STUDY PROTOCOL

The COVID-19 Pandemic and Maternal and Newborn Health:

Assessment of indirect and direct effects using routine population birth data

A study carried out by the Euro-Peristat Network

PHIRI (Population Health Information Research Infrastructure) project

Work Package 6, Use Case C

Coordination: Inserm, Paris

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1. Background and context

Pregnant women and newborns constitute vulnerable populations in an infection disease pandemic

During an infectious disease pandemic, pregnant women and newborns are vulnerable populations because of the specificity of their immune systems, their non-deferrable needs for health services, the effects of environmental factors on their health - notably the influence of social circumstances on risks of morbidity and mortality-, and the long-term consequences of adverse health events.

The novel coronavirus, SARS-CoV-2, has exposed vulnerabilities in our health system's capacity to respond to pandemics both in the management of patients with COVID-19, but also, more broadly, in the care of non-COVID-19 diseases. This is particularly true for maternity care that brings low-risk populations into contact with the health system for care that cannot be rescheduled or postponed. In addition, care for this generally low-risk population relies heavily on routine and regular contacts with health providers because of challenges in distinguishing life-threatening complications from unremarkable, everyday symptoms.

Containment strategies for SARS-CoV-2 also resulted in severe restrictions to normal everyday life, raising hardship and anxiety in families related to their personal safety and their economic livelihoods. Family units have been called upon to play a central role in the fight against this virus. Beyond the changes in care seeking patterns, stress and anxiety, which have been shown to influence perinatal complications, could lead to increases in adverse outcomes such as preterm birth, restricted growth and maternal complications. In times of economic hardship, indicators such as stillbirth rates and infant death rates rise, but underlying mechanisms remain poorly understood.

Population data are required for research on the health of pregnant women and newborns, but these are not readily available

To investigate the direct (due to infection by SARS-CoV-2) and indirect (due to health system or other changes related to the pandemic) effects of the COVID-19 on maternal and newborn health, large, population-based data are needed. Many studies have assessed the impact of COVID-19 on complications during pregnancy, maternal-newborn transmission and newborn health.[1] These have been essential for guiding obstetric and neonatal care during the pandemic. However, these cohorts focus on women and newborns presenting with symptoms of infection or who test positive and cannot respond to the broader questions about how the pandemic affects population health.

Data have also been produced on the indirect effects of the COVID pandemic, although because of delays in the production of health data, these were not available for most of 2020.[2] Further delays occur as this information is synthesized in reviews, although this has begun to occur in the latter part of 2021.[3,4] These assessments from routine birth data are needed to evaluate perinatal risks, including preterm birth, fetal growth restriction, stillbirth and, neonatal and infant mortality at the populationlevel. Initial synthesis of this evidence has shown high heterogeneity in outcomes by country, with some experiencing increases in adverse outcomes, such as stillbirth, whereas elsewhere some negative outcomes, such as preterm birth have decreased.[3,4]

Given these initial findings, it is important to compare the geographic and temporal distribution of perinatal health outcomes, taking into consideration differential secular trends, in order to produce actionable knowledge about the impact of the COVID-19 pandemic on perinatal health. Further, a panEuropean approach, assessing effects in multiple settings, would make it possible to test the

association with viral circulation and societal mitigation measures in a wide-range of settings. This is important for an understanding of underlying causal mechanisms and the potential effectiveness of social or health service interventions.

The PHIRI project: an opportunity to bring together data on maternal and newborn health

PHIRI (Population Health Information Research Infrastructure) is a Health Information project on COVID-19 financed by the European Commission to support research across Europe through the identification, access, assessment and reuse of population health and non-health data to underpin (public health) policy decisions on COVID-19 and future health crisis. The project builds on the BRIDGE Health project and the Joint Action InFact. PHIRI was launched in November 2020 and it includes 41 partners in 30 different countries. The aim is to share data and expertise between countries through a Health Information portal on population health in close interaction with key stakeholders in the health information landscape, in particular with ECDC, EUROSTAT, JRC, OECD, and WHO. One work package within the PHIRI project conducts research of immediate relevance for public health policies and management of the COVID-19 pandemic using a federated model, making it possible to share data rapidly and securely. One of the four use cases in this work package is on "the impact of COVID-19 on perinatal health and perinatal health inequalities" and is piloted by the Euro-Peristat network. Ultimately, PHIRI aims to structure sustainable and reactive health information systems in Europe.

2. Objectives

As part of the broader PHIRI project, this study aims to investigate the indirect effects of the COVID-19 pandemic on pregnant women and newborn health using data collected routinely on births in European countries. Secondary objectives are to examine the use of population birth data for assessing the direct effects of infection. Finally, the project aims to promote sustainable European health information systems by structuring data collection and reporting to improve data availability and timeliness to guide national and European policy.

Principal objectives are to:

1. Investigate principal maternal and newborn health outcomes in relation to population temporal and geographic exposure to SARS-CoV-2. We will distinguish between countries and time periods defined by the intensity of viral circulation and the restrictiveness of social measures and confinement orders.
2. Assess the impact of social and geographic factors on these effects by integrating individual or area-based socioeconomic indicators within this broader exposure framework and identify atrisk groups based on social context.

Secondary objectives are to:

1. Evaluate the timeliness and completeness of data in routine birth data for evaluating exposures and outcomes relevant for the evaluation of this and future pandemics. Make recommendations about how to improve routine birth data to provide actionable data for future epidemics.
2. Analyse the codes/variables for COVID-19, their integration into birth registers and their validity and application for research and, if possible, describe direct outcomes for mothers and infants associated with COVID-19 infection.

3. Assess the federated data collection model for its capacity to improve European-level health information systems and to provide data on perinatal health to inform policy and practice nationally and on the European level.

3. Methods: data sources, study population and indicators

3.1 Euro-Peristat Network

This project is conducted by the partners participating in the Euro-Peristat Network. The objective of the Euro-Peristat Network is to establish a high quality, innovative, internationally recognized and sustainable European perinatal information system. This system's goal is to produce data and analysis on a regular basis for use by national, European and international stakeholders who make decisions about the health and health care of pregnant women and newborns. Euro-Peristat began in 1999 as part of the EU's Health Monitoring Programme and now has official representation from 31 countries across Europe and a large network of contributing experts. The project builds on the Euro-Peristat list of recommended indicators for perinatal health surveillance which have been used to collect data for European Perinatal Health Reports in 2008, 2013 and 2018 and many scientific publications (see www.europeristat.com). The project is coordinated by Inserm, the French National Institute of Health and Medical Research, in Paris.

3.2 Data sources

The data sources used by the Euro-Peristat network are:

- birth registers
- hospital discharge data
- vital statistics
- civil registration
- causes of deaths statistics

When more than one source includes the data used to construct the indicators, the country team decides on the source that is best able to produce high quality and comparable indicators. Annex 1 lists the participants and institutions involved in the collection of the Euro-Peristat indicators.

3.3 Study population and period

The Euro-Peristat uses the following criteria for defining births for data collection: all births (live, stillbirths and terminations of pregnancy) with a gestational age of 22+0 weeks and over or with a birthweight greater or equal to 500 grams if gestational age is missing.

If countries are unable to follow this definition, national definitions can be used and are noted.

The study period covers all births from **2015-2020.** This is necessary because to assess changes during the pandemic in 2020, we will need to assess trends over previous years. Collecting data from 2015 also makes it possible to cross-check with the last data collection exercise in 2015.

3.4 Perinatal health indicators

Infant and maternal outcomes selected for this study are based on the Euro-Peristat core and recommended outcomes as well as a consensus process carried out with the Euro-Peristat network to define other data items of relevance to assessing the impact of the COVID-19 pandemic.

All of the Euro-Peristat core indicators that are feasible are included. One core indicator, maternal mortality, cannot be collected because the outcome is very rare and needs specific collection procedures to be reliable. Recommended indicators are those selected during the consensus process.

Data cover newborn and maternal outcomes, population risk factors, health care and exposures related to COVID.

Table 1 Perinatal health indicators included in the PHIRI Use Case on Perinatal Health

Data category	Core indicators (number)	Recommended indicators (number)	New indicators
Newborn health outcomes	Stillbirth (C1) Termination of pregnancy (C1) Neonatal death (C2) Infant death (C3) Birth weight (C4)** Gestational age (C5)	Apgar (R2)	Transfer to NICU Neonatal morbidity For C4: it was decided to modify the definition to include small for gestational age (requires data on sex of baby)
Maternal health outcome		Maternal morbidity (R6* however, individual items are redefined) Hysterectomy associated with obstetrical haemorrage RBC transfusion associated with obstetrical haemorrhage Eclampsia Transfer to ICU	Gestational diabetes Preeclampsia
Population risk factors	Multiple pregnancy (C7) Maternal age (C8) Parity (C9)	Smoking during pregnancy (R8) Distribution of mothers' education (R9) Distribution of households' occupational classification (R10) Distribution of mother's place of birth (R11) Body mass index, BMI (R12)	SES – deprivation score
Health care/medical practices	Mode of delivery (C10) by all sub-groups Induction of labour**	Induction of labour (R15) Place of birth (R16) Breastfeeding at birth (R20)	Postpartum hospital stay (mother)

COVID exposures			Date of birth (to be linked to information on infection and societal mitigation measures) COVID infection (ICD or other code) Geographic location
Euro-Peristat indicators not currently included in data collection	Maternal mortality (C6)	Congenital anomalies (R1) Fetal and neonatal deaths due to congenital anomalies (R3) Cerebral palsy (R4) Maternal mortality by cause(R5) Tears to the perineum (R7)	
		Pregnancies following subfertility treatment (R13) Timing of 1st prenatal visit (R14) Very preterm infants delivered in units without NICU (R17) Episiotomy (R18) Births without obstetric intervention (R19)	

4. Methods: data collection and management

4.1 Data collection using a federated model

The data collection process uses a federated model, whereby Individual patient data including outcomes and exposures are not transferred from the institution with authorisation to hold and analyse them. Only aggregate data on indicators are collected and provided to Euro-Peristat coordination team.

The figure below schematises the data collection process. Data Hub are the participating in each country. The datasets with individual data on births are kept in the servers as defined by local security and other specifications. In the schema the central Hub is INSERM.

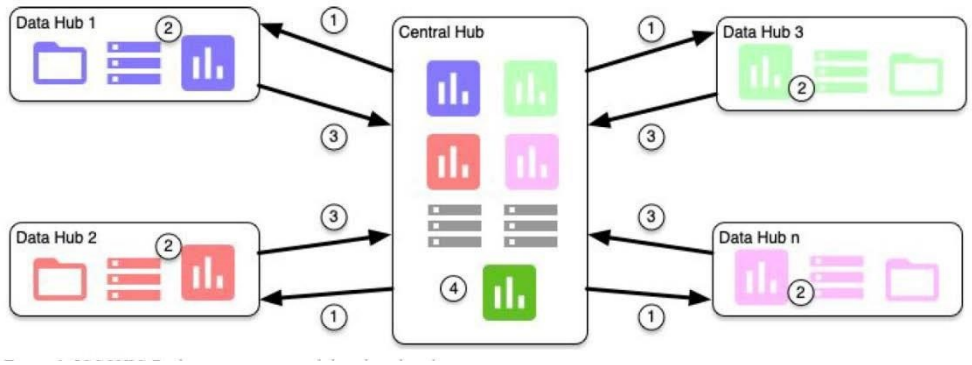

Figure 1. Architecture for exchanging data - hub-central hub

Individual-level data does not move outside the each data hub. Only the scripts and results are transferred between the data hub and the central hub. The data hubs host and curate data and/or have "easy" access to data. The coordination hub develops code, coordinates code exchange and provides technical support.

Within the PHIRI project, WP7 (leader: Enrique Bernal Delgado, Instituto Aragones De Ciencias De La Salud) is responsible for creating and validating this federated research infrastructure. Data collection and transfer procedures, based on open software, including R, will be updated as this system is refined and validated.

4.2 Common data model

The study will be carried out in two steps – the first using a Core Common Data Model and the second using an Expanded Common Data Model including variables based on the indicators described above. The second stage will require additional project support and is not planned until 2023-2024. Although we present the expanded version of the variables, the data collection procedures descried here only to the first stage. Another data collection protocol will be developed and approved for the second stage if further support is ascertained.

The tables below list the variables in the first data collection step and those that will be considered for the second step.

The Core and Expanded Common Data Models are provided in Annex 2.

The first phase data list includes the data from the core data collection list in addition to time stamps (year, month, day) to allow for analysis of data over time and socioeconomic variables, which can be provided as individual level data (maternal education or parental occupation) or small area based socioeconomic scores as available in individual countries.

Table 2 Data items included in the Core Data Model

Label of variable	**Description**
baby_id	baby identificator
Mother	mother identificator

GA	gestational age
BW	birthweight at delivery
SEX	Sex of baby
MULT_B	type of pregnancy
VITAL	vital status at birth
NNM	mortality in first month
NNM_pre	mortality in first week
IM	mortality in first year
MATAGE_B	maternal age at the birth of the baby
PARITY_B	parity
PRES	presentation of the baby at delivery
PREVCS	previous caesarean delivery
MOD	mode of delivery
TYPECESAR	Type of caesarean
INSTRUMENT	Instrumental delivery
ONSET	mode of onset
COUNTRY	Country
Year	year of the birth
Month	month of the birth
Day	day of the birth
SES_ED	education of the mother
SES_OccM	occupation of the mother
SES_OccF	occupation of the father
SES	deprivation score of living area

The data item or the second phase will be based on the following short list established after two rounds of a Delphi consensus. Selection will be based on feasibility and data quality. *Table 3 Data items included in the Expanded Data Model*

Label of variable	Description
APGAR	5 minutes APGAR score by gestational age
PREPREG_BMI	Mother's prepregnancy BMI
BREASTFED_BIRTH	Breastfeeding at birth
COUNTRY OF BIRTH	Maternal country of birth
SMOKING	Smoking status of mother during pregnancy
MAT_MORB_HYST	Severe maternal morbidity (hysterectomy associated with obstetrical hemorrhage)
MAT_MORB_TRANS	Severe maternal morbidity (RBC transfusion associated with obstetrical hemorrhage)
MAT_MORB_ECLAMPSIA	Severe maternal morbidity (eclampsia)
MAT_MORB_ICU	Severe maternal morbidity (transfer to ICU)
DEL	Volume of deliveries of the birth place
NICU_ADM_TERM	Term babies admitted to NICU
NEONAT_MORB	Neonatal morbidity based on ICD-10 codes
DIAB_PREG	Diabetes in pregnancy
PREECLAMP	Preeclampsia
PPSTAY	Length of postpartum stay
COVID	Covid infection at delivery (use of ICD or other code)
VACCINATION	Whether vaccinations were received
NUTS 2	EU geographic region

4.3 Data exchanges

The schema below describes the procedures for the pretest and first phase of the data collection process. A similar schema will be used for subsequent waves of data collection. The R scripts will be determined for each country.

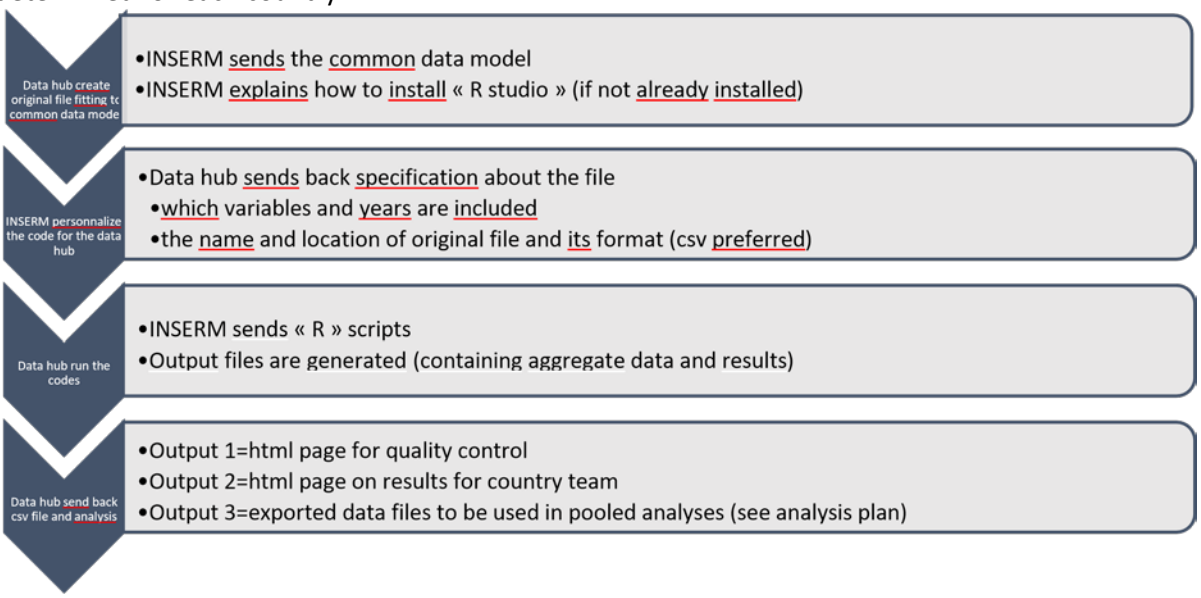

Figure 2 Schema for data collection

4.4 Protection of personal data and transfer and storage procedures

Measures to ensure that personal data is not transferred:

- No personal data are included in the common data model (names, addresses, other directly identifying information).
- The data providers, who are authorized data controllers within their institutions, run all of the R scripts and inspect the outputs before the files are transferred to the central hub.
- Output files include only aggregate data tables which are designed to be anonymous (see below).
- The data model and scripts are publically available

Ascertaining that transferred data are anonymous

To ascertain that the exported data were in line with the GDPR's definition of anonymous data (Recital 26), we assessed "whether a natural person is identifiable" by taking account "of all the means reasonably likely to be used, such as singling out, either by the controller or by another person to identify the natural person directly or indirectly." In the absence of any personal data included in the files, this means ensuring that the data tables should not include any indirectly identifying personal information that would enable identification through linkage to other sources. To ensure this, the following rules are applied:

- Output files only include aggregate data tables, with a maximum of 3 cross-tabulated variables.

- Aggregate data files cannot be linked to each other to augment the number of data items available, even in the case of a cell size of 1 individual because the data items included in the tables do not overlap.
- No dates (except year) or location identifiers (except country) are used in aggregate crosstabulated tables which can have small cell sizes.
- Month is only used for aggregated indicators which do not have a small cell sizes. Monthly rates of indicators are needed for time series analyses (see analysis plan).
- All sociodemographic characteristics (age, parity, socioeconomic status) are exported in grouped categories.

Measures to ensure security and integrity of data

To ensure the security and integrity of the data, transfers will use INSERM's file transfer system with data encryption (RENATER, www.renater.fr) or another secure method proposed by the partner or by WP7 which is developing the architecture for the data hub within PHIRI.

Data stored at Inserm are kept on a secure server (NAS). Backups are performed every week. Access to the office is restricted to those with personal badges; all users have a personal password, sign an agreement with Inserm regarding security procedures, and only have access to parts of the server for which they are explicitly authorised. An antivirus is installed on all computers.

Because the data are assessed to be anonymous, as explained above, aggregate results returned by countries will not be subject to suppression of small cell sizes, unless this is required by the institution's or the country's regulations. Having granular details is essential to permit accurate totals when subgroups are combined and to define comparable indicators. This has been shown in previous EuroPeristat publications which have used the same data collection protocol since 2000.[5-9]

For the publication of results, however, details on cell sizes under 5 will not be included in reports, web tables or scientific papers. In addition, attention will be paid to providing estimates of uncertainty (confidence intervals) in order to make sure that indicators based on small sample sizes are interpreted correctly. Note that if an institution or a country has more stringent requirements (i.e. cell sizes of 10), this will be respected for publication of data from that country. If some institutions have more stringent disclosure rules for the transfer of data with small cell sizes, data transfer agreements can be established with the coordination team at Inserm.

4.5 Data collection calendar

Data collection will begin in July of 2021 and continue until March 2022. Inserm will work with each country to customize the data collection protocol to each country.

5. Methods: Data analysis and dissemination

The analysis will proceed in iterative steps.

5.1 Data cleaning and validation

A first step involves verifying data quality and completeness. This is first done automatically with the R scripts (html page created for quality control by package "dlookr").

After the data are collected, the following Euro-Peristat operational guidelines on data quality apply:

- Network meetings discuss quality of data and review preliminary results.
- Data providers from each country are involved in assessing data quality and checking tables.
- All submitted data are checked by the coordinating team (s) and a report with discrepancies returned to the participating country.
- Data should also be checked with previous years and other sources (Eurostat) in order to detect discrepancies and errors.
- Data from 2015 will be compared with European Perinatal Health Report on 2015 data

5.2 Analysis strategy

1 We will first analyse the perinatal health indicators included in phase 1 of the study by year to establish whether the year 2020 differs from previous years and to determine background rates and trends. This analysis will be based on the Euro-Peristat output tables which will be produced for each year.

   - This will require collecting the Euro-Peristat core indicators using appropriate subcategories as done in previous data collection exercises.
   - For key indicators, measures of trend using regression analyses, adjusting for age and parity, will be produced and the results of these analyses will be exported.

2 More specific analyses will be undertaken using monthly rates and specific periods in 2020, including (i) all of the post-pandemic period and (ii) country-specific lockdown periods. Lockdown periods will be defined using the ECDC database: (https://www.ecdc.europa.eu/en/publicationsdata/download-data-response-measures-covid-19). The table below describes the hypotheses to be tested, the indicators used and the analysis methods and sub-group analyses which are planned.

Table 4 Research Questions and indicators for the analysis by month and COVID-19 period

Research question related to the COVID-19 Pandemic	Outcome measure and definition	Rationale for question and outcome
Was there an evolution in birth rates during the pandemic?	• Number of births per month	Many countries have observed a decline in births. When fertility changes, this can affect the risk level of the childbearing population, which can affect health outcomes.
Was there a trend in the stillbirth rate during the pandemic?	• Stillbirth rate ≥22 weeks • Stillbirth rate ≥24 weeks • Stillbirth rate ≥28 weeks	There is a concern that stillbirth rates rose during the pandemic, reflecting restricted access to health services. We will use several outcomes. While the stillbirth rate using the 24 week threshold is considered optimal in EuroPeristat studies, not all countries can produce it. Further, adopting a 28 week threshold will permit comparisons with other studies using WHO guidelines
Was there a trend in neonatal mortality during the pandemic?	• Neonatal mortality rate (NMR) ≥22 weeks • NMR rate ≥24 weeks • Early NMR rate ≥22 weeks • Early NMR rate ≥24 weeks	Some countries do not have data on all neonatal deaths and therefore a decision was made to produce the early NNR separately. Similar reasons, described above, exist for the gestational age thresholds.
Was there a trend in perinatal mortality during the pandemic?	• Perinatal mortality rate (PMR): stillbirths ≥22 weeks and early neonatal mortality • PMR: stillbirth ≥24 weeks and early neonatal mortality	By combining data from stillbirths and early neonatal deaths, the PMR may be a more robust indicator to detect changes given the short time periods covered.
What was the trend in preterm birth during the pandemic	• Live singleton preterm birth rates (<37 weeks) • Live singleton very preterm birth rate (<32 weeks)	Contrary to expectations, decreases in preterm birth rates have been observed in some, but not all contexts. Some have claimed that this decrease is primarily among very preterm births.

Was there a trend in fetal growth?	• Live singleton low birthweight rates (<2500 g) • Live singleton small for gestational age (SGA) rates • Live singleton SGA rates for term births (≥37 weeks) • Live singleton SGA rates for preterm births (<37 weeks)	This will assess whether any changes to preterm birth rates also affected fetal growth during pregnancy. This analysis uses a traditional measure of fetal growth (births <2500) which is less specific and can include preterm births with normal growth as well as a new indicator for Euro-Peristat based on recent work on the assessment of fetal growth. [10]
Were there changes in the child bearing population linked to declining fertility?	• % of births to mothers <24 years of age and ≥35 years of age • % of primiparous births • % of multiple births By preterm/term	The change in fertility during the pandemic may have led to changes in the composition of the childbearing population at the end of 2020 (for term births in Nov/Dec and for preterm births starting in Sept).
Did obstetrical practices related to mode of delivery change during the pandemic?	• Caesarean delivery (CD) rate • Prelabor CD rate • Intrapartum CD rate • Indicated CD rate (taking into consideration inductions) • Spontaneous CD rate (considering inductions) • Induction rate • Instrumental delivery rate	Changes in obstetrical practices may reflect attempts to minimize infection risks during the pandemic.

a. 3/ Sub-group analyses and other perinatal outcomes: We will investigate trends within specific sub-groups, including by sociodemographic characteristics (maternal age, parity, BMI and SES groups) and by infant characteristics (sex). The first set of analyses will focus on the SES groups and infant sex, as below. These analysis will compare the whole pandemic period and the first two months of the pandemic.

Table 5 Sub-group analyses

Sub-group	Outcomes	Rationale
Socioeconomic differences in outcomes	SB, NNM, PNM, live singleton PTB, live singleton SGA, CD, prelabor CD and intrapartum CD (as described above)	Women with lower socioeconomic status may be more vulnerable to the negative impact of the pandemic.

Sex of baby	SB, PNM, live singleton PTB, live singleton SGA	An exploratory analysis as males may be more vulnerable to negative external impacts during pregnancy.

4/ In a second phase, the set of recommended and new indicators will be added, including COVID-19 codes. An extension to this protocol will be produced, including a detailed analysis plan that will be developed after finalisation of data definitions and assessment of data completeness.

5.3 Publication and dissemination of results

Purposes for which data will be used

The data provided will be used solely within the Euro-Peristat project to analyse and report on national level perinatal health indicators and to achieve the objectives as defined in this protocol.

Access to the data by researchers outside of the Inserm coordination team will be conditional on approval by all members of the Euro-Peristat scientific committee and signature of a data use agreement by the researcher.

Data validation and publication

- All data tables are checked and endorsed by SC members before publication in a scientific article or being made public in a report or on the Euro-Peristat website.

- The Euro-Peristat group fixes a set of analysis priorities and establishes working groups to work on these analyses and produce publications in accordance with Euro-Peristat authorship guidelines (attached).

Annex: Description of the data outputs collected

Variable description	Time period requested	Geography to which data relate
	YEAR indicate **each** year from 2015 to 2020	
Number of live births **by gestational age (in completed weeks)** and **multiplicity (singletons vs multiple births)**	YEAR	National level
Number of live births **by birth weight (in 500g categories)** and multiplicity	YEAR	National level
Numbers of stillbirth by gestational age and multiplicity	YEAR	National level
Numbers of stillbirth by birth weight (in 500g categories) and multiplicity	YEAR	National level
Number of early and late neonatal deaths by gestational age and multiplicity	YEAR	National level
Number of early and late neonatal deaths by birth weight (500g categories) and multiplicity	YEAR	National level
Number of infant deaths by gestational age and multiplicity	YEAR	National level
Number of infant deaths by birth weight (500g categories) and multiplicity	YEAR	National level
Number of multiple births by number of foetus	YEAR	National level
Number of births **by maternal age (5years categories)** and multiplicity	YEAR	National level
Number of births **by parity of the mother (nulliparous vs multiparous)** and multiplicity	YEAR	National level

Variable description	Time period requested	Geography to which data relate
Number of births by mode of delivery, by gestational age and multiplicity	YEAR	National level
Number of births by mode of delivery and by parity	YEAR	National level
Number of births by mode of delivery and by presentation of the child at birth	YEAR	National level
Number of births by mode of delivery and by previous caesarean section	YEAR	National level
Number of births small for gestational age	YEAR	National level
Number of births large for gestational age	YEAR	National level
Number of births by Robson groups by mode of delivery (CS vs all births)	YEAR	National level
Mean, Median, Q1, Q3 and SD of birthweight by GA and by sex	All years 2015-2020 (not by year)	National level
	MONTH indicate **each** month of the period 2015 to 2020	
Number of live births ≥22 weeks (wks), ≥24wks , ≥28wks	a) MONTH b) By YEAR and by maternal SES c) By YEAR and by sex of the baby	National level
Number of stillbirths ≥22wks, ≥24wks , ≥28wks	a)MONTH b)By YEAR and by maternal SES c)By YEAR and by sex of the baby	National level
Number of births <37wks and <32wks	a)MONTH b)By YEAR and by maternal SES	National level

Variable description	Time period requested	Geography to which data relate
	c)By YEAR and by sex of the baby	
Number of births <2500grams	MONTH	National level
Numerators and denominators for rate maternal age <25 years and ≥35 years	MONTH	National level
Numerators and denominators for rate primiparity	MONTH	National level
Numerators and denominators for rate multiple births	MONTH	National level
Numerators and denominators for rate caesarean delivery (CD), CD prelabor, CD intrapartum	a)MONTH b)By YEAR and by maternal SES c)By YEAR and by sex of the baby	National level
Number of CD prelabor, and CD intrapartum	MONTH	National level
Number of CD with spontaneous labor and with induced labor	MONTH	National level
Number of instrumental deliveries	MONTH	National level

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