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Bowden, N., Milne, B., Audas, R. et al. (2022) Criminal justice system interactions among young adults with and without autism : a national birth cohort study in New Zealand. *Autism*, 26 (7). pp. 1783-1794. ISSN: 1362-3613

<https://doi.org/10.1177/13623613211065541>

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Criminal justice system interactions among young adults with and without autism: A national birth cohort study in New Zealand

Autism

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DOI: 10.1177/13623613211065541

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Abstract

While sensationalist headlines and highly publicised criminal cases have led many to believe there is a link between autism and criminal behaviour, extant literature presents an unresolved debate. We sought to address this issue by examining the prevalence of criminal justice system interactions among young adults with and without autism, and by assessing whether offence types differ between these groups. This was a national birth cohort study using linked health and criminal justice system data. Cox proportional hazard models were employed to compare criminal justice system interactions between young adults with and without autism, controlling for important socio-demographic characteristics. Data were acquired for 1197 people with autism and 147,879 without autism. Young adults with autism had significantly lower rates of being proceeded against by police, charged in court, and convicted in court compared to those without autism. However, those charged with an offence were significantly more likely to be charged with serious and violent offences, offences against the person and against property. Our findings indicate that, although young people with autism were not over-represented in the criminal justice system, disparities in offence types and incarceration rates among those charged with an offence suggest the importance of identification and appropriate response to autism within the criminal justice system.

Lay abstract

Sensationalist headlines and highly publicised criminal cases lead many in the public to believe that people with autism are more likely to engage in criminal behaviour. However, recent studies present an unresolved debate, and indicate this may not necessarily be the case. The aims of this study were to examine the prevalence of criminal justice system interactions among young adults with and without autism, and determine whether offence types differ between these groups. We tracked a national birth cohort until their 25th birthday, detecting criminal justice system interactions from age 17 onwards. Linked health and criminal justice system data were used to identify those with autism and detect interactions with the criminal justice system. We found that young people with autism interacted with the criminal justice system at lower rates compared to those without autism. However, there were considerable differences in the types of offences these young people were charged with. For example, among those charged with an offence, people with autism were more likely to be charged with a serious offence, punishable by 2 or more years in prison. We

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conclude that although young people with autism are not over-represented in the criminal justice system, disparities in offence types and incarceration rates among those charged with an offence suggest the importance of identification and appropriate response to autism within the criminal justice system.

Keywords

autism, big data, criminal justice system, Integrated Data Infrastructure, offence types

Background

Sensationalist headlines and highly publicised criminal cases lead many in the public to believe that people with autism are more likely to engage in criminal behaviour (Allen et al., 2008; Howlin, 1997; Howlin et al., 2004). However, contemporary literature is sparse and conflicted, with debate about whether people with autism¹ are over- or under-represented in the criminal justice system (CJS) (Cashin & Newman, 2009; Howlin et al., 2004; King & Murphy, 2014; Mouridsen, 2012; O'Brien, 2002).

The research literature examining whether individuals with autism are likely to commit criminal actions centres on the ways in which perceived behavioural traits associated with autism may impact offending behaviour. Some suggest that people with autism are less likely to offend because they tend to strictly adhere to rules (King & Murphy, 2014). Others suggest social naivety, disruption to routines, sensory processing overload, and special interests may be factors that increase the risk of offending behaviour (Howlin et al., 2004).

Research on autism and the CJS can be grouped into two main types of studies: prevalence of autism in the CJS and prevalence of CJS interactions among populations of individuals with autism (King & Murphy, 2014; Railey et al., 2021). Existing prevalence studies on autism and the CJS are characterised by methodological shortcomings: highly specialised (biased) samples, poor methods of identifying autism and absence of controls for confounding factors (Ali, 2018; King & Murphy, 2014). King and Murphy (2014) claim that this makes direct comparisons among these studies difficult, but more importantly brings into question the robustness of findings. In spite of this, the conclusions drawn from these studies, that people with autism are over-represented in CJS populations, have shaped some of the early narratives in this area (Hare et al., 1999; Kumagami & Matsuura, 2009; Robinson et al., 2012; Scragg & Shah, 1994).

Studies on the prevalence of CJS interactions among people with autism also tend to be characterised by methodological limitations such as biased samples and poorly matched comparison groups (King & Murphy, 2014). In addition, the definition of offending varies, ranging from convictions (Hippler et al., 2010) to self-reported criminal activities (Woodbury-Smith et al., 2006), making comparisons difficult. For these reasons, reported rates of 'offending behaviour' vary dramatically among autism populations, from 2.74% (Hippler et al., 2010) to 48% for self-reported

criminal behaviour (Woodbury-Smith et al., 2006). However, of the studies reviewed by King and Murphy (2014) that employed control groups and were thus deemed to constitute the best quality evidence available, all found that people with autism had equal or lower rates of CJS interactions than those without autism (Brookman-Frazee et al., 2009; Cheely et al., 2012; Hippler et al., 2010; Mouridsen et al., 2008; Woodbury-Smith et al., 2006).

Crimes against people have historically been most studied in relation to autism although there is a paucity of contemporary empirical research. Early research utilised case study methodology to highlight a link between violent crime and autism (Baron-Cohen, 1988; Simblett & Wilson, 1993), but this notion has been challenged by more recent and robust research (Hellerschou et al., 2015; Mouridsen et al., 2008; Woodbury-Smith et al., 2006). With respect to sexual offending, studies have shown that among those who have committed a crime, sexual offences are more common among people with autism, but they are still less likely to commit sexual offences than people without autism (Dein & Woodbury-Smith, 2010; Kawakami et al., 2012). Subsequently, Cheely et al. (2012) found that youth with autism, when they did offend, were more likely to commit offences against people (e.g. assault) than property (e.g. arson), compared to those without autism.

As evidenced above, there remains an unresolved debate in existing literature as to whether people with autism are at higher risk of involvement with the CJS, and if predispositions to certain offence types exist. Furthermore, the majority of existing literature tends to focus on one or more discrete aspects of the CJS, not the pathway through it (i.e. from police proceedings through to convictions and sentencing). It is therefore evident and widely recommended that more robust research in this area is required to better understand the prevalence and nature of CJS interactions among individuals with autism, and to examine the respective pathways through the CJS (Ali, 2018; King & Murphy, 2014; Lambie, 2020).

Under international law, all signatory states to the United Nations Convention on the Rights of Persons with Disabilities (UNCRPD) have a number of legal obligations to disabled people, and therefore people with autism, including:

1. ensuring equal recognition before the law;
2. providing for effective access to justice;
3. protecting the liberty of the person;

4. and collecting data to demonstrate it is meeting its obligations (UNCRPD articles 12, 13, 14 and 31).

We argue that a methodology to support robust data collection is the key to meeting all these obligations. This need has been recognised by the New Zealand government when it acknowledged its reliance on international prevalence data to inform local practice due to the current gap in data (Office for Disability Issues, 2019). This issue has been further acknowledged in New Zealand through the funding of this study, which is in turn part of a wider research project designed to contribute to the development of an evidence base relating to young people with neurodevelopmental impairments in the CJS. This project utilises New Zealand's world leading Integrated Data Infrastructure (IDI), a large whole-of-population research database containing linked data across multiple government agencies and national surveys. It therefore has the potential to assist New Zealand and other countries by contributing previously unknown information about the prevalence of CJS interactions experienced by this diverse group of young people.

The objectives of this study were to:

1. Explore the utility of utilising linked administrative data to develop an evidence base relating to CJS interactions among young people with autism.
2. Report the prevalence of CJS interactions and examine pathways through the system among young people with autism compared to those without autism.
3. Assess whether offence types differ for young people with autism and without autism.

Methods

Study design and data source

This was a national birth cohort study, utilising linked administrative data contained within the IDI. The IDI is a large, whole-of-population research database containing administrative and survey data,² linked at the individual level,³ and managed by Statistics New Zealand (Milne et al., 2019; Statistics New Zealand, 2017). It includes data from government departments including health, education, and the CJS and survey data such as the New Zealand census. IDI data can be accessed only by researchers who are approved by Statistics New Zealand to do research which has been deemed to be for the public good. All data in the IDI have been de-identified. Clearance for access to data was approved by Statistics New Zealand. The study was reviewed as a 'Minimal Risk Health Research – Audit and Audit related studies' proposal and received ethics approval (reference: HD17/004).

Participant population

The participants comprised a 3-year birth cohort, born in New Zealand between 1 July 1992 and 30 June 1995. This cohort was chosen to maximise the sample size, while at the same time allowing for a follow-up period for the majority of the cohort until 25 years of age due to the time coverage of available IDI data. The cohort was identified using birth record data from the Department of Internal Affairs.

The period of interest for CJS interactions for this cohort was from the participant's 17th birthday until their 25th birthday. The rationale for this period is that young people in New Zealand are subject to the Adult Court from age 17 and are generally accepted to be young adults within the CJS until they are 25. Individuals who, prior to their 17th birthday, spent more than 2 years outside of New Zealand or died, were also excluded. The overseas stay exclusion was imposed to ensure each member of the cohort interacted with the New Zealand health system for approximately the same period of time, and hence had equal chances of being identified with autism.

Primary measures

Autism. Autism status was determined using a novel IDI-based case identification method (Bowden et al., 2020). This method draws on diagnosis information contained within three health data sets: publicly funded hospital discharge data, the National Minimum Data Set (NMDS); publicly funded secondary specialist mental health service use data, the Programme for the Integration of Mental Health Data (PRIMHD) formally the Mental Health Information National Collection (MHINC); the Ministry of Health's disability support services data set, Socrates. An individual was considered to have autism if at least one diagnosis code for autism was identified in any of the three data sets from birth until the end of the event window. Diagnosis codes included *Diagnostic and Statistical Manual of Mental Disorders* (4th ed.; DSM-IV) codes for autistic disorder (299.00), childhood disintegrative disorder (299.10) and Asperger's disorder/pervasive developmental disorder NOS (299.80) within PRIMHD; *International Statistical Classification of Diseases and Related Health Problems, Tenth Revision, Australian Modification* (ICD-10-AM) codes for autistic disorder (F84.0), atypical autism (F84.1), other childhood disintegrative disorder (F84.3), Asperger's syndrome (F84.5), other pervasive developmental disorders (F84.8) and pervasive developmental disorder, unspecified (F84.9) within PRIMHD or NMDS; assigned diagnosis codes of autism spectrum disorder (ASD) (1211), Asperger's syndrome (1206) and other ASD (1207) within Socrates. The time coverage of these data sets varies. NMDS was available from birth for the cohort, MHINC/PRIMHD from 1 July 2001 and Socrates

from 1 January 2008. Autism was considered to be a life-time condition, and therefore, the covariate in the model was not considered time varying.

CJS interactions. Four CJS interactions were utilised in this study: police proceedings (legal actions initiated by the New Zealand Police against an alleged offender for an offence) drawn from the New Zealand Police Recorded Crime Offenders data; court charges and court convictions drawn from Ministry of Justice courts data; incarcerations drawn from Department of Corrections data. These interactions were observed over the 89-year event window starting at the time of participants 17th birthday through to their 25th birthday.⁴ Each CJS interaction was constructed as a dichotomous variable, where ‘1’ indicated any interaction and ‘0’ indicated no interaction, with the corresponding date of interactions also extracted.

Total charges. Total charges were counted as the number of distinct sets of charges laid against participants over the event window. If multiple offences were recorded on the same day, these were combined, and thus contributed one offence to the total.

Offence types. The seriousness of charges was examined using a dichotomous indicator reflecting offences punishable by imprisonment of 2 years or more. This indicator was derived from a categorisation defined in the Criminal Procedure Act 2011.⁵

To examine specific offence types, the third edition of the Australian and New Zealand Standard Offence Classification⁶ (ANZSOC) was employed. ANZSOC is a three-level hierarchical framework (divisions, subdivisions and groups) that provides a uniform system for classifying criminal behaviour and is used in Australia and New Zealand (refer to Table 1 for details). Dichotomous indicators for aggregate offence types were created and examined separately: offences against people (ANZSOC divisions 1–6), offences against property (ANZSOC divisions 6–9 and 12), offences against organisations, government and community (ANZSOC divisions 10–11 and 13–16) and violent offences (ANZSOC divisions 2 and 3; ANZSOC subdivisions: murder, attempted murder, abduction and kidnapping, deprivation of liberty/false imprisonment, robbery and the ANZSOC group manslaughter (does not include driving causing death)). ANZSOC divisions were examined separately, but due to small numbers, results are not presented here.

Socio-demographic variables

Sex (male/female), age (in years) and ethnicity (major groups using the New Zealand Standard Classification 2005 V2.0.0 and the total concept approach meaning individuals can identify with more than one ethnic group:

Table 1. ANZSOC divisions.

Division	Description
1	Homicide and related offences
2	Acts intended to cause injury
3	Sexual assault and related offences
4	Dangerous or negligent acts endangering persons
5	Abduction, harassment and other offences against the person
6	Robbery, extortion and related offences
7	Unlawful entry with intent/burglary, break and enter
8	Theft and related offences
9	Fraud, deception and related offences
10	Illicit drug offences
11	Prohibited and regulated weapons and explosives offences
12	Property damage and environmental pollution
13	Public order offences
14	Traffic and vehicle regulatory offences
15	Offences against government procedures, government security and government operations
16	Miscellaneous offences

ANZSOC: Australian and New Zealand Standard Offence Classification.

European; Māori; Pacific; Asian; Middle Eastern, Latin American, African (MELAA), and other) were drawn from the IDI personal details table. Area deprivation (NZDep2013) and area of residence (Auckland, Wellington, rest of the North Island, Canterbury and rest of the South Island) were derived from address notification data as at 17 years of age. NZDep is a socio-economic measure of deprivation, defined at the meshblock (neighbourhood) level that an individual resides. NZDep scores were collapsed into quintiles, with 1 representing the least deprived and 5 representing the most.

Procedure

Data were accessed from the December 2019 refresh of the IDI. Data were extracted using SAS 7.1 (SAS Institute Inc., 2014) and analysed using Stata MP version 15 (StataCorp, 2017a). All counts were suppressed if less than 20 and randomly rounded to base 3, adhering to the confidentiality requirements of Statistics New Zealand.

Statistical analysis

Reporting of studies Conducted using Observational Routinely-collected health Data (RECORD) guidelines were used to inform the reporting of analyses (Benchimol et al., 2015). The birth cohort was described descriptively by socio-demographic subgroup as at age 17 (the start of the event window) by autism status. Observed rates of CJS

interactions for each of the four levels examined were also presented for those with and without autism.

To examine the association between autism and each level of CJS interactions, we used Cox proportional hazards models (StataCorp, 2017b). Hazard ratios (HRs) for autism on different levels of CJS interactions were estimated separately in four different models with the robust variance estimator (Lin & Wei, 1989). Participants stopped contributing to the Cox model on the date of their first CJS interaction, death, the start of a period of overseas travel that lasted greater than three consecutive months (93 days) or their 25th birthday (right censored).

To examine crime types, we undertook two additional series of Cox proportional hazards models, replicating the above analysis but for specific offence types:

1. For the whole participant population.
2. For the subset of the participant population who were charged with one or more offences.

Finally, to examine total charges, we employed a modified Cox proportional hazard model for multiple failure data using the Andersen–Gill method (Andersen & Gill, 1982). This method assumes that all failure types are equal, meaning that each subject enters at time 0, the time of last failure.

We reported crude and multivariable adjusted HRs and 95% confidence intervals (CIs) for all analyses. Adjusted models included sex, age, ethnicity, NZDep2013, and area of residence. Two-tailed tests at the 5% level defined significance.

Community involvement

Engagement with the autism community and co-production of knowledge is important to our research. To this end, one of the co-authors of this study is an autistic adult, a well-respected representative of the autism community, with a long history of community involvement. This co-author contributed to the study design and provided feedback on manuscript drafts to help ensure its contents, including the interpretation of results would be acceptable to the autistic community.

Results

Participant population

The full birth cohort contained 175,170 children. However, the final sample included 149,076 young people after excluding those who spent 2 or more years overseas or died prior to their 17th birthday (Figure 1). The final sample included 1197 (0.8%) young people with autism and 147,879 (99.2%) without autism. Their socio-demographic patterns are displayed in Table 2.

The autism cohort comprised 78.9% who were male compared to 51.6% in the comparison (non-autistic) group.

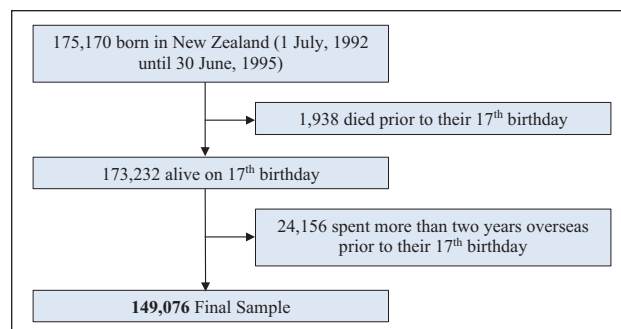


Figure 1. Participant flow chart.

The vast majority of the autism cohort was identified as European (90.2%), comparatively more than in the non-autistic group (77.4%), while in contrast, only 20.1% of people with autism were identified as Māori and 5.0% as Pasifika, compared to 29.9% and 11.4% respectively in the comparison group. The distributions across deprivation quintiles and region were relatively similar in each group; however, among the most deprived group, there were substantially fewer young people with autism compared to the general population.

CJS interactions

Overall, crude analyses indicated 282 young people with autism were proceeded against by police during the 8-year event window, yielding a prevalence of 23.6% (Table 3). Court charges were laid against 16.8% of those with autism, 12.8% were convicted in court and 2.0% were sentenced to prison. In comparison, observed rates of police proceedings (28.9%), court charges (21.4%) and court convictions (17.2%) were consistently higher for those without autism, while incarceration rates were marginally lower (1.7%).

In unadjusted time-to-event models, young people with autism had significantly lower hazards of police proceedings, court charges and court convictions than young people without autism (Table 4). After adjusting for socio-demographic differences (sex, ethnicity, deprivation, and area of residence), the associations amplified to the extent that young people with autism had a 37.6% lower hazard of being proceeded against by police, 39.2% lower hazard of a court charge and a 43.1% lower hazard of a court conviction. In contrast, in both unadjusted and adjusted models, the hazard of incarceration was the same for young people with and without autism were not significant ($p=0.736$ and $p=0.968$, respectively).

Number and type of offences

Among the full cohort, the total number of charges for young people with autism during the event window was slightly fewer compared to those without autism (0.89 on average per person vs 0.95) (Table 5). In general, young people with autism had similar crude charge rates (whether

Table 2. Socio-demographic characteristics of the 1197 young people with autism and the 146,863 without autism at baseline (age 17).

	Autism n (%)	Without autism n (%)
Sex		
Male	945 (78.9%)	75,795 (51.6%)
Female	252 (21.1%)	72,084 (49.1%)
Ethnicity ^a		
European	1080 (90.2%)	113,616 (77.4%)
Māori	240 (20.1%)	43,902 (29.9%)
Pasifika	60 (5.0%)	16,794 (11.4%)
Asian	54 (4.5%)	6834 (4.7%)
MELAA ^b	12 (1.0%)	1425 (1.0%)
Other	6 (0.5%)	1110 (0.8%)
Socio-economic deprivation ^c		
Quintile 1 (least deprived)	231 (19.3%)	28,845 (19.6%)
Quintile 2	243 (20.3%)	26,820 (18.3%)
Quintile 3	228 (19.0%)	26,322 (17.9%)
Quintile 4	255 (21.3%)	27,501 (18.7%)
Quintile 5 (most deprived)	231 (19.3%)	35,196 (24.0%)
Region ^d		
Auckland	360 (30.1%)	41,664 (28.4%)
Wellington	138 (11.5%)	15,459 (10.5%)
Rest of N. Island	381 (31.8%)	54,888 (37.4%)
Canterbury	153 (12.8%)	17,832 (12.1%)
Rest of S. Island	168 (14.0%)	16,455 (11.2%)

^aPercentages sum to greater than 100% as individuals can identify with multiple ethnic groups.

^bMiddle Eastern, Latin American, African.

^cValues missing for 9 young people (0.8%) with autism and 3195 (2.2%) without autism.

^dValues missing for <6 young people (<0.5%) with autism and 1578 (1.1%) without autism.

Table 3. Rates of CJS interactions of the 1197 young people with autism and the 146,853 young people without autism.

	Autism n (%)	Without autism n (%)
Proceeded against by police		
No	915 (76.4%)	105,426 (71.8%)
Yes	282 (23.6%)	42,450 (28.9%)
Court charge		
No	999 (83.5%)	116,439 (79.3%)
Yes	201 (16.8%)	31,437 (21.4%)
Court conviction		
No	1044 (87.2%)	122,589 (83.5%)
Yes	153 (12.8%)	25,287 (17.2%)
Incarceration		
No	1173 (98.0%)	145,377 (99.0%)
Yes	24 (2.0%)	2502 (1.7%)

CJS: criminal justice system.

or not they had a charge as a percentage of the population) compared to young people without autism. They had marginally higher crude rates of charges for serious offences

(9.0% compared to 8.1%), violent offences (7.3% compared to 5.8%) and offences against property (9.8% compared to 8.5%), but marginally lower rates of offences against the person (10.3% compared to 10.6%) and offences against organisations, government and community (11.0% compared to 16.6%). In contrast, among those who were charged with at least one offence, young people with autism were charged with more offences in total (5.30 on average per person over the 8-year window) compared to those without autism (4.48) and had markedly higher crude rates of all offence categories except offences against organisations, government and community.

Adjusted time-to-event count models indicated that among the full cohort, the autism group had a significantly lower hazard for court charges. Time-to-event models also indicated significantly lower hazards for offences against the person as well as offences against organisations, government and community. No statistical difference in hazards was found for serious offences (p -value=0.342), violent offences (p -value=0.626) and offences against property (p -value=0.715). In contrast, for those with at least one court charge, time-to-event count models indicated young people with autism had a significantly higher hazard for the number of court charges. Significantly higher hazards were also found for serious offences, offences against the person, violent offences and offences against property. In contrast, results showed significantly lower hazards among the autism group for offences against organisations, government and community.

Discussion

This national birth cohort study is the first to utilise linked administrative health and CJS data to examine pathways through the CJS for a national population of young adults with and without autism. After controlling for key socio-demographic characteristics, young people with autism in New Zealand were found to be at lower risk of being proceeded against by police (37.6% lower), as well as being charged (40.3% lower) or convicted in court (43.6% lower), than people without autism. In contrast, the risk of being incarcerated was not significantly different between those with and without autism. These findings are consistent with previous studies examining the prevalence of CJS interactions among young people with autism (Brookman-Frazer et al., 2009; King & Murphy, 2014; Mouridsen et al., 2008; Woodbury-Smith et al., 2006) and in stark contrast with earlier small sample studies that indicate those with autism were over-represented in the CJS (Hare et al., 1999; Kumagami & Matsuura, 2009; Robinson et al., 2012; Scragg & Shah, 1994).

The finding that young people with autism are less likely to be proceeded against by police, even less likely to be charged in court and less likely again to be convicted is a positive one which challenges the stereotypes that confront people with autism. It may suggest that the New

Table 4. Unadjusted and adjusted time-to-event hazard ratios (HR) estimates, together with 95% CI, of CJS interactions for autism.

	<i>n</i>	Unadjusted HR (95% CI)	Adjusted* HR (95% CI)
Overall			
Proceeded against by police	282	0.738 (0.656, 0.830)	0.624 (0.555, 0.702)
Court charge	201	0.708 (0.616, 0.815)	0.608 (0.528, 0.699)
Court conviction	153	0.662 (0.563, 0.777)	0.569 (0.484, 0.668)
Incarceration	24	1.071 (0.717, 1.602)	1.008 (0.674, 1.508)

CI: confidence interval; CJS: criminal justice system.

*Adjusted for gender, ethnicity, deprivation and area of residence.

Table 5. Rates of offence types by autism status, together with unadjusted and adjusted time-to-event hazard ratios (HR) estimates for the full birth cohort and those with at least one charge.

Full participant population				
Offence type	Autism	Without autism	Unadjusted HR (95% CI)	Adjusted* HR (95% CI)
	<i>N</i> = 1197	<i>N</i> = 146,853		
	Mean (SD)	Mean (SD)		
Total number of charges	0.89 (3.53)	0.95 (3.59)	0.86 (0.69, 1.08)	0.76 (0.61, 0.96)
	<i>n</i> (%)	<i>n</i> (%)		
Serious offences	108 (9.0)	11,922 (8.1)	1.07 (0.88, 1.30)	0.91 (0.75, 1.11)
Offences against the person ^a	123 (10.3)	15,657 (10.6)	0.90 (0.75, 1.07)	0.72 (0.60, 0.86)
Violent offences ^b	87 (7.3)	8649 (5.8)	1.19 (0.96, 1.46)	1.05 (0.85, 1.30)
Offences against property ^c	117 (9.8)	12,585 (8.5)	1.10 (0.92, 1.32)	0.97 (0.80, 1.16)
Offences against organisations, government and community ^d	132 (11.0)	24,513 (16.6)	0.61 (0.51, 0.72)	0.52 (0.44, 0.61)
Conditional on at least one court charge				
	Autism	Without autism	Unadjusted HR (95% CI)	Adjusted* HR (95% CI)
	<i>N</i> = 201	<i>N</i> = 31,266		
	Mean (SD)	Mean (SD)		
Total number of charges	5.30 (7.25)	4.48 (6.64)	1.15 (0.95, 1.38)	1.23 (1.01, 1.47)
	<i>n</i> (%)	<i>n</i> (%)		
Serious offences	108 (53.7)	11,922 (38.0)	1.62 (1.33, 1.97)	1.76 (1.44, 2.14)
Offences against the person	123 (61.2)	15,657 (49.9)	1.33 (1.11, 1.58)	1.23 (1.03, 1.48)
Violent offences	87 (43.3)	8649 (27.6)	1.74 (1.42, 2.15)	1.93 (1.57, 2.39)
Offences against property	117 (58.2)	12,585 (40.1)	1.57 (1.31, 1.88)	1.71 (1.43, 2.06)
Offences against organisations, government and community	132 (65.7)	24,513 (78.2)	0.71 (0.60, 0.84)	0.73 (0.61, 0.86)

SD: standard deviation; HR: hazard ratio; CI: confidence interval; ANZSOC: Australian and New Zealand Standard Offence Classification.

^aIncludes ANZSOC divisions 1–6.

^bANZSOC divisions: 2 and 3; ANZSOC subdivisions: murder, attempted murder, abduction and kidnapping, deprivation of liberty/false imprisonment, robbery and the ANZSOC group manslaughter (does not include driving causing death).

^cIncludes ANZSOC divisions 6–9 and 12.

^dIncludes ANZSOC divisions 10–11 and 13–16.

*Adjusted for gender, ethnicity, deprivation, and area of residence.

Zealand CJS (inclusive of police, court officials, judges and lawyers) is being responsive to people with autism and effectively diverting them out of the system. This is consistent with the hypothesis of King and Murphy (2014), and could be the result of growing recognition and

understanding of autism within the CJS and steady progress towards a more accommodating system (King & Murphy, 2014). It also suggests positive engagement with the guidance of General Comment 24 on the implementation of the UNCRPD, which asserts that ‘Children with

developmental delays or neurodevelopmental disorders or disabilities . . . should not be in the child justice system at all' (United Nations Committee on the Rights of the Child, 2019).

The time period of this study overlaps with an increasing awareness of the impact of neurodevelopmental impairment and neurodiversity in the youth and adult CJS in New Zealand. Over the last decade, this awareness has led to advances in this space. For example, successive Principal and Senior Youth Court judges have highlighted the prevalence and impact of neurodiversity among young offenders and have advocated for more responsive practice in the Youth Court (Peirse-O'Byrne, 2014). This has resulted in a Young Adult List being piloted within the Porirua District Court designed to be responsive to individuals aged between 18 and 25 years, recognising that both maturation and neurodiversity impact on a young adult's trajectory through the criminal court (Walker & Doogue, 2019).

Nonetheless, a distinct feature of our findings on pathways through the CJS is that, despite the risk of involvement at the police and courts level being significantly lower among those with autism, the risk of incarceration is not. In fact, our findings show that conditional on being charged with an offence, young people with autism have higher rates of incarceration (13%) compared to those without autism (8%). This runs counter to the consideration above, that the New Zealand CJS is being responsive to those with autism and warrants further research and reflection. There is a significant body of research that has considered autism in the context of sentencing with researchers such as Mayes (2003) and Freckelton (2012, 2013) asserting that autism may impact on a defendant's fitness to plead, culpability, criminal responsibility and on their ability to manage being imprisoned (Freckelton, 2012, 2013; Mayes, 2003). For example, behaviours common among autistic individuals such as limited expressions of emotions, gaze aversion and difficulties with discourse management all have the potential to adversely affect sentencing (Foster & Young, 2021). In New Zealand, disability can be taken into consideration at sentencing as part of a pre-sentence report or at the request of the offender. However, this is not explicit in the Parliamentary Counsel Office (2002) and no data are currently available on the effectiveness of this process. Given the results of this study, where young people with autism appear to be imprisoned at a similar rate to their peers without autism, despite lower rates of convictions, it is timely to consider this issue in more depth. This should include consideration as to how prior diagnoses of autism and understandings of individuals' needs within other sectors and services should inform the CJS through data linkage.

Our exploration of offence types revealed that among young people with autism who were charged with offences, the number and type of offences differed from young

people without autism. They had higher numbers of total charges, and were significantly more likely to be charged with a serious offence (offences punishable by 2 or more years in prison) than those without autism. We also found that among those charged with at least one offence, young people with autism were at higher risk of being charged with offences against the person, violent offences and offences against property, and lower risk of offences against organisations, government and community. These findings build on a sparse contemporary literature of which King and Murphy concluded only two studies were methodologically robust enough to confidently draw any conclusions (King & Murphy, 2014). We concur with Cheely et al. (2012), who found that young people with autism who were charged with an offence were significantly more likely to be charged with crimes against the person compared to those without autism. However, our findings that young people with autism who were charged with an offence were at *higher* risk of offences against property and had significantly more total offences compared to people without autism were in contrast with other studies (Cheely et al., 2012; Kumagami & Matsuura, 2009). Importantly, the overall rate of serious offences, offences against the person, offences against property and violent offences among young people with autism were less than, or equal to, the non-autistic population due to the low base rate of offending in the autism group. Such variation illustrates the importance of understanding patterns of offending and pathways through the CJS for young people with autism in considering effective responses.

It is possible that variation in offence types might in part be explained by the fact that the disabling experiences of young people with autism may have more severe consequences when other people are involved. For example, people with autism are likely to be at greater risk of their behaviour being misunderstood or perceived to be socially unacceptable when they are interacting with people (as opposed to property) which may then lead to offending behaviour, specifically offences against the person and violent offences. Furthermore, individual advocacy may be more successful when offences are of a less serious nature, or for offence types that do not directly involve another person. Society may be more understanding, for example, when autistic individuals face charges of offences against property or organisations.

Given young adults with autism who were charged with offences had more serious charges against them in comparison with young people who were not autistic, the higher incarceration rate identified may reflect and be appropriate to the type and seriousness of the charges. However, it is important to consider whether these young people had been identified as autistic before or at any stage during the formal legal proceedings. If autism is not recognised during legal proceedings, autism-related accommodations will be absent and may create serious disadvantage

for the autistic young person and contribute to discriminatory practice within the court and wider legal systems. Limited or uninformed understandings of autism or a tendency to interpret court-room behaviours, such as a lack of eye contact or apparent lack of remorse, through a neurotypical lens can result in harsher penalties, including incarceration, for young people with autism (Brewer & Young, 2015).

Strengths and limitations

The research has a number of strengths. The most significant was the ability to construct a multi-year national birth cohort and subsequently track these individuals through to their 25th birthday. During this observation period, we were able to utilise linked data to identify those with and without autism and examine interactions with the CJS at multiple touch points including police, courts and corrections. We were also able to examine specific offence types to better understand why the pathway through the CJS appears to differ for those with and without autism. Linked data also enabled us to account for early exits during the study period (i.e. immigration and death).

Our findings must also be considered in the context of several limitations. First, there is a risk of misclassification bias as the study utilised an unvalidated method for identifying autism. This method is based on administrative service use data and is not intended to identify true autism prevalence. Therefore, it likely undercounts those with autism and may also result in incorrect identifications (Bowden et al., 2020). Comparable contemporary prevalence estimates from Scotland (1.22% among young people aged 16–24) and Sweden (1.76% among young people aged 18–27) suggest the method may undercount autism prevalence by approximately 35%–55% (Idring et al., 2015; Ryzewska et al., 2019). This is particularly apparent in the relatively low autism rates among Māori and Pasifika that likely reflect inequitable access to services and a lack of culturally appropriate care (Bevan-Brown, 2004; Durie, 2001; Murray et al., 2020; Reid & Robson, 2000). Moreover, we suspect that among this cohort, the method may be biased towards capturing more complex cases of autism, to the extent that a number of these individuals might be completely disengaged with society and at very low risk of criminal activity. In this case, our findings of lower risk of CJS interactions may to some extent be explained by the characteristics of the sample. Second, the analysis is restricted to associations rather than causal inference. For example, we have not examined the contributing effect of confounders such as co-occurring conditions (e.g. intellectual disability, substance abuse and attention deficit hyperactivity disorder (ADHD)) that have been associated with increased risk of offending (Simpson & Hogg, 2001; Welte et al., 2005; Young et al., 2011). This is an important consideration in any attempt to attribute

risk of autism specifically on CJS interactions. Finally, while the birth cohort is representative of those born in New Zealand at the time, it is not reflective of the New Zealand population as a whole. Importantly, our population (by definition) excludes migrants to New Zealand, who make up approximately 31% of young people aged 20–24 living in New Zealand (Statistics New Zealand, 2013).

Further research

Other research notes the importance of protective factors such as employment, housing, family support as well as risk factors such as co-occurring conditions for CJS involvement (Helverschou et al., 2015; Kawakami et al., 2012; Rava et al., 2017). The extent that these factors have an impact within the New Zealand context is for future research. In particular, victimisation, which is evidenced to be disproportionately experienced by people with autism (Brown-Lavoie et al., 2014; Edelson, 2010; Mandell et al., 2005; Sevlever et al., 2013) and is in turn a known risk factor linked to subsequent offending, could be examined further utilising the IDI.

The finding of lower offending rates among the autism population could be the result of growing recognition and understanding of autism within the CJS and steady progress towards a more accommodating system that has been gaining momentum, particularly over the last decade in New Zealand. It is important this progress continues in a way that draws on and is closely informed by the voices and lived experiences of autistic individuals in line with Critical Autism Studies approaches (Davidson & Orsini, 2013; Fletcher-Watson et al., 2019; O'Dell et al., 2016), and the UNCRPD. The evidence base must continue to be developed and data revisited over time, with particular emphasis placed on understanding the context which leads to the incarceration of young autistic individuals.

Additional research is also required to formally validate the method employed to identify individuals with autism (Bowden et al., 2020). Once a suitable data source becomes available to validate against, improvements to the accuracy of the method, such as by requiring at least two autism codes for an autism identification, could be explored.

Conclusion

Our findings indicate that, although young people with autism were not over-represented in the CJS, disparities in offence types and incarceration rates among those charged with an offence suggest the importance of identification and appropriate response to autism within the CJS. This study has also shown that effective data linkage offers the opportunity to enable better understanding of pathways through the CJS for young adults with autism.

Declaration of conflicting interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship and/or publication of this article.

Disclaimer

These results are not official statistics. They have been created for research purposes from the Integrated Data Infrastructure (IDI) which is carefully managed by Stats NZ. For more information about the IDI, please visit <https://www.stats.govt.nz/integrated-data/>.

Ethical approval

The University of Otago Human Research Ethics Committee reviewed the study for ethics consideration. The study was reviewed as a 'Minimal Risk Health Research – Audit and Audit related studies' proposal and was approved (reference: HD17/004). Clearance for this study and access to data were also approved by Statistics New Zealand.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship and/or publication of this article: The authors acknowledge the New Zealand Law Foundation and the Michael and Suzanne Borrin Foundation who jointly provided funding to undertake a project on neurodevelopmental impairment and the criminal justice system. This study details findings related to one aspect of this wider project. This study also received funding from A Better Start National Science Challenge, funded by the New Zealand Ministry of Business, Innovation and Employment, grants UOAX1511 and UOAX1901.

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Notes

- The terms person with autism and autistic person are used interchangeably in this article. The authors recognise that identity-first language (e.g. autistic person) is preferred by some individuals, but also note that Autism New Zealand advises that "... there is no single term preferred by all people on the autism spectrum and other stakeholders to refer to autism/takiwātanga. Many people (particularly adults) in the autism/takiwātanga community prefer to use identity-first language to refer to themselves as being autistic. Some prefer to describe themselves as being on the autism spectrum, or as having autism. Autism Spectrum Disorder (ASD) is diagnostic terminology used by the healthcare sector and is used in the context of a person being "diagnosed with Autism Spectrum Disorder".
- For more details about the data contained within the IDI, see <https://www.stats.govt.nz/integrated-data/integrated-data-infrastructure#data-in-idi>.
- For more details on data linking within the IDI, see http://archive.stats.govt.nz/browse_for_stats/snapshots-of-nz/integrated-data-infrastructure/idi-how-it-works.aspx.
- The December 2019 refresh of the IDI contains justice data across all three domains until June 2019. Hence, for those born after 30 June 1994, the event window is censored to some degree due to availability of data.
- See Section 6 of the Act for more details www.legislation.govt.nz/act/public/2011/0081/latest/DLM3360039.html.
- See [www.https://www.abs.gov.au/ausstats/abs@.nsf/mf/1234.0](https://www.abs.gov.au/ausstats/abs@.nsf/mf/1234.0) for more details.

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