eTable 1: Primary Outcome: Completed Suicide

Author and year	Study population	Sample Size	Study Design	Rurality Definition	Suicide Definition	Findings
Canada						
Burrows et al., 2013[29]	Ages 25+, non-institutionalized	2, 735, 152	Retrospective cohort	Based on population size and commuters to CMAs and CAs. Assigned based on place at time of cohort inception.	ICD-9 and ICD-10 codes; undetermined deaths also considered suicide	Suicide rates are not higher among the most rural areas compared to urban when fully adjusted (male: HR=1.24, 95%CI=0.96-1.61, female: HR=1.15 (95%CI=0.69-1.90)
Dummer et al., 2010[30]	Ages 12-24, living in Nova Scotia and eligible for insured health care	314, 983	Retrospective cohort	Postal code conversion file (PCCF+): based on population density and size; assigned by residential postal code.	death registrations-vital statistics;	Suicide rates were not significantly higher in rural areas (IRR=1.2 (95%CI=0.8-1.8)
Lagacé et al., 2007[28] and Pong et al.[31]	General population	DNS*	Cross-sectional	Metropolitan influence zones (MIZ): based on population size and employed commuters to census metropolitan areas (CMAs) and Census agglomerations (CAs).	ICD-9 codes	Suicide rates are higher among rural males compared to urban males among all metropolitan influence zones (SMR for most rural compared to most urban=2.07, 95% CI=1.93-2.23) and also among females (SMR=1.50, 95%CI=1.27-1.77)
Ngamini Ngui et al., 2015[32]	Ages 65+ living in Quebec	903 cases and 2, 493 controls; 3, 396 total	Case-control	Based on population density within the forward sortation area (FSA) (area covered by the first three digits of the postal code);	Coroner's report ICD-9 codes	Text states that both males and females living in more rural (less dense) areas are less likely to complete suicide (OR=1.00, 95%CI=1.00-1.00) (continuous exposure)

Author and year	Study population	Sample Size	Study Design	Rurality Definition	Suicide Definition	Findings
Ostry, 2009[27]	Canada (very small census subdivisions excluded)	DNS	Cross-sectional	MIZ: based on population size and employed commuters to CMAs and CAs.	ICD-9 codes from Canadian Mortality database	Rates of suicide increase as rurality increases (rural vs urban: 23.7 per 100, 000, vs. 12.3 per 100, 000). By sex: male: 38.4 vs. 19.3 per 100,000, female: 7.9 vs. 5.7 per 100, 000). No effect estimates or CIs reported
United States						
Baeseman, 2009[33]	Living in Wisconsin	DNS	Cross-sectional	National Center for Health Statistics (NCHS) 6-level urban-rural classification system: based on population size and whether area is adjacent to a metropolitan area	ICD-10 Codes X60-X84	Wisconsin: Rural males are at greater risk of suicide (OR=1.14, 95%CI=1.06-1.23) but rural females are not (OR=1.03, 95%CI= 0.89-1.20); United States: rural males are at greater risk of suicide (OR=1.33, 95%CI=1.32-1.35) and rural females are at greater risk (OR=1.09, 95%CI=1.07-1.12)
Britton et al., 2017[34]	Male veterans discharged from acute Veterans Health Administration psychiatric inpatient units	319,700 discharges; 929 deaths	Cohort	a Source is zip code at time of admission as reported in MEDSAS, mapped to a zip/rural crosswalk	ICD-10 codes between 'X60' and 'X84'"	Suicide rates are higher among rural males: HR=1.20 (95% CI=1.05-1.36)
Congdon, 2011[35]	United States counties	3, 142 counties	Cross-sectional	Latent construct variable: rural population in county, employed workers in agriculture and forestry, and fishing; population density per square mile; housing density per square mile	ICD-10 codes X60–X84	Rural males are at increased risk of suicide (standardized coefficient= 0.29 (95%CI=0.23-0.34); Females are not at increased risk (standardized coefficient= 0.02 (95%CI=-0.06-0.10)

Author and year	Study population	Sample Size	Study Design	Rurality Definition	Suicide Definition	Findings
Fontanella et al., 2015[3]	Ages 10-24 years in United States	3, 141 counties (66, 595 suicides)	Cross-sectional	Rural-Urban continuum codes (RUCCs): based on population size and adjacency to metropolitan areas; assigned based on county of residence based on the 5-digit federal information processing standard codes.	National Center for Health Statistics National Vital Statistics System; (ICD-9-CM) (external cause codes E950-E959) and ICD-10) (external cause codes X60-X84, Y87.0, and U03).	Rural suicide is higher among males (IRR=1.19 (95%CI=1.07-1.32)) and females (IRR=1.37 (95%CI=1.08-1.74)); differences widened over time for males and females
Ivey-Stephenson et al., 2017[36]	Ages 10+	545, 155 suicides	Cross-sectional	2006 National Center for Health Statistics classification scheme; based on population size, presence of a principal city, and presence of urban cluster.	ICD-10 codes X60–X84, Y87.0, and U03.	Higher rates of suicide among rural counties: 17.32 per 100, 000 for non-metro compared to 11.92 per 100, 000 for most urban; increasing rates over time for rural more than urban
Kim et al., 2011[37]	Continental United States counties with 20+ suicides; includes rates for those ages 5+	3, 108 counties	Ecological	Based on population density	County-level suicide rates	Rurality is positively associated with suicide (Correlation coefficient for decreasing population density (beta)=0.021)
Kposowa et al., 2013[38]	Adults that have died in the United States	2, 045, 919	Case-control	city size and place of residence at time of death (metropolitan vs. non-metropolitan)	ICD-10 codes X64 to X84, Y87.0 and US clinical modification code U03	Metropolitan place of residence had lower odds of suicide (OR=0.87, 95=0.86-0.89) compared to rural residence; Greater city size is also associated with lower odds of suicide (OR=0.96, 95% CI=0.96-0.97)

Author and year	Study population	Sample Size	Study Design	Rurality Definition	Suicide Definition	Findings
McCann, 2010[39]	General population	DNS	Cross-sectional	Percentage of urban in each state	suicide rates for each state from CDC available at suicide.org	Higher suicide rates associated with a more rural population (Beta=-0.31, t=-2.42, p<0.001)
McCarthy et al., 2012[40]	VA patients ages 18+ who had an inpatient or outpatient encounter with VA in the previous year	~5.5 million in each cohort	Cohort	VA Office of Rural Health criteria: based on population density of area and population density of surrounding areas	ICD-10 codes X60–X84, Y87.0.	Suicide rates were greater in rural areas than in urban areas (HR = 1.22; 95% CI = 1.12-1.33)
McCarthy et al., 2015[41]	VA patients ages 18+ who had an inpatient or outpatient encounter in previous 2 years	3, 180 cases, 1, 056, 004 controls	Case-control	Urban or rural residence	ICD-10 codes X60–X84, Y87.0.	Suicide rates are higher among people from rural areas (urban: 33.3 per 100 000; rural: 40.4 per 100, 000, p<0.0001)
Nance et al., 2010[42]	Ages 0-19 with a firearm-related death	23, 649 total deaths, including 7, 082 firearm-related suicides	Cross-sectional	based on US county of occurrence; based on population size and proximity to metropolitan areas;	ICD-10 codes V01 to X59, Y85 to Y86, W32 to W34, X60 to X84, Y87.0, X72 to X74, X85 to Y09, Y87.1, and X93 to X95	Rates of firearm-related suicides higher among rural (RR=2.01 95% CI: 1.43–2.83)
Nestadt et al., 2017[43]	Ages 15+ in Maryland (MD)	6, 196 suicides	Cross-sectional	Rural–urban continuum variable developed by the US Department of Agriculture: based on the population size of the counties and proximity to metropolitan areas.	Suicides recorded by the Office of the Chief Medical Examiner for the MD state, 5% reviewed by psychiatrist	Suicide rates are higher among rural males (RR=1.19, (95%CI=1.01-1.40) but lower among rural females: (RR=0.63, 95%CI=0.43-0.94)

Author and year	Study population	Sample Size	Study Design	Rurality Definition	Suicide Definition	Findings
Myers et al., 2013[44]	Deceased due to injury-related death	1,295,919 injury deaths	Cross-sectional	Based on county of occurrence; Counties classified according to 10 category variable based on the urban rural continuum codes by the US Department of Agriculture; based on population size and proximity to metropolitan areas.	Classified by intent (suicide) and ICD-10 external cause codes.	no increase in suicides with increasing rurality overall but significant among some younger age groups (0-19 years); Overall RR=1.06 (95% CI=1.0-1.2)
Singh et al., 2013[45]	United States counties; rates for ages 15-24 years	3, 141 counties	Cross-sectional	2003 rural–urban continuum variable developed by the US Department of Agriculture: based on the population size of the counties and proximity to metropolitan areas.	The national mortality database provided pooled mortality data at the county level	Higher among rural for both males and females when stratified by sex: Male: RR=1.82 (95% CI=1.70-1.96); Female: RR=1.65 (95%CI=1.38-1.98)
Singh et al., 2014[46]	United States counties	3, 141 counties	Cross-sectional	same as above ; based on population size of the counties and their proximity to metropolitan areas;	mortality rates for 3 year periods based on national mortality database and cause of death	Higher rates among rural (non-metropolitan) compared to urban (metropolitan) RR= 1.34 (1.32-1.35), possibly increasing over time (no p-value but states this)
Smith and Kawachi et al., 2014[47]	General population	120, 826 suicides	Cross-sectional	The percent of Americans living in an urban area (an area with 50,000 or more people) in a state	ICD code where the listed “intent” was “suicide”, including ICD codes X60-X84, Y87.0, and U03.	No significant increase in suicide found with increasing rurality (males: β=0.031, p=0.82; females: β=-0.152, p=0.33)

Author and year	Study population	Sample Size	Study Design	Rurality Definition	Suicide Definition	Findings
United Kingdom						
Congdon, 2013[48]	Living in England	6, 781 output areas (does not say how many individuals)	Cross-sectional	based on % greenspace, road distance to a Post Office, road distance to a food shop, road distance to a General Practitioner, road distance to a primary school, and population density	UK Office of National Statistics; deaths with underlying cause of intentional self-harm or an injury or poisoning of undetermined intent (ICD10 X60–X84 and Y10–Y34).	Rurality is only significantly associated with suicide among males: Male: β=0.05 (95%CI=0.03-0.08); Female: β=0.03, 95%CI=-0.01-0.07)
Gartner et al., 2011[49]	Ages 15+ living in England and Wales	4, 780 (322 from Wales)	Cross-sectional	New Rural and Urban Area Classification (RUAC); based on: settlements with more than 10,000 people are considered urban areas, with all other settlements deemed to be rural; based on residence	X600eX849, Y100eY338, Y340eY349,	Suicide higher among rural than urban for males in England but not Wales: England: male OR=1.12 (95%CI=1.02-1.24); female OR=1.01 (95%CI=0.86-1.19); Wales: male: OR=1.04 (95%CI=0.79-1.36); female: OR=1.27 (0.78-2.07)
Middleton et al., 2006[50]	Males ages 15-24 living in England and Wales	9, 265 electoral wards; 15, 821 suicides	Cross-sectional	(a) population density and (b) population potential as a measure of geographical remoteness (remoteness from large centres of population)	Suicide and undetermined deaths (International Classification of Diseases (ICD9) codes E950.0–E959.9 and E980.0–E989.9, excluding E988.8)	Increasing urbanicity is associated with decreased risk of suicide. Population potential: RR=0.89, 95% CI=0.85-0.94; population density: RR=0.91, 95% CI=0.87-0.94 per 1 SD increase in exposure.

Author and year	Study population	Sample Size	Study Design	Rurality Definition	Suicide Definition	Findings
O'Reilly et al., 2013[51]	non-institutionalized population ages 16-74 in Northern Ireland	1116748; 566 suicides on follow-up	cohort	population density	both definite suicides and deaths of undetermined intent were combined to define suicide (ICD–10 codes X60–X84, Y10–Y34, Y87.0)	Rurality is not associated with suicide: most dense to least dense: HR=0.83 (95%CI= 0.64-1.08); test for trend across density levels=0.07; no difference
Stark et al., 2007[52]	Ages 15+ living in Scotland	4, 350 deaths	Cross-sectional	Based on residence and postal code; each postcode sector given a Population density score.	Deaths included if the cause of death was recorded as suicide or as undetermined cause (ICD-9 E950-E959, ICD-10 X60-X84 and E980-E989 or Y10-Y34,).	No numerical rate ratios reported but suicide appears to be higher among most rural males of all ages with a J-shape. Rates appear similar among rural and urban females, but appear to be higher for urban women 45 years and older.
Australia						
Australian Institute of Health and Welfare, 2006[53]	General population	DNS	cross-sectional	Australian Standard Geographical Classification (ASGC) Remoteness areas; based on road distance from a locality to the closest service centre; similar to ARIA	Suicide here is defined by the ICD-9 and ICD-10 codes E950–E959 and X60–X84, respectively.	Graph indicates that rural had greater risk of suicide (significance not shown); For both males and females, there were non-significant increases in the suicide death rate in Remote areas, while in Very Remote areas there was a significant increase for males and a non-significant increase for females.

Author and year	Study population	Sample Size	Study Design	Rurality Definition	Suicide Definition	Findings
Cheung et al., 2012[54]	Living in Australia	10, 522 suicides	cross-sectional	The Rural, Remote and Metropolitan (RRMA) classification; based on whether location is in capital city or metropolitan centre, population size, population density and distance to the nearest centre of an urban centre; based on postal areas.	Deaths recorded on the NCIS with an ICD-10 diagnosis 'X60-X84' (deliberate self-harm) or with the 'intent' registered as intentional self-harm)	Suicide rates higher for rural males than more urban males in almost all areas; no urban-rural gradient observed for females
Kõlves et al., 2015[55]	Living in Queensland	5, 752 suicides	Cross-sectional	Accessibility/Remoteness Index of Australia (ARIA) endorsed by Australian Bureau of Statistics (ABS); based on road distance to the nearest Service Centres in five-size categories and population size.	Queensland Suicide register: includes police report, post-mortem autopsy, toxicology and Coroner's findings. Cross-checked with National Coronial Information System.	Suicide rates in remote areas were significantly higher compared to the average for both genders (males RR= 1.63 95%CI=1.26-2.12; females RR= 1.72 95%CI:=1.08-2.72)
Lagacé et al., 2007[28] and Pong et al.[31]	Living in Australia	DNS	Cross-sectional	Australian Standard Geographical Classification (ASGC) Remoteness structure: based on post code of the residential address. Based on the Accessibility/ Remoteness Index of Australia (ARIA+): based on road distance from populated towns.	ICD-10 codes	Males living in the most remote areas are more likely to complete suicide than the most urban (SMR=1.65, 95%CI=1.33-2.02) but rural females are not (SMR=1.18, 95%CI=0.66-1.97)

Author and year	Study population	Sample Size	Study Design	Rurality Definition	Suicide Definition	Findings
Milner et al., 2012[56]	Living in Queensland	35 statistical sub-divisions	Cross-sectional	small geographical unit called the Statistical Sub-Division (SSD), as defined by the Australian Bureau of Statistics (ABS). SSDs grouped: metropolitan, regional or remote; based on the Accessibility/Remoteness Index of Australia (ARIA)	age-standardized rates by SSD	Suicide rates were higher among remote males: (IRR=1.67 (95%CI=1.36-2.04)) compared to the most urban males. Suicide rates did not differ between the most remote females and most urban females (IRR= 0.97 (95%CI=0.62-1.51)
Mitchell et al., 2010[57]	Resident of New South Wales	604, 351 injury-related hospitalisations including 32, 939 self-harm incidents	Cross-sectional	Enhanced Accessibility/ Remoteness Index of Australia, classification (ARIA+13): measures access in terms of remoteness determined on road distance measurements from localities to the nearest service centre and based on population sizes	Australian Bureau of Statistics (ABS) mortality data file; information collected from death certificates; ICD-10 codes	2868 urban self-harm mortalities and 296 rural; SMR=1.36 (1.21-1.53), p<0.0001; higher among rural
Page et al., 2007[58]	Ages 15+	DNS	cross-sectional	The Rural, Remote and Metropolitan (RRMA) classification; based on whether location is in capital city or metropolitan centre, population size, population density and distance to the nearest centroid of an urban centre; based on postal areas.	Unit record suicide data were obtained from the Australian Bureau of Statistics (ABS) for the period 1979–2003.	Rural males more likely to complete suicide: RR=1.40 (95%CI=1.27–1.54); increasing over time; Rural females less likely to complete suicide: RR= 0.87 (95%CI=0.67-1.13)
Qi et al., 2014[59]	General population	45, 293 suicides	Cross-sectional	The Australian Standard Geographical Classification (ASGC): based on Local Government areas, based on proximity to capital cities, metropolitan areas of capitals, and population density	International Classification of Disease (ICD) Code (ICD 9: 950.0–959.9 and ICD 10: X60-X84	Suicide higher among rural compared to average suicide among all people (RR=1.07, 95%CI=1.05-1.09).

Author and year	Study population	Sample Size	Study Design	Rurality Definition	Suicide Definition	Findings
Rintoul et al., 2010[60]	recorded oxycodone-related death in Victoria, Australia	34 intentional oxycodone deaths	Cross-sectional	The usual residential address of this decedent population was allocated to a rural or metropolitan area according to ABS classification and compared to the distribution of the entire Victorian population	Any detection of oxycodone in urine, blood, or tissue by coroners; Intent based on coroner's findings; if evidence (suicide note or very high drug consumption), panel considered death intentional.	Rural were less likely to have an oxycodone-related suicide: RR=0.7, no significance reported
Sankaranaray anan et al., 2010[61]	Patients who died by suicide within any of the 3 adult public mental health services belonging to the southern region of the Hunter New England Mental Health Service, New South Wales	44 suicides	Cross-sectional	The RRMA classification: includes seven categories based on population density and index of remoteness	compulsory root cause analysis conducted by a committee based on narrative of event, contributing factors,	Rural patients had 2.7 times higher rates of suicide, $p<0.05$;

*DNS=Does not specify

eTable 2: Primary Outcome: Attempted Suicide

Author and year	Study Population	Sample Size	Study Design	Rurality Definition	Suicide Attempt Definition	Findings
Canada						
Bethell et al., 2013[25]	Ages 12-17 in Ontario	243, 9939; 16, 835 self-harm incidents across 12, 907 youth	Cross-sectional	Community size; based on Statistics Canada definition: Population less than 10 000, 10k-100k, 100-500k, 500k-1.5M, 1.5M+) ; community size based on Statistics Canada Postal Code Conversion File; classified using continuum	Using 2 different definitions: 1. ICD-10 codes for self-harm (X60-84); 2. Same as 1 but also includes any codes for poisoning, undetermined attempt, or contact with sharp object (ICD-10: Y10-Y19, Y28)	Rates of self-harm are higher in rural areas compared to more urban areas. Definition 1: Self-harm rates in towns <10, 000 are 323.0 per 100, 000 compared to 131.6 per 100, 000 in cities greater than 1.5 million people. Definition 2: 439.9 per 100, 000 (rural) vs. 185 per 100, 000 (urban)
Neufeld et al., 2015[26]	Ages 60+ living in home care setting in Ontario	219, 723 individual home care records; 290 intentional self-harm events	Cohort	Statistics Canada definition from 1981-2011 based on postal codes; rural is living outside centres with a population of 1,000 and outside areas with 400 persons per square kilometre; classified as rural vs. urban	ICD-10-CA (X60-X84); not solely restricted to primary diagnostic types; used most recent record	Rural are more likely to attempt suicide than urban females (HR=1.50, 95%CI=1.01-2.23) and there was also a significant interaction between rurality and sex where rural males were significantly less likely to attempt suicide (interaction term: HR=0.39, 95%CI=0.18-0.81).
United States						
Goldman-Mellor et al., 2017[62]	Ages 12-17	4, 616	Cross-sectional multi-wave	CLARITAS data; based on population density of the household's ZIP code and surrounding areas	self-report via phone interview	Rural less likely to report a past-year suicide attempt (OR = 0.17, 95% CI = 0.05-0.66) and less likely to report lifetime suicidal behaviour (OR=0.69, 95%CI=0.26-1.85)

Author and year	Study Population	Sample Size	Study Design	Rurality Definition	Suicide Attempt Definition	Findings
Goodwin and Taha, 2014[63]	Ages 15-54	8, 098	Cross-sectional	Household survey. A question was asked of all participants about what sort of environment they were raised in for the majority of their childhood. Answers were: (i) rural; (ii) small town; (iii) moderate size town; (iv) suburbs; (v) city; or moved around a lot. dichotomized to rural vs. all other	survey: participants asked whether they had ever attempted suicide	No difference between rural and urban (OR=0.72 (0.45-1.16)
Husky et al., 2012[64]	Ages 13-18	10, 123	Cross-sectional	metropolitan, other urban, rural; does not say how these were defined	assessed by asking in computer-assisted face-to-face interviews, “Have you ever seriously thought about killing yourself?”	There were no significant differences found between urban and rural (urban vs rural: OR=1.24, 95%CI=0.65-2.37)
Maimon and Kuhl, 2008[65]	Students in grades 7-12, that attend public school	6, 369	Cross-sectional	Population density	Answer to question "During the past 12 months, how many times did you actually attempt suicide?	As urbanicity (population density) increases, number of suicide attempts decrease (coefficient=-0.051, se=0.025) event RR=0.949 for full model; $p<0.05$;
Swahn et al., 2010[66]	Students in grades 9-12 in public, private and Catholic schools	15, 214	Cross-sectional	Based on the location of school attended. Urban schools are in a Metropolitan Statistical Area (MSA) and in the central city; a suburban school is in an MSA, but outside the central city and a rural school is outside a MSA	Answer to: did you attempt suicide one or more times in the past 12 months?	Suicide attempts did not appear to differ between rural and urban. urban: 8.47%, Suburban: 8.66%, rural: 7.38%; no significance reported.

Author and year	Study Population	Sample Size	Study Design	Rurality Definition	Suicide Attempt Definition	Findings
Thompson and Laney, 2011[67]	Students in grades 7-12	13, 558 in wave 2 and 10, 282 in wave 3	Cross-sectional	Urban vs. rural farm and nonfarm areas	Respondents were asked whether they had attempted suicide in the 12 months prior to the survey.	Rural were not more likely to attempt suicide: (OR=1.09, 95%CI=0.84-1.41) at wave 2 and OR=0.97, 95%CI=0.65-1.44) at wave 3
United Kingdom						
Congdon, 2013[48]	Living in England	6, 781 output areas	Ecological	based on % green space, road distance to a Post Office, road distance to a food shop, road distance to a General Practitioner, road distance to a primary school, and population density	ICD10 codes X60 to X84. .	Rural have lower self-harm rates (linear regression model: β3 = −0.081 (−0.092, −0.069) (more rural=less self-harm); nonlinear effect
Harriss and Hawton, 2011[68]	Ages 15-64 presenting at John Radcliffe Hospital; had to reside in catchment area	6, 833 incidents; 4, 054 people	Cross-sectional	Based on ward; Based on the Office for National Statistics (ONS) Rural and Urban Area Definition: based on population size.	Intentional self-injury or self-poisoning through Oxford Monitoring System for Attempted Suicide	Urban rates are higher than rural rates among both males and females; both male and female: IRR=1.26 (95%CI=1.1-1.44); male: 1.29 (95%CI=1.1-1.5), female: 1.25 (95%CI=1.1-1.4);
Australia						
Mitchell et al., 2010[57]	resident of New South Wales	32, 939 self-harm incidents	Cross-sectional	Enhanced Accessibility/ Remoteness Index of Australia, classification (ARIA+13): based on road distance to service centre and population size	based on hospital admission data; Wales; principal diagnosis ICD-10-AM S00-T98, external cause code ICD-10-AM V00-Y98	Rural has higher rate of admissions for self-harm compared to rural: Standardized admission ratio= 1.15 (95% CI=1.10-1.19), p<0.0001);

*DNS=Does not specify

eTable 3: Secondary Outcome: Help-seeking

Author and year	Participants	Sample Size	Findings
Canada			
Neufeld et al.[26]	Ages 60+ living in home care setting in Ontario		Of those with attempted suicide, 39% of rural residents had an overnight hospital visit in the 90 days prior to the suicide attempt, compared to 38.2% of urban. 29.3% of rural residents had an ED visit, compared to 25.3% of urban residents.
Rhodes et al, 2008[69]	Ages 12-64 living in Ontario; engaged in self-poisoning and presented at an emergency room	8, 914	Rural residents that presented with deliberate self-poisoning were less likely to have had ambulatory psychiatric contact within the previous 12 months self-poisoning: 72.4% of rural patients had no outpatient psychiatric contact compared to only 59.5% of urban patients ($p<0.0001$).
United States			
Fontanella et al., 2017[70]	Ages 19-65, enrolled in Medicaid	1, 338 suicides	Rural are less likely to seek help for mental health (OR=0.40 (95% CI=0.22-0.72, p=0.002) but not significantly less likely to seek general medical help (OR=0.96, 95% CI = 0.62-1.48)
Searles et al., 2014[2]	Completed suicide in one of 16 states; those with unknown suicide circumstances excluded	17, 504	People from rural counties less likely to receive mental health care current and prior treatment; Current treatment: (OR=0.85, 95%C=0.75-0.96); Prior treatment: (OR=0.74, 95%CI=0.65-0.83)
United Kingdom			
Leavey et al., 2016[71]	Completed suicide in Northern Ireland	361 suicides	No differences in help-seeking at 30 days or 3 months prior; those from smaller towns less likely to see GP 1 year prior to suicide for mental health problems (OR=0.23, 95%CI=0.08-0.66) than urban but no difference for most rural group; mean GP consultations related to mental health problems higher in large towns than rural or urban (mean=5.38 for urban, mean=8.42 for large town, small town and rural combined mean=5.52, p=0.017)
Stark et al., 2012[72]	National Health Service (NHS) Highland residents who died from suicide in Scotland	177 suicides	32% of urban had mental health service contact 1 month prior to death compared to 21% small town/accessible rural and 11% rural/remote, $p<0.01$; This trend is consistent for other times periods of one year and lifetime; There was no difference for GP contact; Those in the two rural categories were less likely to have had a general hospital admission in the year before their death than those in urban areas ($p<0.05$)

Author and year	Participants	Sample Size	Findings
Australia			
Kõlves et al., 2012[73]	Ages 35+ and living in Queensland	334	Those living in rural areas were less likely to visiting a GP prior to suicide compared to urban (68.8% vs. 77%), but this was not significant. There were no significant differences in visiting a psychiatrist prior to suicide between rural and urban (31.3% vs. 28.4%). Multiple contacts did not differ between rural and urban suicide cases (42.9% in rural and 48% in urban).
Sankaranarayanan et al., 2010[61]	Patients who died by suicide within any of the 3 adult public mental health services belonging to the southern region of the Hunter New England Mental Health Service, New South Wales	44	Rural and urban not significantly more or less likely to have been an inpatient vs. never admitted; time since last mental health contact did not differ either

eTable 4: Secondary Outcome: Mental illness diagnosis

Author and year	Participants	Sample Size	Findings
Canada			
Rhodes et al, 2008[69]	Ages 12-64 living in Ontario; engaged in self-poisoning and presented at an emergency room	8, 914	22.7% of rural patients with deliberate self-harm had a possible or probable diagnosis of nonorganic psychosis prior to the self-harm incident compared to 30.4% of urban patients, no significance reported.
Neufeld et al, 2015[26]	Ages 60+ living in home care setting in Ontario	219, 723 individual home care records; 290 intentional self-harm events	19.5% or rural patients with self-harm had a prior psychiatric diagnosis compared to 35.3% of those from urban areas (no significance). 7.3% or rural patients had alcohol use or dependence compared to 4.8% of those from urban areas ($p<0.05$)
United States			
Searles et al., 2014[2]	Completed suicide in one of 16 states; excluded unknown suicide circumstances	17, 504	Rural decedents were less likely than urban decedents to have a mental health diagnosis (OR=0.70, 95%CI=0.62-0.79).
United Kingdom			
Leavey et al., 2016[71]	Completed suicide in Northern Ireland	361 suicides	There were no differences for common mental disorders, severe mental illness, and alcohol/drug related diagnoses between urban and rural, except for large towns being less likely than urban centres to have a diagnosed common mental disorder (OR=0.45, 95%CI=0.22-0.91).
Stark et al., 2012[72]	NHS Highland residents who died from suicide in Scotland	177 suicides	Those from rural areas are less likely to have a lifetime history of deliberate self-harm (urban: 57%, rural: 30%, $p>0.05$) and less likely to have a diagnosed psychiatric illness (urban: 87%, rural: 57%, $p<0.001$). There was no significant difference for substance misuse (urban: 64% rural: 55%, not significant).
Australia			
Kõlves et al., 2012[73]	Ages 35+ and living in Queensland	334	There was a higher prevalence of psychiatric diagnoses in rural cases (84% vs. 70%, $\chi^2=3.77$, $p=0.05$). Anxiety disorders were more common among rural (40% rural, 20% urban, $\chi^2=8.00$, $p=0.005$).

eTable 5: Secondary Outcome: Suicide Means

Author and year	Participants	Sample Size	Findings
Canada			
Burrows et al., 2013[29]	Ages 25+	273, 5152	Rural are more likely to complete suicide by hanging (HR=1.48, 95% CI=1.01-2.16) and by firearm (OR=3.43, 95%CI=2.35-5.00); no significant differences for completed suicide by poisoning (OR=0.62, 95%CI=0.36-1.08) and completed suicide by jumping (OR=0.84, 95% CI=0.34-2.08) but for all other rural classifications, rural significantly less likely to complete suicide through falling (ex., weak urban influence vs. most urban OR=0.39 (95% CI=0.19-0.81)
United States			
Fontanella et al., 2015[3]	Ages 10-24	3, 141 counties; 66595 suicides	Rates of suicide by firearm were higher in rural areas (males: 11.87 per 100, 000 vs. 4.42 per 100,000; females: 1.44 per 100, 000 vs. 0.44 per 100, 000). Rates of suicide by hanging and suffocation were also higher in rural areas (males: 6.85 vs. 4.21 per 1000, 000; females: 2.43 vs. 1.33 per 100, 000). These urban-rural differentials increase over time, particularly for males.
Ivey-Stephenson et al., 2017[36]	Ages 10+	545, 155 suicides	Suicide rates by firearms in nonmetropolitan/rural counties were almost two times that of rates in larger metropolitan counties (10.53 per 100, 000 vs. 5.39 per 100, 000 for rural vs urban); there were no significant differences for poisoning, hanging and other methods.
McCarthy et al., 2012[40]	VA patients ages 18+ who had an inpatient or outpatient encounter with VA in the previous year before the year of follow-up	~5.5 million in each cohort	Firearm methods were more likely in rural than in urban areas (77% vs 61%). For both male and female suicide decedents, the percentage of suicides by firearms was greater in rural than in urban areas. The rates of suicide for rural appear to also be higher for hanging (3.66 vs. 3.12 per 100, 000), drug poisoning (1.80 vs. 1.70 per 100, 000), and nondrug poisoning (0.56 vs. 0.50 per 100, 000). They appear to be lower for other methods (not specified) (0.77 vs. 1.21 per 100, 000).
Nance et al.[42]	Ages 0-19 and firearm-related death	23, 649 total firearm-related deaths, including 7, 082 firearm-related suicides	Rates of suicide higher among rural for firearm-related suicides (RR=2.01 95% CI: 1.43–2.83)
Nestadt et al., 2017[43]	Ages 15+ in Maryland	6, 196 suicides	Firearm-related suicides were higher among rural males (IRR=1.36, 95%CI=1.09-1.69) than urban, but non-firearm suicides were not higher (IRR=0.97, 95%CI=0.75-1.26), suggesting that firearm related suicides are more common in rural areas. Firearm-related suicides were not higher among rural females (RR=0.74, 95%CI=0.36-1.49).

Author and year	Participants	Sample Size	Findings
Searles et al., 2014[2]	Completed suicide in one of 16 states; those with unknown suicide circumstances excluded	17, 504	Rural people were more likely to use firearms as a means of suicide (OR=1.99, 95% CI=1.76-2.24). They were less likely to use hanging (OR=0.66, 95%CI=0.57-0.76), poison (OR=0.71, 95%CI=0.60-0.84) and other means of suicide (OR=0.44, 95%CI=0.32-0.60).
Australia			
Qi et al., 2014[59]	General population	45, 293 suicides	Those living in rural areas were more likely to use firearms (4.22 per 100, 000 vs. 1.31 per 100, 000) across all age groups. Poisoning methods by solid or liquid substances were higher in urban areas (1.40 per 100, 000 vs. 2.07 per 100,000 among all age groups. Gases and vapours were similar between groups (rural vs. urban: 2.51 vs. 2.56 per 100, 000) and hanging appears to be similar (4.38 vs. 4.27 per 100, 000).
Sankaranarayanan et al.[61]	Patients who died by suicide within any of the 3 adult public mental health services belonging to the southern region of the Hunter New England Mental Health Service, New South Wales	44	Urban more likely to jump from heights, but no significant differences for hanging, overdose, firearms, and other.
Tait and Carpenter, 2009[74]	Died in Queensland and had closed coroner's report	567 suicides	Rural people were more likely to complete suicide with firearms than urban Queenslanders (6.6% of urban people vs. 15.7% of urban people, $\chi 2\ 0.01 = 9.61 > 6.64$).
Koo, YW. et al., 2017[75]	Age 65+	1, 086 suicides	Rural are more likely to use firearms (OR=10.39, 95%CI = 5.33-20.27), less likely to use drugs poisoning (OR=0.18, 95%CI=0.04-0.80), and there were no significant differences for hanging, suffocation, and drowning.

eTable 6: Meta-analysis results by country

Outcome	Country	Number of Studies	Risk Ratio (95% Confidence Interval)
Completed Suicide (both sexes)	United States	5	1.23 (1.10, 1.37)
	Canada	1	1.20 (0.80, 1.80)
	Australia	2	1.20 (0.95, 1.51)
	United Kingdom	1	1.20 (0.93, 1.55)
	Overall	9	1.22 (1.11, 1.33)
Completed Suicide (Male)	United States	5	1.29 (1.03, 1.61)
	Canada	2	1.63 (0.99, 2.69)
	Australia	4	1.52 (1.37, 1.68)
	United Kingdom	1	1.11 (1.02, 1.21)
	Overall	12	1.41 (1.21, 1.64)
Completed Suicide (Female)	United States	4	1.13 (0.82, 1.57)
	Canada	2	1.46 (1.25, 1.71)
	Australia	4	1.10 (0.81, 1.49)
	United Kingdom	1	1.03 (0.89, 1.20)
	Overall	11	1.16 (0.98, 1.37)
Attempted Suicide	United States	4	0.73 (0.46, 1.15)
	Canada	1	1.50 (1.01, 2.23)
	Australia	1	1.15 (1.11, 1.20)
	United Kingdom	1	0.79 (0.69, 0.91)
	Overall	7	0.93 (0.73, 1.19)

eTable 7: Risk of Bias Analysis

Paper	Study Design	Outcome	Newcastle-Ottawa Scale
Baeseman[32]	Cross-sectional	Completed Suicide	8
Britton et al.[33]	Cohort	Completed Suicide	6
Burrows et al.[28]	Cohort	Completed Suicide	8
Congdon 2013	Cross-sectional	Completed Suicide	4
Dummer et al.[29]	Cross-sectional	Completed Suicide	5
Fontanella et al.	Cross-sectional	Completed Suicide	8
Gartner 2011	Cross-sectional	Completed Suicide	7
Goldman-Mellor et al., 2017[61]	Cross-sectional	Attempted Suicide	5
Goodwin and Taha, 2014[62]	Cross-sectional	Attempted Suicide	4
Harriss and Hawton, 2011[67]	Cross-sectional	Attempted Suicide	7
Husky et al., 2012[63]	Cross-sectional	Attempted Suicide	4
Kposowa et al.	Cross-sectional	Completed Suicide	6
Kõlves et al. 2015[54]	Cross-sectional	Completed Suicide	6
Lagacé et al. and Pong et al.[27,30]	Cross-sectional	Completed Suicide	8
McCarthy et al.	Cohort	Completed Suicide	7
Milner et al.[55]	Cross-sectional	Completed Suicide	7
Mitchell et al.	Cross-sectional	Completed and Attempted	7
Myers et al. 2013 [43]	Cross-sectional	Completed Suicide	6
Nance et al.[41]	Cross-sectional	Completed Suicide	6
Nestadt et al.	Cross-sectional	Completed Suicide	7
Neufeld et al.[25]	Cohort	Attempted Suicide	7
O'Reilly	Cohort	Completed Suicide	8
Ostry et al.[26]	Cross-sectional	Completed Suicide	7
Page et al. 2007	Cross-sectional	Completed Suicide	8
Qi et al. 2014	Cross-sectional	Completed Suicide	5
Singh et al., 2013[44]	Cross-sectional	Completed Suicide	6
Singh et al. 2014	Cross-sectional	Completed Suicide	7
Thompson and Laney, 2011[66]	Cross-sectional	Attempted Suicide	1

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