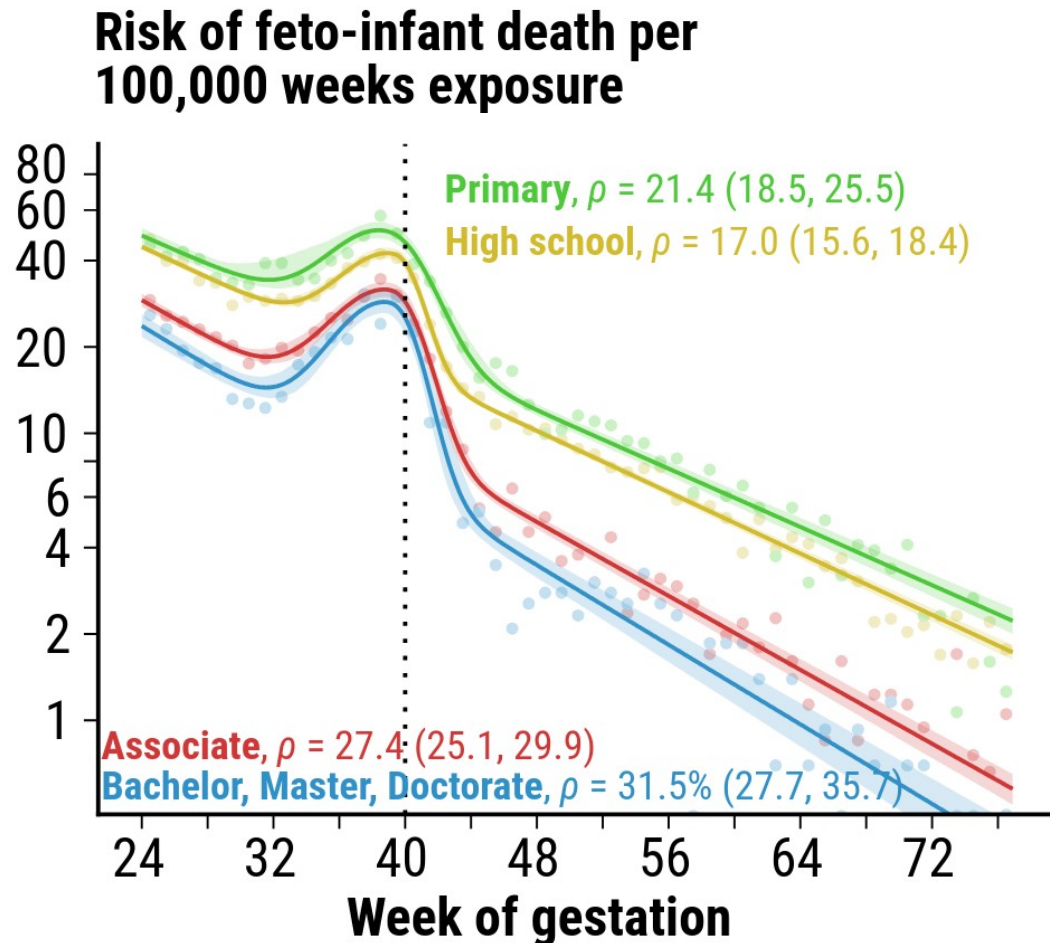
Three predictions

1. Compression of mortality towards birth



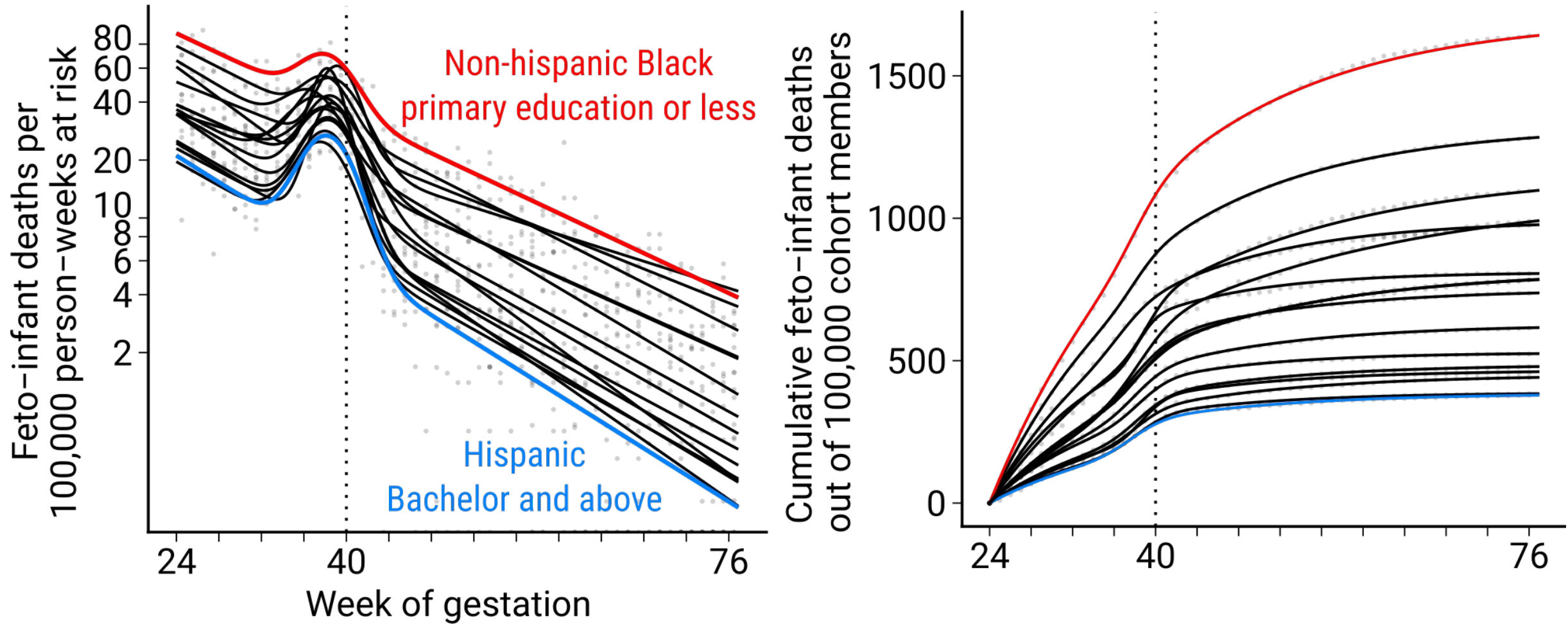
Stratified feto-infant death rates among US conception cohort 2014. Schöley & Kniffka (2025). "The birth-hump". A shape decomposition of perinatal excess mortality.

1. Compression of mortality towards birth



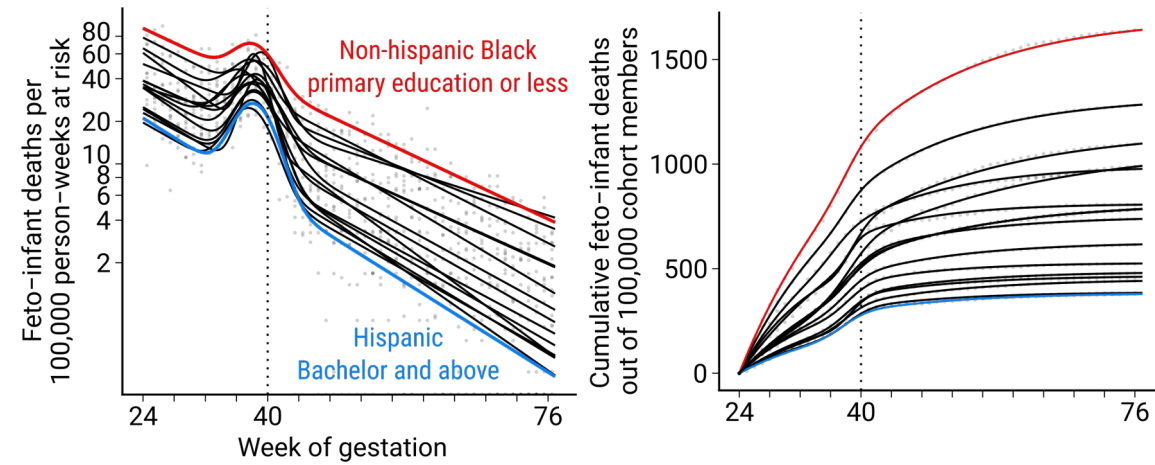
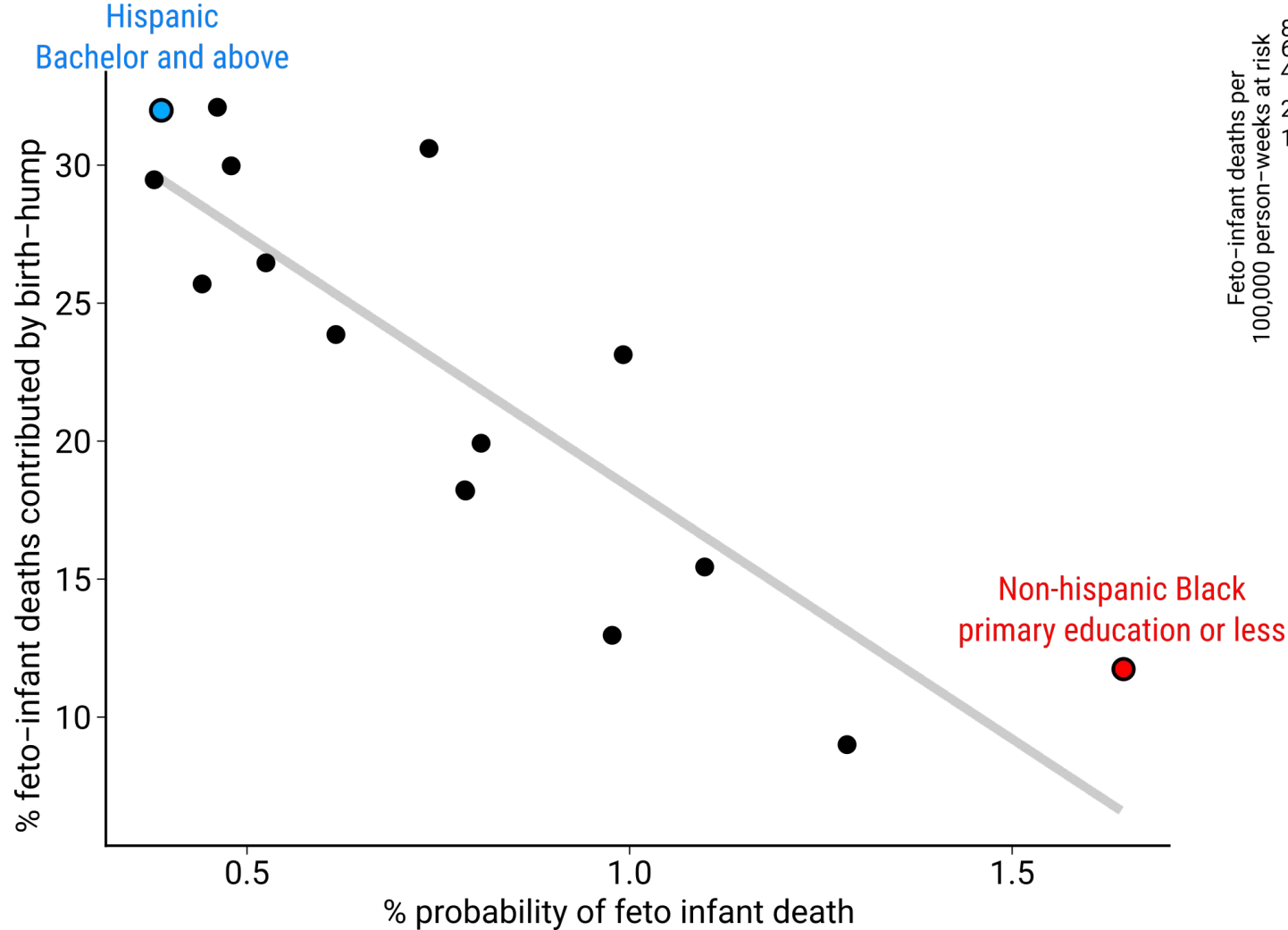
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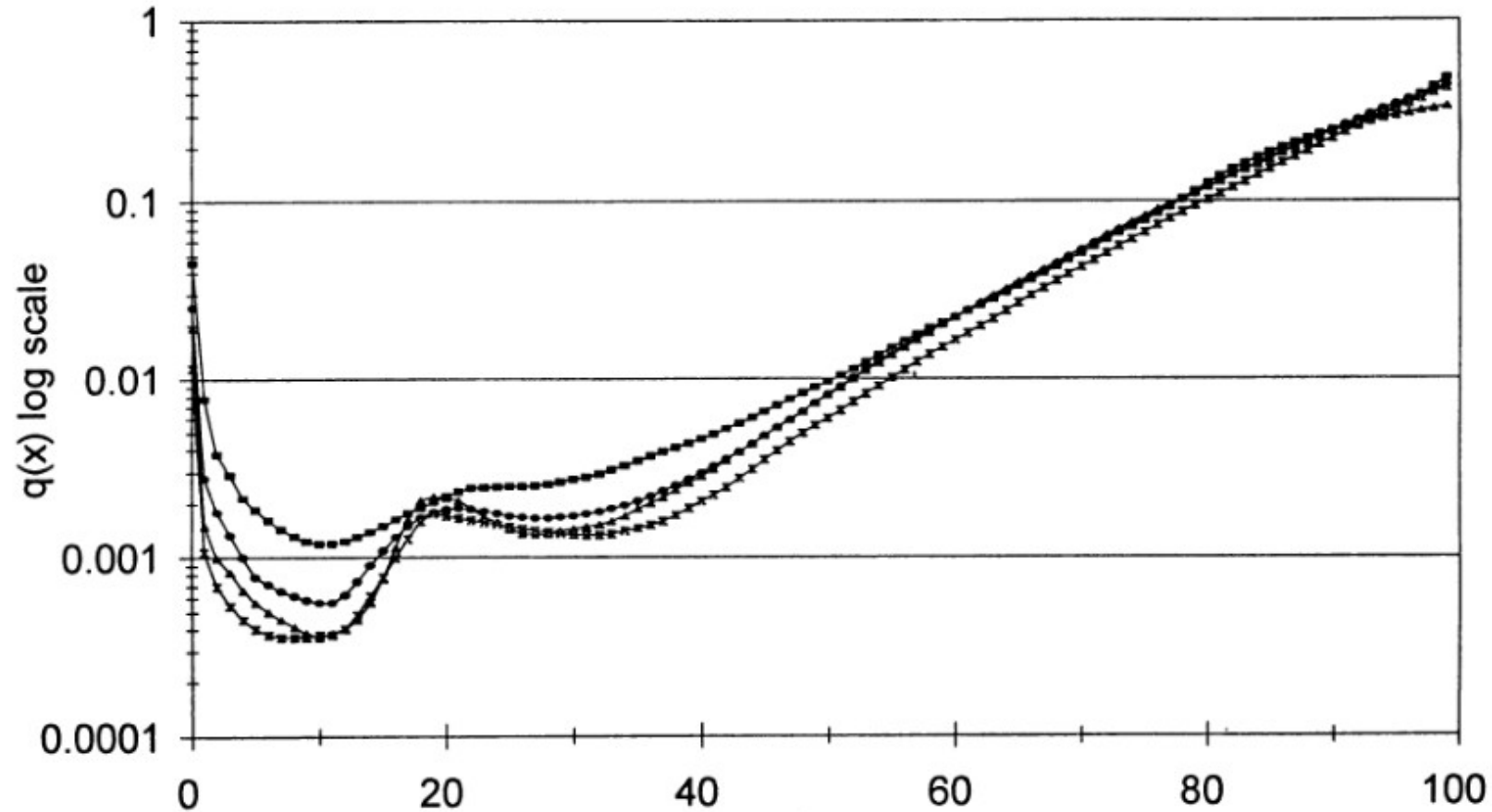
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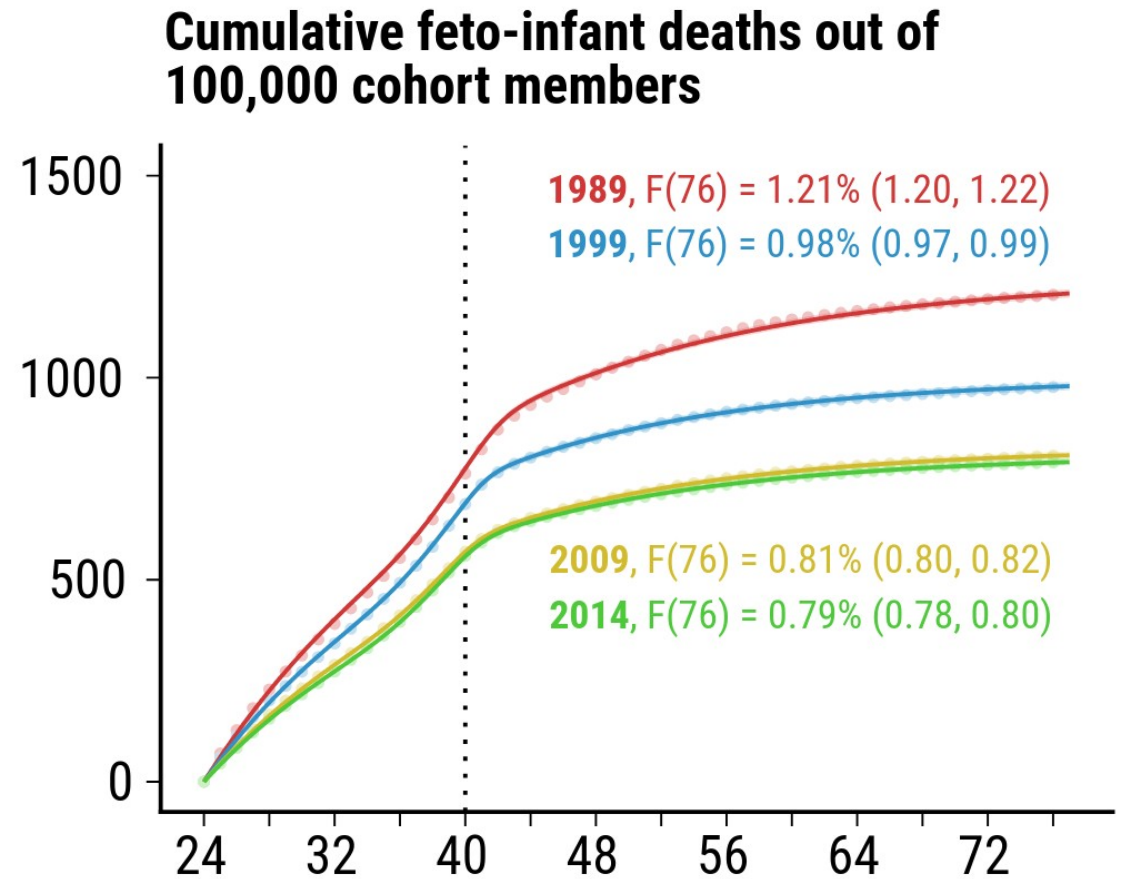
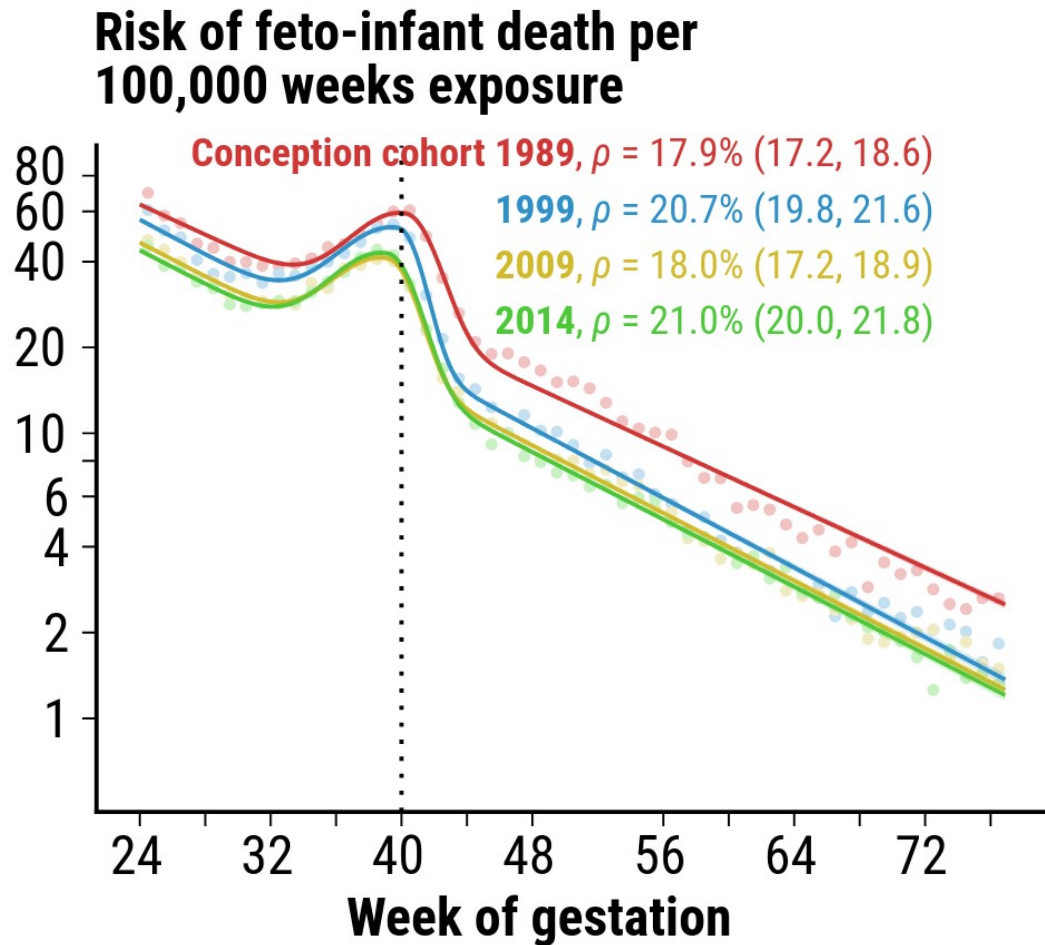
2. No birth hump in high mortality settings

Figure 1
Mortality $q(x)$ curves of Australian males according to Australian Life Tables (Males)
A1932-34, A1953-55, A1970-72 and the 1982 data.



Pollard (1996). On the changing shape of the Australian mortality curve. jstor.org/stable/40652265

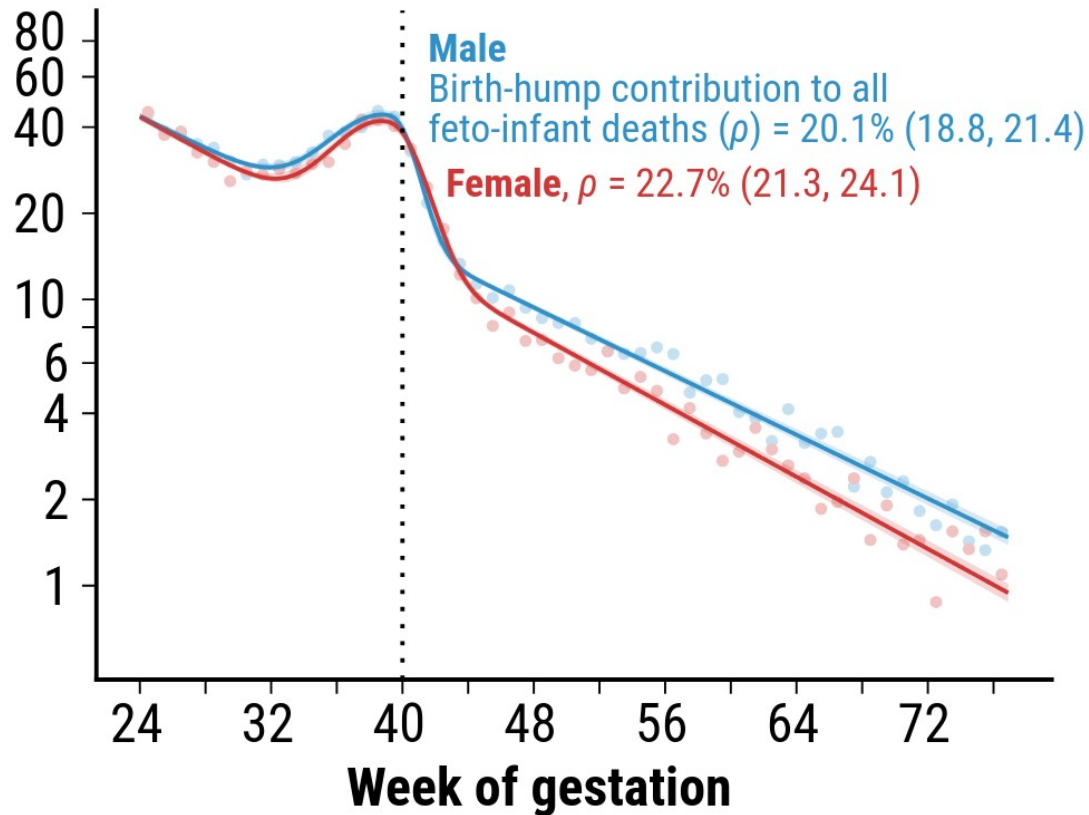
3. Slope of ontogenescence indicative of data quality



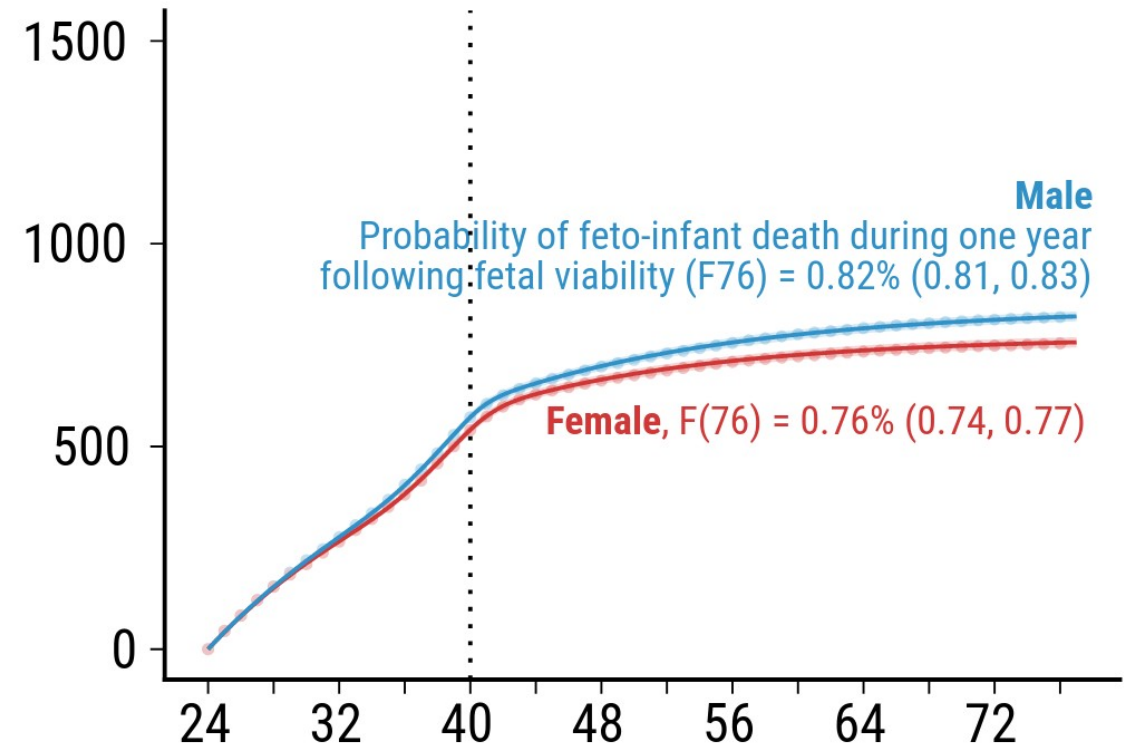
Stratified feto-infant death rates among US conception cohorts. Schöley & Kniffka (2025). “The birth-hump”. A shape decomposition of perinatal excess mortality.

3. Slope of ontogenescence indicative of data quality

Risk of feto-infant death per 100,000 weeks exposure



Cumulative feto-infant deaths out of 100,000 cohort members



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