

# **The NSW Child Development Study:** Achieving better mental health for maltreated children

Never Stand Still

Faculty of Medicine

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# BMJ Open New South Wales Child Development Study (NSW-CDS): an Australian multiagency, multigenerational, longitudinal record linkage study

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## ABSTRACT

**Purpose:** The initial aim of this multiagency, multigenerational record linkage study is to identify childhood profiles of developmental vulnerability and resilience, and to identify the determinants of these profiles. The eventual aim is to identify risk and protective factors for later childhood-onset and adolescent-onset mental health problems, and other adverse social outcomes, using subsequent waves of record linkage. The research will assist in informing the development of early life interventions and strategies.

## Strengths and limitations of this study

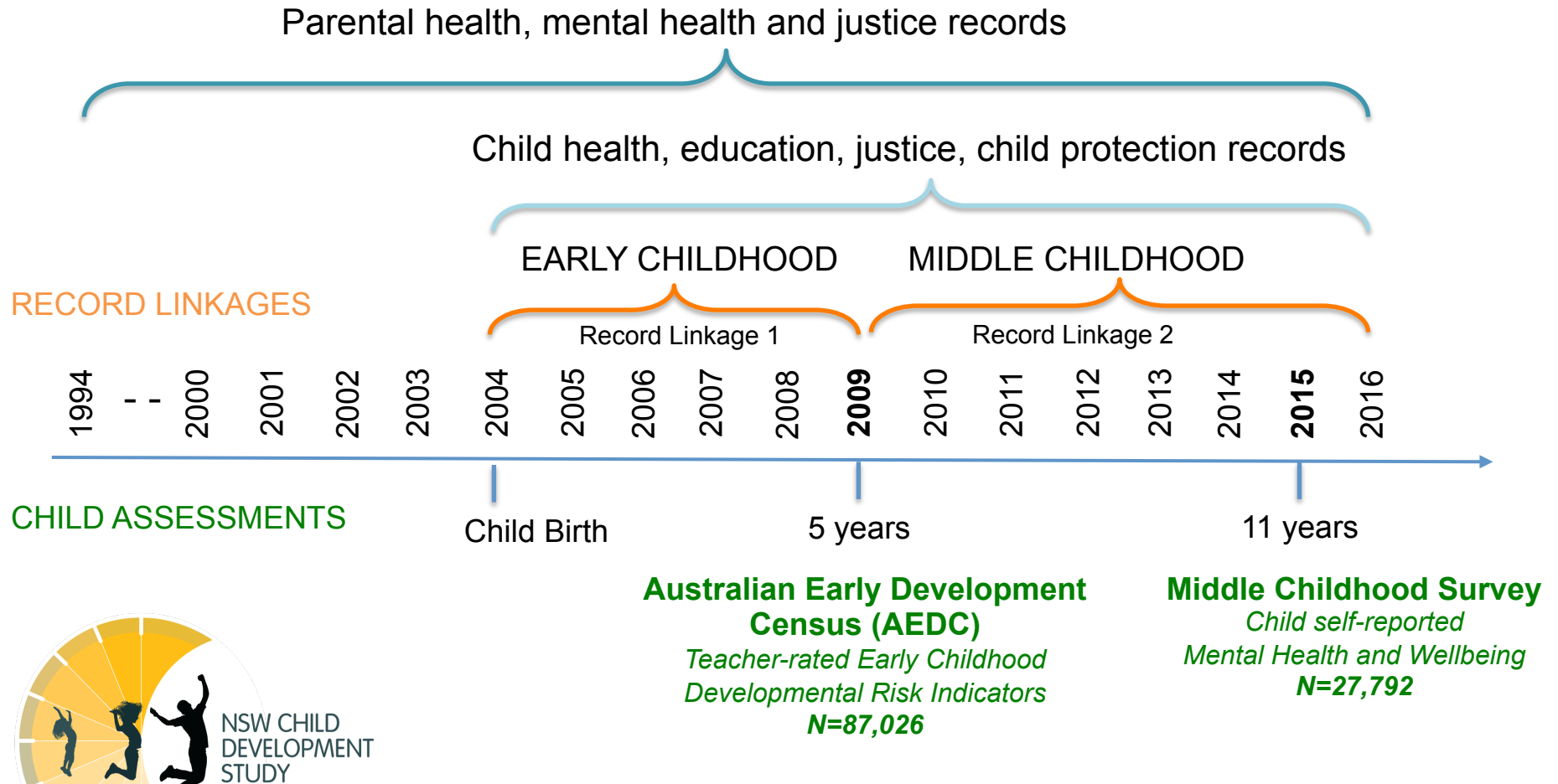
- The sample is a multigenerational, population cohort of approximately 87 000 Australian children, representative of 99% of children in the state of New South Wales entering their first year of formal education in 2009.
- The use of record linkage methodology to combine multiagency administrative data collections limits selection and participation bias and



# Mental Health And Trauma exposure

- **Childhood maltreatment is a significant risk factor for all mental disorders and pre-morbid childhood psychopathology**
  - 3-fold increase in odds of developing psychosis after childhood trauma
  - Early life social, emotional and cognitive problems are antecedents of all types of adult mental disorders
- **Trauma affects the development of biological systems**
  - The brain is rapidly developing in early life and is highly sensitive to the influence of stress
  - Stress-response systems (e.g., HPA-feedback loops) can become oversensitive (i.e., toxic cortisol levels)
  - Immune activation and inflammatory responses are also associated with severe stress and mental disorders

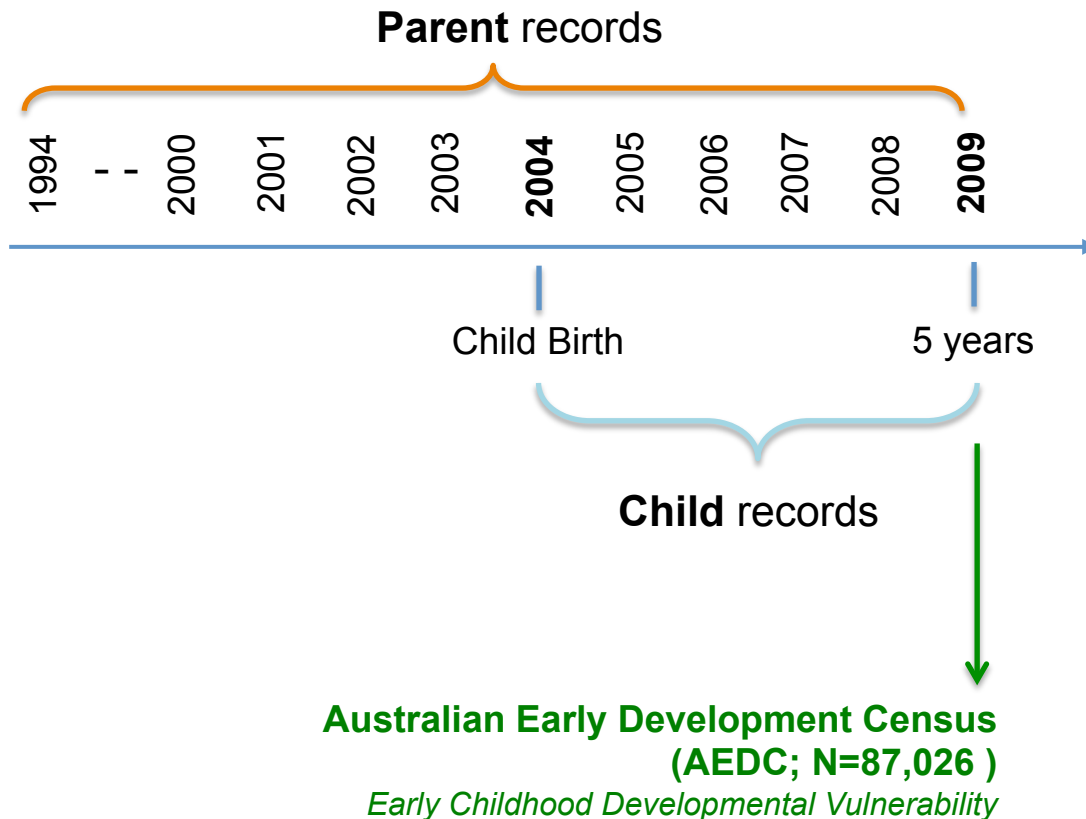
# The NSW Child Development Study



Wave 2 linkage brought together 17 record sets containing more than 1500 variables, and over 3.4 million records, for 91,635 children and their parents (parental linkage only when child born in NSW – around 80% of child cohort)



# NSW CDS Record Linkage 1 (N=87,026)



## Parent Records (1994-2009)

### NSW Health

- Admitted Patients Data
- Mental Health Ambulatory
- Emergency Department Data
- Perinatal Data
- Births, Deaths, Marriages

### Bureau of Crime Statistics And Reporting

- Criminal Court Charges

## Child Records (birth-2009)

### NSW Health

- Perinatal Data
- Admitted Patients Data
- Emergency Department Data
- Births, Deaths, Marriages

### Department of Education

- Best Start Kindergarten Assessment
- Australian Early Development Census

### NSW Family and Community Services

- Child Protection (substantiated reports)
- Out of Home Care

**Latent Class Analysis** of 16 dichotomous sub-domain AEDC indicators (conducted using PROC LCA in SAS) was used to determine latent classes of children.

AEDC Domain	AEDC Subdomain	% Vulnerable (N)
Social Competence	1. Overall social competence	5.5 (3,767)
	2. Responsibility and respect	8.5 (5,869)
	3. Approaches to learning	7.6 (5,209)
	4. Readiness to explore new things	8.5 (5,856)
Emotional Maturity	5. Prosocial and helping behaviour	7.4 (4,985)
	6. Anxious and fearful behaviour	10.7 (7,326)
	7. Aggressive behaviour	8.3 (5,729)
	8. Hyperactive and inattentive behaviour	10.5 (7,231)
Physical Health and Wellbeing	9. Physical readiness for school day	8.3 (5,734)
	10. Physical independence	7.3 (5,046)
	11. Gross and fine motor skills	6.3 (4,335)
Language and Cognitive Skills	12. Basic literacy	5.9 (4,086)
	13. Interest in literacy/numeracy and memory	6.0 (4,104)
	14. Advanced literacy	4.7 (3,203)
	15. Basic numeracy	8.6 (5,916)
Communication	16. Communication and General Knowledge	8.3 (5,689)

# Latent profiles of early developmental vulnerabilities in a New South Wales child population at age 5 years

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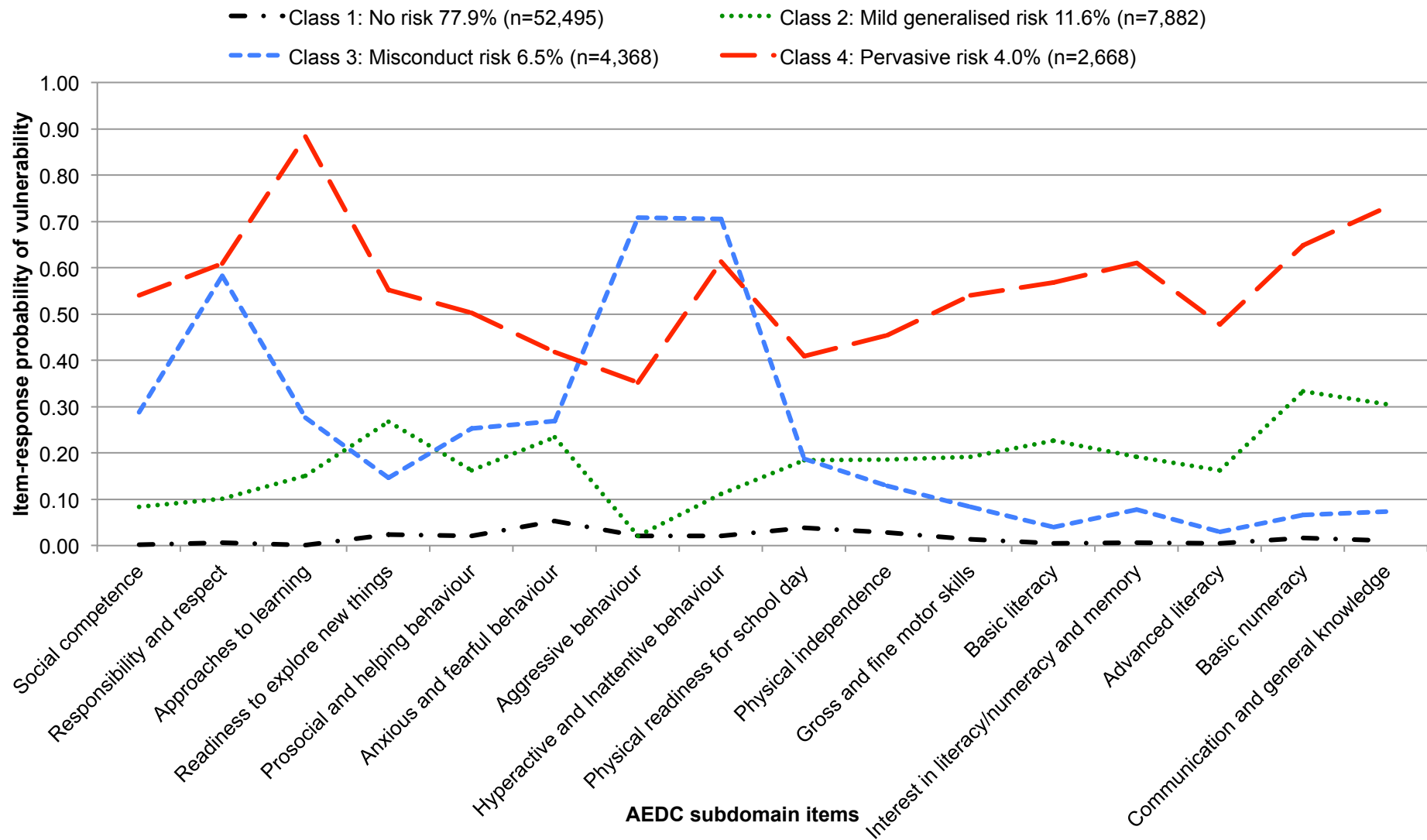
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Kimberlie Dean<sup>1,2,5</sup>, Maina Kariuki<sup>1,2</sup>, Felicity Harris<sup>1,2</sup>,  
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and Vaughan J Carr<sup>1,2,9</sup>

## Abstract

**Objective:** Detecting the early emergence of childhood risk for adult mental disorders may lead to interventions for reducing subsequent burden of these disorders. We set out to determine classes of children who may be at risk for later mental disorder on the basis of early patterns of development in a population cohort and associated exposures gleaned from linked administrative records obtained within the New South Wales Child Development Study.

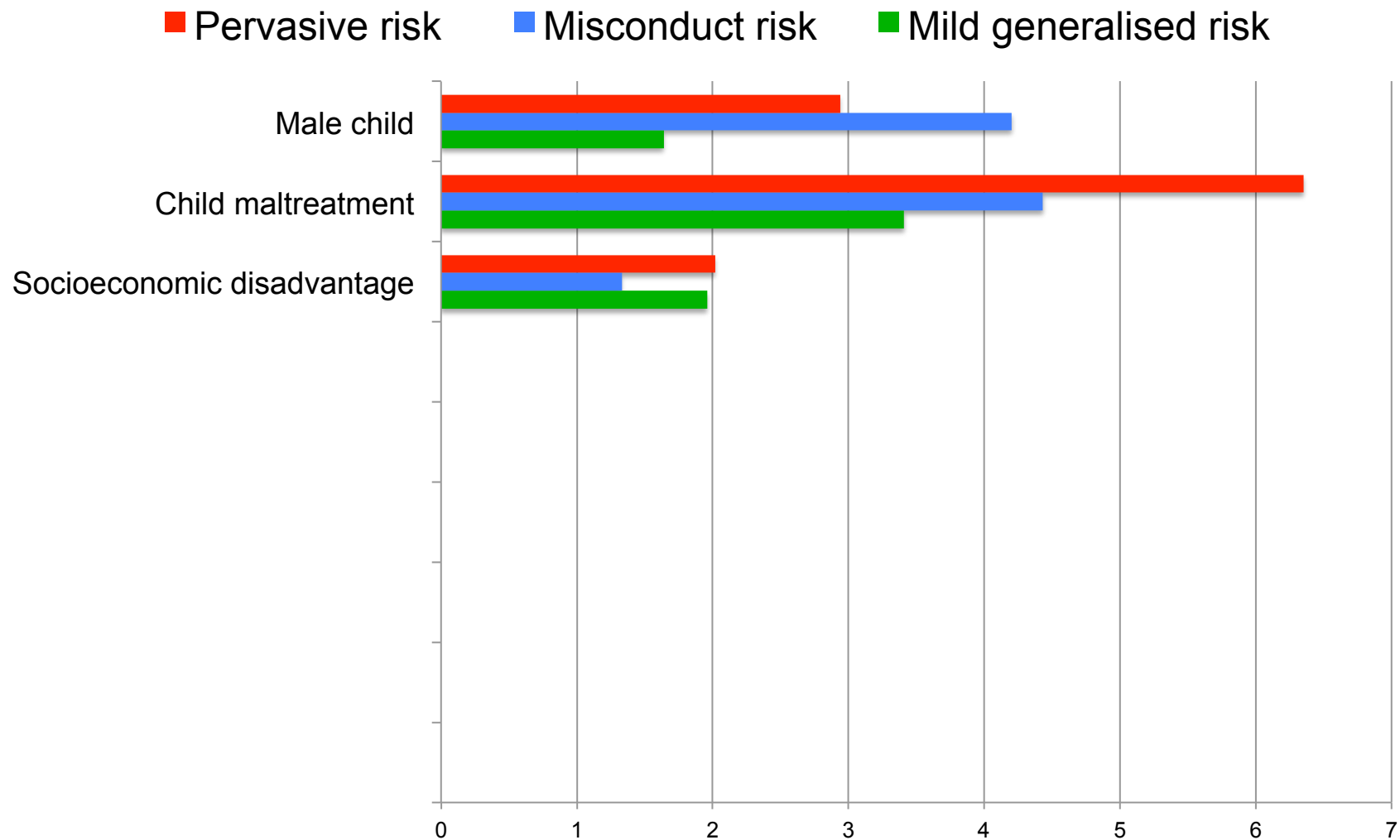
**Methods:** Intergenerational records from government departments of health, education, justice and child protection were linked with the Australian Early Development Census for a state population cohort of 67,353 children approximately 5 years of age. We used binary data from 16 subdomains of the Australian Early Development Census to determine classes of children with shared patterns of Australian Early Development Census-defined vulnerability using latent class analysis. Covariates, which included demographic features (sex, socioeconomic status) and exposure to child maltreatment, parental mental illness, parental criminal offending and perinatal adversities (i.e. birth complications, smoking during pregnancy, low birth weight), were examined hierarchically within latent class analysis models.

# Early childhood profiles of developmental vulnerability on the AEDC

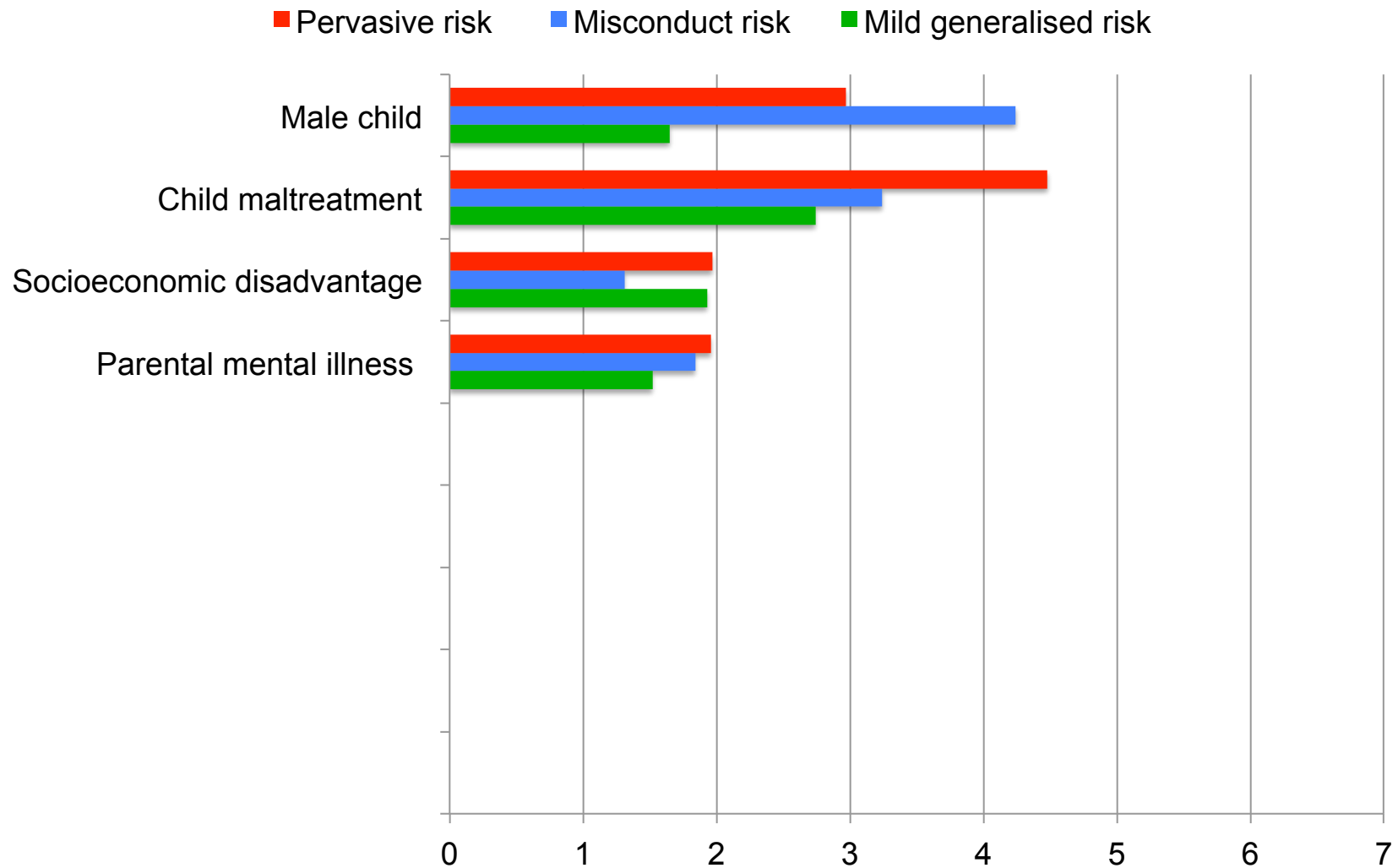


**Latent Class Analysis** of 16 dichotomous sub-domain AEDC indicators (conducted using PROC LCA in SAS)

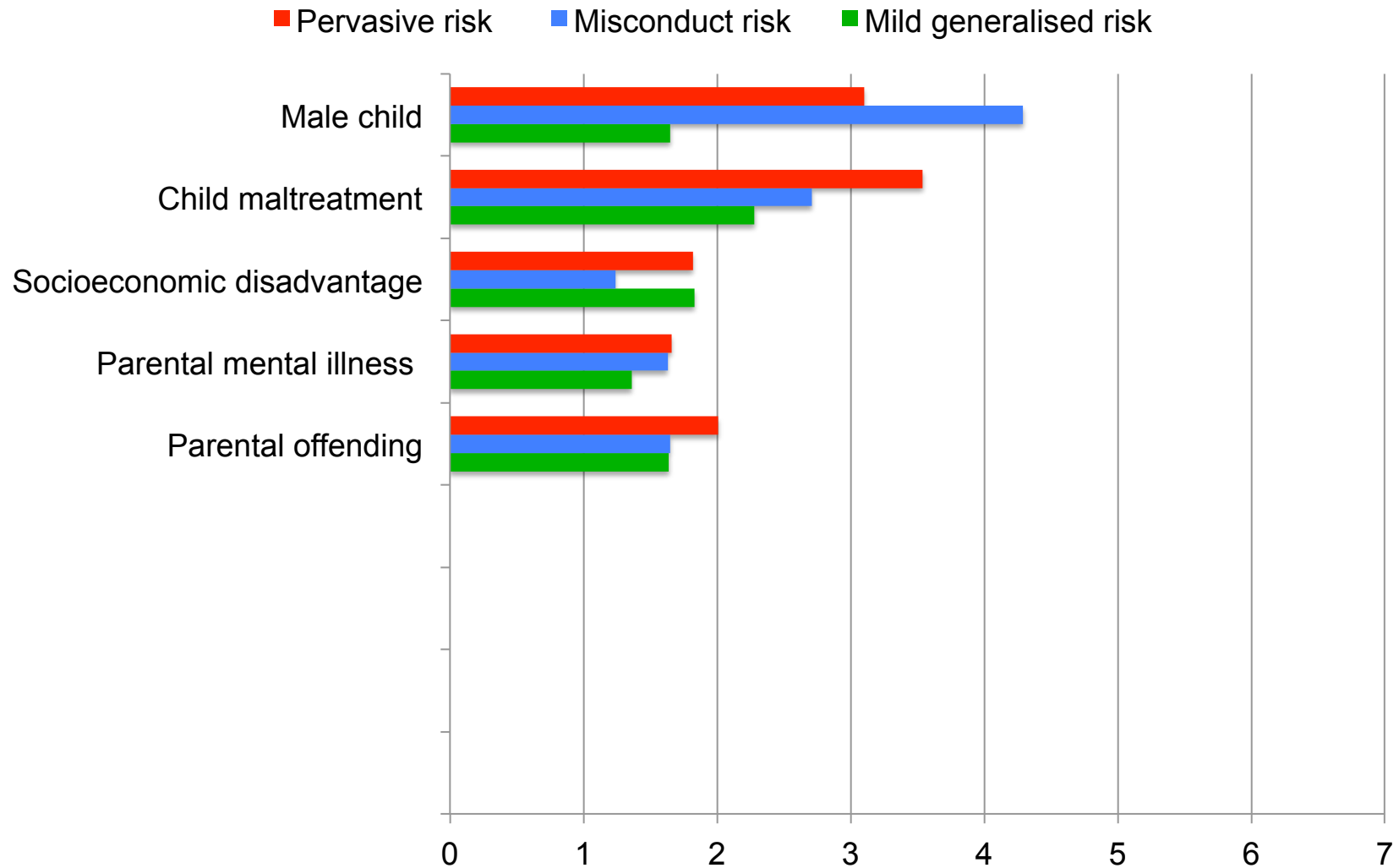




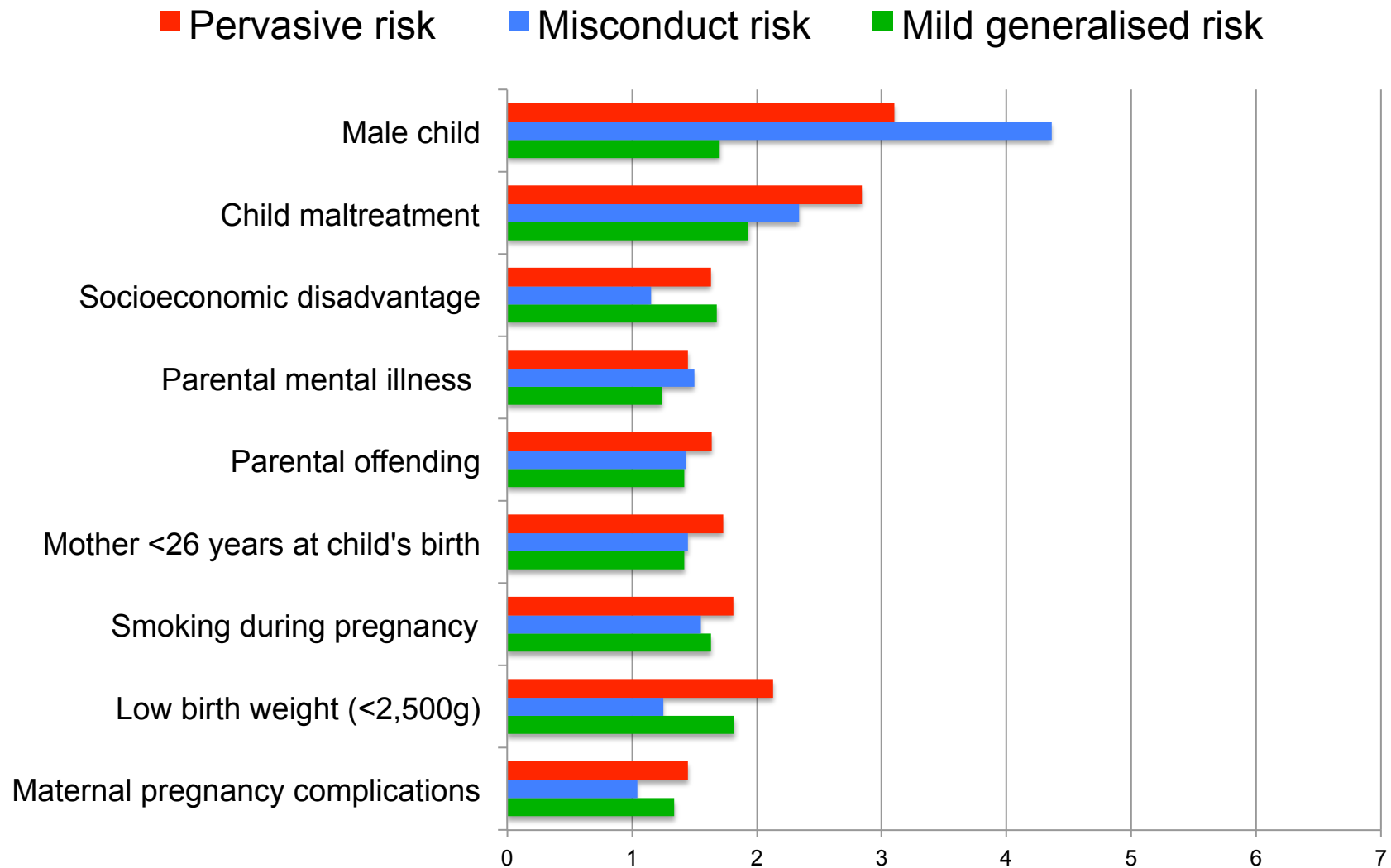
Odds of various risk exposures among vulnerable classes, relative to the non-vulnerable group: MODEL 1



Odds of various risk exposures among vulnerable classes, relative to the non-vulnerable group: MODEL 2




Odds of various risk exposures among vulnerable classes, relative to the non-vulnerable group: MODEL 3



Odds of various risk exposures among vulnerable classes, relative to the non-vulnerable group: MODEL 4

Empirical Report

## Childhood Maltreatment and Early Developmental Vulnerabilities at Age 5 Years

Melissa J. Green , Stacy Tzoumakis, Brooke McIntyre, Maina Kariuki, Kristin R. Laurens, Kimberlie Dean, Marilyn Chilvers, Felicity Harris, Merran Butler, Sally A. Brinkman, Vaughan J. Carr

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Early View



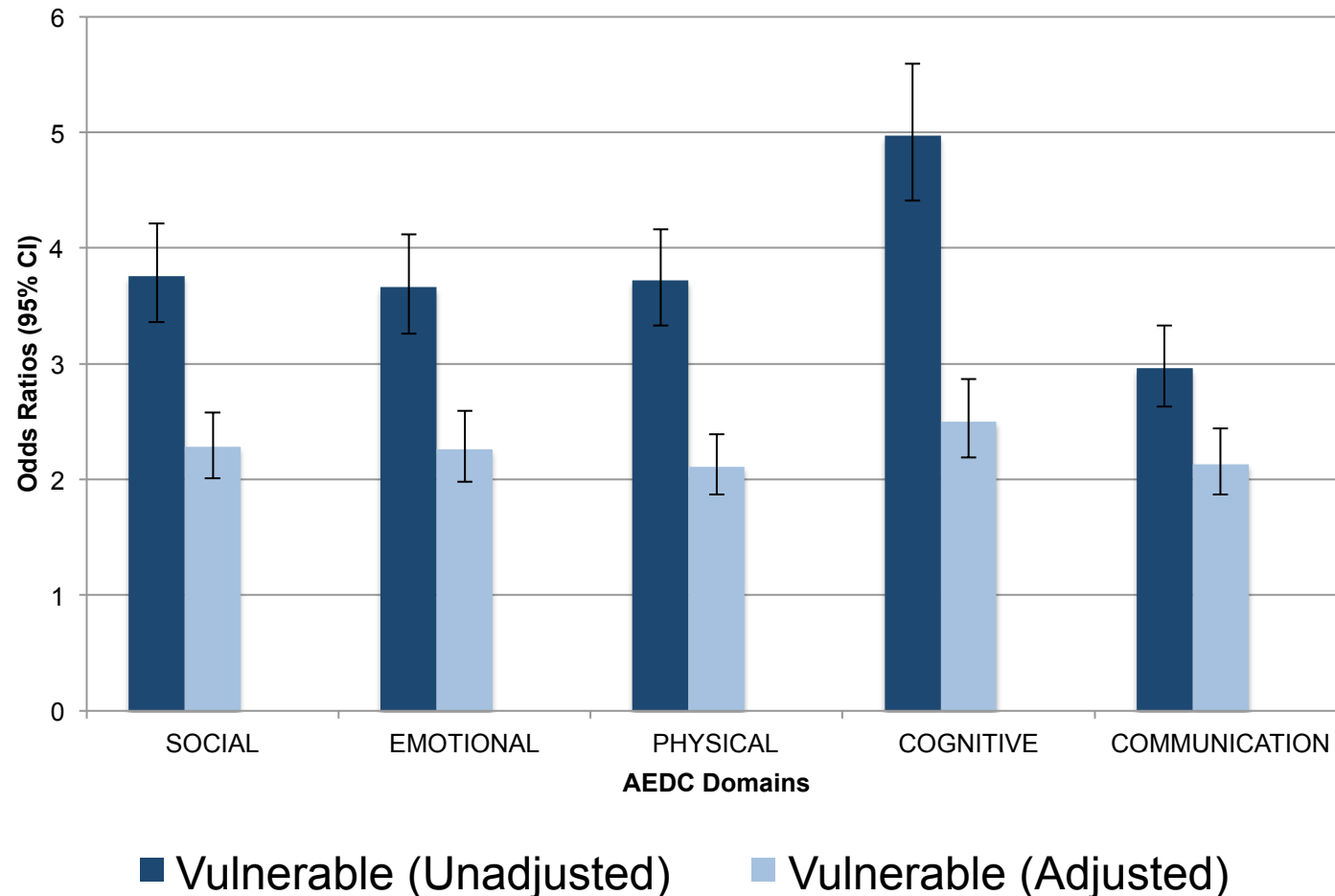
[Browse Early View Articles](#)  
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in an issue

## Selected domain descriptives from the NSW AEDC dataset (n= 87 026)

Domain	Developmentally vulnerable	Developmentally at risk	On track	
	<10 <sup>th</sup> percentile (%)	11 <sup>th</sup> -25 <sup>th</sup> percentile (%)	26 <sup>th</sup> -50 <sup>th</sup> percentile (%)	>50 <sup>th</sup> percentile (%)
Physical health and wellbeing	8.6	12.9	21.3	57.2
Social competence	8.8	14.0	23.0	54.2
Emotional maturity	7.4	14.3	24.7	53.6
Language and cognition	5.9	9.5	19.4	65.2
Communication skills and general knowledge	9.2	15.8	19.2	55.9

Percentiles based on National AEDC data, i.e. created on basis of all children who participated in the AEDC nationally.

# Likelihood of AEDC vulnerability associated with ANY substantiated (ROSH) reports of childhood maltreatment

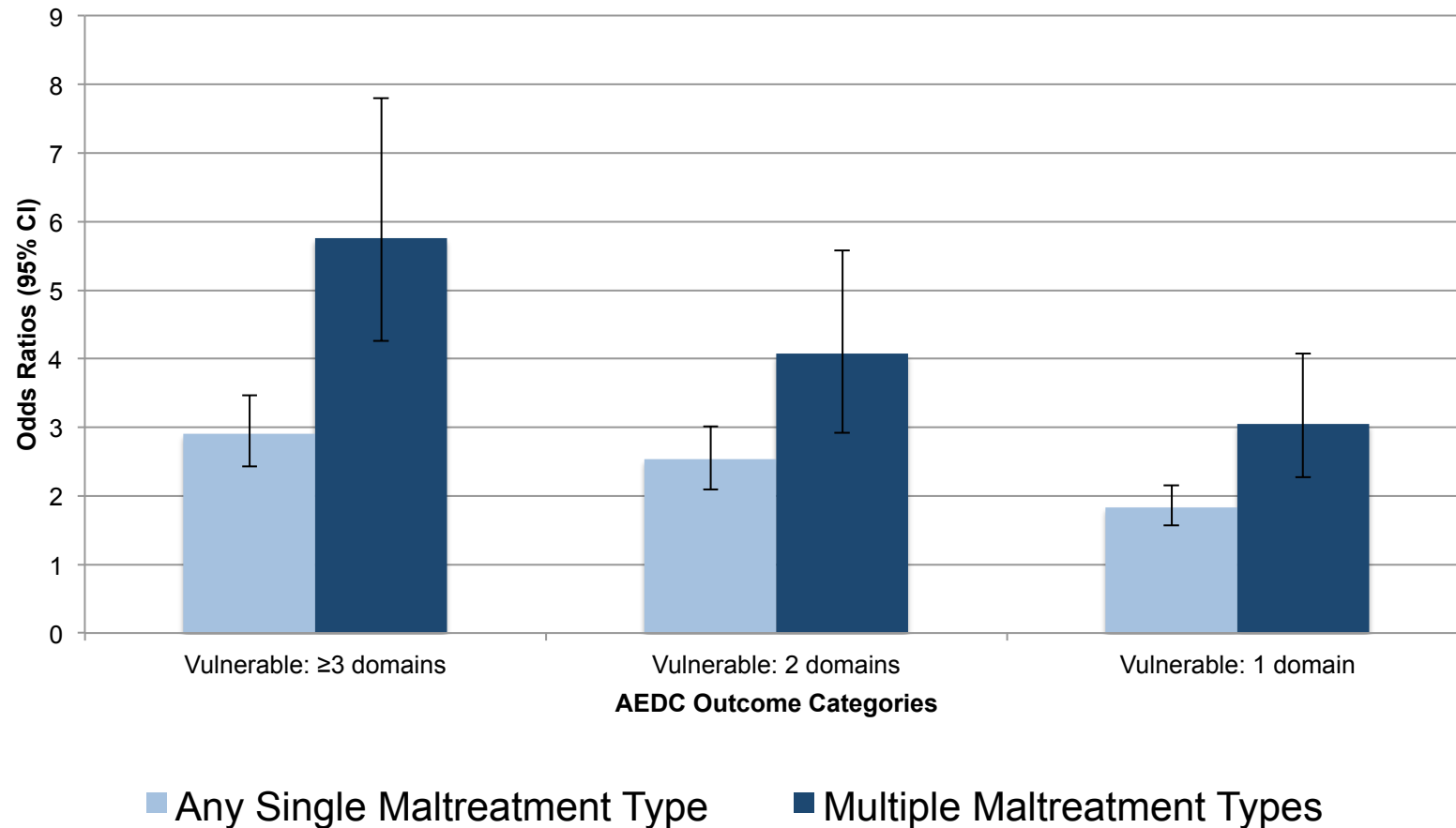


\*Adjusted models include: child's sex, ESL, low SES, maternal age <25 years, pre-term birth (<37 weeks), prenatal smoking, parental mental illness, child infection



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# Adjusted likelihood of AEDC vulnerabilities for children exposed to single and MULTIPLE maltreatment types associated with substantiated ROSH reports



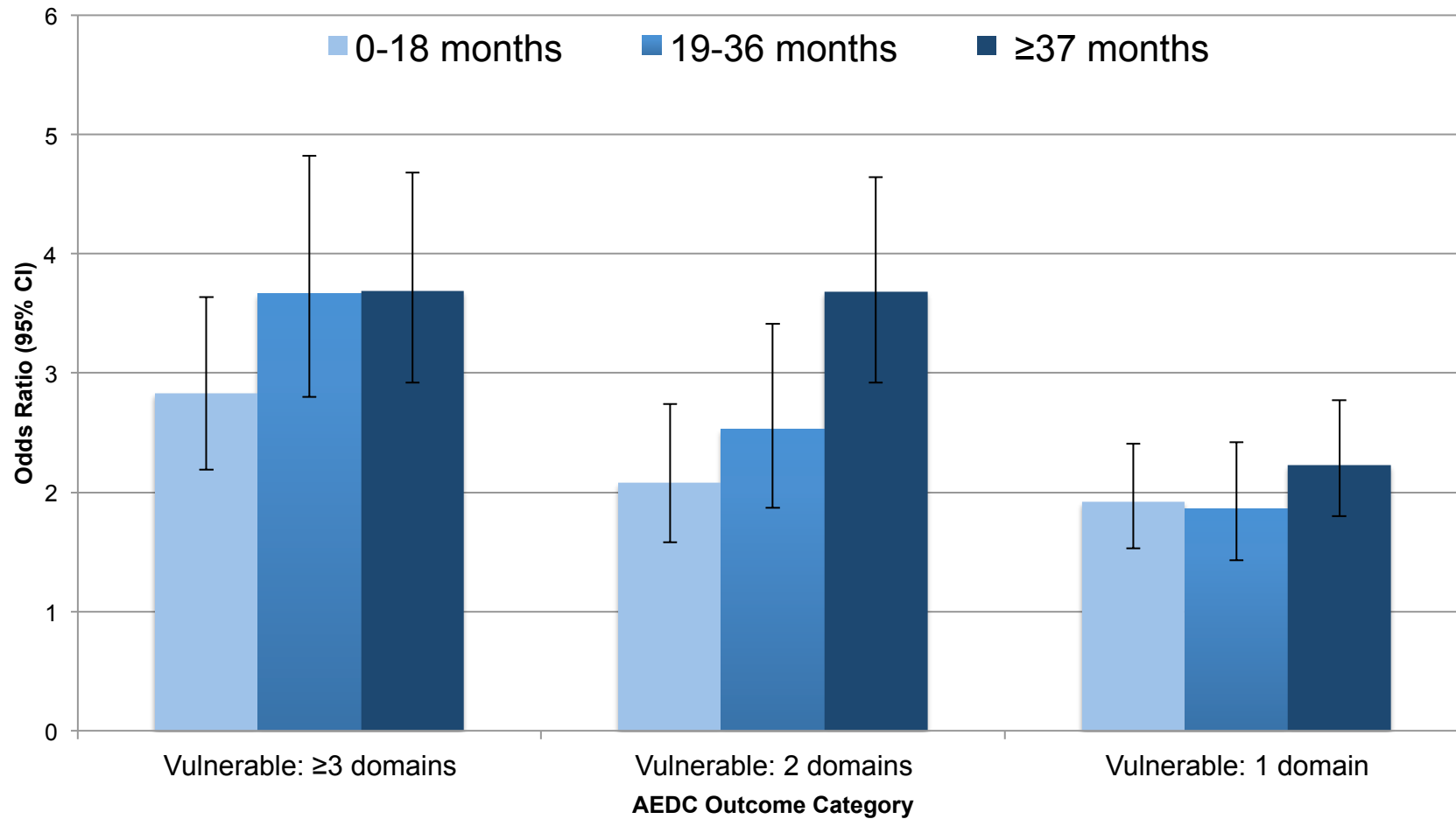
\*Adjusted models include: child's sex, ESL, low SES, maternal age <25 years, pre-term birth (<37 weeks), prenatal smoking, parental mental illness, child infection



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# Adjusted likelihood of AEDC vulnerability according to the TIMING of first substantiated maltreatment (ROSH) report



\*Adjusted models include: child's sex, ESL, low SES, maternal age <25 years, pre-term birth (<37 weeks), prenatal smoking, parental mental illness, child infection

# How important is this?

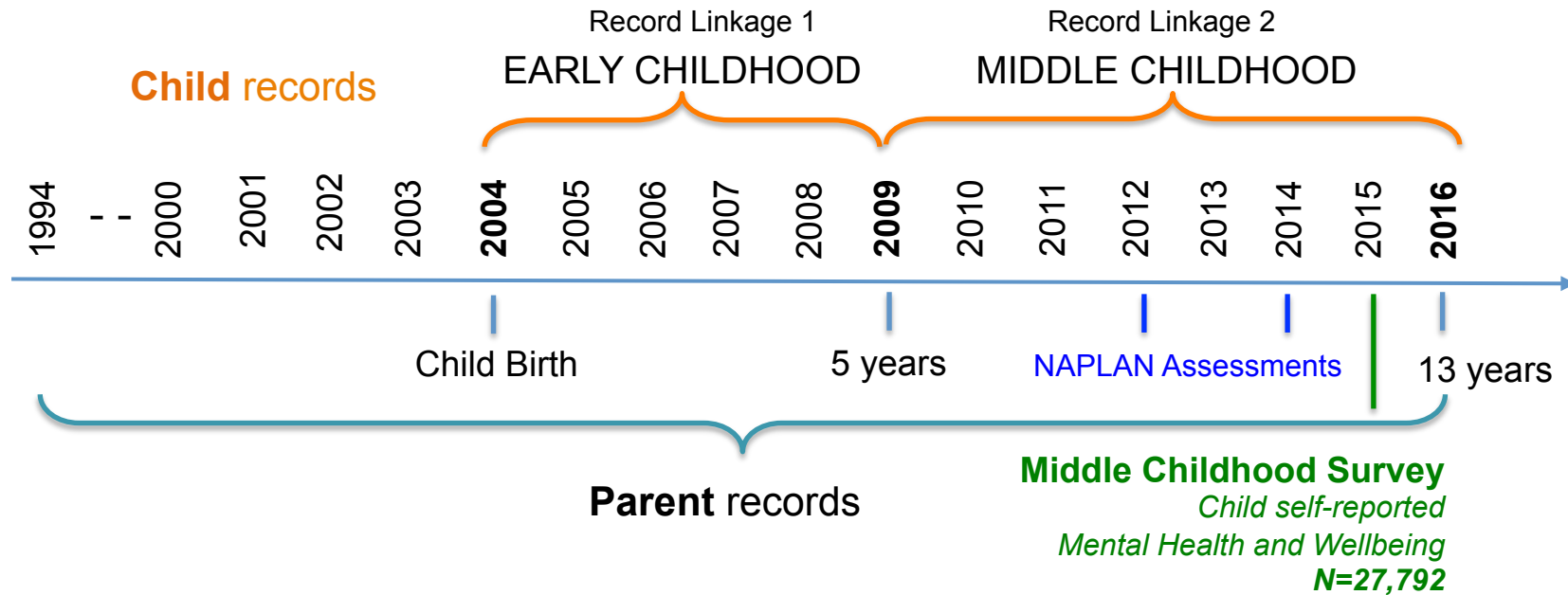
Social and emotional development in these early years of life provide building blocks for higher order social cognitive skills that facilitate relationships, vocational achievement, etc.

Early signs of delayed social, emotional and cognitive development are known antecedents of the most severe mental disorder disorders

**Early detection of these very high-risk children for targeted interventions could reduce the likelihood of poor mental health outcomes for maltreated children**

**WE ARE ALREADY SEEING HIGH RATES OF MENTAL HEALTH AT AGE 13 YEARS IN THESE MALTREATED CHILDREN (Linkage 2)**

# Record Linkage 2 (N=91,635)



## Cross-sectional Assessments

Age 5: Australian Early Development Census (AEDC)

**Age 12: Middle Childhood Survey (MCS)**

## NSW Department of Education

Best Start Kindergarten Assessment,

**National Literacy and Numeracy Assessments (NAPLAN)**

## NSW Family and Community Services

Child Protection (substantiated reports)

Out of Home Care

## NSW Health

Admitted Patients Data,

**Mental Health Ambulatory Data**

Emergency Department Data

Perinatal Data,

Births, Deaths.

## NSW Family and Community Services

Child Protection (**all levels of reports**) and OOHC

## NSW Police

**Victimisation and reporting contacts**



# NSW CDS (Wave 2) Linkage

Total Child Cohort (N=91,635)

AEDC sub-cohort (N=87,037)

MCS sub-cohort (N=27,792)

AEDC only  
(N=63,843)

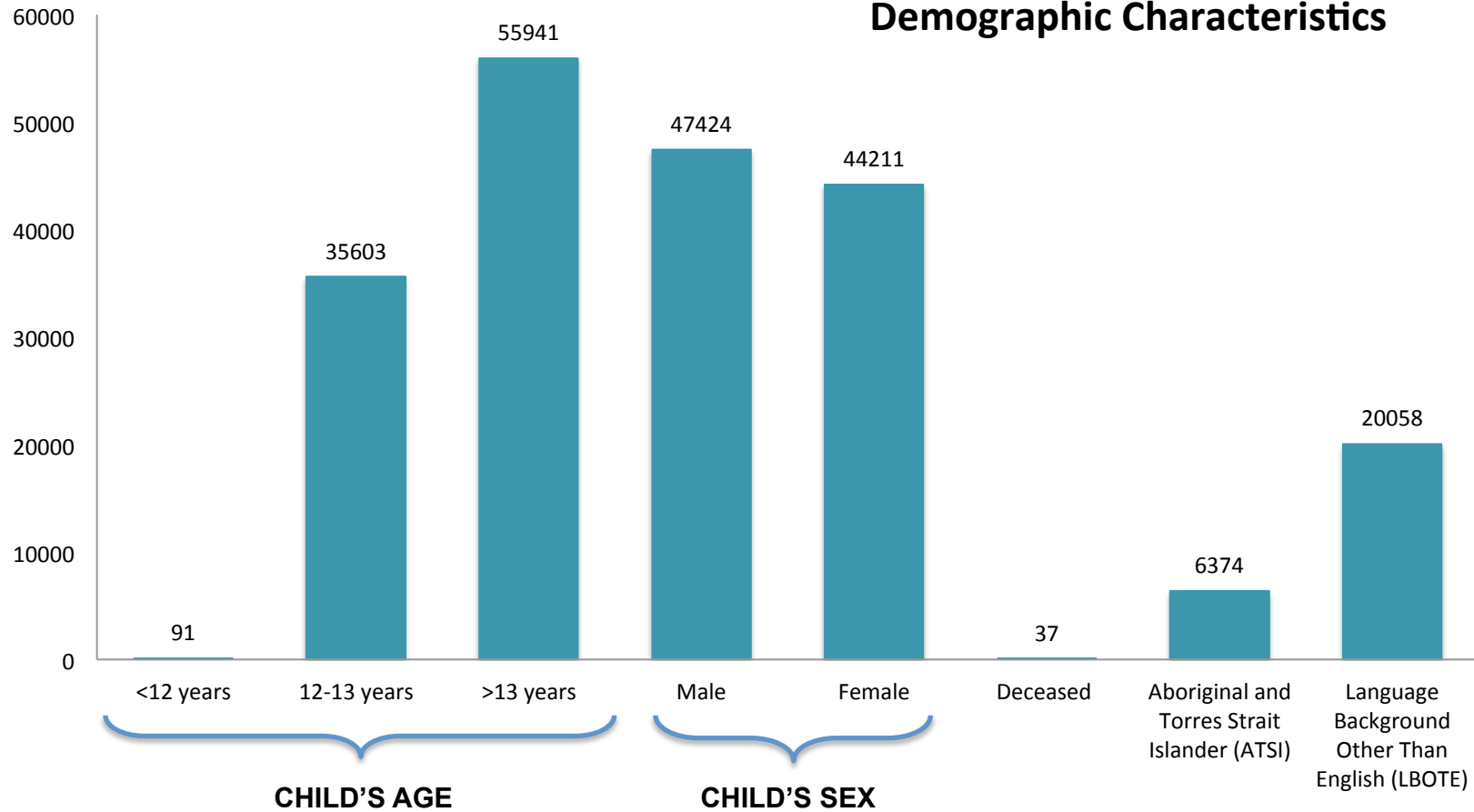
AEDC + MCS  
(N=23,194)

MCS only  
(N=4,598)



# NSW CDS (Wave 2) Linkage

## Child Cohort (N=91,635) Demographic Characteristics





Australian Government  
National Health and  
Medical Research Council

N H M R C

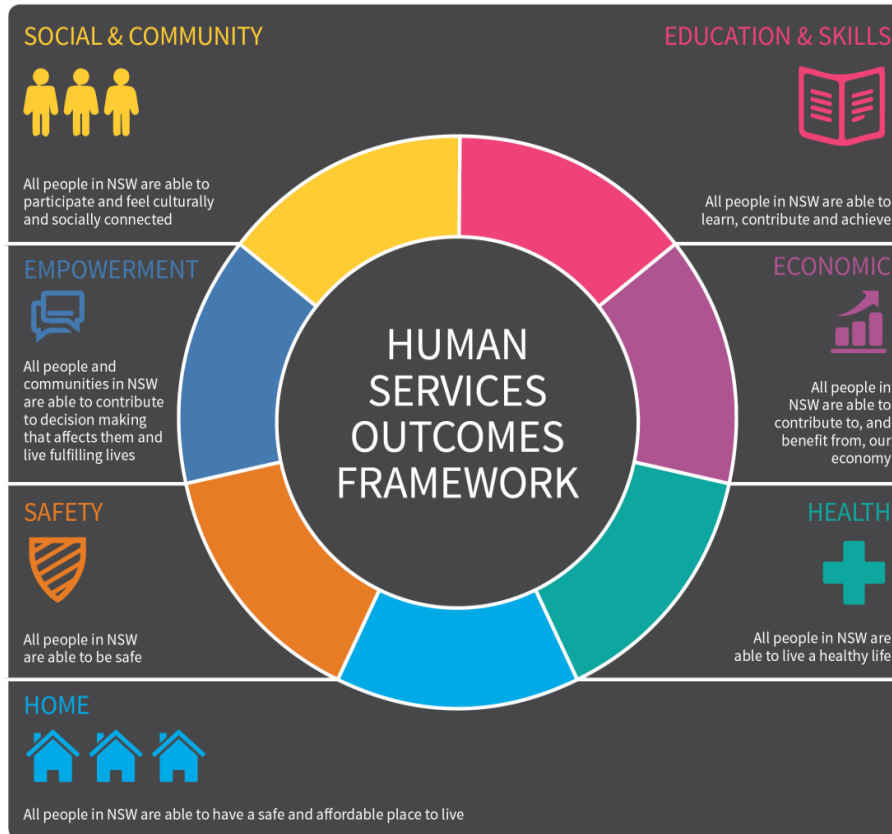
# NSW-CDS & FACS Partnership (2017-2020)

**Working together to promote the best possible mental health outcomes for these vulnerable children and their families**

- Identify cross-agency indicators of high-risk ROSH reports (e.g., characteristics of ROSH reports with swift progression to OOHC) to inform improvements to referral review within the current whole-of-service reforms.
- Determine health and wellbeing outcomes (i.e., mental health, physical health, educational achievement, and criminal justice contacts) up to age 13 years for children in with child protection reports, to inform the allocation of cross-agency interventions for vulnerable children and families.
- Determine health cost estimates for children in the cohort who are receiving child protection services to inform investment models for inter-agency referral and child protection services

# Policy and Practice Implications

Cross agency data linkages can enable the earliest responses to assist vulnerable families and children



Our continuing work is showing the value of child- and parent-level risk factors *at the time of the child's birth*, to assist with a whole-of-government response

The earliest intervention is crucial to thwart poor mental health trajectories, that begin in early childhood social, emotional and cognitive functioning; the first 5 years of brain development form the foundations for later mental health and wellbeing



# Acknowledgements

This research was conducted using population data owned by the *NSW Department of Family and Community Services, the NSW Ministry of Health, NSW Bureau of Crime Statistics and Research, NSW Registry of Births, Deaths and Marriages, and NSW and Commonwealth Education Departments* however the information and views contained in this study do not necessarily reflect the views held by these Departments.

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