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From Birth to Five:

A multiagency data-linkage study to inform a public health response to child protection in the Northern Territory

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A Child Youth and Development Research Partnership Project

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The views and findings expressed in this report are those of the authors and do not necessarily reflect those of the organisational partners.

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Executive summary

The Child Youth and Development Research Partnership (CYDRP) is a collaboration between Menzies School of Health Research and the NT Government departments of Health, Education, Attorney-General and Justice, and Territory Families to support the ongoing development and utilisation of research infrastructure capable of exploring important determinants of health, education and social outcomes for NT children and youth.

The early years are critical in the development of a child and provide the greatest opportunity for prevention and early intervention to protect vulnerable children. To inform policy development and services in child protection, the purpose of this study was to build on existing knowledge of the characteristics of children in recent contact with NT child protection services by focussing on information for children through their early years. This study was commissioned within the partnership with three objectives, to:

1. Investigate the pattern of contact with the child protection system (from birth to age 5 years).
2. Explore the link between perinatal characteristics and child maltreatment of infants.
3. Examine the link between a child's exposure to maltreatment and readiness for school at age 5 years.

This is a life course study, in which the study population was selected from those children who were recorded in the statutory NT perinatal data register as being born in the NT and who were also known to still be living in the NT, at around age 5 years, by their participation in one of the three collection rounds of Australian Early Development Census (AEDC) in 2009, 2012 and 2015. Most analyses were focussed on the youngest cohort, which consists of 2,503 children (1194 Aboriginal and 1309 non-Aboriginal) who were born in the NT (between 2009 and 2010) and participated in the 2015 Australian Early Development Census (AEDC).

Magnitude of child maltreatment and pattern of reports

Consistent with previous reports there was a high level of contact of NT Aboriginal children with child protection services, a level much greater than NT non-Aboriginal children:

- o For Aboriginal children, by age 5 years, more than half had at least one notification (53%); one quarter had at least one substantiated episode of maltreatment (26%) and one in 11 had at least one episode of out-of-home care (9%). For non-Aboriginal children, the corresponding proportions were one in 10 (9.8%), three in 200 (1.4%) and one in 200 (0.6%).
- o For Aboriginal children, more than half of the first notifications, substantiations and out-of-home care in the first 5 years occurred by age 2 years.
- o Among those children who had ever had a notification, more than half (Aboriginal children, 65%; non-Aboriginal children, 53.1%) had repeated notifications, with

20.5% of Aboriginal and 14.8% of non-Aboriginal children having five or more notifications.

The findings also highlight important differences in the pattern of maltreatment reports between Aboriginal and non-Aboriginal children, suggesting the need for a differentiated response to child protection service for the two populations:

- o For Aboriginal children, by age 5 years, the most common type of child maltreatment at first notification was neglect (49.8%), which was also the leading type for all notifications (48.3%).
- o For non-Aboriginal children, by age 5 years, the leading type of first notification was emotional abuse (39.1%), while the proportions of all notifications were similar for emotional abuse (34.6%) and neglect (33.6%).

There were substantial geographic variations in the proportion of children with child protection notifications and substantiations, which suggests the need for more place-based strategies. In our study cohort, the proportion of Aboriginal children with at least one notification in each region varied from 41.5% of children in the Daly-Tiwi-West Arnhem region to 76.9% in the Barkly region. The proportion of non-Aboriginal children with at least one notification in each region varied from 3.1% of children in the East Arnhem regions to 14.5% in the Katherine region.

Patterns of reporting by the source of reports

Notifications varied by the source of report, in terms of both maltreatment type and frequency of reporting. This study found that:

- o For both Aboriginal and non-Aboriginal children, the most common sources for first notifications to the child protection system (by age 5 years) were police, health professionals and community members.
- o For Aboriginal children, the highest rate of first notifications were children to age 1 year most commonly reported by health professionals for neglect. After the first year, police were the leading source of first reports. Police were also the leading source of all reports for all ages from 0 to 4 years, most commonly reporting children at risk of emotional abuse (most associated with domestic violence).
- o A substantial proportion of those children with notifications were reported by more than one reporter source (Aboriginal, 52.5%; non-Aboriginal, 49.2%). Of those children who have been reported, 6.5% of Aboriginal and 3.9% of non-Aboriginal children have been reported by five or more 'reporter categories' by age 5 years.
- o In our study cohort, most of the children who came into contact with child protection services had been reported by police and/or health professionals in the first five years of their life (Aboriginal, 84.6%; non-Aboriginal, 67.2%).
- o For first notifications of Aboriginal children, health professionals were the most common source of first notification for neglect (44.3%), particularly in the first year (50.7%).

- o   For both Aboriginal and non-Aboriginal children (by age 5 years), the most common grouping of children in notifications was police reporting emotional abuse only (9.8% and 12.5% respectively).

Prenatal and perinatal characteristics associated with maltreatment

At birth, there are a range of prenatal and perinatal characteristics of children that are associated with increased risk of subsequent contact with child protection services. The findings highlight the need for a differentiated approach to early maternal support. The results include:

- o   Aboriginal children born to a mother who drank alcohol at 36 weeks gestation were 2.3 times (Odds Ratio (OR): 2.31) more likely than other Aboriginal children in the study cohort to be reported to child protection services within their first year. Other variables that were strongly associated with increased risk were low birth weight (OR: 2.05), being born to a mother who smokes at 36 weeks gestation (OR: 1.56), mother attending fewer than seven antenatal visits (OR: 1.57) and a maternal record of a sexually transmitted infection (STI) (OR: 1.86).
- o   For non-Aboriginal children, the risk factors were a little different. There was strong evidence for increased risk of notification by age 1 year for children born to teenage mothers (OR: 4.44), children born to a mother who reported smoking at 36 weeks gestation (OR: 7.80) or a maternal record of an STI (OR: 8.15).

A predictive model based solely on perinatal information was not sufficiently robust to identify a majority of children who will later come into contact with child protection services but is useful in identifying particular infants at high risk. For example, an Aboriginal child with five selected perinatal risk factors has a 66% chance of being reported to child protection services by age 1 year. Similarly, a non-Aboriginal child with five selected factors has a 76% chance of being reported by age 1 year.

The results also confirm the elevated risk of maltreatment for children with mothers with a record of drinking alcohol during pregnancy.

- o   By age 5 years, three-quarters (73.7%) of Aboriginal and one-fifth (18.2%) of non-Aboriginal children with mothers drinking alcohol during pregnancy have been reported to the child protection system.

The association between child maltreatment experience and school readiness

Children with a history of either a notification or a substantiated episode of child maltreatment are more likely to be "developmentally vulnerable" at the time of school entry than children without a record of contact with child protection services.

- o   For Aboriginal children, 61.3% of the children with record of substantiation and 59.0% of children with one or more notifications only were developmentally vulnerable in at least one of five AEDC developmental domains, compared with

49.1% of Aboriginal children with no record of contact. For non-Aboriginal children, the corresponding proportions were 44.4%, 30.9% and 20.7%.

- o For Aboriginal children, 47.1% of the children with record of substantiation and 45.1% of children with notifications only are developmentally vulnerable on two or more AEDC domains compared with 32.3% of Aboriginal children with no record of contact. For non-Aboriginal children, the corresponding proportions are 16.7%, 16.4% and 9.4%.
- o There is also a higher proportion of children with 'special needs' in education among those children with history of contact with child protection services.

Conclusion

The study findings describe multiple factors associated with the risk of children's involvement in the child protection system and point to opportunities for the development of evidence-based government policy, services, prevention and intervention programs. The study also demonstrates the utility of data linkage to identify critical points for targeting early interventions and the opportunity for an integrated service response to child protection concerns in the first five years of a child's life.

The unpacking of how service contact patterns differ between groups of children provides a rational basis for more differentiated child protection intervention service response. Similarly, the observed geographical variation in rates of child maltreatment across the NT suggests the need for more place-based strategies in addition to the current population-level approach to child health and wellbeing.

Demonstration of the relationship between children's experience of maltreatment and school readiness has important implications for both child protection and education service providers and highlights the need for early education support for these children to make a successful transition into school-based learning.

Future data linkage studies should explore the predictors of maltreatment for children at different ages and also assess their long-term education, justice, health and employment outcomes. Such studies offer significant potential to enhance the effectiveness of whole-of-government initiatives by transcending the 'siloed' structures in which government administrative data have historically been used for service planning to improve the developmental, health, education and social outcomes of Territory children.

1. Introduction

1.1 Development of a cross-agency linked data resource

Since 2009, Menzies School of Health Research (Menzies) has collaborated with the Northern Territory Government (NTG) and the SA-NT DataLink data integration facility to develop the infrastructure and capacity to perform data-linkage research in the Northern Territory (NT). The collaboration aims to make better use of existing administrative datasets to inform social and public policy in the Northern Territory.

There have been NT data linkage projects in a range of research areas, but the area with the most sustained focus has been in child and youth health and development. The linkage of information on individuals across multiple agencies, including the NT Government departments of Health, Education, Attorney-General and Justice, and Territory Families, has allowed the Menzies data-linkage team to construct a longitudinal dataset that supports a developmental and life-course perspective in research. This approach allows NT children to be followed from birth through childhood and youth to understand the cumulative impacts of the many influences on a child's development. The research is conducted within a framework that is ethically approved (HREC-2016-2708) and in which all information is de-identified.

1.2 Use of linked datasets to inform a public health approach to child protection

In the past decade, there is a growing acceptance of a public health approach (Figure 1.1) to child protection.[1-9] Under such an approach, different prevention programs are developed for groups with varying needs and risks through interagency collaboration and coordination of children and family services. Such an approach aims to inform a more integrated service system. The benefits of collaboration between services highlight the value of bringing together information across the multiple agencies such that information from multiple sources (e.g. birth and hospital records) can be used to inform an appropriate level of support for families, including those with vulnerable children.[10]

To support the public health approach to child abuse and neglect, the following four steps (Figure 1.2) have been proposed by Jack (2010):[5]

1. measuring the magnitude of maltreatment using surveillance and epidemiological methods
2. identification of modifiable risk factors
3. development, implementation and subsequent evaluation of interventions
4. implementing evidence-based primary prevention strategies.

Figure 1.1 A system for protecting children
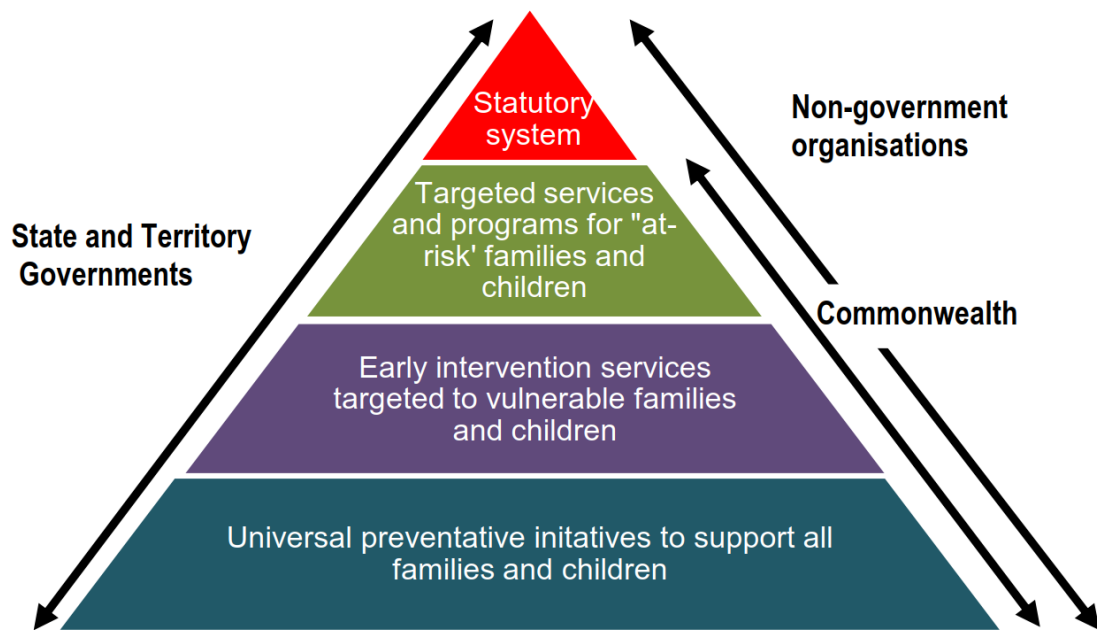
Source: Council of Australian Governments, Protecting Children is Everyone's Business-National Framework for Protecting Australia's Children 2009–2020. 2009, Canberra: Commonwealth of Australia, reported and modified in Guthridge, S.L. (2014). Trends in child maltreatment in the Northern Territory, using child protection reports and hospital admissions, 1999 to 2010. Adelaide University, Adelaide. Available at https://digital.library.adelaide.edu.au/dspace/bitstream/2440/88692/8/02whole.pdf

Figure 1.2 Four steps in a public health approach to child maltreatment

Source: Adapted from Jack S. The role of public health in addressing child maltreatment in Canada. Chronic Diseases and Injuries in Canada. 2010;31(1)

There is also a growing recognition of the value of data-linkage to inform a public health approach to child protection. In Australia, most analysis of child protection data is based on a cross-sectional design.[11] Although this is useful for national and international comparisons of prevalence and incidence of child abuse, such an approach has several limitations. Firstly, cross-sectional analysis does not differentiate between old and new notifications (or substantiations); secondly, it does not provide the lifetime prevalence of child maltreatment experience.

To overcome such limitations, data-linkage can be used to construct 'multi-sector, multi-level, longitudinal administrative datasets'.[12] Administrative data contains date information (e.g. 'service date'/ 'event date'), which enables researchers to 'reconstruct chronologies of events, follow pathways through multiple services and explore interactions between service systems'.[12] By linking child protection data to other administrative datasets, longitudinal analysis can be used to track the journey of children through the health, education, welfare, child protection and juvenile justice services. Understanding the different involvement of multiple service systems could inform a more holistic view of the children's experience and service provision, which is useful in devising prevention and early intervention strategies.

1.3 Menzies-NTG Child and Youth Development Research Partnership (CYDRP)

An agreement between Menzies and NT Government agencies—the Child and Youth Development Research Partnership (CYDRP)—commenced in May 2017. This research partnership supports the ongoing development of the existing linked data repository and commissions specific data linkage studies within an ethics-approved research program (Human Research Ethics Committee of the NT Department of Health and Menzies School of Health Research, HREC-2016-2708). This report presents results from a study commissioned within the partnership agreement:

> *to explore the health, education and social characteristics of children who have been in contact with the child protection system.*

The project seeks to build on previous reports in child protection to provide a more refined and contemporary analysis by focussing on younger children, up to 5 years old, in contact with the child protection system between 2009 and 2015.

2. Findings from past research

2.1 Time trend of annual number of children in contact with the child protection system

Through the period from 2000 to 2017, there was a substantial increase in the number of children in contact with the NT child protection system in each year. The increase has been associated with a range of national and NT-specific events, including coronial investigations, government inquiries and changes in legislation. The trend of increase is demonstrated in Figure 2.1 (Appendix Table A1) along with selected NT-specific events associated with the increase. The graph utilises published information on the number of NT Aboriginal and non-Aboriginal children who were in contact with child protection services in each financial year from 1999–2000 to 2016–2017.[13-16] Each child is counted only once in each year.

The number of Aboriginal children with notifications and substantiations each year has more than doubled since 2007. The increase in the number of children in contact with the child protection system may, in part, reflect greater public and professional awareness of mandatory requirement for notification of children at risk of harm as the result of widespread reporting of inquiries, including the 'Little Children are Sacred' (2007) and the 'Growing them Strong Together' (2010) reports.[17,9] The increase may also reflect changes in reporting practice associated with legislation such as the *NT Care and Protection of Children Act* 2007 and the introduction of mandatory reporting of family violence in 2008, which introduced mandatory reporting of children exposed to family violence. It is important to recognise that the impact of any single event may not have occurred at a specific time, such as the release of a report, but may have been associated with related activities such as public attention surrounding events, changes in policy and procedures for reporting, and changes in funding for services.

While the number of Aboriginal children notified in each year continued to increase, the percentage of those notifications that were substantiated initially rose; for example, from 24% in 2007 to 34% in 2011 before falling to 16% in 2016 and 20% in 2017. Similar annual variations were evident for non-Aboriginal children over the same period. These changes may have varied explanations. On the one hand, the changes could indicate that the number of children at risk of harm is varying or alternatively that the investigative capacity of the child protection system is being overwhelmed by the increase in numbers of reports requiring investigation.

Figure 2.1 Trend in the number of Aboriginal and non-Aboriginal children aged from 0 to 16 years with notifications, substantiations and out-of-home care placement in each financial year, ending June 2000 to July 2017, Northern Territory
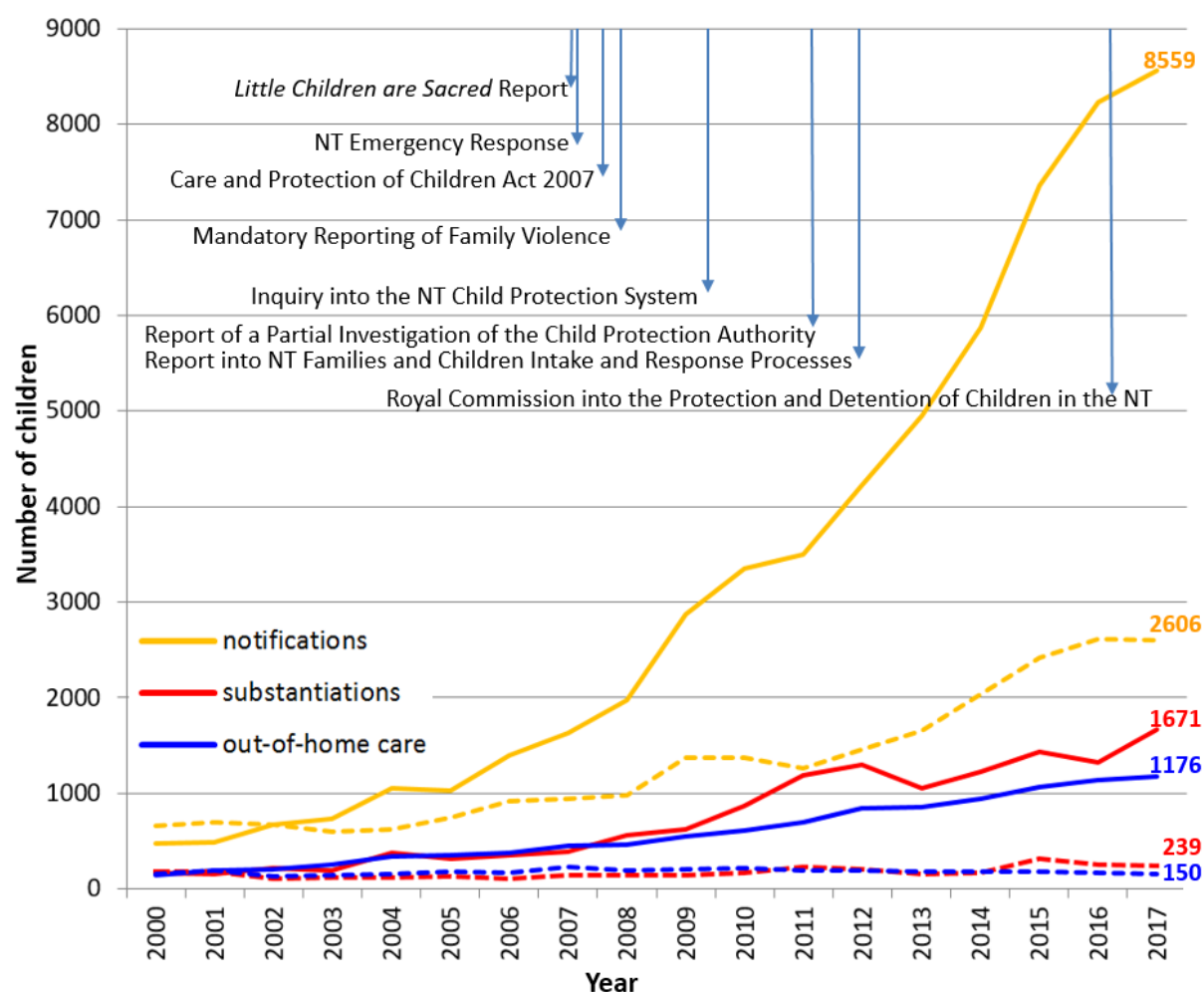
Notes:

1. Results for Aboriginal children are presented as solid lines, and results for non-Aboriginal children are presented as dashed lines.
2. Due to changes in reporting definitions by the Productivity Commission, notifications and substantiations include children aged 0-16 in financial years 1999-2000 to 2009-2010, and children aged 0-17 in financial years 2010-2011 to 2016-2017.

Investigating the trend in the number of children who have a substantiated episode by type of child abuse or neglect provides insight into the cause of the increase. While there has been an increasing number of Aboriginal children with substantiated episodes each year across all maltreatment types, the greatest numerical increase has been for neglect and emotional abuse (Figure 2.2, Appendix Table A2). In the 10 years from 2006–2007 to 2016–

2017, the number of Aboriginal children with substantiated neglect increased about six-fold, to 756 children, and the number with substantiated emotional abuse also increased about six-fold, to 632 children. For the same period, there was also an increase in the number of cases involving non-Aboriginal children. In 2016–2017, the largest number of children involved in substantiated episodes was for emotional abuse, with 112 children.

Figure 2.2 Trend in the number of Aboriginal and non-Aboriginal children with substantiated episodes of child abuse and neglect in each financial year, ending June 2000 to June 2017, by type of abuse or neglect, Northern Territory

Aboriginal children

non-Aboriginal children
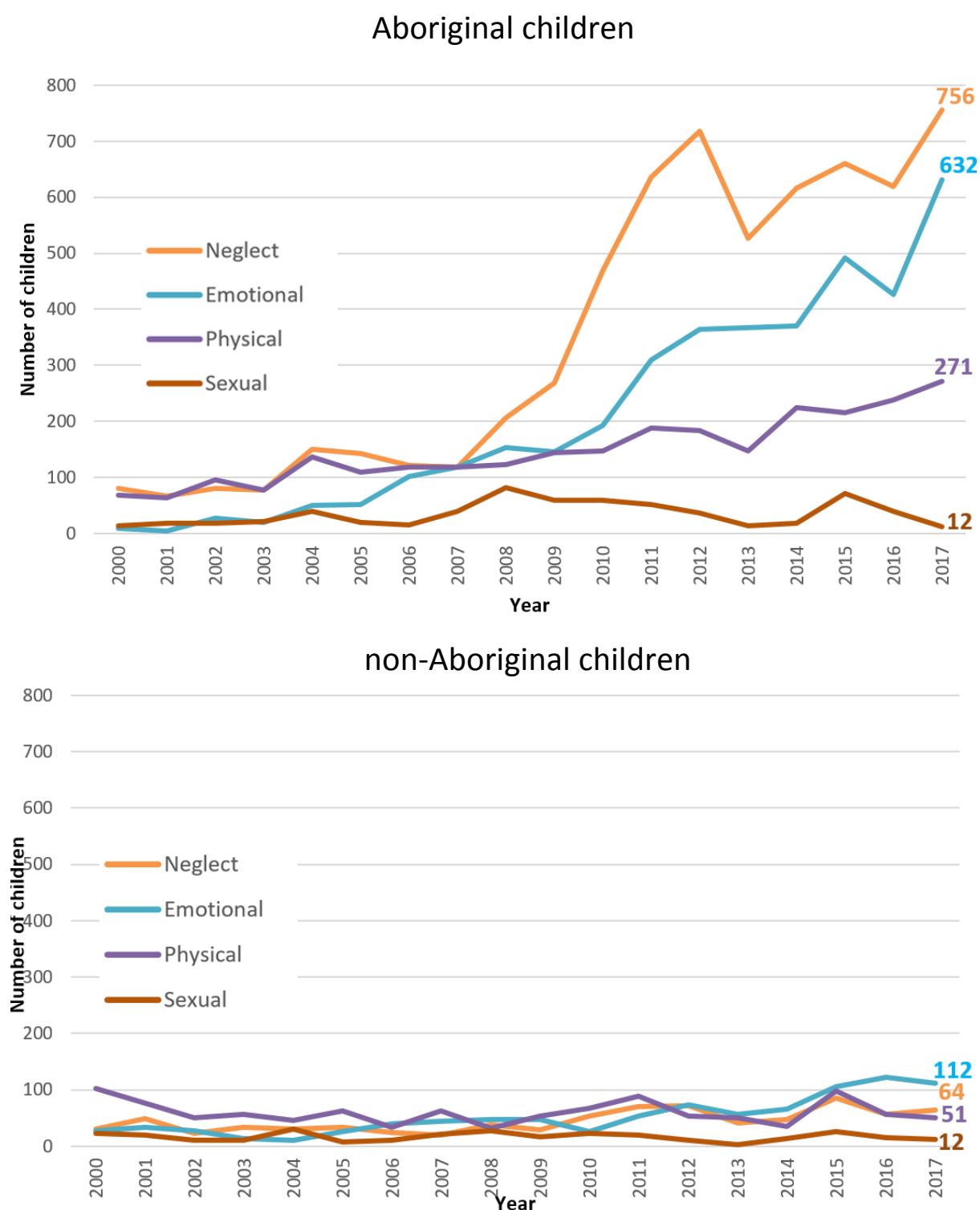
Source: AIHW (2001 to 2018[18]). Child protection (all years 1999–2000 to 2016–17). Child Welfare Series no. (multiple). Cat. No. (multiple). Canberra. Available at https://www.aihw.gov.au/reports-statistics/health-welfare-services/child-protection/

Notes:

1. If a child was the subject of more than one type of abuse or neglect as part of the same notification, the abuse and/or neglect reported is the one considered by the child protection workers to cause the most harm to the child. Where a child is the subject of more than one substantiation during the year, the type of abuse reported in this table is the type of abuse and/or neglect associated with the substantiation decision relating to the earliest notification during the year.
2. Finalised investigations, and thus substantiations, refer only to cases that were notified during the year, not to the total number of investigations finalised by 31 August of each year.
3. In the NT, due to recording issues, sexual exploitation is under-reported. This has been addressed, and it is expected numbers in this area will be similar to those of other jurisdictions in future years.

2.2 Time trend of annual rates of children in contact with the child protection system

A previous study investigated the trends in the incidence of child maltreatment notifications and substantiation for the period from 1999 to 2010.[19] During this period, the annual incidence of notifications for Aboriginal children increased from 29.7 per 1000 children to 155.5 per 1000 children, while the incidence of substantiations increased from 9.6 per 1000 children to 47.3 per 1000 children. For both types of contact, the greatest increase in rate was for emotional abuse, with an average increase of 30% per year, while at the end of the study period, neglect was the most common type of abuse and neglect. Among non-Aboriginal children for the same period, the rates of notifications increased from 19.7 per 1000 children to 41.8 per 1000 children, while substantiated cases increased from 4.3 to 6.7 per 1000 children.

The distribution of the rates of substantiated cases of maltreatment by type for Aboriginal children is presented in Figure 2.3. The results highlight both the emergence of cases of emotional abuse from a low base at the start of the study period, as well as the dominance of cases of neglect in the later years.

The study also found that the greatest increase in child maltreatment notification reporting for Aboriginal children was not by the public but by professional groups.[19] In particular, there was increased reporting by police of children exposed to violence (emotional abuse) and health professionals reporting neglect. The authors emphasised that these changes challenge a common perception that mandatory reporting leads to increased reports by the public of less serious incidents.[19]

Figure 2.3 Trends in annual rate of substantiated cases of child maltreatment by primary type of maltreatment, Northern Territory Aboriginal children, 1999–2010
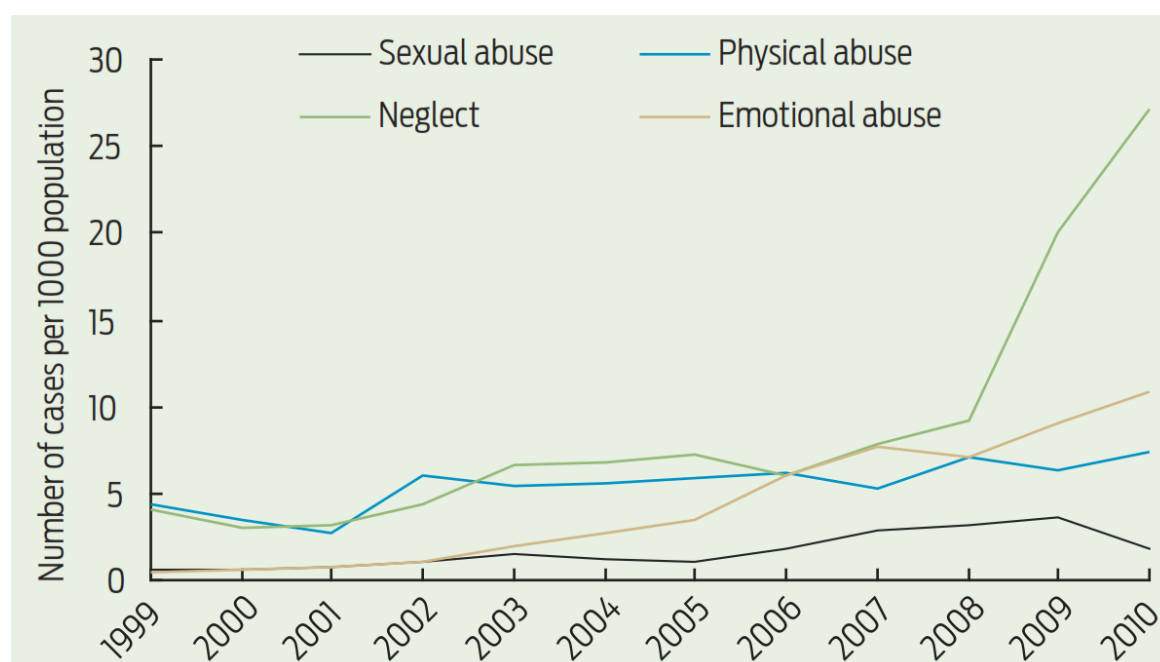
Source: Guthridge S, Ryan P, Condon JR, Bromfield LM, Moss JR, Lynch JW. Trends in reports of child maltreatment in the Northern Territory, 1999–2010. Med J Aust. 2012(197(11)):637-41. Available at https://www.mja.com.au/journal/2012/197/11/trends-reports-child-maltreatment-northern-territory-1999-2010. Reproduced with permission

2.3 Sources of report for children with substantiations

In 2016, Menzies provided a submission to the Royal Commission for the Protection and Detention of Children in the Northern Territory.[20] The submission included information that highlighted the marked differences in the distribution of the sources of report by maltreatment types as well as differences in source of report between Aboriginal and non-Aboriginal children. Figure 2.4 presents the distribution of the source of reports for children with a substantiated episode of abuse or neglect in 2014–15. Emotional, sexual and physical abuse are combined and are presented separately to neglect. For events involving Aboriginal children, police (54%) were the leading source of reports of abuse, while health service providers (31%) were the leading source of reports of neglect. For events involving non-Aboriginal children, police (33%), school personnel (29%) and community members (25%) were the leading source of reports of abuse, while police (37%) and community members (22%) were also the leading source of reports of neglect. Health service providers were only a minor source of reports for substantiated cases of both abuse and neglect (8% and 13% respectively) for non-Aboriginal children.

Abuse (Aboriginal children)
- Community members 9%
- Child protection staff 7%
- Other professionals 0%
- School personnel 8%
- Police 54%
- NGOs 6%
- Health professionals 16%

Abuse (non-Aboriginal children)
- NGOs 2%
- Health professionals 8%
- Community members 25%
- Child protection staff 3%
- School personnel 29%
- Police 33%

Neglect (Aboriginal children)
- Community members 11%
- Child protection staff 13%
- School personnel 12%
- Police 25%
- Other professionals 1%
- NGOs 7%
- Health professionals 31%

Neglect (non-Aboriginal children)
- Other professionals 2%
- Health professionals 13%
- NGOs 5%
- Community members 22%
- Child protection staff 12%
- School personnel 9%
- Police 37%

Source: Guthridge S, He V, Silburn S. (2017). http://webarchive.nla.gov.au/gov/20180615091705/https://childdetentionnt.royalcommission.gov.au/NT-public-hearings/Pages/Hearings/2017/19-June-2017-Exhibits.aspx

2.4 Age distribution of children in substantiated cases of abuse and neglect by type of abuse and neglect

The submission to the Royal Commission also highlighted several important differences in the pattern of substantiation cases of abuse and neglect between Aboriginal and non-Aboriginal children. [20] The greatest number of substantiations for Aboriginal children occurred in the first year of life, when neglect and emotional abuse together accounted for 85% of all cases. The number of children in substantiations then steadily decreased until ages 10 to 11 years before an increase during early adolescence from 12 to 15 years. There were relatively few substantiated reports for 17-year-old Aboriginal children.

There were many fewer non-Aboriginal children with substantiated reports, and there was only minor variation across ages from 0 to 15 years before the number of reports fell among children aged 16 and 17 years. The highest number of children in substantiated cases for the

2014–15 reporting year was at age 10 years, followed by the lowest number of cases at age 11 years. There were relatively small numbers of children in substantiated cases at each age and the fluctuation in numbers is consistent with random fluctuation.

Figure 2.5 Number of children with substantiated reports by age and type of abuse and neglect, 2014–15

Source: Guthridge S, He V, Silburn S. (2017). http://webarchive.nla.gov.au/gov/20180615091705/https://childdetentionnt.royalcommission.gov.au/NT-public-hearings/Pages/Hearings/2017/19-June-2017-Exhibits.aspx

Notes:

1. These graphs present the number of children by age who were subject to at least one substantiated episode of child abuse or neglect by type of abuse or neglect.
2. The scale of y-axes on the two graphs are different.

2.5 Lifetime contact for 10-year-old children (from 2010 to 2014)

In the same Menzies's submission,[20] the lifetime contact of 10-year-old children (aged 10 years in each year from 2010 to 20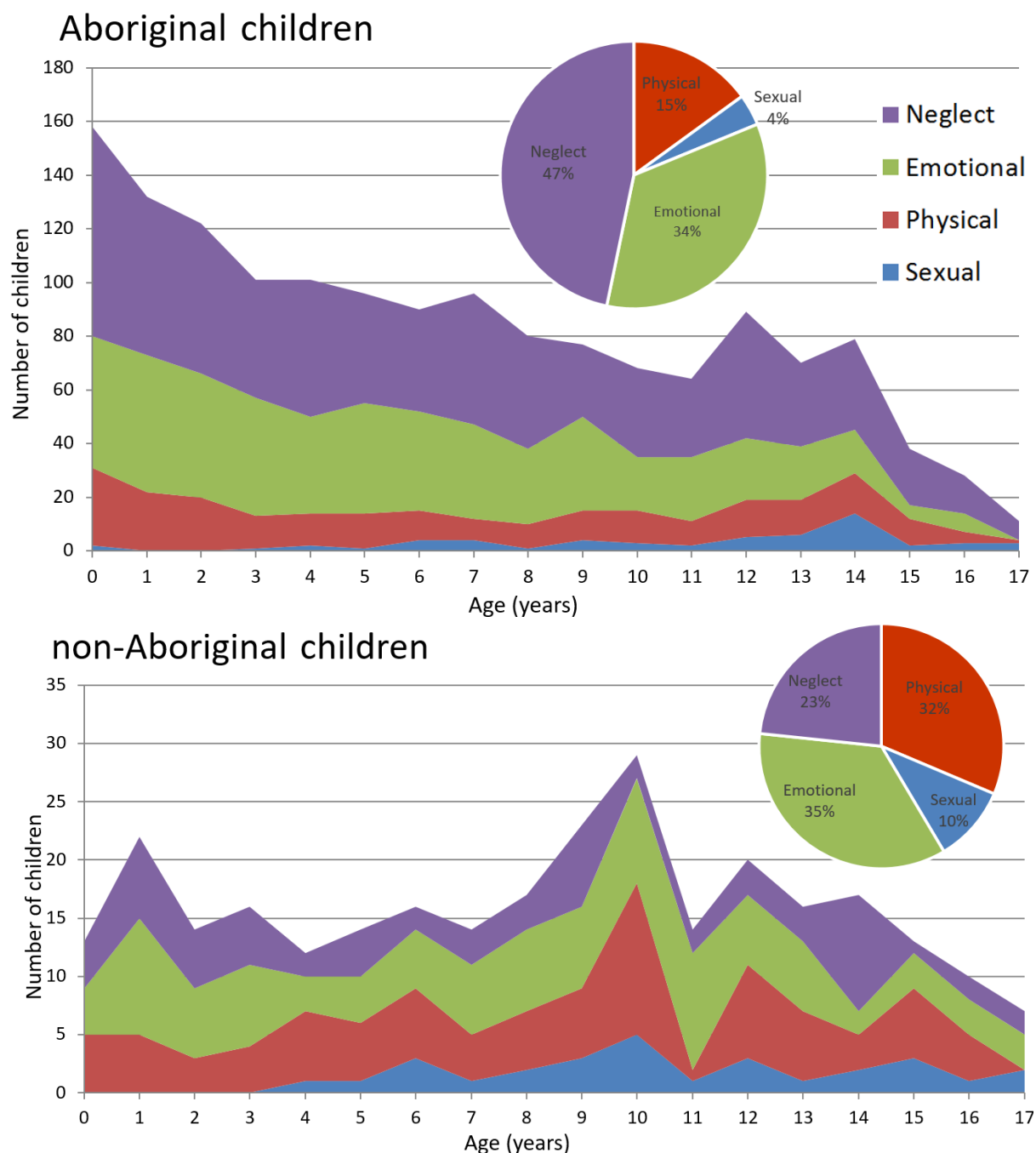14) was investigated. It was found that on average, around one in two Aboriginal children (766 of 1524) had a record of at least one notification; one in four (363 of 1524) had at least one substantiation; and one in 12 (115 of 1524) had at least one out-of-home care episode with substantiated abuse or neglect. The balance of Aboriginal children (758 of 1524) had no record of contact with child protection services at the age of 10 years. For non-Aboriginal children, one in five (422 of 1904) had a record of at least one notification; one in 20 (95 of 1904) had at least one substantiation; and one in 60 (32 of 1904) had at least one out-of-home care episode with substantiated abuse or neglect. More than three quarters (1483 of 1904) of non-Aboriginal children had no record of contact with child protection services by the age of 10 years.

2.6 Characteristics of children by different levels of contacts with the child protection system

The Menzies submission to the Royal Commission[20] also described some background characteristics and service-related characteristics of children at age 10 years (from 2010 to 2014) with varied levels of contact with child protection services. Pictographs were used to show how often, on average, each background characteristic and service-related characteristic was present for Aboriginal and non-Aboriginal children for each level of contact with the NT child protection system. The pictographs presented information on associations of contact with perinatal, demographic and socio-economic conditions. Examples of the pictographs are reproduced below in Figure 2.6 and Figure 2.7.

The first pictograph in the series of pictographs in Figure 2.6 concerns children whose prenatal health data included a record of whether their mother reported drinking alcohol (at any level) in pregnancy. This pictograph shows that one in 10 Aboriginal and non-Aboriginal children with no child protection involvement had mothers who reported drinking alcohol during pregnancy. Among children with notifications and substantiations, two in 10 Aboriginal children and one in 10 non-Aboriginal children had mothers who drank alcohol in pregnancy. This risk increased to three in 10 for Aboriginal children and two in 10 for non-Aboriginal children with an episode of out-of-home care. This pattern demonstrates a clear association between the proportion of mothers who reported drinking alcohol in pregnancy and level of child protection contact.

Gradients of risk can also be seen in the second pictograph (Figure 2.6), which presents the proportions of children whose mothers smoked in pregnancy across four levels of child protection involvement. The level of maternal smoking exposure is much greater for Aboriginal children across all levels of contact, but there is also a gradient of increasing risk from four in 10 children exposed to maternal smoking in pregnancy for those children with no involvement to five in 10 for those with a notification and six in 10 for those children with either a substantiated maltreatment episode or an out-of-home care episode. Among

non-Aboriginal children, the proportions of children exposed to maternal smoking in pregnancy was much lower; however, a record of maternal smoking demonstrates a stronger gradient of risk. Among non-Aboriginal children with no involvement with child protection services, two in 10 children had a record of maternal smoking in pregnancy. This proportion doubled for those children with at least one notification, to four in 10, and increased again for children with either a substantiated episode or an out-of-home care episode.

In the third pictograph, it can be seen that around three in 10 Aboriginal children had teenage mothers, but having a teenage mother was not associated with increased levels of child protection involvement. By contrast, while fewer non-Aboriginal children had teenage mothers, this characteristic showed a steep gradient of risk; for example, between those with no child protection contact and those with out-of-home care (three in 100 children compared with two in 10 children).

Figure 2.6 Gradients of risk for the association between various prenatal conditions and level of contact with child protection services
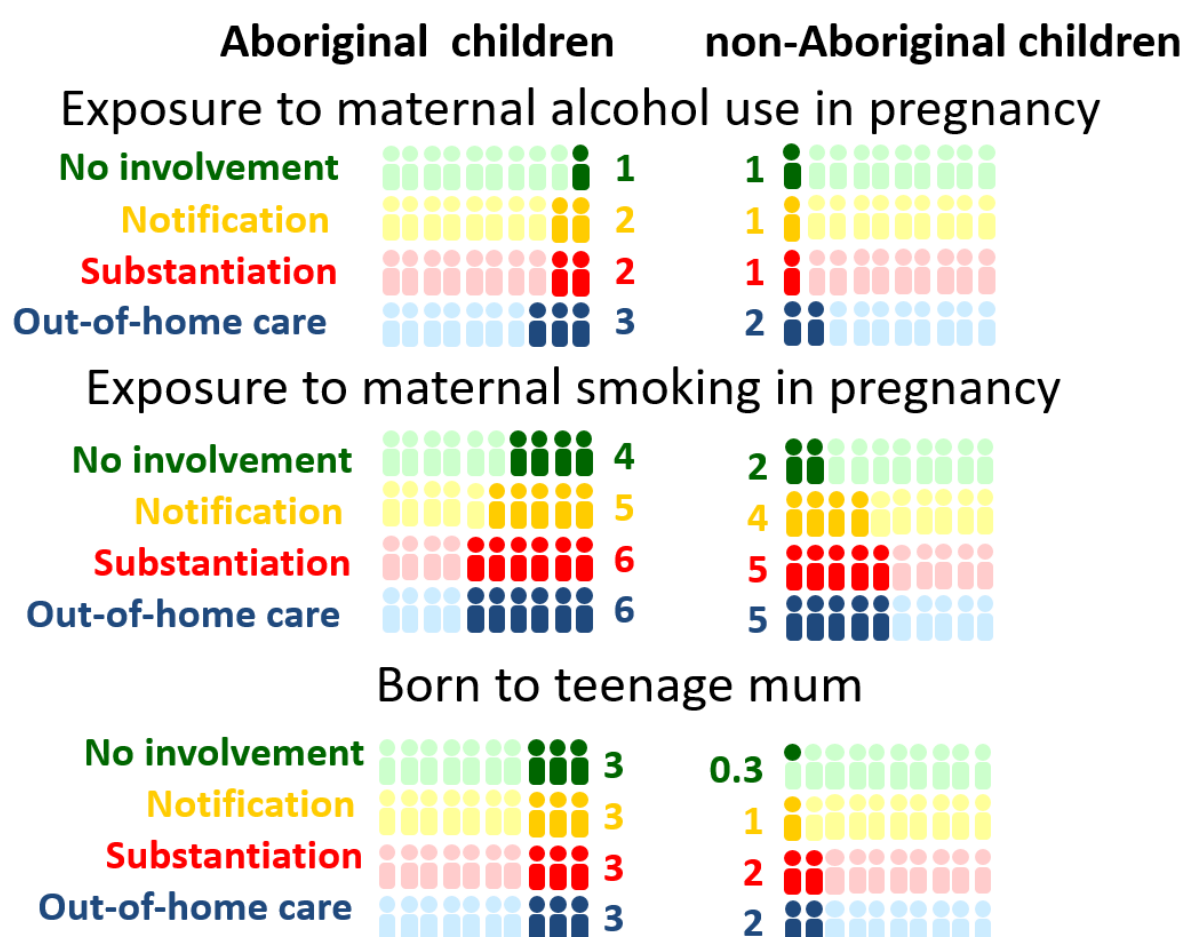
In the next series of pictographs (Figure 2.7), the first pictograph highlights that around eight in 10 Aboriginal children aged 10 years were living in remote or very remote areas and that this characteristic was not associated with higher levels of involvement with the child protection system. Similarly, there was no apparent risk from living in remote or very remote areas evident for non-Aboriginal children (three in 10 for all levels of contact).

The second pictograph in Figure 2.7 shows that around six in 10 Aboriginal children were living in the most economically disadvantaged areas of the NT in contrast to fewer than one in 10 non-Aboriginal children. There was no difference in levels of child protection involvement for children living in disadvantaged areas for either group of children.

The final pictograph presents the proportions of Aboriginal and non-Aboriginal children whose primary carer was not in the labour force at the time the child first enrolled in school. Around half of the Aboriginal children had carers who were not in the labour force, but this was only weakly associated with increasing levels of child protection involvement. Far fewer non-Aboriginal children had carers not in the labour force; however, there was a significant gradient in the association with child protection involvement (four in 100 with no child protection involvement compared with two in 10 children with a history of a substantiations or out-of-home care).

Figure 2.7 Gradients of risk for the association between various socio-economic conditions and level of contact with child protection services
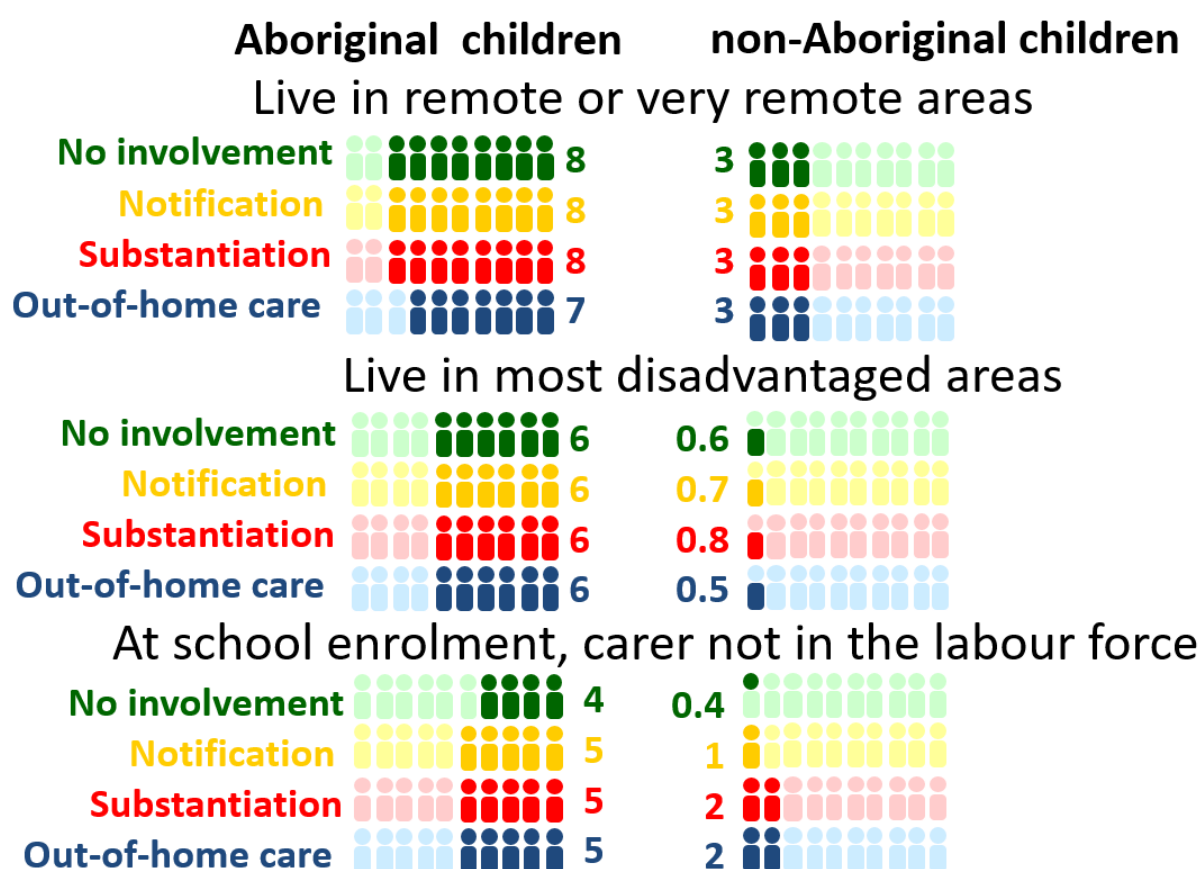
3. Description of the study methods

3.1 Defining the study cohort

The aim of this study is to build on existing knowledge of the characteristics of children in contact with NT child protection services by focussing on information for children through their early years—children to age 5 years. The early years are critical in the development of a child and provide the greatest opportunity for prevention and early intervention to protect vulnerable children. To inform policy development and services in child protection, the results of the study need to be current and comprehensive, which requires two significant refinements in the study design. The first is to use recent information, and the second is to adjust for the high interstate mobility of the NT population.

The previous chapter demonstrated the rapid increase in the number of reports and substantiations between 2000 and 2015 as well as the changing nature of reporting, with, for example, many more reports for emotional abuse and neglect. A consequence of these changes is that information for children by age 5 years for older birth cohorts may be very different to information available for younger children. The first refinement in the study design was to restrict the analysis to those children who turned 5 years in the most recent years for which data is available.

There is a very high turnover of children living in the NT, particularly non-Aboriginal children. The effect of turnover is that there are many children captured in administrative records who have only lived in the NT for short periods. There are also children who are resident in the NT for whom there are no records. The second refinement in the study design was to restrict the analysis to those children who were firstly recorded as having been born in the NT and secondly recorded as living in the NT around the time of their fifth birthday.

To accommodate these two requirements, this study focusses on all NT-born children who participated in the 2015 Australian Early Development Census (AEDC). Most of these children were born between July 2009 and June 2010. The following chapters assess the characteristics of these children up to their fifth birthday. There are a total of 1194 Aboriginal children and 1309 non-Aboriginal children in the study cohort.

The AEDC is a triennial census of all Australian children conducted in a child's first year of school (at around age 5 years).[21] The census involves teachers systematically assessing each child across five areas of early development known to be associated with readiness for school learning.[21] The AEDC involves all NT children in their first year of school, and it is estimated that the participation rate for the 2015 AEDC was 98.0% of the age cohort.[21] For

comparison purposes, in two sub-studies, we have also included results for NT-born children who participated in the AEDC in 2009[i] and 2012[ii].

3.2 Statistical methods

The study cohorts were derived by linking the NT perinatal records to unit-level AEDC records. Survival analysis methods were used to estimate the proportion of the population that has experienced the outcome of interest over time (cumulative incidence). Cumulative incidence has been previously used to estimate the rates of out-of-home care placement in Australia, Canada and England which is a more accurate measure than simple annual incidence rates.[22, 23]

A method referred to as Conjunctive Analysis of Cases Configuration (CACC) is used in several chapters to explore the distributions within the study cohort for various combinations of types abuse and neglect, and for combinations of source of reports. This approach allows identification of groups of children as a basis for planning more targeted responses.

3.3 Structure of the report

As described in Chapter 1, the first step in a public health response is to 'measure the magnitude of maltreatment'.[5,7] This is addressed in Chapter 4, which describes the magnitude of recorded child abuse and neglect for the study population of NT children by age 5 years. The final section of the chapter provides details of the distribution of notifications by geographic areas.

Chapter 5 provides detail on the source of reports, or 'reporters', with information on the age of children and the different types of abuse and neglect that are reported by the different groups of reporters.

The following chapter, Chapter 6, utilises information available in perinatal information to assess the association of various perinatal factors and the probability of notification. The chapter also provides a more detailed analysis of a record of maternal alcohol consumption during pregnancy and risk of later notification of child protection.

Chapter 7 presents information on the association between child abuse and neglect events occurring from birth to age 5 years and 'developmental vulnerability' (or school readiness) assessed by the AEDC at around age 5 years.

The final chapter, Chapter 8, summarises the results of the study and places them in the context of the contemporary literature.

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[i] 1096 Aboriginal and 1055 non-Aboriginal children.
[ii] 1056 Aboriginal and 1142 non-Aboriginal children.

4. Magnitude of child abuse and neglect

Key findings

The chapter reports the magnitude of contact of NT children born in 2009–10 with child protection services and identifies critical points for targeting early interventions.

o   For Aboriginal children, by age 5 years, more than half had at least one notification (53%); one quarter had at least one substantiated episode (26%) and one in 11 had at least one episode of out-of-home care (9%). For non-Aboriginal children, the corresponding proportions were one in 10 (9.8%), three in 200 (1.4%) and one in 200 (0.6%).

o   More than half of the first Aboriginal maltreatment notifications, substantiations and out-of-home care in the first 5 years occurred by age 2 years.

o   Among those children who had ever had a notification, more than half (Aboriginal children, 65%; non-Aboriginal children, 53.1%) had repeated notifications, with 20.5% of Aboriginal and 14.8% of non-Aboriginal children having five or more notifications.

The findings also highlight important differences in the pattern of maltreatment reports between Aboriginal and non-Aboriginal children, suggesting a differentiated response to child protection service for the two populations:

o   For Aboriginal children, by age 5 years, the most common type of child maltreatment at first notification was neglect (49.8%), which was also the leading type for all notifications (48.3%).

o   For non-Aboriginal children, by age 5 years, the leading type of first notification was emotional abuse (39.1%), while the proportions of all notifications were similar for emotional abuse (34.6%) and neglect (33.6%).

There were substantial geographic variations in the number of child protection notifications and substantiations, which suggest the need for more place-based strategies.

In our study cohort, the proportion of Aboriginal children with notification (by age 5 years) in each region varied from 41.5% of children in the Daly-Tiwi-West Arnhem region to 76.9% in the Barkly region. The proportion of non-Aboriginal children with notifications in each region varies from 3.1% of children in the East Arnhem regions to 14.5% in the Katherine region.

4.1 Cumulative incidence of contact with child protection services over time

The availability of linked records for the same children in the AEDC, perinatal data and child protection data allows the analysis of the first notification, substantiation and out-of-home placement during the period from birth to a child's fifth birthday. The cumulative proportion (incidence) of the study cohort of NT children who have had a first notification, a first substantiated episode of child abuse or neglect, or a first episode of out-of-home care are presented in Figure 4.1, Figure 4.2 and Figure 4.3 respectively.

The graphs highlight that there has been a marked increase, over time, in the number of Aboriginal children having child protection notifications, substantiations and out-of-home placement between the 2009 AEDC cohort (born in 2003–2004), the 2012 AEDC cohort

(born in 2006–2007) and the 2015 AEDC cohort (born in 2009–2010). The five-year cumulative incidence of first child protection notification (Figure 4.1) of Aboriginal children increased from 35% for the 2009 AEDC cohort to 45% for the 2012 AEDC cohort and to 53% for those children in the 2015 AEDC cohort. For non-Aboriginal children, the five-year cumulative incidence of first notification for the 2015 AEDC cohort was similar to the 2012 AEDC cohort (10%), but both were greater than the 2009 AEDC cohort (6%).

From the same graph, it is also evident that for the 2015 AEDC Aboriginal cohort, 30% of children had a first child protection notification by age 2 years.

Figure 4.1 Cumulative incidence of NT Aboriginal and non-Aboriginal children with a first child protection notification to age 5 years for 2009, 2012 and 2015 AEDC cohorts
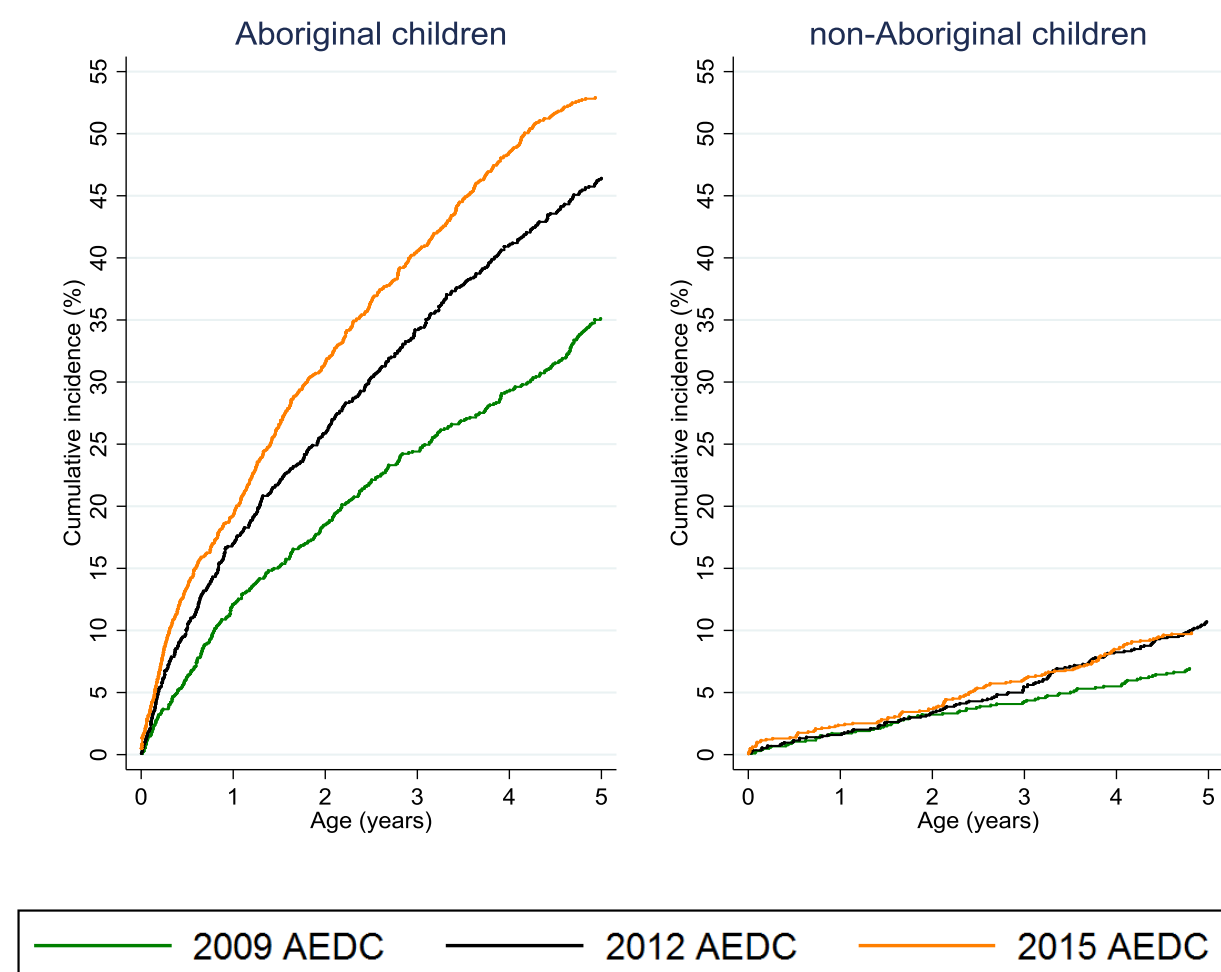
Figure 4.2 Cumulative incidence of NT Aboriginal and non-Aboriginal children with a first substantiated episode of child abuse or neglect to age 5 years for 2009, 2012 and 2015 AEDC cohorts
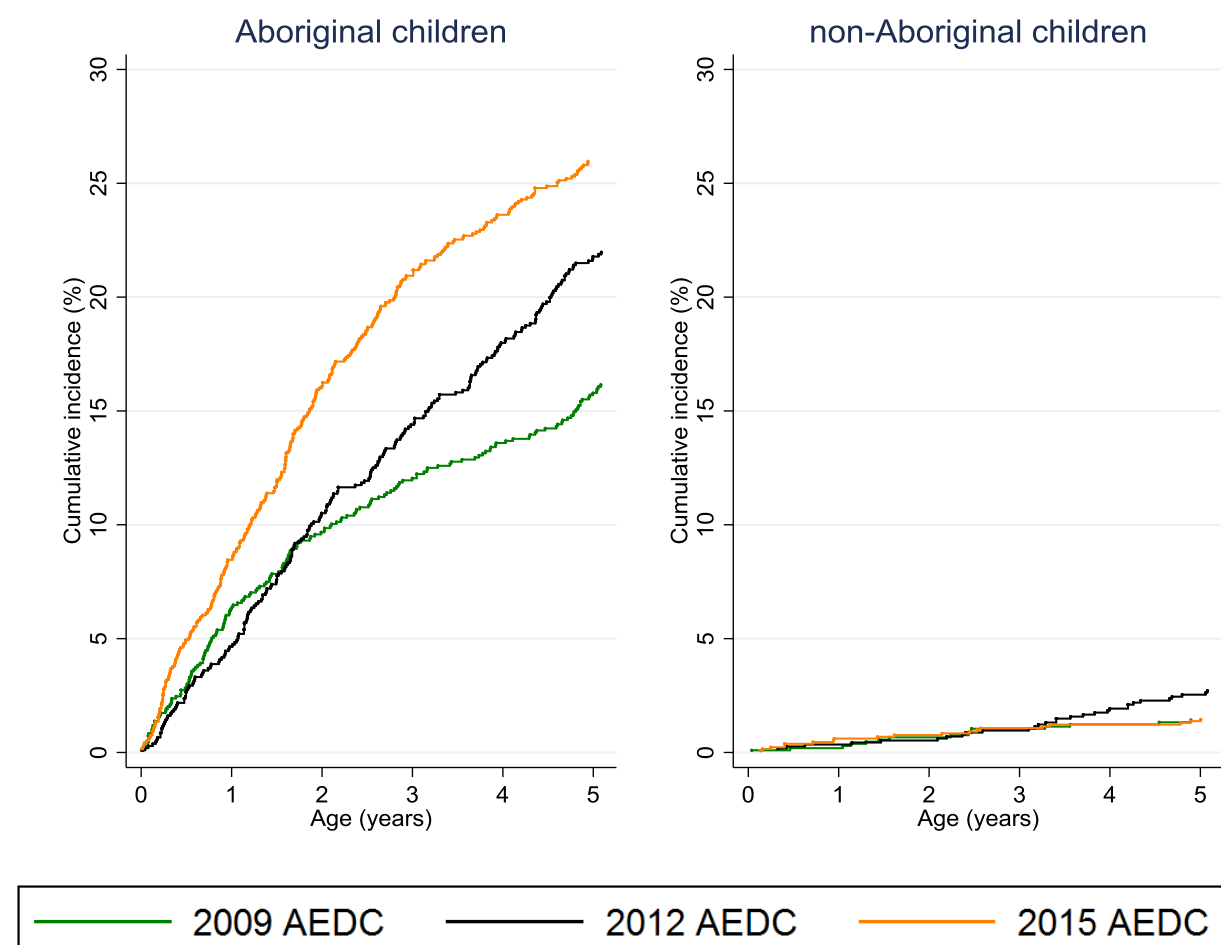
The five-year cumulative incidence of a first substantiation for Aboriginal children also increased over time from 16% for the 2009 AEDC cohort to 22% for the 2012 AEDC cohort and 26% for the 2015 AEDC cohort (Figure 4.2). The five-year cumulative incidence of first episode of out-of-home care for Aboriginal children increased from 6.8% for the 2009 AEDC cohort to 8.8% for the 2012 AEDC cohort and 9.1% for the 2015 AEDC cohort (Figure 4.3). For non-Aboriginal children, there was some variation between the three groups of children but no evidence of an increase in cumulative incidence over time between the three groups.

Among Aboriginal children in the 2015 AEDC cohort, more than half of the first notifications, substantiations and out-of-home care episodes by age 5 years occurred by age 2 years (Figures 4.1 to 4.3).

Figure 4.3 Cumulative incidence of NT Aboriginal and non-Aboriginal children with a first out-of-home care episode to age 5 years for 2009, 2012 and 2015 AEDC cohorts
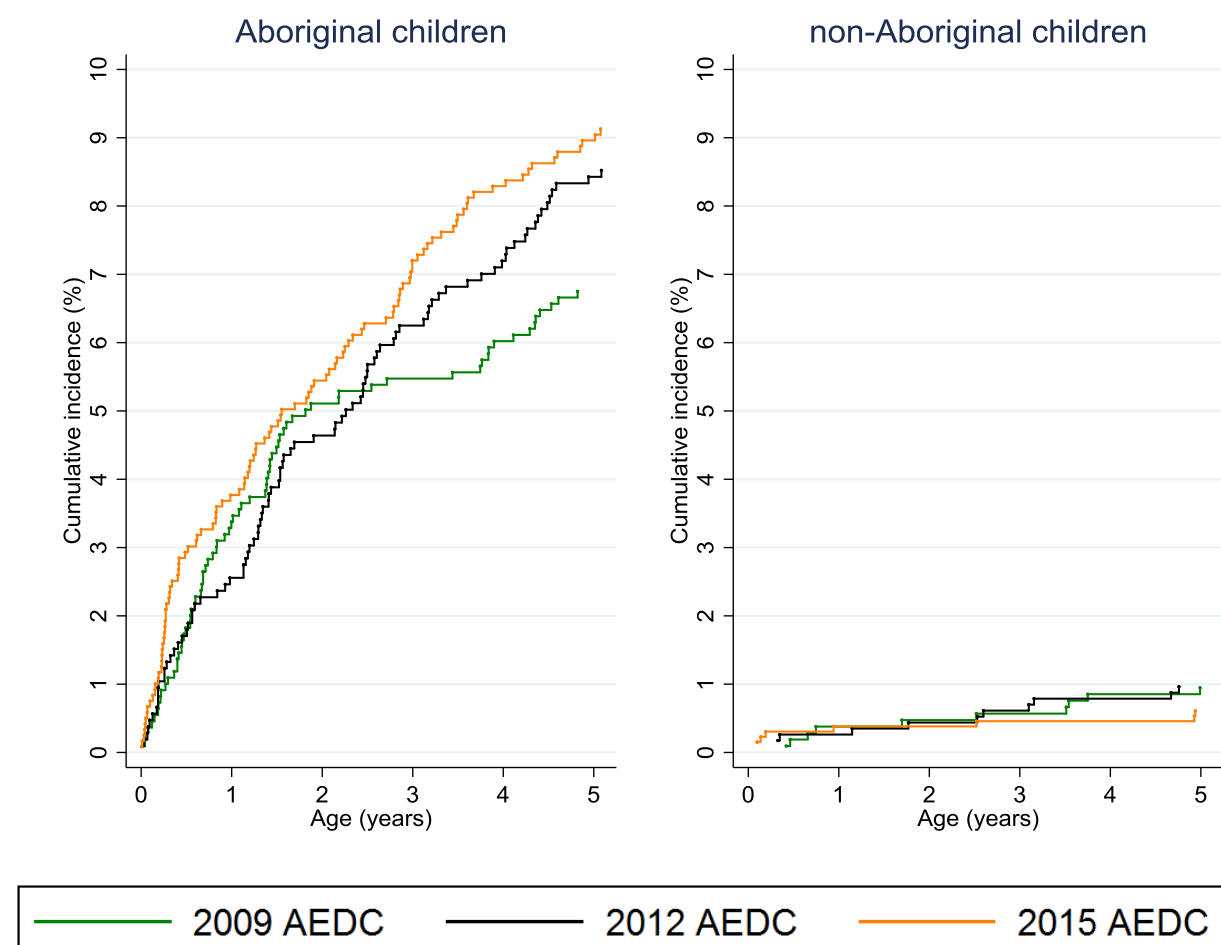
4.2 Proportion of NT Aboriginal and non-Aboriginal children with contact with different levels of child protection services by age 5 years

By age 5, half (53%) of the Aboriginal children in the 2015 AEDC cohort had at least one notification; a quarter (26%) had at least one substantiation; and one in 11 (9%) had at least one out-of-home care episode as a result of substantiated abuse or neglect,[iii] while half (47%) had no contact with child protection services (Figure 4.4). For the non-Aboriginal children in the study cohort, one in 10 (9.8%) had at least one notification; three in 200 (1.4%) had at least one substantiation; and one in 200 (0.6%) had at least one out-of-home care episode for substantiated abuse or neglect. More than 90% had no contact with child protection services by the age of 5 years (Figure 4.4).

[iii] Children who were in out-of-home care for social reasons, such as an unwell parent, were excluded from this analysis.

Figure 4.4 Proportion of NT Aboriginal and non-Aboriginal children with contact with different levels of child protection services by age 5 years

Aboriginal children

- 47% of children had no contact with child protection services
- 53% of children had at least one notification — **1 in 2 children**
- 26% of children had at at least one substantiation — **1 in 4 children**
- 9 % of children had at least one Out-of-Home Care episode — **1 in 11 children**

non-Aboriginal children

- 90.2% of children had no contact with child protection
- 9.8% had at least 1 notification — **1 in 10 children**
- **3 in 200 children(1.4%)**
- **1 in 200 children(0.6%)**
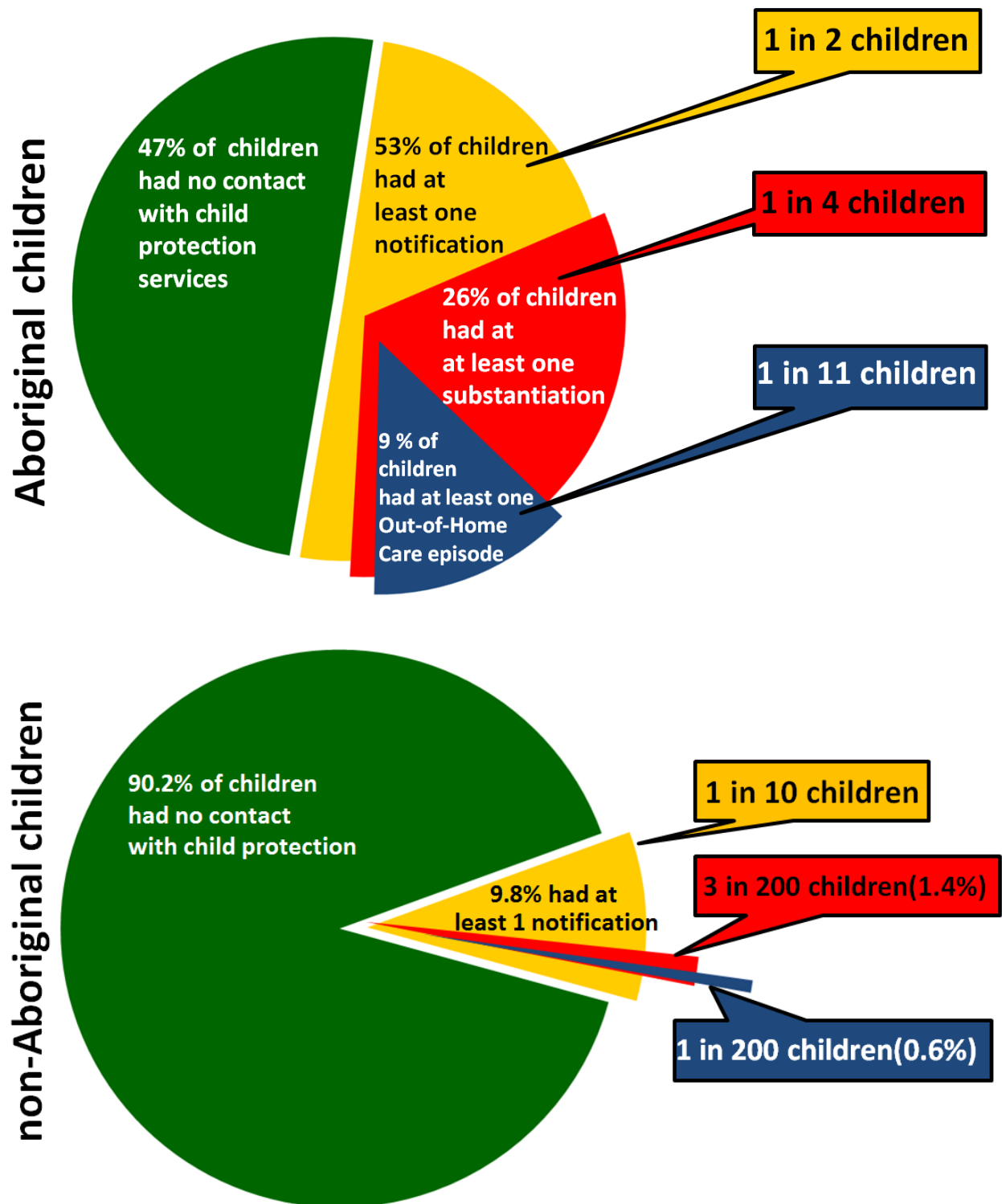
4.3 Repeat notifications and substantiations by age 5 years

Among children in the 2015 AEDC cohort, more than half of those children who came into contact with child protection services experienced more than one notification (Aboriginal children, 65%; non-Aboriginal children, 53.1%) (Figure 4.5). By age 5, 20.5% of the Aboriginal and 14.8% of the non-Aboriginal children who had been reported to child protection services had been reported at least five times (Figure 4.5, Appendix Table 3). For both Aboriginal and non-Aboriginal children who were reported by age 5 years, the median number of notifications per child was two notifications.

For those 634 Aboriginal children who had at least one child protection notification by age 5 years, 311 (49%) children had a substantiated episode. Among the children with a substantiated episode, 182 (28.7%) children had a single substantiated episode of child abuse or neglect, while 59 (9.3%) children had three or more substantiated episodes (Figure 4.6, Appendix Table 4). Among the 128 non-Aboriginal children with at least one child protection notification by age 5 years, a total of 20 (15.6%) children had a substantiated episode, with five (3.9%) children having more than one substantiated episode (Figure 4.6).[iv]

Figure 4.5 Distribution of the number of notifications by age 5 years for NT Aboriginal and non-Aboriginal children in the 2015 AEDC cohort

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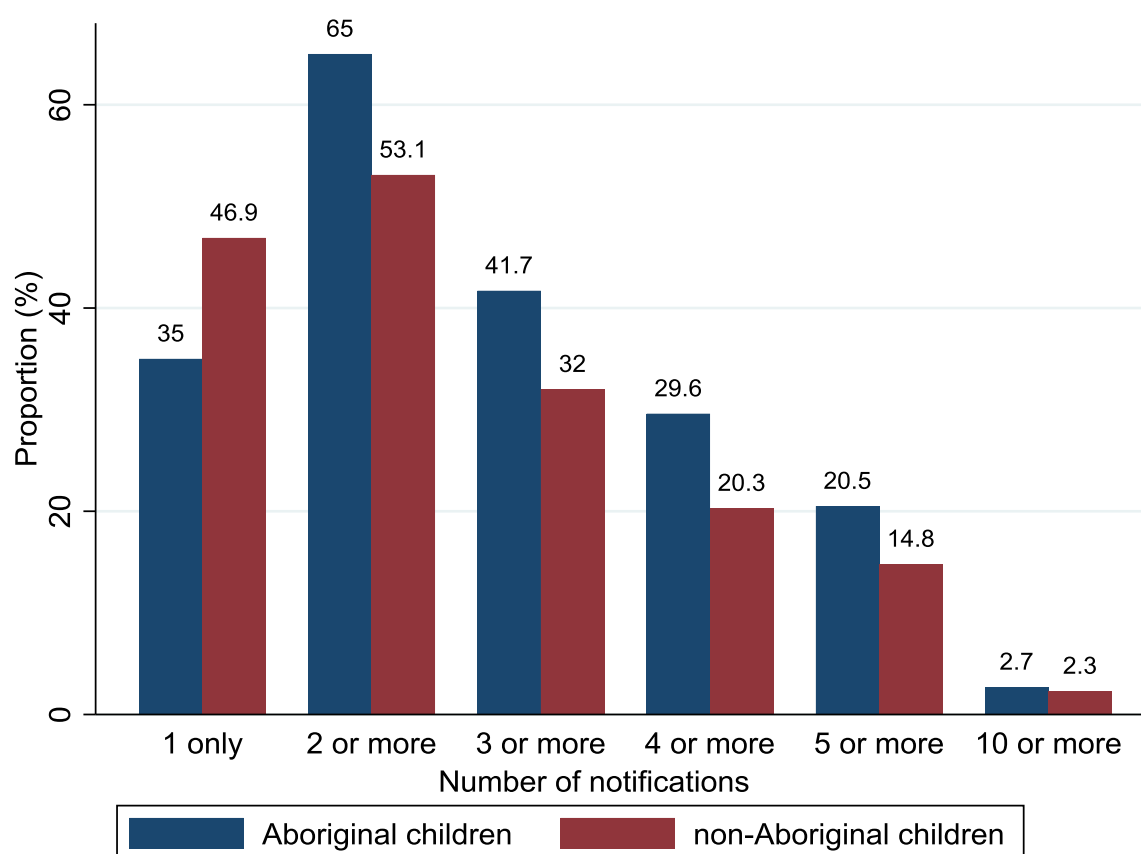
[iv] Table not included because of small numbers.

Figure 4.6 Distribution of the number of substantiated episodes of child abuse or neglect among those children with at least one notification by age 5 years for NT Aboriginal and non-Aboriginal children in the 2015 AEDC cohort
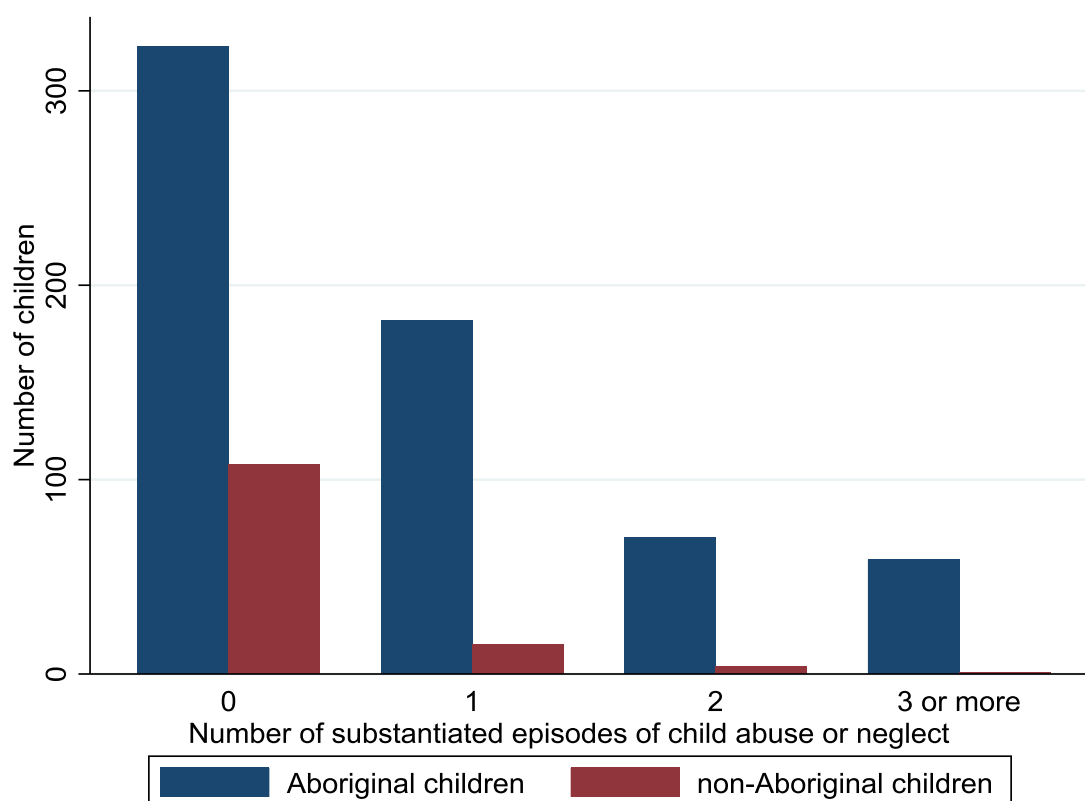
4.4 Primary type of maltreatment for first notification and all notifications by age 5 years

For the 634 NT Aboriginal children in the study cohort with at least one notification, by age 5 years, the most common primary type of *first* maltreatment report was neglect (49.8%), followed by emotional, physical and sexual abuse (Figure 4.7). For the 128 non-Aboriginal children in the study cohort with at least one notification, the most common primary type of *first* maltreatment report was emotional abuse (39.1%), followed by neglect, physical and sexual abuse (Figure 4.7).

Figure 4.8 presents the distribution of the primary type of maltreatment for all notifications. For Aboriginal children, there was 1918 notifications, of which almost half (48.3%) were for neglect. For non-Aboriginal children, there was a total of 324 notifications, of which the two most common primary types of maltreatment were emotional abuse (34.6%) and neglect (33.5%).

Figure 4.7 Distribution of primary type of maltreatment at first notification by age 5 years for NT Aboriginal and non-Aboriginal children in the 2015 AEDC cohort

Aboriginal children (n=634)

non-Aboriginal children(n=128)
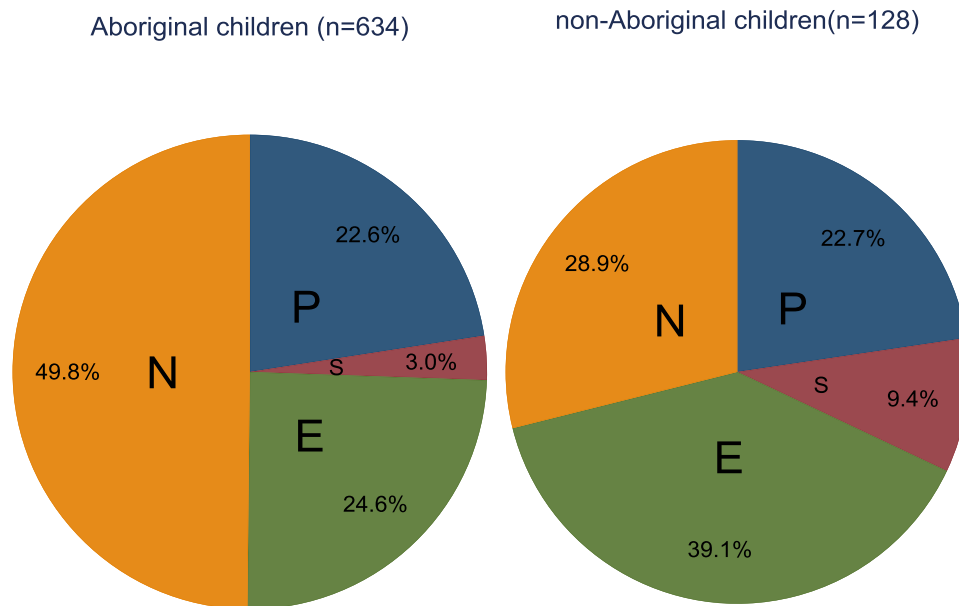
Note: N: neglect; P: physical abuse; E: emotional abuse; S: sexual exploitation.

Figure 4.8 Distribution of primary type of maltreatment for all notifications, by age 5 years, for NT Aboriginal and non-Aboriginal children in the 2015 AEDC cohort

Aboriginal children (1918 notifications)

non-Aboriginal children (324 notifications)
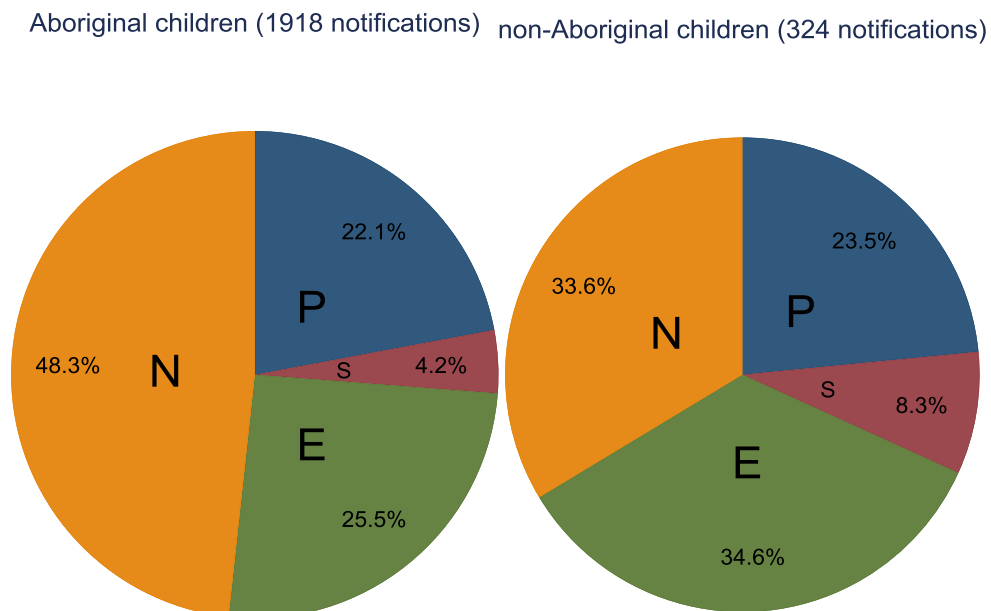
Note: N: neglect; P: physical abuse; E: emotional abuse; S: sexual abuse/exploitation.

The pattern of notifications by each of the four types of maltreatment can also be considered separately to answer the question of what proportion of all children by age 5 years have ever been reported for each type of maltreatment (as the primary type at notification). This result is expressed as the cumulative incidence (proportion) among all children in the study cohort, with the results presented in Figure 4.9. Note that the groups overlap, with some children counted for more than one type of maltreatment.

For the Aboriginal children, the five-year cumulative incidence of the first notification for neglect, physical abuse, emotional abuse and sexual abuse were 35%, 25%, 25% and 5% respectively. This implies that by age 5, for Aboriginal children, 35% have ever been reported for neglect, 25% reported for physical abuse, 25% reported for emotional abuse and 5% reported for sexual abuse. For the non-Aboriginal children, the five-year cumulative incidence of the first notification for neglect, physical, emotional and sexual abuse were 4.5%, 3.5%, 5% and 2% respectively.

The shape of the curves presented in Figure 4.9 provides an indication of the ages of greatest rate of reporting. For example, the cumulative incidence of notifications for emotional abuse among Aboriginal children and of neglect among non-Aboriginal children is relatively constant across different ages. On the other hand, first notifications of neglect are more common among Aboriginal children in their first year, while the cumulative incidence of first reports of emotional abuse among non-Aboriginal children accelerates after age 2 years.

Figure 4.9 Cumulative incidence of first notification for each primary type of maltreatment by age 5 years for NT Aboriginal and non-Aboriginal children in the 2015 AEDC cohort

Aboriginal children

non-Aboriginal children
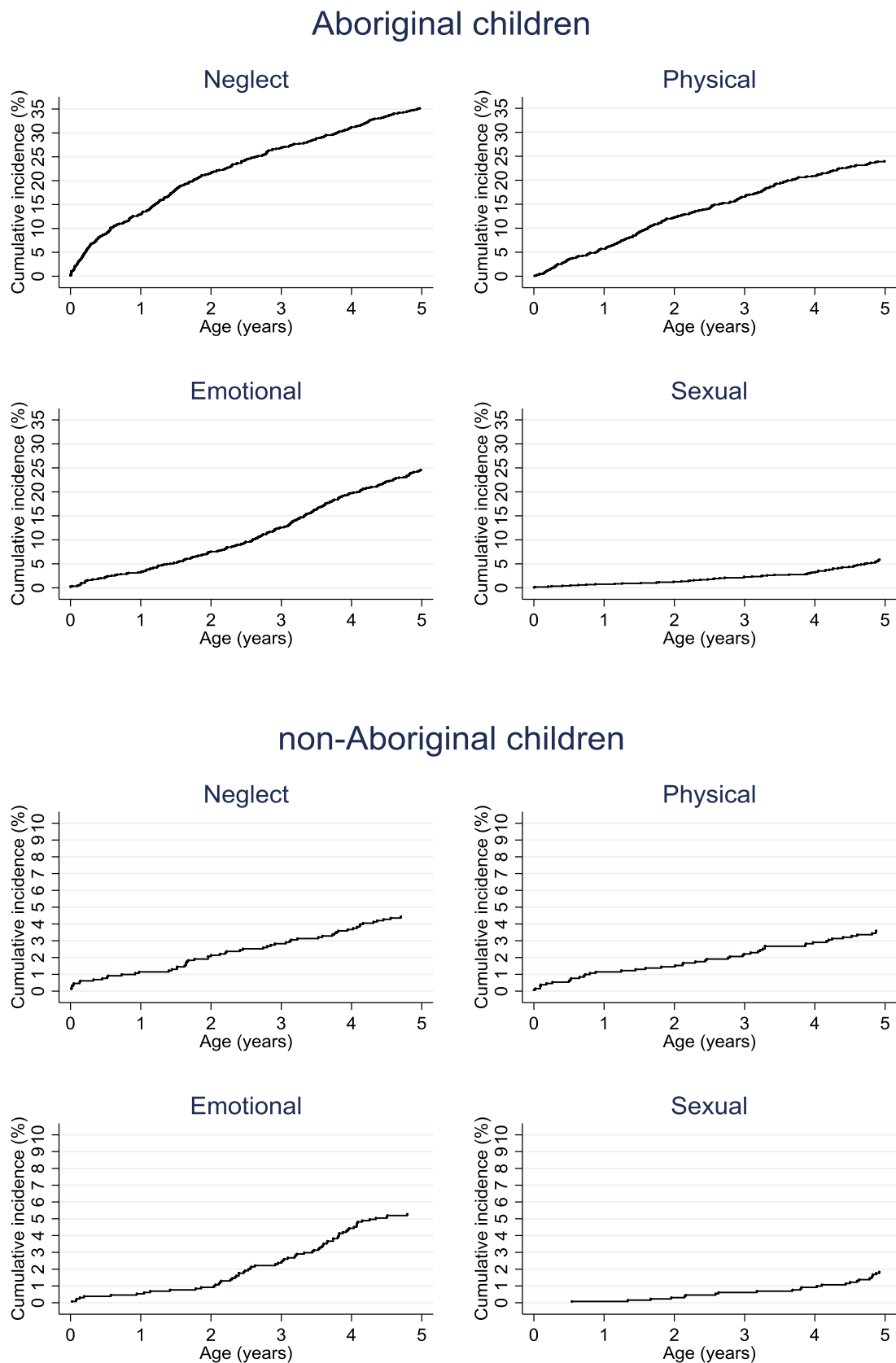
4.5 Proportion of children with notifications for multiple primary types of maltreatment by age 5 years

The previous section observed that some children are reported for more than one primary type of maltreatment. This section describes the proportion of children with first notifications of multiple types of maltreatment.

Among the 634 Aboriginal children and 128 non-Aboriginal children in the AEDC cohort who have a notification, 49.8% of Aboriginal children (n=316) and 39.8% (n=51) of non-Aboriginal children have been reported for two or more types of maltreatment. Of all children with notifications, 2.1% of Aboriginal (n=13) and 2.3% (n=3) of non-Aboriginal children have been reported for all four maltreatment types by age 5 (Figure 4.10).

Figure 4.10 Distribution of number of primary types of maltreatment in notifications by age 5 years for NT Aboriginal and non-Aboriginal children in the 2015 AEDC cohort
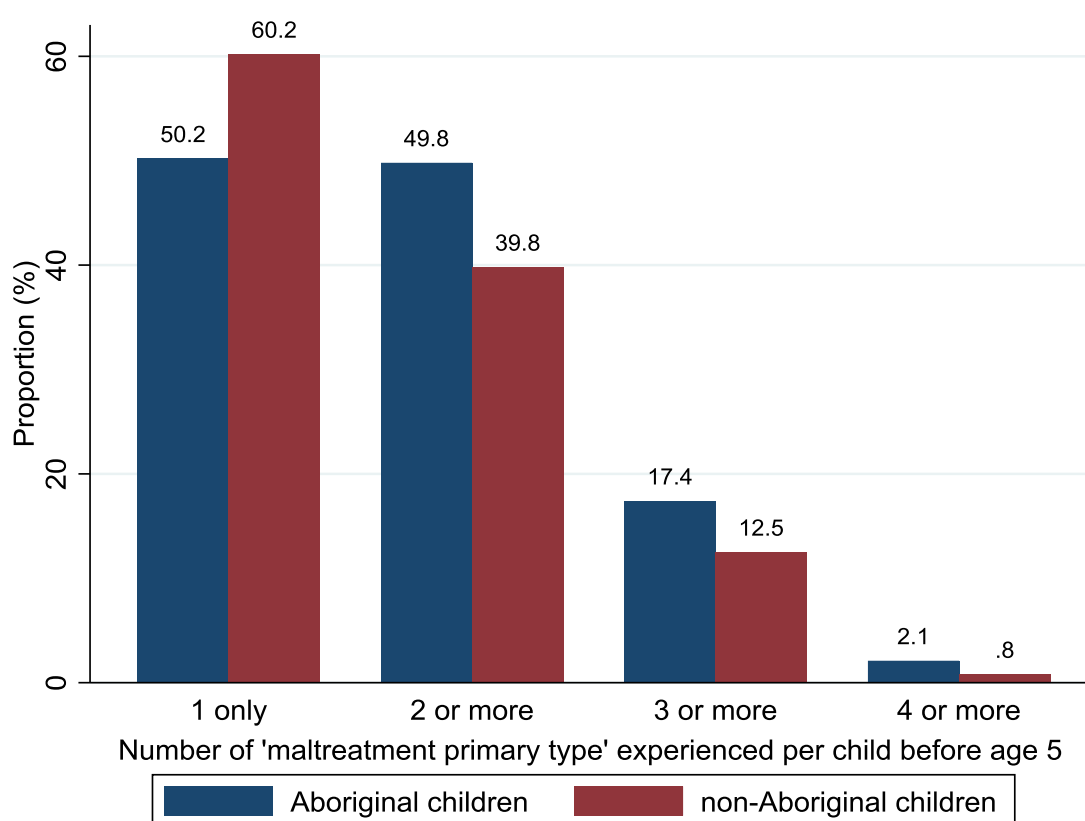
4.6 Pattern of overlap for primary type of maltreatment in notifications by age 5 years

In this section, the overlap between different primary types of notification is further explored using a method referred to as Conjunctive Analysis of Cases Configurations (CACC). This method was first applied by Miethe et al (2008)[24] and is applied in this section to provide a visual representation of the distributions of the varied combinations of notifications for the four types of maltreatment. With four maltreatment types there is a total of 16 possible configurations, which are presented as Table 4.1 as neglect (N),

emotional abuse (E), physical abuse (P) and sexual exploitation or abuse (S) along with the absence (*) of each respective type of maltreatment. For example, *E** would indicate reports involving emotional abuse, while N*PS would indicate reports involving neglect (N), physical abuse (P) and sexual exploitation/abuse (S), but not emotional abuse (*).

From the CACC table, we can see that for those children in the study cohort with one or more notification, there are distinctly different patterns between Aboriginal and non-Aboriginal children. Aboriginal children were most likely to be reported for neglect only (N***, 25.4%) while non-Aboriginal children were most likely to be reported for emotional abuse only (E***, 25.6%). The second-ranked configuration was emotional abuse only (*E**, 12.3%) for Aboriginal children and neglect only (N***, 16.4%) for non-Aboriginal children. A notable overlap is that 11.0% of Aboriginal children and 6.3% of non-Aboriginal children have been reported for the combination of neglect, emotional abuse and physical abuse (NEP*) before age 5 years.

Table 4.1 Case configuration of primary types of maltreatment in notifications by age 5 years for NT Aboriginal and non-Aboriginal children in the 2015 AEDC cohort

	Aboriginal					non-Aboriginal			
Rank	Type	n	%	cumulative %	Rank	Type	n	%	cumulative %
1	N***	161	25.4	25.4	1	*E**	34	26.6	26.6
2	*E**	78	12.3	37.7	2	N***	21	16.4	43.0
3	NE**	73	11.5	49.2	3	**P*	13	10.2	53.1
4	N*P*	72	11.4	60.6	4	N*P*	10	7.8	60.9
5	NEP*	70	11.0	71.6	5	NE**	10	7.8	68.8
6	**P*	65	10.3	81.9	6	***S	9	7.0	75.8
7	*EP*	44	6.9	88.8	7	*EP*	8	6.3	82.0
8	N*PS	16	2.5	91.3	8	NEP*	8	6.3	88.3
9	***S	14	2.2	93.5	9	**PS	3	2.3	90.6
10	NEPS	13	2.1	95.6	10	N**S	3	2.3	93.0
11	N**S	9	1.4	97.0	11	NE*S	3	2.3	95.3
12	NE*S	7	1.1	98.1	12	NEPS	3	2.3	97.7
13	*E*S	5	0.8	98.9	13	*EPS	2	1.6	99.2
14	*EPS	4	0.6	99.5	14	*E*S	1	0.8	100.0
15	**PS	3	0.5	100.0					

Note: N: neglect; P: physical abuse; E: emotional abuse; S: sexual abuse or exploitation: * absent

4.7 Geographic variation in notifications and substantiated cases of child maltreatment

There are geographic variations in the number of child protection notifications and substantiations for both Aboriginal and non-Aboriginal children. The discussion in this section uses the nine NT geographic regions developed for the Australian Bureau of Statistics (ABS) for statistical reporting.[25] These regions are Statistical Area Level 3 (SA3) in the hierarchy of ABS geography (Figure 4.11). [v]

Figure 4.11 Map of the ABS Statistical Area Level 3 (SA3) in the NT
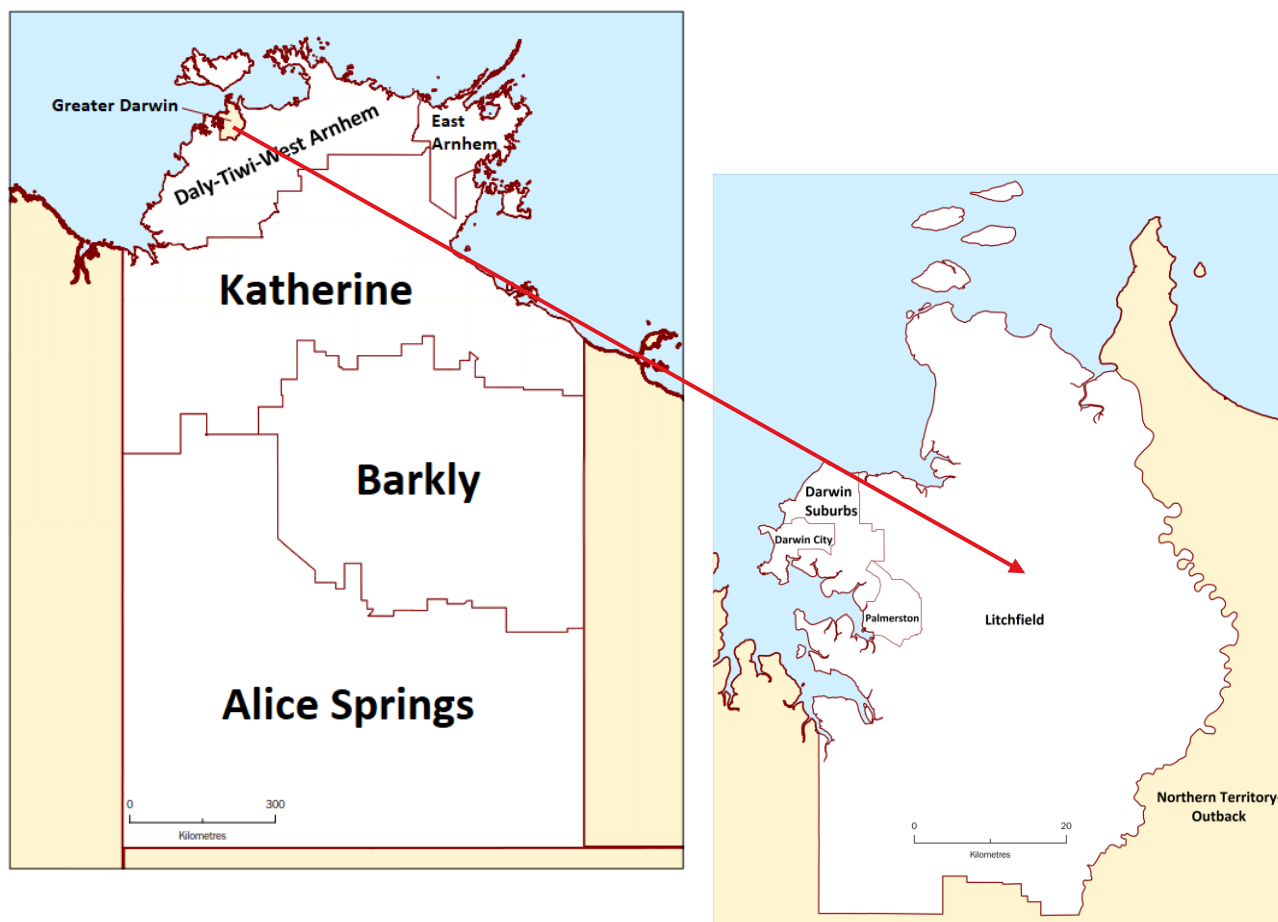
Source: Adapted from Australian Bureau of Statistics, Australian Statistical Geography Standard (ASGS) Volume 1 - Northern Territory Maps, July 2011, Statistical Area Level 4 & 3. ABS Catalogue No. 1270.0.55.001. Reproduced with permission

For those 634 Aboriginal children in the study cohort who were ever in notifications (by age 5 years), the greatest proportion were from Alice Springs (27.1%), followed by Katherine (18.9%) and Daly-Tiwi-West Arnhem (16.6%) SA3 regions. The largest proportion of the 128 non-Aboriginal children in notifications were from Litchfield (27.3%), followed by Darwin City (26.6%) and Katherine (18.0%) SA3 regions (Figure 4.12).

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[v] SA3: Statistical Area 3. SA3 are geographical areas that were used by ABS for the output of regional data, including 2011 and 2016 Census Data.

Figure 4.12 Geographic distribution across nine NT regions of the number of first notifications for Aboriginal and non-Aboriginal children, 2015 AEDC cohort

Aboriginal children (n=634)   non-Aboriginal children (n=128)

Legend:
- Alice Springs
- Barkly
- Daly - Tiwi - West Arnhem
- Darwin City
- Darwin Suburbs
- East Arnhem
- Katherine
- Litchfield
- Palmerston
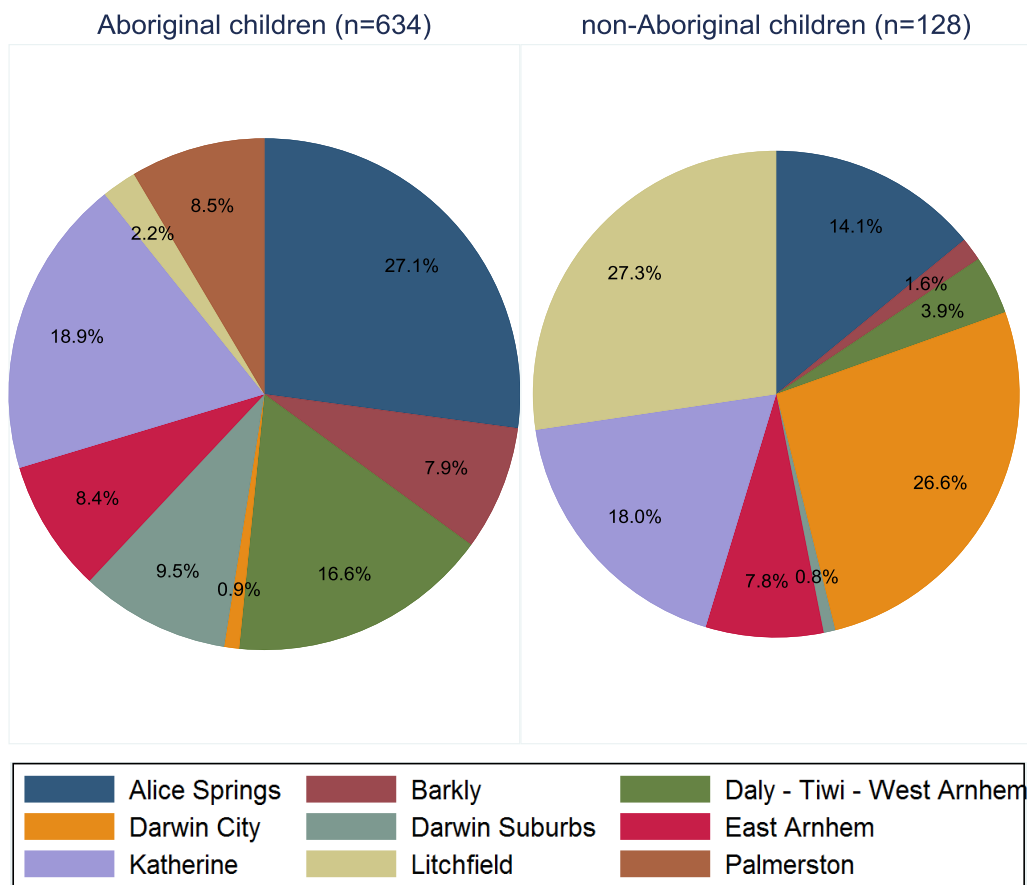
Figure 4.13 presents the number of children in the 2015 AEDC study cohort from each of the nine SA3 regions as well as the number who have had or not had at least one notification by age 5 years. Figure 4.14 provides similar information presented as the proportion of children in each region who have had a notification to child protection services. Among all Aboriginal children in the study cohort, the proportion of children with notifications was 76.9%, 63.0%, 58.1% and 56.6% for those living in the Barkly, Alice Springs, Palmerston and Katherine SA3 regions respectively. For non-Aboriginal children, the proportions of children with notifications were 14.5%, 12.3% and 12.2% for those living in the Katherine, Palmerston and Litchfield regions respectively.

Figure 4.15 and Figure 4.16 are in similar format to the previous figures, but the results are for children who have ever had (or not had) a substantiated episode of maltreatment by age 5 years. Among the Aboriginal children in the study cohort, the proportion of children who had ever had a substantiated episode of child maltreatment were 46.2%, 33.3%, 30.8% and 30.7% for those living in the Barkly, Alice Springs, Darwin suburbs and Katherine regions respectively. Among non-Aboriginal children, the proportions of children with substantiations were 4.3%, 2.1% and 3.2% for those living in the Katherine, Palmerston and Litchfield regions respectively.

Figure 4.13 Comparison of the numbers of Aboriginal and non-Aboriginal children with and without a child protection notification by age 5 years across nine NT SA3 regions, 2015 AEDC cohort
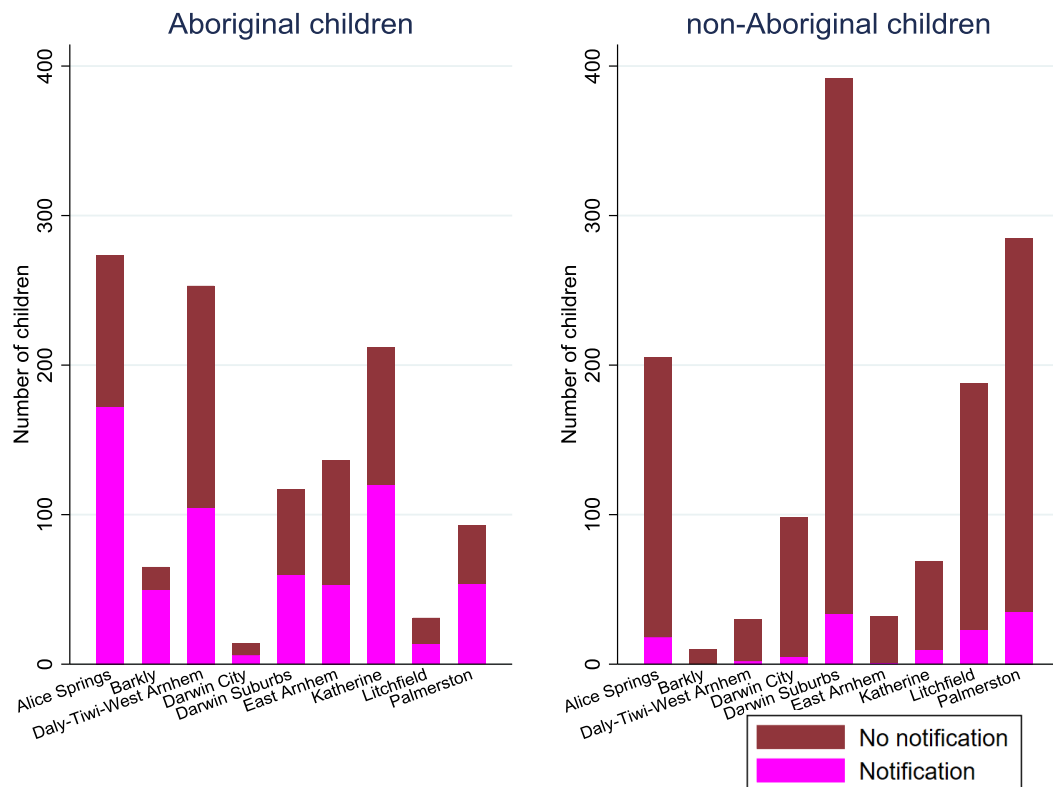
Figure 4.14 Comparison of the proportion (%) of Aboriginal and non-Aboriginal children with a child protection notification by age 5 years across nine NT SA3 regions, 2015 AEDC cohort
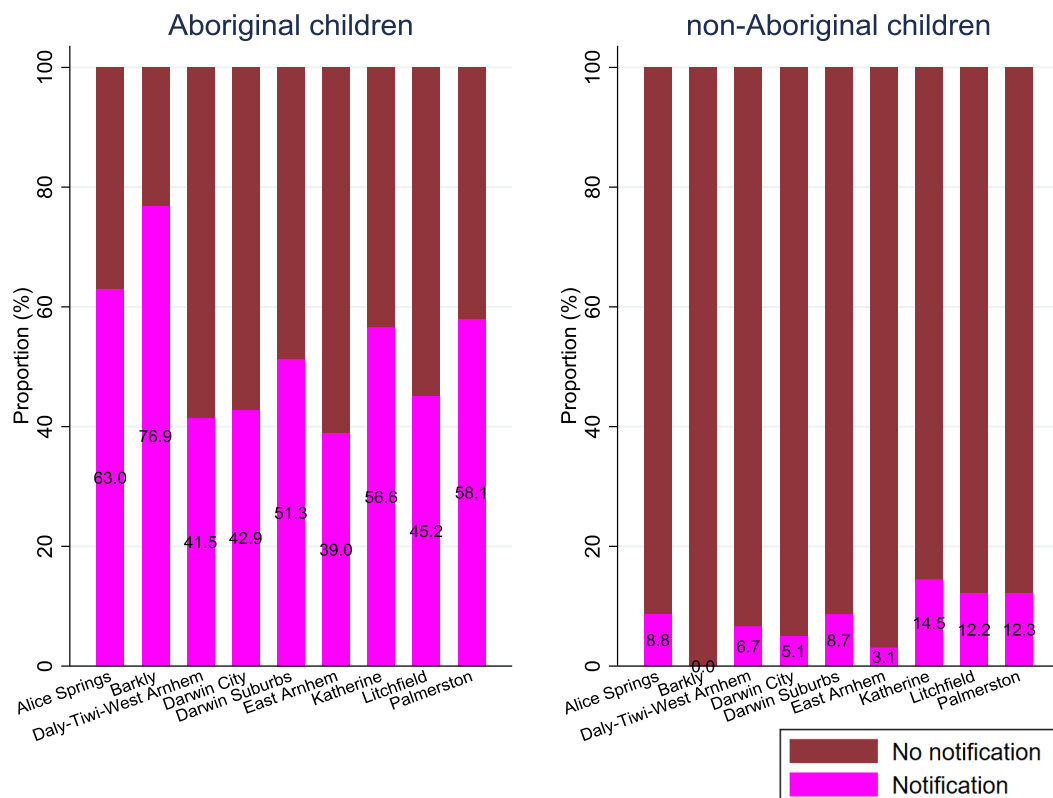
Figure 4.15 Comparison of the numbers of Aboriginal and non-Aboriginal children with and without a substantiated episode of child maltreatment by age 5 years across nine NT SA3 regions, 2015 AEDC cohort
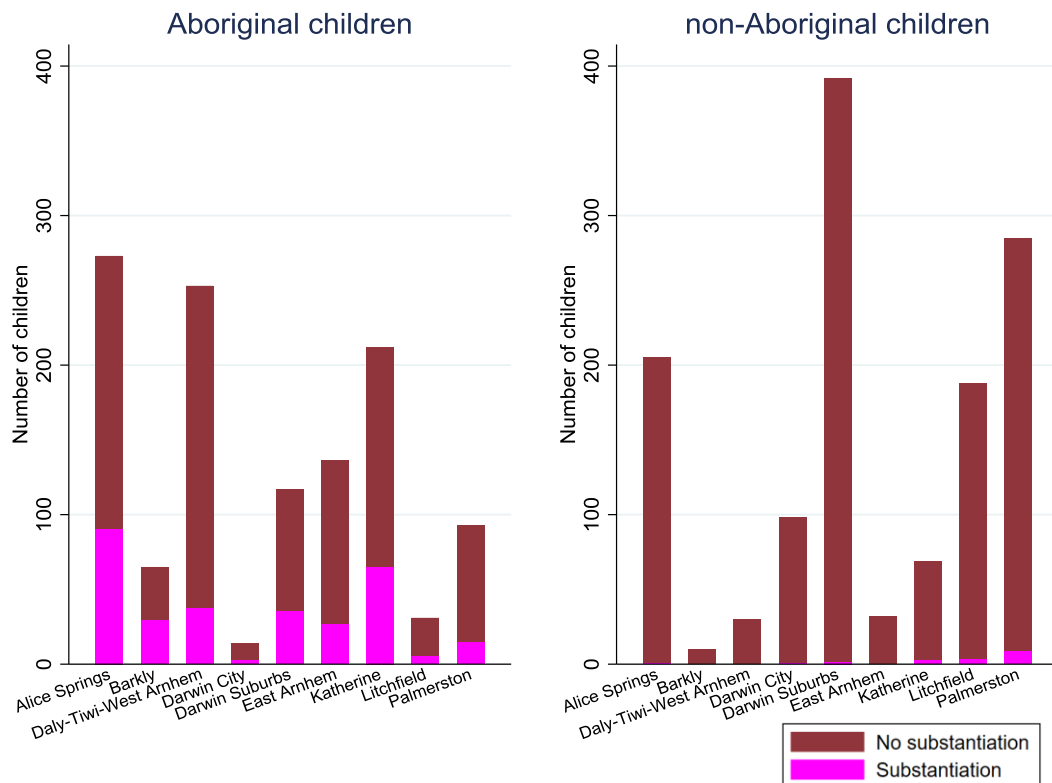
Figure 4.16 Comparison of the proportion (%) of Aboriginal and non-Aboriginal children with a substantiated episode of child maltreatment by age 5 years across nine NT SA3 regions, 2015 AEDC cohort
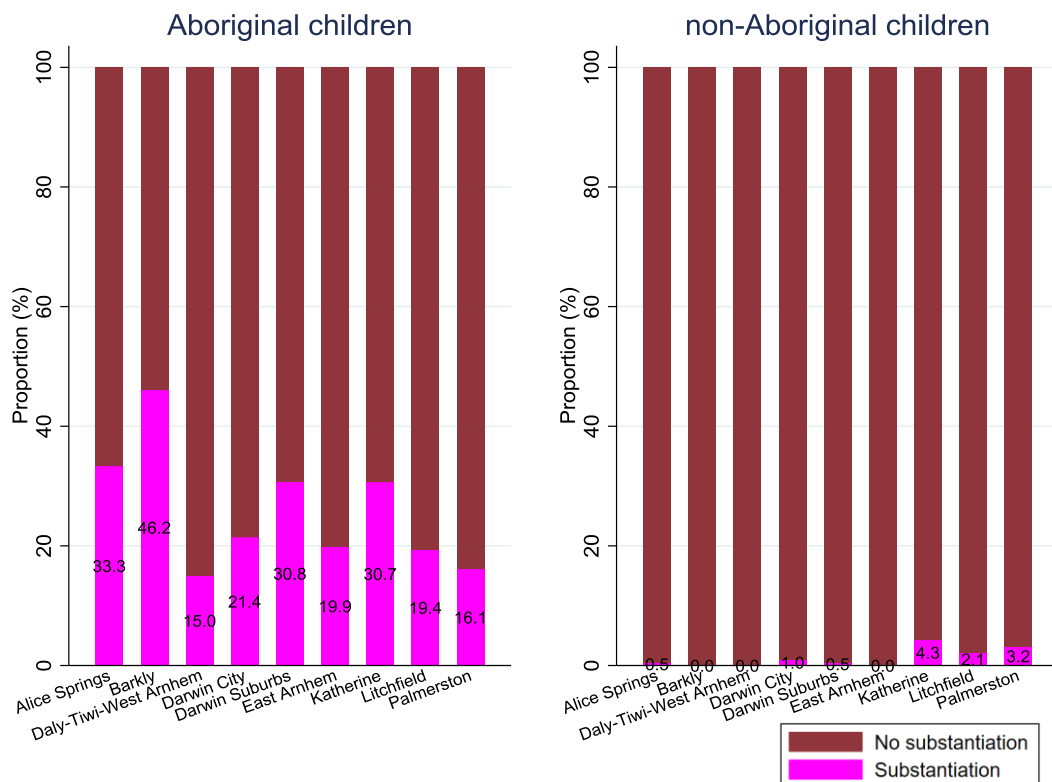
5. Distribution of notifications by reporter group

Key findings

This chapter explores how notifications vary by the source of report in terms of both maltreatment type and frequency of reporting. The results support a more differentiated child protection intervention response. This study found that:

o For both Aboriginal and non-Aboriginal children, the most common sources for first notifications to the child protection system (by age 5 years) were police, health professionals and community members.

o For Aboriginal children, the highest rate of first notifications were children to age 1 year most commonly reported by health professionals for neglect. After the first year, police were the leading source of first reports. Police were also the leading source of all reports for all ages from 0 to 4 years, most commonly reporting children at risk of emotional abuse (most associated with domestic violence).

o For Aboriginal children, about one in three children had ever been reported by police (33.4%), one in four had ever been reported by health professionals (23.1%), and about one in six had been ever been reported by community members (16.9%) by age 5 years.

o For non-Aboriginal children, about one in 20 children had been reported by police (5.3%) or community members (4.7%), and one in 50 had been reported by health professionals (1.9%) by age 5.

o A substantial proportion of those children with notifications are reported by more than one reporter source (Aboriginal, 52.5%; non-Aboriginal, 49.2%). Of those children who have been reported, 6.5% of Aboriginal and 3.9% of non-Aboriginal children have been reported by five or more 'reporter categories' by age 5 years.

o In our study cohort, most of the children that come into contact with child protection services have been reported by police and/or health professionals in the first five years of their life (Aboriginal, 84.6%; non-Aboriginal, 67.2%).

o For first notifications of Aboriginal children, health professionals are the most common source of first notification for neglect (44.3%), particularly in the first year (50.7%).

o For both Aboriginal and non-Aboriginal children (by age 5 years), the most common grouping of children in notifications was police reporting emotional abuse only (9.8% and 12.5% respectively).

5.1 Source of notification by age and reporter group

Understanding how notifications vary by the source of report provides insight into the patterns of activity leading to reports in the child protection system. This is particularly relevant to the NT, which has a different pattern of child protection notifications from other states in Australia. In Australia in 2016–17, the most common source of report that was subsequently investigated was police (20.7%) followed by school personnel (19.3%), social workers (13.0%) and health professionals (11.7%) (Appendix table A5).[26] In the NT, a higher proportion of investigated reports was from police (35.4%), which was then followed by

health professionals (18.5%), school personnel (15.7%) and non-government organisations (NGOs) (8.3%) (Appendix table A5).[26]

Within the NT child protection dataset, there are 17 different reporter categories, which in this analysis were aggregated into the seven reporter groups presented in Table 5.1. The reporter categories and reporter groups are collapsed for some analyses by aggregations of 'others'.

Table 5.1 Classification of reporter group from reporter category

Reporter group	Reporter category
Police	Police
School personnel	School personnel
Child protection staff	Departmental officer
Non-government organisation (NGO)	Non-government organisation (NGO)
Health professionals	Hospital or health centre
	Medical practitioner
	Other health personnel
Community members	Subject child
	Parent/guardian
	Sibling/other relative
	Friend/neighbour
	Anonymous
	Other
Other professionals	Social worker
	Child care personnel

The three most common reporter groups for notifications to child protection services by age 5 years, for both Aboriginal and non-Aboriginal children, were police, health professionals and community members. However, there are noticeable differences between reports for Aboriginal and non-Aboriginal children in terms of the number of reports by source and the age at notification.

For Aboriginal children (Figure 5.1), the number of first reports and the total number of reports were both highest in the first year of life and declined with increasing age. The most common source of first notification in the first year was from health professionals, while police became the most common source of first notification as the child grew older. Across all ages, from 0 to 4 years, police were the most common source of any report for Aboriginal children with a range from 31.2% of all reports in infants to 64.2% of all reports for children aged 3 years (Figure 5.2).

For non-Aboriginal children (Figure 5.3), there were smaller numbers of first and total reports than for Aboriginal children, with no clear pattern of first reports across age groups of children. Similarly, there was a less clear pattern in source of report for both first reports

and all reports. Health professionals were the leading source of first reports in infants, but there was also a substantial proportion of first reports from community members. In subsequent age groups, community members and police were the leading sources of first reports. Community members and police were also the two leading sources of all reports for all age groups (Figure 5.4).

Figure 5.1 Numbers of first notification and all notifications for NT Aboriginal children by age and source of report, 2015 AEDC cohort
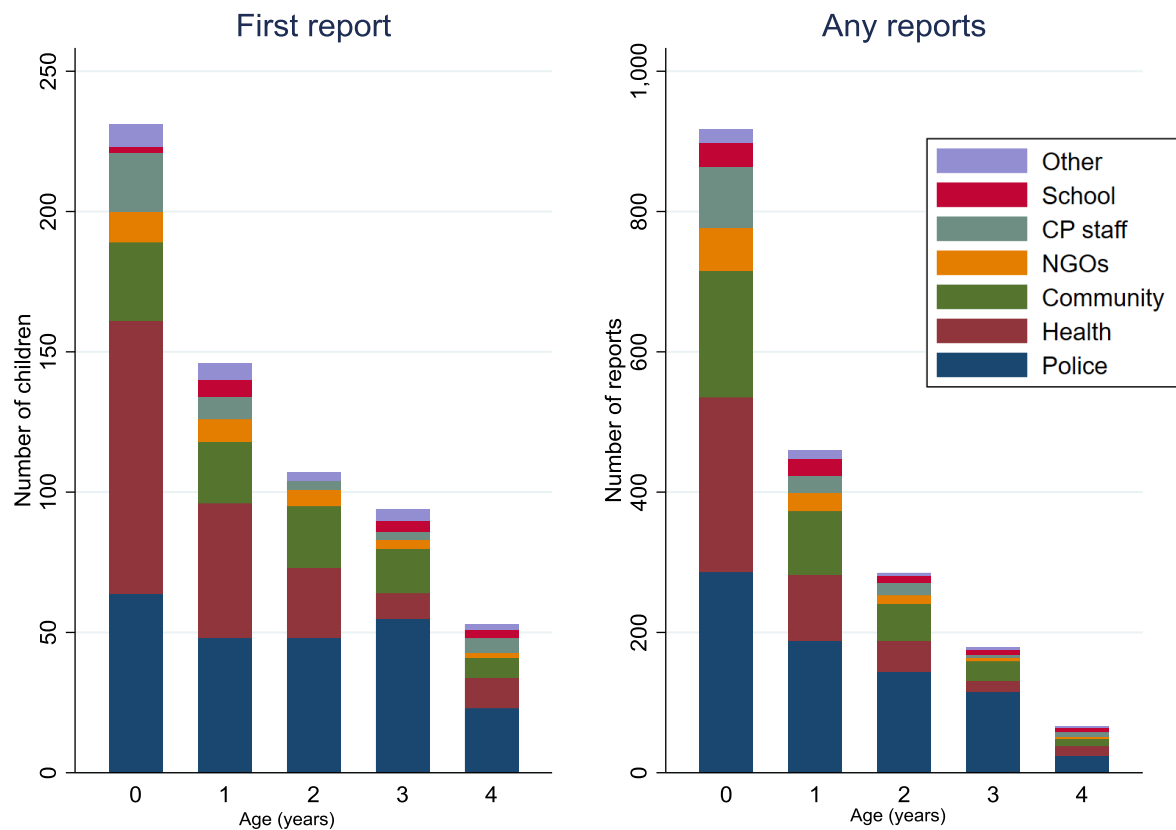
Figure 5.2 Proportion (%) of total notifications for NT Aboriginal children by age and source of report, 2015 AEDC cohort
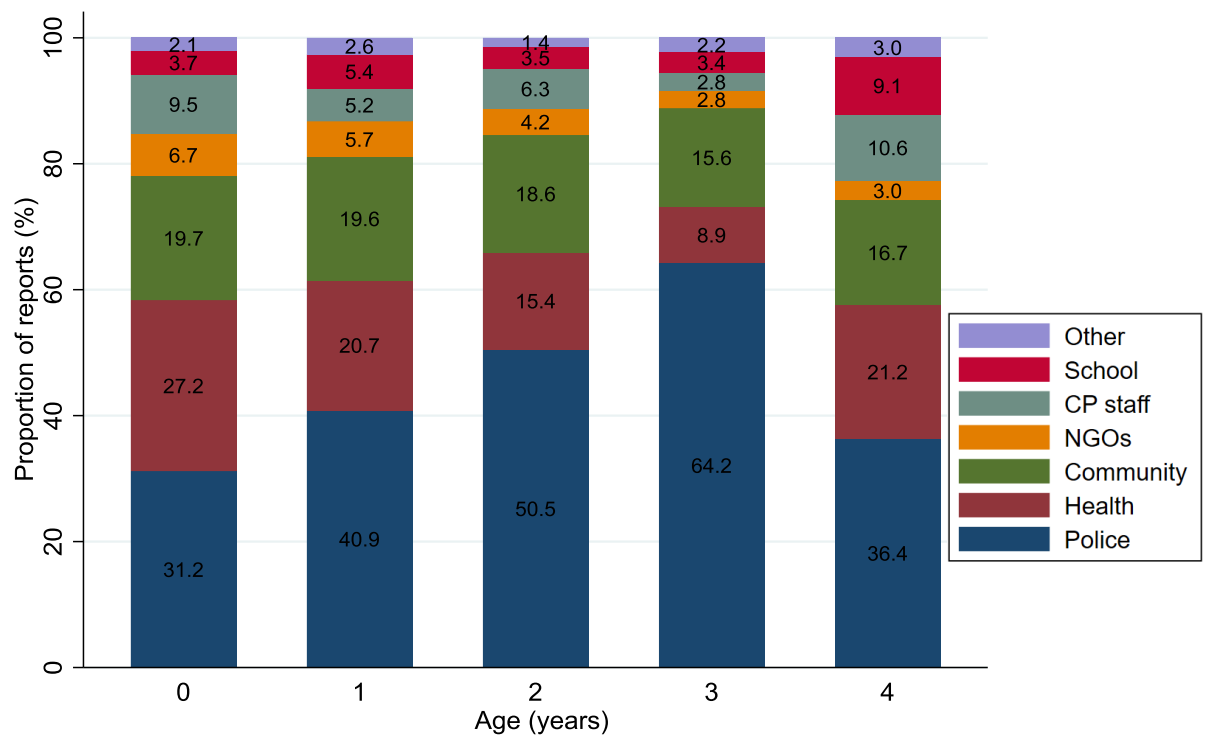
Figure 5.3 Distribution of first notifications and all notifications for NT non-Aboriginal children by age and source of report, 2015 AEDC cohort
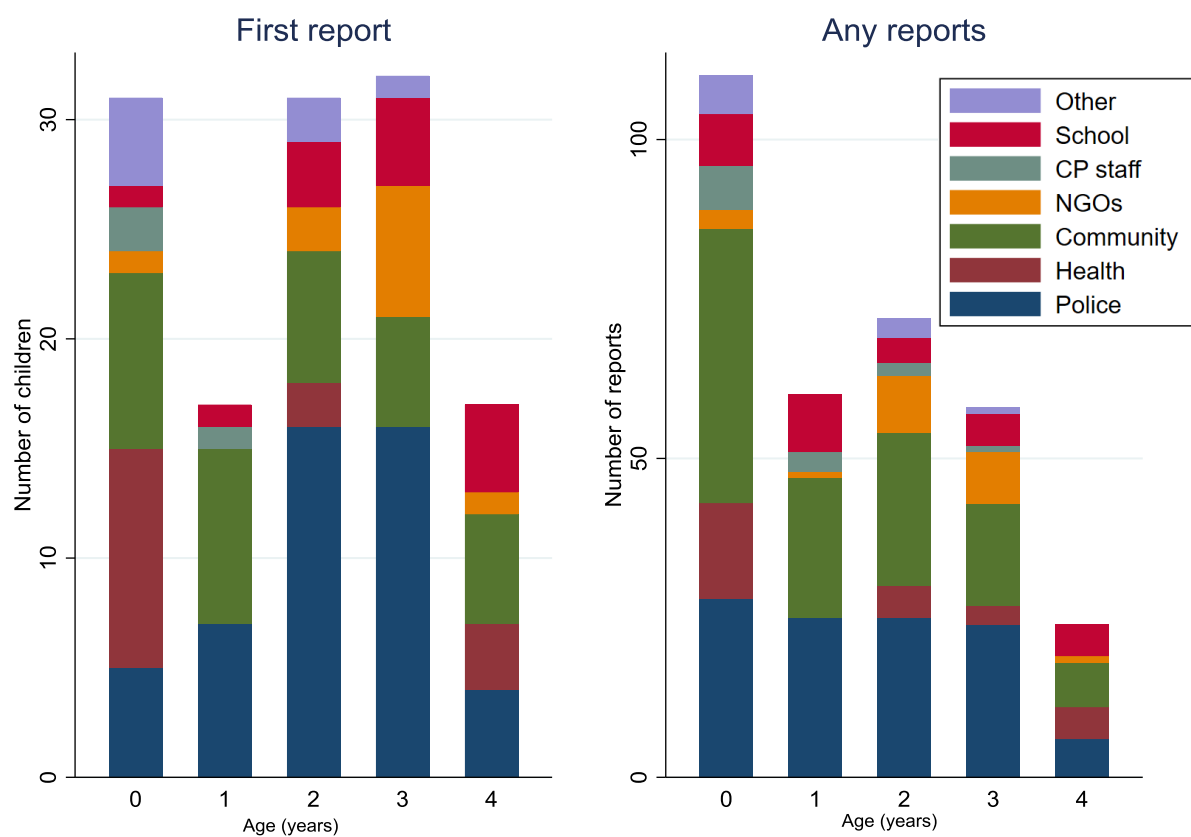
Figure 5.4 Proportion of total notifications for NT non-Aboriginal children by age and source of report, 2015 AEDC cohort
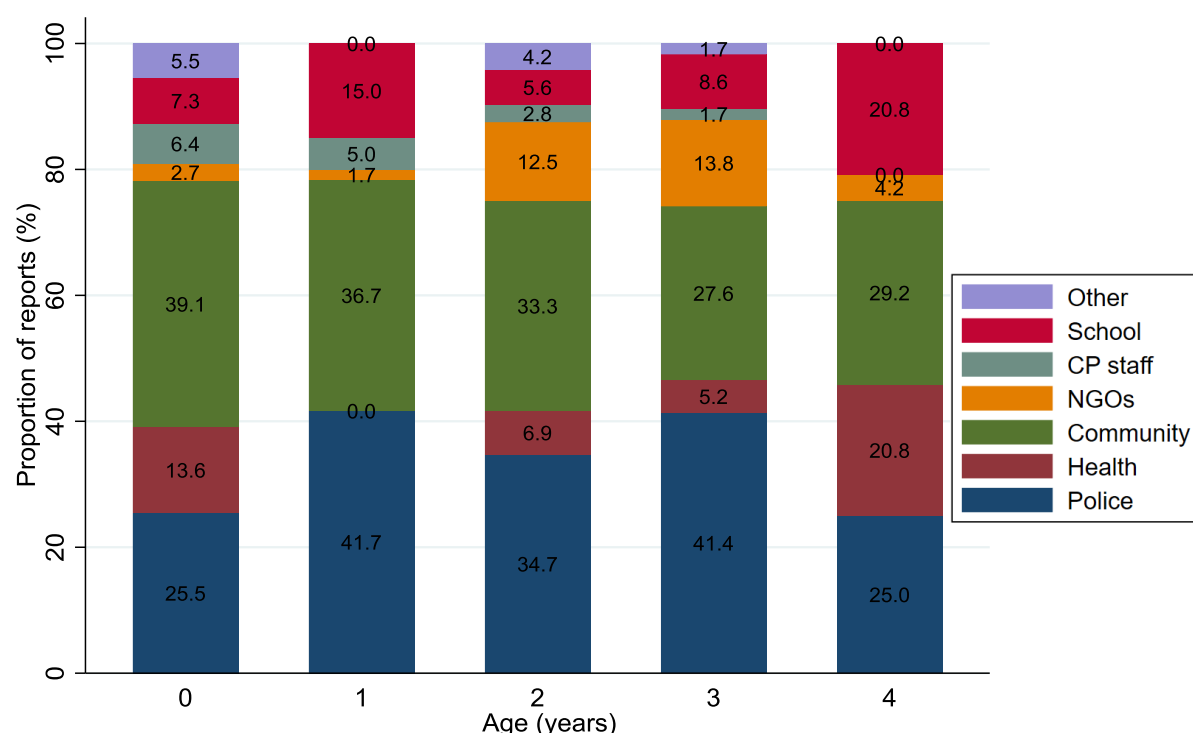
The cumulative proportion of all children in the study cohort with a first notification to child protection services by police, health professionals or community members is presented in Figure 5.5. For Aboriginal children, by age 5 years, about one in three children had ever been reported by police (33.4%), one in four had ever been reported by health professionals (23.1%) and about one in six had been ever been reported by community members (16.9%). For non-Aboriginal children, about one in 20 children had been reported by police (5.3%) or community members (4.7%), and one in 50 had been reported by health professionals (1.9%). The shape of the incidence curves provides insight into the patterns of reporting across age groups; for example, community members report all age groups for both Aboriginal and non-Aboriginal children at a relatively steady rate, while health professionals are more likely to report Aboriginal infants than older-age children.
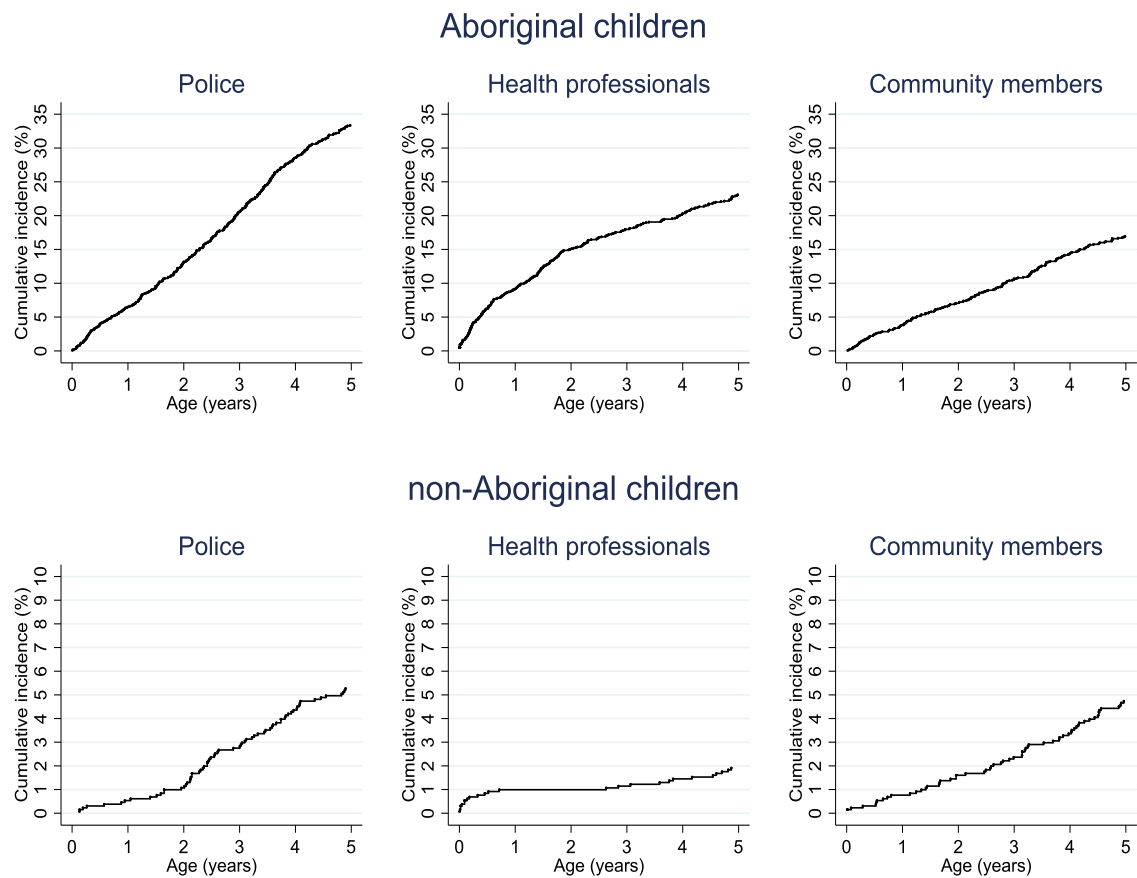
5.2 Multiple reporter sources

For both NT Aboriginal and non-Aboriginal children, almost half of those children who have been reported to child protection services have been reported by two or more 'reporter categories', defined in Table 5.1, by age 5 years (Aboriginal, 52.5%; non-Aboriginal, 49.2%) (Figure 5.6, Appendix table A6). Of those children who have been reported, 6.5% of Aboriginal and 3.9% of non-Aboriginal children have been reported by five or more 'reporter categories' by age 5 years.

Figure 5.6 Proportion of children in notifications who have been reported by multiple 'reporter categories' by age 5 years, for NT Aboriginal and non-Aboriginal children in the 2015 AEDC cohort
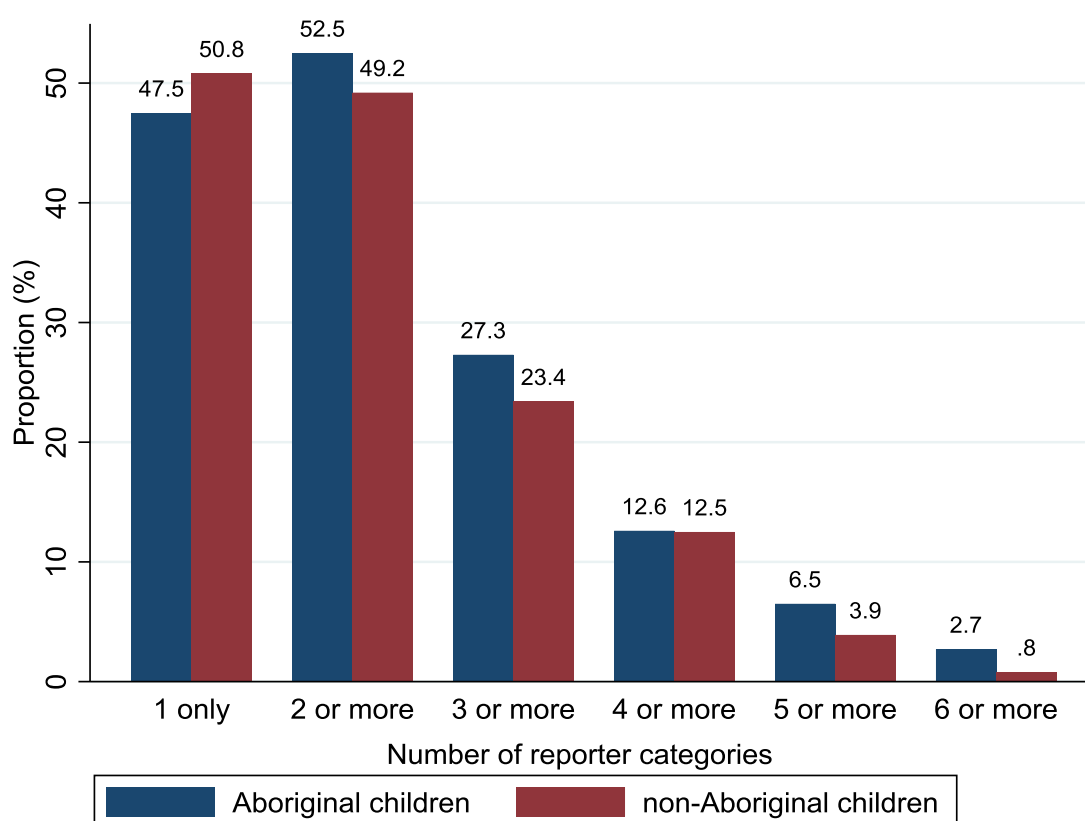
5.3 Pattern of overlap between reporter groups for notifications by age 5 years

A majority of children in the study cohort who have been reported have been reported by more than one reporter group (defined in Table 5.1). This section investigates the overlap between reporter groups by using the same method of Conjunctive Analysis of Cases Configurations (CACC) described in Section 4.6. For this analysis, the sources of reports are reduced to four major groups with a total of 15 possible configurations. The results are presented in Table 5.2, in which the four reporter groups are police (P), health professionals (H), community members (C) and all other reporter groups combined (O) along with the absence of each respective reporter group (*). For example, *H** would indicate that reports were only made by health professionals, while P*CO would indicate that reports

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were made by police (P), community members (C) and other sources (O), but not by health professionals (*).

In our study cohort, the top-ranking configuration for both Aboriginal and non-Aboriginal children who have been reported to child protection services is the group of children reported only by police (P***, 23.2% and 18.0% respectively). The second- and third-ranked configurations for Aboriginal children are health professionals only (*H**, 13.1%) and the combination of police and health professionals (PH**, 9.3%). For non-Aboriginal children, the second- and third-ranked configurations are community members only (**C*, 17.2%) and the combination of police and community members (P*C*, 15.5%)

In Table 5.2, the configurations that involved police reporting are in red text, and the configurations that involved reporting by health professionals are highlighted yellow. In our study cohort, most of the children that come into contact with child protection services have been reported by police and/or health professionals in the first five years of their life (Aboriginal, 84.6%; non-Aboriginal, 67.2%). More than half have been reported by police (Aboriginal, 63.0%; non-Aboriginal, 53.9%), with the others (that have not been reported by police) reported by health professionals (Aboriginal, 21.6%; non-Aboriginal, 13.3%).

Table 5.2 Case configuration of reporter groups for notifications by age 5 years for NT Aboriginal and non-Aboriginal children (2015 AEDC cohort) in contact with the child protection system.

	Aboriginal children					non-Aboriginal children			
Rank	Type	n	%	cumulative %	Rank	Type	n	%	cumulative %
1	P***	147	23.2	23.2	1	P***	23	18.0	18.0
2	*H**	83	13.1	36.3	2	**C*	22	17.2	35.2
3	PH**	59	9.3	45.6	3	P*C*	20	15.6	50.8
4	***O	48	7.6	53.2	4	***O	19	14.8	65.6
5	P**O	39	6.2	59.3	5	P*CO	11	8.6	74.2
6	P*C*	37	5.8	65.1	6	*H**	8	6.3	80.5
7	**C*	35	5.5	70.7	7	P**O	7	5.5	85.9
8	P*CO	35	5.5	76.2	8	*H*O	5	3.9	89.8
9	PHCO	33	5.2	81.4	9	*HCO	3	2.3	92.2
10	*H*O	28	4.4	85.8	10	PH*O	3	2.3	94.5
11	PH*O	27	4.3	90.1	11	PHCO	3	2.3	96.9
12	PHC*	22	3.5	93.5	12	**CO	1	0.8	97.7
13	*HC*	16	2.5	96.1	13	*HC*	1	0.8	98.4
14	**CO	15	2.4	98.4	14	PH**	1	0.8	99.2
15	*HCO	10	1.6	100.0	15	PHC*	1	0.8	100

5.4 Association between reporter group and maltreatment type

For both Aboriginal and non-Aboriginal children who have had notifications to child protection services, the type of maltreatment varies with both the source of report and age of child.

For first notifications of Aboriginal children (Figure 5.7), health professionals are the most common source of first notification for neglect (44.3%), particularly in the first year (50.7%). Police are the most common source of first reports for emotional abuse (75.0%), including 92.3% of first notifications for emotional abuse in the third year. Police are also the most common source of first notifications for physical abuse (49%), including 58.3% in the second year. The patterns for all reports of Aboriginal children (Figure 5.8) are consistent with first notifications.

There are fewer notifications for non-Aboriginal children, and the results for first notifications and all notifications in Figures 5.9 and 5.10 can only provide a general guide. For first notifications of non-Aboriginal children, health professionals are the major source of first notifications for both neglect and physical abuse in the first year but are a less common source in other age groups. Police are the most common reporter group for emotional abuse and also provide notifications of children at risk for other types of maltreatment. Community members also report several types of maltreatment for both first and all notifications.

Figure 5.11 and Figure 5.12 provide an overview for Aboriginal and non-Aboriginal children respectively of the proportion of all reports by reporter source for each maltreatment type[vi] in the first and fourth years of life. For Aboriginal children before age 1 year, health professionals were the most common source of neglect notification (35.9%), followed by police (17.3%) and community members (22.7%). For the Aboriginal children aged 3 years, police were the most common source of neglect notification (31.7%), followed by community members (28.3%) and health professionals (18.3%). For Aboriginal children before age 1 year, police were the most common source of physical abuse notification (38.9%), followed by health professionals (21.3%) and community members (15.6%). For the Aboriginal children aged 3 years, police were again the most common source of physical abuse notification (63.6%), followed by community members (24.2%) and health professionals (6.1%). For both Aboriginal and non-Aboriginal children, police were the most common source of emotional abuse notifications before age 1 (Aboriginal, 64.3%; non-Aboriginal, 58.1%) and for age 3 years (Aboriginal, 92.4%; non-Aboriginal, 60.6%).

[vi] Sexual exploitation was excluded due to the small numbers.

Figure 5.7 Source of reports for first notification for NT Aboriginal children by age and primary type of maltreatment, 2015 AEDC cohort
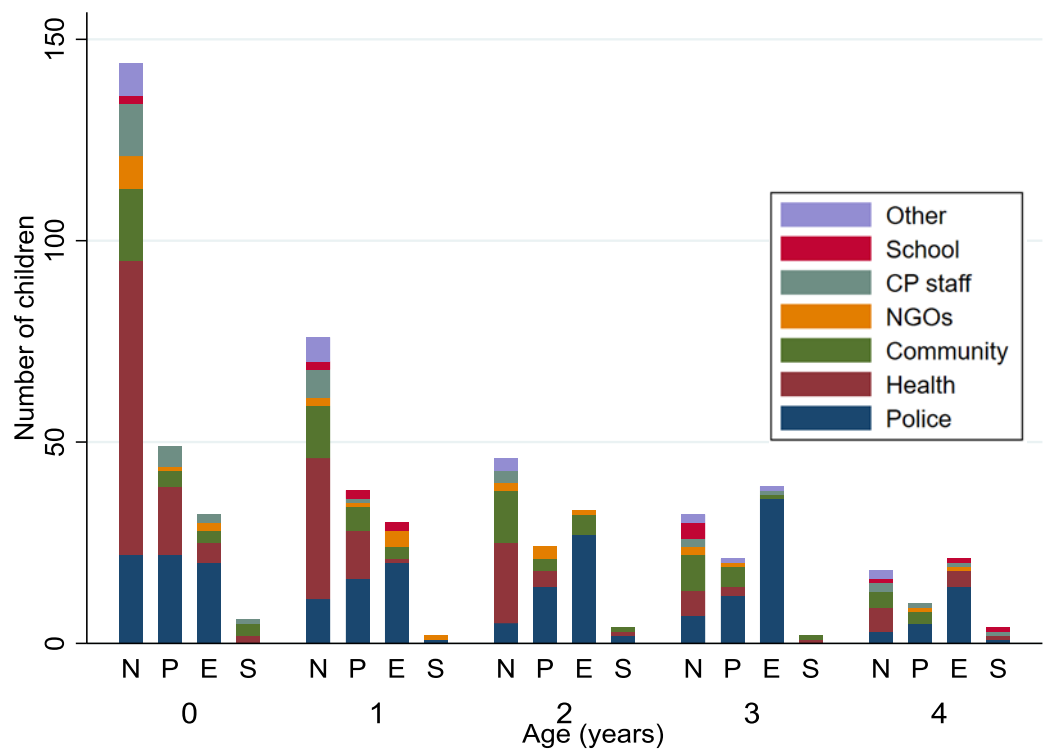
Note: N: neglect; P: physical abuse; E: emotional abuse; S: sexual abuse/exploitation.

Figure 5.8 Source of reports for all notifications for NT Aboriginal children by age and primary type of maltreatment, 2015 AEDC cohort
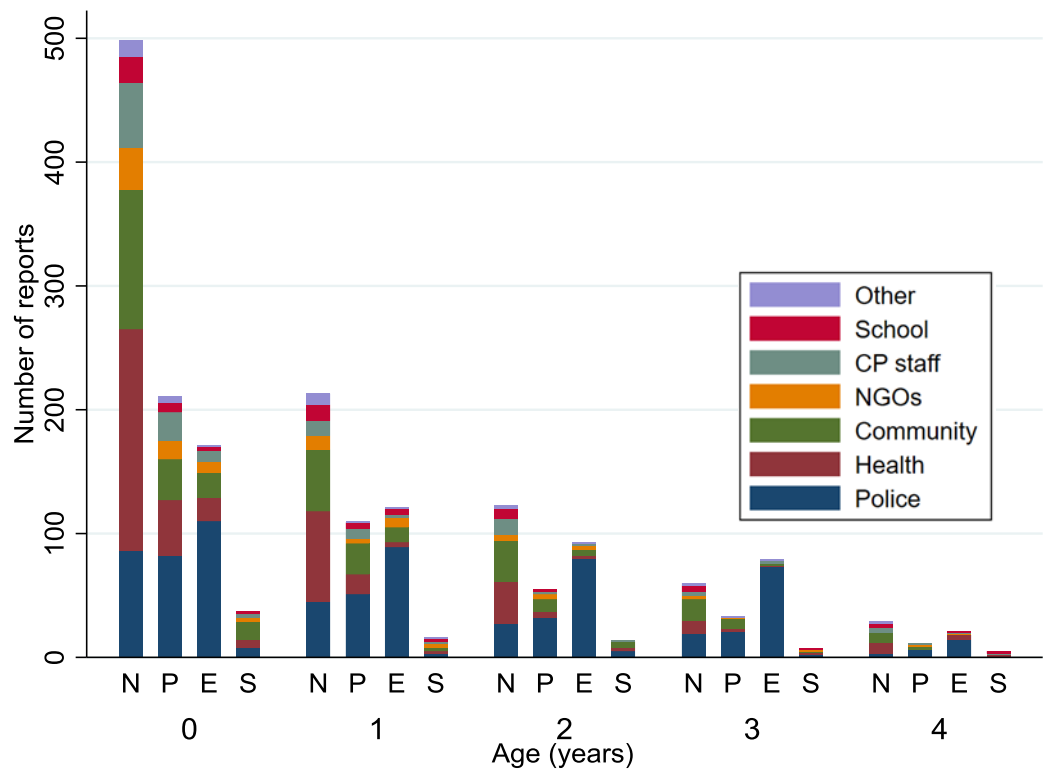
Note: N: neglect; P: physical abuse; E: emotional abuse; S: sexual abuse/exploitation.

Figure 5.9 Source of reports for first notification for NT non-Aboriginal children by age and primary type of maltreatment, 2015 AEDC cohort
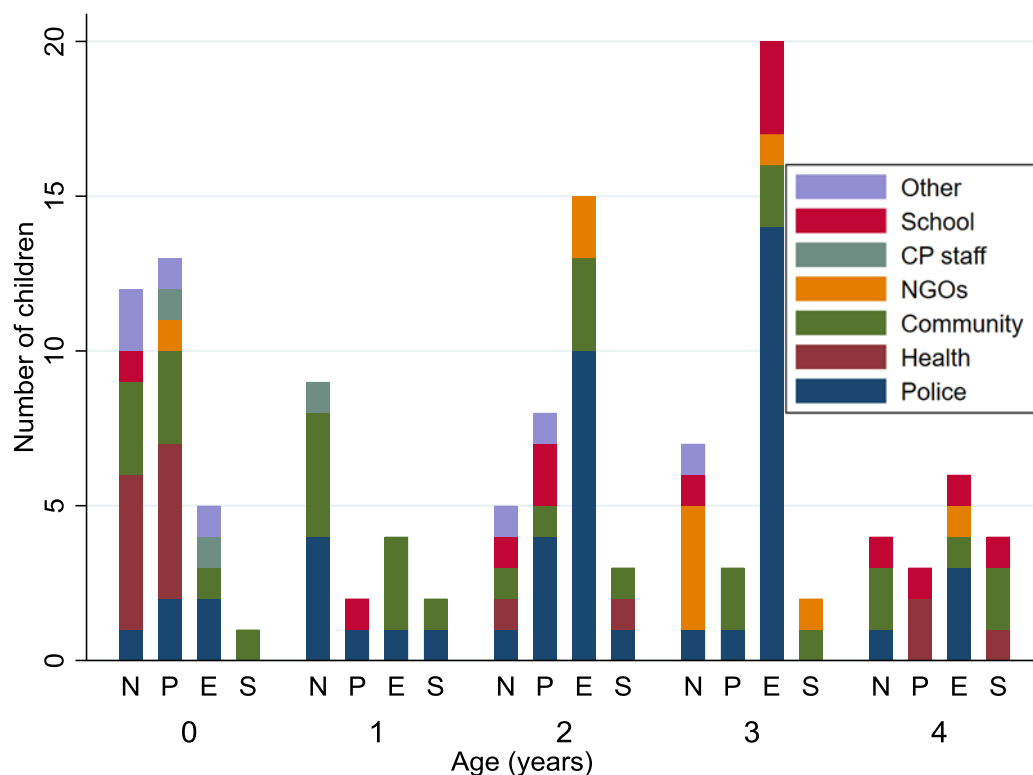
neglect; P: physical abuse; E: emotional abuse; S: sexual abuse/exploitation.

Figure 5.10 Source of reports for all notifications for NT non-Aboriginal children by age and primary type of maltreatment, 2015 AEDC cohort
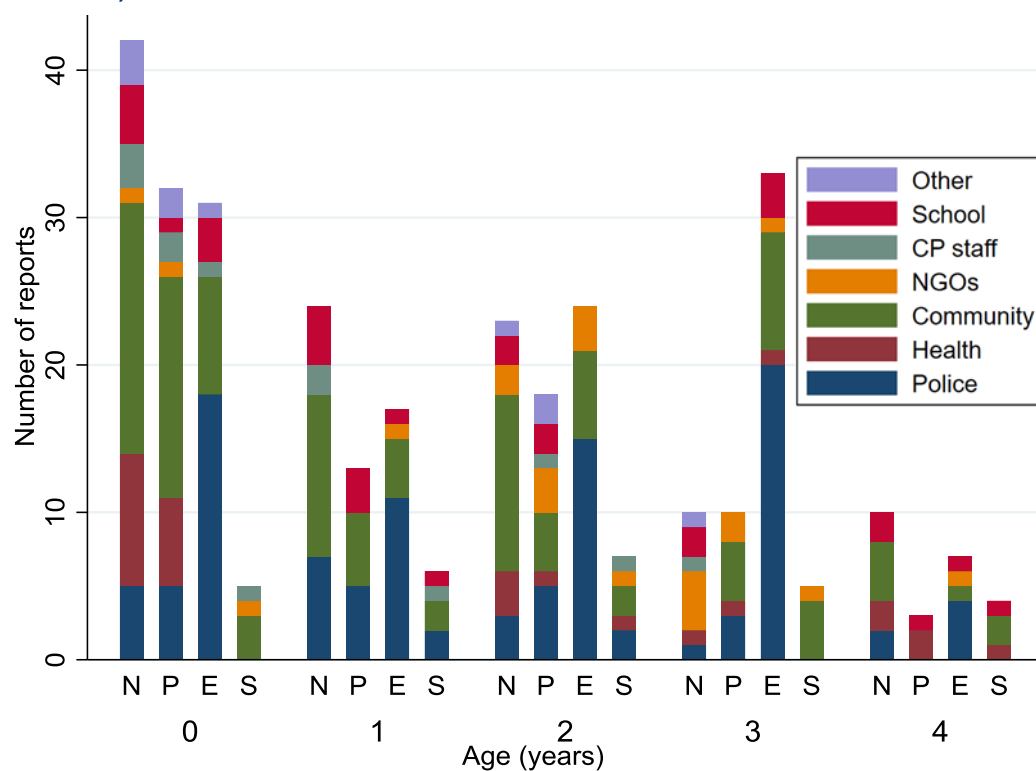
Note:

Note: N: neglect; P: physical abuse; E: emotional abuse; S: sexual abuse/exploitation.

For the non-Aboriginal children before age 1 year, community members were the most common source of physical abuse notification (46.9%), followed by health professionals (18.8%) and police (15.6%). For the non-Aboriginal children aged 3 years, community members were the most common source of physical abuse notification (40.0%), followed by police (30.0%) and NGOs (20.0%). For the non-Aboriginal children before age 1 year, community members were the most common source of neglect notification (40.5%), followed by health professionals (21.4%) and police (11.9%). For the non-Aboriginal children aged 3 years, workers in the non-government (NGO) sector were the most common source of neglect notification (40.0%), followed by school personnel (20.0%).

Figure 5.11 Proportion of all notifications by source of report for NT Aboriginal children in first and fourth years of life, 2015 AEDC cohort
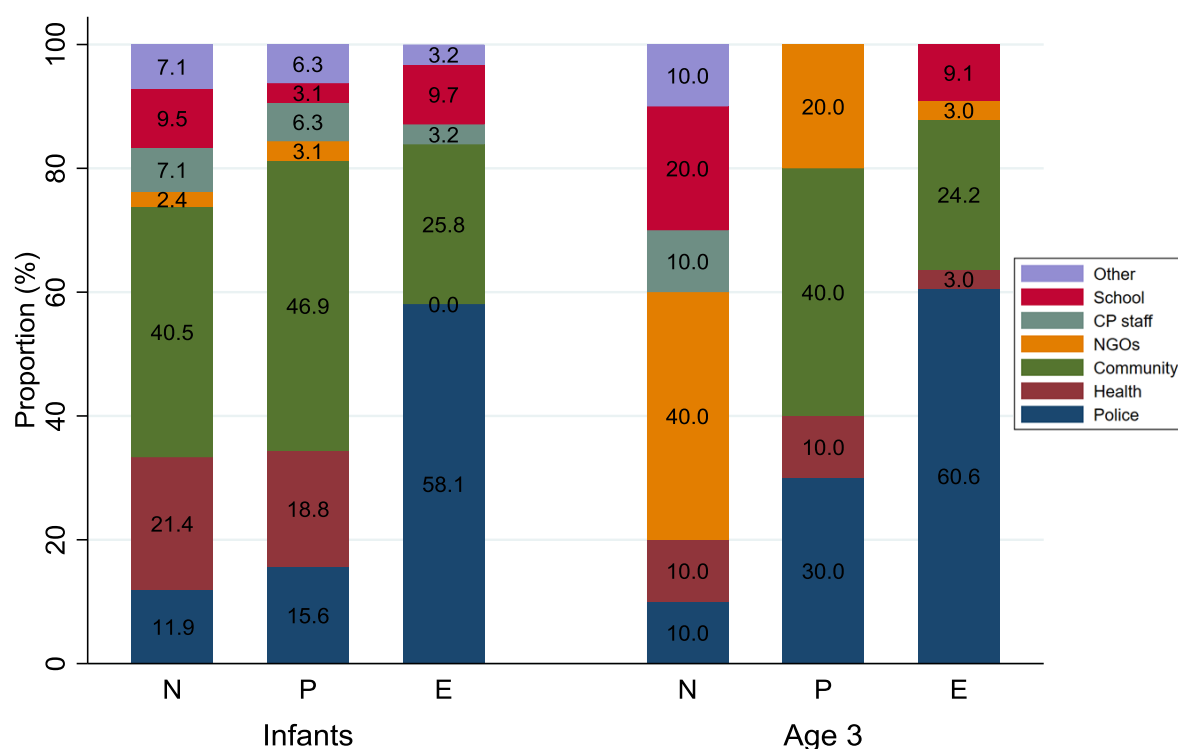
5.5 Pattern of notifications by reporter groups and maltreatment types

In previous sections, we have used a Conjunctive Analysis of Case Configuration (CACC) method to explore the separate configurations of notifications by maltreatment type (Section 4.6) and reporter source type (Section 5.3).

In this section, we report the relationship between the two measures by cross-tabulating the combined configurations for maltreatment type and reporter source and describing the most common types. The full results are comprehensive and contain many empty cells but for reference are included as an appendix table (Appendix Table A7). The nomenclature used in the table is consistent with the earlier separate analyses using four types of abuse and neglect and four reporter groups; for example, emotional abuse (E) and neglect (N) along with police (P) and health professionals (H) in addition to the missing type or reporter group (*).

For both Aboriginal and non-Aboriginal children with history of contact with NT child protection services, the top-ranking configuration was reports by police for emotional abuse with no other record (the cell P***, *E**, which is highlighted in Appendix Table A6). This configuration accounted for 9.8% of Aboriginal children and 12.5% of non-Aboriginal children in the study cohort who had been reported by the age of 5 years.

For the Aboriginal children, the second-ranked configuration was health professionals reporting neglect only (*H**, N*** highlighted in Appendix Table 7), which accounted for 9.1% of children in notifications. The third-ranked configuration was police reporting physical abuse (P***, **P* in Appendix Table 7), with 5.2% of Aboriginal children.

For the non-Aboriginal children, the second-ranking configuration for 'other' reporters (not police, health professionals or community members) reporting children at risk of emotional abuse only (***O, *E** in Appendix Table 7), accounting for 6.3% of non-Aboriginal children in reports. The third-ranked configuration was other reporters reporting children at risk of neglect only (***O, N*** in Appendix Table 7), accounting for 5.5% of children in reports.

6. Predictive factors associated with reports to child protection services

Key findings

This chapter explores the perinatal characteristics of infants associated with increased risk of contact with child protection services. The findings highlight the need for a differentiated approach to early maternal support. The results include:

o Aboriginal children born to a mother who drank alcohol at 36 weeks gestation are 2.3 times (OR: 2.31) more likely than other Aboriginal children in the study cohort to be reported to child protection services within their first year. Other variables that were strongly associated with increased risk were low birth weight (OR: 2.05), being born to a mother who smokes at 36 weeks gestation (OR: 1.56), mother attending fewer than seven antenatal visits (OR: 1.57) and a maternal record of diagnosis of an STI (OR: 1.86).

o For non-Aboriginal children, the risk factors were a little different. There was strong evidence for increased risk of notification by age 1 year for children born to teenage mothers (OR: 4.44), children born to a mother who reported smoking at 36 weeks gestation (OR: 7.80) or a maternal record of an STI (OR: 8.15).

The predictive model was not sufficiently robust to be used for identifying a majority of children at risk; however, it is useful in identifying particular infants at high risk. For example, an Aboriginal child with five selected risk factors has a 66% chance of being reported to child protection services by age 1 year. Similarly, a non-Aboriginal child with five selected risk factors has a 76% chance of being reported by age 1 year.

This chapter also confirms the elevated risk of maltreatment report for children with mothers drinking alcohol during pregnancy.

o By age 5 years, three-quarters (73.7%) of Aboriginal and one-fifth of non-Aboriginal children (18.2%) with mothers drinking alcohol during pregnancy have been reported to the child protection system.

o By age 5, almost half of Aboriginal (48.9%) and one in 10 non-Aboriginal (11.4%) children with mothers drinking alcohol at first antenatal visit had a child maltreatment report by police.

6.1 Perinatal characteristics associated with child protection reports for infants

The NT Perinatal Data Register is a statutory data collection containing information on the antenatal and perinatal period for all births in the Northern Territory. This section reports the characteristics recorded in the Perinatal Data Register that are associated with the notification of a child within the first year of life. The study population are those children who participated in the AEDC in 2015.

For Aboriginal infants, a report of maternal consumption of alcohol in pregnancy, either at 36 weeks or at first antenatal visit (usually before 12 weeks), is associated with a three-fold increase in the risk (expressed as odds) of a later notification of the child to child protection services by age 1 year. Other factors that are associated with increased risk of notification

include a maternal record of a sexually transmitted infection (STI) during pregnancy, low birthweight, maternal smoking in pregnancy and poor antenatal attendance (Figure 6.1).

Figure 6.1 The association between selected perinatal factors and notification of Aboriginal children by age 1 year, 2015 AEDC cohort, Northern Territory
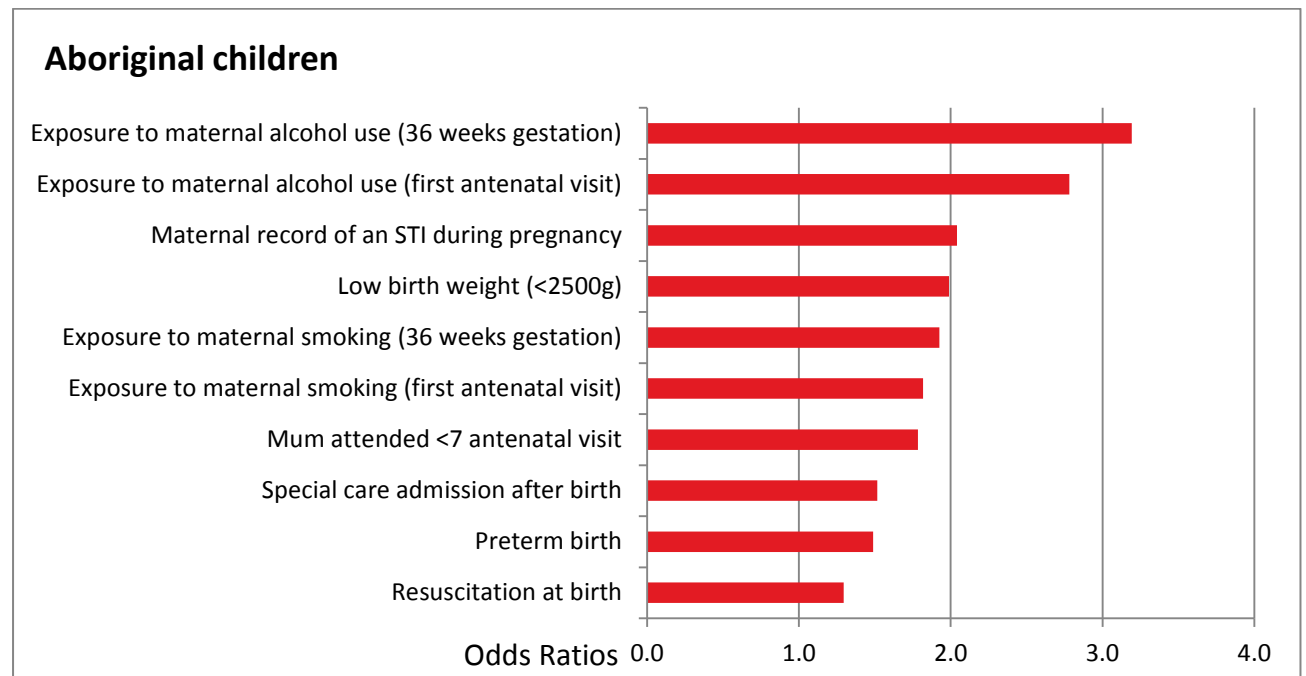
For non-Aboriginal infants, the strongest association is a history of maternal smoking during pregnancy at either the first antenatal visit or at 36 weeks gestation, with greater than an eight-fold increase in odds for both characteristics (Figure 6.2). A notable difference between Aboriginal and non-Aboriginal infants is whether a child has a teenage mother at the time of the birth, with no additional risk for Aboriginal infants but a six-fold increase for non-Aboriginal infants. A record of maternal consumption of alcohol in pregnancy was not associated with increased risk for non-Aboriginal infants. It is worth noting that the median age of Aboriginal mothers was much lower than that of non-Aboriginal mothers in the NT. In our study cohort, the median age of Aboriginal mothers (24.0 years) was almost six years younger than that of non-Aboriginal mothers (30.8 years). The proportion of births to teenage mothers was 23.3% for the Aboriginal children and 3.4% for the non-Aboriginal children in our study cohort.

Figure 6.2 The association between selected perinatal factors and notification of non-Aboriginal children by age 1 year, 2015 AEDC cohort, Northern Territory
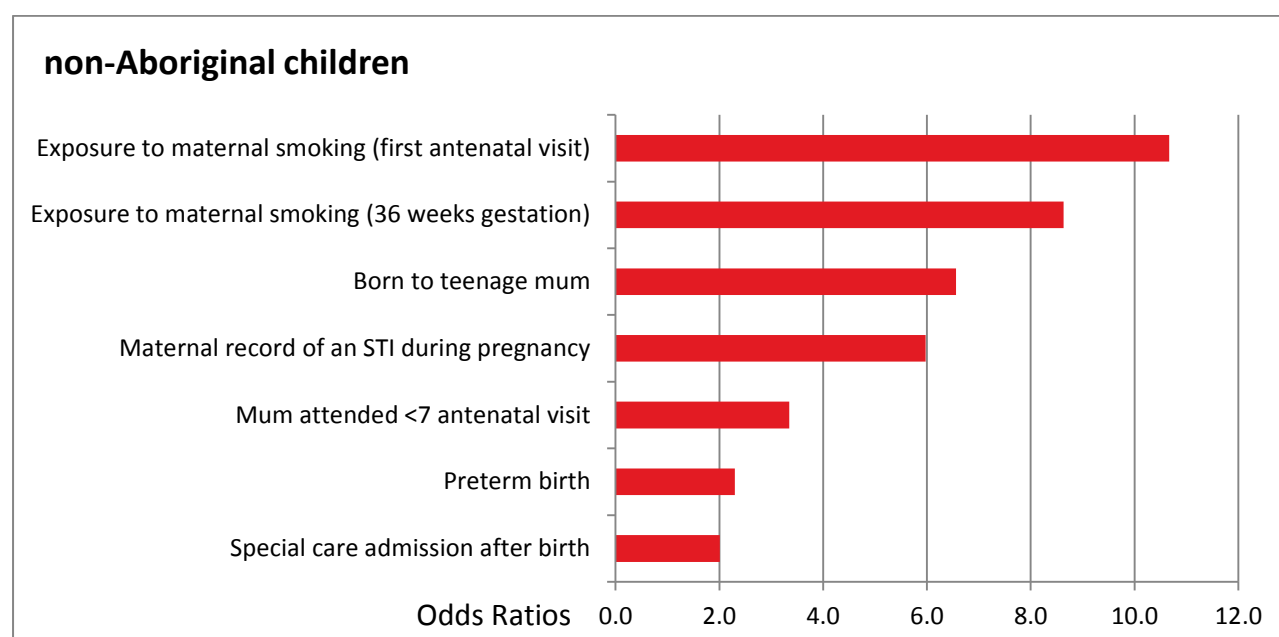
6.2 Multivariable analysis

The previous section considered each characteristic separately; however, there may be multiple and overlapping characteristics for infants. For example, a mother who smokes at the first antenatal visit is also more likely to smoke at 36 weeks gestation than a mother who does not smoke at the first antenatal visit. Multivariable analysis allows the analysis of many characteristics at the same time so that the estimated risk of any single characteristic is adjusted for the concurrent effect of all other characteristics in the model. The results of the final model (the best fitted model) for Aboriginal and non-Aboriginal infants is presented in Table 6.1.[vii] Note that some of the characteristics that are presented in the single variable (univariate) analysis in Section 6.1 are no longer present because they are represented by a related factor or factors with a stronger adjusted association.[viii]

Aboriginal infants born to a mother who drank alcohol at 36 weeks gestation were statistically 2.3 times more likely to be reported to child protection services within their first year (odds ratio (OR): 2.31). Other variables that were strongly associated with increased odds of notifications included having low birth weight (OR: 2.05), being born to a mother who smokes at 36 weeks gestation (OR: 1.56), mother attending fewer than seven antenatal

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[vii] The multivariable model fits better for the non-Aboriginal children than the Aboriginal children as the proportion of total variation of outcomes explained by the model was greater for non-Aboriginal children (R^2=0.15) than Aboriginal children (R^2=0.06).
[viii] In the multivariable analysis for the non-Aboriginal children, we have dropped the 'maternal consumption of alcohol in pregnancy' variable from the predictive model.

visits (OR: 1.57) and a maternal record of an STI (OR: 1.86) during pregnancy. There was no evidence for an association between a child being born to a teenage mother and the outcome of notification by age 1 year (p=0.60).

For non-Aboriginal children, there was no evidence that being born to a mother who attended fewer than seven antenatal visits or having low birth weight were associated with the outcome of notification before age 1 year. However, the multivariable model indicates that there is strong evidence for increased risk of notification by age 1 year for children born to teenage mothers (OR: 4.44) and children born to a mother who smokes at 36 weeks gestation (OR: 7.80) or has a record of an STI (OR: 8.15) during pregnancy.

When interpreting this information, it is important not only to consider the strength of the statistical associations between the various characteristics and the outcome but also how much of the variation in the outcome is explained by the combination of selected characteristics. The model presented here, based only on perinatal characteristics, explains about 6% of the variation in the outcome of notifications for Aboriginal children and 15% of the variation in outcome for non-Aboriginal children. While these models are 'statistically' significant, a more complete model will need to be developed to be of practical application in a comprehensive, whole-population-service response.

Table 6.1 Multivariable analysis for the association between selected perinatal factors and notification of children by age 1 year, 2015 AEDC cohort, Northern Territory

	Aboriginal				Non-Aboriginal			
	OR	95% CI		p	OR	95% CI		p
Teenage mother (when child was born)	1.08	0.81	1.43	0.601	4.44	1.95	10.12	<0.001
Exposure to maternal smoking (36 weeks gestation)	1.56	1.22	1.99	<0.001	7.80	4.28	14.19	<0.001
Mother attended <7 antenatal visits	1.57	1.23	2.01	<0.001	1.49	0.71	3.12	0.294
Maternal record of an STI during pregnancy	1.86	1.32	2.64	<0.001	8.15	1.95	34.02	0.004
Low birth weight of infant (<2500g)	2.05	1.49	2.83	<0.001	1.04	0.35	3.08	0.940
Exposure to maternal alcohol use (36 weeks gestation)	2.31	1.63	3.28	<0.001				

6.3 Predicted probability based on risk factors

While the predictive model may not be useful for planning whole-population-services, it is useful for informing a more targeted response by combining the selected risk factors to provide a probability of the outcome of notification for individual children or groups of children.

For Aboriginal children with the five perinatal risk factors from Table 6.2, the predicted probability of being reported to the child protection services within first year is 66%. For Aboriginal children born to mother who reported drinking alcohol and smoking during pregnancy and with a record of an STI (group 3), the predicted probability is 43%. For Aboriginal children born to mother with the single risk of the mother reporting drinking alcohol during pregnancy (group 5), the predicted probability is 25%.

Table 6.2 Predictive modelling for risk of notification by age 1 year, Aboriginal children in the 2015 AEDC cohort, Northern Territory

Risk factors for Aboriginal infants	Group						
	1	2	3	4	5	6	7
Exposure to maternal alcohol use (36 weeks gestation)	✔	✔	✔	✔	✔		
Maternal record of an STI during pregnancy	✔	✔	✔	✔		✔	
Exposure to maternal smoking (36 weeks gestation)	✔	✔	✔				✔
Mother attended <7 antenatal visits	✔	✔					
Low birth weight of infant (<2500g)	✔						
Predicted probability*	0.664	0.510	0.430	0.372	0.252	0.216	0.166

Note: *95 % confidence interval estimates are available in the appendix (Appendix table A8).

The predictive models are stronger for non-Aboriginal children (Table 6.3). As an example, a child at birth with all five risk factors in the model (group 1) had a 76% probability of being reported to child protection services within one year of birth. For non-Aboriginal children, a model with four risk factors (group 2) has a predictive probability of 75%. Single risk factor models have much weaker predictive probability; for example, the single risk factor model using diagnosis of an STI in pregnancy (group 5) has a predicted probability of only 8% and attendance of fewer than seven antenatal visits has a predicted probability of the outcome of only 4%.

Table 6.3 Predictive modelling for risk of notification by age 1 year, non-Aboriginal children in the 2015 AEDC cohort

Risk factors for non-Aboriginal infants	Group						
	1	2	3	4	5	6	7
Maternal record of an STI during pregnancy	✔	✔	✔	✔	✔		
Exposure to maternal smoking (36 weeks gestation)	✔	✔	✔	✔		✔	
Born to teenage mum	✔	✔	✔				✔
Mother attended <7 antenatal visits	✔	✔					
Low birth weight of infant (<2500g)	✔						
Predicted probability*	0.760	0.752	0.681	0.336	0.077	0.059	0.042

Note: *95 % confidence interval estimates are available in the appendix (Appendix table A8).

6.4 Elevated risk for children with mothers drinking alcohol during pregnancy,

An issue of substantial interest in child protection services is the association between exposure to alcohol and involvement of child protection services in the care of a child. One source of information on alcohol consumption is the record in the perinatal register of whether a mother reports drinking alcohol in pregnancy. The cumulative risk for a child being reported to child protection services can be expressed as cumulative incidence (probability) of being reported for those children, in the 2015 AEDC cohort, with or without a record of maternal alcohol consumption at first antenatal visit. The results of this analysis are presented at Figure 6.3. The available information on maternal alcohol consumption at first antenatal visit was also estimated for those children who have had a notification to child protection services by police, which is presented in Figure 6.4.

By age 5 years, almost three in four Aboriginal children and one in five non-Aboriginal children with mothers who have a record of drinking alcohol at the first antenatal visit had come into contact with the child protection system (Aboriginal, 73.7%; non-Aboriginal, 18.2%) (Figure 6.3). This is much higher for both populations than children who did not have a record of mothers drinking alcohol at first antenatal visit.

By age 5, almost half of Aboriginal and one in 10 non-Aboriginal children with mothers drinking alcohol at first antenatal visit had a child maltreatment report by police (Aboriginal, 48.9%; non-Aboriginal, 11.4%) (Figure 6.4).

For both analyses, the rates of notification are highest in the first six months of a child's life. By six months of age among the Aboriginal children with a record of mothers drinking alcohol at first antenatal visit, one in three children had been reported to child protection services (33.1%), and one in 10 had been reported by police (9.1%) (Figure 6.3 and Figure 6.4 respectively).

Figure 6.3 Cumulative incidence of first child protection notification for children with or without a record of maternal consumption of alcohol in pregnancy, NT Aboriginal and non-Aboriginal children in the 2015 AEDC cohorts
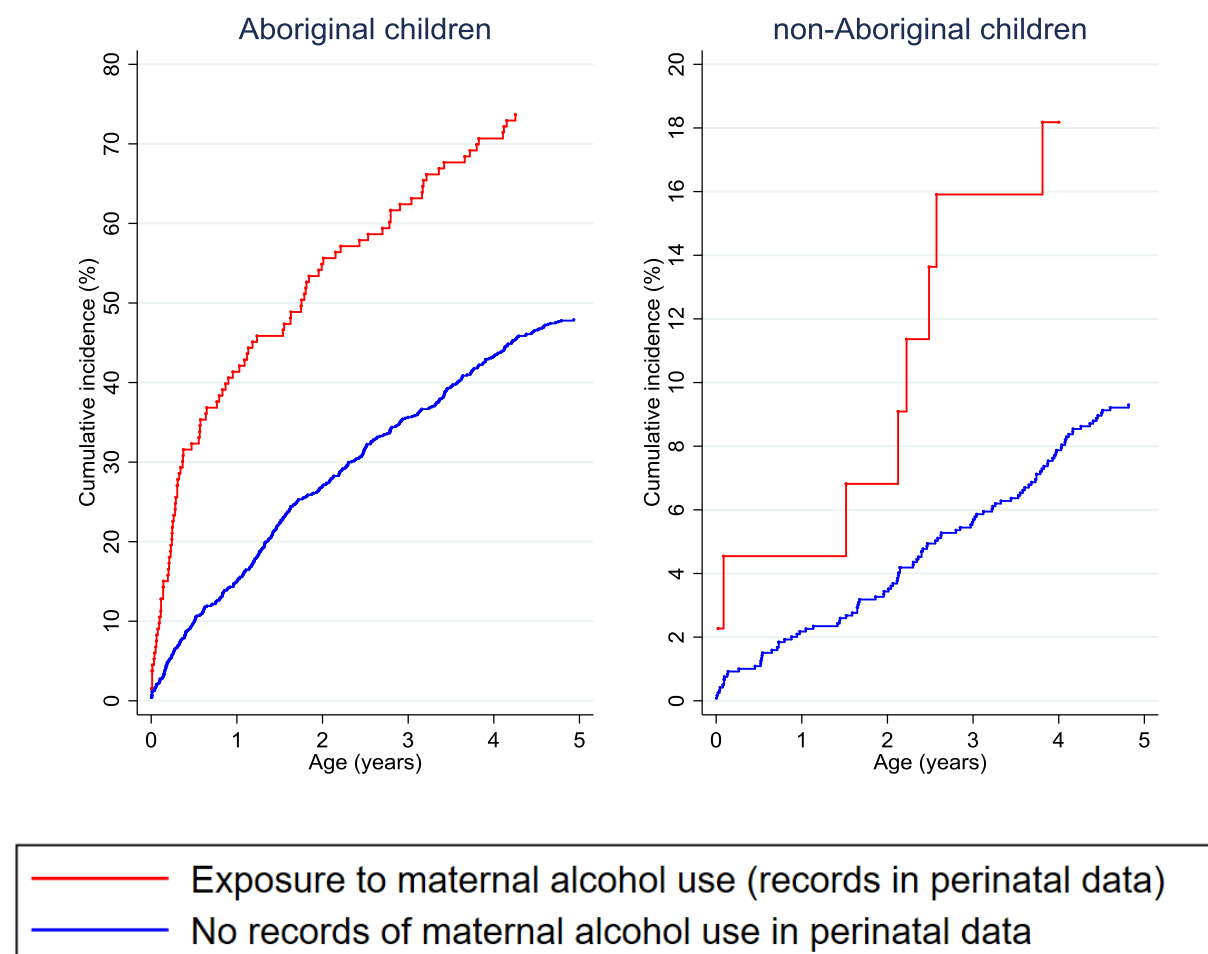
Figure 6.4 Cumulative incidence of first child protection notification reported by police for children with or without a record of maternal consumption of alcohol in pregnancy, NT Aboriginal and non-Aboriginal children in the 2015 AEDC cohorts
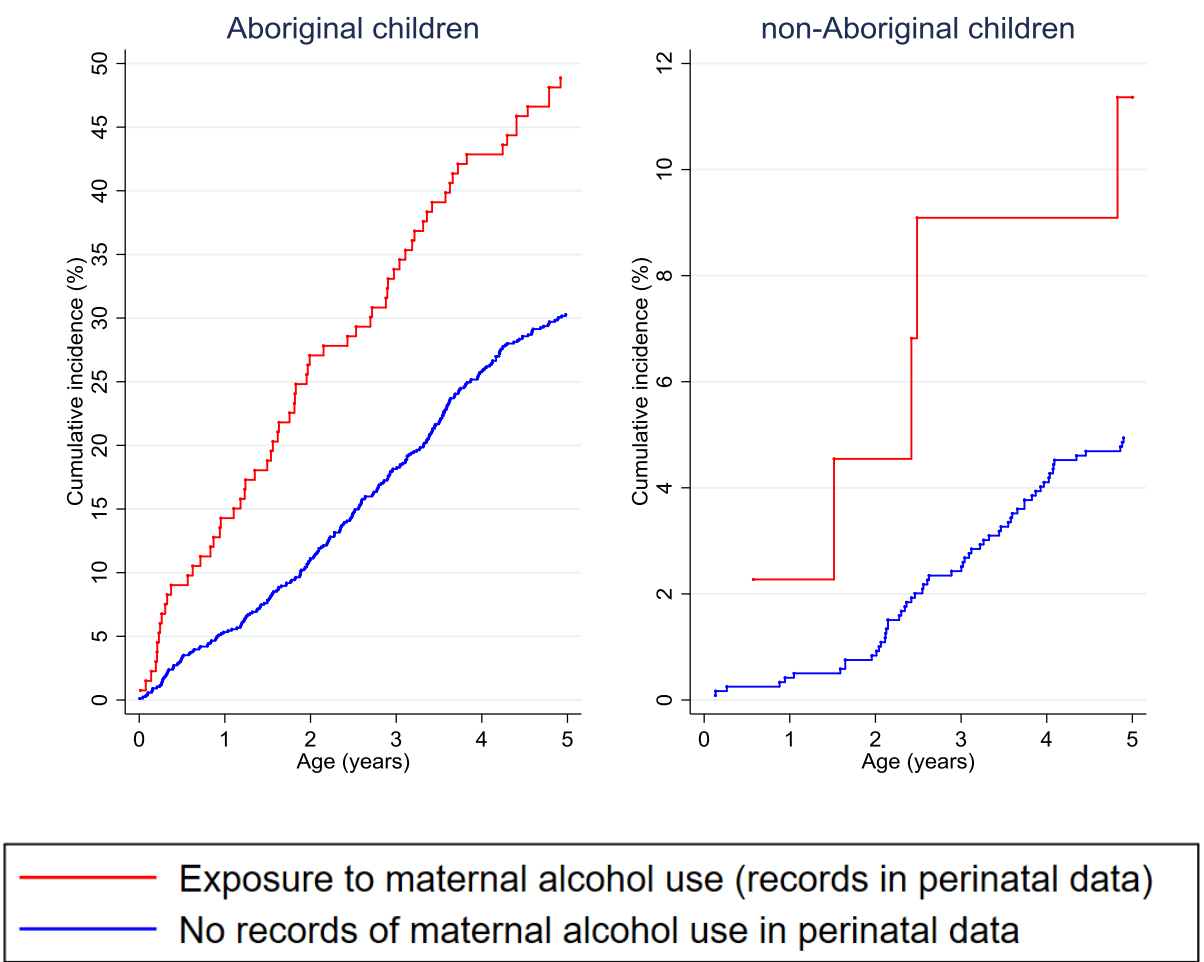
7. Association between child maltreatment experience and school readiness

Key findings

This chapter investigates the link between early exposure to trauma/neglect and school readiness at age 5 by using results from the Australian Early Development Census (AEDC). We found that for both Aboriginal and non-Aboriginal children, children with a history of either notification or substantiated episode of child protection were more likely to be developmentally vulnerable than children without a record of contact with child protection services.

o For Aboriginal children, 61.3% of the children with record of substantiation and 59.0% of children with one or more notifications only were developmentally vulnerable in at least one of five AEDC developmental domains compared with 49.1% of Aboriginal children with no record of contact. For non-Aboriginal children, the corresponding proportions were 44.4%, 30.9% and 20.7%.

o For Aboriginal children, 47.1% of the children with record of substantiation and 45.1% of children with notifications only were developmentally vulnerable on two or more AEDC domains compared with 32.3% of Aboriginal children with no record of contact.

o For non-Aboriginal children, the corresponding proportions were 16.7%, 16.4% and 9.4%.

o There was also a higher proportion of children with 'special needs' in education among those children with history of contact with child protection services.

7.1 Developmental vulnerability in one more AEDC domains

The previous chapter described the associations between characteristics for a child that are available from the perinatal data register as predictors of subsequent contact with child protection services. In this section, we reverse the order and consider the relationship between contact with child protection services and a later outcome—the readiness of a child at age 5 years for learning in a school environment.

The school readiness of Australian children is assessed during the Australian Early Development Census (AEDC) using a standardised instrument. The assessment is completed by a child's classroom teacher within the first months of school attendance. The instrument has been specifically modified to be suitable for Aboriginal children, and when appropriate, the assessment of an Aboriginal child includes the involvement of an Aboriginal teacher or classroom assistant. The AEDC is conducted every three years and in 2015, involved 98.0% of eligible NT children.[21]

The AEDC contains five domains, and a child is considered developmentally vulnerable if their results are below the 10% benchmark for their adjusted age in any of the five domains of assessment. Children scoring in the 'developmentally vulnerable' range are typically assessed as needing special learning and/or language support. The two standard indicators for reporting developmental vulnerability are a child being vulnerable in one or more domains (DV1) or in two or more domains (DV2). Children with special education needs are registered but are not required to be assessed.

Results of whether a child is 'on-track' or developmentally vulnerable in one or more domains (DV1) are presented in Figure 7.1 (as a number) and Figure 7.2 (as a proportion) for children with no contact, notification(s) only and one or more substantiated episodes of child maltreatment. For both Aboriginal and non-Aboriginal populations, children with a history of either notification or substantiated episode of maltreatment were more likely to be developmentally vulnerable than children with no history of contact with child protection services. For Aboriginal children in the study cohort, 59.0% of children with one or more notifications only and 61.3% of children with a record of a substantiation were recorded as developmentally vulnerable (DV1) compared with 49.1% of Aboriginal children with no record of contact (Figure 7.2). For non-Aboriginal children, the corresponding proportions of children who were assessed as developmentally vulnerable were 30.9% of children with notification only, 44.4% of the children with a substantiation and 20.7% of children with no record of contact with the child protection system.

There was also a higher proportion of children with special education needs among children with a history of contact with child protection services. Among Aboriginal children, 5.2% of children with notifications and 8.4% of the children with at least one substantiated episode of maltreatment had special needs, compared with 4.3% of children with no contact with the child protection system. For non-Aboriginal children, the corresponding proportions were 8.2%, 11.1% and 4.1%.

Figure 7.1 Distribution of the number of children with varying AEDC results (on track, vulnerable in one or more domains, did not complete and special needs), by varying levels of child protection contact by age 5 years, Aboriginal and non-Aboriginal children in 2015 AEDC cohort, Northern Territory
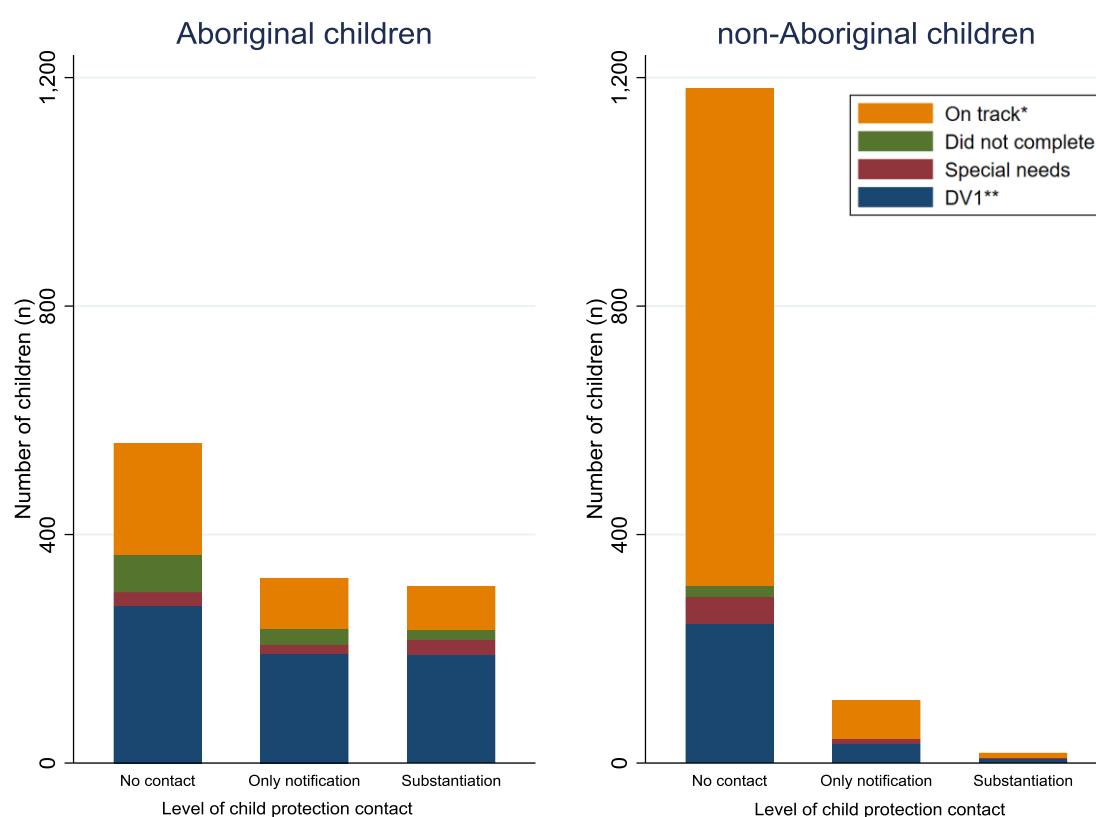
Figure 7.2 Distribution of the proportion (%) of children with varying AEDC results (on track, vulnerable in one or more domains, did not complete and special needs), by varying levels of child protection contact by age 5 years, Aboriginal and non-Aboriginal children in 2015 AEDC cohort, Northern Territory

Notes: *On track: developmentally on track in all five AEDC domains
        **DV1: developmentally vulnerable in one or more domains.

7.2 Developmental vulnerability in two or more AEDC domains

This section provides a similar analysis to the previous section but focusses on those children who are developmentally vulnerable in two or more domains (DV2). Children who are developmentally vulnerable on two or more AEDC domains are highly likely to require some form of additional education support for a successful transition to school learning. Results of whether a child is developmentally vulnerable in two or more domains (DV2) are presented in Figure 7.3 (as a number) and Figure 7.4 (as a proportion) for children with no contact with child protection services, one or more notifications only and one or more substantiated episodes of child maltreatment.

Among the Aboriginal children, 45.1% of children with one or more notifications only and 47.1% of the children with at least one substantiated episode of maltreatment were assessed as developmentally vulnerable on two or more AEDC domains, compared with 32.3% of Aboriginal children with no contact with the child protection system.

Among the non-Aboriginal children, there was also an association between developmental vulnerability (DV2) and contact with child protection services; 16.4% of children with notification only and 16.7% of the children with at least one substantiated episode of maltreatment were assessed as developmentally vulnerable on two or more AEDC domains, compared with 9.4% of non-Aboriginal children with no record of contact with the child protection system.

Figure 7.3 Distribution of the number of children with varying AEDC results (on track, vulnerable in two or more domains (DV2), did not complete and special needs) by varying levels of child protection contact by age 5 years, Aboriginal and non-Aboriginal children in 2015 AEDC cohort, Northern Territory
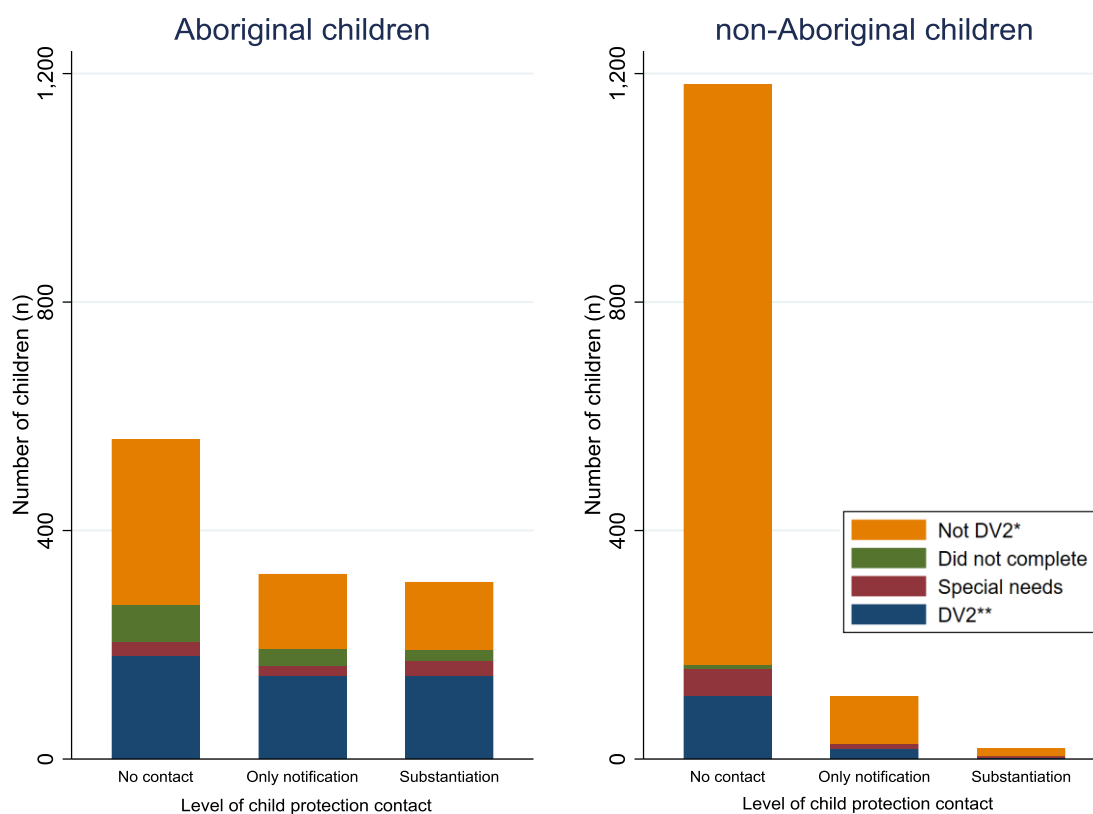
Figure 7.4 Distribution of the proportion (%) of children with varying AEDC results (on track, vulnerable in two or more domains (DV2), did not complete and special needs) by varying levels of child protection contact by age 5 years, Aboriginal and non-Aboriginal children in 2015 AEDC cohort, Northern Territory
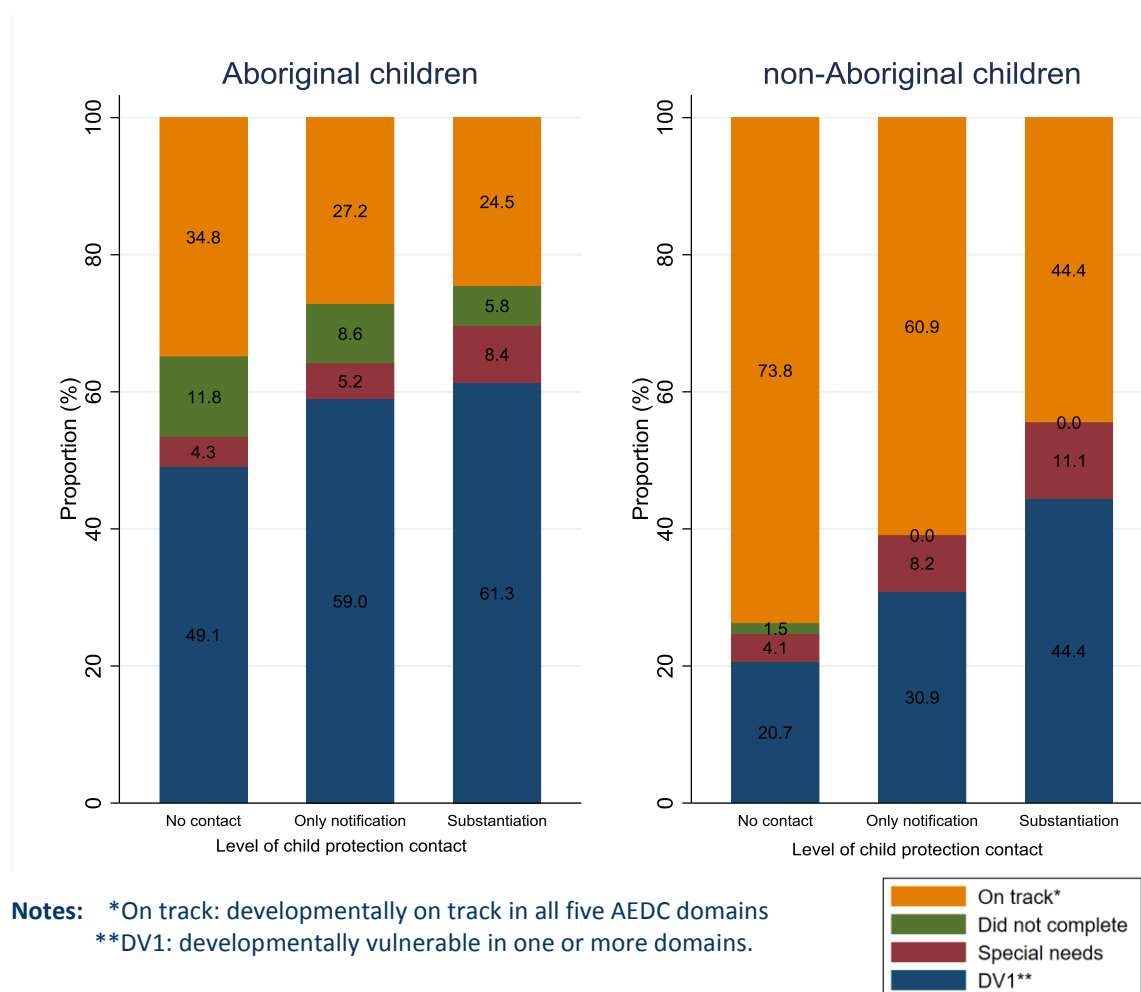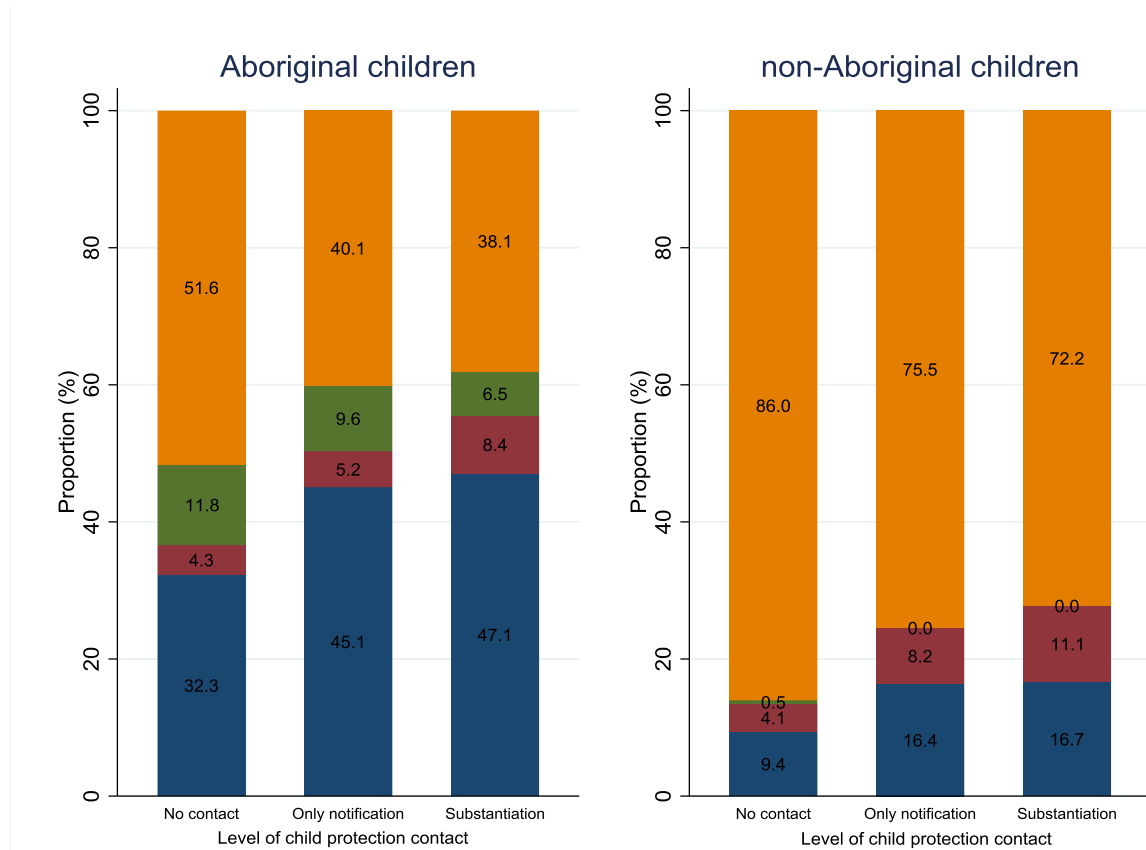

Notes: *Implies that they are on track on 4 or 5 AEDC domains;
**DV2: developmentally vulnerable on 2 or more domains.
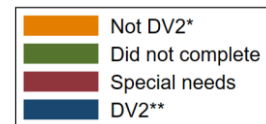
8. Discussion

8.1 Magnitude of child maltreatment and pattern of CP reports

Prevalence of child abuse and neglect

This report confirms that over time there has been increasing contact of Aboriginal children with the child protection system and that the average age of first notification has decreased. More than half of the Aboriginal children (634 out of 1194) in the NT study cohort, most born in the period from July 2009 to June 2010, had a first notification by age 5 years. A study in South Australia for children born in 2002 reported similar results, with half of the Aboriginal children born in 2002 having had a first notification by age 4 years.[11] Over time, there has also been increasing episodes of out-of-home care and decreasing average age of first out-of-home care order for the Aboriginal children in the NT. Menzies's submission to the NT Royal Commission reported that that one in 12 Aboriginal children born in 2000–2004 received out-of-home care order by age 10 years.[20] The current study contains a more recent cohort of children and estimates that in this group, almost one in 10 children were subject to an out-of-home care placement by age 5 years.

The sharp difference in both the reported levels of abuse and neglect and the early age of exposure between NT Aboriginal and non-Aboriginal children is of major concern—not only because of the immediate impact of trauma and neglect on a substantial proportion of the population but also for the long-term influence of such exposure on early brain development and subsequent cognitive, social and emotional development that influences the life course.

Repeated child maltreatment reports

Among those children who have been subject to a first notification, half have repeat notifications by age 5 years (Aboriginal children, 65%; non-Aboriginal children, 53%), with 20.5% of Aboriginal children and 14.8% of non-Aboriginal children reported more than five times. A substantial proportion of those children with notifications are reported for more than one primary type of maltreatment (Aboriginal, 49.8%; non-Aboriginal, 39.8%) and are reported by more than one reporter source (Aboriginal, 52.5%; non-Aboriginal, 49.2%). The high proportions of repeat notification and of reports by different sources suggest that these notifications are significant and justify investigation.

Future research should investigate the factors that are associated with repeated child maltreatment reports in the NT. Previous research used a conceptual framework of child maltreatment recurrence, which included 'child and family factors', 'incident factors', and 'CPS system factors' to identify the risk of maltreatment recurrence.[27] It found that repeated notification was more affected by child protection process factors (such as investigation and intervention) than service factors and recommended three responses: an

adjustment of risk assessment instruments (to ensure that they are valid and reliable), appropriate child protection service practices and effective service provision.[27, 28]

Different pattern of child protection notifications in the NT

Although internationally there is extensive research about recurrence in child maltreatment reports,[29-39] we are uncertain if the results can be generalised to the NT, which has a very different pattern of child protection notifications. Our study has shown almost half of the notifications for NT Aboriginal children (48.3%) and a third for non-Aboriginal children (33.6%) are for neglect, and a further quarter (25.5%) and a third (34.6%) respectively are for emotional abuse. One previous study explored the perceptions of child neglect from an Aboriginal perspective in a rural New South Wales community.[40] The author reported that the main factors for child neglect were violence and substance abuse and concluded that there was little difference in the way Aboriginal and non-Aboriginal people perceived child neglect but suggested that 'It is the difficult circumstances experienced by Aboriginal families that keep parents from actualising their parenting expectations'.[40, 41]

Multi-type abuse

There is emerging recognition of the importance of cumulative harm associated with repeated or continuing maltreatment; however, there is difficulty in measuring the 'severity' or 'chronicity' of maltreatment across a child's lifetime. One possible indicator is the repeated notification of a child for different types of maltreatment. Our study finding of the high proportion of children having multiple maltreatment types is supported by the literature[42], with previous estimates that the prevalence of multi-type maltreatment is between 46% and 90% of cases.[43] Our study to age 5 years and based on primary maltreatment type only found that 49.8% of Aboriginal children and 39.8% of non-Aboriginal children who were reported were reported for more than one maltreatment type. It is likely that this proportion will rise substantially as the NT children are followed further through their childhood.

Geographical variations in child protection reports

Previous studies have demonstrated the utility of geographic mapping and spatial analysis to identify the association between community-level factors and child maltreatment.[44] Our findings of geographic variations in child protection reports in the NT suggest the need for the examination of community characteristics on rates of child maltreatment [45], which could inform place-based strategies with partnership with communities that are 'built on the principles of mutual respect, shared commitment, shared responsibility and good faith'.[46] Freisther et al. (2007)[47] indicated that off-premises alcohol outlet density was associated with child maltreatment and that the number of bars in local areas was associated with the rate of children in out-of-home care. Research has also demonstrated the relationship between the level of neighbourhood overcrowding and child maltreatment, [44, 48] while a recent study[49] demonstrates that living in a community with overcrowded housing is the

strongest factor associated with school attendance for the Year 1 Aboriginal students in the NT.

Advancing research methods

Currently in child protection research literature, there is no consistent way to operationalise the dimensions of child maltreatment (abuse type, frequency, age of onset, severity, chronicity, duration and perpetrator type).[50] The appropriate operationalisation of these dimensions would enable us to better account for variations in different outcomes (such as early development, health, education and delinquency) for children with varying needs, demographic characteristics and maltreatment experience. Further investigation is needed to operationalise the maltreatment dimensions, an exercise that is facilitated by the availability of contextual information in linked research datasets.

Our study demonstrated the importance of using the 'reporter group' variable together with age and abuse type in contextualising child maltreatment. We propose that a typological approach[51] may be more informative than a single outcome approach or a cumulative risk model approach. A single outcome approach assumes that the different child maltreatment types happen in isolation, and a cumulative risk model approach assumes each maltreatment type contributes equally to the sum of maltreatment in the child's lifetime.[52]

A typological approach identifies patterns of maltreatment and considers the interaction between the maltreatment types.[51] It also considers the interactions between maltreatment type, child and family factors, child protection system factors, and the outcome of interest. Examples of the typological approach include latent class analysis [53-56] and cluster analysis[52, 57-59]. Over the past decade, there is a growing use of latent class analysis in the child maltreatment research[53-56] to identify different risk profiles of children and to inform targeted prevention and intervention strategies. Such an analytic approach could be relevant to the NT, which has high proportion of children with multi-type maltreatment.

8.2 Prenatal and perinatal characteristics of children that are associated with child maltreatment and the development of predictive models

In any jurisdiction, infants are a priority when reported to child protection services. The NT has the highest rates of infants with child protection notification (137.8 per 1000 in 2016–17) and substantiations (59.1 per 1000) in Australia.[26] In addition, notification and substantiation rates for NT infants are higher than other age groups. These rates emphasise the importance of understanding the prenatal and perinatal characteristics of infants that are associated with increased child protection contact to inform prevention and early intervention strategies.

A Western Australia (WA) study investigated the risks of substantiated maltreatment and demonstrated the substantial difference in the predictive factors associated with substantiated maltreatment between Aboriginal and non-Aboriginal children.[60] The

different risk profiles by Indigenous status demonstrated in both this report and the WA study[60] highlight the need for a differentiated approach to the early maternal support for Aboriginal and non-Aboriginal populations and the need to review the current screening tool to ensure that the risk assessment processes are appropriate for both groups of children. This could also assist in the adaptation and calibration of screening tools to enable earlier identification of at-risk children.

Extensive research has identified a strong relationship between maternal alcohol use and child maltreatment.[61, 62] Two WA data-linkage studies[61, 63] reported that children with a mother with an alcohol use disorder were more likely to come into contact with the child protection system and justice system, including three times more likely to have a substantiated child protection report and almost four times more likely to have an out-of-home care placement.[61] The risk of having a child protection notification was found to be the highest in children whose mother had an alcohol diagnosis recorded during pregnancy and in the years immediately pre- or post-pregnancy.[61] Our study confirms the elevated risk for children with mothers drinking alcohol during pregnancy, with almost three-quarters of Aboriginal and one-fifth of non-Aboriginal children with mothers drinking alcohol during pregnancy having a child protection notification before age 5 years.

Some of our results on predictors of risk need to be interpreted with caution as we are uncertain about their generalisability. For example, we found that 'being born to a teenage mother' was not predictive of increased risk for NT Aboriginal children. It is important to recognise the unique demography of the NT; in our study cohort, the proportion of children born to teenage mothers was 23.3% for Aboriginal children and 3.4% for non-Aboriginal children. It is also important to look beyond the strength of the statistical associations between the various characteristics and the outcome but also how much of the variation in the outcome is explained by the combination of selected characteristics. The model for predicting risk of maltreatment presented in this study explained about 6% of the variation in the outcome of notifications for Aboriginal children and 15% of the variation in outcome for non-Aboriginal children. While these models are 'statistically' significant, a more complete model will need to be developed to be of practical application in a comprehensive, whole-population-service response.

One limitation of this study is that the level of alcohol use might be underestimated. This is because our study identified alcohol use information of the children's mother based on their self-report (recorded in the perinatal dataset), while the WA data-linkage study[61] identified alcohol use information based on alcohol-related diagnoses recorded in the linked administrative datasets, which included the Hospital Morbidity data system, Mental Health Inpatients and Outpatients, and the Drug and Alcohol Office.

Another limitation of this study is that we do not have the child protection history of the children's siblings which might be more predictive of child maltreatment reports than by solely using the prenatal and perinatal characteristics. Linkage of family clusters will provide

more insights to understand the family risk factors (i.e. parents and sibling-related factors) for child maltreatment. Other states in Australia, such as WA and New South Wales, are utilising the capacity to enable family data-linkage studies. Technically, this is possible in the NT. Health information (e.g. hospital admissions related to mental health, substance use and assault) and child protection history of the children's parents/siblings could be obtained through linkage of data in NT health records. There is also the potential for linking the child protection data to the police data in examining the link between domestic violence and child maltreatment reports of children.

There is extensive data-linkage research that demonstrates the links between maternal mental illness and child maltreatment.[64] This would have an implication on using data-linkage to inform the 'joining up' of child protection and adult mental health services. Results from a South Australian study[65] have 'indicated the need for more supportive connections between parents, child protection workers and adult mental health services', given that 'many parents require ongoing support beyond periods of crisis and specialist interventions to resolve or process adverse childhood experiences and prevent the intergenerational transmission of dysfunction'. This is particularly relevant to the NT, in which a survey conducted in 2004 revealed that 19.4% of non-Aboriginal parents had been treated for a mental health problem.[66]

The model in this study, while highlighting high-risk groups, is not sufficiently predictive for more general application but might be improved by linking the child protection data to other government administrative data[67] (e.g. welfare, police, hospital data) or using more advanced techniques (e.g. machine-learning methods) to inform a more integrated service response to child protection in the early years of children's life. These techniques have been used successfully in New Zealand[68] and USA[69] to predict children who are highly likely to be exposed to maltreatment. The USA study[69], which linked child welfare with birth record data, found that a child in the high-risk profile had an 89% predicted probability of being reported for maltreatment before the age of 5. The New Zealand study[68] presented a convincing case for the technical, methodological and ethical feasibility of the use of predictive risk model (PRM) on linked data (public benefits and child protection data) to generate risk scores for substantiated maltreatment. In the final NZ model (132 variables selected from initial 224 variables), it was found that among children in the top decile of risk, 47.8% had a substantiated maltreatment by the age of 5. Although there are some ethical concerns about the use of PRM in child protection, one assessment has reported that the potential ethical risks 'can either be significantly mitigated by appropriate implementation strategies or are plausibly outweighed by the potential benefits of such modelling'.[70]

8.3 Association between child maltreatment experience and school readiness

Our study confirms the relationship between early exposure to trauma/neglect and school readiness at age 5 years, with children having a history of maltreatment (notifications or

substantiations) having a higher risk. This finding has significant implications for both child protection and education service providers in meeting the learning needs of NT children. Children who are developmentally vulnerable on two or more AEDC domains (DV2) are highly likely to require some form of special education support for a successful transition to school learning. This study also demonstrated that the proportion of NT children with special needs was associated with higher levels of child protection involvement. The proportion of children recorded for special needs is higher in children with notifications (Aboriginal, 5.2%; non-Aboriginal, 8.2%) and substantiations (Aboriginal, 8.4% non-Aboriginal, 11.1%) than those with no contact with the child protection system (Aboriginal, 4.3%; non-Aboriginal, 4.1%).

In this study, both Aboriginal and non-Aboriginal children with unsubstantiated notifications had similar risk of developmental vulnerability as those children with substantiated notifications. This finding is consistent with a recent WA study,[71] which found that children with substantiated or unsubstantiated notification had similar levels of school readiness. In particular, it was found that neglect was associated with a lower level of school readiness on all five AEDC domains for both substantiated and unsubstantiated notifications. A second WA study found that children with either unsubstantiated or substantiated notifications both had similarly increased risk for low reading achievement.[72] All these findings suggest that investigation of medium- and long-term outcomes of children should not be limited to children with substantiation but also should include children with unsubstantiated notification.

Research in a Menzies study[49] has demonstrated the significant association between school readiness and school attendance for the Year 1 Aboriginal students. This report confirms the relationship between child maltreatment and school readiness and the high rates of contact with the child protection system before age 5 in the NT. These findings highlight the importance of early assessment/screening for school readiness to identify the additional early support required from an early age for successful school transition for children in the NT.

8.4 Conclusion

The study findings concerning the multiple determinants of children's involvement in the child protection system offer new opportunities for the development of evidence-based government policy, services, prevention and intervention programs. They also demonstrate the utility of data linkage to identify critical points for targeting early interventions, multi-agency collaboration and integrated service response to child protection concerns in the first five years of children's lives.

This report has found that with the most recent information, more than half of Aboriginal children had a first notification by age 5 years, and half of these contacts occurred before age 2 years. It has also found high proportions of repeat notification and of reports by

different sources, with 20.5% of Aboriginal children and 14.8% of non-Aboriginal children reported more than five times. These findings indicate both the scale of the issue and the potential long-term costs for individuals, families, communities and society.

The unpacking of how service contact patterns differ between groups of children informs a more differentiated child protection intervention service response. Similarly, the observed geographical variation in rates of child maltreatment across the NT suggests the need for more place-based strategies in addition to the current population-level approach to child health and wellbeing.

This report has also demonstrated some difference in the prenatal and perinatal predictors for maltreatment between Aboriginal and non-Aboriginal infants, which suggests a need to review the current screening tool to ensure that the risk assessment processes are appropriate for both groups of children. This could also assist in the adaptation and calibration of screening tools to enable earlier identification of children at risk. The finding of the increased risk for children with mothers drinking alcohol during pregnancy for both Aboriginal and non-Aboriginal children suggests an opportunity for early intervention.

Demonstration of the relationship between children's experience of maltreatment and school readiness has important implications for both child protection and education service providers and highlights the need for early education support for these children making a successful transition into school learning, which is critical to their school attendance and achievement in later years.

This report has demonstrated the utility of data-linkage to inform a public health response to child maltreatment. In our study cohort, most children that come into contact with child protection services before age 5 years have been reported by police and/or health professionals. The contact of children with multiple government agencies reinforces the need to recognise that child protection is not the sole responsibility of a single agency, as observed by the *Growing them strong, together* report that 'government and non-government agencies [have to work] separately—or collaboratively—across the spectrum of hospital and health services, family support services, education and training, housing, police and corrective services'.[9]

Future data linkage studies should explore the determinants of maltreatment vulnerability for children at different ages and also assess their long-term education, justice, health and employment outcomes. Such studies offer significant potential to enhance the effectiveness of whole-of-government initiatives by transcending the 'siloed' manner in which government administrative data have previously been used for service planning and resource allocation to improve the developmental, health, education and social outcomes of Territorian children.

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Appendix

Table A1 Trend in the number of children* with notifications, substantiations and out-of-home care placement in each year from 2000 to 2017

Indigenous status	Level of contact	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Aboriginal	Notifications	471	491	668	738	1052	1032	1396	1632	1978	2874	3348	3498	4219	4944	5871	7365	8237	8559
Aboriginal	Substantiations	172	153	222	198	375	319	354	395	558	617	868	1186	1304	1053	1231	1439	1325	1671
Aboriginal	Out-of-home care	147	193	199	258	338	346	371	452	464	543	608	702	838	862	937	1067	1135	1176
Non-Aboriginal	Notifications	663	695	675	595	618	745	916	948	983	1371	1371	1259	1458	1656	2036	2417	2609	2606
Non-Aboriginal	Substantiations	179	177	109	113	116	128	108	145	142	145	169	232	209	150	162	315	249	239
Non-Aboriginal	Out-of-home care	160	190	125	140	150	175	170	228	190	204	212	192	192	186	177	184	164	150

Year**

Source: Guthridge S, He V, Silburn S. (2017). A statistical overview of children's involvement with the NT child protection system', Royal Commission into Protection and Detention of Northern Territory Children. Exh 512.00. http://webarchive.nla.gov.au/gov/20180615091705/https://childdetentionnt.royalcommission.gov.au/NT-public-hearings/Pages/Hearings/2017/19-June-2017-Exhibits.aspx and based on Productivity Commission (2005[13], 2006[14], 2015[15], and 2018[16]), Report on government services, Productivity Commission, Canberra. Available at: http://www.pc.gov.au/research/ongoing/report-on-government-services/2018

Notes: * Due to changes in reporting by Productivity Commission, notifications and substantiations include children aged 0-16 in financial year 1999-2000 to 2009-2010, and children aged 0-17 year 2010-2011 to 2016-2017.

** The year is expressed in terms of the end of each financial year (e.g. 2017 represents the financial year 2016–17).

Table A2 Trend in the number of NT Aboriginal and non-Aboriginal children with substantiated episodes of child abuse and neglect in each year from 2000 to 2017 by type of abuse or neglect

Indigenous status	Type of abuse	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Aboriginal	Neglect	80	67	81	78	151	142	122	118	206	268	469	636	718	526	617	660	620	756
	Emotional	9	5	27	20	50	52	101	119	153	146	193	310	365	367	371	492	427	632
	Physical	69	63	96	78	136	110	118	119	123	144	147	189	184	147	224	216	239	271
	Sexual	14	19	19	22	39	20	15	39	82	60	59	51	37	14	19	71	39	12
Non-Aboriginal	Neglect	30	49	22	34	30	33	24	19	38	29	54	70	72	41	47	85	56	64
	Emotional	27	33	28	14	11	26	40	44	47	47	26	53	57	57	66	106	122	112
	Physical	102	76	50	56	45	62	34	63	32	54	67	89	54	50	35	98	56	51
	Sexual	22	19	10	10	30	8	10	21	28	17	22	20	10	2	14	26	15	12

Sources: AIHW (2001 to 2018[18]). Child protection, (all years 1999–2000 to 2016–17). Child Welfare Series no. (multiple). Cat. No. (multiple). Canberra. Available at https://www.aihw.gov.au/reports-statistics/health-welfare-services/child-protection/

Notes[18]:

1. The year is expressed in terms of the end of each financial year (e.g. 2017 represents the financial year 2016–17).
2. If a child was the subject of more than one type of abuse or neglect as part of the same notification, the abuse and/or neglect reported is the one considered by the child protection workers to cause the most harm to the child. Where a child is the subject of more than one substantiation during the year, the type of abuse reported in this table is the type of abuse and/or neglect associated with the substantiation decision relating to the earliest notification during the year.
3. Finalised investigations, and thus substantiations, refer only to cases that were notified during the year, not to the total number of investigations finalised by 31 August of each year.
4. In the NT, due to recording issues, sexual exploitation is under-reported. This has been addressed and it is expected numbers in this area will be similar to those of other jurisdictions in future years.

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Table A3 Distribution of number of notifications per child by age 5 years for NT Aboriginal and non-Aboriginal children (2015 AEDC cohort) in contact with the child protection system before age 5

Number of notifications	Aboriginal		non-Aboriginal	
	Number of children	%	Number of children	%
1	222	35.0	60	46.9
2	147	23.2	27	21.1
3	77	12.2	15	11.7
4	58	9.2	7	5.47
5 to 9	113	17.8	16	12.5
10+	17	2.7	3	2.3
Total	634	100	128	100

Table A4 Frequencies of the number of substantiated maltreatment notifications per child by age 5 years for NT Aboriginal and non-Aboriginal children (2015 AEDC cohort) in contact with the child protection system before age 5

Number of substantiated notifications per child	Aboriginal Number of children	% of children	Cumulative % of children
0	323	51.0	51.0
1	182	28.7	79.7
2	70	11.0	90.7
3	30	4.7	95.4
4	17	2.7	98.1
5	6	1.0	99.1
6	5	0.8	99.8
7	1	0.2	100.0

Number of substantiated abuse notifications per child	non-Aboriginal Number of children	% of children	Cumulative % of children
0	108	84.4	84.4
1	15	11.7	96.1
2	4	3.1	99.2
4	1	0.8	100.0

Table A5 Distribution of the number of investigations by source of notification (%) for each states and territories in Australia, 2016–17

Source of notification	NT	Australia	NSW	VIC	QLD	WA	SA	TAS	ACT
Police	35.4	20.7	14.6	30.5	19.7	32.3	21.5	27.1	19.8
School personnel	15.7	19.3	19.9	20.3	19.6	14.3	16.7	27.4	22.2
Medical/health personnel	18.5	11.7	9.9	10.4	18.0	9.0	19.0	7.6	15.3
Family	5.8	10.0	10.1	8.9	13.8	9.8	5.1	9.4	9.0
Friend/neighbour	2.1	3.5	3.9	2.6	5.0	1.4	2.1	3.9	5.0
Social worker	0.5	13.0	21.0	3.6	0.0	10.5	18.2	14.8	0.4
Non-government organisation personnel	8.3	7.1	6.2	10.8	9.3	0.0	7.6	0.5	9.7
Departmental officer	7.7	4.1	4.7	0.0	3.5	7.7	5.1	0.5	7.6
Child care personnel	0.6	1.1	1.3	0.5	1.4	0.5	1.8	2.2	1.9
Other	5.1	7.2	8.4	3.1	8.8	7.9	2.8	6.4	8.7
Subject child	0.2	0.3	0.2	0.0	0.7	0.8	0.0	0.2	0.4
Not stated	0.0	2.1	0.0	9.3	0.1	5.8	0.1	0.0	0.2
Total number of report (N)	9245	177056	93042	31176	22654	12533	4094	1390	2922

Source: Adapted from Australian Institute of Health and Welfare 2018. Child protection Australia 2016–17. Child welfare series no. 68. Cat. no. CWS 63. Canberra: AIHW. Table S6. Available at https://www.aihw.gov.au/reports/child-protection/child-protection-australia-2016-17/data

Notes:

1. The number of notifications and the percentage of those notifications investigated are not comparable across jurisdictions, as legislation and policies that provide the framework for assessing child protection notifications vary broadly across jurisdictions.
2. New South Wales figures are not comparable with those of other jurisdictions. New South Wales has a differential investigation response whereby an investigation can be undertaken over two stages (stage 1–information gathering; stage 2 – assessment).
3. Data reported for Tasmania aligns with the AIHW technical specifications except in the case of notifications received from departmental officers, which could also be classified in another category (for example, social worker). Notifications from departmental officers were assigned to the category of 'departmental officer' regardless of whether the source of notification could be classified in other categories.
4. 'Medical/health personnel' includes medical practitioners, hospital personnel and other health personnel.
5. 'Family' includes parent/guardian, sibling and other relative.
6. 'Other' category includes where the source of notification was anonymous and may include the person responsible.
7. Note: investigations include 'investigations finalised', 'investigations in process' and 'investigations closed—no outcome possible'.

Table A6 Frequencies of the number of 'reporter category' type per child by age 5 years for NT Aboriginal and non-Aboriginal children (2015 AEDC cohort) in contact with the child protection system before age 5

Aboriginal			
Number of 'reporter category' type per child	Number of children	% of children	Cumulative % of children
6 or more	17	2.7	2.7
5	24	3.8	6.5
4	39	6.2	12.6
3	93	14.7	27.3
2	160	25.2	52.5
1	301	47.5	100

non-Aboriginal			
Number of 'reporter category' type per child	Number of children	% of children	Cumulative % of children
6 or more	1	0.8	0.8
5	4	3.1	3.9
4	11	8.6	12.5
3	14	10.9	23.4
2	33	25.8	49.2
1	65	50.8	100

Table A7 Pattern of notifications by reporter groups and maltreatment types for NT Aboriginal and non-Aboriginal children (2015 AEDC cohort)

Aboriginal		***O	**C*	**CO	*H**	*H*O	*HC*	*HCO	P***	P**O	P*C*	P*CO	PH**	PH*O	PHC*	PHCO	sum(row)
Maltreatment type (primary)									Reporter type								
	***S	0.3	0.5	0.0	0.8	0.0	0.0	0.0	0.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0	2.2
	**P*	1.1	1.3	0.0	1.9	0.3	0.0	0.0	5.2	0.2	0.0	0.0	0.3	0.0	0.0	0.0	10.3
	**PS	0.0	0.2	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.0	0.5
	*E**	0.9	0.2	0.0	0.5	0.0	0.0	0.0	9.8	0.5	0.3	0.0	0.2	0.0	0.0	0.0	12.3
	*E*S	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.2	0.2	0.0	0.0	0.2	0.0	0.2	0.0	0.8
	EP	0.0	0.0	0.2	0.0	0.0	0.0	0.0	2.5	0.8	1.1	0.3	1.7	0.3	0.0	0.0	6.9
	*EPS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.3	0.0	0.0	0.2	0.0	0.6
	N***	4.4	3.2	0.6	9.1	1.7	0.8	0.8	1.9	0.3	0.8	0.3	0.6	0.3	0.3	0.2	25.4
	N**S	0.2	0.2	0.0	0.2	0.2	0.2	0.0	0.0	0.2	0.2	0.0	0.3	0.0	0.0	0.0	1.4
	N*P*	0.2	0.2	0.5	0.5	1.4	0.6	0.2	0.8	0.8	1.1	0.8	1.9	0.6	0.5	1.4	11.4
	N*PS	0.0	0.0	0.3	0.0	0.0	0.0	0.2	0.0	0.2	0.0	0.6	0.2	0.3	0.3	0.5	2.5
	NE**	0.3	0.0	0.2	0.2	0.6	0.6	0.2	1.4	1.4	0.8	0.6	2.8	1.1	0.9	0.3	11.5
	NE*S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3	0.2	0.0	0.2	0.2	0.2	1.1
	NEP*	0.2	0.0	0.3	0.0	0.0	0.3	0.2	0.8	1.4	1.1	1.7	0.9	1.4	0.8	1.9	11.0
	NEPS	0.0	0.0	0.2	0.0	0.0	0.0	0.2	0.0	0.0	0.2	0.6	0.0	0.0	0.2	0.8	2.1
Sum(col)		7.6	5.5	2.4	13.1	4.4	2.5	1.6	23.2	6.2	5.8	5.5	9.3	4.3	3.5	5.2	100

non-Aboriginal		***O	**C*	**CO	*H**	*H*O	*HC*	*HCO	P***	P**O	P*C*	P*CO	PH**	PH*O	PHC*	PHCO	sum(row)
Maltreatment type (primary)	***S	0.0	3.9	0.0	1.6	0.0	0.0	0.0	0.8	0.8	0.0	0.0	0.0	0.0	0.0	0.0	7.0
	**P*	1.6	1.6	0.0	3.1	0.0	0.8	0.0	2.3	0.8	0.0	0.0	0.0	0.0	0.0	0.0	10.2
	**PS	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.0	0.0	0.0	0.0	0.0	2.3
	*E**	6.3	3.9	0.0	0.0	0.0	0.0	0.0	12.5	0.0	3.9	0.0	0.0	0.0	0.0	0.0	26.6
	*E*S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.8
	EP	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.8	0.0	3.1	0.0	0.8	0.0	0.8	0.0	6.3
	*EPS	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.8	1.6
	N***	5.5	4.7	0.0	1.6	0.0	0.0	0.8	1.6	0.0	0.8	0.8	0.0	0.8	0.0	0.0	16.4
	N**S	0.0	0.0	0.8	0.0	0.8	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.0	0.0	0.0	2.3
	N*P*	0.8	1.6	0.0	0.0	1.6	0.0	0.8	0.0	0.8	0.8	1.6	0.0	0.0	0.0	0.0	7.8
	NE**	0.0	0.0	0.0	0.0	0.8	0.0	0.0	0.0	0.8	3.9	2.3	0.0	0.0	0.0	0.0	7.8
	NE*S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.8	0.8	0.0	0.0	0.0	0.8	2.3
	NEP*	0.0	0.0	0.0	0.0	0.8	0.0	0.8	0.0	0.8	0.8	0.8	0.0	1.6	0.0	0.8	6.3
	NEPS	0.8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	1.6	0.0	0.0	0.0	0.0	2.3
	Sum(col)	14.8	17.2	0.8	6.3	3.9	0.8	2.3	18.0	5.5	15.6	8.6	0.8	2.3	0.8	2.3	100

Reporter type

Table A8 Predictive probabilities for first notification by age 1 year for NT Aboriginal and non-Aboriginal children (2015 AEDC cohort), with 95% Confidence Intervals (CI)

Aboriginal		
Group	**Predicted probability**	**95% CI**
1	0.664	0.555 0.774
2	0.510	0.401 0.619
3	0.430	0.327 0.533
4	0.372	0.272 0.472
5	0.252	0.189 0.315
6	0.216	0.160 0.271
7	0.166	0.143 0.189
non-Aboriginal		
Group	**Predicted probability**	**95% CI**
1	0.760	0.415 1.000
2	0.752	0.447 1.000
3	0.681	0.332 1.000
4	0.336	0.017 0.655
5	0.077	0.000 0.177
6	0.059	0.034 0.084
7	0.042	0.009 0.075