

**GUSTO Data Vault:**  
Laying the foundations for  
an open science system with  
OMOP Data Catalogue

PRESENTERS: **Cindy Ho,**  
**Mukesh Kumar**

**INTRO:**

- Growing Up in Singapore Towards healthy Outcomes (GUSTO) aims to understand how conditions in pregnancy and early childhood influence the subsequent health and development of women and children.
- The A\*STAR/GUSTO Data Vault platform have advanced data exploration capabilities for research data, biospecimens and publications asset management.
- The OMOP Data Catalogue was created in GUSTO Data Vault to showcase the GUSTO data which have been converted into OMOP CDM format.

**METHODS**

- Data Vault (containerized web application with Docker) was built using PostgreSQL database and Django.
- Tools used: HTML, CSS, jQuery, Ajax, Python, Plotly Dash, Dashboard engine in Dash Enterprise
- OMOP fields were mapped using Athena and customized R programming scripts.

**RESULTS**

- OMOP Data Catalogue makes GUSTO cohort-specific CDM fields to be discovered across the Person, Condition, Observation and Measurement tables by the global research community.
- Metadata is described with relevant attributes such as CDM Field, Concept ID, Name, Subject Type, Visit Timepoint, Description and Domain.
- Data profiling of the OMOP Concept IDs enables GUSTO data to be reused, described, discovered, and identified by researchers (FAIR data principles).
- OMOPed data from incremental OMOP conversions can be seamlessly integrated in OMOP Data Catalogue by GUSTO data curators.
- This enables database level characterizations for GUSTO study.

# GUSTO OMOP Data Catalogue

lays the foundations for

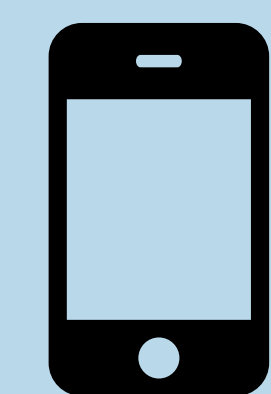
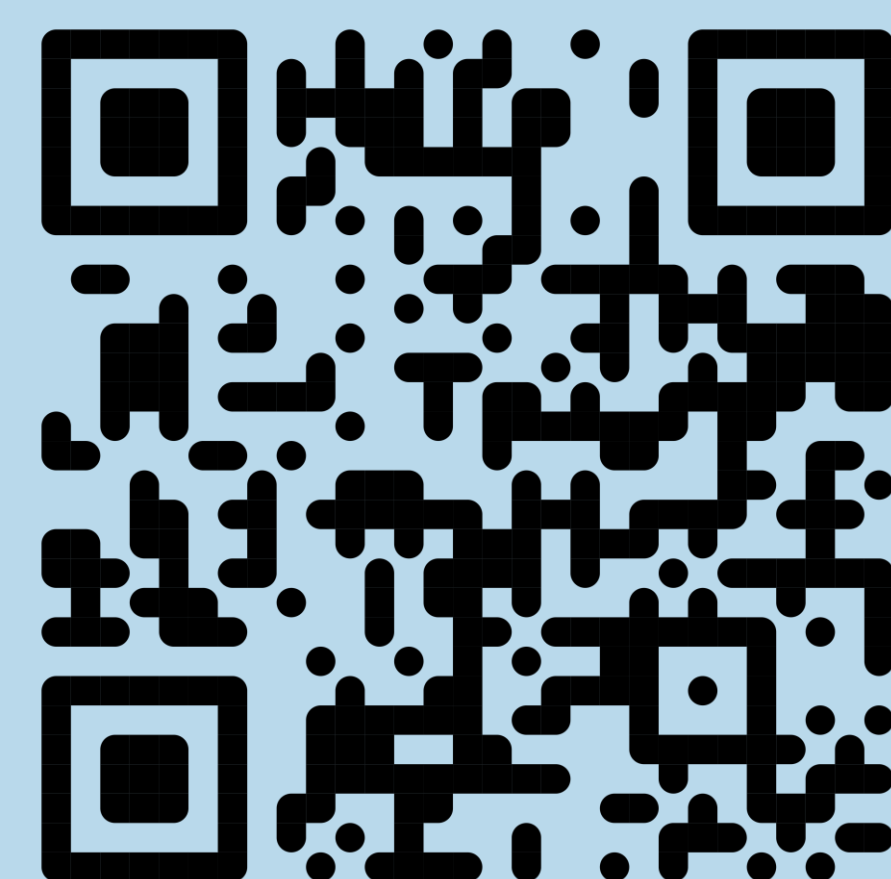
developing cross-study OMOP

Data Catalogues expanded

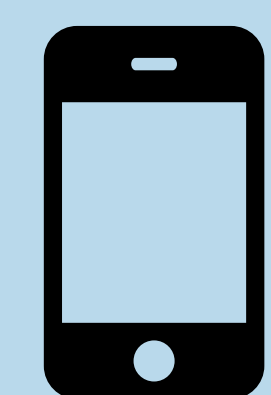
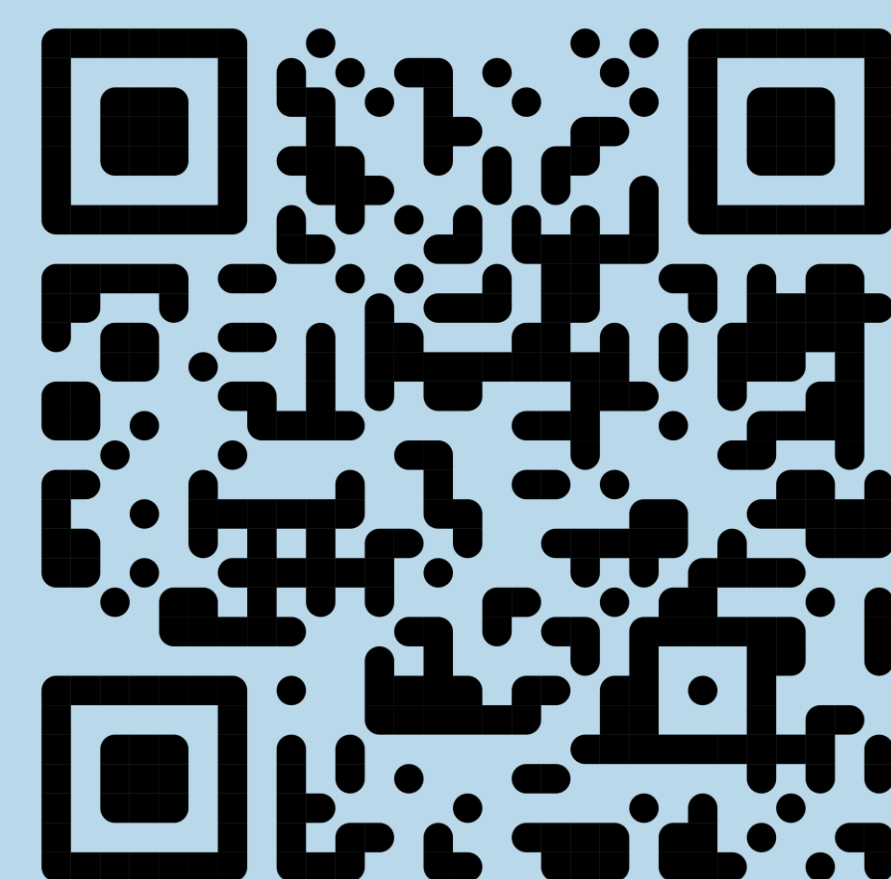
across APAC and global OHDSI

data partners, enabling database

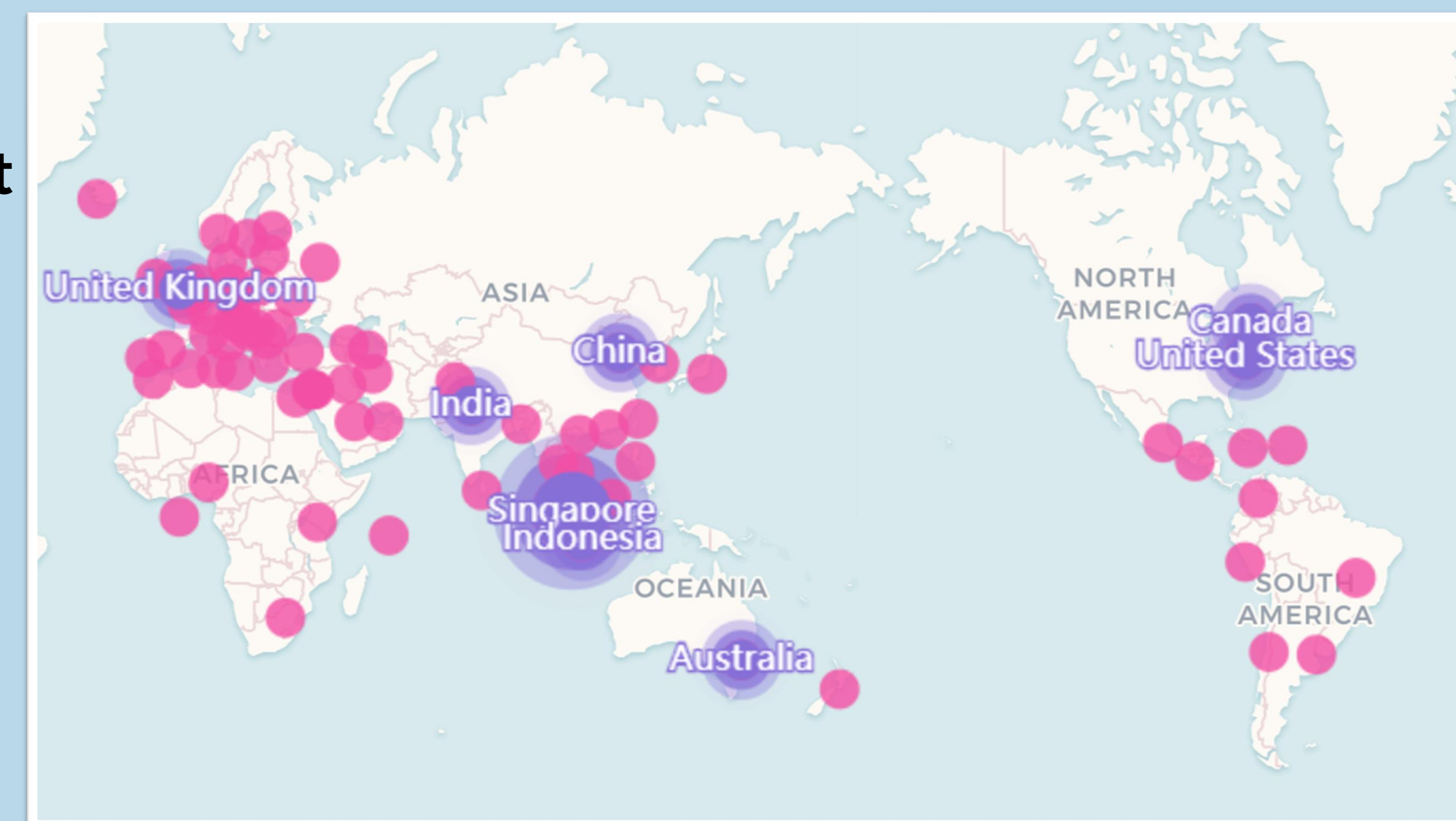
level characterizations.



Scan to visit  
GUSTO Data Vault  
(<https://gustodatavault.sg>)



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abstract



Global Impact of GUSTO Data Vault

**GUSTO**  
GROWING UP IN SINGAPORE TOWARDS HEALTHY OUTCOMES

**Recruitment**  
In 2009 - 2010, 1450 women were recruited in GUSTO study when they were 7-11 weeks pregnant.

**Delivery**  
1209 of the women delivered.

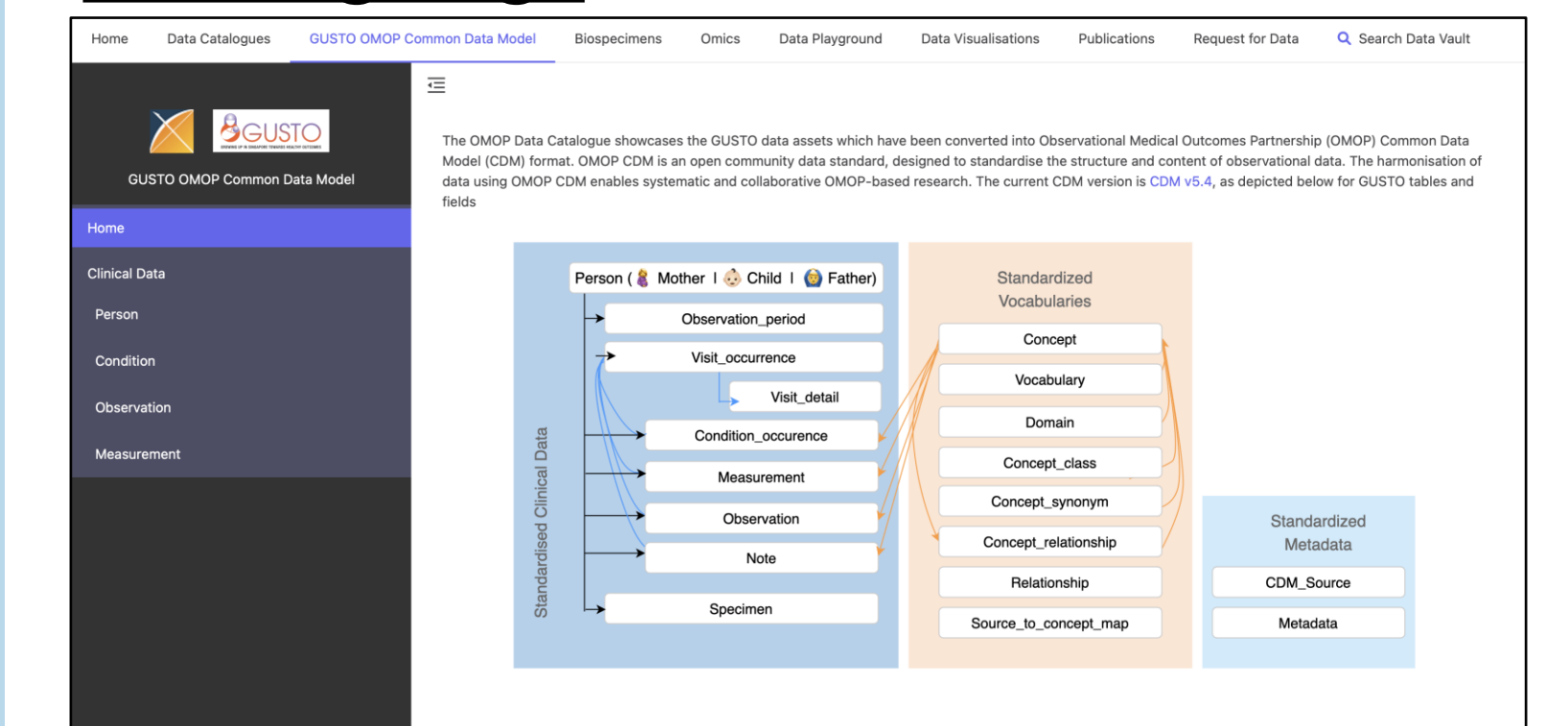
**Current**  
We are at Year 13 of the study (children are 13 years old). There are about 900 participants who are still active (75% retention rate).

**RESEARCH THEMES**  
Metabolic & Body Composition, Women's Health, Neurodevelopment, Children's Health, Imaging, Systems Biology

<https://www.gusto.sg/>

Our future work includes the optimization of GUSTO OMOP data conversion journey using advanced OMOP conversion tools such as the IQVIA OMOP Converter.

**Snippets of OMOP Data Catalogue Landing Page**



**Person table**

Concept ID	Description	No. of Subjects (%)
38000170	Chinese	403 (26.1%)
38000174	Indian	278 (17.6%)
38000000	Many	171 (10.6%)
38000001	Other	118 (7.4%)

**Measurement table**

Concept ID	Name	Subject Type	Description	Concept Type	Visit Frequency
408423	Birth weight	Child	Birthweight of child	Body weight	1X
373849	Plasma ferritin glucose level	Child	Fasting glucose level of Child	Plasma glucose level	1X
373850	Plasma insulin level	Child	Insulin level of Child	Plasma insulin level	1X
373859	Plasma HDL, high density lipoprotein cholesterol level	Child	High density lipoprotein (HDL) cholesterol of Child	Plasma HDL cholesterol level	1X
373858	Plasma LDL, low density lipoprotein cholesterol level	Child	Low density lipoprotein (LDL) cholesterol of Child	Plasma LDL cholesterol level	1X

**Observation table**

Concept ID	Name	Subject Type	Description	Concept Type	Visit Frequency
447880	Gestational age	Mother	Gestational age	Measure of pregnancy	1X
426419	Parity	Mother parity	Mother parity	Parity	1X
427260	Maternal smoking	Mother	Maternal smoking status	Maternal smoking status	1X
417480	Maternal income	Mother	Maternal income	Income details	1X
427114	Maternal education	Mother	Maternal education	Education details	1X
427115	Maternal occupation	Mother	Maternal occupation	Occupation details	1X
380145	Maternal occupation	Mother	Maternal occupation	Occupation history detail	1X
380151	Smoking status	Mother	Maternal smoking status	Parity	1X

Cindy Ho, Li Ting Ang, Maisie Ng, Hang Png, Shuen Lin Tan, Estella Ye, Sunil Kumar Raja, Mengling Feng, Johan G Eriksson, Mukesh Kumar

