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**Examining the Predictors of School Exclusion
for Māori and Pākehā Learners**

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WORKING PAPER

No. 3/2024

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March 2024

Abstract: The sample used for this study followed an entire cohort of over 40,000 students through their compulsory education in New Zealand. A previously developed econometric model explaining higher rates of school exclusions for Pacific learners (an ethnic group over-represented in lower SES, higher rates of SEN, and greater rates of school exclusion) is applied to a large cohort of indigenous Māori and Pākehā learners in this study. Significant variables in the model that predict Pākehā learner school exclusion are very similar to those predicting Māori learner school exclusion. However, after accounting for variables identified in the literature as correlated with school exclusion, Māori learners are still more likely to be excluded, are more likely to be excluded more often, and are more likely to be excluded earlier than their Pākehā peers. One possible explanation of this result is that the Pygmalion Effect of teachers having lower expectations of Māori students (Blank et al, 2016) may also contribute to higher rates of school exclusion. Māori students have previously reported lower rates of belonging at school. One implication of this may be the need for a cheaper, faster way for families or advocates to appeal the decision made to exclude a learner by local principals or Boards of Trustees. This is in contrast to the current system of recourse through the court system, which can be an expensive and time-consuming process.

Keywords: School exclusion; ethnicity, Māori, indigenous people

JEL Classifications: I21, I24, I28, J15

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Introduction

There are a range of interventions used in NZ schools which are described as measures of a school's reaction to challenging behaviour (Education Counts, 2021). The interventions consist of a stand-down (where a student may be formally removed for up to 5 school days), a suspension (where a student is formally removed until a Board of Trustees (BOT) meeting where the next course of action is decided), an exclusion (the termination of a student's enrolment who is under the age of sixteen) and an expulsion, (the termination of a student's enrolment who is over the age of sixteen) (Education Counts, 2021). According to the courts, when considering exclusion, the principal must consider all circumstances, and not apply a predetermined rule. (Ministry of Education, 2021). For the purposes of this paper, any student who has been stood-down, suspended or excluded is labelled as an exclusion. Students who are expelled are not present in this study which follows a cohort of students from the start to the end of their compulsory schooling (up to the age of 16).

There are other interpretations of the term school exclusion in the literature than that given above. In his 2001 article, Williamson states "Recent debate has suggested that the under-achievement of Māori (and indeed other indigenous or minority groups) is the result of social exclusion based on their socio-economic circumstances. This argument is supported by the over-representation of Māori in most negative socio-economic statistics in Aotearoa/New Zealand" (Williamson, 2001, p. 100). In Williamson's (2001) article, the term school exclusion covers two contexts. The first is 'out of school students', who are not physically in school for a variety of reasons, such as truancy. The second, related context, is students who are engaged with schooling, but are denied the life prospects needed for learning, such as adequate housing, food, clothing, security, and safety (Williamson, 2021). While a body of literature exists examining the causes and effects of these types of school exclusion, the literature examining the effect of identifying as Māori on the probability of being excluded from school as a result of a disciplinary measure is limited to a handful of government agency reports giving raw number counts or percentages. For the purposes of this research, the term school exclusion refers to a student being excluded from school as a disciplinary measure.

Māori students in New Zealand are over-represented in school exclusion where disciplinary action has been taken by a school (Education Counts, 2021). This research aims to test whether an econometric model based on existing school exclusion literature explains the difference in exclusion rates between Māori and Pākehā learners in a cohort of over 43,000 students in New Zealand schools. Based on international literature, an econometric model was recently developed which explained the difference in school exclusion rates between Pākehā and Pacific (a non-European migrant ethnic minority group who are over-represented in exclusion statistics) learners in New Zealand (author redacted, 2022). This study examines the same large dataset to ascertain whether the same econometric model can account for the difference in school exclusion rates between Pākehā and New Zealand's indigenous Māori. Māori are the tangata whenua, the indigenous people, of New Zealand. After their arrival from Polynesia in the 13th century Māori lived in relative isolation until the arrival of the first Pākehā (European/Caucasian) settlers in the 18th century. Māori are the second largest ethnic group in New Zealand, currently making up approximately 16.5% of the population. Pākehā are the largest ethnic group accounting for 70.2% of the population (EHINZ, 2021). As shown in table 1, Māori learners are excluded, suspended or have their enrolment cancelled at significantly greater rates than Pākehā (New Zealand European) learners.

Table 1. Age-standardised rates per 1,000 students, by ethnic group. (Education Counts, 2021).

	Pākehā	Māori
Suspension	3.2	8.3
Stand-down	24.4	48.6
Exclusion	1.1	3.2
Expulsion	1.0	1.9

Literature Review

Ethnicity as a predictor of school exclusion: The New Zealand Context

In New Zealand, Asian students have lower rates of school exclusion than Pākehā (White) students, while Māori and Pacific Peoples have higher rates of exclusion than Pākehā. In their 2022 study (author redacted, 2022) developed a model of predictors of school exclusion based on the literature. The predictors were grouped into categories labelled demographic, *SES*, *SEN*, family climate and parental education. Once these variables were accounted for, there was no significant difference in the rates of school exclusion between Pākehā and Pacific learners. An additional dimension that may influence whether the same finding is found for Māori learners is that Māori are the indigenous people of New Zealand, while Pacific Peoples are more recent migrants to New Zealand.

In an example of the complex interaction between learner characteristics, Van Meijl (2020) references Fraser (1995) when stating that Māori “face the consequences of socioeconomic injustice, rooted in the colonial history of New Zealand during which they were largely dispossessed of their lands and natural resources” (p. 78). The domain of education is identified by Van Meijl (2020) as the area where the most intensive discussion have taken place regarding Māori inequality. Specifically, attempting to answer the question is it lower *SES* or ethnicity that explains unequal educational outcomes? Interestingly, Van Meijl (2020) states that “In the empiricist tradition of ‘evidence based’ research it has been demonstrated that differences between the educational performance of Māori and non-Māori can be accounted for by environmental variables” (p. 90). It is worth noting here that the research referred to is examining attainment inequalities, rather than inequality of rates of school exclusion. He does go on to describe how it can be problematic to disentangle *SES* and ethnicity as drivers in statistical research. The approach used in this study of regression analysis aims to achieve that goal. This study aims to fill the gap created by a lack of analytical research in a New Zealand context aimed at determining the drivers of Māori learner school exclusions relative to Pākehā learners.

Ethnicity as a predictor of school exclusion: The International Perspective

Data tabled in the Queensland parliament showed that Indigenous Australians accounted for more than a quarter of all suspensions, exclusions and enrolment cancellations in 2021. This is despite Indigenous people making up a significantly smaller percentage of the population (Rigby & McKillop, 2022). Ethnicity has been found to be a predictor of school exclusion in several studies in the UK and the US. In some local authorities in the United Kingdom, black Caribbean students are excluded up to six times more than their white British peers (McIntyre, 2021). Interestingly, in the UK, Black Caribbean boys have higher exclusion rates than White students, while Black African pupils have lower rates of exclusion than White

pupils (Graham et al, 2019). While current African Caribbean learners tend to originate from former British colonies and be third or fourth generation immigrants, Black Africans tend to be relatively recent immigrants. This may hold some similarities to New Zealand, where Pacific Learners tend to be first or second generation immigrants, while Māori are indigenous to New Zealand. Similar to indigenous Australians and Māori, Black Caribbean students in the UK, and in the US African American and Hispanics are over-represented in lower socioeconomic status (*SES*) statistics. This has led to the question ‘are certain ethnic groups more likely to be excluded from school simply because they are from lower *SES* backgrounds’? In the international literature, there have been mixed results as to whether differences in school exclusion by ethnicity persist once *SES* has been accounted for. When controlling for *SES* through free school meals in a national cohort of 500,000 in the United Kingdom, Strand & Fletcher (2014) found over thirty percent of black Caribbean and Mixed White & Black Caribbean students experience a fixed-term exclusion compared to a national rate of around sixteen percent overall. They are also excluded for approximately twice as many days of fixed-term exclusions compared to white British peers. When *SES* is accounted for the over-representation of ethnic minorities still persists (Strand & Fletcher, 2014). While both the United Kingdom and United States have found a correlation between exclusion and ethnic minorities (Strand & Fletcher, 2014; Theriot et al., 2010), one American study found ethnicity variables (African American and Hispanic) not to be significant after controlling for socioeconomic status (Achilles, 2007). The model used in the current study includes *SES* variables.

Another predictor of school exclusion also correlated with *SES* is crime. Indigenous Australians are over-represented in the criminal justice system (Australian Institute of Health & Welfare, 2021). While Indigenous Australians account for 3.3% of the population, they make up 29.6% of the adult prison population (Australian Institute of Health & Welfare, 2021). Where just 7% of the 10 to 17 year old population of Queensland was made up of Indigenous Australians (between 2015 and 2019), 55% of those under youth justice supervision were Indigenous Australians (Queensland Family and Child Commission, 2021). Citing previous literature (Novak, 2019), Graham et al (2022) state that school exclusion is a key contributor to the school to prison pipeline, noting there is a paucity of research examining the population in countries such as Australia, Canada and New Zealand. Violence and abuse in the home (Apland et al, 2017), and parental imprisonment (Achilles et al, 2013) have also been identified as impacting on behaviour at school. The model used in this paper includes variables measuring whether learner’s parents have had criminal charges laid against them, and if the child has been the victim of abuse.

Special educational needs (SEN) students also have a greater risk of school exclusion, especially those with emotional and behavioural issues (Achilles et al., 2007). Data released in the UK for the 2021-22 school year showed that students with an education, health and care plan were twice as likely to be excluded, while students identified as SEN support had a rate of suspension and exclusion five times higher (Nasen, 2023).

In New Zealand, special education support is available for children who struggle with learning, communicating, or getting along with others (TeachNZ, 2023). Section 8 of the Education Act states that learners with SEN (whether due to disability or otherwise) have the right to enrol and receive education at a state school (YouthLaw Aotearoa, 2023). The main intervention in New Zealand supporting students with SEN is the reading recovery program developed by Dame Marie Clay for students who struggle to learn to read and write. Upon her death, the 2007 Fall edition of the *Journal of Reading recovery* was dedicated to her work. As noted by Chamberlin, “at its core, the specific, individualized nature of the Reading

Recovery Program seems ideal to meet the needs of special education students struggling with the reading process” (2015, p. 9.). The model used in this study includes SEN variables of reading recovery, along with receiving English as a second language support (ESOL), and census data identifying students with a disability.

This article aims to establish if the same variables which explain the difference in school exclusion rates between Pacific and Pākehā learners also explains the difference between Māori and Pākehā learners. There is some evidence in the raw statistics that this may well be the case. When examining selected *SES* wellbeing measures by ethnicity (StatsNZ, 2019), 31% of Pākehā reported having not enough, or only just enough, money to meet everyday needs. The comparable figure for Māori was 50%. Pākehā were also less likely to be convicted of committing a crime. The proportion of the 1978 birth cohort that was convicted by the age of 38 (2016), was 22% for Pākehā, and 46% for Māori.

If the same variables which explain the difference in school exclusion rates between Pacific and Pākehā learners do not, explain the difference between Māori and Pākehā learners, it is beyond the scope of this research to categorically identify what those variables are. It is however worth noting that some literature does suggest a link between racism or unconscious bias and higher rates of school exclusion. Indeed, racism is identified in some of the literature as a possible explanation for the higher exclusion rates of Black Caribbean students. It is suggested “racism was considered to influence schools’ views on (un)acceptable behaviour and expectations of different sets of pupils” (Graham et al, 2019, p. 18). This has led researchers such as Hamilton (2018) to develop theoretical arguments that school curriculum and classrooms are White spaces. Unintentional racism can result in discriminatory practices in the classroom, such as lower expectations of Black students. (Stamou et al, 2014). In a report for the Institute of Public Policy Research, Gill et al (2017) suggests that subconscious stereotyping of Black pupils behaviour by teachers may contribute to the higher exclusion rates for Black students. In their review of the literature, Graham et al (2019) describe an experimental approach used by Okonofua & Eberhardt (2015). The more teachers believe fictional students to be Black, the more seriously they view their behavioural issues. They also consider future suspension from school to be more likely.

There is some evidence that Māori learners do have a greater sense of not belonging in school. Negative staff-pupil relationships along with a sense of ‘not belonging’ at school are prominent themes in the literature for contributing to higher rates of school exclusion (Graham et al, 2019; Craggs et al, 2017; Tucker, 2013; Robinson, 2014). When summarising a body of literature (Wright, 2010; Carlile, 2009, Gill et al 2017), Graham et al (2019) state students are more likely to report a feeling of ‘not belonging’ when they are being racially stereotyped, leaving them feeling isolated and disrespected. A 2018 PISA report (May, Jang-Jones & McGregor, 2019) surveyed the views of 6,200 fifteen year olds in New Zealand. The students self-reported attitudes towards a sense of belonging at school, parental support for their schooling, and academic expectations. The results, stratified by ethnicity, are given in table 2. Both Pākehā and Māori reported high levels of parental support. The average level of agreement across the three parental support statements are very similar, with Pākehā at 90.7% and Māori at 89.3%. For the two friendship statements the percentage of agreement is again very similar. The largest differences are feeling safe at school, and a sense of belonging at school. For both of these statements Māori report a five percentage point lower level of agreement than Pākehā.

Table 2. Attitudes of 15 year old New Zealanders. (May, Jang-Jones & McGregor, 2019)

	% of Non-Māori & Non-Pacific Peoples	% of Māori
I feel like I belong at school	68	63
I feel safe at school	81	76
I make friends easily at school	74	78
Other students seem to like me	85	84
My parents encourage me to be confident.	91	90
My parents support me when I am facing difficulties at school.	88	87
My parents support my educational efforts and achievements.	93	91
% of students expected to go on to a degree or higher.	51	40
% of students expecting a level 1, 2 or 3 NCEA certificate to be their highest qualification.	29	40

Note: Pākehā trends mirror those of the non-Māori and non-Pasifika groups as Pākehā makes up most of the 2018 Pisa sample.

In a comparative study by Blank, Houkamau and Kingi (2016) comparing Māori and African American students' experience of unconscious bias in education, some key messages emerged. Findings include that "Māori children face significant barriers to achievement, which stem from negative stereotypes attached to Māori as a social group" (Blank et al, 2016, p. 4). The term Pygmalion Effect is used in the study to describe teachers having lower expectations of their Māori students leading to lower achievement of Māori. The authors conclude that "Recognising how unconscious bias influences teachers' relationships with Māori students is the key to lifting Māori educational achievement" (Blank et al, 2016, p. 4). It may be the case that the same approach may also lower rates of school exclusion for Māori students. There are however, no readily available sources of data for measuring this at the individual student level on a nationwide scale. As a result, in this study, there is no variable for racism or subconscious stereotyping in the model.

An econometric model including SES, SEN, family climate and parental education as explanatory variables of school exclusion has been used to show those variables explain the difference in exclusion rates between Pākehā and Pacific learners (author redacted, 2022). The same model is applied to the same dataset in this paper comparing Pākehā learners to Māori learners. Coefficients and model intercepts are then compared to establish whether the model adequately explains different rates of exclusion for Pākehā and Māori students, using a large national cohort. The model will also disclose whether Māori and Pākehā have similar drivers of school exclusion. It is important to note that this research does not attempt to identify all the drivers of school exclusion for Māori. This research uses a model identified in previous research which was found to explain the difference between Pākehā and Pacific learner rates of school exclusion (author redacted). If the same findings occur for Māori

learners, it can be said that variables identified in the literature that account for the difference between Pākehā and Pacific learners rates of school exclusion (such as *SES*, *SEN* etc.) also account for the difference in rates of exclusion between Pākehā and Māori learners. In terms of policy response, this would be an important finding. Raising children out of poverty would improve school exclusion rates across all ethnicities, but would disproportionately improve Māori and Pacific learner rates of exclusion. If the model does not fully explain the difference between Māori and Pākehā school exclusion rates, it invalidates arguments such as Māori learners are more likely to be excluded because they are poorer, or have less educated parents, or because of other family climate variables. While policy responses addressing issues such as poverty would improve Māori learner rates of exclusion relative to Pākehā learners, there would still remain ‘something else’ going on unique to Māori learners.

Materials and Methods

In terms of defining school exclusion, the terminology used in the UK is similar to that used in New Zealand. A stand-down is where a student may be formally removed for up to 5 school days. The student returns automatically to school following a stand-down. A suspension is where a student is formally removed until a Board of Trustees (BOT) meeting where the next course of action is decided. The BOT can lift the suspension, extend the suspension, or terminate the student’s enrolment at that School. (Education Counts, 2021). Similar to the British literature, for the purposes of this Research the term exclusion includes any student who has been stood-down or suspended from their first day at school to the end Year Eleven. The final two years of secondary education are not included in the study, as schooling is not compulsory, and there is a greater chance students could be invited to ‘leave school’ rather than being formally excluded.

The dataset of over 43,000 New Zealand learners used in this study is obtained from the New Zealand Integrated Data Infrastructure (*IDI*). The *IDI* database is maintained by Stats NZ, New Zealand's official data agency. It links different touchpoints an individual has with various agencies such as the Ministry of Social Development, the Ministry of Education, and non-government organisations (*NGOs*). The dataset has been used in a previous study to test an econometric model for explaining differences between Pākehā and Pacific learner rates of school exclusion. This study initially assesses the same econometric model’s ability to explain the differences between Pākehā and Māori learner rates of school exclusion. A variation of the model is then applied to a subset of school learners.

Information in the initial dataset (43,386 learners) was collected before the learner commenced their primary schooling in 2008, or from the 2013 national census. Information in the secondary dataset (34,662 learners) was collected in the learner’s last year of compulsory school (2018), or from the national census held in 2013. As a result, some variables such as parental criminal charges have increased from the original dataset. The secondary dataset is smaller, as additional information was collected measuring the percentage of each ethnicity attending the school of each student. This information is most accurately gathered at the secondary school level, however some students do not have this data recorded, so are removed from the dataset. The dataset is still substantial at over 34,000 learners. Any learner who spent more than six months or more outside of New Zealand since they turned five has been removed from the datasets. The linked nature of the data means parental variables can be included for each learner, resulting in a rich datasets with predictors of school exclusion incorporating several family background variables. There are four groups

of predictors of school exclusion in the model developed by (author redacted, 2022) based on the literature. These are (note that all of the variables are binary in nature):

Demographic Variables

Gender, ethnicity (the ethnic group a learner has listed as their first ethnicity on their school forms) and a ‘late start’ variable used to show if a learner first attending school before the end of June (year one) or after the end of June (year zero).

Learning Support

Needing learning support before their first exclusion in the form of special education services (emotional and behavioural needs), reading recovery, or English for speakers of other languages (*ESOL*). An additional *ESOL* variable interacted with Pacific ethnicity is also included given the high number of Pacific learners for which English is not the first language in the home (May, Jang-Jones & McGregor, 2019). Data for these variables is sourced from the Ministry of Education (*MOE*) databases. Note all of these interventions are only identified if they occurred pre-exclusion, to avoid reverse causality. A self-reported disability variable from the 2013 Census is also included.

Dimensions of Socioeconomic Status (SES)

Three measures of *SES* are based on previous research (Hernandez, 2019). Parental home ownership, warm home (more than two sources of heating) and access to the internet at home. The data for these variables was collected from the 2013 census. The family benefit variable records if a child is been listed on a parent’s social welfare benefit before the first day of school. This data is sourced from Ministry of Social Development’s (MSD) benefit dynamics data.

Parental Education

Sourced from the 2013 census, these variables show the change in probability of exclusion for each parental qualification category, relative to having no school qualification.

Family Climate

For all of these variables, the action described has been recorded before the learner’s first day at school. The abuse victim indicator shows if a child has encountered a form of abuse that has been recorded by Oranga Tamariki (Ministry for Children). The parent absent variable shows if either the mother or the father was not recorded on a child’s birth certificate. The mother and father criminal charge variables signal if a parent of a student had any criminal offence charges laid before the child’s first day of school. These charges could have been laid before the child is born.

The number counts for these variables are shown in table 3 below.

Table 3. Number counts – Full Sample.

	Sample population	Excluded students
Number of Students	43,386	5589 (13%)
Number of Students Excluded	5,589	N/A
Demographic		
Female	21,264	1,875 (9%)
Early Start	32,679	4,239 (13%)

Māori	10,212	2,463 (24%)		
Pacific Peoples	3,243	645 (20%)		
Asian	2,637	99 (4%)		
Pākehā	26,532	2,322 (9%)		
Other Ethnicity	762	162 (21%)		
SES				
Parent Home Ownership	20,487	1,665 (8%)		
Warm Home	37,674	4,761 (13%)		
Internet Access at Home	35,646	3,501 (10%)		
Family Benefit Recipient	19,914	4,110 (21%)		
Learning Support				
Reading Recovery	5,967	1,275 (21%)		
Special Educational Needs	1,242	300 (14%)		
Self-Reported Disability	1,671	321 (19%)		
English Second Language	3,750	552 (15%)		
Pacific Peoples English Second Language	1,806	423 (23%)		
Family Climate				
Abuse Victim	2,049	771 (38%)		
Parent Absent	2,280	687 (30%)		
Father Criminal Charge	15,441	3,162 (20%)		
Mother Criminal Charge	7,272	2,082 (29%)		
Parental Education	Mother	Father	Mother	Father
No School Qualification	5,826	5,784	1,434 (25%)	1,137 (20%)
High School Qualification	14,496	9,753	1,698 (12%)	951 (10%)
Above High School	6,672	8,586	615 (9%)	630 (7%)
Bachelor Degree	6,762	4,449	366 (5%)	168 (4%)
Postgraduate Qualification	2,364	2,172	117 (5%)	72 (3%)

Using this data, a regression model was developed as shown in (1) below:

$$\begin{aligned}
 Y^* = & a + \beta 1 \text{Female} + \beta 2 \text{Early Start} + \beta 3 \text{Māori} + \beta 4 \text{Pacific Peoples} + \beta 5 \text{Asian} + \\
 & \beta 6 \text{Other Ethnicity} + \beta 7 \text{Home Ownership} + \beta 8 \text{Warm Home} + \beta 9 \text{Internet Access} + \\
 & \beta 10 \text{Family Benefit} + \beta 11 \text{Reading Recovery} + \beta 12 \text{SEN} + \beta 13 \text{Disability} + \beta 14 \text{Reading} \\
 & \text{Recovery} + \beta 15 \text{Special Educational Needs} + \beta 16 \text{Disability} + \beta 17 \text{ESOL} + \\
 & \beta 18 \text{ESOL Pacific Peoples} + \beta 19 \text{Abuse Victim} + \beta 20 \text{Parent Absent} + \beta 21 \text{Father} \\
 & \text{Criminal Charge} + \beta 22 \text{Mother Criminal Charge} + \beta 23 \text{Mother High School} + \\
 & \beta 24 \text{Mother Above High School} + \beta 25 \text{Mother Bachelor} + \beta 26 \text{Mother Postgrad} + \\
 & \beta 27 \text{Father High School} + \beta 28 \text{Father Above High School} + \beta 29 \text{Father Bachelor} + \\
 & \beta 30 \text{Father Postgrad} + e
 \end{aligned}
 \tag{1}$$

Three types of regressions, logit, Poisson and Cox proportional-hazards model were run, with average marginal effects on the probability of being excluded reported.

For the second part of the regression analysis, to enable a discussion around the explanatory value of the model for each ethnicity, OLS results are reported, which allows for the intercept to be compared (logit results are shown in appendix one). The dataset used for this analysis is

smaller, as additional information is collected measuring the percentage of each ethnicity attending the school of each student. This information is most accurately gathered at the secondary school level, however some students do not have this data recorded, so are removed from the dataset. The dataset is still substantial at over 34,000 students. Number counts are shown in table 4 below.

Table 4. Number Counts – Reduced Sample.

		Māori	Pacific Peoples		Pākehā
			ESOL	Non-ESOL	
Number of Students	34,662	8,175 (24%)	1,647 (5%)	1,206 (3%)	20,703 (60%)
Number of Students Excluded	4,677	2,049 (25%)	378 (23%)	210 (17%)	1,884 (9%)
Demographic					
Female	16,974	3,996 (49%)	819 (50%)	639 (53%)	10,053 (49%)
Māori	8,178	----	----	----	----
Pacific Peoples	2,853	----	----	----	----
Asian	2,271	----	----	----	----
Pākehā	20,703	----	----	----	----
Other Ethnicity	660	----	----	----	----
SES					
Parent Home Ownership	16,359	2,670 (33%)	258 (16%)	357 (30%)	11,439 (55%)
Warm Home	30,351	7,047 (86%)	1,386 (84%)	1,062 (88%)	18,228 (88%)
Internet Access at Home	28,416	5,319 (65%)	840 (51%)	843 (70%)	18,810 (91%)
Family Benefit Recipient	18,747	6,318 (77%)	1,344 (82%)	879 (73%)	8,610 (42%)
Learning Support					
Reading Recovery	4,587	1,404 (17%)	315 (19%)	159 (13%)	2,505 (12%)
Special Educational Needs	912	279 (3%)	45 (3%)	24 (2%)	519 (3%)
Self-Reported Disability	1,197	390 (5%)	48 (3%)	30 (2%)	696 (3%)
English Second Language	3,360	96 (1%)	----	----	180 (1%)
Pacific Peoples English Second Language	1,647	----	1,647 (100%)	1,206 (100%)	----
Family Climate					
Abuse Victim	3,780	1,821 (22%)	270 (16%)	171 (14%)	1,377 (7%)
Parent Absent	1,863	939 (11%)	141 (9%)	135 (11%)	594 (3%)
Father Criminal Charge	13,554	4,674 (57%)	882 (54%)	609 (50%)	6,660 (32%)

Mother Criminal Charge	7,068		3,324 (41%)		486 (30%)		357 (30%)		2,697 (13%)	
Parental Education	Mother	Father	Mother	Father	M	F	M	F	Mother	Father
Education Unknown	5,775	10,356	1,590 (19%)	3,642 (45%)	654 (40%)	951 (58%)	255 (21%)	537 (45%)	2,163 (10%)	4,026 (19%)
No School Qualification	4,686	4,644	1,842 (23%)	1,539 (19%)	366 (22%)	390 (24%)	207 (17%)	201 (17%)	1,950 (9%)	2,217 (11%)
High School Qualification	11,451	7,599	2,802 (34%)	1,545 (19%)	447 (27%)	198 (12%)	435 (36%)	255 (21%)	7,371 (36%)	5,289 (26%)
Above High School	5,430	6,810	1,029 (13%)	984 (12%)	111 (7%)	81 (5%)	162 (13%)	135 (11%)	3,846 (19%)	5,250 (25%)
Bachelor Degree	5,394	3,567	726 (9%)	351 (4%)	57 (3%)	21 (1%)	117 (10%)	57 (5%)	3,876 (19%)	2,640 (13%)
Postgraduate Qualification	1,929	1,686	186 (2%)	117 (1%)	12 (1%)	<4 (0%)	30 (2%)	24 (2%)	1,494 (7%)	1,284 (6%)

For this analysis, the data is collected either in the child's last year of compulsory school (2018), or from the national census held in 2013. As a result, some variables such as parental criminal charges have increased from the original analysis. Where table 1 shows parental conviction counts prior to the child starting school in 2008, table 2 shows conviction counts of parents in 2018, when the child finished their compulsory schooling. The model uses the same independent variables as (1) above, with two exceptions. The early start variable in model (1) is found to be not significantly correlated to school exclusion. In model (2), the variables are collected from the 2013 census or in 2018 at the end of compulsory schooling. The early start variable is therefore removed from model (2) given the length of time that has passed since the child commenced school in 2008. The ethnicity variables are removed as the data is stratified by ethnicity for model (2). Regressions are run separately for Pākehā and Māori. The resulting model is shown below (2):

$$Y^* = a + \beta_1 \text{Female} + \beta_2 \text{Māori} + \beta_3 \text{Pacific Peoples} + \beta_4 \text{Asian} + \beta_5 \text{Other Ethnicity} + \beta_6 \text{Home Ownership} + \beta_7 \text{Warm Home} + \beta_8 \text{Internet Access} + \beta_9 \text{Family Benefit} + \beta_{10} \text{Reading Recovery} + \beta_{11} \text{SEN} + \beta_{12} \text{Disability} + \beta_{13} \text{Reading Recovery} + \beta_{14} \text{Special Educational Needs} + \beta_{15} \text{Disability} + \beta_{16} \text{ESOL} + \beta_{17} \text{ESOL Pacific Peoples} + \beta_{18} \text{Abuse Victim} + \beta_{19} \text{Parent Absent} + \beta_{20} \text{Father Criminal Charge} + \beta_{21} \text{Mother Criminal Charge} + \beta_{22} \text{Mother High School} + \beta_{23} \text{Mother Above High School} + \beta_{24} \text{Mother Bachelor} + \beta_{25} \text{Mother Postgrad} + \beta_{26} \text{Father High School} + \beta_{27} \text{Father Above High School} + \beta_{28} \text{Father Bachelor} + \beta_{29} \text{Father Postgrad} + e \quad (2)$$

Results and Discussion

Table 5 shows correlations for Logit, Poisson and Cox regressions.

Three different approaches are initially used to analyse the data. A Logit model is used to show the probability of an event. In this case, the event is the first exclusion. All coefficients in this model show average marginal effects of the probability of being excluded. This way differences in probabilities can be compared, which are intuitively easier to understand than odds ratios. A Poisson model is also used. Poisson regression is a generalised linear model with a count dependant variable. In this study, the count of exclusions one child faces in their school career is used as the dependant variable in the Poisson model. The coefficients are the marginal effect on the number of exclusions. Finally, a Cox proportional-hazards model, a

type of survival regression, is used. For this study, the Cox model accounts for how many days it takes for the first exclusion to occur. If a student is not excluded, the number of days from their first day at school to the end of year eleven is recorded. This model only accounts for the time of first exclusion, and does not account for the number of times a child can be excluded.

All three types of regressions report the same significant correlations with the exception of Logit, for which the ESOL indicator is not significant. Therefore, the same variables identified in the literature as predictors of school exclusion also correlate with being excluded more often and earlier in the education.

Table 5: Regression Results for Logit, Poisson and Cox Regressions – Full Sample.

	Logit	Poisson	Cox
	dy/dx	dy/dx	Haz. Ratio
<i>Demographic</i>			
Female	-0.079*** (0.003)	-0.248*** (0.011)	0.519*** (0.015)
Early Start	0.000 (0.003)	-0.009 (0.011)	0.959 (0.032)
Māori	0.038*** (0.004)	0.071*** (0.012)	1.340*** (0.045)
Pacific Peoples	0.007 (0.008)	-0.024 (0.025)	1.016 (0.076)
Asian	-0.083*** (0.012)	-0.277*** (0.040)	0.437*** (0.053)
Other Ethnicity	-0.006 (0.014)	-0.022 (0.046)	0.868 (0.112)
<i>SES</i>			
Parent Home Ownership	-0.015*** (0.003)	-0.041*** (0.012)	0.847*** (0.028)
Warm Home	-0.002 (0.004)	-0.0135 (0.013)	0.993 (0.040)
Internet Access at Home	-0.030*** (0.004)	-0.068*** (0.011)	0.774*** (0.028)
Family Benefit Recipient	0.044*** (0.004)	0.159*** (0.014)	1.528*** (0.056)
<i>Learning Support</i>			
Reading Recovery	0.023*** (0.004)	0.056*** (0.011)	1.234*** (0.045)
Special Educational Needs	0.032*** (0.008)	0.128*** (0.023)	1.235*** (0.099)
Self-Reported Disability	-0.001 (0.007)	0.055** (0.023)	1.076 (0.073)
English Second Language	-0.017 (0.012)	-0.089** (0.036)	0.802** (0.089)
English Second Language – Pacific Peoples	0.042*** (0.015)	0.118*** (0.046)	1.334** (0.190)
<i>Family Climate</i>			
Abuse Victim	0.044*** (0.005)	0.124*** (0.015)	1.403*** (0.077)

Parent Absent	0.057*** (0.006)	0.148*** (0.018)	1.702*** (0.106)
Father Criminal Charge	0.051*** (0.004)	0.142*** (0.013)	1.594*** (0.056)
Mother Criminal Charge	0.043*** (0.004)	0.101*** (0.011)	1.440*** (0.050)
<i>Parental Education</i>			
Mother: High School Qualification	-0.033*** (0.004)	-0.109*** (0.013)	0.740*** (0.031)
Mother: Above High School but Sub-Degree	-0.036*** (0.006)	-0.127*** (0.018)	0.694*** (0.038)
Mother: Bachelor Degree	-0.056*** (0.007)	-0.193*** (0.023)	0.576*** (0.037)
Mother: Postgraduate Qualification	-0.043*** (0.010)	-0.124*** (0.039)	0.666*** (0.067)
Father: High School Qualification	-0.031*** (0.005)	-0.081*** (0.017)	0.782*** (0.038)
Father: Above High School but Sub-Degree	-0.038*** (0.006)	-0.100*** (0.020)	0.740*** (0.041)
Father: Bachelor Degree	-0.070*** (0.009)	-0.235*** (0.031)	0.521*** (0.045)
Father: Postgraduate Qualification	-0.076*** (0.013)	-0.241*** (0.045)	0.503*** (0.063)

** and *** denote statistical significance at the 5 and 1% levels respectively.

Examining the number counts in table 1, Māori learners are excluded at a rate of 25%. In table 5, the logit marginal effect for Māori ethnicity is still significant once the variables suggested by the literature have been included in the model. Māori learners are still more likely to be excluded than Pākehā learners. They are also significantly more likely to be excluded earlier (Cox regression, and more often Poisson Regression).

The results for model (2), using the reduced sample stratified by ethnicity are given in table 6 below.

Table 6: OLS Regressions – Reduced Sample (See Appendix One for Logit Results).

	Pākehā	Māori
<i>Demographic</i>		
Female	-0.066*** (0.004)	-0.085*** (0.009)
<i>SES</i>		
Parent Home Ownership	-0.011*** (0.004)	-0.031*** (0.010)
Warm Home	-0.002 (0.006)	0.009 (0.013)
Internet Access at Home	-0.035*** (0.009)	-0.065*** (0.012)
Family Benefit Recipient	0.020*** (0.004)	0.033*** (0.011)
<i>Learning Support</i>		
Reading Recovery	0.030*** (0.007)	0.046*** (0.013)

Special Educational Needs	0.050*** (0.018)	0.042 (0.029)
Self-Reported Disability	0.023 (0.015)	0.001 (0.024)
English Second Language	-0.050** (0.020)	0.092 (0.049)
<i>Family Climate</i>		
Abuse Victim	0.136*** (0.013)	0.128*** (0.014)
Parent Absent	0.075*** (0.018)	0.052*** (0.019)
Father Criminal Charge	0.049*** (0.005)	0.043*** (0.010)
Mother Criminal Charge	0.059*** (0.008)	0.072*** (0.011)
<i>Parental Education</i>		
Mother: High School Qualification	0.053*** (0.010)	0.074*** (0.012)
Mother: Above High School but Sub-Degree	-0.057*** (0.010)	-0.081*** (0.016)
Mother: Bachelor Degree	-0.069*** (0.010)	-0.092*** (0.017)
Mother: Postgraduate Qualification	-0.070*** (0.010)	-0.080*** (0.024)
Father: High School Qualification	-0.036*** (0.008)	-0.039*** (0.015)
Father: Above High School but Sub-Degree	-0.036*** (0.008)	-0.054*** (0.016)
Father: Bachelor Degree	-0.047*** (0.009)	-0.068*** (0.019)
Father: Postgraduate Qualification	-0.043*** (0.009)	-0.056** (0.026)
Constant	0.193*** (0.014)	0.274*** (0.024)

** and *** denote statistical significance at the 5 and 1% levels respectively.

Overall, the variables which significantly impact on risk of exclusion are very similar between Māori and Pākehā. Seventeen significant variables for Māori are also significant for Pākehā. Two additional variables are significant for Pākehā, having special educational needs (positively correlated with exclusion), and receiving English as a second language support (negatively correlated with exclusion). The relative size of the marginal effects of variables are also similar between Māori and Pākehā, with the family climate group of variables having the largest effect sizes for both ethnicities. Parental education levels and female gender also have reasonably large effect sizes for both ethnic groupings. The amount of variance explained by the model is slightly larger for Māori. The R^2 is 10.36% and 12.38% for Pākehā and Māori respectively.

While the drivers are essentially the same between Pākehā and Māori, the intercepts of the model are not. The intercepts show the probability of being excluded if all explanatory

variables are set at zero. For Pākehā, that figure is 19.3%, while the comparable figure for Māori is 27.4%. The intercept is considerably larger for Māori than for Pākehā. In percentage terms, it is almost 50% larger for Māori. The variables in the model are informed by the literature on school exclusion. The variables omitted from the model have a larger influence on the risk of exclusion for Māori than for Pākehā.

Conclusion

This study found that after accounting for variables identified in the literature as correlated with school exclusion, Māori learners are more likely to be excluded, are more likely to be excluded more often, and are more likely to be excluded earlier than their Pākehā peers.

The model used in this study found the vast majority of variables that significantly impacted on exclusion for Pākehā were also significant for Māori learners. Similar rates of variance were explained by the model; 12% for Māori learners and 10% for Pākehā learners. While Māori and Pākehā have similar predictors of school exclusion, their respective model intercepts are different. For Pākehā, the percentage of school exclusion when explanatory variables are set to zero is 19.3%, while for Māori it is 27.4%. There are variables not present in the model that explain a large percentage of the Māori learner rates of exclusion. It is important to note that the omitted variables have not been defined.

As mentioned in the introduction, Māori are over-represented in most negative socio-economic statistics in Aotearoa/New Zealand (Williamson, 2001). This was reflected in the sample used for this study, with Māori learners more likely to come from households with lower rates of home ownership, lower rates of internet connection in the home, lower rates of parental education and higher rates of welfare payments than their Pākehā counterparts. Negative social outcomes associated with lower *SES* such as greater rates of parental criminal charges are also more prevalent for Māori learners. Māori learners also required reading recovery, had *SEN*, and identified as having a disability at greater rates than Pākehā learners. The sample used for this study which involved following an entire cohort of students through their compulsory education could be said to accurately represent the general population of learners in terms of factors shown in the literature to be correlated with rates of school exclusion. Theoretically, accounting for these factors in regression analysis should explain the differences in rates of exclusion between Māori and Pākehā learners. This was the case when the same econometric models were used to compare Pacific learners, an ethnic group also over-represented in lower *SES*, higher rates of *SEN*, and greater rates of school exclusion; to Pākehā learner rates of exclusion (author redacted, 2023). This research, using the same sample as the present study, found that after allowing for the influence of *SES*, gender, learning support, family climate and parental education, there is no significant difference in the rate of exclusion between Pākehā and Pacific learners in New Zealand (author redacted, 2023). This has found to not be the case for Māori learners in this study.

It could be, for example, that omitted *SES*, learning support or family climate variables could explain the significant difference in school exclusions for Māori learners which still persist in the model. For this to be the case, the omitted variables would have to be capturing a greater portion of the effect of those variables for Māori than for Pākehā. An alternative perspective could be that identified in previous literature mentioned earlier in the literature review. This previous literature has hypothesised school curriculum and classrooms to be ‘white spaces’ due to unintentional discriminatory practices (Hamilton, 2018; Stamou et al, 2014), with the

suggestion that higher rates of exclusion for Black students could be down to subconscious stereotyping (Gill et al, 2017). The *Pygmalion Effect* of teachers having lower expectations of Māori students (Blank et al, 2016) may also extend to school exclusion. As outlined in the literature section above, Māori students report lower rates of belonging at school, and feeling safe at school. Reported levels of discrimination for Pākehā (15%), are also much lower than for Māori (24%). If unintentional discriminatory practices relating to school exclusion are occurring, they are more complex than simply Pākehā versus non-Pākehā discrimination. The variables in the model explain higher exclusion rates for Pacific learners relative to Pākehā (author redacted, 2023). They do not for indigenous Māori learners. Ethnicity persists as a variable significantly correlated with higher rates of school exclusion for Māori learners. If there is a ‘Pygmalion Effect’ contributing to higher rates of school exclusion for Māori learners, one implication of this may be the need a cheaper, faster way for families or advocates to appeal the decision made to exclude a learner by local principals or Boards of Trustees. Currently, recourse is through the court system, which can be an expensive and time consuming process. As stated by Youth Law Aotearoa “A decision by a principal to stand-down or suspend, or a board of trustees to exclude or expel is effectively final, with no direct right of appeal or challenge. To attain even a modicum of justice, parents and students must rely upon a patchwork of legal and quasi-legal mechanisms which can be time-consuming, costly, and provide little in the way of actual remedy” (Youth Law Aotearoa, 2023, p.1). A more centralised appeal process through the Ministry of Education in New Zealand may be more appropriate. More research is required to determine exactly what the omitted variables in the model are as they pertain to Māori learners, to inform policy responses from Government.

A strength of the study is the existence of an extensive dataset which records every touch-point a New Zealander has with government agencies, thus reducing the need to rely on self-reported data. This strength is also a limitation. This study is limited to analysing previously collected data by central agencies in New Zealand.

Disclosure Statement

The authors report there are no competing interests to declare. The requirement for ethics committee approval was waived by the authors’ institution as a secondary dataset collected and held by StatsNZ was used.

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Appendix 1

Logit regression coefficients for reduced sample.

	Pākehā	Pacific Peoples - ESOL	Pacific Peoples – Non ESOL	Māori
<i>Demographic</i>				
Female	-0.069*** (0.004)	-0.132*** (0.020)	-0.120*** (0.021)	-0.085*** (0.009)
<i>SES</i>				
Parent Home Ownership	-0.011*** (0.004)	-0.029 (0.031)	-0.042 (0.027)	-0.037*** (0.011)
Warm Home	-0.005 (0.006)	0.015 (0.027)	-0.090*** (0.078)	0.008 (0.013)
Internet Access at Home	-0.016*** (0.005)	-0.025 (0.021)	-0.014 (0.022)	-0.054*** (0.010)
Family Benefit Recipient	0.037*** (0.005)	0.037 (0.028)	0.047 (0.029)	0.058*** (0.015)
<i>Learning Support</i>				
Reading Recovery	0.020*** (0.005)	0.035 (0.024)	0.037 (0.028)	-0.039*** (0.011)
Special Educational Needs	0.027*** (0.010)	0.066 (0.055)	0.038 (0.061)	0.033 (0.023)
Self-Reported Disability	0.016 (0.009)	-0.101 (0.071)	0.023 (0.055)	0.003 (0.021)
English Second Language	-0.042 (0.004)	----	----	0.073 (0.037)
<i>Family Climate</i>				

Abuse Victim	0.057*** (0.006)	0.066*** (0.025)	0.126*** (0.024)	0.095*** (0.010)
Parent Absent	0.048*** (0.009)	0.086** (0.037)	0.012 (0.038)	0.057*** (0.016)
Father Criminal Charge	0.045*** (0.004)	0.059** (0.022)	0.039 (0.024)	0.055*** (0.012)
Mother Criminal Charge	0.035*** (0.005)	0.064*** (0.022)	0.029 (0.022)	0.065*** (0.010)
<i>Parental Education</i>				
Mother: High School Qualification	-0.029*** (0.007)	-0.036 (0.030)	-0.077*** (0.027)	-0.064*** (0.012)
Mother: Above High School but Sub-Degree	-0.034*** (0.008)	0.016 (0.045)	-0.113*** (0.038)	-0.074*** (0.017)
Mother: Bachelor Degree	-0.056*** (0.012)	-0.052 (0.068)	-0.112** (0.047)	-0.108*** (0.023)
Mother: Postgraduate Qualification	-0.066*** (0.007)	0.147 (0.136)	-0.110 (0.102)	-0.100** (0.047)
Father: High School Qualification	-0.026*** (0.006)	-0.073 (0.039)	-0.004 (0.035)	-0.043*** (0.015)
Father: Above High School but Sub-Degree	-0.023*** (0.010)	-0.201*** (0.070)	-0.028 (0.045)	-0.072*** (0.019)
Father: Bachelor Degree	-0.059*** (0.013)	-0.105 (0.114)	-0.081 (0.081)	-0.120*** (0.037)
Father: Postgraduate Qualification	-0.053*** (0.006)	Omitted	0.104 (0.069)	-0.102 (0.062)

** and *** denote statistical significance at the 5 and 1% levels respectively.