CCGA
Canadian Common Ground Alliance

DIRT Report 2019

October 2020

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Message from the Chair of the CCGA

On behalf of the CCGA Board of Directors, I am proud to deliver the CCGA's third annual, comprehensive, DIRT (Damage Information Reporting Tool) Report.

Protecting buried energy and utility networks from damage is critical to public, worker and community safety, the stability of our economy and the protection of our environment and since the early spring of 2020, challenges associated with doing so have increased with the global pandemic. COVID-19 introduced an entirely new set of hurdles for the construction industry and the owners of buried energy and utility networks. Across Canada, though, the commitment to safety continued. Measures, procedures and campaigns to enhance worker safety and public confidence in the locating and marking process were quickly implemented and have now simply become the norm. And after initially experiencing a slow start to the digging season, provincial One-Call centres are now reporting an increase in homeowner locate requests this year.

With many Canadians experiencing the damage prevention process for the first time, these enhanced safety procedures, including physical distancing, masks and signage promoting awareness of the locating and marking process, was a good first exposure to our industry's dedication to safety.

The DIRT report provides us with valuable information on the state of Damage Prevention in Canada. Unfortunately, reporting damages in DIRT remains voluntary; understating the true number and cause of damages in Canada. With this in mind, the CCGA continues to work toward comprehensive damage prevention legislation that includes mandatory damage reporting.

Sincerely,

Mr. Todd Scott
Chair of the CCGA Board of Directors

Introduction

Vast networks of conduits and cables lay underground, delivering products and services to today's society: telecommunication and electrical cables, gas conduits, sewers, water lines, drainage systems, oil pipelines, transportation, etc.

The fact many of these underground infrastructures are buried not far from the ground's surface increases the risk of damaged during excavation or rehabilitation work. Despite all the efforts to increase awareness on the importance of exercising vigilance during excavation work, damages continue to occur having an impact on the environment and on the integrity of services, but more importantly, placing public, worker and community safety at risk.

The Damage Information Reporting Tool (DIRT) was developed by the Common Ground Alliance (CGA). It provides a summary and an analysis of damages reported throughout Canada in the DIRT system.

Important note about the DIRT Data

- The Damage Information Reporting Tool (DIRT) is a confidential database where various stakeholders may enter information related to damages to buried utilities.
- Participation in DIRT is made on a voluntary basis. The report does not reflect the total number of damages that take place in Canadian provinces and there is no legal obligation for reporting such damages in DIRT .
- In 2018, important changes were made to the damage reporting form, increasing the accuracy of the information written on the form.
- The data collected is a rich source of industry intelligence on damages to buried facilities from excavation activities. Despite this, uncertainties remain that limit the ability to draw firm conclusions on the trends over time and across jurisdictions. For one, since damages are reported to DIRT on a voluntary basis, they do not reflect the total number of damages that take place in a given year.
  For example, an increase in damages in one year, relative to another, could reflect a difference in actual damages, or it could reflect an increase in the number of damages being reported. In addition, not all regions have adopted the database to the same extent. As a result, some jurisdictions contain more comprehensive data than others.
  Results may vary from one yearly report to another, due to retroactive data being entered from time to time, making comparison difficult from one report to the next.
- Damage is defined as 'any impact, near miss or exposure that results in the need to repair an underground facility due to a weakening or the partial or complete destruction of the facility, including, but not limited to, the protective coating, lateral support, cathodic protection, or the housing for the line, device, or facility.

2019 Highlights

- **1 in 4 damages** due to not making a locate request.
- **Nearly 1 in 5 damages** involve hazardous/life threatening facilities.
- Societal cost of damage to buried assets is estimated to be over **1.2 Billion dollars.**
- More than **48 damages** occurred per workday.
- The total number of damages Canada-wide is **11,949**, which is **a drop of 0.8%** from 12,041 in 2018.
- Natural gas and telecommunication facilities were affected in **85% of damages**, 46% and 39% respectively.
- **Hoe/trencher** was the most common equipment type used in damages (60%). Equipment type was omitted in 18% of reported damages.
- Work on water and sewer systems accounted for **24% of damages**.
- The most common known root cause of damages was **excavation issue** (39%).
- **Note** that damages are reported to DIRT on a voluntary basis and thus do not reflect the total number of damages that take place in a year in Canadian provinces.

In 2019 several Canadian regions reported damages via the DIRT system. The regions and their respective population values are shown in Figure 1.

Figure 1

Province/Region	2019 Population	% of Population	% of Damages
British Columbia	5,071,336	20%	11%
Alberta	4,371,316	17 %	30%
Saskatchewan	1,174,462	5%	6%
Manitoba	1,369,465	5%	2%
Ontario	14,566,547	57%	42%
Quebec	8,484,965	33%	9%
Atlantic	2,426,711	9%	1%
Canada	**25,602,683**	**100%**	**100%**

2019 Highlights

In 2019, the number of damages reported via DIRT for Canada totaled 11,949, which is slightly down (0.8%) than the 12,041 for 2018 . Table 1 presents a summary of key performance indicators related to damages by province/region. Canada-wide, there were on average 48 damages per workday (assuming 251 workdays per year).

Table 1 - Damages, requests, notifications, by province/region 2019

Province/Region	Damages	Damages per Work Day	Damages per 1,000 Requests*	Damages per 1,000 Notifications**
British Columbia	1,304	5	6.45	1.92
Alberta	3,613	14	8.96	2.47
Saskatchewan	669	3	4.73	1.49
Manitoba	196	1	2.62	1.02
Ontario	5,005	20	4.67	0.80
Quebec	1,102	4	3.82	1.76
Atlantic	60	< 1	1.15	0.87
Canada	**11,949**	**48**	**5.35**	**1.23**

* Locate request is defined as 'communication between an excavator and a staff member of a One-Call Centre in which a request for locating underground facilities is processed.

** Notifications: Ticket data transmitted to underground infrastructure owners registered with a One-Call Centre

Location and Year of Damages

Table 2 illustrates the total number of reported damages per year (2017-2019) by province/region and the percent of total damages by province/region.

Table 2 - Total Damages per year, by province/region 2017 - 2019

Incident types by Province	2017	2018	2019	2017	2018	2019
	Number of Damages			Percentage of Damages		
British Columbia	1,449	1,408	1,304	12%	12%	11%
Alberta	2,750	3,139	3,613	23%	26%	30%
Saskatchewan	716	673	669	6%	6%	6%
Manitoba	187	219	196	2%	2%	2%
Ontario	5,367	5,313	5,005	46%	44%	42%
Quebec	1,302	1,235	1,102	11%	10%	9%
Atlantic	17	54	60	0.1%	0.4%	1%
Grand Total	**11,788**	**12,041**	**11,949**	**100%**	**100%**	**100%**

In Table 3 below, we have broken out the near misses that are part of the overall Damage numbers. A near miss as defined in the CCGA Best Practices 3.0 glossary is, «An event where damage did not occur, but a clear potential for damage was identified». These numbers have historically been part of the data and Near Misses are required to be reported under the Canada Energy Regulator Event Reporting Guidelines.

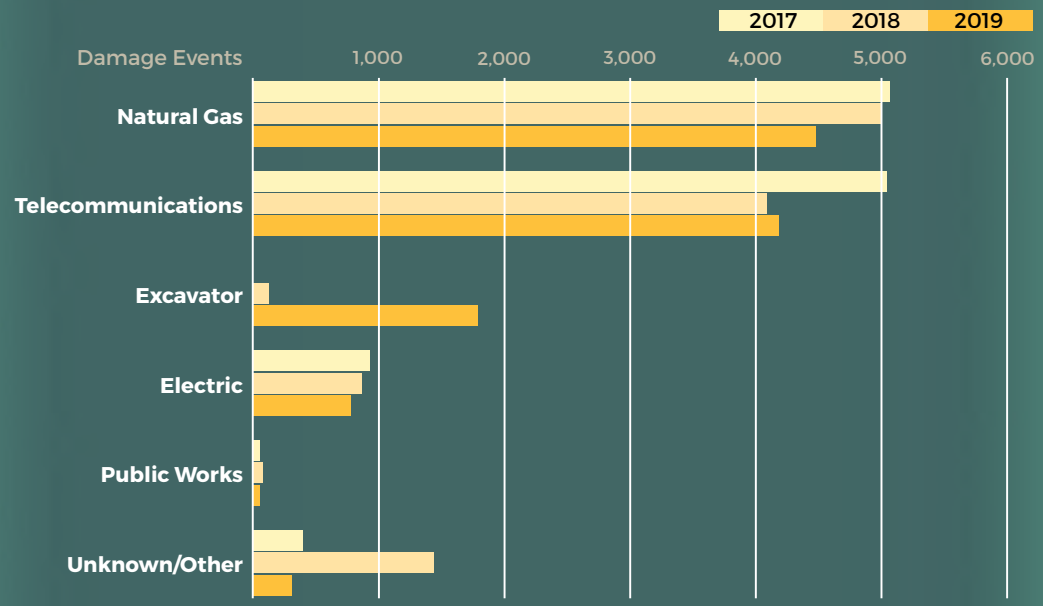
Table 3 - Total near misses per year, by Facility 2017 - 2019

Type of Failities	2017	2018	2019	2017	2018	2019
	Number of Damages			Percentage of Near Misses		
Natural Gas	101	105	101	34%	27%	32%
Telecommunications	67	78	91	22%	20%	29%
Unknown/Other	64	100	69	21%	25%	22%
Electric	4	59	26	1%	15%	8%
Liquid Pipeline	63	44	26	21%	11%	8%
Water & Sewer		8	6	0%	2%	2%
	299	**394**	**319**	**100%**	**100%**	**100%**

Reporting Stakeholders

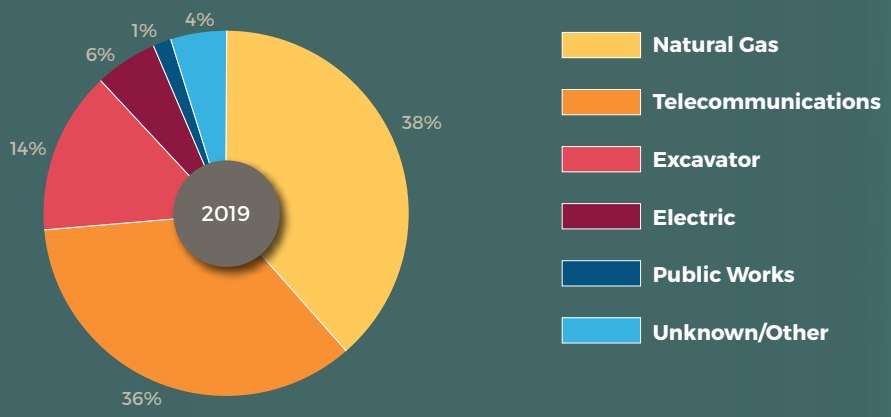
Figure 2 shows total damages by the seven most common stakeholder groups for the 2017-2019 period. The increase in the Excavator category in 2019 is primarily from Alberta.

Figure 2 - Damages by stakeholder group 2017-2019



As shown in Figure 3, 74% of total damages were reported by stakeholders in the natural gas and telecommunication sectors in 2019. For 4% of damage reports, no stakeholder group was listed.

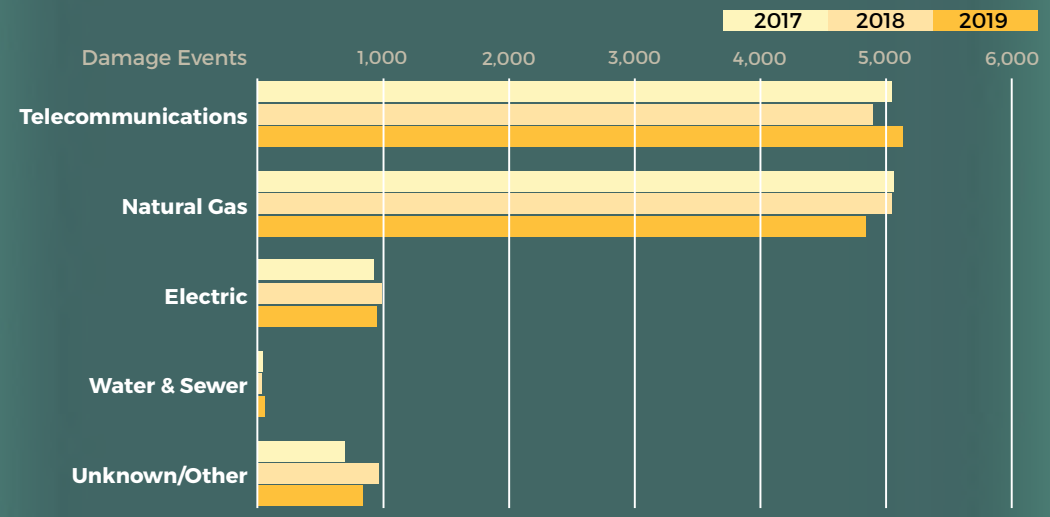
Figure 3 - Percentage of damage events by stakeholder 2019



Facilities Affected

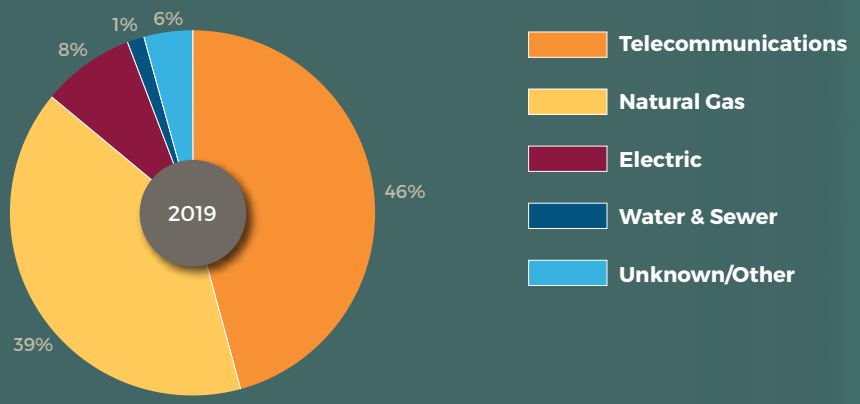
This section describes the facility operation affected by damages. Between 2017 and 2019, there has been an increase of 82% in water & sewer, 18% in unknown/other, 8% in telecommunications, and 6% in Electric.
We have also seen a decrease of 9% in natural gas (Figure 4).

Figure 4 -Damages by affected facility



Natural gas and telecommunication facilities were affected in 85% of the incidents in 2019 (Figure 5), an increase of 3% over 2018.

Figure 5 - 2019 Damages by affected facility



Facilities Affected

Table 4 illustrates the percentage of damages by facility type at a provincial level.

- In British Columbia, for example, 87% of damages affected natural gas facilities.
- In Atlantic Canada, 75% of damages affected telecommunication facilities.
- Manitoba had a high number of damages affecting electric facilities.

Table 4 - Percentage of damages by affected facility by province /region 2019

Province/Region	Telecommunications	Natural Gas	Electric	Water	Unknow/Other
British Columbia	9%	87%	0%	0%	4%
Alberta	63%	15%	6%	2%	15%
Saskatchewan	25%	35%	39%	0%	1%
Manitoba	0%	44%	56%	0%	0%
Ontario	47%	47%	5%	1%	0%
Quebec	49%	33%	11%	0%	7%
Atlantic	75%	25%	0%	0%	0%
Canada	**46%**	**39%**	**8%**	**1%**	**6%**

Excavator Information

This section describes the type of excavator and the type of excavation equipment involved in damages.

Excavator Type

Figures 6 and 7 provide the percentage and number of damages by type of excavator, respectively.
Contractor damages increased overall from 2017 to 2019, with a spike in 2018.
Municipalities, utility and other/unknown were flat from 2017 to 2019.
Occupant/farmer experienced a decline in damages from 2017 to 2019.

Figure 6 - Percentage of damage reports by type of excavator, 2019

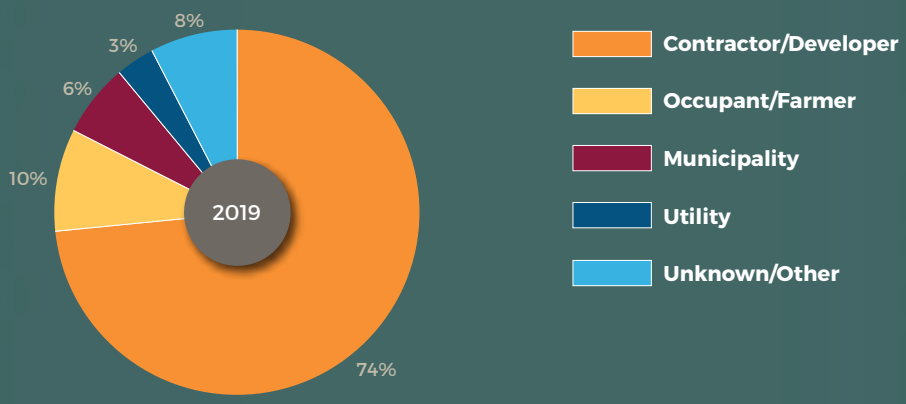
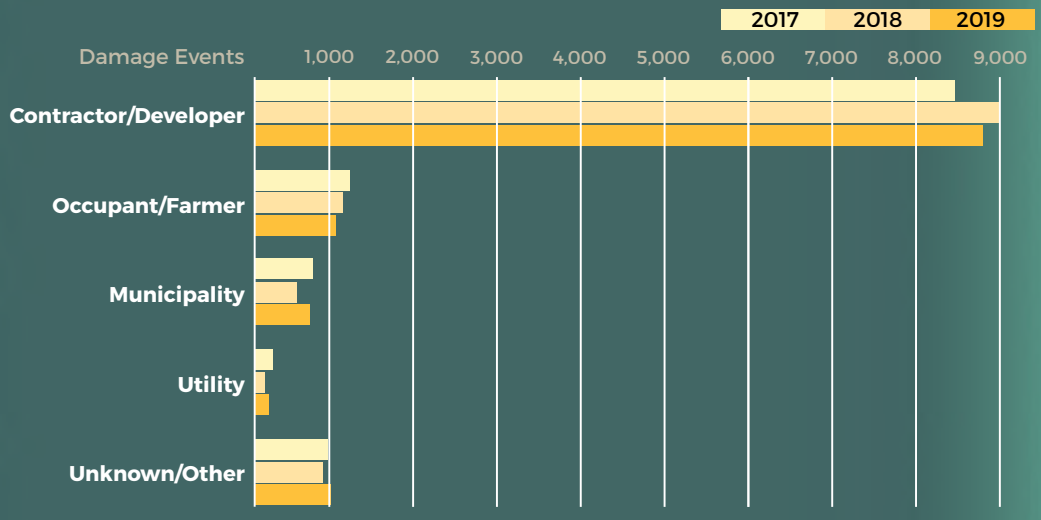


Figure 7 - Damages by excavator type 2017 - 2019

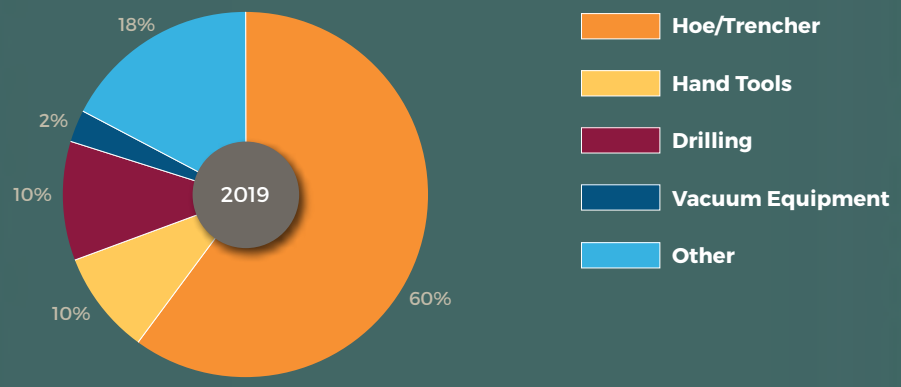


Excavator Information

Excavator Equipment Type

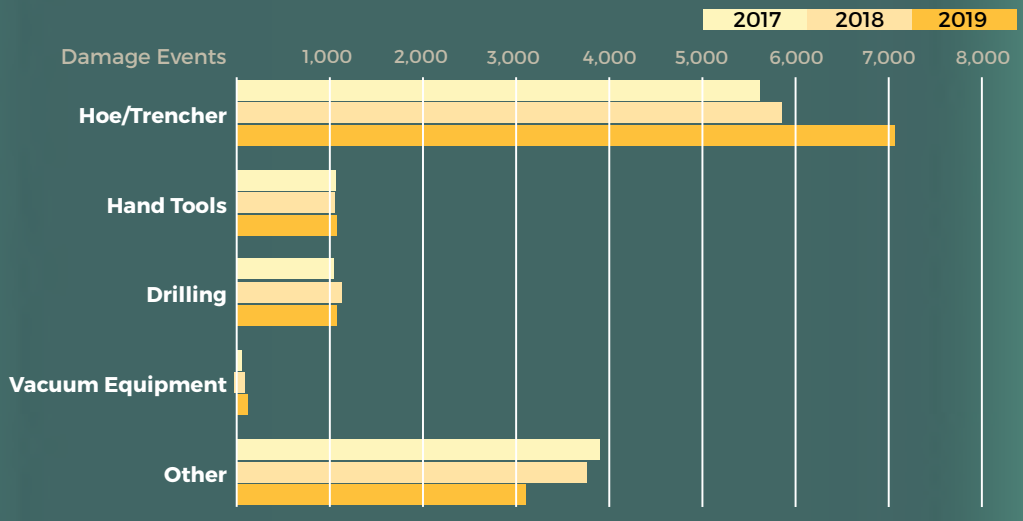
As shown in the graphic below, the hoe/trencher category remains, once again, the most common equipment type cited in damage reports (60%) in 2019.

Figure 8 - Percentage of damage reports by excavator equipment type, 2019



All categories of equipment type increased in the year 2019 compared to 2017, with Hoe/Trencher increasing the most (27%), nearly all taken from the Other category (Figure 9).

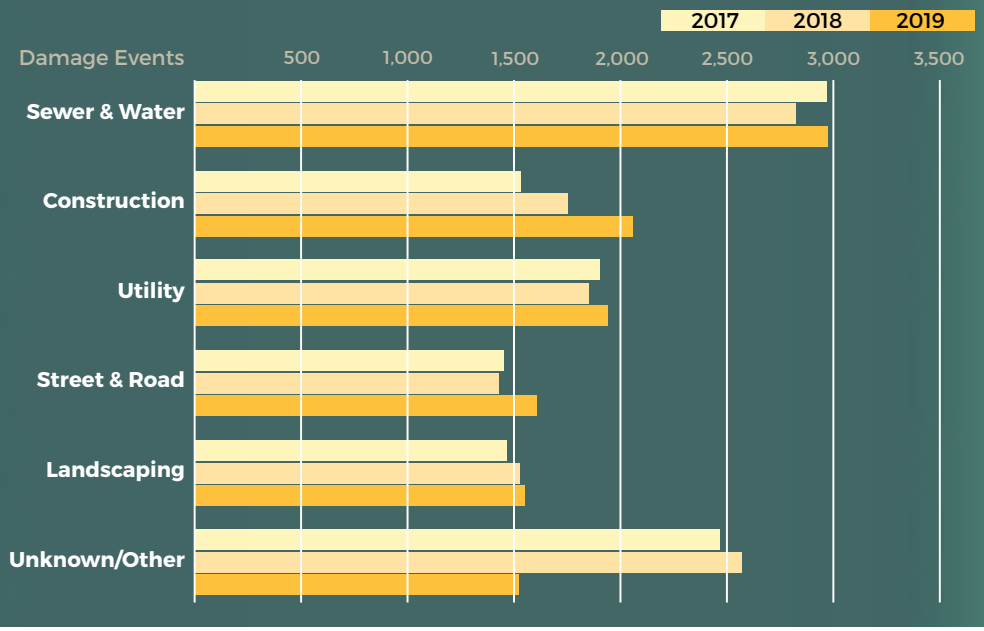
Figure 9 - Damages by excavation equipment type, 2017 - 2019



Work Details

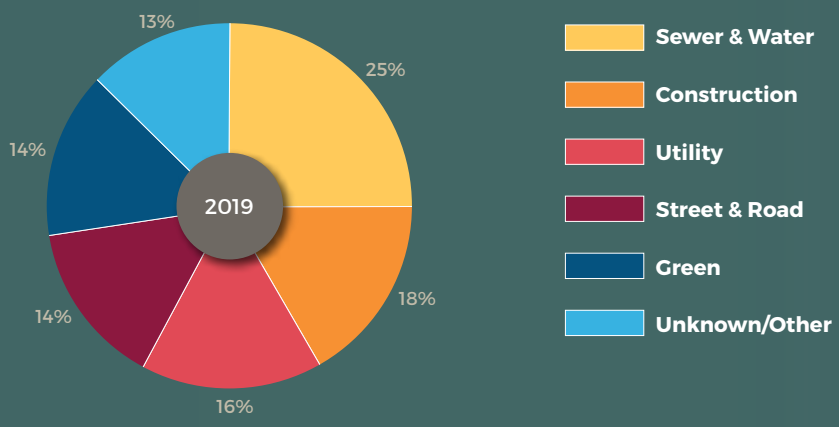
Figure 10 displays the number of damages by the type of work performed for the years 2017 to 2019. Sewer & Water, Utility and Landscaping experienced minor increases from 2017 to 2019. Construction as well as street & road have had increases that are more significant. The only decrease has been in unknown/other which appears to have been dispersed between the other categories.

Figure 10 - Damages by type of work performed, 2017 - 2019



As shown in Figure 11, work on water and sewer systems accounted for 25% of damages in 2019. Construction (37%), street & road (20%) and green (10%) all saw significant increases from 2017 to 2019.

Figure 11 - Percentage of damages by type of work performed, 2019



Work Details

Table 5 reports damages by type of work performed and type of excavator for the year 2019.

- Excavating contractors were responsible for 74% of damages; the majority while conducting sewer and water work.
- The second highest creator of damages (10% of total damages), was work performed by occupants, with landscaping being the most common type of work.

Table 5 - Damages by type of work performed and type of excavator, 2019

Type of Work	Contractor/ Developer	Municipality	Occupant/ Farmer	Utility	Unknown/ Other	Grand Total	% of Damages
Sewer & Water	2,163	304	199	175	124	2,965	25%
Construction	1,773	36	272	60	16	2,157	18%
Utility	1,530	38	84	105	159	1,916	16%
Steet & Road	1,359	186	46	115	23	1,729	14%
Landscaping	982	71	455	101	5	1,614	14%
Unknown/Other	986	43	100	425	14	1,568	13%
Grand Total	**8,793**	**678**	**1,156**	**981**	**341**	**11949**	**100%**

The leading type of damage varied by province. The leading cause of damages in Saskatchewan (SK) was utility (n=200). Damages attributed to work performed on water and sewer systems were the most frequent in Alberta (AB) (n=921), and Quebec (QC) (n=298), Construction was most common in British Columbia (BC) (n=435), and Ontario (ON) (n=1,166). Unknown/Other in Manitoba (MB) (n=196) and Saskatchewan (n=136). Street & Road was the primary damage type in the Atlantic Provinces (n=15). Table 6 reports damages by type of work performed by province.

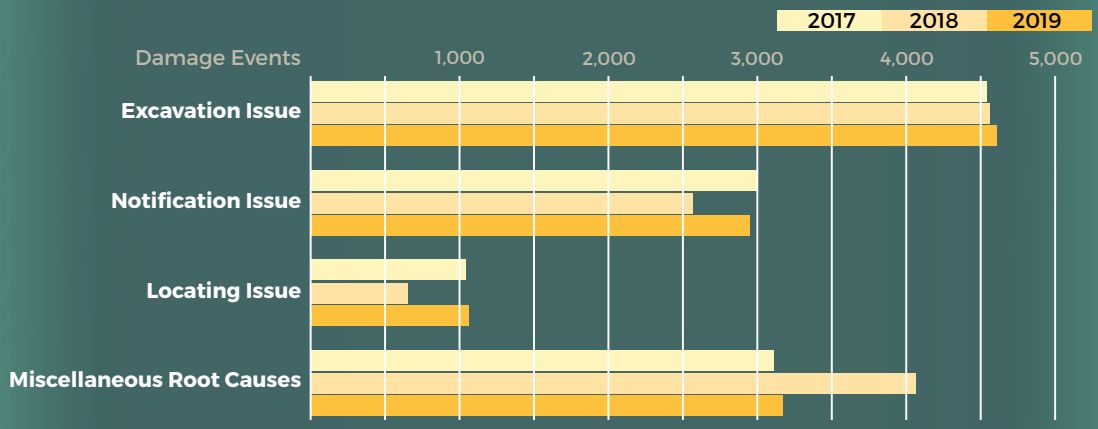
Table 6 - Damages by type of work performed by province, 2019

Type of Work	British Columbia	Alberta	Saskatchewan	Manitoba	Ontario	Quebec	Atlantic	Grand Total
Sewer & Water	415	921	94	60	1,166	298	11	2,905
Construction	435	301	49	13	1,182	168	9	2,144
Utility	109	673	200	19	815	94	6	1,897
Unknown / Other	93	506	136	53	569	197	14	1,711
Street & Road	117	735	63	24	523	252	15	1,705
Landscaping	135	477	127	27	750	93	5	1,587
Grand Total	**1,304**	**3,613**	**669**	**196**	**5,005**	**1,102**	**60**	**11,949**

Root Cause

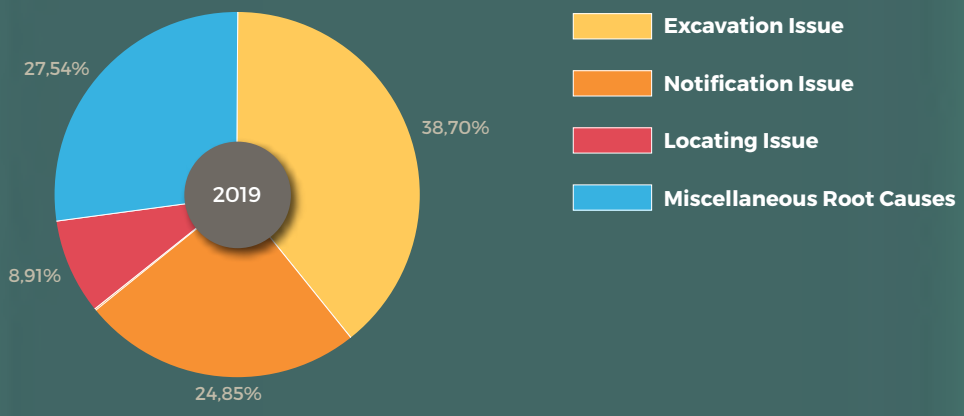
Root cause describes the reason for reported damages. Figure 12 provides a breakdown of known root causes in 2019. There has been a slight year over year increase in Excavation Issues damages. As this is also the largest category, this is reason for concern. In both Notification Issue and Locating Issue, there is a flat trend for 2017 to 2019, with a drop in 2018 for both categories. Meanwhile Miscellaneous Root causes is the reverse with a large spike in 2018.

Figure 12 - Known root causes, 2017 - 2019



Due to changes to the 2018 Field Form, year-to-year comparisons are less reliable to use for the sub-categories.
In the 2021 report, this will no longer be a problem, as the legacy root causes sub-categories will no longer be part of the sample group (2019-2021).

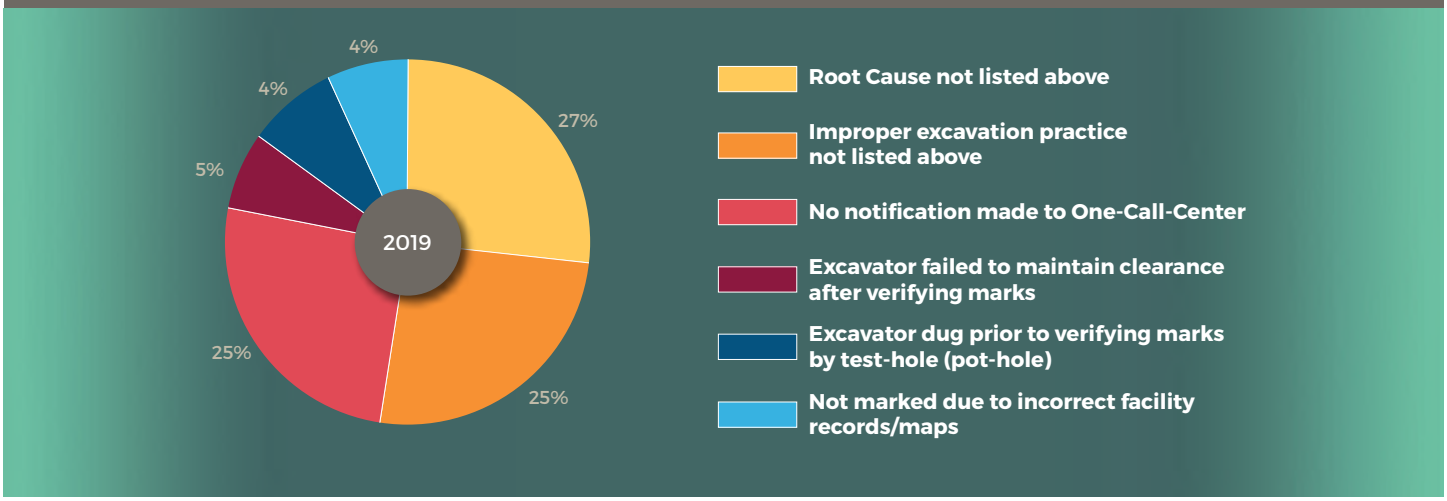
Figure 13 - Known root causes, 2019

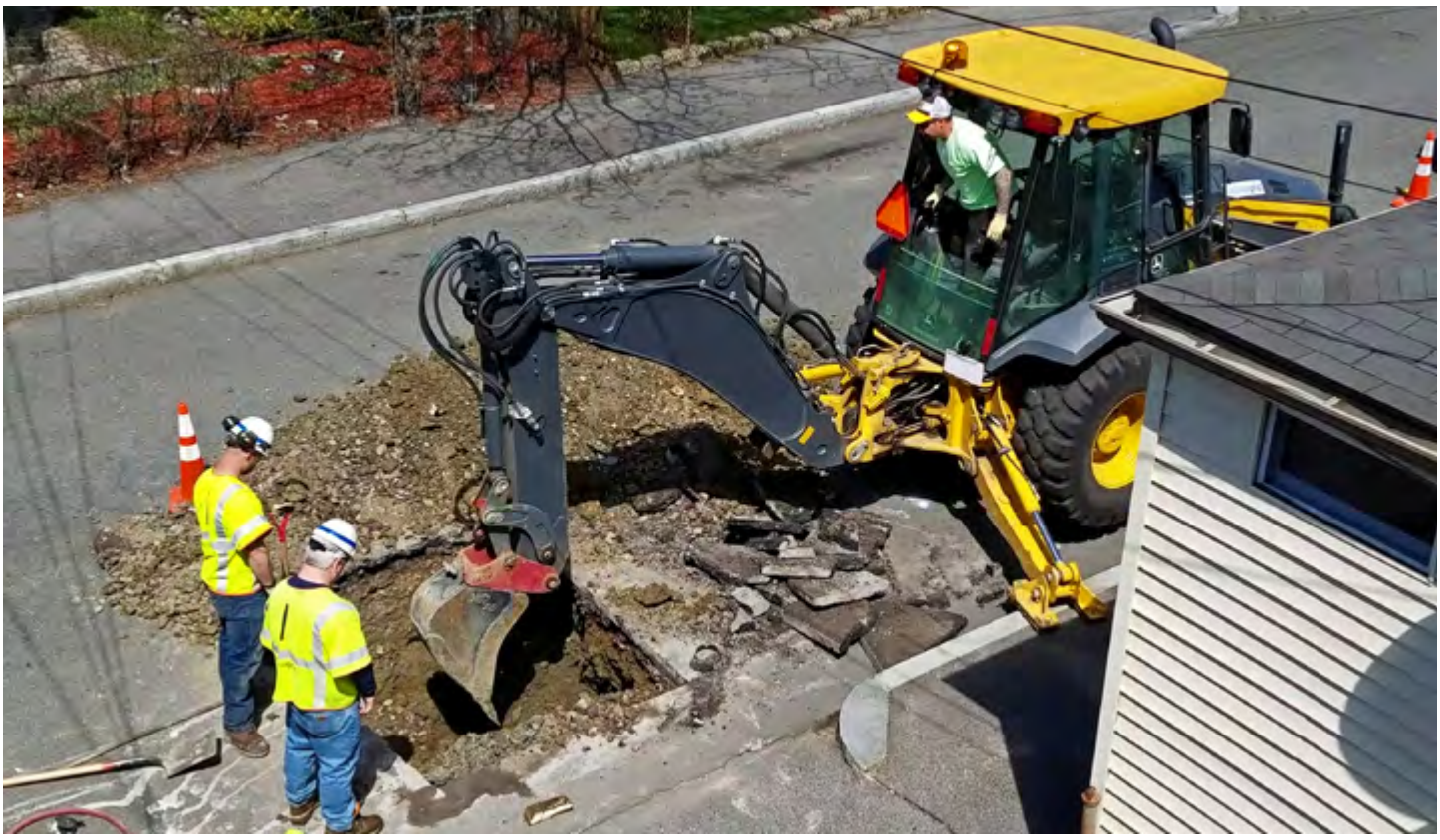


Root Cause

Figure 14 presents the top 90% of root cause sub-categories with 50% of damages split between Improper Excavation Practice and No Notification Made to the One-Call Centre. The leading cause of damage (Root Cause not Listed) is a new option allowing the person reporting the damage to choose a root cause.

Figure 14 - Top 90% of root cause sub-categories, 2019





Root Cause

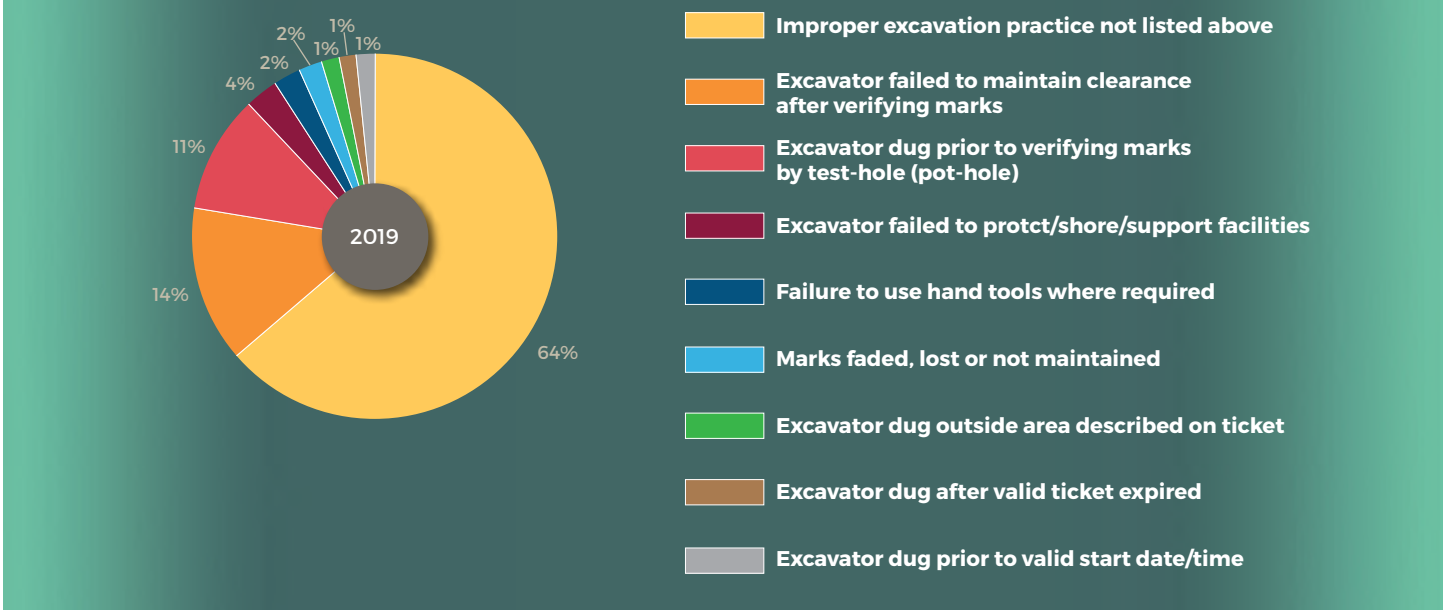
Of the 25% of damages attributed to no notification made to One-Call Centres, 68% occurred at an electric or natural gas facility posing a high risk to the public, worker and community safety (Table 7). This demonstrates that notifying One-Call Centres is a critical measure in preventing workplace injury.

Table 7 - No Locate Damages and percentage of damages with hazardous utilities, 2019

Province/Region	2019 No Locate Damages	No Locate Request, Electric	No Locate Request, Natural Gas	Percent of Total – No Locate, Electric, Natural Gas
British Columbia	720	0	698	97%
Alberta	406	31	167	49%
Saskatchewan	186	68	76	77%
Manitoba	35	18	17	100%
Ontario	1,371	9	857	63%
Quebec	205	0	79	39%
Atlantic	35	0	4	11%
National Total	**2,958**	**126**	**1,898**	**68%**

Of the 4,624 known root causes attributed to excavation issues, more information is needed to understand the 64% that were indicated as "Other insufficient excavation practices". Figure 15 presents known root causes attributed to excavation issues.

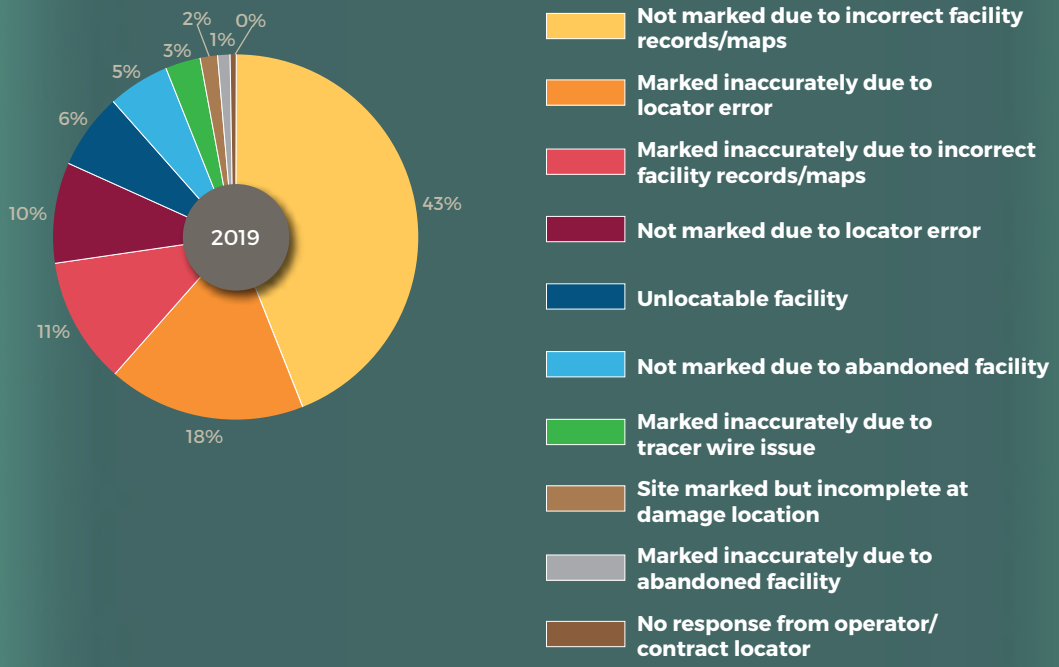
Figure 15 - Known root cause by excavation issue



Root Cause

Figure 16 presents known root causes attributed to location issues. Of the 459 known root causes attributed to location issues, the top four make up over 80% of the damages. They are; not marked due to incorrect facility records/maps (43%), marked inaccurately due to Locator error (18%), marked inaccurately due to incorrect facility record/maps (11%), not marked due to Locator error (10%).

Figure 16 - Known root cause by location issue, 2019



Societal Costs

Societal costs related to damages remains significant; reflecting direct (e.g. cost of repairs to damaged underground infrastructure) and indirect costs such as:

- Service disruption
- Loss of product
- Evacuation
- Economic impacts
- Environmental impacts and mitigation
- Administrative and legal costs

20% Directs costs

80% Indirects costs

The Cost of damage to underground infrastructures is estimated to be over $1.2 billion per year.

Additional information per province

Over and above the data collected in the DIRT system, One-Call Centres provide important information related to data found in locate requests made in every province. In Canada, on-line / web locate requests have emerged as a preferred method of requesting a locate. Any person requesting a locate can do so 24/7/365 and is typically able to plot or draw their dig site on a sketch or map reducing the risk of misinterpretation to an Agent thereby improving the damage prevention process. Table 8 shows the breakdown of locate requests placed via telephone versus the Web, as well as the number of registered members of One-Call Centres by province/region. While Table 9 is a summary of the provincial and regional information.

Table 8 - Registered members at One-Call Centres and percentage of phone versus web locate requests

Notification center	Registered Members	Phone Locate Requests (%)	Web Locate Requests (%)
British Columbia	357	25%	75%
Alberta	874	21%	79%
Saskatchewan	96	45%	55%
Manitoba	46	28%	72%
Ontario	828	17%	83%
Quebec	255	9%	91%
Atlantic	33	12%	88%
Canada	**2,489**	**22%**	**78%**

Table 9 - Summary by Province\Region, 2019

Province /Region	% of Population ‡	Damages	% of Damages	Damages per Work Day	Locate Requests	Damages per 1,000 Requests*	Locate Notifications	Damages per 1,000 Notifications**
British Columbia	11%	1,304	12%	5	202,052	6.45	679,203	1.92
Alberta	9%	3,613	27%	14	403,434	8.96	1,463,751	2.47
Saskatchewan	1%	669	6%	3	141,518	4.73	450,209	1.49
Manitoba	2%	196	2%	1	74,861	2.62	191,226	1.02
Ontario	42%	5,005	44%	20	1,071,928	4.67	6,227,227	0.80
Quebec	30%	1,102	10%	4	288,149	3.82	627,518	1.76
Atlantic	6%	60	<1%	< 1	52,361	1.15	68,686	0.87
Canada	**100%**	**11,949**	**100%**	**48**	**2,234,303**	**5.35**	**9,707,820**	**1.23**

‡ StatsCan (2019)
* Locate request is defined as 'communication between an excavator and a staff member of a One-Call Centre in which a request for locating underground facilities is processed
** Notifications: Ticket data transmitted to underground infrastructure owners.

Ontario is the only province with legislation mandating registration with a One-Call Centre.

Conclusions and Actions

This report presents 2019 data by region and as reported via the DIRT system. Care must be taken when interpreting trends over time or when comparing between regions due to the voluntary aspect of reporting damages in the system. Adopting best practices is also critical in reducing public risk and preventing workplace injury. Nonetheless, a number of useful observations can be taken from this report, which are continuations of our last year's three actionable items.

1) Improper excavation practice was the leading cause of damages in 2019. Improved targeting, increasing the frequency, and broadening the method of education and awareness of the CCGA's Best Practices to the digging community will reduce damages caused by improper excavating practices.

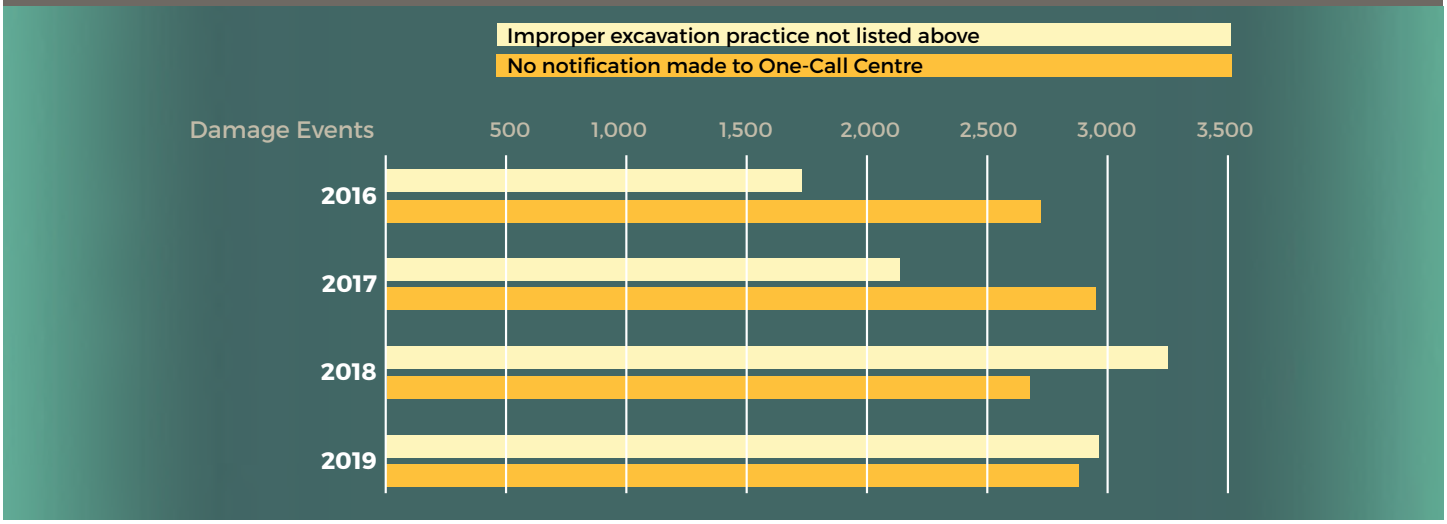
2) The absence of a locate request to a One-Call Centre prior to excavation was once again a primary cause of damage to underground infrastructure across Canada and the CCGA notes the lack of a Canada-wide, symmetrical and bilingual campaign promoting the efficacy of initiating the damage prevention process is likely contributing to this repeating trend.

   Across the United States, the 811 brand, campaign and call-to-action is widely recognized, supported and promoted whereas in Canada, national damage prevention branding is diluted with independent promotion and branding of "*Call Before You Dig*", "*Click or Call Before You Dig*", ClickBeforeYouDig and individual 800 numbers. In this regard, the CCGA continues to promote and recognize the bilingual ClickBeforeYouDig.com portal as the preferred one-window approach to initiate the damage prevention process anywhere in Canada and remains of the view that actively and collectively promoting it will enhance awareness, increase locate requests and take advantage of the economies of scale of a coast-to-coast-to-coast damage prevention campaign.

3) Increase the number of Stakeholders submitting to DIRT

   The DIRT Report is the only national account dedicated to disseminating damage data in Canada. Due to limited and voluntary reporting, however, the report is often asterisked as an 'incomplete' account of data which weakens and questions its findings. Increasing the sample population will enhance public confidence in the CCGA and the information presented by the DIRT Report and in that regard, the CCGA and its partners are committed to developing and implementing an ongoing campaign in both official languages promoting its importance and increasing damage reporting.

Figure 17 - Action items, 2019



Regional Profiles

The series of tables below provide summaries of damage data, along with some contextual economic data, for each of the regions currently reporting via the DIRT system in Canada. Time series data is provided for relevant provinces. For each province/region, a summary of whether damage prevention/One-Call legislation exists is also provided.

Also, at the end of each profile, you will find the website of the Regional Partner of the Common Ground Alliance in Canada and the One-Call centre for that region.

Housing Starts
Table 34-10-0135-01 Canada Mortgage and Housing Corporation, housing starts, under construction and completions, all areas, quarterly

Construction Employment
Table 14-10-0092-01 Employment by industry, annual, provinces and economic regions (x 1,000)

Construction GDP
Table 36-10-0402-01 Gross domestic product (GDP) at basic prices, by industry, provinces and territories (x 1,000,000)

Register with DIRT and Be Part of the Damage Prevention Solution

The Canadian Common Ground Alliance invites you to register with Regional Partner Virtual DIRT and report damages to Canada's buried infrastructure. Doing so will allow more thorough analysis and enable damage prevention and safety solutions that will benefit all Canadians.

Alberta: digsafeab.ca
Atlantic: atlanticdigsafe.ca
British Columbia: commongroundbc.ca
Manitoba: manitobacga.com
Ontario: orcga.com
Quebec: info-ex.com
Saskatchewan: scga.ca

British Columbia

	2017	2018	2019
PROFILE			
Population	4,817,160	5,016,322	5,071,336
Land area	922,503	922,503	922,503
Population density	5.2	5.4	5.5
Housing starts*	43,664	40,857	44,932
Employment in construction	228,600	238,400	236,600
Construction GDP ($ millions)	19,825	20,562	22,650
SUMMARY			
Locate requests	190,312	203,758	202,052
Notifications	880,229	821,445	679,203
Locate requests to notifications ratio	1:4.6	1:4.0	1:3.4
Damages	1,449	1,408	1,304
Damages per work day	5.8	5.6	5
Damage ratio per 1,000 notifications	1.7	1.7	1.92
Damage ratio per 1,000 locate requests	7.76	6.9	6.45
DAMAGES BY TYPE OF WORK			
Green (Landscaping)	142	143	135
Construction	180	184	435
Water/Sewer	454	397	415
Road/Street	109	130	117
Utilities	147	168	109
Unknown/other	417	386	93
DAMAGES BY FACILITY TYPE			
Electric	0	0	0
Natural Gas	1,301	1,228	1,139
Liquid Pipeline	52	36	22
Telecommunications	70	106	111
Unknown/Other	26	38	32
ROOT CAUSE			
Excavation Issue	516	660	447
Notification Issue	830	616	720
Locating Issue	12	4	4
Miscellaneous Root Causes	91	128	133
Damage Prevention/One Call Legislation			
British Columbia CGA: commongroundbc.ca BC One-Call: bc1c.ca	**Partial legislation:** BC Oil and Gas Commission and the Canada Energy Regulator governed pipelines are required to register with BC One-Call		

* Note that not all housing starts will be associated with an excavation; in the case of condo developments, for example, one excavation will be associated with numerous housing starts.

Regional Profiles

Alberta

ABCGA
Alberta Common Ground Alliance

	2017	2018	2019
PROFILE			
Population	4,286,134	4,330,206	4,371,316
Land area	640,330	640,330	640,330
Population density	6.7	6.8	6.8
Housing starts	29,457	26,085	27,325
Employment in construction	241,000	245,400	236,800
Construction GDP ($ millions)	27,496	27,168	25,208
SUMMARY			
Locate requests	378,360	351,934	404,434
Notifications	1,649,307	1,477,711	1,463,751
Locate requests to notifications ratio	1:4.4	1:4.4	1:3.6
Damages	2,750	3,139	3,613
Damages per work day	10.9	12.5	14.4
Damage ratio per 1,000 notifications	1.7	2.2	2.47
Damage ratio per 1,000 locate requests	7.31	9.1	8.96
DAMAGES BY TYPE OF WORK			
Green (Landscaping)	252	317	477
Construction	245	298	301
Water/Sewer	467	546	921
Road/Street	322	421	735
Utilities	484	408	673
Unknown/other	980	1,149	506
DAMAGES BY FACILITY TYPE			
Electric	152	179	205
Natural Gas	714	672	526
Liquid Pipeline	1*	381	0
Telecommunications	1,507	1,458	2,277
Water/Sewer	15	61	80
Unknown/Other	361	388	525
ROOT CAUSE			
Excavation Issue	576	550	1,163
Notification Issue	307	237	406
Locating Issue	505	306	631
Miscellaneous Root Causes	1,362	2,046	1,413
Damage Prevention/One-Call Legislation			
Alberta CGA: albertacga.ca Alberta One-Call: albertaonecall.com		**Partial legislation:** Alberta Energy Regulator and the Canada Energy Regulator governed pipelines are required to register with Alberta One-Call *Note that 2017 data for Alberta does not include damages from a large stakeholder.	

Regional Profiles

Saskatchewan

Saskatchewan Common Ground Alliance

	2017	2018	2019
PROFILE			
Population	1,163,925	1,165,903	1,174,462
Land area	588,244	588,244	588,244
Population density	2.0	2.0	2.0
Housing starts	4,904	3,610	2,427
Employment in construction	50,700	49,500	47,100
Construction GDP ($ millions)	6,014	5,862	5,717
SUMMARY			
Locate requests	144,855	148,166	141,518
Notifications	448,874	466,764	450,209
Locate requests to notifications ratio	1:3.1	1:3.1	1:3.2
Damages	716	673	669
Damages per work day	2.9	2.7	2.7
Damage ratio per 1,000 notifications	1.60	1.44	1.49
Damage ratio per 1,000 locate requests	4.94	4.54	4.73
DAMAGES BY TYPE OF WORK			
Green (Landscaping)	99	124	127
Construction	172	55	49
Water/Sewer	127	78	94
Road/Street	52	70	63
Utilities	147	162	200
Unknown/other	119	184	136
DAMAGES BY FACILITY TYPE			
Electric	226	271	258
Natural Gas	136	224	232
Liquid Pipeline	7	3	1
Telecommunications	347	172	170
Unknown/Other	0	3	8
ROOT CAUSE			
Excavation Issue	268	277	317
Notification Issue	171	159	186
Locating Issue	199	78	123
Miscellaneous Root Causes	78	159	43
Damage Prevention/One-Call Legislation			
Saskatchewan CGA: scga.ca Sask 1st Call: sask1stcall.com	**Partial legislation:** Canadian Energy Regulator governed pipelines are required to register with Sask 1st Call.		

Regional Profiles

Manitoba

	2017	2018	2019
PROFILE			
Population	1,338,109	1,356,836	1,369,465
Land area	552,371	552,371	552,371
Population density	2.4	2.5	2.5
Housing starts	7,501	7,376	6,946
Employment in construction	48,300	47,200	50,400
Construction GDP ($ millions)	4,593	4,742	4,815
SUMMARY			
Locate requests	61,885	64,090	74,861
Notifications	136,024	173,292	191,226
Locate requests to notifications ratio	1:2.2	1:2.2	1:2.6
Damages	187	219	196
Damages per work day	0.7	0.9	0.8
Damage ratio per 1,000 notifications	1.3	1.26	1.02
Damage ratio per 1,000 locate requests	2.86	3.42	2.62
DAMAGES BY TYPE OF WORK			
Green (Landscaping)	24	33	27
Construction	20	20	13
Water/Sewer	61	58	60
Road/Street	20	28	24
Utilities	20	22	19
Unknown/other	42	58	53
DAMAGES BY FACILITY TYPE			
Electric	85	132	110
Natural Gas	102	87	86
Liquid Pipeline	0	0	0
Telecommunications	0	0	0
Unknown/Other	0	0	0
ROOT CAUSE			
Excavation Issue	130	153	137
Notification Issue	41	41	36
Locating Issue	14	21	22
Miscellaneous Root Causes	2	4	1
Damage Prevention/One-Call Legislation			
Manitoba CGA manitobacga.com One-Call: clickbeforeyoudigmb.com	**Partial legislation:** Canada Energy Regulator governed pipelines are required to register with ClickBeforeYouDigMB		

Regional Profiles

Ontario

	2017	2018	2019
PROFILE			
Population	14,193,384	14,411,424	14,566,547
Land area	908,699	908,699	908,699
Population density	15.6	15.9	16.0
Housing starts	79,123	78,742	68,985
Employment in construction	512,500	525,100	542,800
Construction GDP ($ millions)	51,011	51,915	50,792
SUMMARY			
Locate requests	1,041,610	1,077,815	1,071,928
Notifications	7,498,270	6,698,205	6,227,227
Locate requests to notifications ratio	1:7.2	1:6.2	1:5.8
Damages	5,367	5.313	5,005
Damages per work day	21.1	21.2	19.9
Damage ratio per 1,000 notifications	0.7	0.87	0.80
Damage ratio per 1,000 locate requests	5.2	5.16	4.67
DAMAGES BY TYPE OF WORK			
Green (Landscaping)	799	831	750
Construction	799	1072	1,182
Water/Sewer	1,437	1,281	1,166
Road/Street	640	496	523
Utilities	992	950	815
Unknown/other	700	683	569
DAMAGES BY FACILITY TYPE			
Electric	343	341	270
Natural Gas	2,404	2,408	2,332
Liquid Pipeline	17	17	13
Telecommunications	2,549	2,484	2,343
Water/Sewer	52	62	42
Unknown/Other	2	1	5
ROOT CAUSE			
Excavation Issue	2,499	2,356	2,085
Notification Issue	1,318	1,321	1,381
Locating Issue	271	302	249
Miscellaneous Root Causes	1,279	1,334	1,290
Damage Prevention/One-Call Legislation			
OntarioCGA : orcga.com One-Call : ontarioonecall.ca	**Partial legislation:** Canada Energy Regulator governed pipelines and all buried infrastructure within public rights of way are required to register with Ontario One-Call		

Quebec

	2017	2018	2019
PROFILE			
Population	8,394,034	8,390,499	8,484,965
Land area	1,667,712	1,667,712	1,667,712
Population density	6.2	6.5	5.1
Housing starts	46,495	46,874	47,967
Employment in construction	245,800	249,600	264,600
Construction GDP ($ millions)	22,850	23,527	23,801
SUMMARY			
Locate requests	259,670	274,938	288,149
Notifications	572,049	597,324	627,518
Locate requests to notifications ratio	1:2.2	1:2.2	1:2.2
Damages	1,302	1,235	1,102
Damages per work day	4.9	4.9	4
Damage ratio per 1,000 notifications	2.2	2.07	1.8
Damage ratio per 1,000 locate requests	4.74	4.49	3.82
DAMAGES BY TYPE OF WORK			
Green (Landscaping)	144	112	93
Construction	160	164	168
Water/Sewer	407	416	298
Road/Street	296	261	252
Utilities	73	84	94
Unknown/other	222	198	197
DAMAGES BY FACILITY TYPE			
Electric	99	127	120
Natural Gas	480	443	369
Liquid Pipeline	2	0	2
Telecommunications	614	570	540
Water/Sewer	0	1	0
Unknown/Other	107	94	71
ROOT CAUSE			
Excavation Issue	527	558	463
Notification Issue	339	231	205
Locating Issue	48	45	32
Miscellaneous Root Causes	388	401	402
Damage Prevention/One-Call Legislation			
QCGA et One-Call : info-ex.com	**Partial legislation:** Pipelines governed by the Canada Energy Regulator are required to register with Info-Excavation.		

Regional Profiles

Atlantic Region

ATLCGA
Atlantic Canada Common Ground Alliance

	2017	2018	2019
PROFILE			
Population	2,394,362	2,416,754	2,426,711
Land area	500,531	500,531	500,531
Population density	4.8	4.8	4.8
Housing starts	8,619	9,299	10,103
Employment in construction	82,400	82,300	84,700
Construction GDP ($ millions)	7,978	7,254	7,429
SUMMARY			
Locate requests	35,451	44,481	52,361
Notifications	53,338	53,771	68,686
Locate requests to notifications ratio	1:1.5	1:1.2	1:1.3
Damages	17	54	60
Damages per work day	0.3	0.2	0.2
Damage ratio per 1,000 notifications	1.2	1.00	0.87
Damage ratio per 1,000 locate requests	1.86	1.21	1.15
DAMAGES BY TYPE OF WORK			
Green (Landscaping)	3	4	5
Construction	6	5	9
Water/Sewer	4	21	11
Road/Street	2	10	15
Utilities	0	4	6
Unknown/other	2	10	14
DAMAGES BY FACILITY TYPE			
Electric	0	0	0
Natural Gas	14	17	15
Liquid Pipeline	0	0	0
Telecommunications	52	29	45
Water/Sewer	0	0	0
Unknown/Other	0	0	0
ROOT CAUSE			
Excavation Issue	13	18	12
No notification made to the One-Call Centre	3	31	35
Locating Issue	0	1	4
Miscellaneous Root Causes	1	4	9
Damage Prevention/One-Call Legislation			
Altantic Canada CGA: atlanticdigsafe.ca One-Call: info-ex.com	**Partial legislation:** Pipelines governed by the Canadian Energy Regulator are required to register with Info-Excavation.		


CCGA
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www.CanadianCGA.com
www.ClickBeforeYouDig.com
www.digsafecanada.com
www.facebook.com/Canadian/CGA
twitter.com/CanadianCGA
Beaufort Sea
Inuvik
Mackenzie
Victoria Island
Great Bear Lake
Great Slave Lake
Baffin Island
Iqaluit
Hudson Bay
British Columbia
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Alberta Common Ground Alliance
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