Prenatal maternal substance use and child protection system involvement to age 12

A whole-population study birth cohort of 1,160,000 Australian children

Madeleine Powell, Rhiannon Pilkington, Alys Havard, Mark Hanly, Tasnia Ahmed,
BJ Newton, Timothy Dobbins, John Lynch, Kathleen Falster

NDARC National Drug & Alcohol Research Centre

BETTERSTART Health and Development Research
Better Evidence
Better Outcomes Linked Data platform

THE UNIVERSITY of ADELAIDE
SCHOOL OF PUBLIC HEALTH

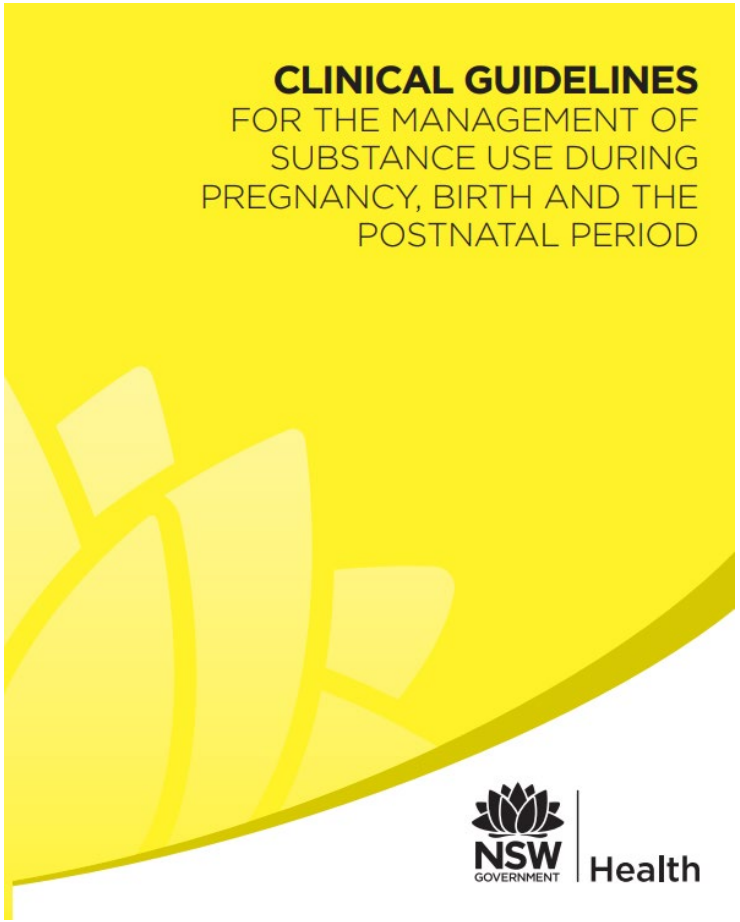
UNSW SYDNEY

Acknowledgement of Country

We acknowledge the sovereign Aboriginal lands across NSW, where the study was conducted, and the ongoing connection Aboriginal peoples have to lands and waters. We pay respects to elders past and present, and all Aboriginal people.

We acknowledge the families in this study and that behind every data point are the lives of real children and families.

Substance use during pregnancy and child outcomes



The Strong Foundations: Getting it Right in the First 1000 Days Partnership

Prenatal maternal substance use and child maltreatment

Prenatal substance exposure

Child maltreatment populations

COMPREHENSIVE REVIEW | Open Access

The burden of prenatal and early life maternal substance use among children at risk of maltreatment: A systematic review

Madeleine Powell, Rhiannon Pilkington, Bianca Varney, Alys Havard, John Lynch, Timothy Dobbins, Ju Lee Oei, Tasnia Ahmed, Kathleen Falster

Among child maltreatment populations: 2 - 40%
had prenatal substance exposure

General populations: 0.1 - 18%

Prenatal maternal substance use and child maltreatment

Prenatal substance exposure populations → Experience child maltreatment

Child Maltreatment
Volume 27, Issue 2, May 2022, Pages 290-315

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SAGE journals

Review

Prenatal Substance Exposure and Child Maltreatment: A Systematic Review

Anna E. Austin[1,2], Caitlin Gest[1], Alexandra Atkeson[1], Molly C. Berkoff[3], Henry T. Puls[4], and Meghan E. Shanahan[1,2]

Prenatal substance exposure populations associated with **child maltreatment.**

Lifetime risk of child protection involvement

Whole populations of children
(Australia, NZ, USA, Denmark, Canada)

Lifetime risk of child protection involvement

By age 1 year

Whole populations of children
(Australia, NZ, USA, Denmark, Canada)

- **2-5% reported**
- **0.2-1% out-of-home care**

Lifetime risk of child protection involvement

	By age 1 year	By age 18 years
Whole populations of children (Australia, NZ, USA, Denmark, Canada)	• 2-5% reported • 0.2-1% out-of-home care	• 14-24% reported • 3-6% out-of-home care

Lifetime risk of child protection involvement

	By age 1 year	By age 18 years
Whole populations of children (Australia, NZ, USA, Denmark, Canada)	• 2-5% reported • 0.2-1% out-of-home care	• 14-24% reported • 3-6% out-of-home care
Prenatal substance use population (California, Washington)		

Lifetime risk of child protection involvement

	By age 1 year	By age 18 years
Whole populations of children (Australia, NZ, USA, Denmark, Canada)	• 2-5% reported • 0.2-1% out-of-home care	• 14-24% reported • 3-6% out-of-home care
Prenatal substance use population (California, Washington)	• 61% reported • 30% out-of-home care	

Lifetime risk of child protection involvement

	By age 1 year	By age 18 years
Whole populations of children (Australia, NZ, USA, Denmark, Canada)	• 2-5% reported • 0.2-1% out-of-home care	• 14-24% reported • 3-6% out-of-home care
Prenatal substance use population (California, Washington)	• 61% reported • 30% out-of-home care	?

Research questions

What is the **scale and timing** of child protection contacts until the child's 12th birthday, among children with and without records of prenatal substance exposure?

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Study design: Birth cohort study using linkage of population data sources

Data sources: 10 administrative data sources linked for the NSW Child E-Cohort Project

Data sources[1]	Pregnancy	Birth	Neontal period	Childhood	Years data are available
Mother's records					
NSW Perinatal Data Collection (formerly known as the Midwives Data Collection) (Perinatal data)					2001-2019
NSW Registry of Births, Deaths and Marriages birth registrations (Birth registrations)					2001-2019
NSW Admitted Patient Data Collection (Hospital inpatient data)					Jul 2001-2019
NSW Emergency Department Data Collection (Emergency department presentations)					2006 -2019
NSW Mental Health Ambulatory Data Collection (Mental health outpatient data)					2006-2019
NSW Registry of Births, Deaths and Marriages (RBDM) death registrations (Death registrations)					2001 -2019
NSW Cause of Death Unit Record File Unit Record File (Cause of death records)					2001-2019
NSW Department of Communities and Justice, Social housing applicant file and Tennacny file (Public housing)					2001-2019
NSW Controlled Drugs Data Collection - Opioid Treatment Program (Opioid treatment registry)					2001-2019
Child's records					
NSW Perinatal Data Collection (formerly known as the Midwives Data Collection) (Perinatal data)					2001-2019
NSW Registry of Births, Deaths and Marriages birth registrations (Birth registrations)					2001-2019
NSW Admitted Patient Data Collection (Hospital separations)					Jul 2001-2019
NSW Registry of Births, Deaths and Marriages (RBDM) death registrations (Death registrations)					2001 -2019
NSW Cause of Death Unit Record File Unit Record File (Cause of death records)					2001-2019
NSW Department of Communities and Justice, child protection reports, investigations and out-of-home care (Child protection)					2004 -2019

Definitions: NSW: New South Wales 1. More information on all data sources can be found at https://www.cherel.org.au/datasets

Study Population

Population: 1,161,876 children born in NSW from 2008 to 2017 and their **717,063 mothers**

Age at follow up from birth

Birth year	Calendar year (follow-up from pregnancy through childhood)														Years of follow up
	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	
2007	Gestation	Birth	1	2	3	4	5	6	7	8	9	10	11	12	12
2008		Gestation	0	1	2	3	4	5	6	7	8	9	10	11	11
2009			Gestation	0	1	2	1	1	1	1	1	1	1	1	10
2010				Gestation	0	1	2	3	4	5	6	7	8	9	9
2011					Gestation	0	1	2	3	4	5	6	7	8	8
2012						Gestation	0	1	2	3	4	5	6	7	7
2013							Gestation	0	1	2	3	4	5	6	6
2014								Gestation	0	1	2	3	4	5	5
2015									Gestation	0	1	2	3	4	4
2016										Gestation	0	1	2	3	3
2017											Gestation	0	1	2	2
2018												Gestation	0	1	1

Data sources

- NSW Perinatal Data Collection (formerly known as the Midwives Data Collection) (Perinatal data)
- NSW Registry of Births, Deaths and Marriages birth registrations (Birth registrations)
- NSW Admitted Patient Data Collection (Hospital inpatient data)
- NSW Mental Health Ambulatory Data Collection (Mental health outpatients data)
- NSW Emergency Department Data Collection (Emergency department presentations)
- NSW Controlled Drugs Data Collection - Opioid Treatment Program (Opioid treatment registry)
- NSW Department of Communities and Justice, child protection reports and investigations (child protection data)
- NSW Department of Communities and Justice, out-of-home care data (child protection data)

Two populations of interest

All NSW children born 2007-2018

***Prenatal substance exposure* population**

Children **with** indicators of prenatal substance exposure in health and child protection reports data

All other children

Children **with no** indicators of prenatal substance exsposure in health and child protection reports data

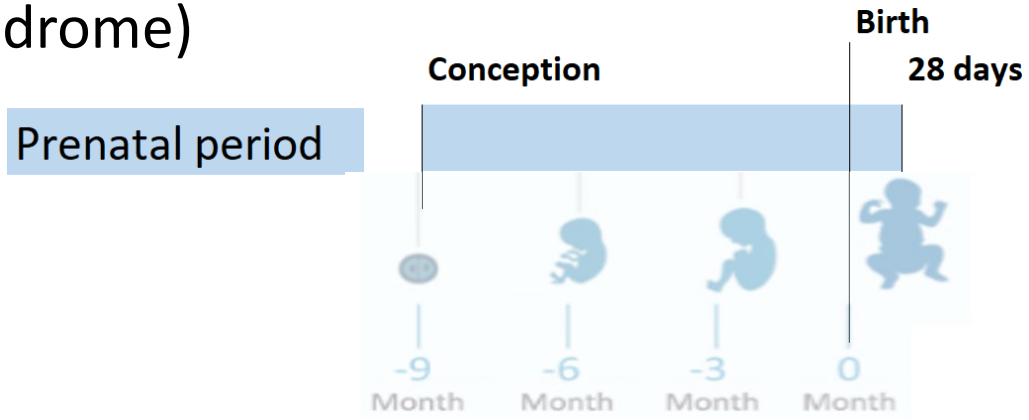
Prenatal substance use/exposure indicators

Any maternal substance use/diagnoses/treatment or *in utero* substance exposure recorded in administrative data including:

- Alcohol
- Solvents
- Organic compounds
- Illicit substances
- Misuse of prescription medicine
- Opioid-agonist treatment

Recorded from conception until <28 days post-birth.

As diagnoses (e.g., neonatal abstinence syndrome) indicate use during pregnancy.



Prenatal substance use/exposure measures

Data source	Maternal records	Child records
Hospital data (Admitted Patient Data Collection)	261 ICD-10AM codes for diagnoses related to substance use (primary and secondary diagnoses)	4 ICD-10AM codes for in-utero exposure to substances (primary and secondary diagnoses)
Emergency Presentations (Emergency Department Data Collection)	261 ICD-10AM + 534 SNOMED codes for diagnoses related to substance use (primary presenting issue)	NA
Mental health out-patient's data (Mental Health Ambulatory Data Collection)	261 ICD-10AM codes for diagnoses related to substance use (mental health and additional diagnosis)	NA
Opioid Treatment Register (Controlled Drugs Data Collection)	Mother was on the register during the study period	NA
Reports to child protection		Drug or alcohol use by **carer** reported to the child protection helpline, recorded in the primary or other issue field

Outcomes

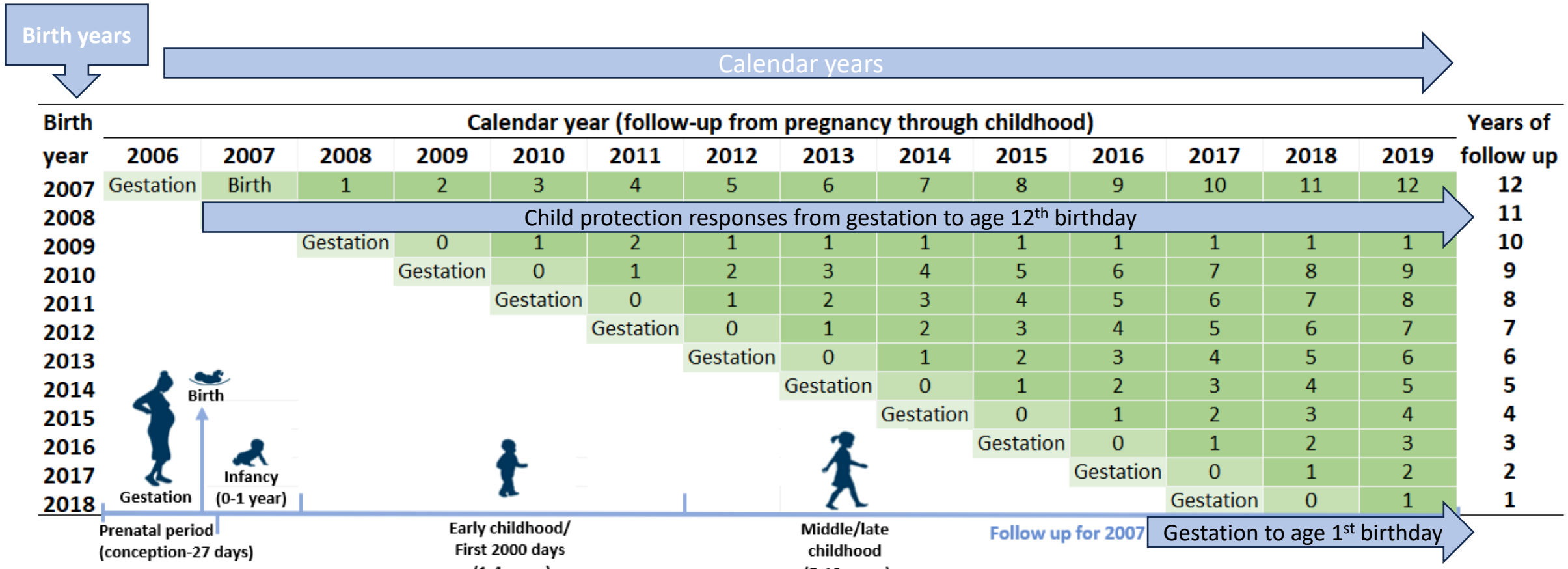
Child protection responses to child concern reports:

- **Screened-in reports**: reports that were screened-in after meeting the threshold of risk of significant harm
- **Investigations**
- **Substantiations** of actual/risk of harm
- **Removals into out-of-home care** (OOHC)

Maltreatment types included issues that were assessed for children with a substantiated actual/risk of harm assessment. Categorised by child protection as:

- **Neglect** (carer substance use is classified as neglect)
- **Emotional abuse**
- **Physical abuse**
- **Sexual abuse**

Cumulative incidence of child protection responses from gestation to 12 years of age



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2017											Gestation	0	1	2	2
2018												Gestation	0	1	1

RESULTS
Population

Population

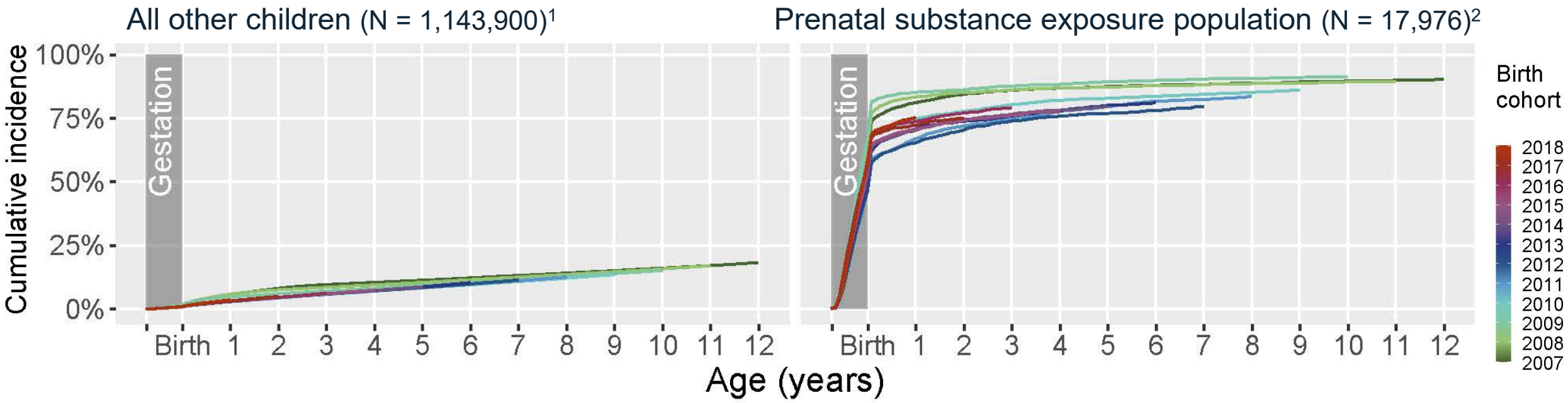
Total study population included
1,161,876 children and their 717,063 mothers

- ***Prenatal substance exposure population*** 17,976 children **with** indicators of prenatal substance exposure in health data +/or reports to child protection
- ***All other children*** 1,143,900 children **with no** indicators of prenatal substance exposure in health data +/or reports to child protection

RESULTS
Scale and timing of first-time child maltreatment responses

First-time reports screened-in by child protection as at risk of significant harm

First-time reports screened-in by child protection



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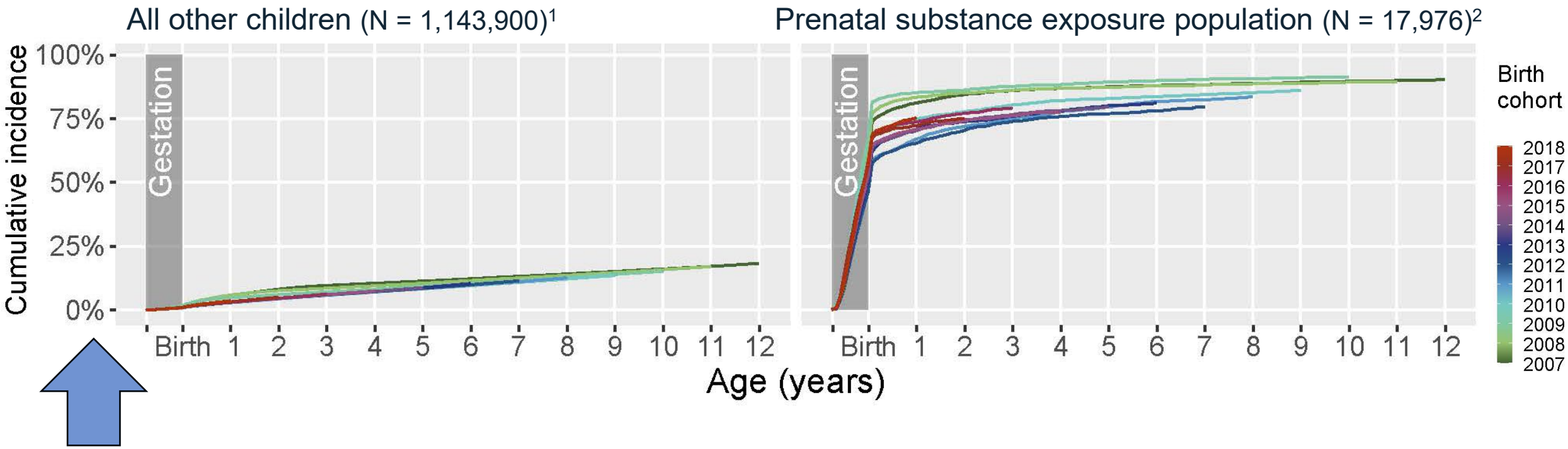
First-time reports screened-in by child protection



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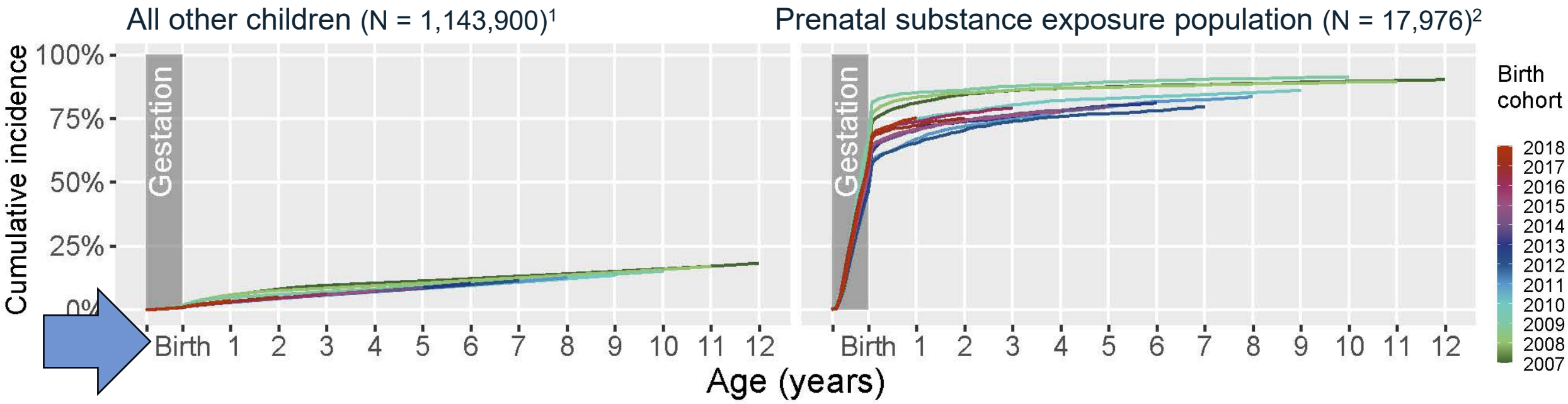

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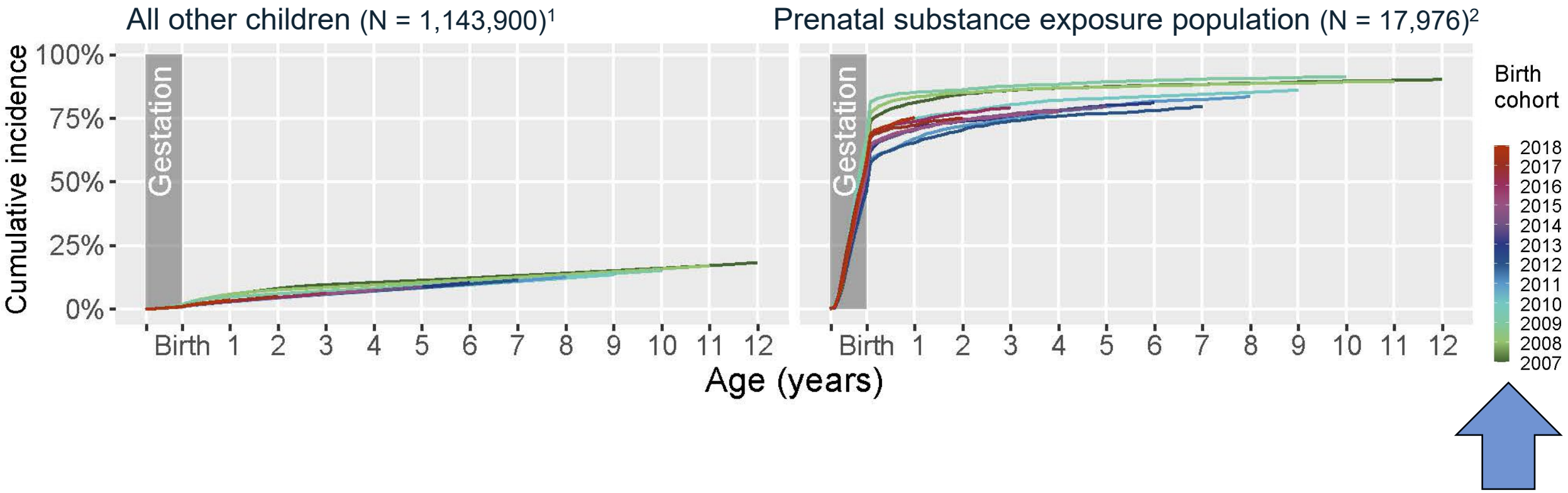

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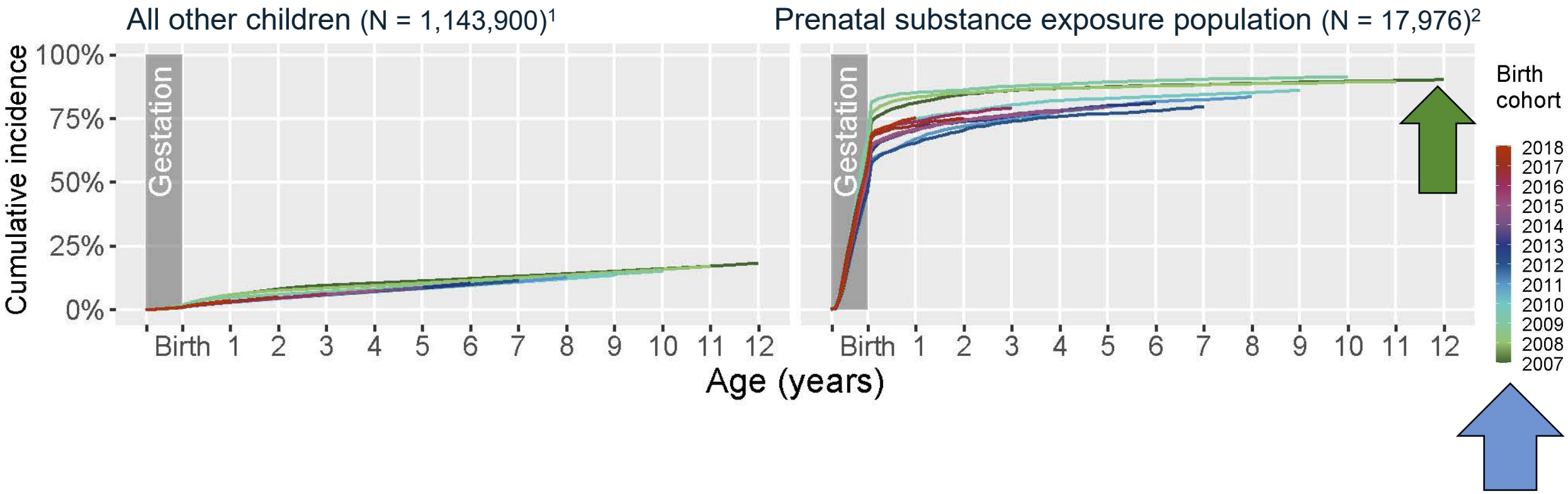

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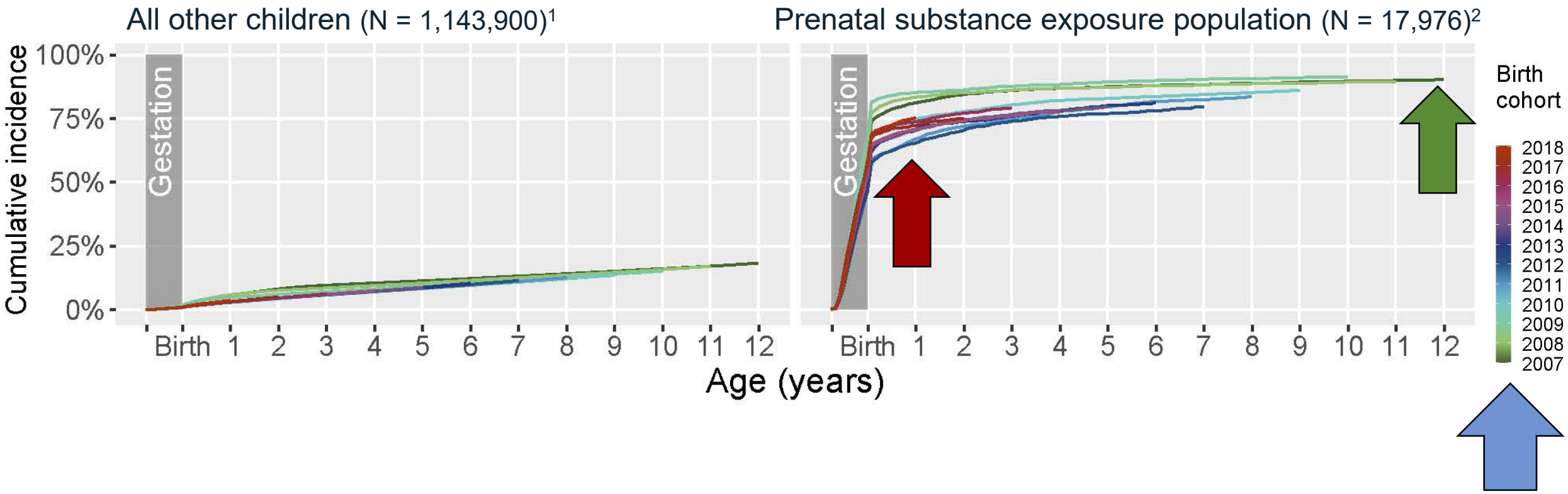

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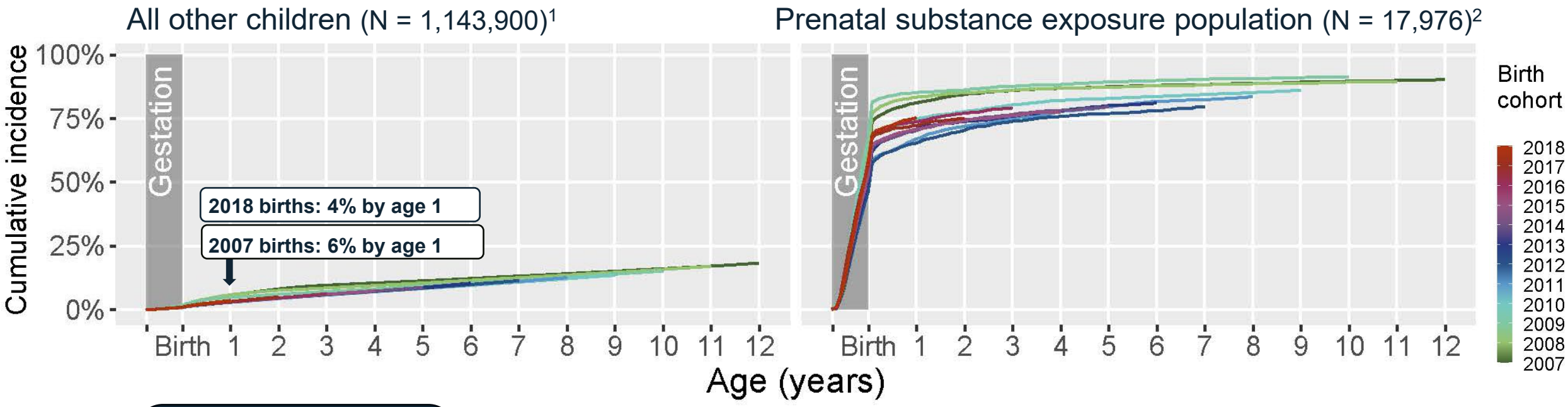

By Age 1
1 in **25** children
were screened-in

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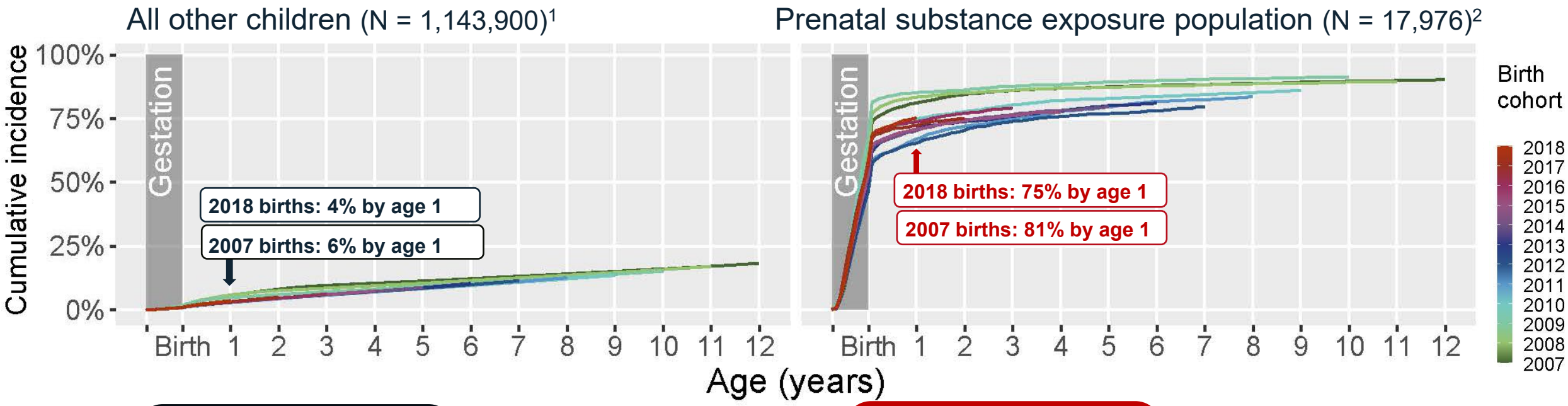

By Age 1
1 in **25** children
were screened-in

By Age 1
8 in **10** children
were screened-in

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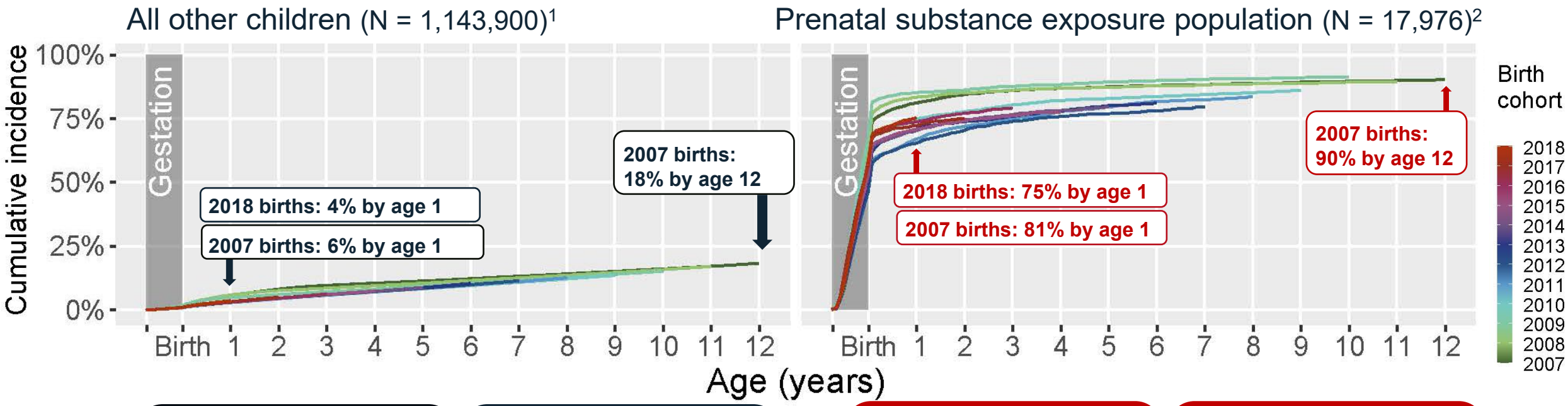

By Age 1
1 in **25** children were screened-in

By Age 12
2 in **10** children were screened-in

By Age 1
8 in **10** children were screened-in

By Age 12
9 in **10** children were screened-in

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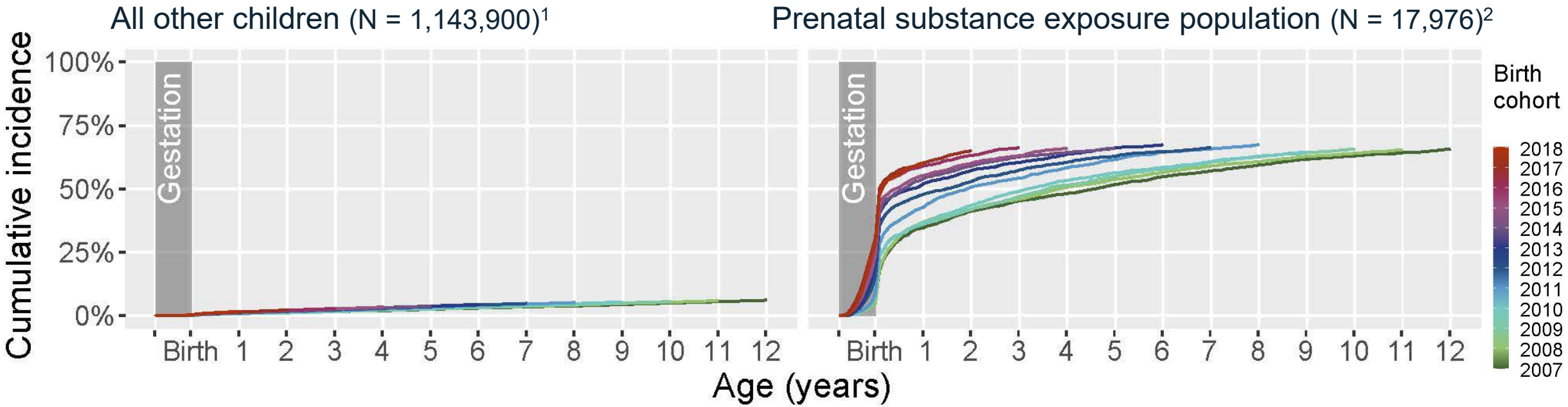
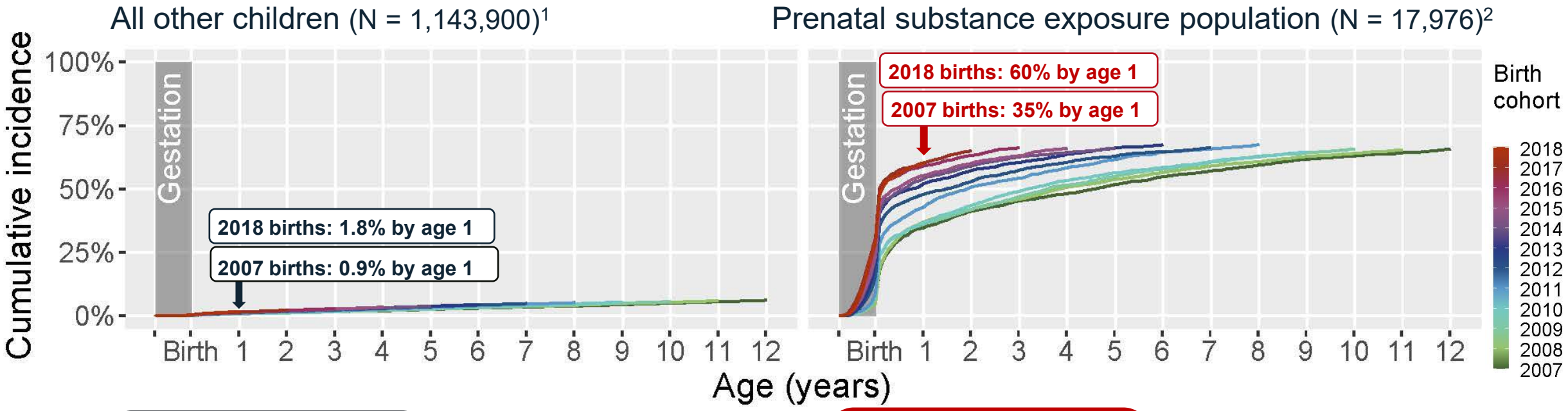
Scale and timing of first-time investigations

First-time investigations



Investigations: An investigation and assessment to determine whether the child or young person is at actual or risk of significant harm, conducted by a child protection caseworker . **1.** Children with no record of prenatal substance exposure in the available data sources, born in New South Wales, Australia, from 2007-2018. **2.** Children with a record of prenatal substance exposure in the available data sources, born in NSW, Australian. Available data sources included mother's hospital, emergency, mental health outpatients, and/or opioid treatment records, and children's hospital or child protection reports data. Prenatal substance exposure included the use of alcohol and or any drug use, excluding tobacco, inducing illicit drugs, misuse of prescription drugs, and use of opioid agonist treatment, from conception up until 27 days post the child's birth.

First-time investigations



By Age 1
2 in **100** children

By Age 1
6 in **10** children

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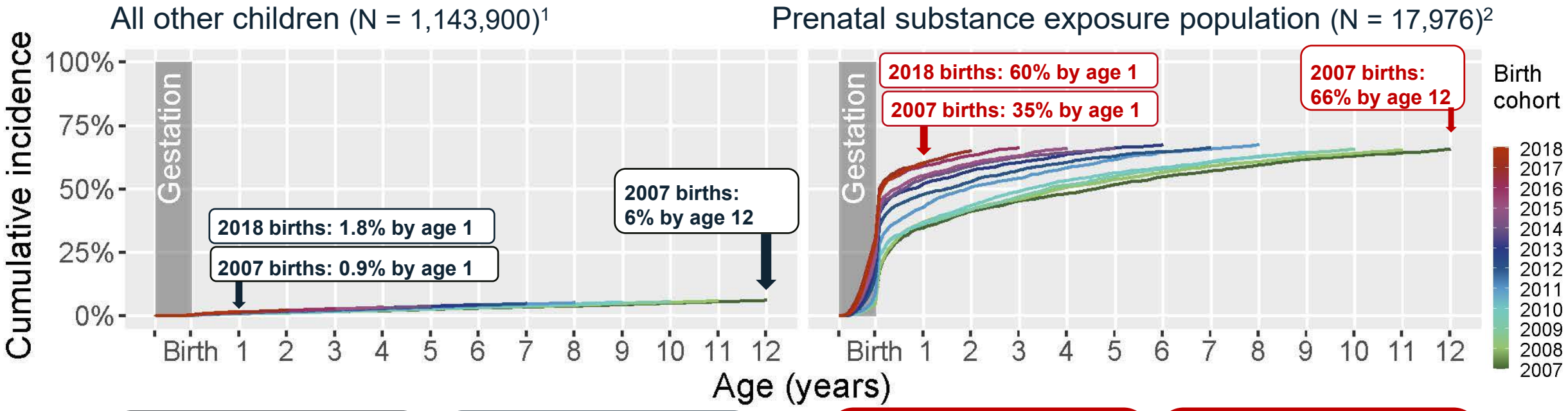

By Age 1
2 in **100** children

By Age 12
3 in **50** children

By Age 1
6 in **10** children

By Age 12
7 in **10** children

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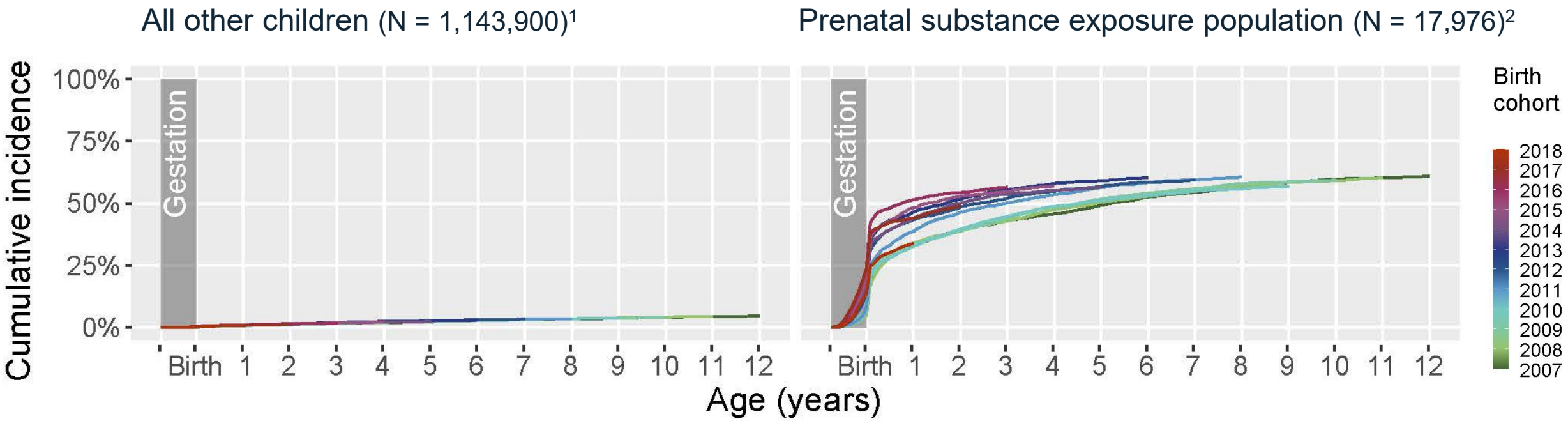
Scale and timing of first-time child protection defined substantiated maltreatment

First-time child protection defined substantiations

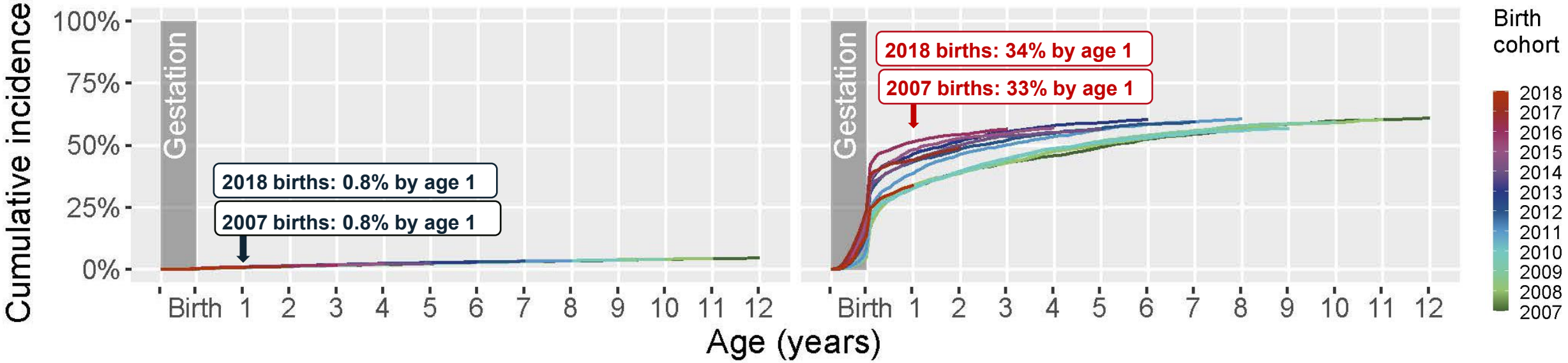


Substantiations: Actual harm or risk of harm was substantiated from the field assessments. The cumulative incidence of substantiations was lower in the 2017 and 2018 cohorts after data/counting rule changes were introduced in 2016. **1.** Children with no record of prenatal substance exposure in the available data sources, born in New South Wales, Australia, from 2007-2018. **2.** Children with a record of prenatal substance exposure in the available data sources, born in NSW, Australian. Available data sources included mother's hospital, emergency, mental health outpatients, and/or opioid treatment records, and children's hospital or child protection reports data. Prenatal substance exposure included the use of alcohol and or any drug use, excluding tobacco, inducing illicit drugs, misuse of prescription drugs, and use of opioid agonist treatment, from conception up until 27 days post the child's birth.

First-time child protection defined substantiations

All other children (N = 1,143,900)[1]

Prenatal substance exposure population (N = 17,976)[2]



By Age 1
<1 in **100** children

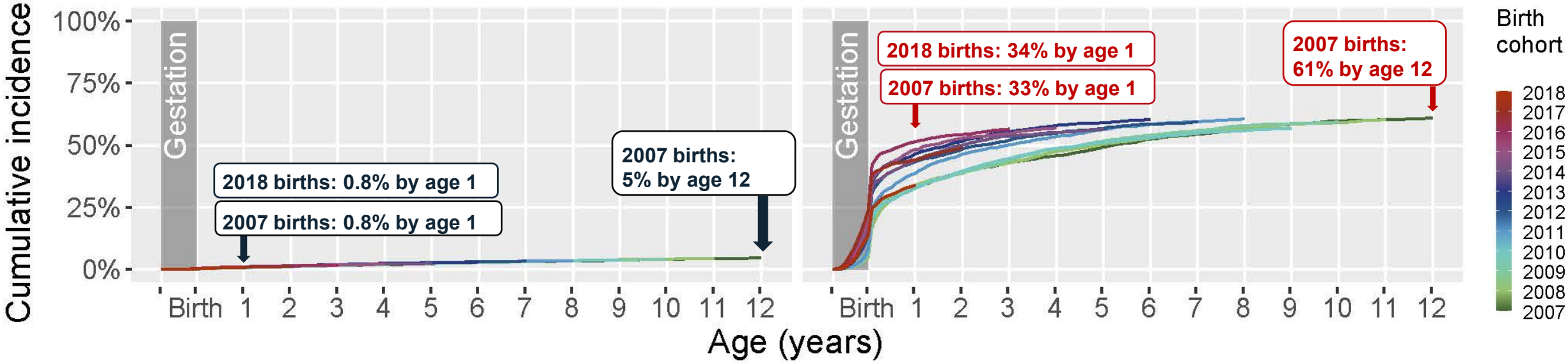
By Age 1
1 in **3** children

Substantiations: Actual harm or risk of harm was substantiated from the field assessments. The cumulative incidence of substantiations was lower in the 2017 and 2018 cohorts after data/counting rule changes were introduced in 2016. **1.** Children with no record of prenatal substance exposure in the available data sources, born in New South Wales, Australia, from 2007-2018. **2.** Children with a record of prenatal substance exposure in the available data sources, born in NSW, Australian. Available data sources included mother's hospital, emergency, mental health outpatients, and/or opioid treatment records, and children's hospital or child protection reports data. Prenatal substance exposure included the use of alcohol and or any drug use, excluding tobacco, inducing illicit drugs, misuse of prescription drugs, and use of opioid agonist treatment, from conception up until 27 days post the child's birth.

First-time child protection defined substantiations

All other children (N = 1,143,900)[1]

Prenatal substance exposure population (N = 17,976)[2]



By Age 1
<1 in **100** children

By Age 12
1 in **20** children

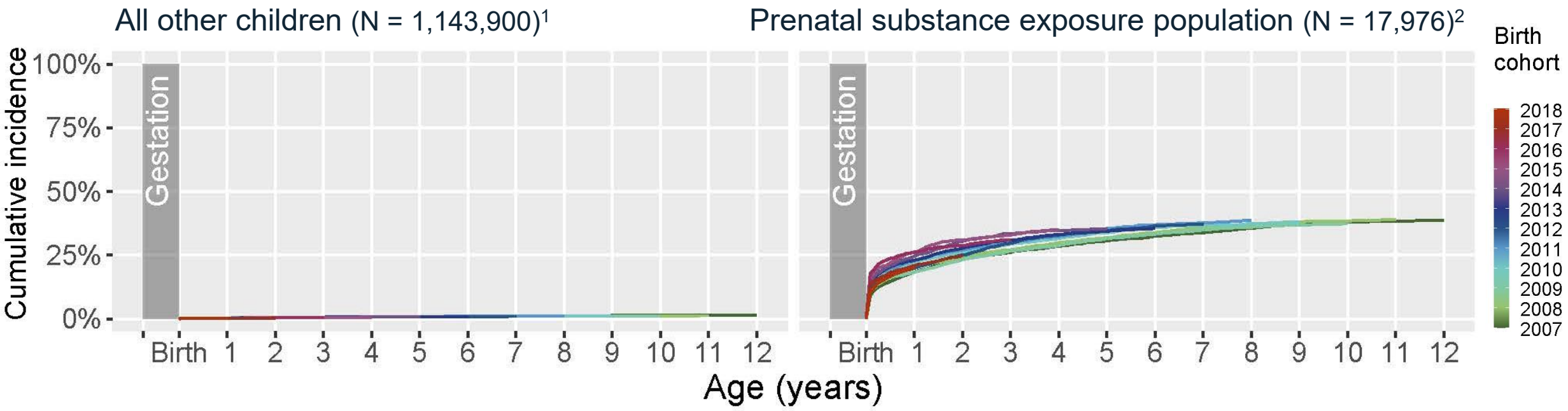
By Age 1
1 in **3** children

By Age 12
6 in **10** children

Substantiations: Actual harm or risk of harm was substantiated from the field assessments. The cumulative incidence of substantiations was lower in the 2017 and 2018 cohorts after data/counting rule changes were introduced in 2016. **1.** Children with no record of prenatal substance exposure in the available data sources, born in New South Wales, Australia, from 2007-2018. **2.** Children with a record of prenatal substance exposure in the available data sources, born in NSW, Australian. Available data sources included mother's hospital, emergency, mental health outpatients, and/or opioid treatment records, and children's hospital or child protection reports data. Prenatal substance exposure included the use of alcohol and or any drug use, excluding tobacco, inducing illicit drugs, misuse of prescription drugs, and use of opioid agonist treatment, from conception up until 27 days post the child's birth.

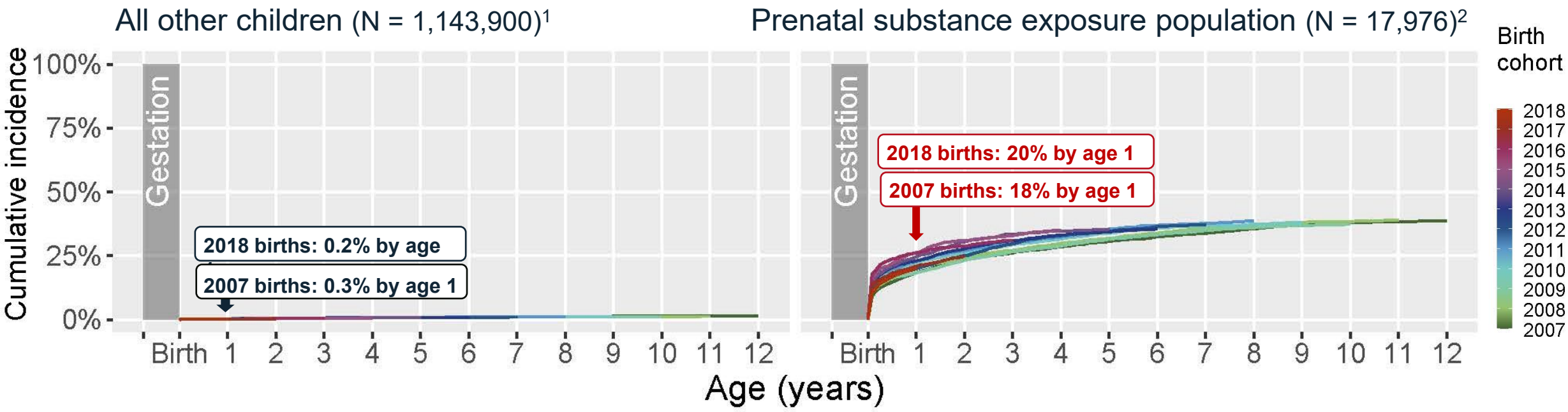
Scale and timing of first-time removals into out-of-home (OOHC)

First-time child removals into OOHC



Child removals: First time child was removed into out-of-home care. **1.** Children with no record of prenatal substance exposure in the available data sources, born in New South Wales, Australia, from 2007-2018. **2.** Children with a record of prenatal substance exposure in the available data sources, born in NSW, Australian. Available data sources included mother's hospital, emergency, mental health outpatients, and/or opioid treatment records, and children's hospital or child protection reports data. Prenatal substance exposure included the use of alcohol and or any drug use, excluding tobacco, inducing illicit drugs, misuse of prescription drugs, and use of opioid agonist treatment, from conception up until 27 days post the child's birth.

First-time child removals into OOHC

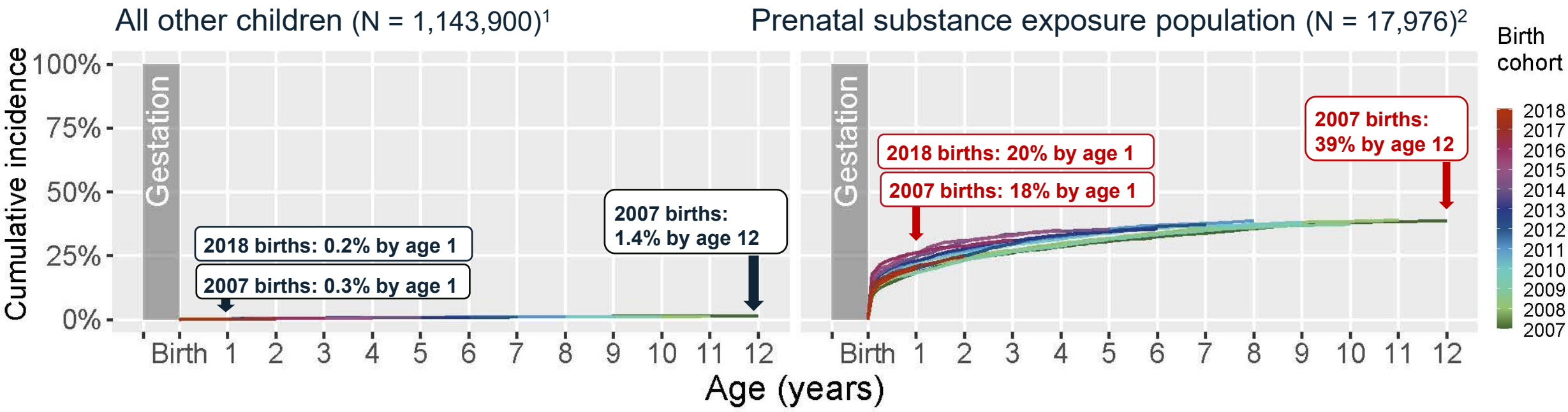


By Age 1
<1 in **100** children
were removed

By Age 1
2 in **10** children
were removed

Child removals: First time child was removed into out-of-home care. **1.** Children with no record of prenatal substance exposure in the available data sources, born in New South Wales, Australia, from 2007-2018. **2.** Children with a record of prenatal substance exposure in the available data sources, born in NSW, Australian. Available data sources included mother's hospital, emergency, mental health outpatients, and/or opioid treatment records, and children's hospital or child protection reports data. Prenatal substance exposure included the use of alcohol and or any drug use, excluding tobacco, inducing illicit drugs, misuse of prescription drugs, and use of opioid agonist treatment, from conception up until 27 days post the child's birth.

First-time child removals into OOHC



By Age 1
<1 in **100** children were removed

By Age 12
1 in **100** children were removed

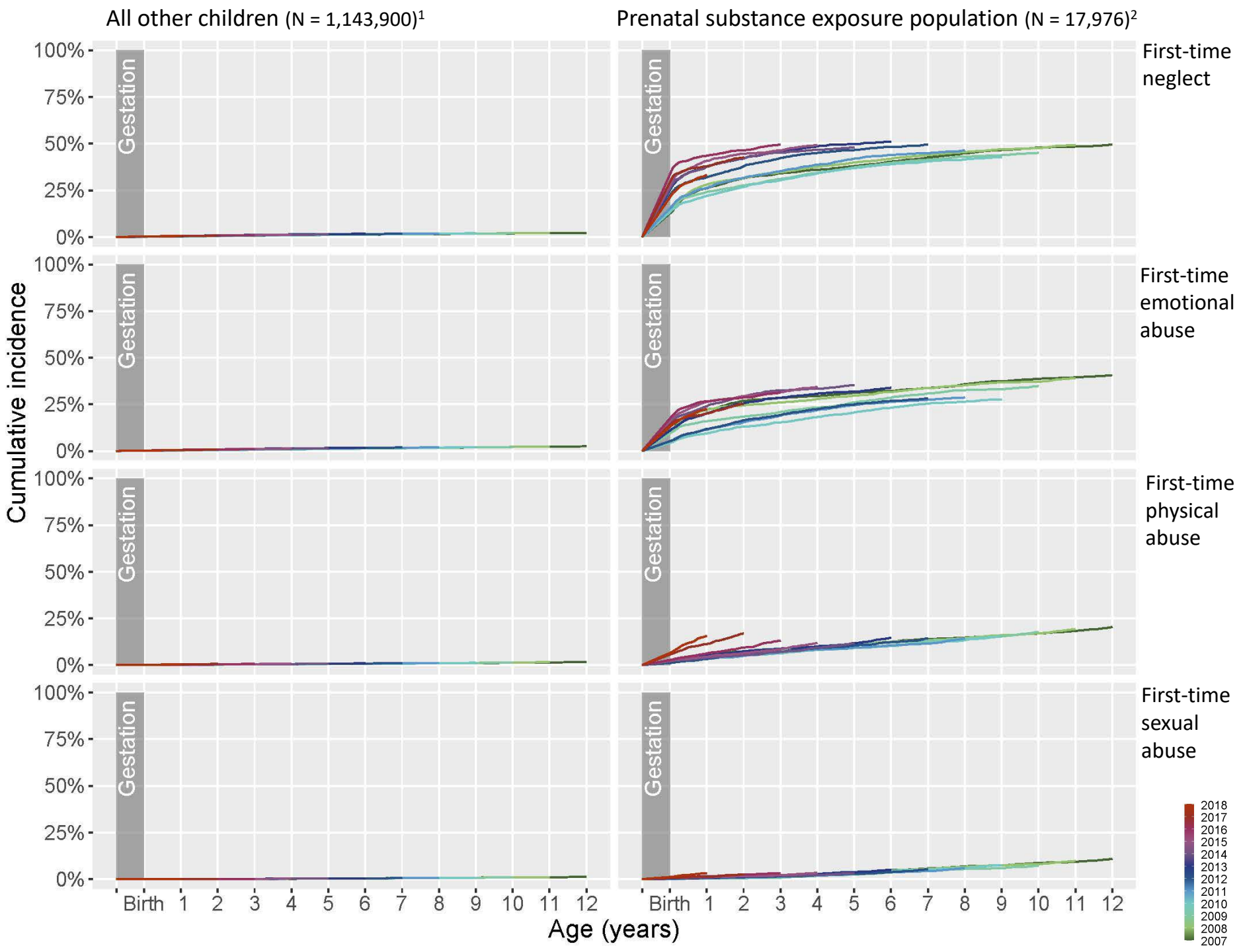
By Age 1
2 in **10** children were removed

By Age 12
4 in **10** children were removed

Child removals: First time child was removed into out-of-home care. **1.** Children with no record of prenatal substance exposure in the available data sources, born in New South Wales, Australia, from 2007-2018. **2.** Children with a record of prenatal substance exposure in the available data sources, born in NSW, Australian. Available data sources included mother's hospital, emergency, mental health outpatients, and/or opioid treatment records, and children's hospital or child protection reports data. Prenatal substance exposure included the use of alcohol and or any drug use, excluding tobacco, inducing illicit drugs, misuse of prescription drugs, and use of opioid agonist treatment, from conception up until 27 days post the child's birth.

Scale and timing of first-time child maltreatment types

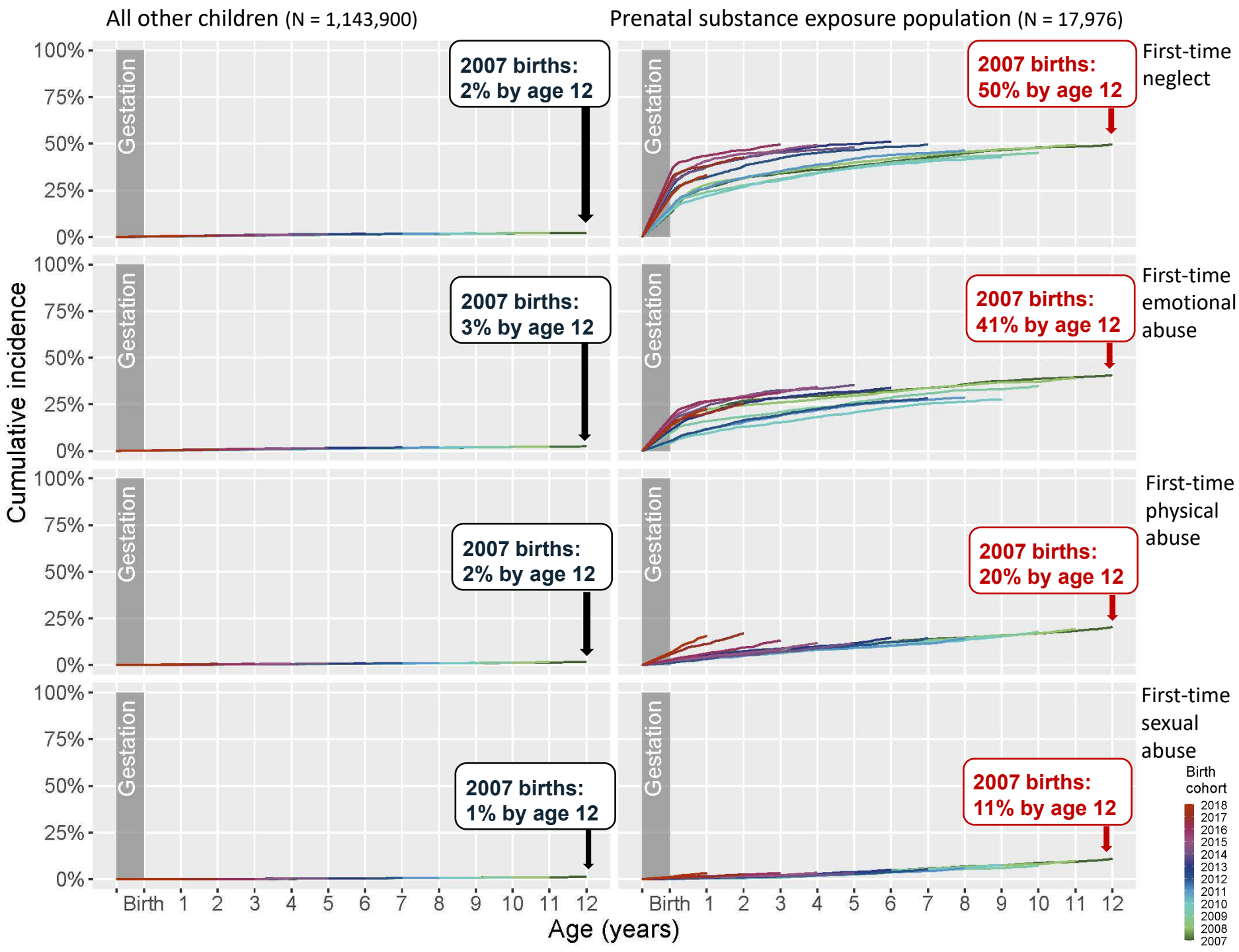
Cumulative incidence of maltreatment types by age 12



Cumulative incidence of maltreatment types by age 12

All child maltreatment types were higher among the prenatal substance use groups.

Neglect was the most common maltreatment type among the prenatal substance use population.

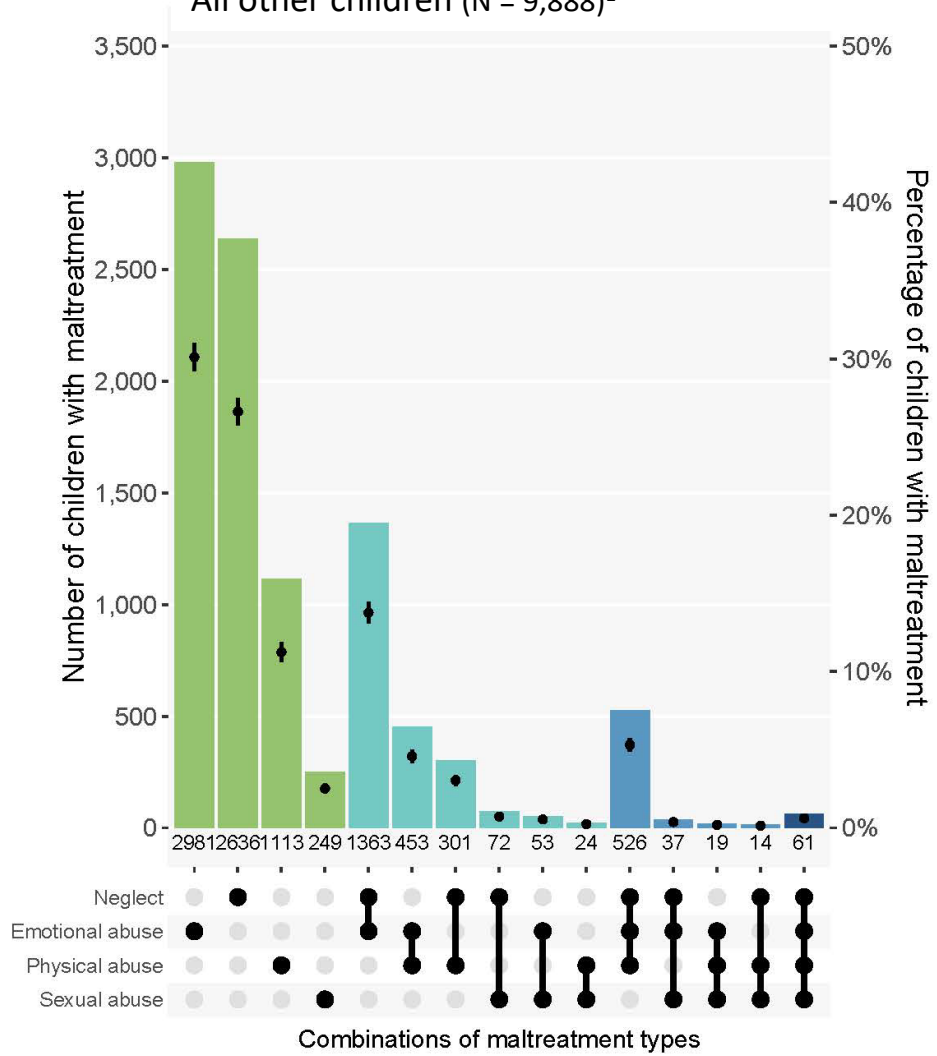


Combinations of child maltreatment types at age 1

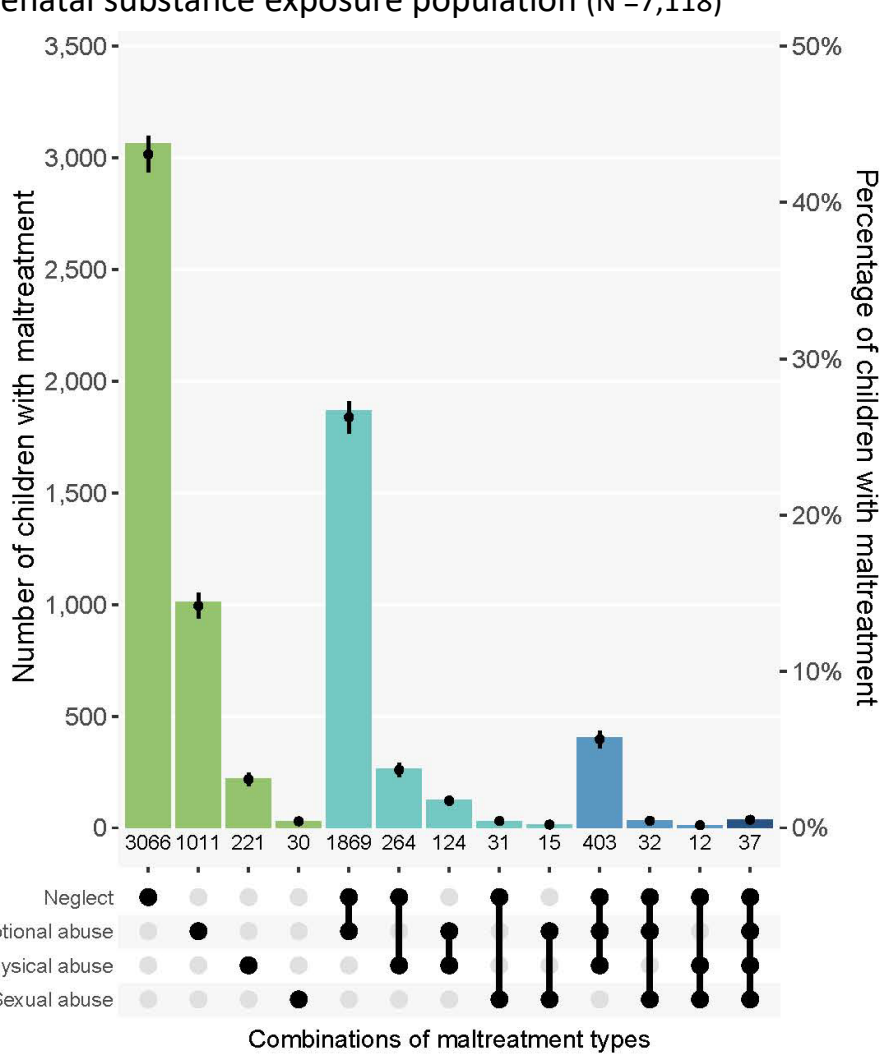
Maltreatment types* by age 1

The most common combinations of maltreatment types among the *Prenatal substance exposure group* and *All other children* with a substantiation

All other children (N = 9,888)[1]



Prenatal substance exposure population (N =7,118)



Number of combinations 1 2 3 4

*Maltreatment types defined by routinely reported groups, based on assessed issues recorded at the time of child protection substantiations.

Maltreatment types* by age 1

The most common combinations of maltreatment types among the *Prenatal substance exposure group* and *All other children* with a substantiation

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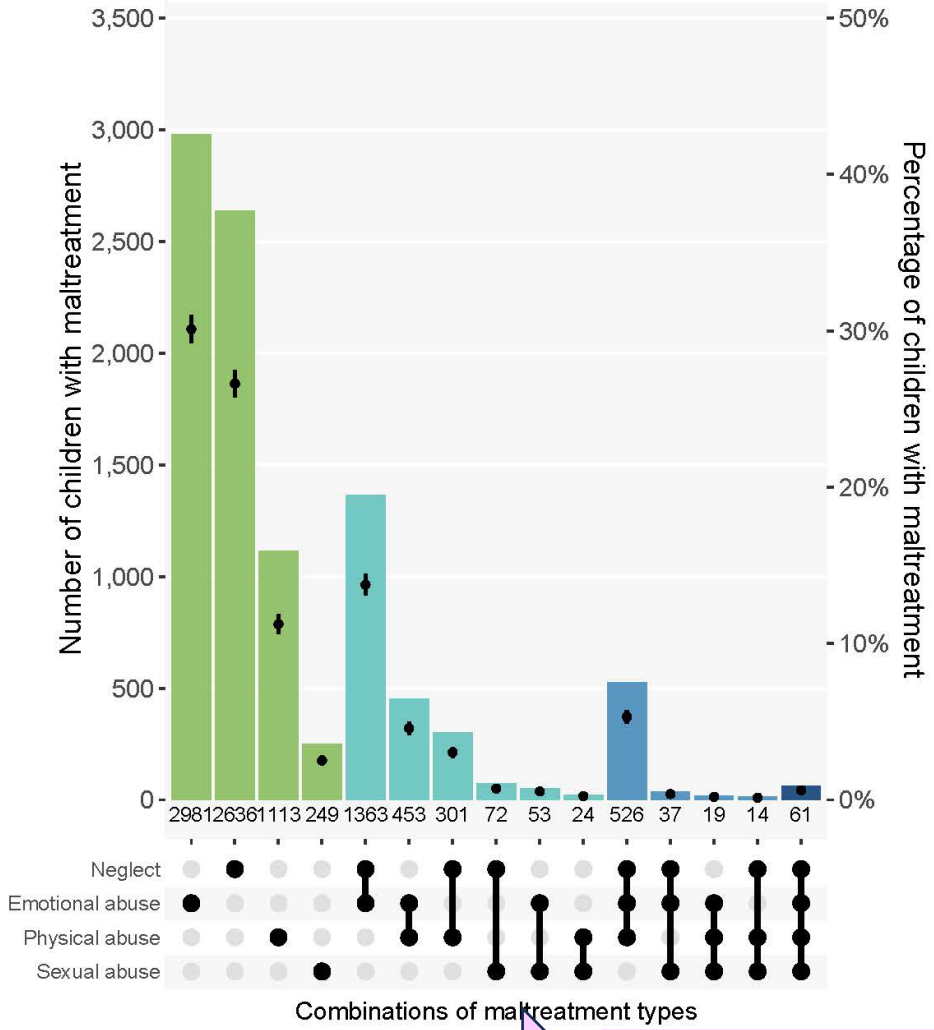

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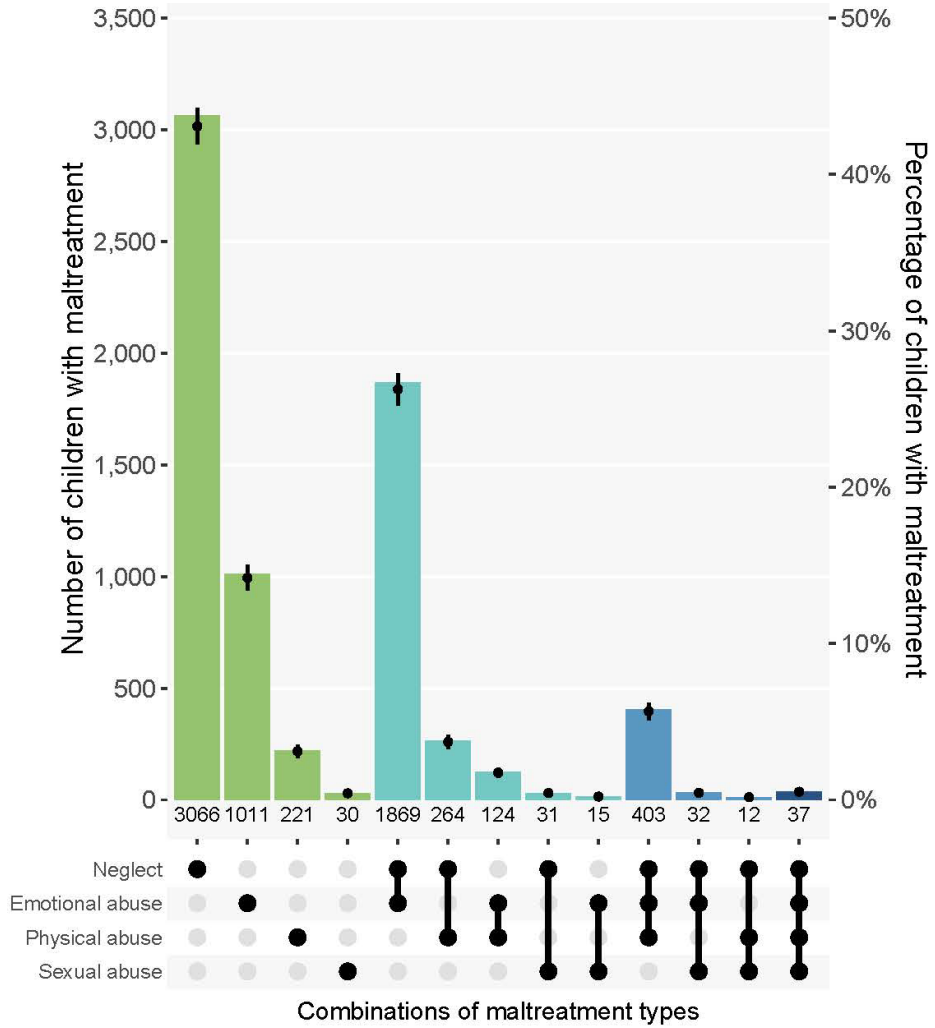

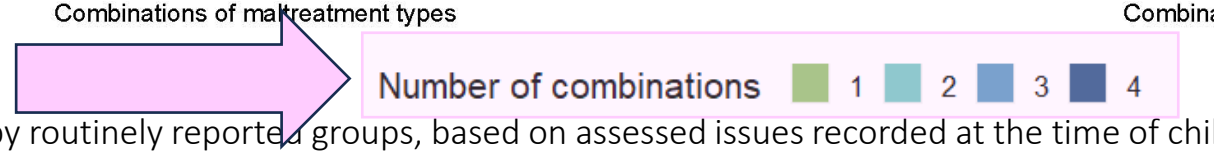

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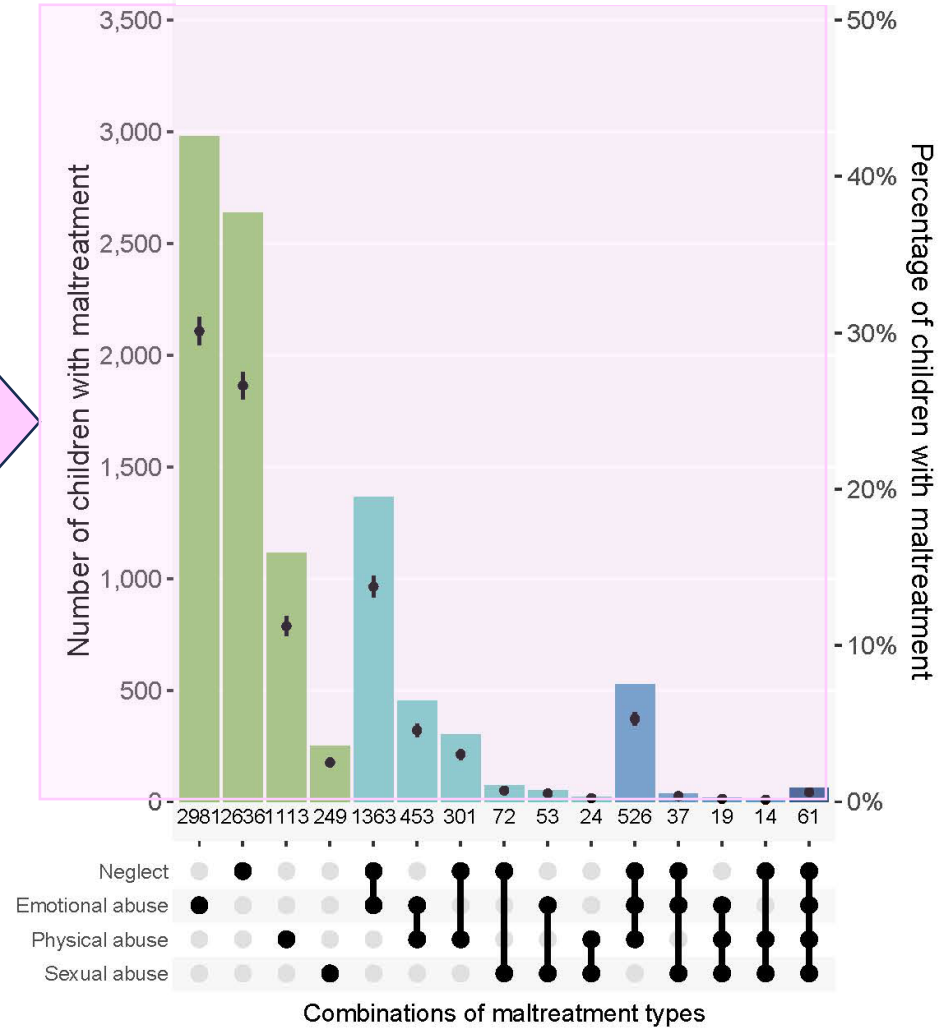

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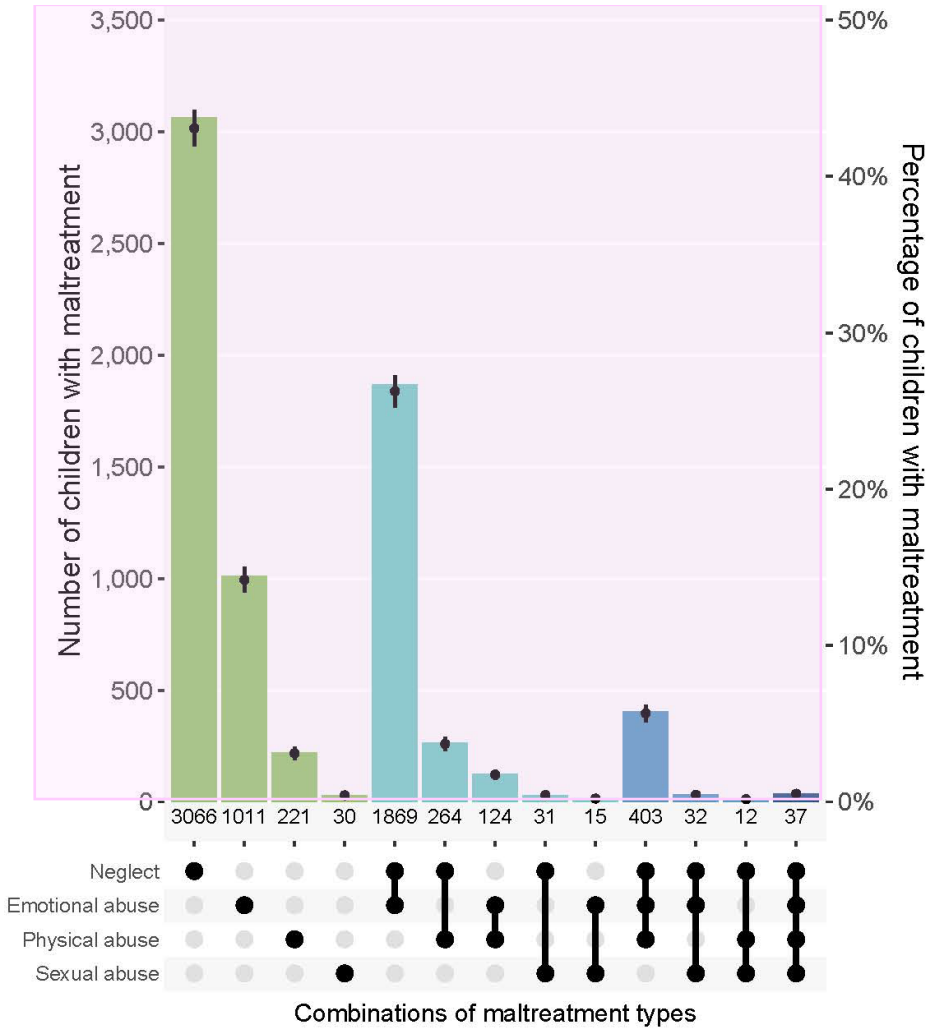

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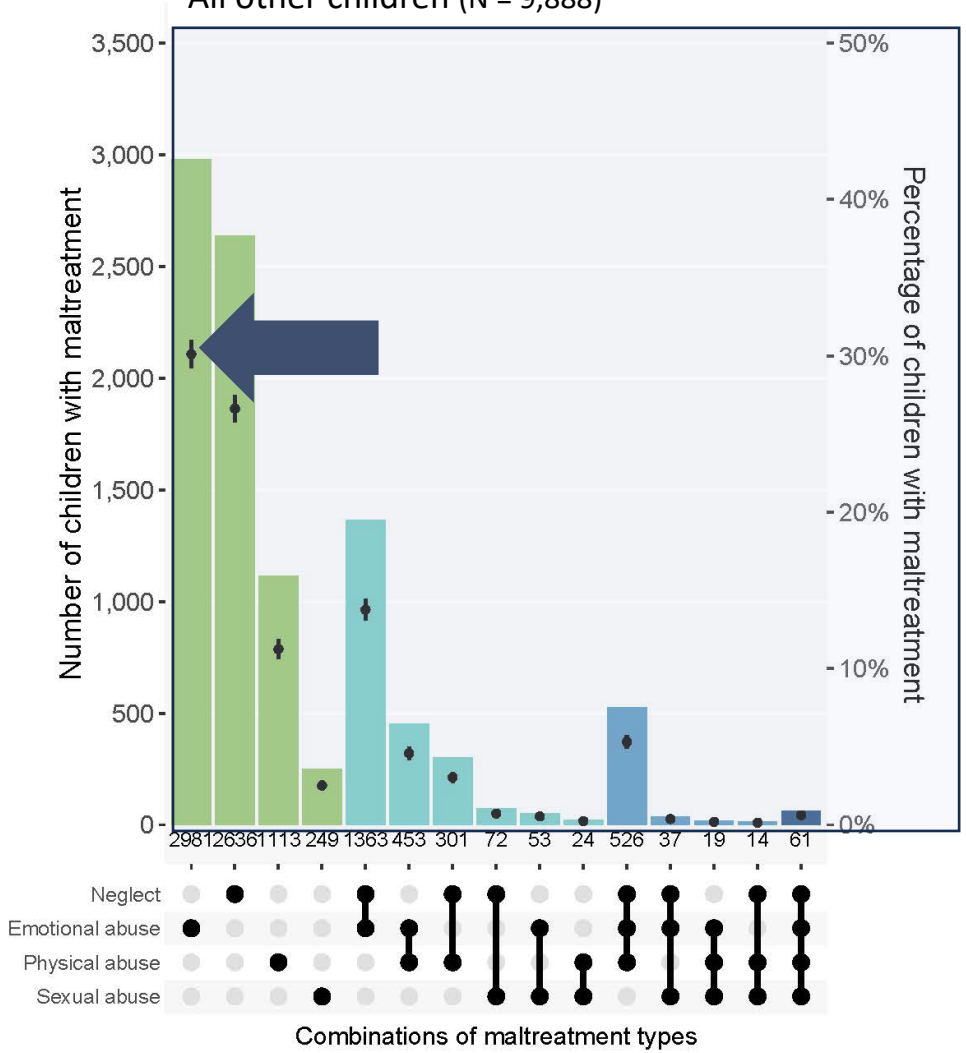
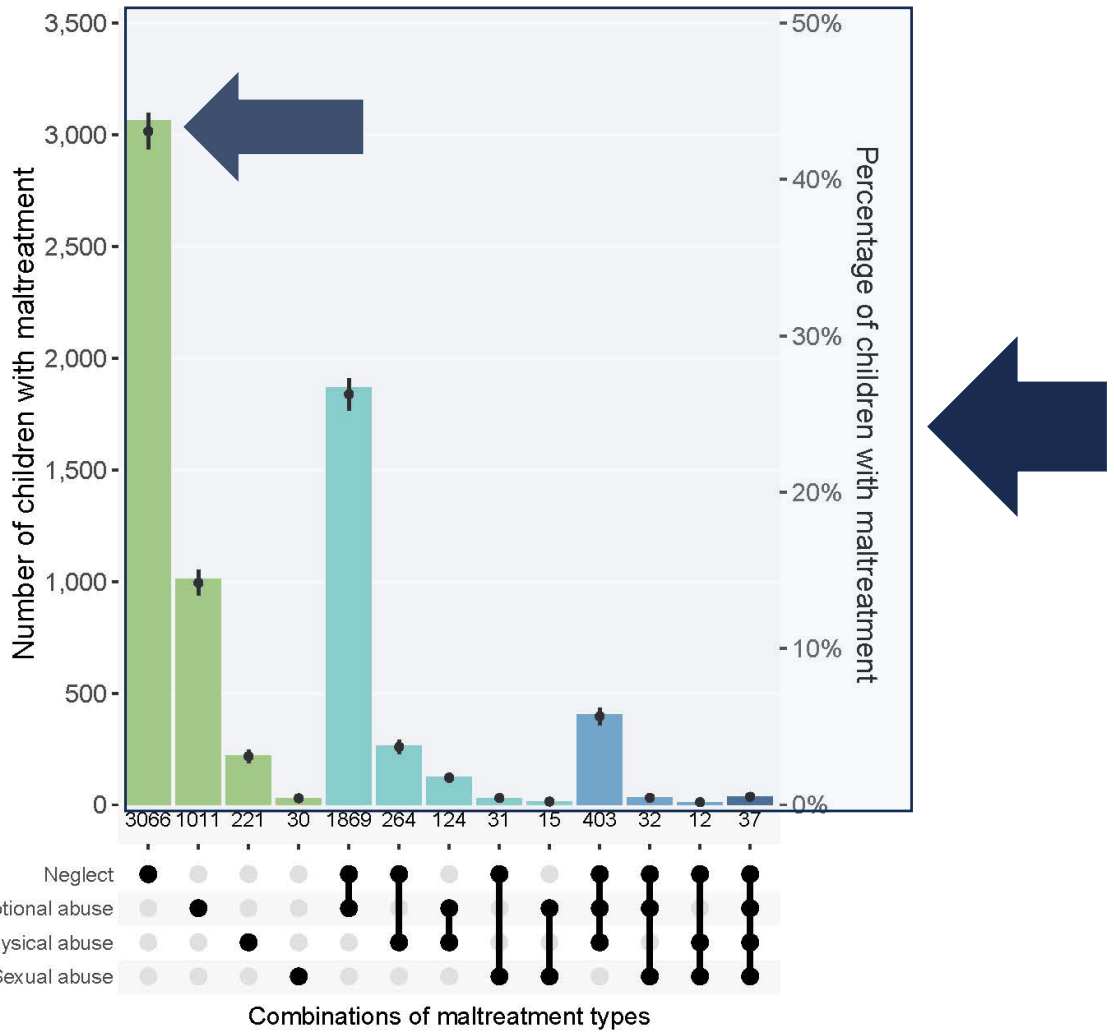


Prenatal substance exposure population (N =7,118)



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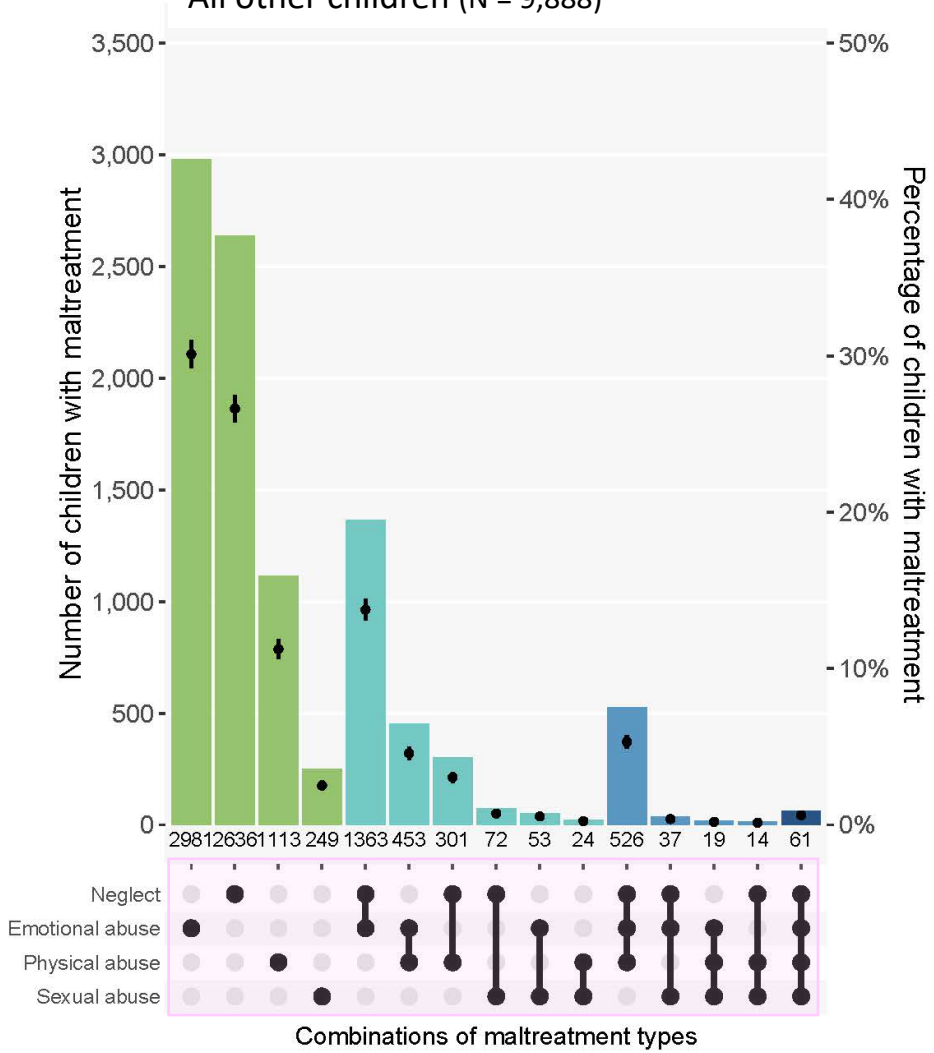
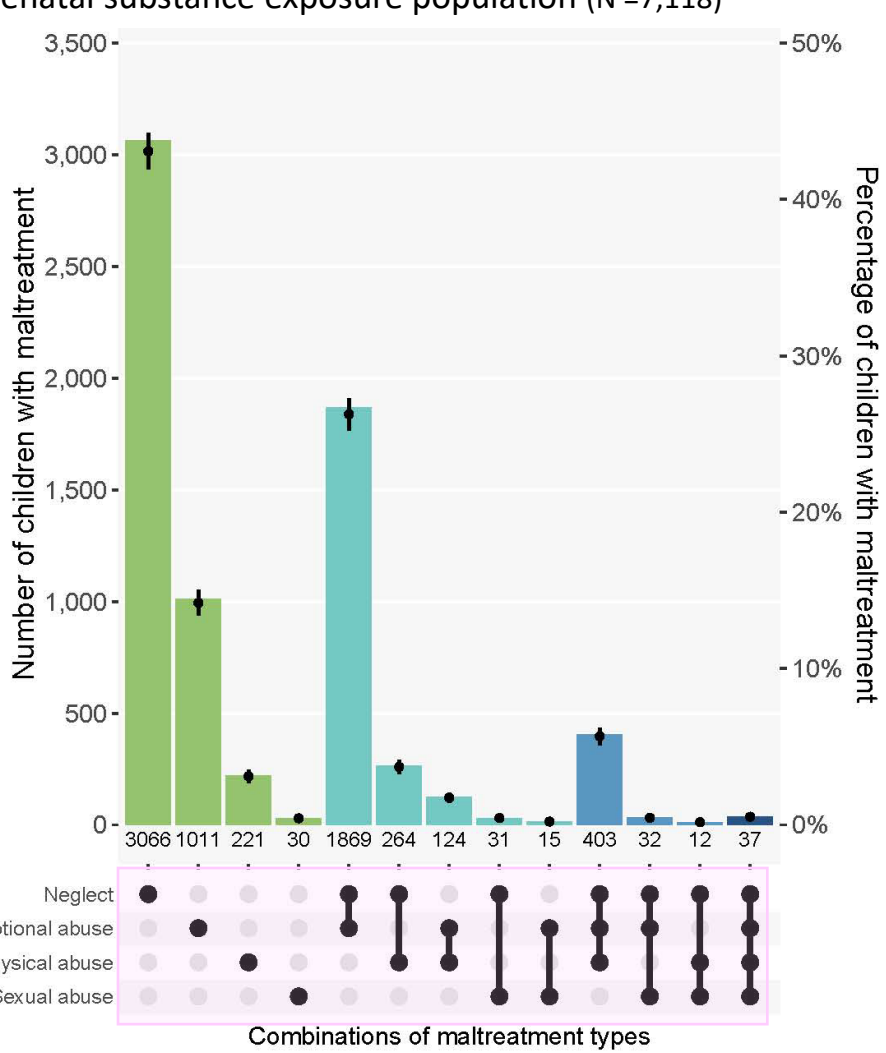


Prenatal substance exposure population (N =7,118)



Number of combinations 1 2 3 4

*Maltreatment types defined by routinely reported groups, based on assessed issues recorded at the time of child protection substantiations.

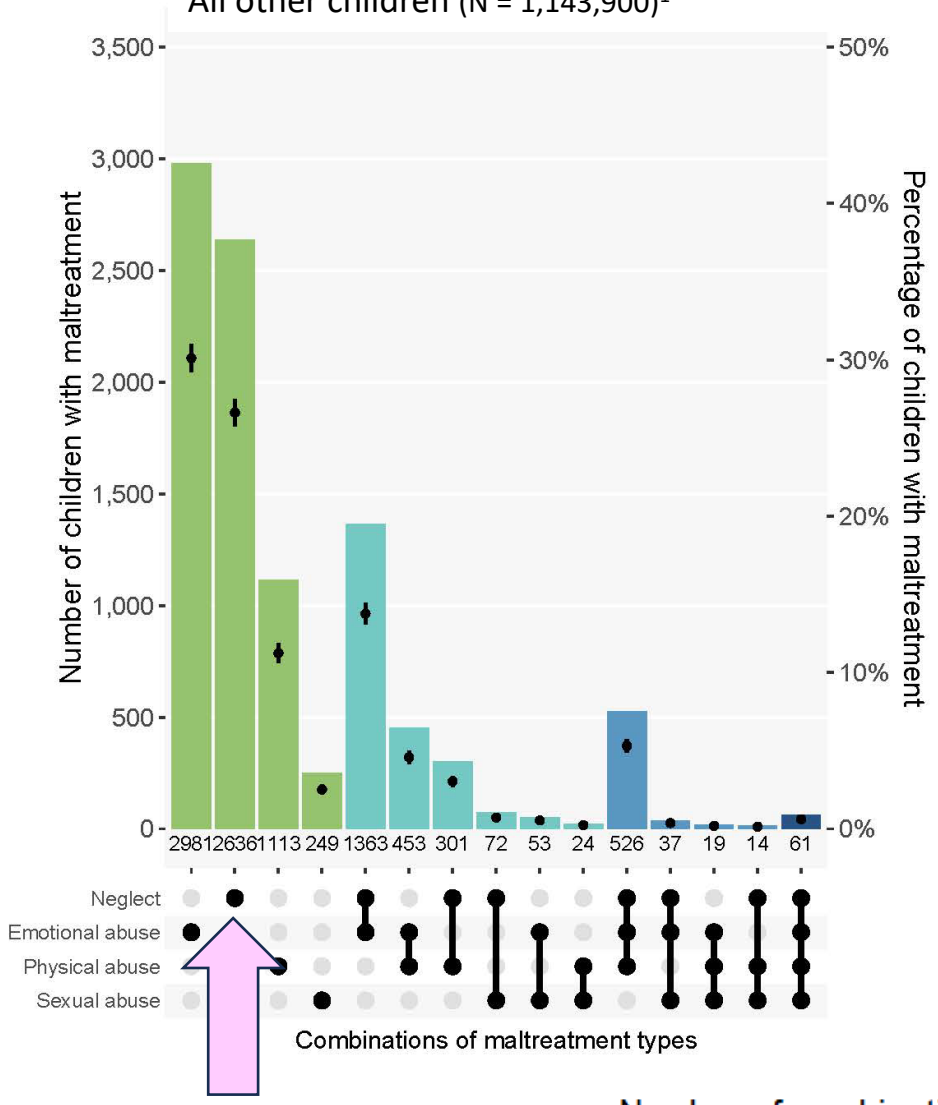
Maltreatment types* by age 1

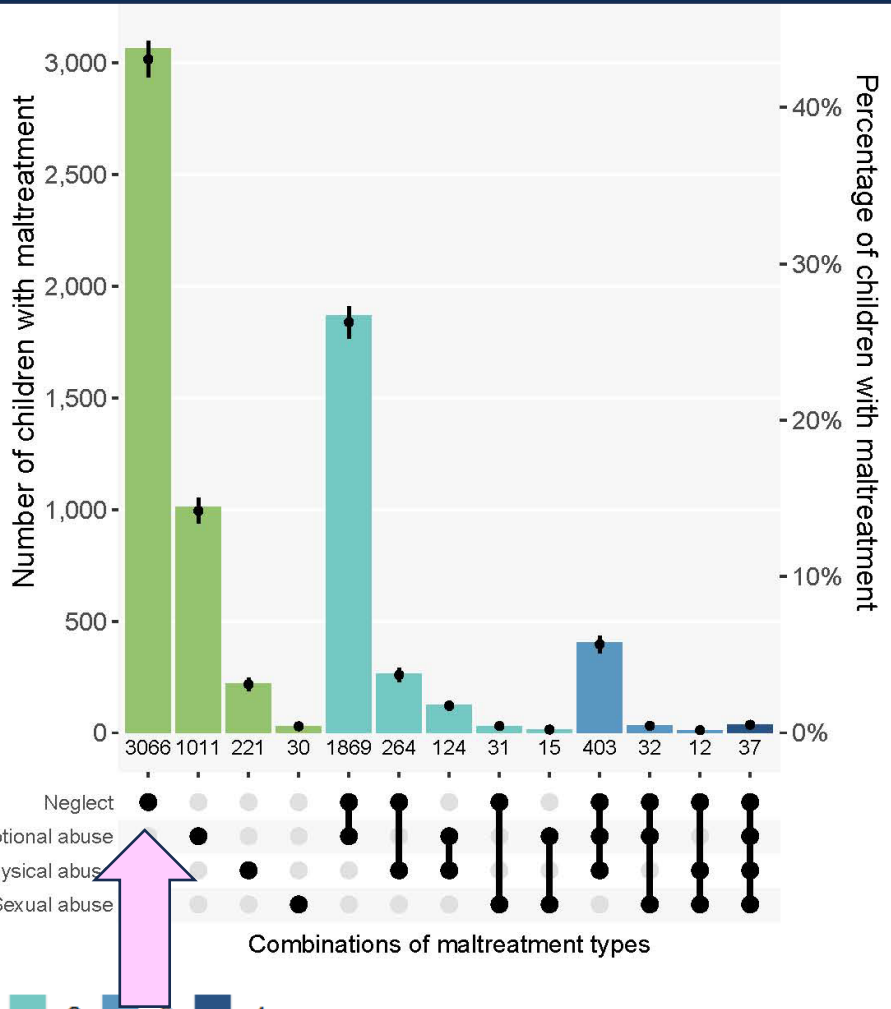
The most common combinations of maltreatment types among the *Prenata*

The most common maltreatment types assessed during field assessments among the PSU group were:

- Neglect alone
- Neglect and emotional maltreatment

All other children (N = 1,143,900)[1]





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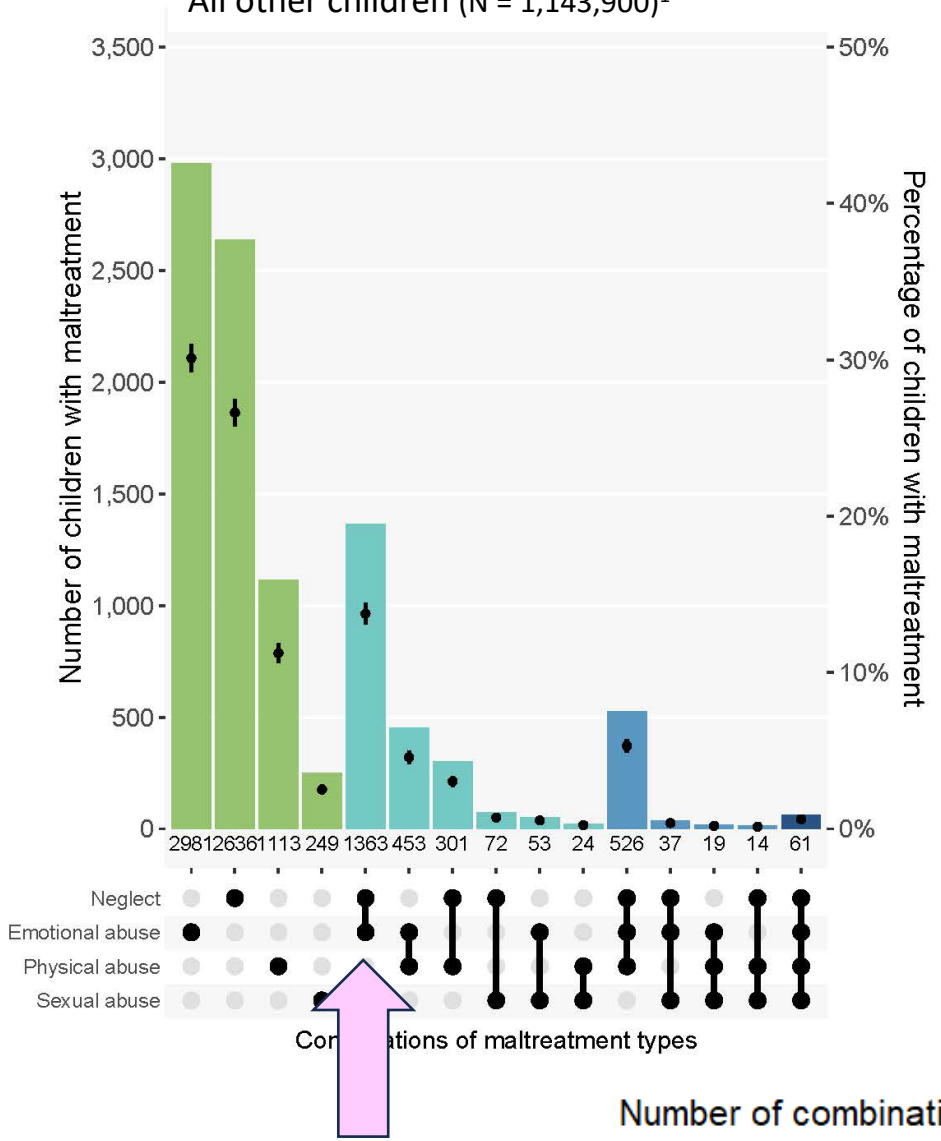
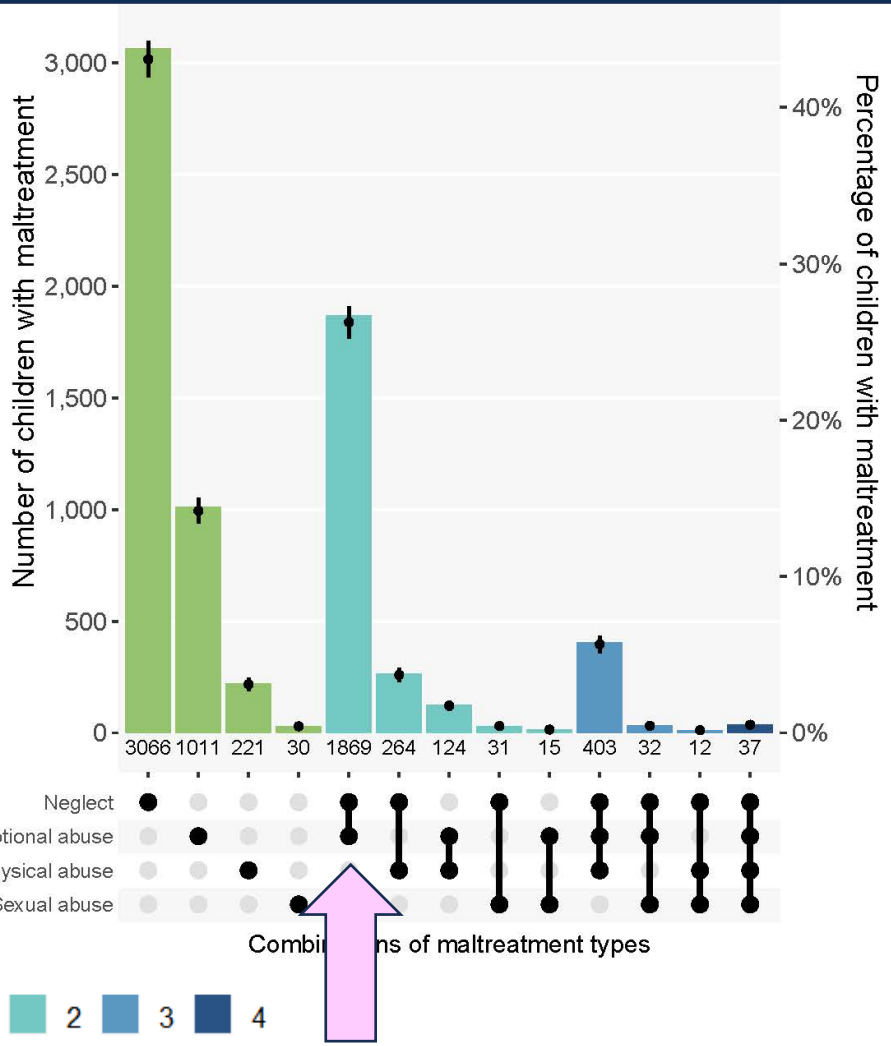




Number of combinations 1 2 3 4

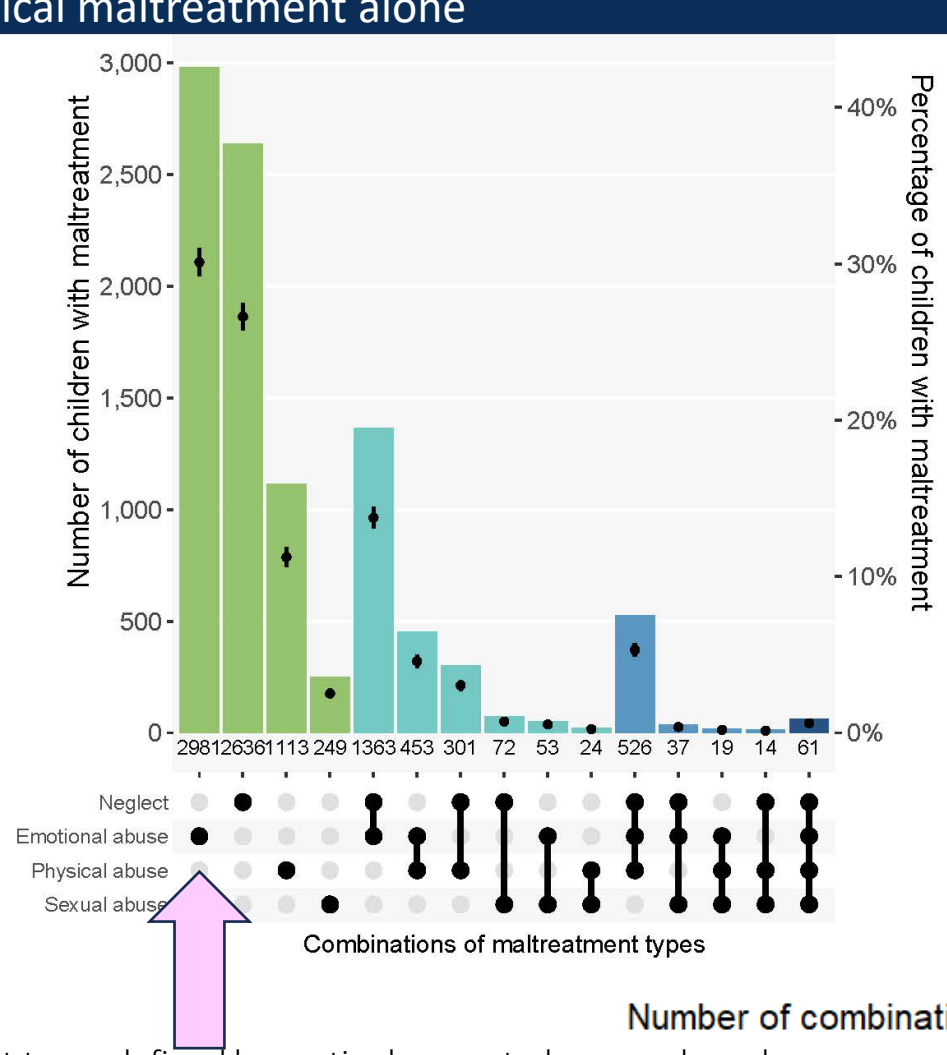
*Maltreatment types defined by routinely reported groups, based on assessed issues recorded at the time of child protection substantiations.

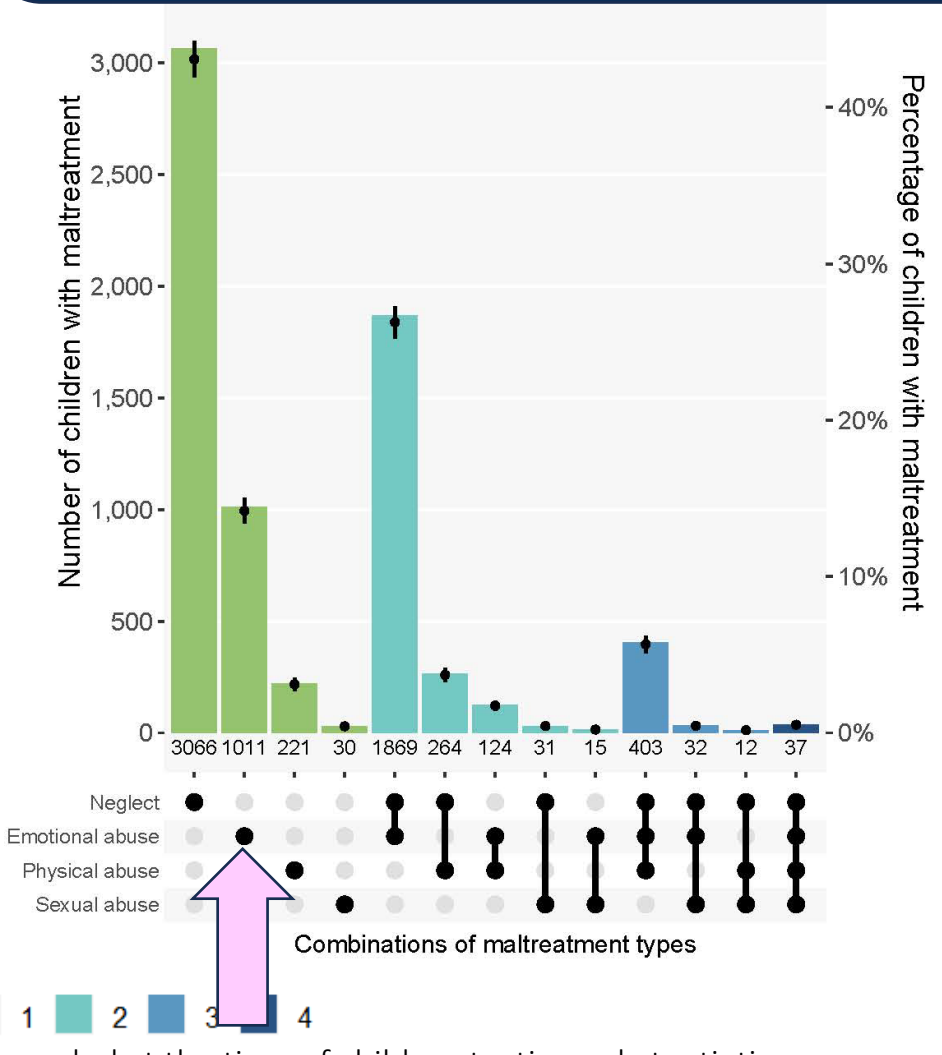
The most common maltreatment types among all other children were:

- Emotional maltreatment alone
- Neglect alone
- Neglect and emotional maltreatment
- Physical maltreatment alone

The most common maltreatment types assessed during field assessments among the PSU group were:

- Neglect alone
- Neglect and emotional maltreatment





Number of combinations 1 2 3 4

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Demographic Profile

of children with prenatal substance exposure

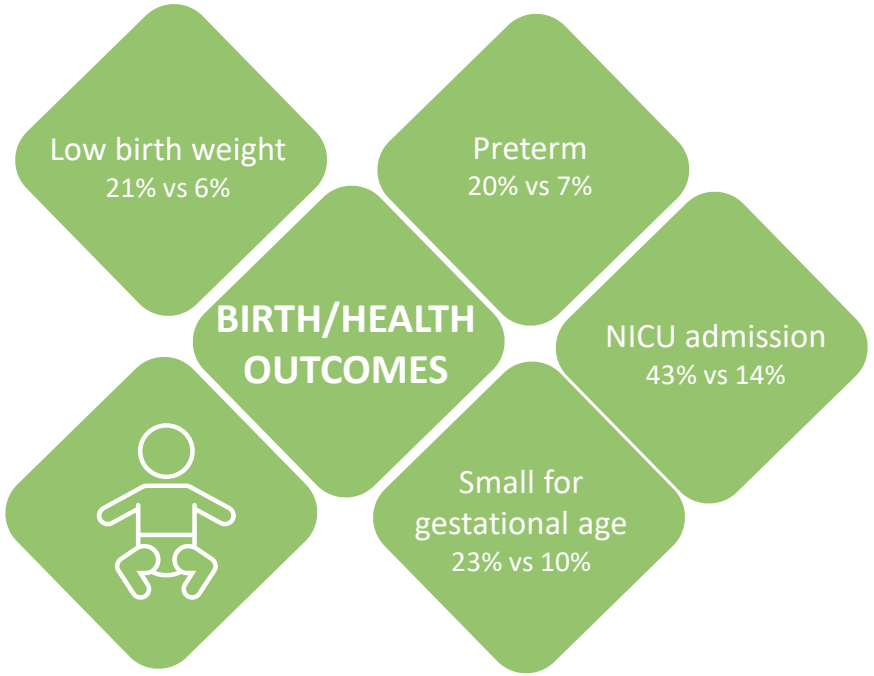
Demographic profile

Health & social disadvantage was more common among children with maternal prenatal substance exposure

Demographic profile

Health & social disadvantage was more common among children with maternal prenatal substance exposure

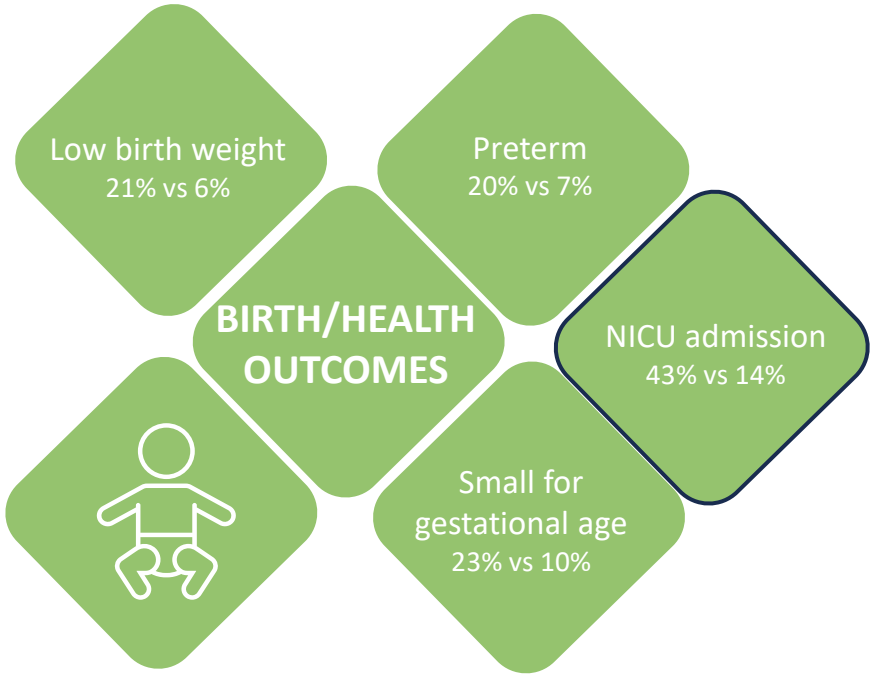
Child health and birth outcomes



Demographic profile

Health & social disadvantage was more common among children with maternal prenatal substance exposure

Child health and birth outcomes



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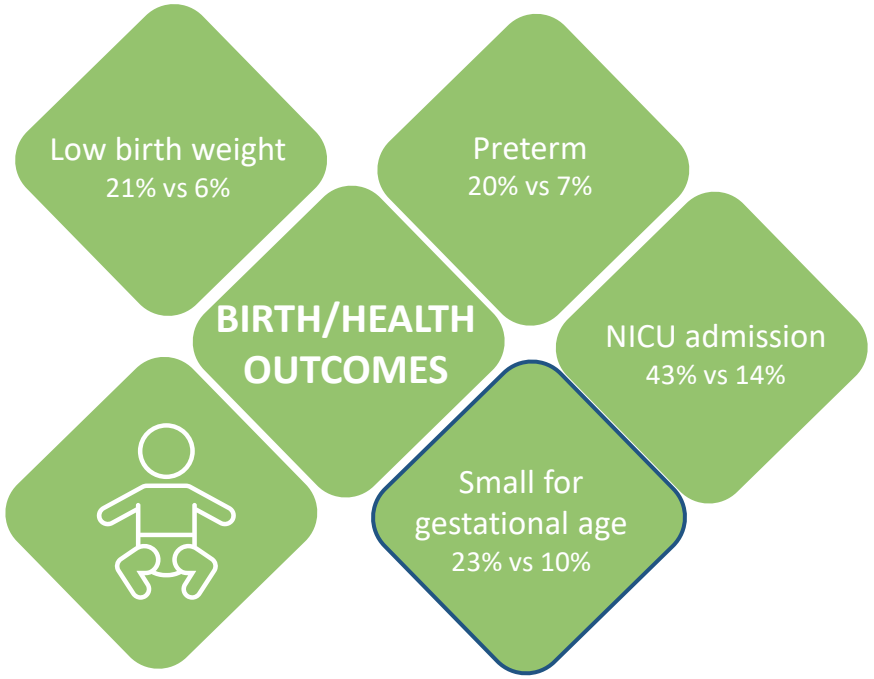
Health & social disadvantage was more common among children with maternal prenatal substance exposure

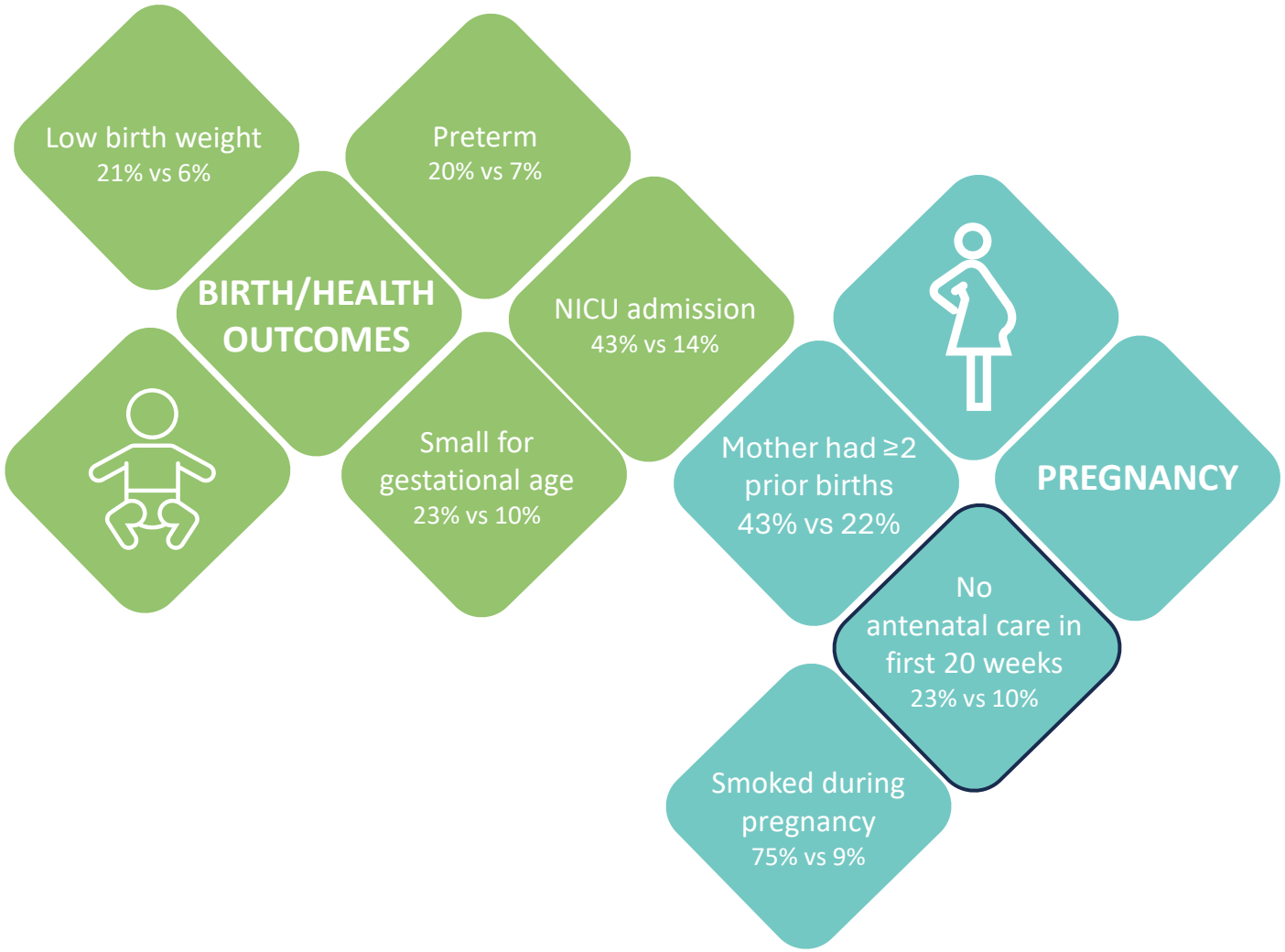
Child health and birth outcomes



Demographic profile

Health & social disadvantage was more common among children with maternal prenatal substance exposure

- Child health and birth outcomes
- Pregnancy

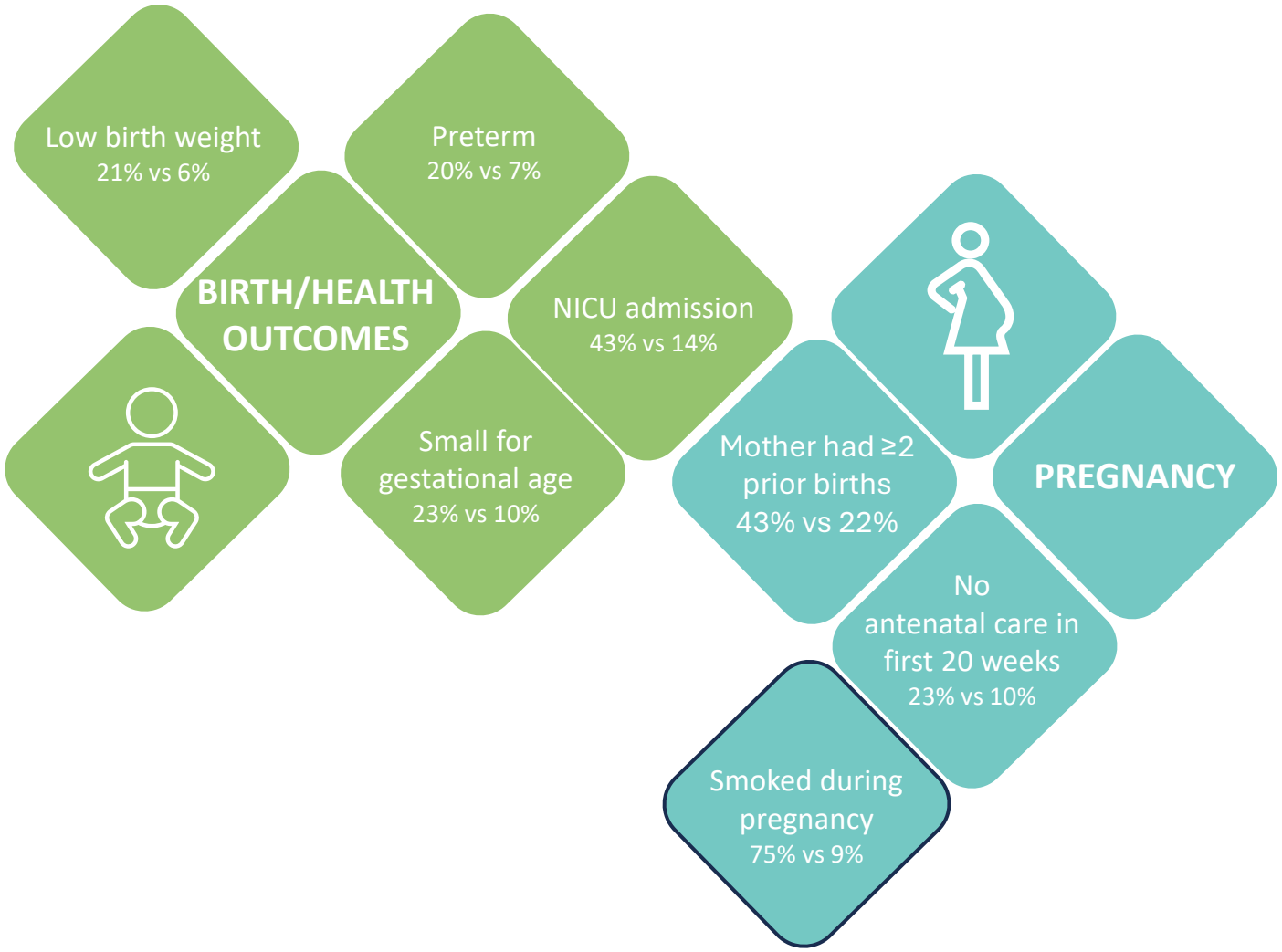


Demographic profile

Health & social disadvantage was more common among children with maternal prenatal substance exposure

Child health and birth outcomes

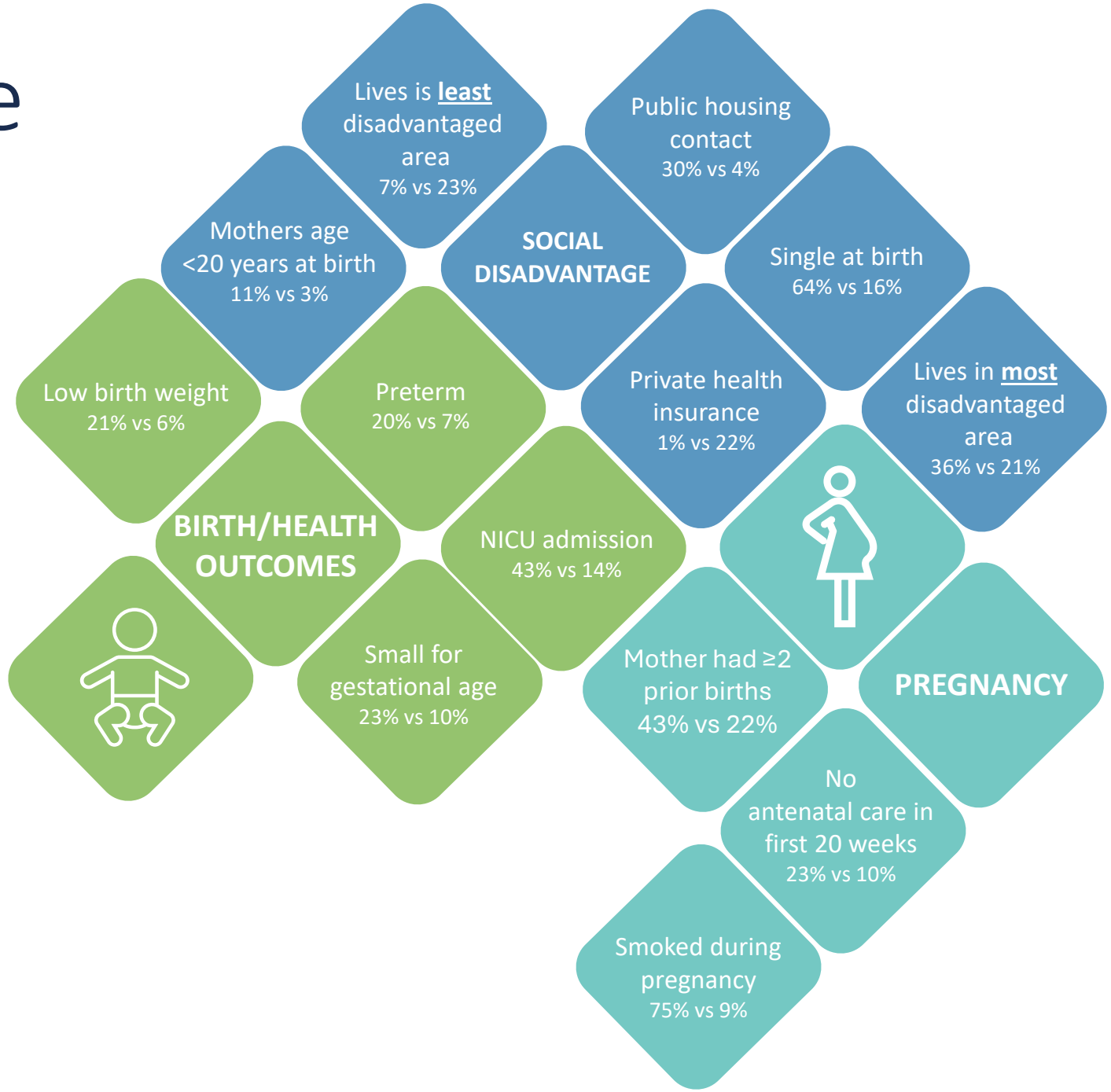
Pregnancy



Demographic profile

Health & social disadvantage was more common among children with maternal prenatal substance exposure

- Child health and birth outcomes
- Pregnancy
- Maternal social disadvantage



Demographic profile

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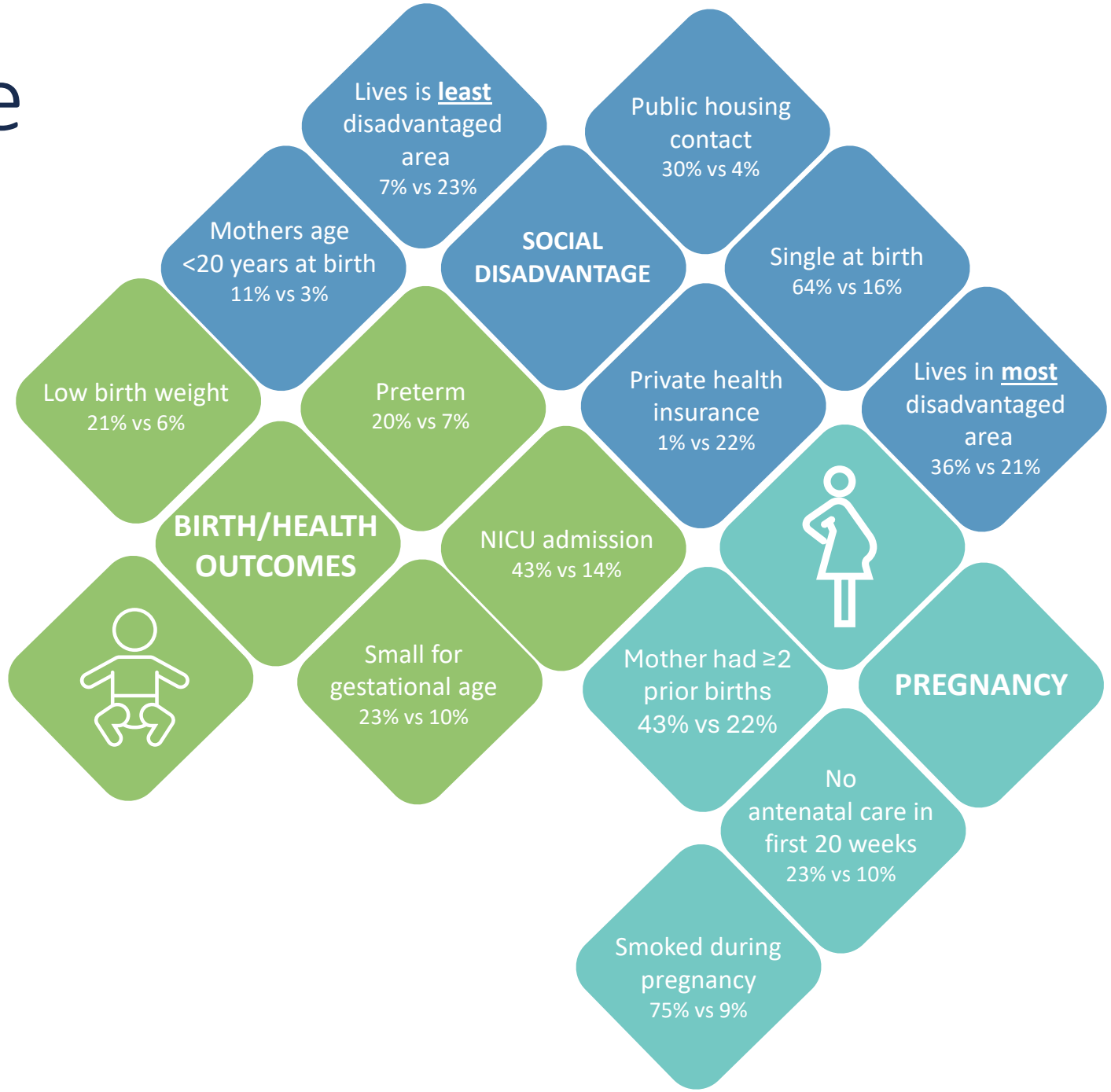

Demographic profile

Health & social disadvantage was more common among children with maternal prenatal substance exposure

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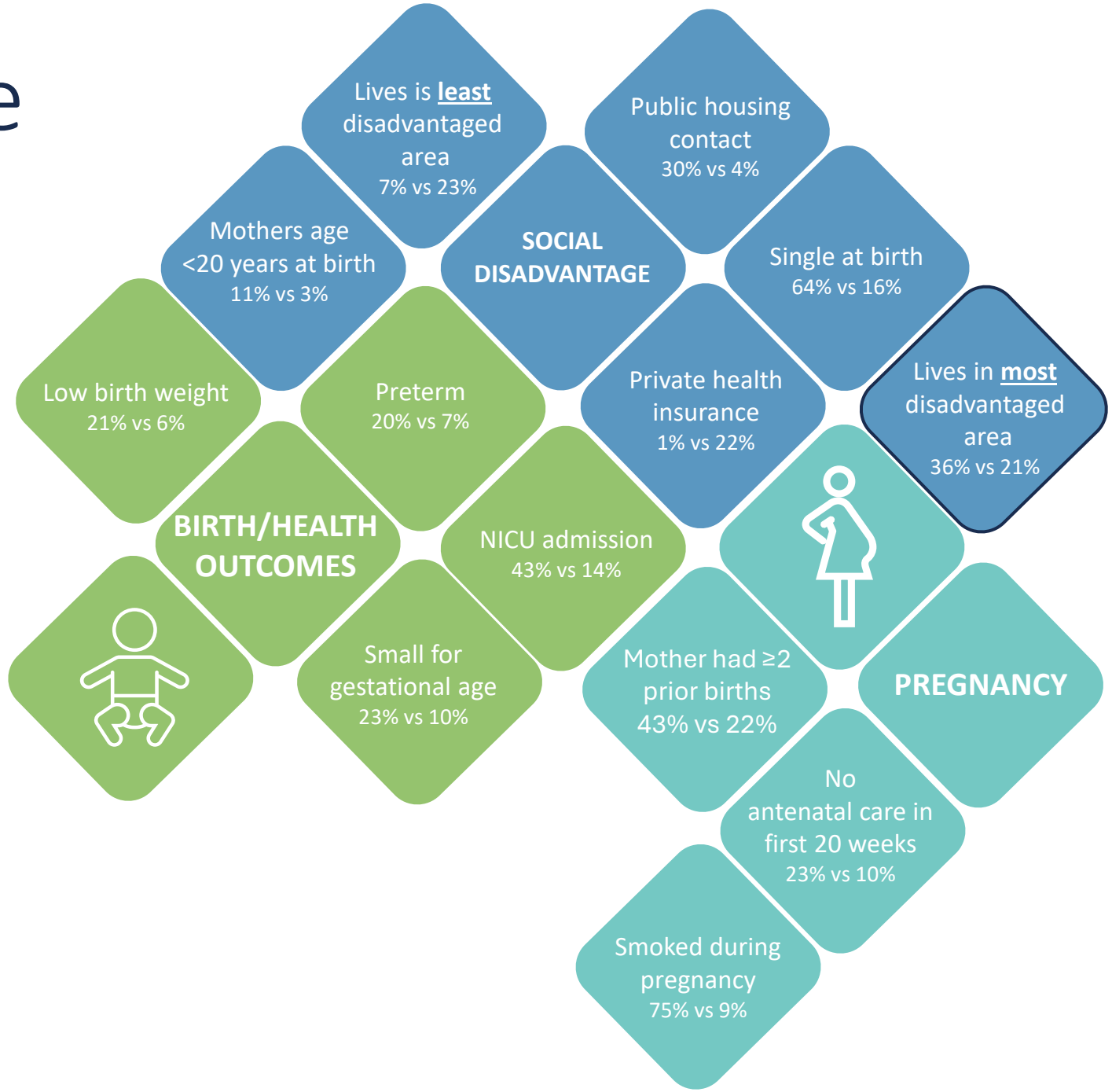

Demographic profile

Health & social disadvantage was more common among children with maternal prenatal substance exposure

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- Pregnancy
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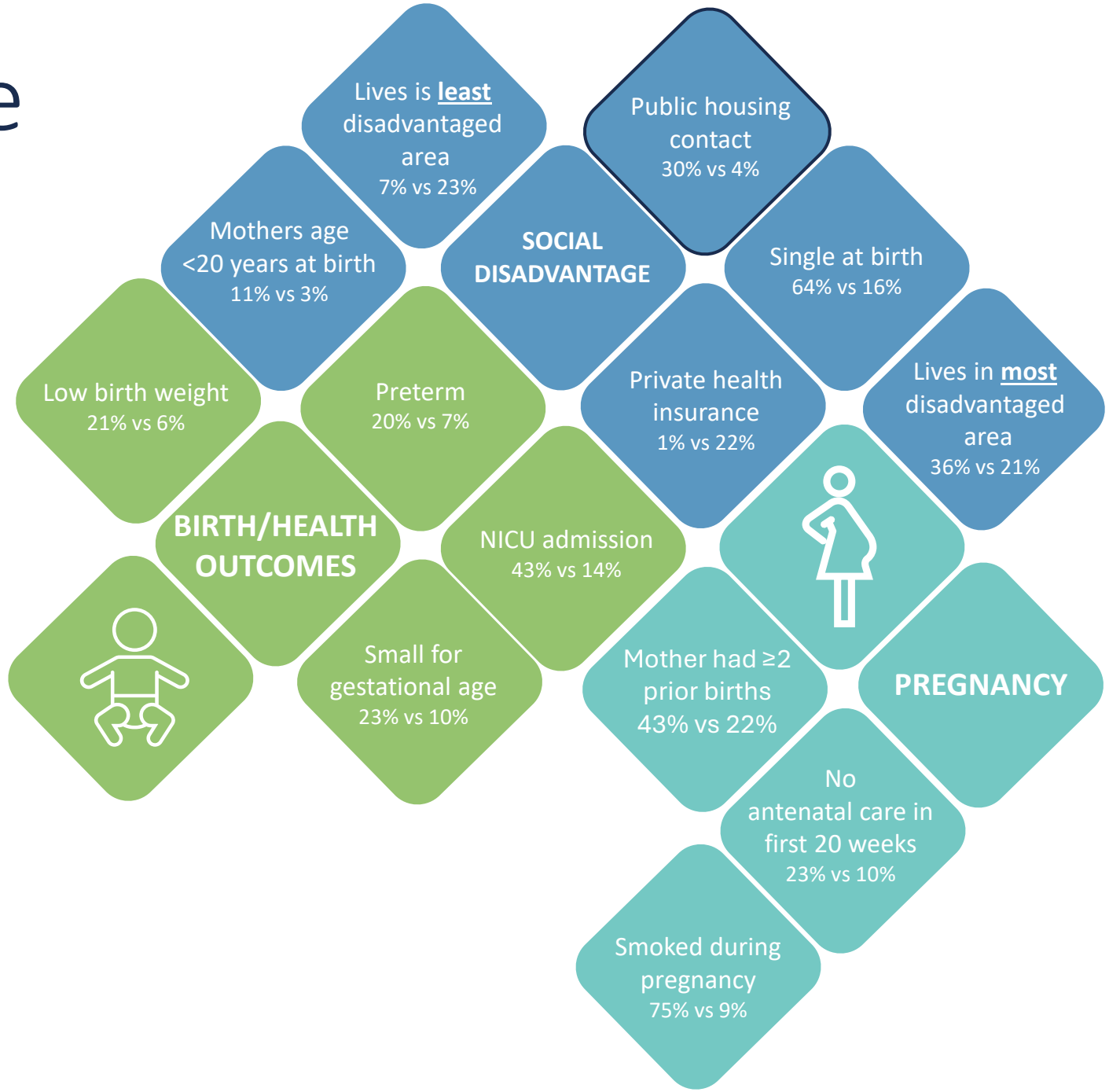

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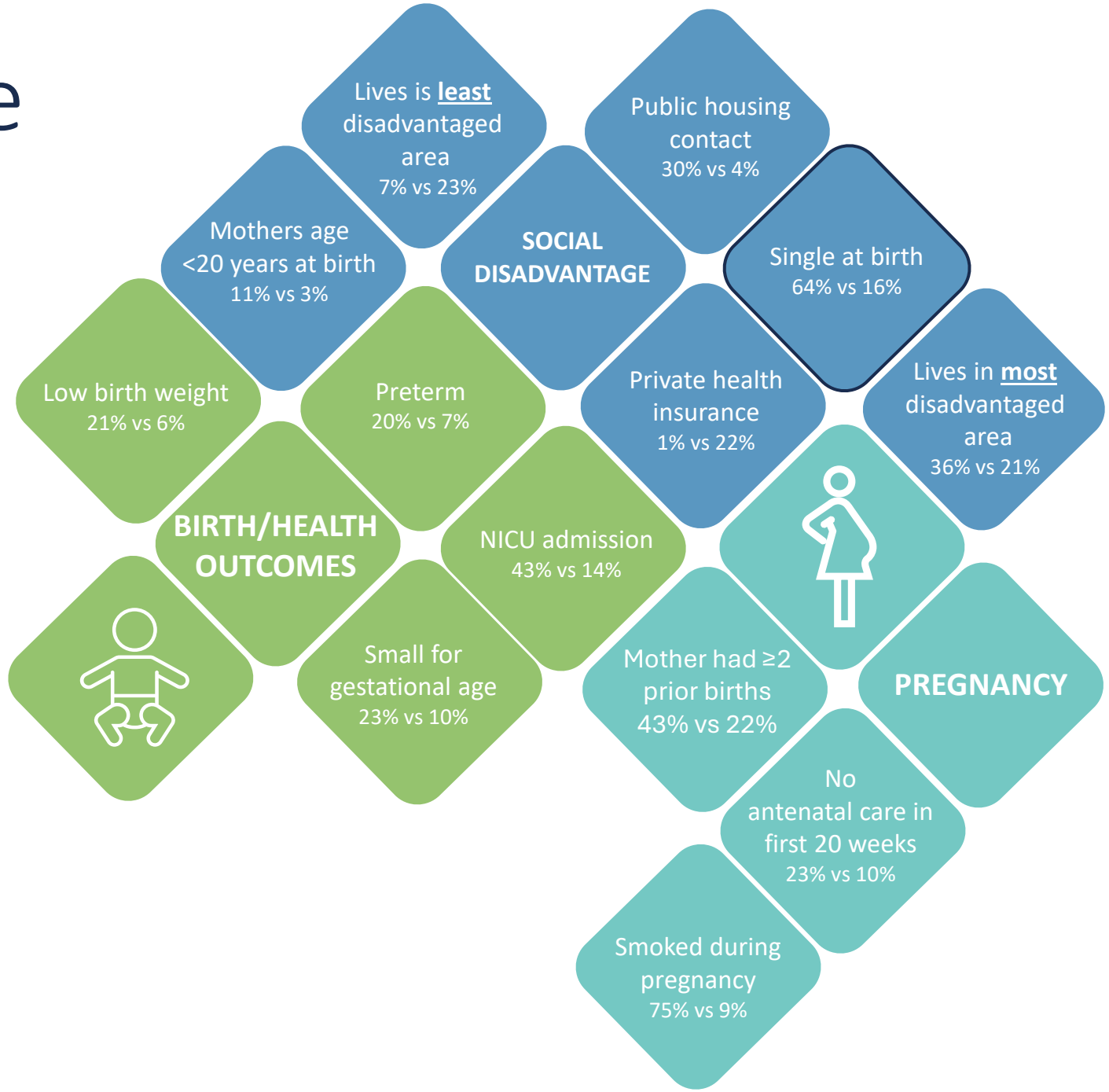

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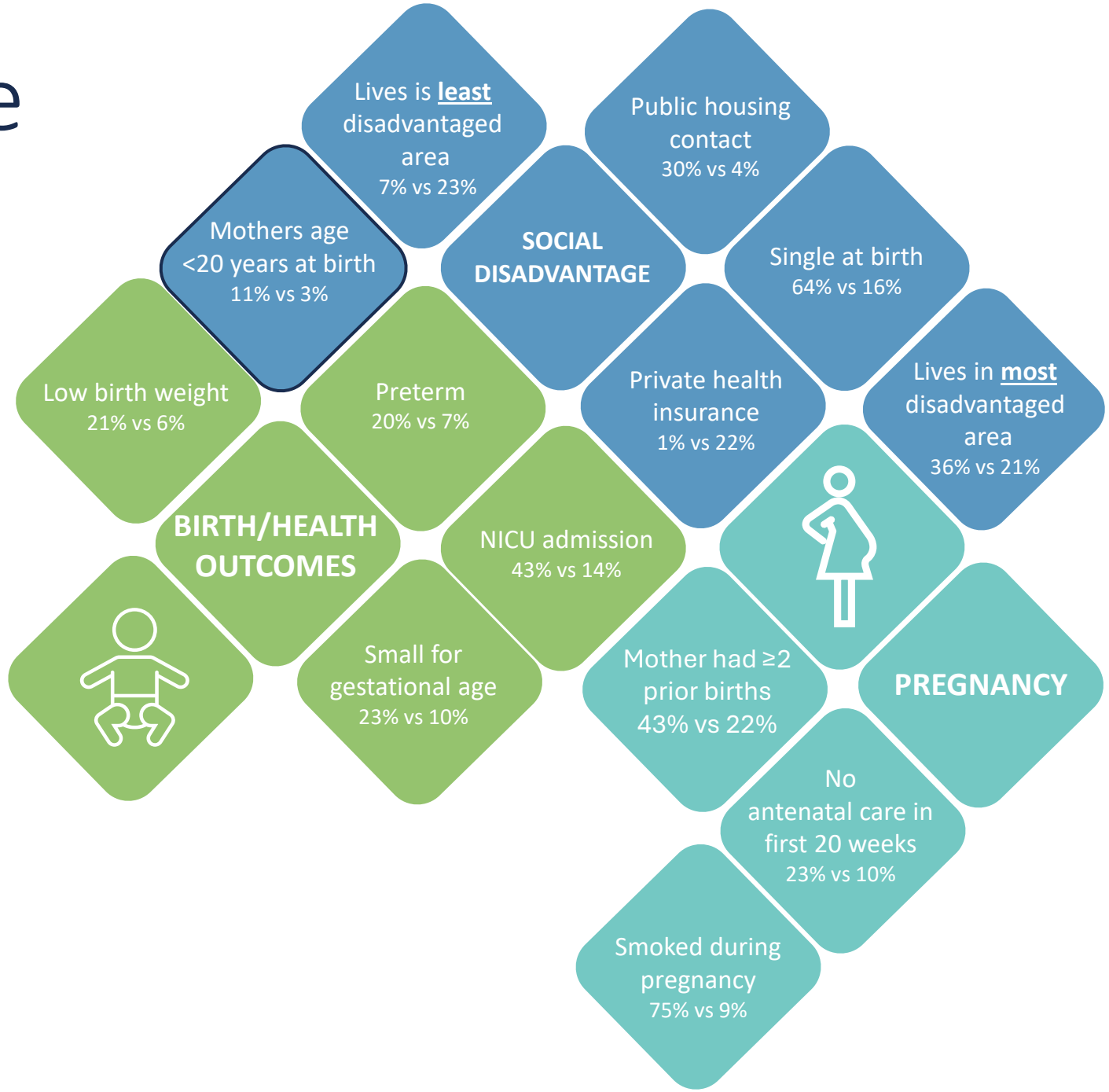
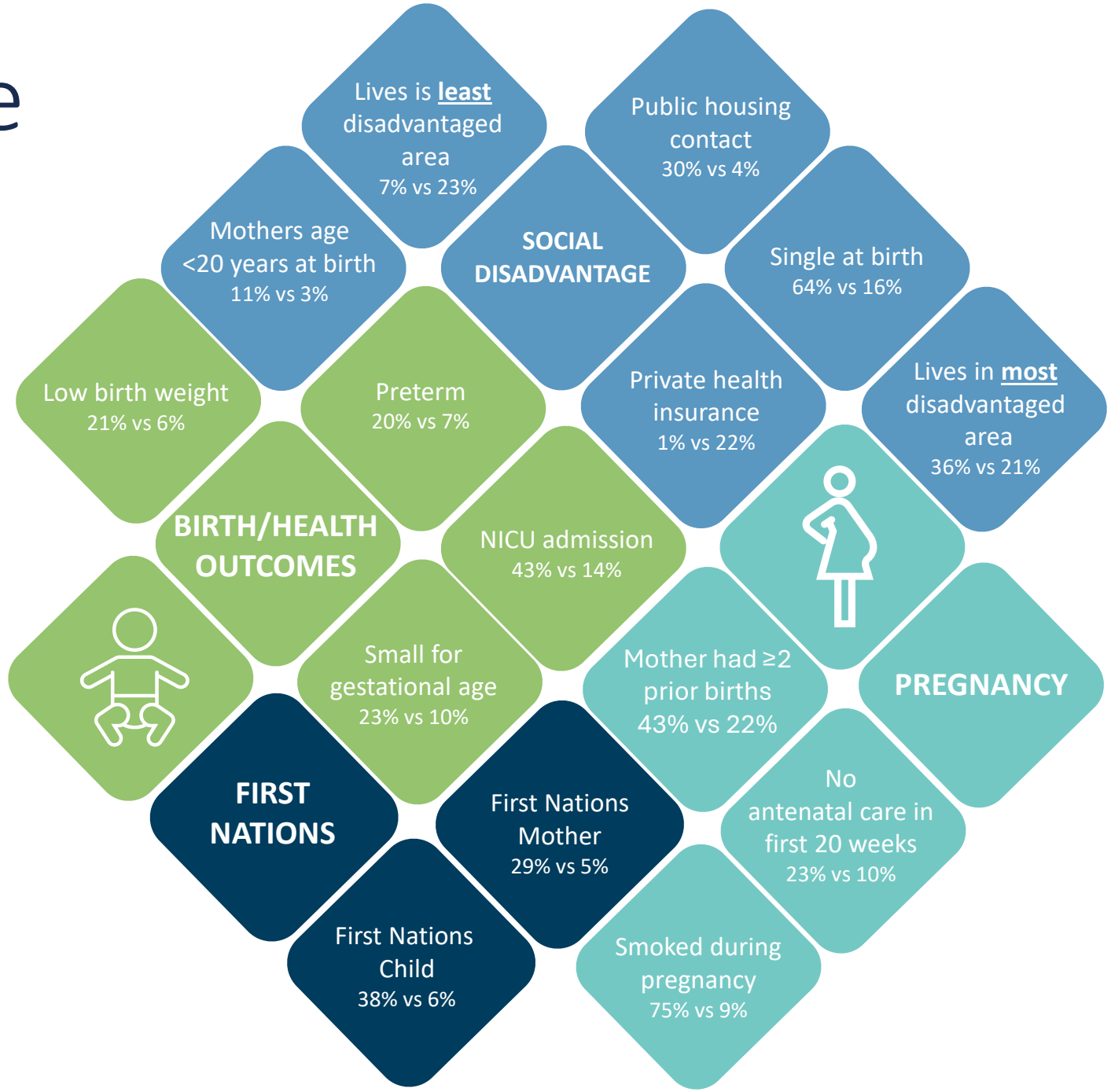


Demographic profile

Health & social disadvantage was more common among children with maternal prenatal substance exposure

- Child health and birth outcomes
- Pregnancy
- Maternal social disadvantage
- First Nations children and mothers[1]



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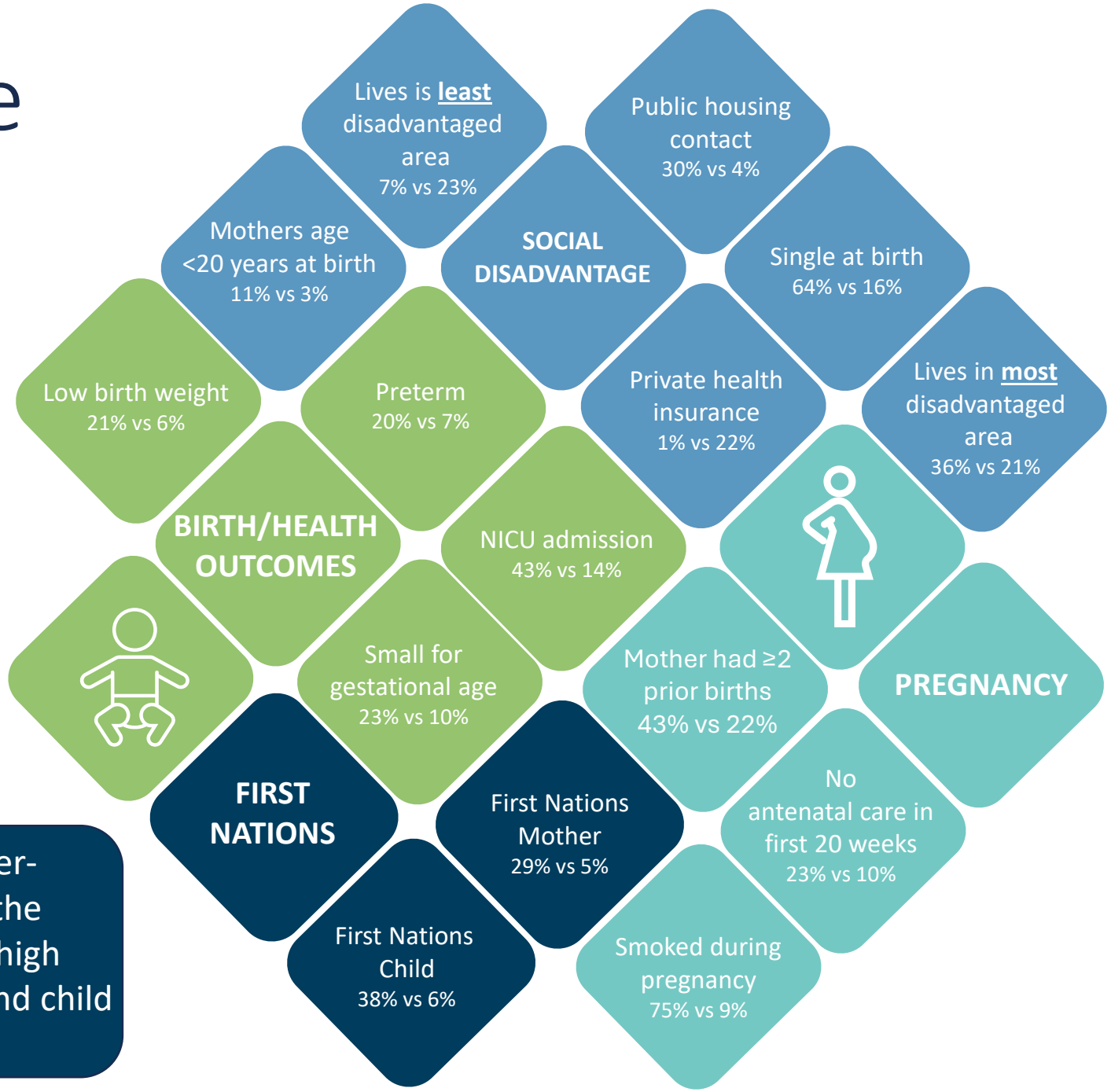

1 This reflects the ongoing systemic racism and over-surveillance of Aboriginal children and families in the health and child protection systems, that leads to high rates of reporting to the child protection system and child removals. (Krakouer 2023)

Summary of findings

Summary of findings

- **9 in 10** (90%) children in the prenatal substance exposure population were **screened-in** by child protection by age 12.
- **>1** in **five children** in the prenatal substance exposure population were removed into **OOHC by age 1**, with **2 in 5 in OOHC by age 12**.
- **Neglect** and **emotional abuse** were the most common maltreatment types recorded at the time of a substantiation.
- **Socioeconomic** and **early life health disadvantage** were more common among the prenatal substance exposure population.

Policy and practice implications

What are the **key policy changes and service delivery innovations** across health & child and family sector services[1] needed to shift from:

Risk oriented child protection approach → **Child and family wellbeing approach** (Health, child protection, education, social services)

for maternal substance use during pregnancy and co-occurring disadvantage.

1. Mainstream and Aboriginal community-controlled sector

Thank you.

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Lead investigator (Primary supervisor)

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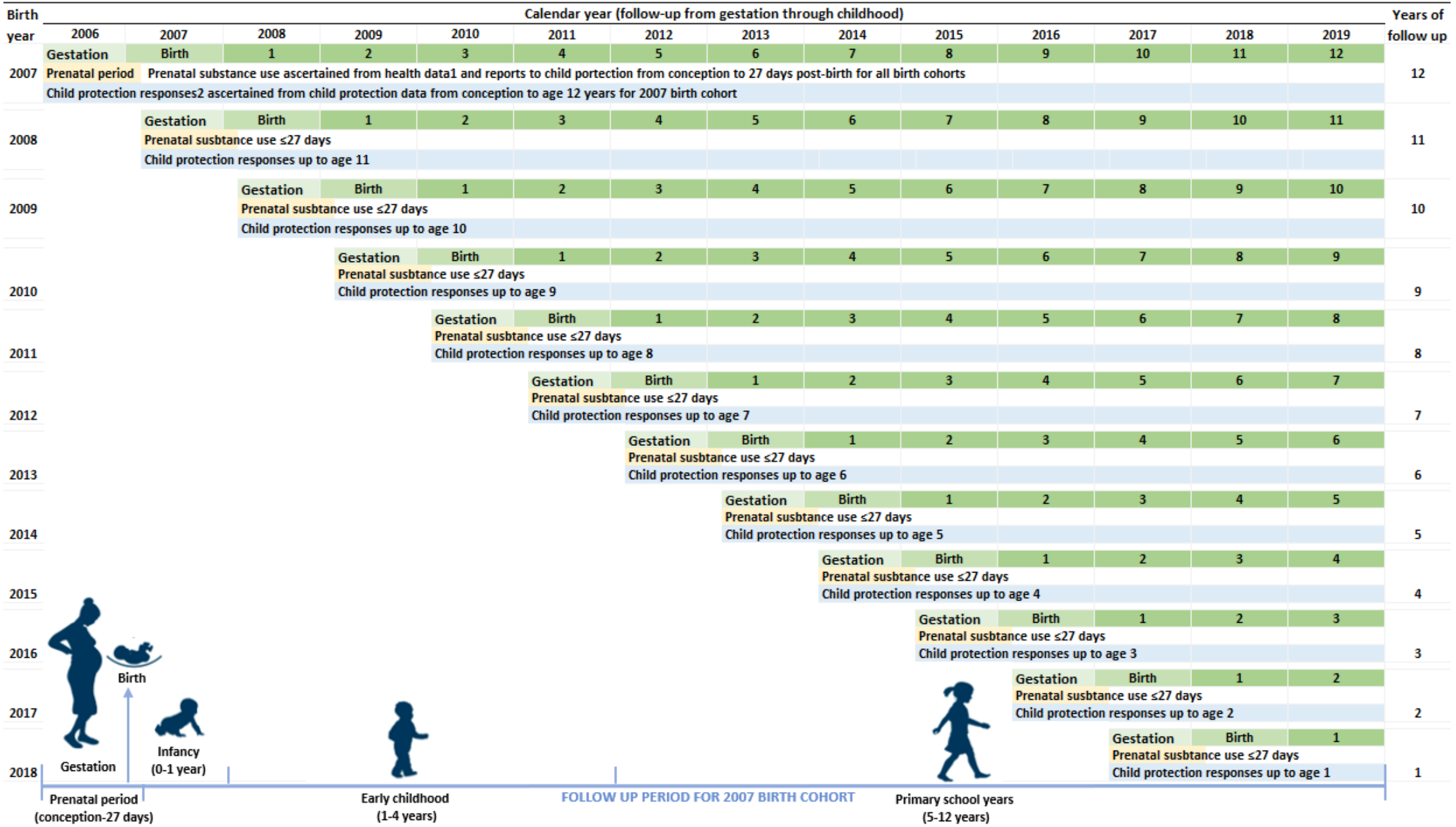
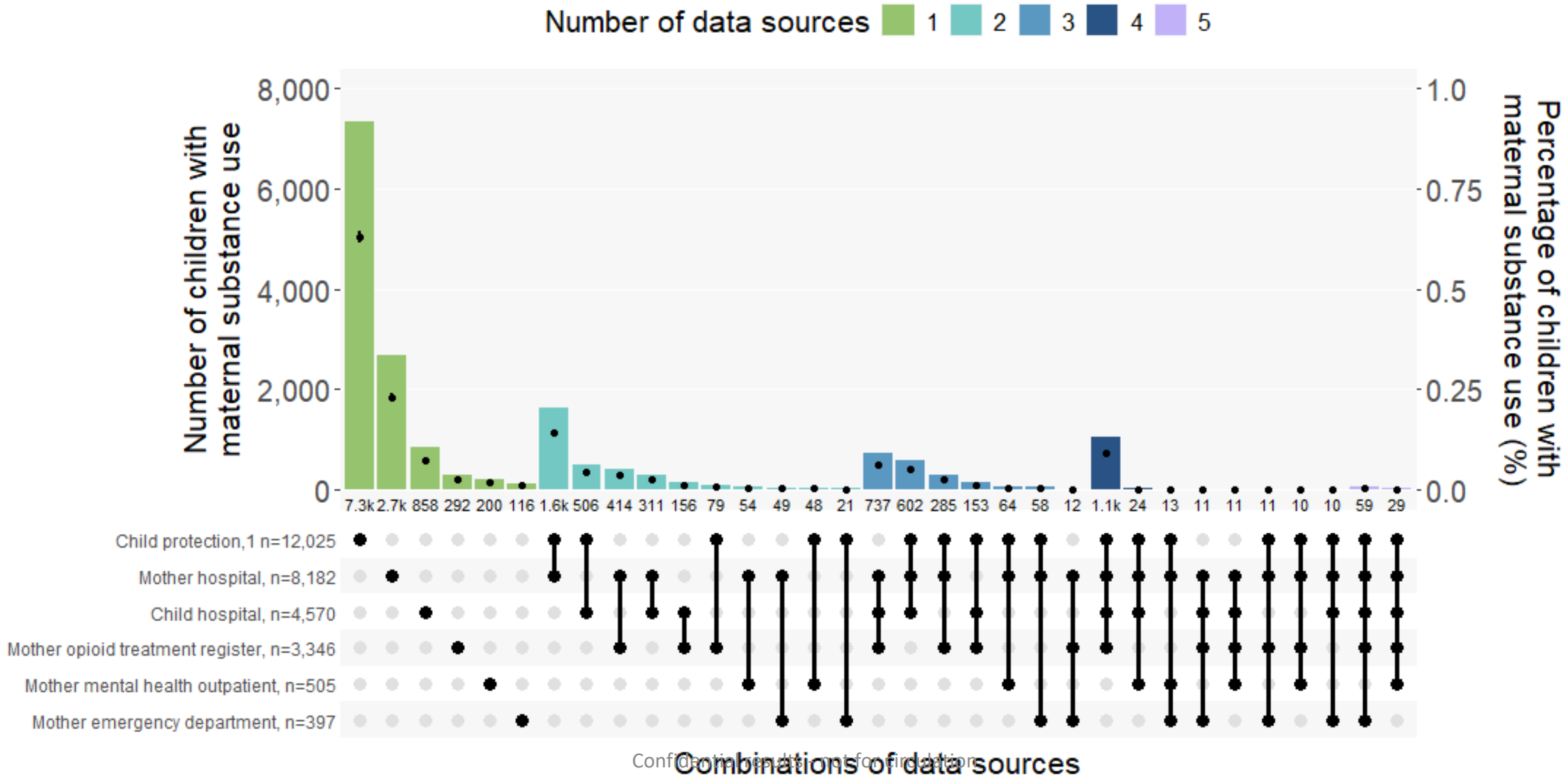
We thank the children and families of New South Wales (NSW) whose data are included in this study. We thank the NSW Centre for Health Record Linkage for managing and conducting the data linkage for the NSW Child E-Cohort Project. This study uses data from the NSW Ministry of Health, NSW Register of Births, Deaths and Marriages, and the NSW Department of Communities and Justice (DCJ). We acknowledge the input from the AH&MRC and AbSec. The findings and views reported in this study are those of the authors and should not be attributed to any agency or government department.

Additional slides



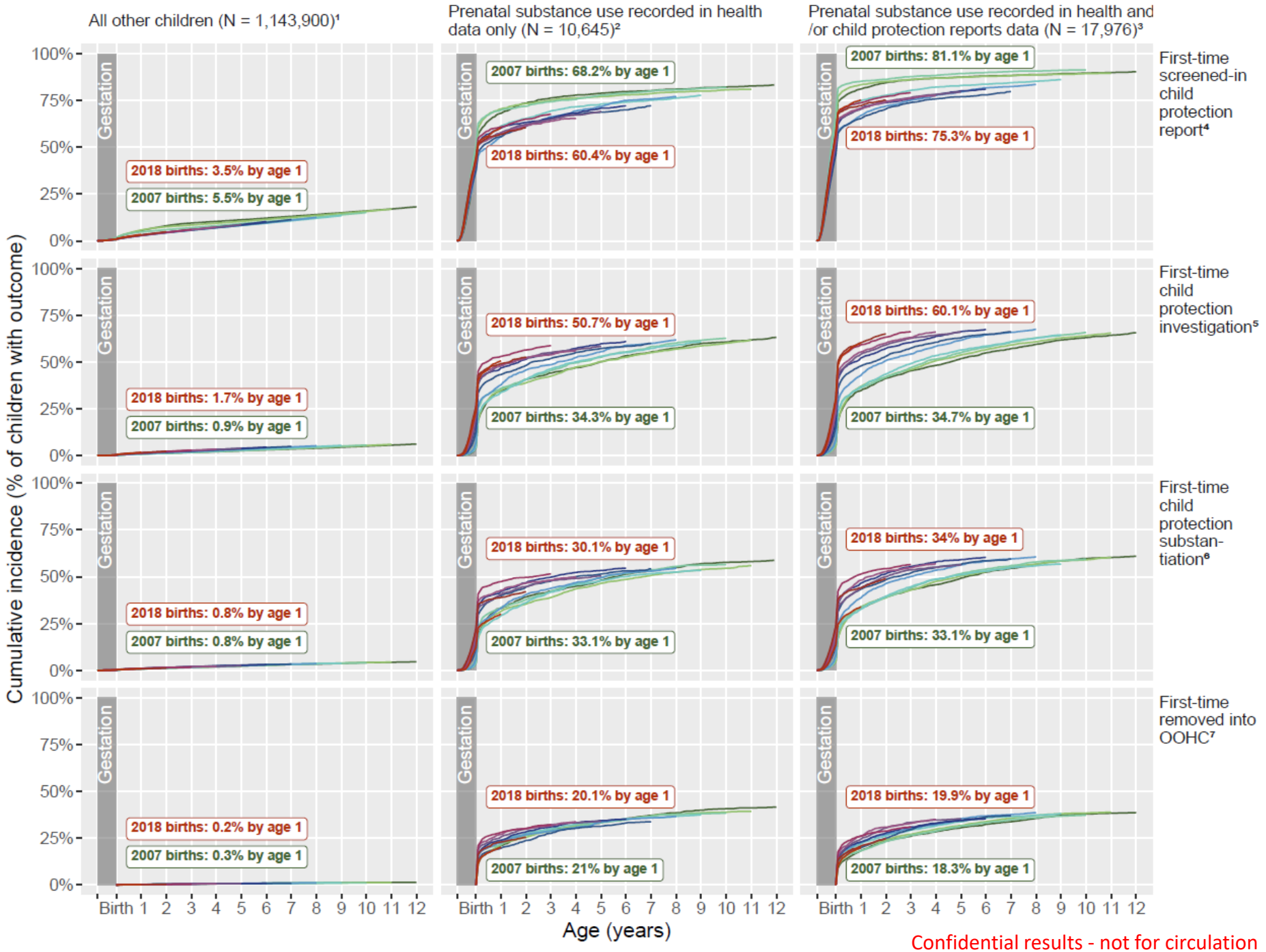
Most common types and combinations of data sources with maternal prenatal substance use recorded, for children born in NSW from 2007-2018 (n=1,161,876 children, 717,063 mothers)



Sensitivity analysis:

Child protection risk among children with prenatal substance use recorded in maternal and child health data only

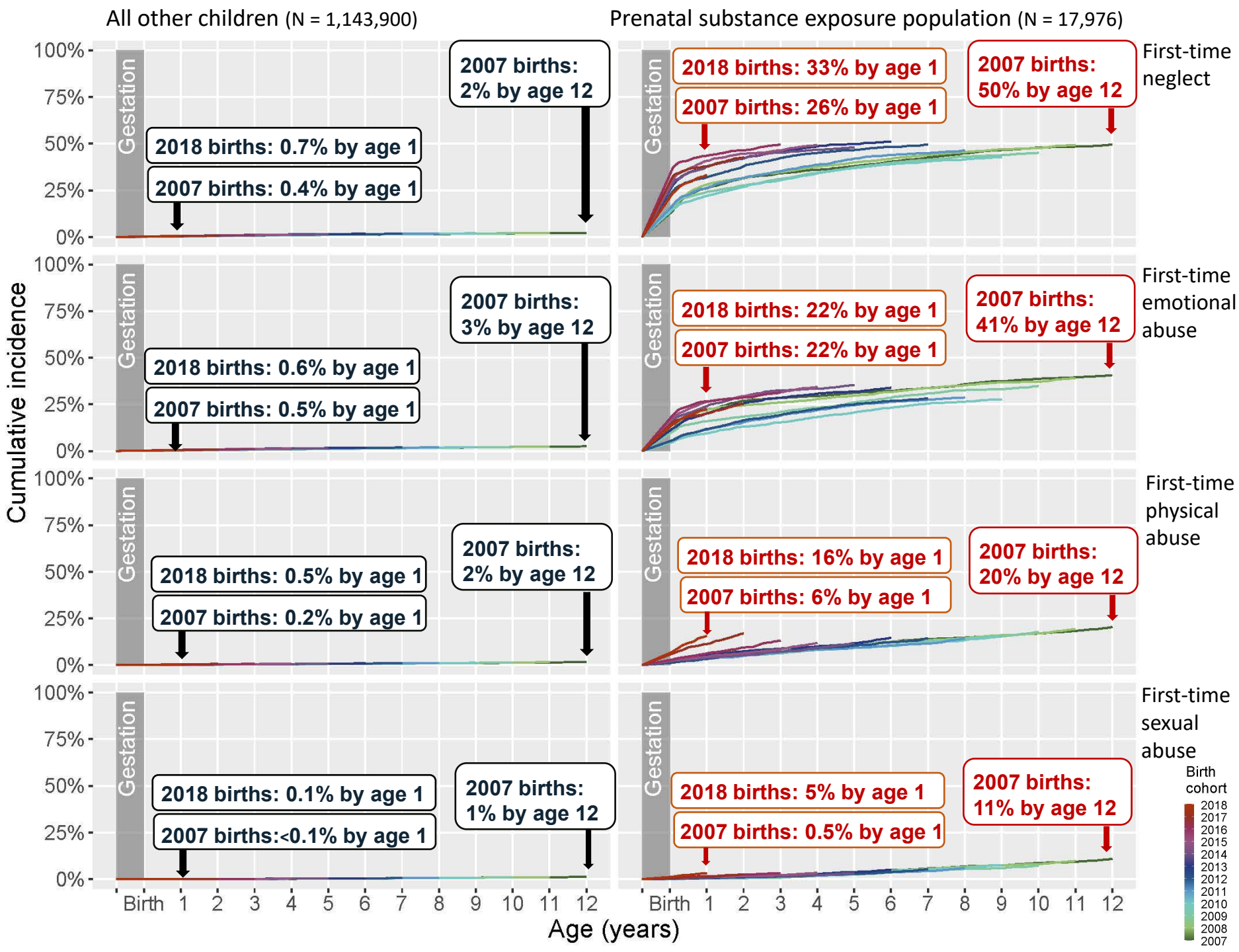
The risk of screened in reports were slightly lower among child with records only in



Cumulative incidence of maltreatment types by age 12

All child maltreatment types were higher among the prenatal substance use groups.

Neglect was the most common maltreatment type among the prenatal substance use population.

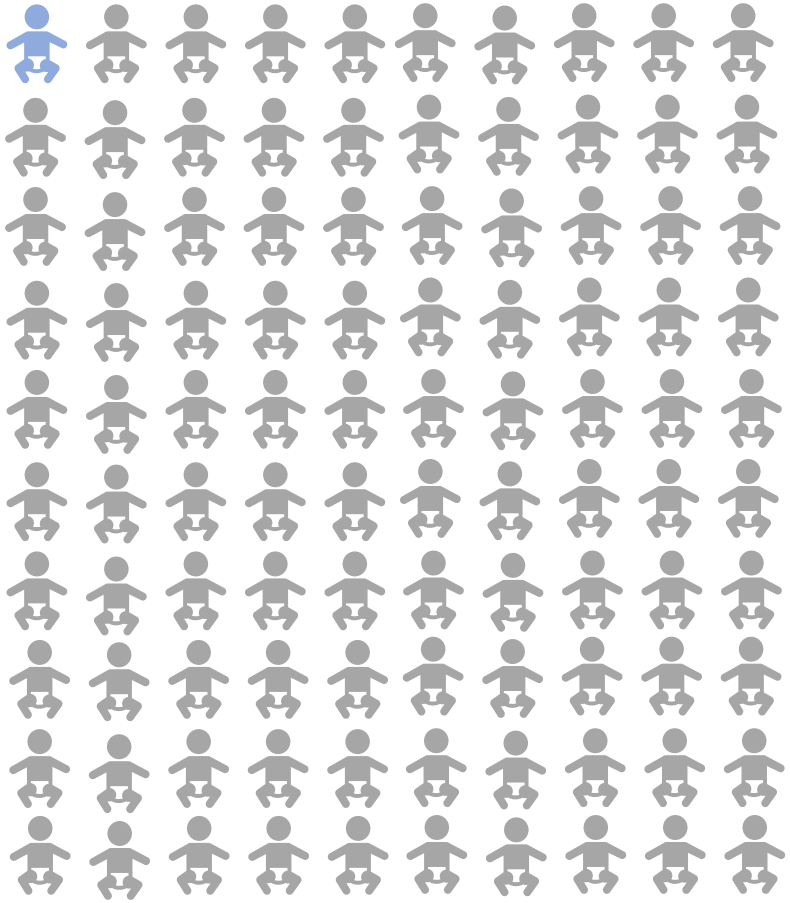


REPORTS SCREENED-IN
by **CHILD PROTECTION**
AT RISK OF
SIGNIFICANT HARM
among
ALL NSW CHILDREN

All other children

1 in 100 screened-in

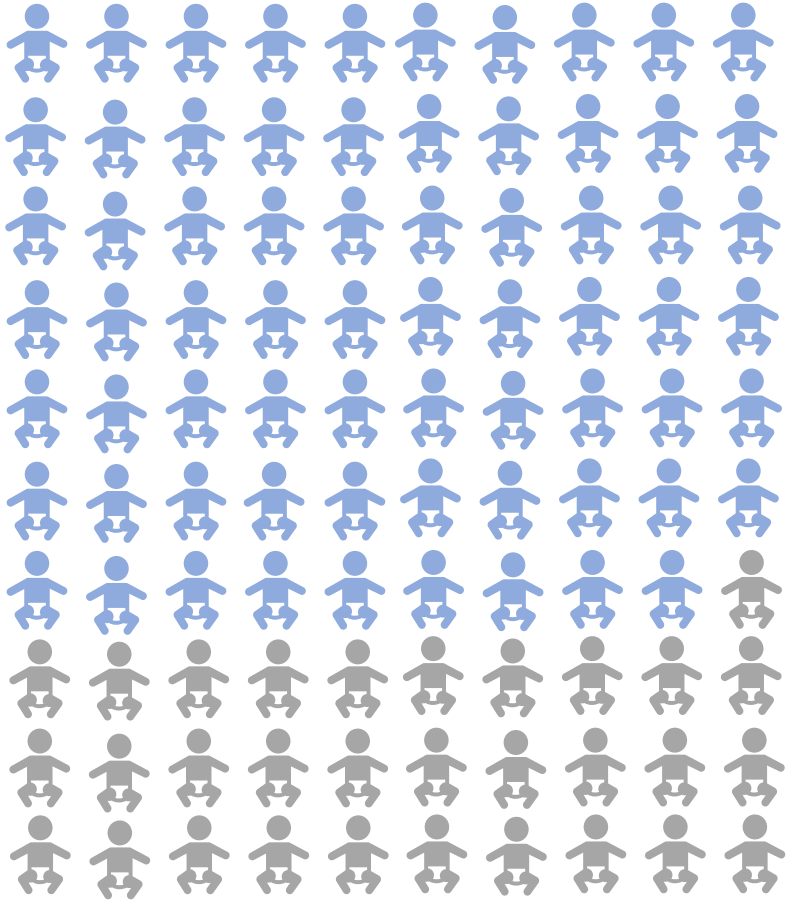
By 1 month post birth



Prenatal substance exposure

69 in 100 screened-in

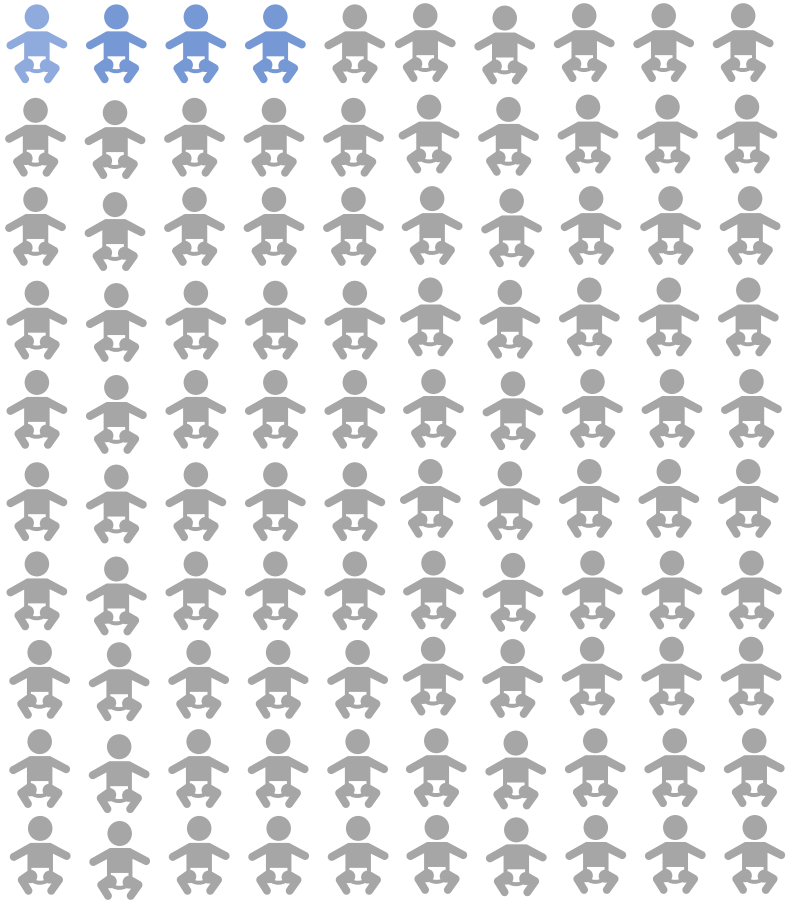
by 1 month post birth



REPORTS SCREENED-IN
by **CHILD PROTECTION**
AT RISK OF
SIGNIFICANT HARM
among
ALL NSW CHILDREN

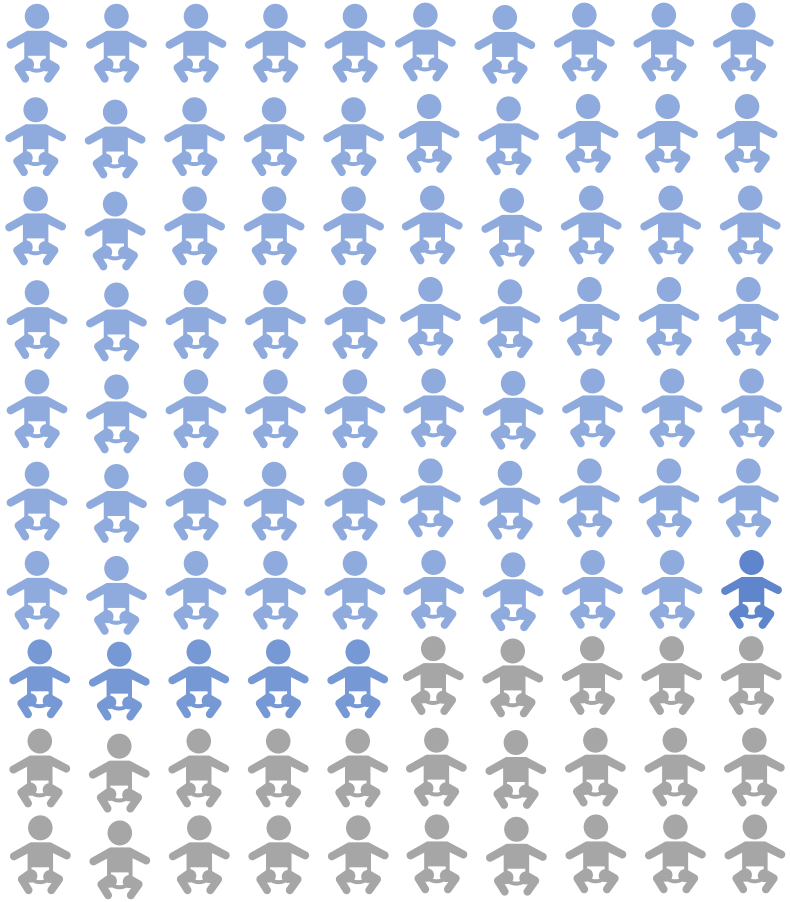
All other children

1 in 100 screened-in
by 27 days post-birth
4 in 100 by 1 year



Prenatal substance exposure

69 in 100 screened-in
by 27 days post-birth
75 in 100 by 1 year



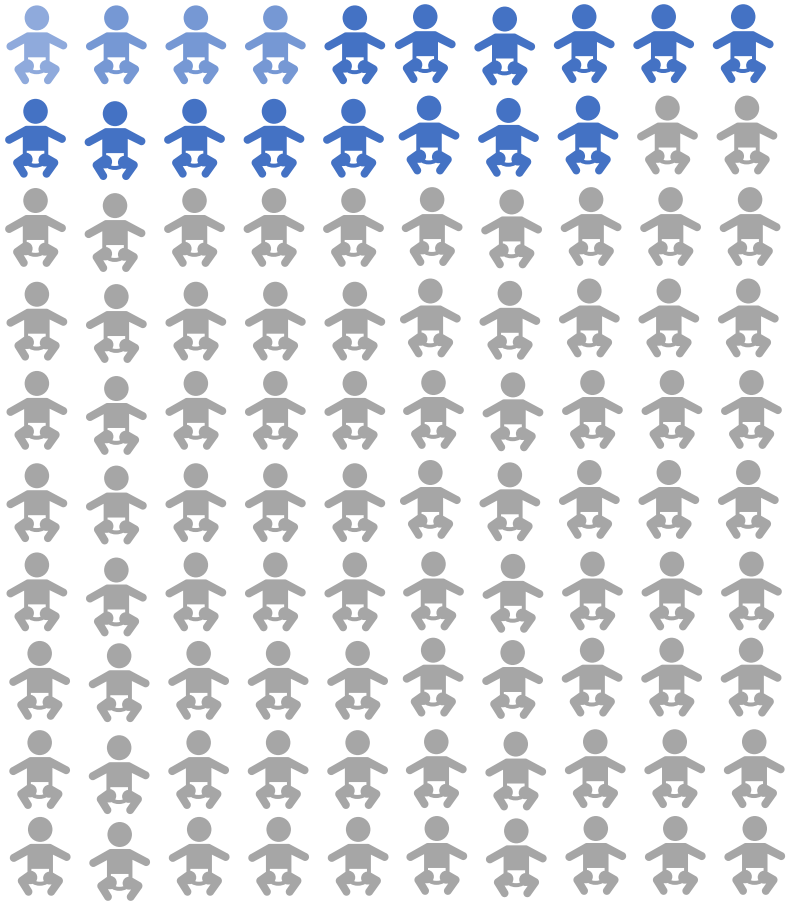
REPORTS SCREENED-IN
by **CHILD PROTECTION**
AT RISK OF
SIGNIFICANT HARM
among
ALL NSW CHILDREN

All other children

1 in 100 screened-in
by 27 days post-birth

4 in 100 by 1 year

18 in 100 by 12 years



Prenatal substance exposure

69 in 100 screened-in
by 27 days post-birth

75 in 100 by 1 year

90 in 100 by 12 years