

S1. DATA PARAMETER DEFINITIONS

Table S1.1 provides definitions and technical specifications for the parameters applied in extracting the datasets used in this research.

Table S1.1. Definitions of the parameters used to extract the data.

Variable	Definition	NIA fields
Residential burglary	Burglary of residential properties (not commercial or public properties).	ANZSOC Division = 07 Unlawful Entry With Intent/Burglary, Break and Enter. Location Type ^a = Residential
Non-residential burglary	Burglary of non-residential properties (i.e., commercial or public properties).	ANZSOC Division = 07 Location Type ^a = not Residential or Unknown
Commercial robbery	Robbery of commercial or properties (e.g., petrol stations, shops, banks)	ANZSOC Subdivision = Robbery. Location Type ^a = Commercial
Personal robbery	Robbery of people (e.g., on the street, at transit hubs, at schools), also known as street robbery	ANZSOC Subdivision = Robbery. Location Type ^a = not Commercial or Unknown
Extra-familial sex offenses	Indecent acts, assaults and sexual violations including rape not involving family members.	ANZSOC Division = 03 Sexual Assault and Related Offenses. Excluded: Offense codes for non-contact or family-specific sex offenses, where the Offense Code Description contained the words: OBJECTIONABLE, RECORDING, PUBLISH, PUBLICATION, TOUR, INCEST, SPOUSE, or FAMILY. Excluded: occurrences with a Family Violence flag.
Location ID	Unique reference created to identify and count unique locations.	Coordinates of a location, or if there are no coordinates, the address string, or if there is no address string, the Location ID field.
Offender	A person believed by Police to have committed a given offense on the basis of sufficient evidence to initiate a charge or other proceeding (e.g., written or verbal warning).	Person-Offense Link Type = Offender, Cleared Offender (this refers to the Police 'clearing' – solving - the case; it does not refer to the offender being cleared of guilt) or Youth Aid Offender.
Non-offender role	A person involved in an offense or non-crime incident but not as an offender, nor as a suspect against whom there is insufficient evidence to proceed.	Person-Offense Link Type = Victim, Complainant, Informant, Witness, Subject, Child or Young Person Exposed to Family Harm, Predominant Aggressor, Primary Victim, Mutual Participant. Excluded: Suspect, Offender/Cleared Offender/Youth Aid Offender, Other (a catch all category sometimes used as an alternative to Suspect).
Home address	Residential address where a person is recorded as living, or having lived, for any period of time.	Address Type = Bail Address, Boarding House Of, Boards At, Contact Address, E M Bail Address, Home Address, Leases, MOJ Address, Place Known to Sleep, Postal Address, Previous Address, Rented By, Rents, Residence Of, Resides At, Sleeps At, 86, 338, 423, 491, 1366 (numeric codes are invalid address types; these numeric codes were checked and are indicative of home addresses).
Family home address	Residential address where persons linked to the offender as family members, either as an intimate partner or relative, is recorded as living, or having lived, for any period time during the offender's lifetime. Addresses limited to the offender's childhood years before memories are formed were extremely rare (<2% of records) and thus retained as	Person-Person Link Type = 1. Immediate family (Child, Identical Twin, Next Of Kin, Parent, Sibling, Step child, Step parent, Step Sibling). 2. Intimate Partner (Boyfriend/girlfriend, De-facto, Ex Married/Partner Living Together, Ex partner, Ex Partner Not Living Together, Ex-boyfriend/girlfriend, Married, Partner, Partner - Living together, Partner - Not Living Together)

	unlikely to make any difference to the results of the present analyses.	3. Other relative (Care Giver, Caregiver - Other Relative, Foster Parent, Grandchild, Grandparent, In Custody Of, Legal Guardian, Other Relative, Relative, Under Care Of, Under care of - Other Relative, Under Foster Care Of). Excluded: extra-familial caregivers (often institutional or medical staff), friend, associate, stranger, known to each other. Address record 'End Date' >= the offender's date of birth. Education screen > Education Institution/Other Name = not Null. Or: Employment screen > Employer Name = not Null, and contains the words: INTERMEDIATE, SECONDARY, NORMAL, PRIMARY, KURA, TKKM, COLLEGE, YMCA, GRAMMAR, PROGRAMME, COLLEGE, EDUCATION, LEARNING, TRUST, COURSE, CPIT, BACHELOR, INSTITUTE, TRAINING, TURANGA, POUTAMA, UNIVERSITY, WANANGA, DIPLOMA, DEGREE, POLYTECH, UNITEC, or CAMPUS. Inspection of Employer Names and checks of age at association dates showed these key words to be a reliable indicator that these school/education details had been entered into the employment instead of education screen and were not reflective of employment as teachers. Offense code = 1000-9999. Excluded: Traffic Offense codes (those preceded by A through Z).
Education	School, alternative education facility or tertiary institution the offender is recorded as having attended.	
Non-traffic offenses	Offenses that do not relate to driving behavior or other traffic violations. Traffic offenses were excluded because initial checks showed that their inclusion would introduce an unacceptable number of geographically imprecise records, considering the spatial units of analysis (exact coordinates and SA1 census units). For these codes, an estimated 40% or more of the addresses were street-only rather than address specific and tended to involve long streets, the geocoded coordinates of which could fall hundreds of meters from the actual place the offense occurred.	
Non-crime incidents	Incidents to which the Police respond that are not crimes/offenses, and not traffic or rescue related (for the same reasons as excluding traffic offenses).	Incident code = 1A – 1Z, 6A-6Z. Excluded: Traffic and land/water rescue codes: 1I, 1Q, 1U, 1V, 6F, 6I, 1L, 1W.

^a Location Type categories were: Residential (e.g., private dwellings and associated outbuildings/grounds, residential construction sites, farms, rest homes), Commercial (e.g., shops, restaurants, bars, entertainment facilities, businesses, factories, malls, offices, gyms, motels, hotels, hostels, campgrounds, commercial construction sites), Public (e.g., school/education, sports facilities/grounds, hospitals and medical clinics, transit stations, police stations, courts, prisons, church/religious facility, community buildings, marae), Street (e.g., streets, roads, footpaths, parks and open spaces, car parking facilities, wharf, harbor, beach, lake, river, sea), Transit (e.g., bus, car, train, boat, ship, plane in transit) and Unknown (i.e., not able to be coded as any of above, e.g., "other", "miscellaneous", "unspecified", "unknown", "online"). Location type was coded using a custom rule applied to a range of indicators because there is no single field in the NIA database that is a reliable indicator of location type (covering the entire data period). The rule was tested against a series of alternatives in order to identify the version that most accurately identified location type, by checking the narrative descriptions of a random sample of 1% of the reference offenses of each crime type. The optimal rule achieved 95%-98% accuracy across the reference offense categories (burglary, robbery and sex offenses). Reference tables mapping the NIA Scene Type and Address Type codes (e.g. farm, restaurant, hospital) to the present location type categories (residential, commercial, etcetera), and the rule incorporating these and other location type indicators, as an R Script, are available from the corresponding author.