

Supplementary Materials

S1. Activity node type and opportunity variable definitions

Table S1.1. Node type variable definitions and data specification

Node type	Definition	NIA database specification
Home	Residential address where a person is recorded as living, or having lived, for any period of time.	Address history screen > 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	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 unlikely to make any difference to the results of the present analyses.	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) 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 history screen (for family member) > Address Type = as per Home above and address record 'End Date' >= the offender's date of birth.
School	School, alternative education facility or tertiary institution the offender is recorded as having attended.	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.
Work	Work address	Address history screen > Address Type = Alternate Work Address, Firearms Dealer - Place Of Business, Work Address. We also attempted to identify work addresses from Employer Name in the Employment screen but these typically only included a company name with no specific details of location, branch or any

Node type	Definition	NIA database specification
Prior offence	Offences that do not relate to driving behaviour or other traffic violations. Traffic offences were excluded because initial checks showed that their inclusion would introduce an unacceptable number of geographically imprecise records.	other address, precluding sufficiently complete or accurate geocoding to enable their inclusion. Offence code = 1000-9999. Excluded: Traffic Offence codes (those preceded by A through Z). Person-Offence 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. Or Address history screen > Address Type = Obtained Drugs From, Place Drugs obtained by, Operates Illegal Activities At
Victim/witness	Offences in which the offender was involved but not as an offender, nor as a suspect against whom there is insufficient evidence to proceed.	Offence code = as per Prior offence above. Person-Offence Link Type = Victim, Complainant, Informant, Witness, Subject, Child or Young Person Exposed to Family Harm, Primary Victim. Excluded: Suspect, Offender/Cleared Offender/Youth Aid Offender, Other (a catch all category sometimes used as an alternative to Suspect).
Incident	Incidents to which the Police respond that are not crimes/ offences, and not traffic or rescue related (for the same reasons as excluding traffic offences).	Incident code = 1A – 1Z, 6A-6Z. Excluded: Traffic and land/water rescue codes: 1I, 1Q, 1U, 1V, 6F, 6I, 1L, 1W. Person-Offence Link Type = Complainant, Informant, Witness, Subject, Child or Young Person Exposed to Family Harm, Predominant Aggressor, Primary Victim, Mutual Participant.
Other	Other police contacts or sightings.	Address history screen > Address Type = Arrested At, Decamped From, Died At, Found At, Frequented By, Frequents, Keyholder, Last Drank At, Other(Specify), Owns, Place Arrested For, Place Decamped By, Place Found, Place Seen, Place Spoken To, Place Stopped For, Place trespassed from, Recovered, Seen At, Spoken To At, Stopped At, Trespassed from, Unknown – NIS, Visited At, 45, 46, 47, 90, 91, 96, 177, 178, 180, 909, 1340, 1424 (numeric codes are invalid address types; these numeric codes were checked and are indicative of these other types of addresses).

Note: A version of this table also appears in Curtis-Ham, S., Bernasco, W., Medvedev, O. N., & Polaschek, D. L. L. (2021). A national examination of the spatial extent and similarity of offenders’ activity spaces using police data. *ISPRS International Journal of Geo-Information*, 10(2), 47. <https://doi.org/10.3390/ijgi10020047>, Supplementary Materials Table s1.1. CC BY 4.0.

Table S1.2. Opportunity variable definitions and data specification

Offence	Variable	Census/Business demography specification
Residential Burglary	Number of residential dwellings	NZ Census > Number of private dwellings. Census 2013 data was used for reference offences occurring from 2009-2015 and census 2018 data were used for 2016-2018 reference offences because a small number of SA2s’ residential populations increased or decreased drastically between Census years.

Offence	Variable	Census/Business demography specification
		Marlborough SA2s were adjusted as per Statistics New Zealand guidance and corrections available at: http://datainfolplus.stats.govt.nz/Item/nz.govt.stats/b09ae9c0-de19-4418-952b-c9e4cbf7e1a2. For reference, Residential Burglaries were those where the Location Type of the offence was Residential*.
Non-residential Burglary	Number of business units	Business demography statistics > Industry Category = All. Business demography statistics remained consistent over the data period so 2018 was used for simplicity. For reference, Non-residential Burglaries were those where the Location Type was not Residential or Unknown*.
Commercial Robbery	Number of commercial business units	Business demography statistics > Industry Category = G Retail Trade, H Accommodation and Food Services, K Financial and Insurance Services, L Rental, Hiring and Real Estate Services. M Professional, Scientific and Technical Services, K Financial and Insurance Services, L Rental, Hiring and Real Estate Services, M Professional, Scientific and Technical Services, N Administrative and Support Services, R Arts and Recreation Services, S Other Services. For reference, Commercial Robberies were those where the Location Type of the offence was Commercial*.
Personal Robbery & Extrafamilial Sex Offences	Number of commercial and public business units	Business demography statistics > Industry Category = As for Commercial Robbery plus I Transport, Postal and Warehousing, J Information Media and Telecommunications, O Public Administration and Safety, P Education and Training, Q Health Care and Social Assistance. For reference, Personal Robberies were those where the Location Type was not Commercial or Unknown*.

* 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 offences of each crime type. The optimal rule achieved 95%-98% accuracy across the reference offence categories (burglary, robbery and sex offences). 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.

Note: This table also appears in Curtis-Ham, S., Bernasco, W., Medvedev, O. N., & Polaschek, D. L. L. (2022). A new Geographic Profiling Suspect Mapping And Ranking Technique for crime investigations: GP-SMART. *Journal of Investigative Psychology and Offender Profiling*. <https://doi.org/10.1002/jip.1585>, Supplementary Materials Table s1.2. CC BY 4.0.

S2. Descriptive statistics

Tables S2.1 to S2.4 present a range of descriptive statistics describing the offenders, the number of nodes per offender, the proportion of sampled SA2 alternatives with activity nodes in them or nearby, and the distribution of opportunity variables for the sampled SA2 alternatives. Non-parametric statistics are used because all distributions were positively skewed.

Table S2.1 presents demographic statistics for the offenders for each crime type.

Table S2.1. Offender demographic statistics

Reference offence	Median Age (IQR)	% Male	% Female
Residential Burglary	21 (14)	83.3%	16.6%
Non-residential Burglary	18 (12)	88.0%	12.0%
Commercial Robbery	19 (8)	87.7%	12.3%
Personal Robbery	19 (10)	80.7%	19.3%
Extrafamilial Sex Offences	28 (24)	96.8%	3.2%

Table S2.2 shows the average number of SA2s per person that contained each type of node, for each crime type. The minimum for all node types and crime types was 0.

Table S2.2. Median, IQR and Maximum number of SA2s per person containing each node type

Node type	Res. Burg.			Non-res. Burg.			Com. Rob.			Pers. Rob.			Sex offences		
	Med	IQR	Max	Med	IQR	Max	Med	IQR	Max	Med	IQR	Max	Med	IQR	Max
Home	4	4	54	3	4	54	4	4	28	4	4	54	3	3	44
Family home: immediate	5	6	86	5	6	77	7	6	89	7	7	73	1	4	71
Family home: intimate partner	3	7	175	1	6	151	2	5	98	3	7	117	0	4	135
Family home: other relative	0	4	114	0	3	85	0	5	72	0	6	120	0	0	57
School	0	1	6	0	1	6	0	1	5	0	1	7	0	0	5
Work	0	0	6	0	0	5	0	0	2	0	0	3	0	0	3
Prior offence	4	4	79	3	5	98	5	4	56	5	4	73	1	2	99
Prior victim/ witness	1	1	32	1	1	23	1	2	16	1	2	21	0	1	42
Prior incident	1	1	17	1	1	18	1	1	13	1	1	14	1	1	23
Other location	4	4	57	3	5	88	4	5	61	5	4	58	1	3	92

Table S2.3 provides descriptive statistics for the node type variables as a proportion of all SA2 alternatives sampled for each crime type. To illustrate, for the residential burglaries, 2.4 percent of all potentially chosen SA2 units contained a home node of the offender, for 1.6 percent the nearest home node was 0-200m away, for 2.5 percent the nearest home node was 200-500m away and for 18.3 percent the nearest home node was 2-5km away.

Table S2.3. Proportion of sampled SA2s for which the nearest activity node was within a given distance band, for each type of node and each distance band

Node type	Distance band	Res. Burg.	Non-res. Burg.	Com. Rob.	Pers. Rob.	Sex offences
Home	In the SA2	0.024	0.023	0.019	0.020	0.025
	0-200m	0.016	0.016	0.014	0.015	0.018
	200-500m	0.025	0.024	0.022	0.023	0.028
	500-1000m	0.040	0.039	0.037	0.038	0.046
	1-2km	0.074	0.073	0.073	0.072	0.088
	2-5km	0.183	0.182	0.199	0.185	0.235
Family home: immediate	In the SA2	0.032	0.033	0.033	0.033	0.023
	0-200m	0.021	0.022	0.023	0.022	0.016
	200-500m	0.031	0.032	0.034	0.033	0.023
	500-1000m	0.048	0.050	0.052	0.051	0.036
	1-2km	0.085	0.089	0.094	0.092	0.066
	2-5km	0.204	0.216	0.231	0.222	0.163
Family home: intimate partner	In the SA2	0.029	0.024	0.019	0.026	0.021
	0-200m	0.019	0.017	0.014	0.018	0.014
	200-500m	0.028	0.024	0.020	0.027	0.021
	500-1000m	0.043	0.037	0.032	0.041	0.033
	1-2km	0.076	0.066	0.059	0.072	0.060
	2-5km	0.176	0.153	0.147	0.171	0.145
Family home: other relative	In the SA2	0.013	0.013	0.015	0.015	0.009
	0-200m	0.009	0.009	0.010	0.010	0.006
	200-500m	0.013	0.014	0.016	0.016	0.010
	500-1000m	0.021	0.021	0.025	0.025	0.016
	1-2km	0.038	0.039	0.046	0.046	0.029
	2-5km	0.095	0.097	0.115	0.113	0.073
School	In the SA2	0.002	0.002	0.002	0.002	0.001
	0-200m	0.001	0.002	0.002	0.002	0.001
	200-500m	0.003	0.003	0.003	0.003	0.002
	500-1000m	0.005	0.006	0.006	0.006	0.003
	1-2km	0.011	0.012	0.015	0.014	0.007
	2-5km	0.032	0.035	0.045	0.044	0.021
Work	In the SA2	0.000	0.000	0.000	0.000	0.000
	0-200m	0.000	0.000	0.000	0.000	0.000
	200-500m	0.000	0.000	0.000	0.000	0.001
	500-1000m	0.000	0.000	0.000	0.000	0.001

Node type	Distance band	Res. Burg.	Non-res. Burg.	Com. Rob.	Pers. Rob.	Sex offences
	1-2km	0.001	0.001	0.001	0.001	0.003
	2-5km	0.003	0.003	0.003	0.002	0.009
Prior offence	In the SA2	0.023	0.024	0.024	0.023	0.016
	0-200m	0.017	0.018	0.019	0.018	0.012
	200-500m	0.023	0.024	0.026	0.024	0.017
	500-1000m	0.037	0.039	0.042	0.039	0.028
	1-2km	0.068	0.071	0.080	0.072	0.054
	2-5km	0.159	0.161	0.194	0.175	0.137
Prior victim/ witness	In the SA2	0.006	0.006	0.007	0.006	0.006
	0-200m	0.005	0.005	0.006	0.005	0.005
	200-500m	0.008	0.008	0.009	0.008	0.007
	500-1000m	0.014	0.014	0.015	0.015	0.013
	1-2km	0.028	0.027	0.032	0.030	0.026
	2-5km	0.078	0.076	0.095	0.086	0.074
Prior incident	In the SA2	0.007	0.006	0.005	0.006	0.008
	0-200m	0.005	0.005	0.004	0.005	0.006
	200-500m	0.008	0.008	0.007	0.008	0.010
	500-1000m	0.014	0.014	0.013	0.014	0.018
	1-2km	0.029	0.029	0.027	0.028	0.037
	2-5km	0.083	0.080	0.083	0.083	0.105
Other location	In the SA2	0.023	0.023	0.022	0.023	0.019
	0-200m	0.017	0.018	0.018	0.019	0.015
	200-500m	0.023	0.024	0.025	0.025	0.021
	500-1000m	0.037	0.038	0.040	0.040	0.034
	1-2km	0.070	0.071	0.078	0.075	0.066
	2-5km	0.168	0.168	0.199	0.184	0.171

Table S2.4 describes the distribution of the opportunity variable (i.e., number of dwellings or business units) for the sampled SA2s, for each crime type. The minimum for all crime types was 0 dwellings/business units.

Table S2.4. Median, IQR and maximum number of opportunity units per SA2

Offence type	Median	IQR	Max
Residential Burglary	1167	273	4707
Non-residential Burglary	306	123	4059
Commercial Robbery	195	90	3354
Personal Robbery	231	102	3822
Sex offences	231	102	3822

S3. Odds ratios for activity node associations

Table S3.1 shows the odds ratios (ORs) for the associations between activity node proximity and crime location choice, for each activity node type, distance band and crime type. Each column represents a separate model.

Table S3.1. Odds ratios (CIs) for activity node associations by node type, distance and crime

Node type	Distance band	Res. Burg.	Non-res. Burg.	Com. Rob.	Pers. Rob.	Sex offences
Home	In the SA2	53.97*** (49.64-58.68)	28.66*** (25.54-32.17)	19.43*** (14.89-25.34)	15.12*** (12.62-18.12)	235.28*** (207.72-266.5)
	0-200m	30.18*** (27.26-33.41)	28.06*** (24.72-31.85)	16.99*** (12.75-22.65)	13.09*** (10.76-15.92)	59.12*** (48.88-71.5)
	200-500m	24.65*** (22.38-27.15)	21.88*** (19.35-24.73)	17.07*** (13.05-22.35)	9.99*** (8.26-12.09)	57.36*** (48.26-68.18)
	500-1000m	20.65*** (18.83-22.65)	20.48*** (18.22-23.02)	15.77*** (12.27-20.27)	8.42*** (7.01-10.11)	48.19*** (41.23-56.33)
	1-2km	16*** (14.66-17.47)	13.78*** (12.3-15.44)	10.11*** (7.95-12.86)	6.98*** (5.87-8.3)	31.73*** (27.41-36.74)
	2-5km	10.62*** (9.79-11.53)	9.42*** (8.47-10.48)	6.82*** (5.46-8.51)	5.41*** (4.61-6.35)	17.3*** (15.13-19.77)
Family home: immediate	In the SA2	5.55*** (5.14-5.98)	8.17*** (7.37-9.06)	4.13*** (3.26-5.24)	5.18*** (4.4-6.09)	3.55*** (3.04-4.14)
	0-200m	3.84*** (3.48-4.23)	6.4*** (5.68-7.21)	4.12*** (3.18-5.34)	4.23*** (3.53-5.07)	2.9*** (2.32-3.64)
	200-500m	3.49*** (3.18-3.83)	5.88*** (5.23-6.6)	3.06*** (2.36-3.95)	4.08*** (3.42-4.86)	2.65*** (2.14-3.28)
	500-1000m	3.22*** (2.94-3.52)	4.95*** (4.43-5.55)	2.98*** (2.34-3.79)	3.9*** (3.3-4.61)	2.35*** (1.91-2.88)
	1-2km	2.79*** (2.56-3.04)	4.15*** (3.72-4.63)	3.22*** (2.58-4.01)	2.91*** (2.47-3.43)	2.52*** (2.1-3.04)
	2-5km	2.45*** (2.26-2.65)	3.35*** (3.02-3.72)	2.54*** (2.06-3.13)	2.47*** (2.12-2.88)	2.03*** (1.7-2.42)
Family home: intimate partner	In the SA2	2.46*** (2.29-2.65)	1.40*** (1.25-1.56)	2.78*** (2.18-3.53)	2.88*** (2.47-3.36)	3.17*** (2.68-3.74)
	0-200m	1.67*** (1.51-1.85)	1.61*** (1.41-1.83)	2.47*** (1.84-3.31)	2.02*** (1.66-2.45)	2.12*** (1.66-2.7)
	200-500m	1.6*** (1.45-1.76)	1.33*** (1.18-1.52)	2.27*** (1.73-2.99)	1.99*** (1.66-2.38)	1.7*** (1.34-2.16)
	500-1000m	1.51*** (1.38-1.65)	1.21*** (1.07-1.37)	1.9*** (1.47-2.46)	1.93*** (1.63-2.28)	1.68*** (1.36-2.08)
	1-2km	1.57*** (1.45-1.71)	1.06 (0.94-1.19)	1.65*** (1.3-2.09)	1.65*** (1.41-1.93)	1.47*** (1.2-1.79)
	2-5km	1.38*** (1.28-1.49)	1.11* (1.01-1.23)	1.57*** (1.28-1.93)	1.52*** (1.32-1.76)	1.56*** (1.31-1.84)
Family home: other relative	In the SA2	2.02*** (1.84-2.22)	1.71*** (1.51-1.95)	1.70*** (1.29-2.23)	1.77*** (1.48-2.13)	2.59*** (2.05-3.27)
	0-200m	1.43*** (1.25-1.64)	1.48*** (1.26-1.75)	1.28 (0.89-1.84)	1.51*** (1.2-1.9)	1.92*** (1.34-2.75)
	200-500m	1.38*** (1.22-1.57)	1.31*** (1.12-1.53)	1.34 (0.98-1.83)	1.4** (1.13-1.73)	1.18 (0.82-1.7)

Node type	Distance band	Res. Burg.	Non-res. Burg.	Com. Rob.	Pers. Rob.	Sex offences
	500-1000m	1.31*** (1.17-1.48)	1.18* (1.02-1.38)	1.35* (1.02-1.8)	1.39** (1.14-1.7)	1.34 (0.98-1.83)
	1-2km	1.35*** (1.21-1.5)	1.14 (1-1.31)	1.36* (1.06-1.75)	1.38*** (1.15-1.66)	1.62*** (1.24-2.12)
	2-5km	1.24*** (1.13-1.36)	1.06 (0.94-1.2)	1.28* (1.02-1.61)	1.23* (1.04-1.45)	1.47** (1.16-1.87)
School	In the SA2	1.79*** (1.59-2.02)	2.37*** (2.07-2.7)	1.41* (1.03-1.91)	1.53*** (1.22-1.93)	1.26 (0.89-1.78)
	0-200m	1.57*** (1.34-1.85)	1.06 (0.86-1.3)	1.26 (0.84-1.87)	1.59*** (1.21-2.1)	1.03 (0.63-1.67)
	200-500m	1.41*** (1.23-1.63)	1.02 (0.86-1.21)	0.92 (0.64-1.32)	1.4** (1.1-1.78)	0.73 (0.47-1.14)
	500-1000m	1.42*** (1.26-1.61)	1.19* (1.03-1.39)	0.88 (0.64-1.2)	1.49*** (1.21-1.83)	0.9 (0.62-1.3)
	1-2km	1.24*** (1.1-1.39)	0.95 (0.82-1.1)	0.81 (0.61-1.07)	1.13 (0.93-1.38)	0.74 (0.52-1.04)
	2-5km	1.14* (1.03-1.27)	0.92 (0.8-1.05)	0.76* (0.59-0.97)	1.06 (0.89-1.26)	0.71* (0.53-0.97)
	In the SA2	1.13 (0.75-1.7)	2.94*** (1.92-4.53)	5.34*** (2.21-12.89)	2.43* (1.1-5.33)	4.69*** (3.07-7.18)
	- 200m	0.88 (0.59-1.33)	1.33 (0.77-2.3)	1.74 (0.54-5.59)	1.43 (0.57-3.58)	1.56 (0.89-2.73)
Work	200-1000m	0.84 (0.65-1.1)	1.29 (0.88-1.88)	1.1 (0.49-2.48)	2.51** (1.42-4.44)	1.14 (0.77-1.68)
	1-5km	0.84 (0.65-1.1)	1.29 (0.88-1.88)	1.1 (0.49-2.48)	2.51** (1.42-4.44)	1.14 (0.77-1.68)
	In the SA2	6.95*** (6.44-7.5)	11.04*** (9.99-12.2)	5.77*** (4.58-7.27)	7.03*** (5.98-8.26)	2.51*** (2.14-2.95)
	0-200m	3.69*** (3.35-4.07)	4.17*** (3.67-4.73)	3.42*** (2.6-4.5)	4.62*** (3.85-5.55)	2.21*** (1.78-2.74)
	200-500m	3.53*** (3.22-3.88)	3.62*** (3.19-4.11)	3.05*** (2.34-3.99)	3.67*** (3.05-4.41)	1.74*** (1.4-2.17)
	500-1000m	3.15*** (2.89-3.45)	3.15*** (2.78-3.55)	3.05*** (2.38-3.9)	3.04*** (2.54-3.64)	1.72*** (1.41-2.11)
	1-2km	2.84*** (2.61-3.09)	2.87*** (2.56-3.22)	2.55*** (2.01-3.22)	2.58*** (2.18-3.06)	1.45*** (1.2-1.76)
	2-5km	2.17*** (2-2.35)	2.18*** (1.95-2.43)	2.52*** (2.03-3.11)	2.38*** (2.03-2.79)	1.26** (1.06-1.5)
Prior offence	In the SA2	1.28*** (1.19-1.39)	1.22*** (1.1-1.35)	1.17 (0.91-1.49)	1.36*** (1.16-1.6)	1.54*** (1.3-1.83)
	0-200m	1.04 (0.93-1.17)	1.06 (0.92-1.22)	1.13 (0.83-1.53)	1.04 (0.84-1.27)	1.26 (0.95-1.67)
	200-500m	1.01 (0.91-1.13)	0.91 (0.79-1.04)	1.05 (0.79-1.39)	1.1 (0.91-1.33)	1.1 (0.84-1.44)
	500-1000m	0.89* (0.81-0.99)	0.85* (0.74-0.96)	0.88 (0.68-1.15)	0.95 (0.8-1.14)	1.09 (0.86-1.38)
	1-2km	0.91* (0.83-0.99)	0.9 (0.8-1.01)	1.12 (0.89-1.4)	0.86 (0.73-1.01)	1.19 (0.97-1.46)
	2-5km	0.90** (0.83-0.97)	0.88* (0.79-0.98)	0.92 (0.75-1.13)	0.87 (0.75-1.01)	1.18 (0.99-1.42)
	In the SA2	1.31*** (1.21-1.41)	1.27*** (1.14-1.41)	1.35* (1.05-1.74)	1.36*** (1.16-1.6)	2.34*** (2.02-2.72)
	0-200m	1.16* (1.04-1.3)	1.06 (0.92-1.22)	1.01 (0.71-1.44)	1.13 (0.91-1.4)	1.69*** (1.32-2.15)
Prior victim/ witness	200-500m	1.1 (1-1.23)	1.09 (0.95-1.25)	1.15 (0.84-1.57)	1.05 (0.86-1.28)	1.22 (0.96-1.56)
	500-1000m	1.08 (0.98-1.19)	0.98 (0.86-1.11)	1.17 (0.89-1.52)	1.02 (0.85-1.23)	1.40** (1.14-1.72)
	1-2km	1.03 (0.94-1.12)	1.01 (0.9-1.13)	0.99 (0.78-1.27)	1.11 (0.95-1.31)	1.15 (0.95-1.39)
	In the SA2	1.31*** (1.21-1.41)	1.27*** (1.14-1.41)	1.35* (1.05-1.74)	1.36*** (1.16-1.6)	2.34*** (2.02-2.72)
	0-200m	1.16* (1.04-1.3)	1.06 (0.92-1.22)	1.01 (0.71-1.44)	1.13 (0.91-1.4)	1.69*** (1.32-2.15)
	200-500m	1.1 (1-1.23)	1.09 (0.95-1.25)	1.15 (0.84-1.57)	1.05 (0.86-1.28)	1.22 (0.96-1.56)
	500-1000m	1.08 (0.98-1.19)	0.98 (0.86-1.11)	1.17 (0.89-1.52)	1.02 (0.85-1.23)	1.40** (1.14-1.72)
	1-2km	1.03 (0.94-1.12)	1.01 (0.9-1.13)	0.99 (0.78-1.27)	1.11 (0.95-1.31)	1.15 (0.95-1.39)
Prior incident	In the SA2	1.31*** (1.21-1.41)	1.27*** (1.14-1.41)	1.35* (1.05-1.74)	1.36*** (1.16-1.6)	2.34*** (2.02-2.72)
	0-200m	1.16* (1.04-1.3)	1.06 (0.92-1.22)	1.01 (0.71-1.44)	1.13 (0.91-1.4)	1.69*** (1.32-2.15)
	200-500m	1.1 (1-1.23)	1.09 (0.95-1.25)	1.15 (0.84-1.57)	1.05 (0.86-1.28)	1.22 (0.96-1.56)
	500-1000m	1.08 (0.98-1.19)	0.98 (0.86-1.11)	1.17 (0.89-1.52)	1.02 (0.85-1.23)	1.40** (1.14-1.72)
	1-2km	1.03 (0.94-1.12)	1.01 (0.9-1.13)	0.99 (0.78-1.27)	1.11 (0.95-1.31)	1.15 (0.95-1.39)
	In the SA2	1.31*** (1.21-1.41)	1.27*** (1.14-1.41)	1.35* (1.05-1.74)	1.36*** (1.16-1.6)	2.34*** (2.02-2.72)
	0-200m	1.16* (1.04-1.3)	1.06 (0.92-1.22)	1.01 (0.71-1.44)	1.13 (0.91-1.4)	1.69*** (1.32-2.15)
	200-500m	1.1 (1-1.23)	1.09 (0.95-1.25)	1.15 (0.84-1.57)	1.05 (0.86-1.28)	1.22 (0.96-1.56)

Node type	Distance band	Res. Burg.	Non-res. Burg.	Com. Rob.	Pers. Rob.	Sex offences
	2-5km	1.06 (0.98-1.15)	0.97 (0.87-1.07)	1.06 (0.87-1.31)	0.97 (0.84-1.13)	1.09 (0.92-1.28)
Other location	In the SA2	1.7*** (1.58-1.84)	2.03*** (1.84-2.24)	3.00*** (2.39-3.77)	3.20*** (2.74-3.75)	2.07*** (1.76-2.44)
	0-200m	1.57*** (1.43-1.72)	1.63*** (1.44-1.84)	2.19*** (1.68-2.86)	2.35*** (1.96-2.82)	1.59*** (1.27-1.98)
	200-500m	1.58*** (1.44-1.72)	1.38*** (1.21-1.56)	1.78*** (1.37-2.33)	2.28*** (1.9-2.73)	1.79*** (1.45-2.21)
	500-1000m	1.44*** (1.32-1.57)	1.20** (1.07-1.35)	1.95*** (1.53-2.48)	2.17*** (1.83-2.58)	1.55*** (1.28-1.89)
	1-2km	1.34*** (1.23-1.45)	1.17** (1.05-1.31)	1.44** (1.14-1.82)	1.96*** (1.67-2.31)	1.47*** (1.22-1.76)
	2-5km	1.37*** (1.27-1.48)	1.21*** (1.09-1.35)	1.57*** (1.28-1.94)	1.58*** (1.35-1.84)	1.33*** (1.13-1.57)

*p < 0.05, ** p < 0.01, *** p < 0.001

S4. Wald test results

Table S4.1 shows the results of Wald Chi Square tests for statistical differences used to test hypotheses comparing Odds Ratios (ORs) within models where their 95% confidence intervals (CIs) overlapped. Comparisons appear in the order reported in the text. All variable 1 ORs are greater than variable 2 ORs.

Table S4.1. Results of Wald tests comparing ORs where CIs overlapped

H ^a	Offence	Variable 1	Variable 2	X ²
1	Com. Rob.	Family: other in SA2	Family: other 2-5km	2.79
1	Com. Rob.	Incident in SA2	Incident 2-5km	0.06
1	Pers. Rob.	School in SA2	School 2-5km	9.24**
1	Sex	School in SA2	School 2-5km	7.86**
1	Sex	Victim/Witness in SA2	Victim/Witness 2-5km	7.07**
1	Non. Res. Burg.	Family: IP 0-200m	Family: IP in SA2	4.42*
1	Pers. Rob.	School 0-200m	School in SA2	0.06
1	Non. Res. Burg.	Family: IP 2-5km	Family: IP 1-2km	0.76
1	Non. Res. Burg.	School 500m-1km	School 200-500m	2.87
1	Pers. Rob.	Work 1-5km	Work 200m-1km	1.57
1	Sex	Family: other 1-2km	Family: other 500m-1km	1.22
1	Sex	Incident 500m-1km	Incident 200-500m	0.95
3(a)	Com. Rob.	Family: immed. in SA2	Family: IP in SA2	0.16
3(a)	Sex	Family: immed. in SA2	Family: IP in SA2	1.06
3(b)	Sex	Family: immed. in SA2	Family: other in SA2	4.69*

*p < 0.05, ** p < 0.01

^a Hypothesis to which the comparison is relevant.