



National Indigenous
Fire Safety Council Project

Projet du conseil national
autochtone de la sécurité-incendie

National Indigenous Fire Safety Council (NIFSC) Mortality & Morbidity related to Fires and First Nations People, Metis and Inuit

Presented to Indigenous Services Canada
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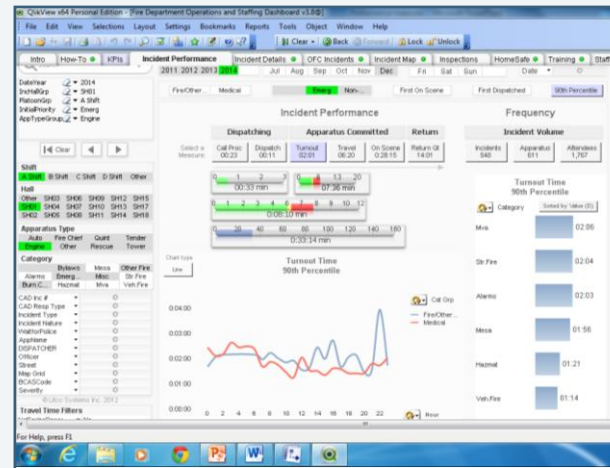
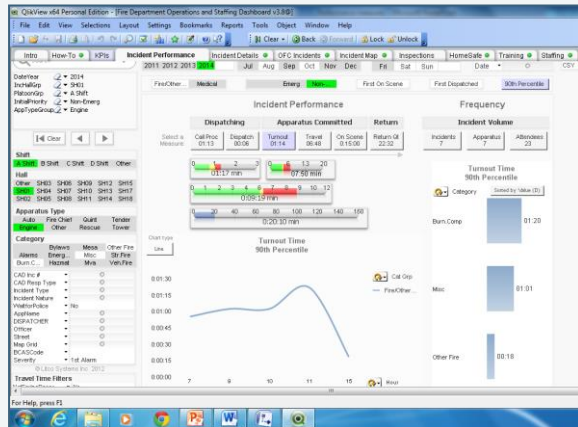
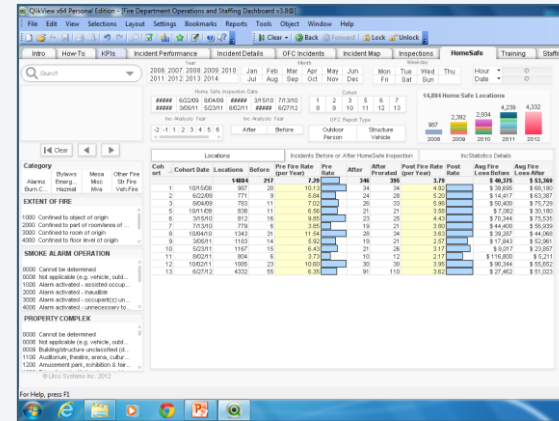
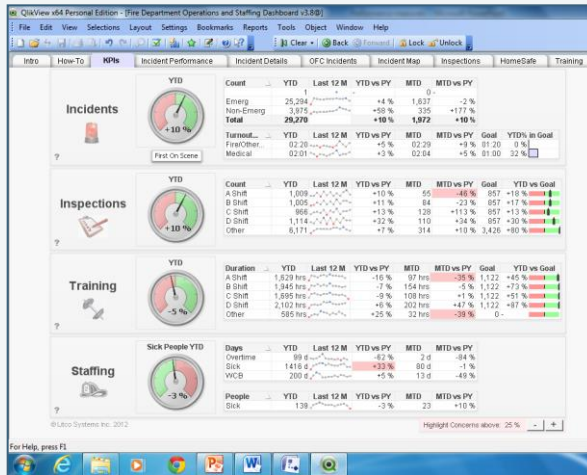
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Measuring What Matters

KPI



Performance Management: Future State KPI Dashboards



What do we know about Morbidly in the Indigenous Population

National Indigenous Fire Safety Council have made available programs and services in the following areas:

1. Community Fire Safety
2. Community Governance Support
3. Community Infrastructure and Engineering Support
4. Fire Department Management
5. Fire Inspection Services
6. Fire Investigation Services
7. Fire Department Operations

The goal of the NIFSC is to create a framework where we can identify and capture data that will then enable us to implement programs and services that reduce injuries and death.



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What do we know about Morbidity in the Indigenous Population – The Challenges.....

Collection of fire incident data has commenced using the National Incident Reporting System (NIRS) , Home Safety Assessments (HSA) and Fire Department Assessments (FDA)

Data collected from these sources will direct when, where and what programs will be best suited to support communities and reduce fires and related deaths and injuries

The research underway will be informed by data collection, analysis, and best practices that will allow more precision

The future state will apply surveillance tools to monitor and adjust programs and services as needed



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What Do We Know About Morbidly in the Indigenous Population

- 1991 - 2001 in BC Fire Related Mortality was 9 times higher than non-indigenous people to rest of B.C's Population
- 2007 - 2011 in BC Fire Related Mortality was 4 times higher than non-indigenous people of B.C's Population
- 2007 - Canada Mortgage and Housing Corporation Mortality was 10.4 times than non-indigenous people
- 2021 – Stats Canada Mortality was 5.3 times higher in Canada , 10.6 times on a Reserve in Canada and 17.6 times higher for Northern Canada or Inuit
- We do not have finite geospatial information nor basic causations (Retrospective Data) , except to say we know non-indigenous Mortality and Mobility rates are much lower and would be desirable to achieve



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What Do We Know About Morbidly in the Indigenous Population

- Programs and services will take time (5 to 8 years) to mature then will achieve optimum measurable results , then maintenance is needed just like (seatbelts and immunization)
- We have recognized there are notable benefits in reducing death, injuries and fire rates from a well managed Smoke Alarm Program.
- We have observed an uptake in British Columbia (Office of the BC Fire Commissioner Data) and (Ontario Chief Corners Table on Understating Fire Deaths in First Nations) from Fire Deaths associated with the absence of working smoke alarms.
- Research predicts mortality can be reduced by as much as 50% when fire occurs, and a working smoke alarm is present.
- The following slides will help to understand this problem is present in both indigenous and non-indigenous populations In Canada.



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Fire statistics in Canada, Selected Observations from the National Fire Information Database 2005 to 2014



Prepared by the Canadian Centre for Justice Statistics
for the Canadian Association of Fire Chiefs

September 2017



Statistics
Canada

Statistique
Canada

Canada

NFID coverage (6 provinces) as a percentage of the Canadian population, July 1, 2014

Jurisdiction	Population, July 1, 2014		NFID population coverage	
	number	percent	number	percent
Newfoundland and Labrador	528,333	1.5	0	0.0
Prince Edward Island	145,832	0.4	0	0.0
Nova Scotia	943,294	2.7	0	0.0
New Brunswick	754,865	2.1	754,865	2.1
Quebec	8,214,503	23.1	0	0.0
Ontario	13,685,171	38.5	13,685,171	38.5
Manitoba	1,280,953	3.6	1,280,953	3.6
Saskatchewan	1,121,285	3.2	1,121,285	3.2
Alberta	4,108,283	11.6	4,108,283	11.6
British Columbia	4,645,261	13.1	4,645,261	13.1
Yukon	36,872	0.1	0	0.0
Northwest Territories	43,889	0.1	0	0.0
Nunavut	36,023	0.1	0	0.0
Canada/NFID Total	35,544,564	100.0	25,595,818	72.0



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Number and proportion of reported structural, vehicle and outdoor fire incidents,
6 jurisdictions, 2005 to 2014¹

Year	Structural fires		Vehicle fires		Outdoor fires		Unknown ²	Total fire incidents
	number	percent	number	percent	number	percent	number	number
2005	23,580	52	9,445	21	12,457	26	3,226	48,708
2006	23,367	53	8,960	20	12,070	25	3,018	47,415
2007	24,082	53	8,715	19	12,625	26	3,083	48,505
2008	22,418	55	8,511	21	9,894	23	2,291	43,114
2009	19,896	56	7,896	22	7,914	18	9,396	45,102
2010	18,996	57	6,979	21	7,195	16	11,508	44,678
2011	19,412	60	7,173	22	6,005	14	10,500	43,090
2012	18,528	57	6,485	20	7,261	16	12,731	45,005
2013	17,546	61	6,151	21	5,075	14	8,422	37,194
2014	17,507	62	6,054	21	4,858	13	8,026	36,445
Total	205,332	56	76,369	21	85,354	19	72,201	439,256

1. Six jurisdictions in Canada provided ten years of fire incident data to the National Fire Information Database (NFID) - New Brunswick, Ontario, Manitoba, Alberta, British Columbia and the Canadian Armed Forces. Saskatchewan also provided data to the NFID, however they were for only 2012 to 2014, so their data have not been included in this table.

2. New Brunswick did not provide information on the property classification of fire incidents in the province. Their counts are included under "Unknown".

Notes: Incidents where the property type was unknown were excluded from the calculation of percentages. Totals may not add to 100% due to rounding.

Source: Statistics Canada, Canadian Centre for Justice Statistics, National Fire Information Database



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What do we know about Smoke Alarms and Mortality in the Non-Indigenous Canadian Population

Performance of smoke alarm device where death occurred resulting from fire, 4 jurisdictions, 2005 to 2014¹

Year	Performance of smoke alarm device										
	No smoke alarm		Alarm activated		Alarm did not activate		Unknown		Total no smoke alarm, not activated, unknown		Total deaths
	Number of deaths										
number	percent	number	percent	number	percent	number	percent	number	percent	number	
2005	26	15	29	16	25	14	96	55	147	84	176
2006	41	25	26	16	16	10	78	48	135	84	161
2007	50	26	29	15	10	5	104	54	164	85	193
2008	47	21	34	16	17	8	121	55	185	84	219
2009	33	16	35	17	20	10	115	57	168	83	203
2010	27	16	21	12	23	14	98	58	148	88	169
2011	36	21	27	16	24	14	85	49	145	84	172
2012	22	15	28	19	16	11	83	56	121	81	149
2013	26	18	28	20	8	6	79	56	113	80	141
2014	35	23	19	13	8	5	88	59	131	87	150
Total	343	20	276	16	167	10	947	55	1,457	84	1,733

1. Four jurisdictions in Canada provided 10 years of casualty data to the National Fire Information Database (NFID) - Ontario, Manitoba, Alberta, and British Columbia. New Brunswick and Saskatchewan also provided casualty data to the NFID, however they covered only 6 years and 3 years respectively, so their data have not been included in this table.

Source: Statistics Canada, Canadian Centre for Justice Statistics, National Fire Information Database

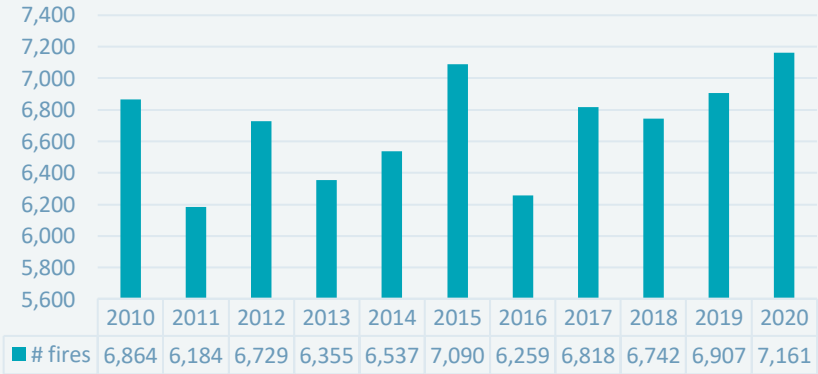
84% of the Deaths in Canada had No or Unknown Smoke Alarm Function



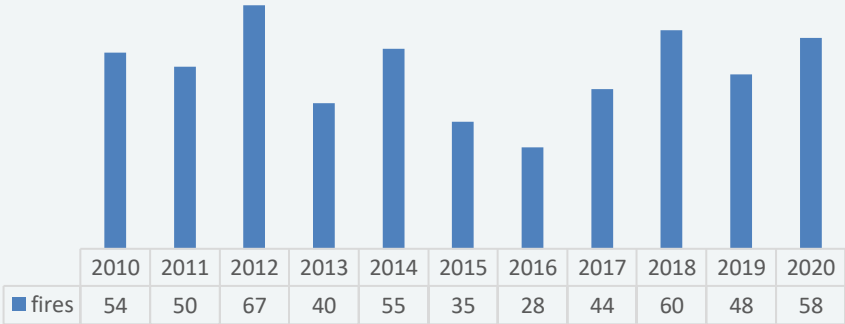
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What Do We Know About Smoke Alarms and Mortality in the Indigenous & Non-Indigenous Canadian Population

Fire = Non- First Nations British Columbia
2010 - 2020



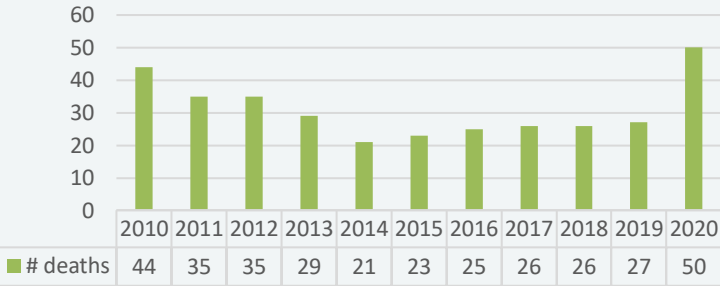
British Columbia Fires Reported to the BC Fire
Commissioner - First Nations 2010 - 2020



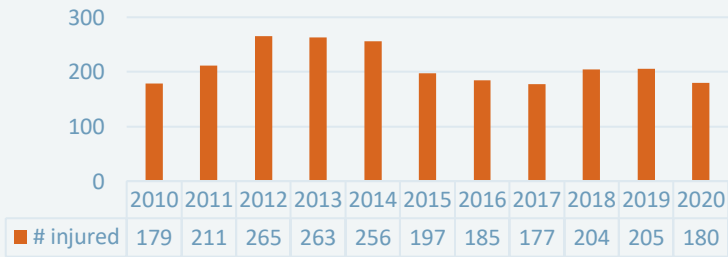
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What Do We Know About Smoke Alarms and Mortality in the Indigenous & Non-Indigenous Canadian Population

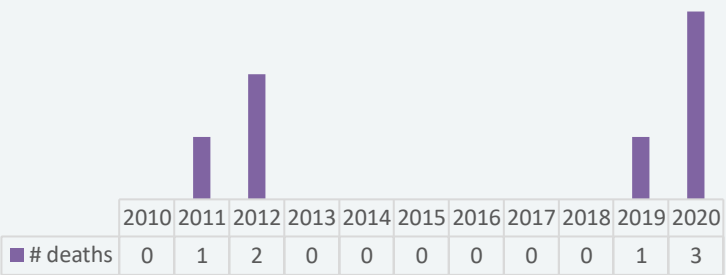
Fire Deaths = Non-First Nations British Columbia 2010 - 2020



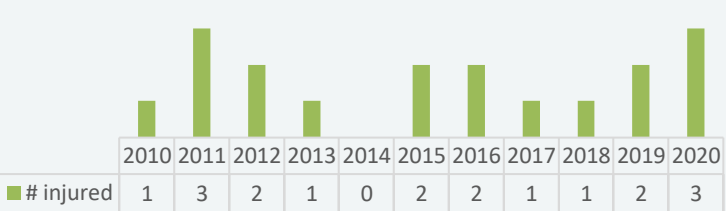
Fire Injuries = Non- First Nations British Columbia 2010 - 2020



Fire Deaths Reported First Nations British Columbia - 2010 - 2020 (n=7)

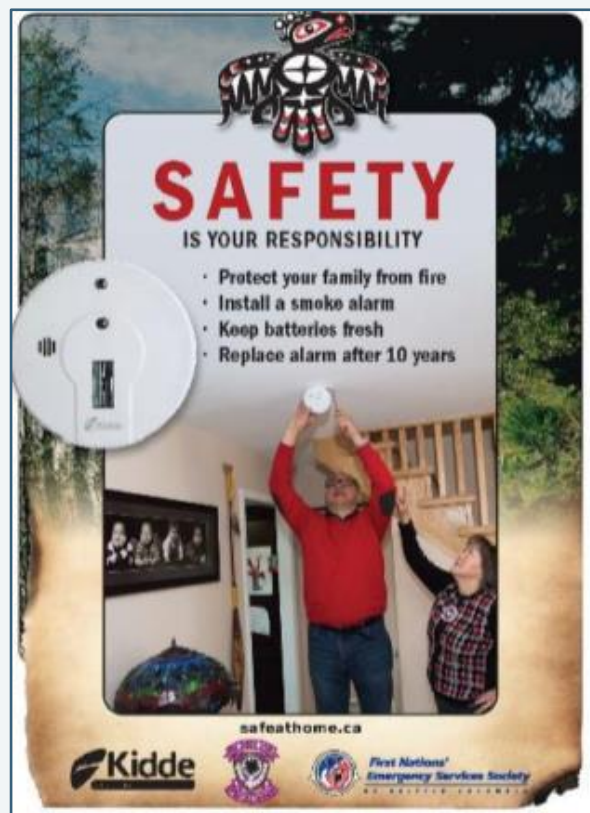
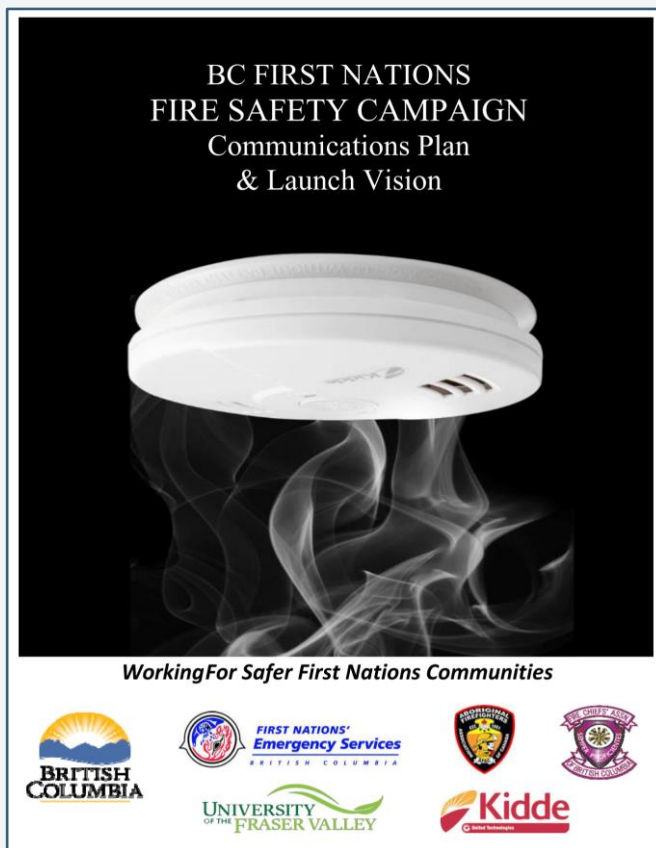


Fire Injuries Reported First Nations British Columbia 2010 - 2020 (n=18)



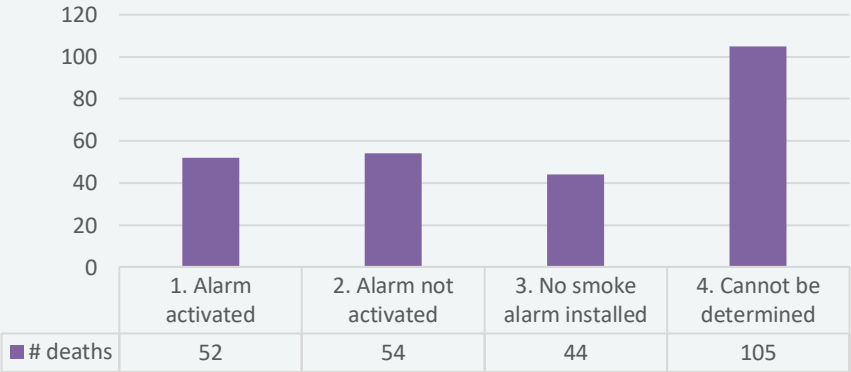
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BC First Nations Fire Safety Campaign started in 2012 installed estimated 20,000 Smoke Alarms



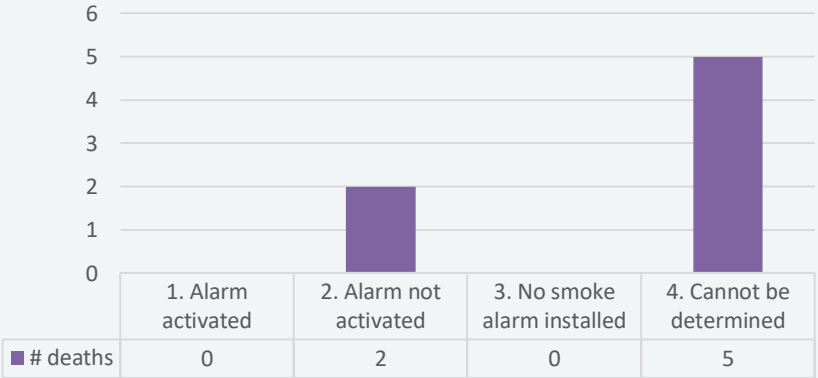
What Do We Know About Smoke Alarms and Mortality in the Indigenous & Non-Indigenous Canadian Population

Fire Deaths Non- First Nations British Columbia Population 2010 – 2020
(Deaths n=226)



77% of the Deaths had No Working Smoke Alarm

Fire Deaths First Nations British Columbia Population 2010 - 2020 (Deaths n=7)



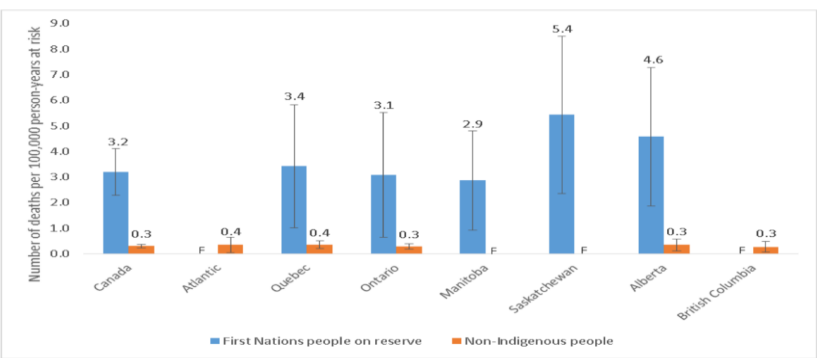
100% of the Deaths had No Working Smoke Alarm



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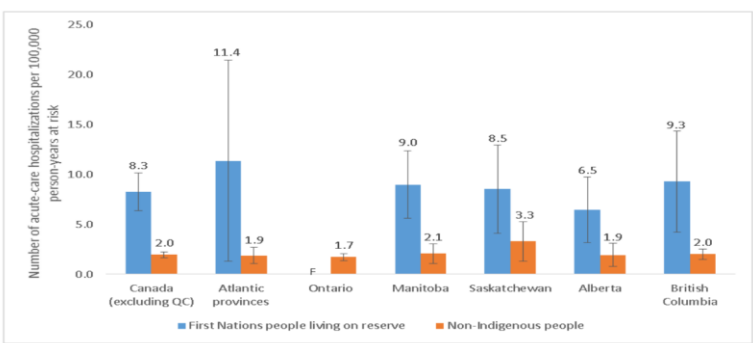
What Do We Know About Smoke Alarm Programs - Clues That This Works :

Figure 2. Age-standardized fire-related mortality rates (ASMR or number of deaths per 100,000 person-years at risk) among First Nations people living on reserve and non-Indigenous people, by province, household population aged 1 year or older, Canada, 2011-2018



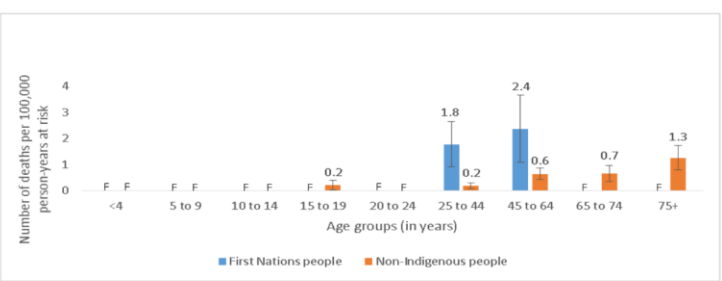
F: too unreliable to be published
Notes: 7.6 years of follow-up period: May 10, 2011 to December 31, 2018
Excluded from data: institutional population at time of census collection (e.g. nursing homes, jails), population living in collective households (e.g. motels, hotels, rooming houses), persons not enumerated by the 2011 National Household Survey.
Source: Statistics Canada, 2011 Canadian Census Health and Environment Cohort integrating the 2011 National Household Survey with Canadian Vital Statistics Database (2011-2018).

Figure 8. Age-standardized hospitalization rates (ASHR or number of acute-care hospitalizations per 100,000 person-years at risk) for fire-related injuries among First Nations people living on reserve and non-Indigenous people in Canada, by province and territory, household population aged 1 year or older, Canada (excluding Quebec), 2011/12-2016/17



F: too unreliable to be published
Notes: 5.9 years of follow-up period: May 10, 2011 to March 31, 2017
Excluded from data: institutional population at time of census collection (e.g. nursing homes, jails), population living in collective households (e.g. motels, hotels, rooming houses), persons not enumerated by the 2011 National Household Survey.
Source: Statistics Canada, 2011 Canadian Census Health and Environment Cohort integrating the 2011 National Household Survey with Discharge Abstract Database (2011/12-2016/17).

Figure 3. Age-specific fire-related mortality rates (number of deaths per 100,000 person-years at risk) among First Nations people and non-Indigenous people, by province, household population aged 1 year or older, Canada, 2011-2018

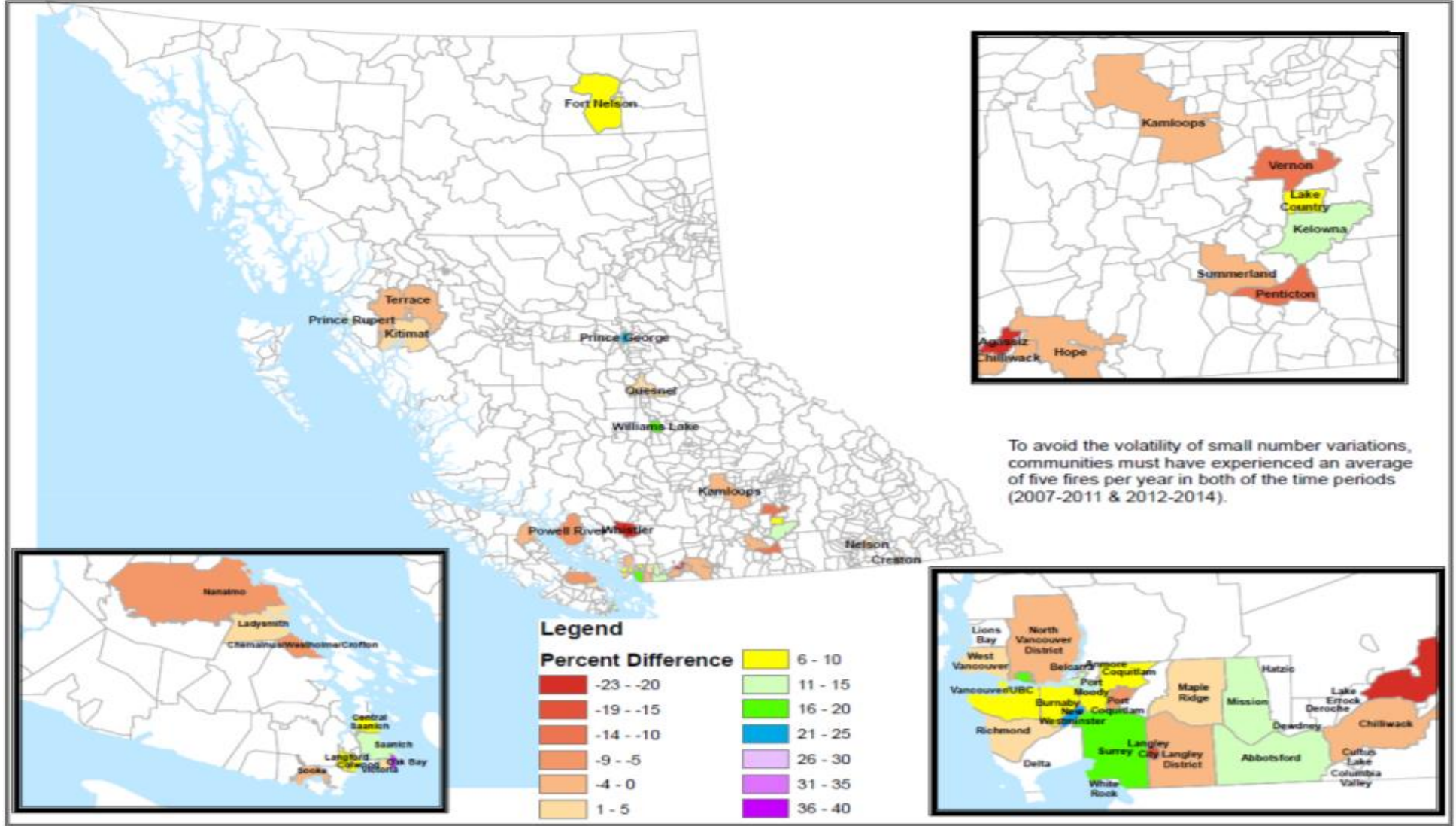


F: too unreliable to be published
Notes: 7.6 years of follow-up period: May 10, 2011 to December 31, 2018
Excluded from data: institutional population at time of census collection (e.g. nursing homes, jails), population living in collective households (e.g. motels, hotels, rooming houses), persons not enumerated by the 2011 National Household Survey.
Source: Statistics Canada, 2011 Canadian Census Health and Environment Cohort integrating the 2011 National Household Survey with Canadian Vital Statistics Database (2011-2018).



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FIGURE 7. PERCENTAGE POINT DIFFERENCE IN RESIDENTIAL STRUCTURE FIRES WITH A PRESENT, FUNCTIONING SMOKE ALARM, BC OFC, 2007-2011 VS. 2012-2014



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What Do We Know About Smoke Alarm Programs

Clues That This Works :

With respect to residential structure fires and the Smoke Alarm Movement that commenced in 2012:

Comparing the time period between 2007-11 with the time between 2012-14:

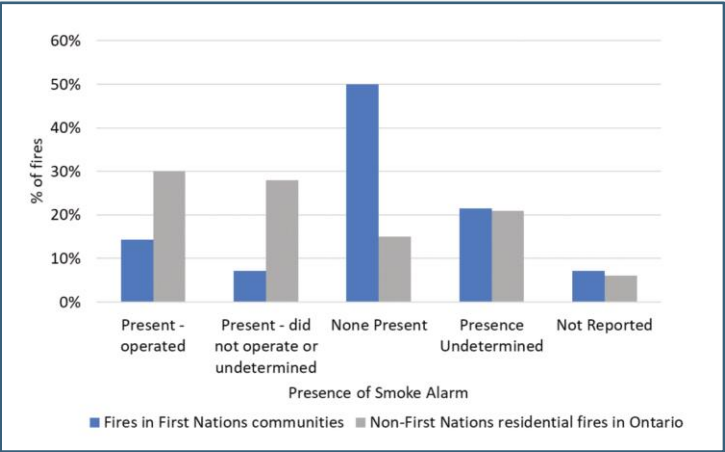
- Deaths per 100,000 citizens declined by 65%;
- Deaths per 1,000 fires declined by 37%;
- Present, functioning smoke alarms per 1,000 fires increased by 26%
- Fires without any smoke alarms decreased by 17%.

<https://cjr.ufv.ca/wp-content/uploads/2015/09/Smoke-Alarms-Revisited-Report.pdf>



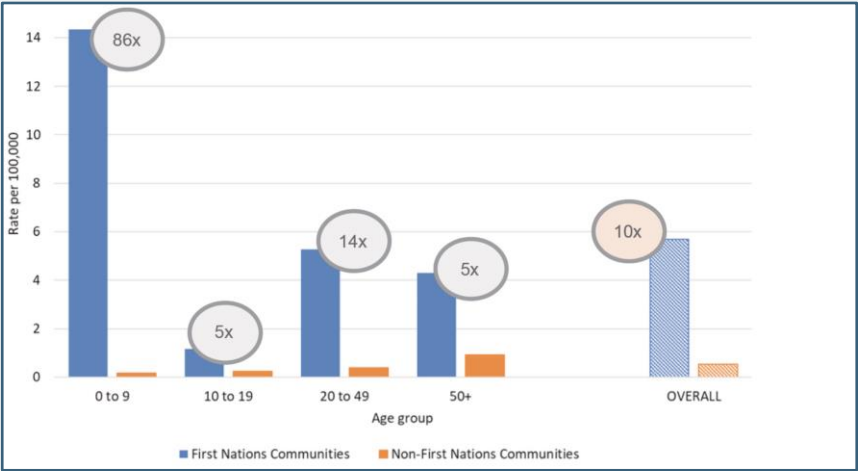
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What Do We Know About Smoke Alarms and Mortality in the Indigenous & Non-Indigenous Canadian Population – Ontario 2008 -2017



86% of the deaths did not have a working smoke alarm

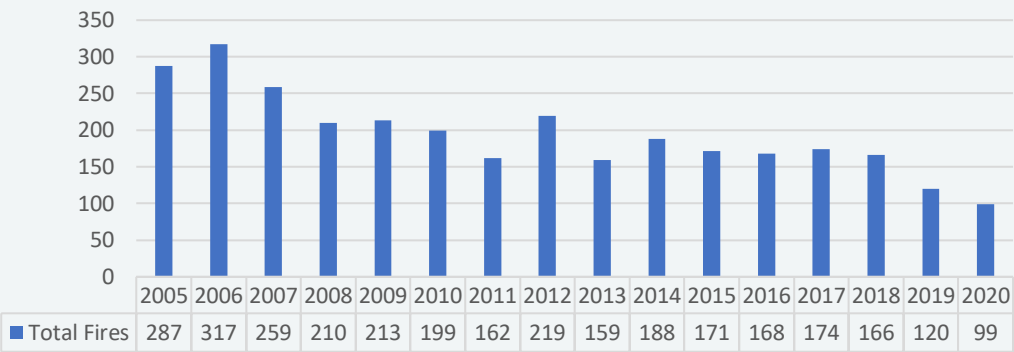
	Fires in Communities with year-round road access and a MTSA	Fires in Communities with year-round road access and no MTSA	Fires in Communities with no year-round road access	Total Fatal Fires in First Nations Communities
Number of fatal fires (% of fires)	9 (31%)	9 (31%)	11 (38%)	29
Number of fire fatalities (% of total deaths)	14 (25%)	16 (29%)	26 (46 %)	56
Number of communities (% of total communities)	6 (30%)	7 (35%)	7 (35%)	20



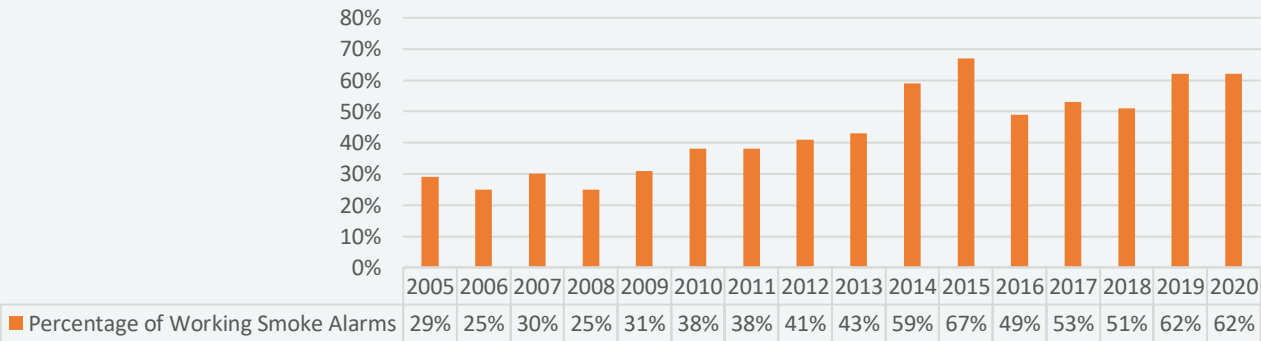
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What do we know about the best practice of managing an effective Smoke Alarm program : Case City of Surrey British Columbia

Surrey Fire Service Residential Fires 2005 - 2020



Surrey Fire Service Working Smoke Alarms at the Time of the Fire - Residential 2005 - 2020



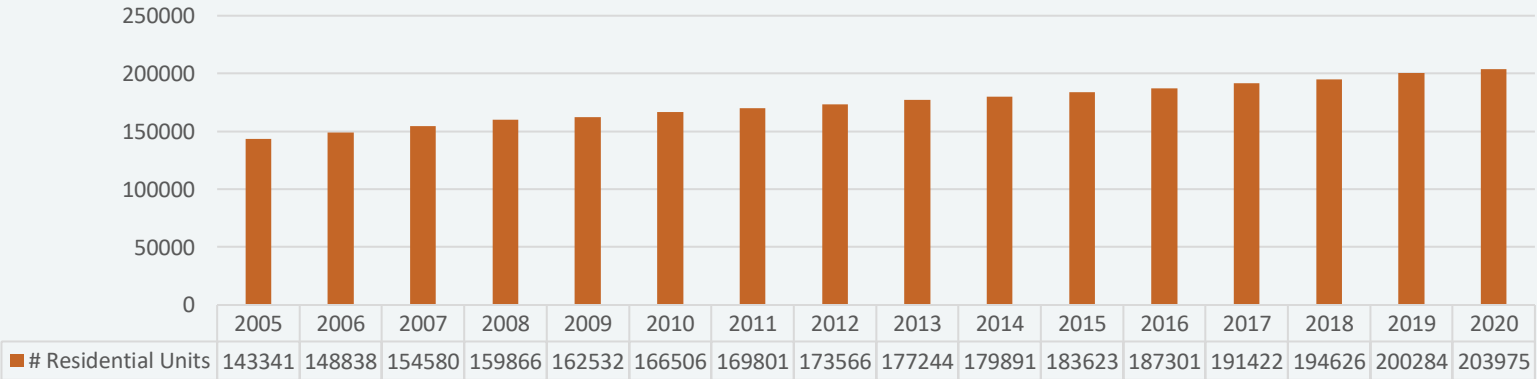
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What do we know about the best practice of managing an effective Smoke Alarm program : Case City of Surrey British Columbia

Surrey Fire Service Residential Fire Casualty 2005 - 2020

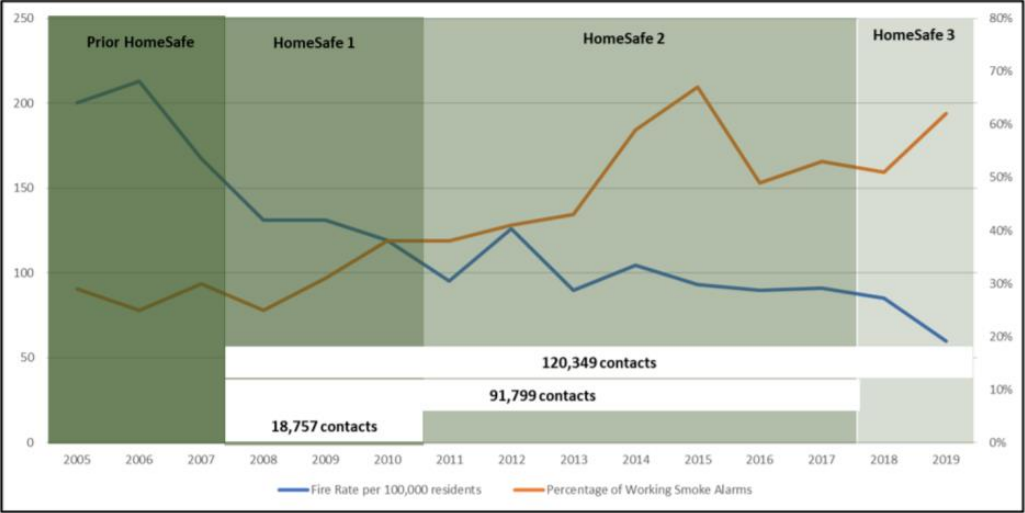


Surrey Fire Service Residential Unit 2005 - 2020



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What do we know about Smoke Alarm programs what work:



Fire rate per 1,000 dwellings per year across intervention and control groups [2]

Cohort	Addresses	Years Pre-	Years Post-	Intervention		Control	
				Fire Rate Pre-	Fire Rate Post-	Fire Rate Pre-	Fire Rate Post-
1	2,747	2	2.07	2.18	1.23	3.64	3.34
2	2,716	2.68	1.38	1.23	0	2.61	1.33
3	2,690	2.8	1.27	1.15	0.59	2.65	1.47
4	2,627	2.99	1.08	0.76	0.71	2.04	2.12
5	2,803	3.41	0.65	1.05	1.09	1.99	0
6	2,407	3.74	0.33	0.56	0	1	1.27
7	2,483	3.97	0.1	3.04	0	2.03	4.08
Total	18,473	3.09	0.98	1.43	0.52	2.28	1.95



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What do we know about Smoke Alarm programs what work:

Table 4. Fire rate per 1,000 occupied dwellings per year across Cohort 8 to Cohort 14

Cohort	Addresses	Intervention (Fire Rate per 1,000 occupied properties)		Rate Change	Pct of Fires			
		Pre-	Post-		Post 1 Yr	Post 3Yrs	Post 5 Yrs	Post 10 Yrs
8	2,789	3.76	0.8	-79%	24.0%	48.1%	64.0%	100%
9	2,672	2.25	0.82	-64%	11.5%	42.3%	61.5%	100%
10	2,772	2.17	1.12	-48%	20.7%	48.3%	76.0%	100%
11	1,918	1.82	0.87	-52%	5.0%	30.0%	60.0%	100%
12	2,359	4.03	1.28	-68%	35.3%	73.5%	79.4%	100%
13	8,387	3.3	1.27	-62%	29.1%	76.4%	93.7%	100%
14	511	0	0		0.0%	0.0%	0.0%	0.0%
Total	21,408	2.94	1.26	-57%	25.0%	63.2%	81.2%	100%



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What do we know about Smoke Alarm programs that work:

Table 7. Fire Rate per 1,000 Occupied Dwellings for HS Initiatives

Initiative	Addresses	Intervention (Fire Rate per 1,000 occupied properties per Year)		Rate Change	Pct of Fires			
		Pre-	Post-		Post 1 Yr	Post 3Yrs	Post 5 Yrs	Post 10 Yrs
HS Inspections/Smoke Alarm Installation by request	3,284	3.20	0.79	-75%	19.2%	65.4%	100.0%	100.0%
DOOR HANGER	8,740	2.00	2.24	12%	21.6%	78.4%	100.0%	100.0%
PACKAGE	4,630	2.05	2.35	15%	22.4%	67.3%	100.0%	100.0%
Smoke Alarm Verification at Incidents	15,814	1.77	0.61	-66%	40.6%	81.3%	98%	100.0%



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Conclusion:

- First Nations people, Metis, and Inuit experience significantly higher rates of mortality and morbidity relating to fires and burns compared to rates among non-Indigenous people.
- There is an uptake in fire deaths in BC and Ontario where there were no working smoke alarms.
- A national smoke alarm distribution and education program would quickly impact the on-reserve deaths rates
- Smoke Alarm distribution programs need to ensure smoke alarms are installed as part of the program. (not just distributed)
- Assuming a campaign occurs, a careful documentation is recommended for installation, housing conditions, including crowding.



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- <https://indigenousfiresafety.ca/wordpress/download/123/2020-2021/7273/moving-from-risk-assessment-to-risk-reduction.pdf>
- <https://indigenousfiresafety.ca/wordpress/download/123/2020-2021/7271/mortality-and-morbidity-related-to-fire-burns-and-carbon-monoxide-poisoning-among-first-nations-people-metis-and-inuit.pdf>



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