



COVID-19 in Durham Region

Epi Summary 2 - Flattening the Curve

September 2020

This report is a snapshot of how COVID-19 changed over time in Durham Region from its beginning on February 24, 2020 to the end of Stage 1 reopening on June 18, 2020.

The report presents information about confirmed cases that are residents of Durham Region based on data extracted from the integrated Public Health Information System (iPHIS) for Durham Region on July 3, 2020 at 9:00AM.

What is a confirmed case?

A confirmed case is a person who has tested positive for COVID-19 infection based on a laboratory test.

Highlights

- Durham Region had 1,671 confirmed COVID-19 cases with an illness onset date between February 24 and June 18, 2020.
- The estimated effective reproduction number peaked in Durham Region at 2.5 on March 16.
- The pandemic had three noticeable phases so far: growth, flattening and recovery.
- As containment of COVID-19 in Durham Region institutions improved over time, outbreaks were controlled more quickly and involved fewer cases.
- Sixty nine percent of cases linked to institutional outbreaks were from outbreaks that began in March.
- The median age of Durham Region cases peaked at 64 years in April and decreased over time.
- Within two months of the first COVID-19 case identified in Durham Region, all municipalities had reported at least one confirmed case.
- The most likely exposure source for cases changed over time and varied by municipality.

Community Spread

1,671

Confirmed COVID-19 cases among Durham Region residents with an illness onset date between February 24 and June 18.

How is virus spread measured?

Virus spread in the community can be measured by the effective reproduction number, R_t . This estimates the average number of people one COVID-19 case can infect.

What does the R_t value mean?

R_t equals one:

A person with COVID-19 can infect one other person.

R_t is greater than one:

On average, a person with COVID-19 can infect more than one person and the number of cases will increase. This means the epidemic is growing.

R_t is less than one:

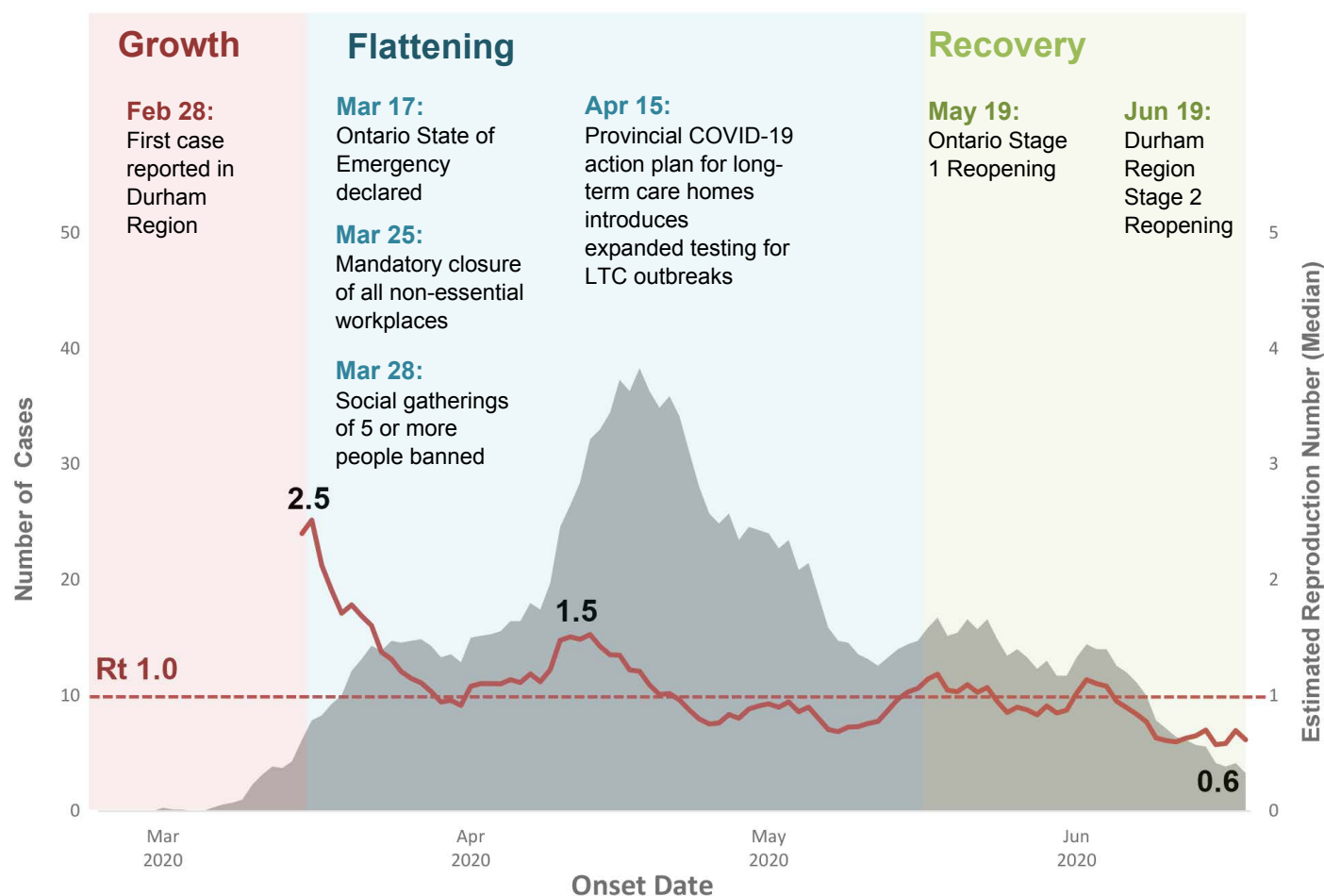
A person with COVID-19 might not infect anyone else and the number of cases will decrease. This means the epidemic is being brought under control.

How is R_t calculated?

Durham Region's R_t is calculated using a software program called "R" and methods developed by Public Health Ontario.

It uses the number of new cases in the community per day, based on estimated onset date. In other words, the date the case began to show symptoms, or if that is not available, the date they were tested for COVID-19.

Figure 1: Timeline of COVID-19 in Durham Region



Data Source: Ontario Ministry of Health, integrated Public Health Information System (iPHIS) database, extracted by Durham Region Health Department on July 3, 2020 at 9:00AM.

In **Figure 1**, the grey area shows the number of new confirmed COVID-19 cases per day as a moving average for the past seven days, based on illness onset date.

The red line shows how COVID-19 transmission changed over time in Durham Region based on the **effective reproduction number (Rt)**.

Key dates are identified to better understand how policies have impacted the course of COVID-19 within Durham Region.

The first confirmed COVID-19 case in Durham Region became ill on February 24, approximately one month after the first case was reported in Ontario on January 25. From February 24 to the end of Stage 1 Reopening on June 18, the pandemic had three distinct phases: growth, flattening and recovery.

Growth February 28 to March 17 This period occurred at the beginning of the pandemic before control measures were put in place.	Flattening March 18 to May 18 This period occurred from the beginning of the Ontario State of Emergency until Durham Region moved to Stage 1 Reopening on May 19.	Recovery May 19 to Present Durham Region entered Stage 1 Reopening on May 19.
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Growth (February 28 to March 17):

This period occurred at the beginning of the pandemic before control measures were put in place.

The first confirmed COVID-19 case in Durham Region became ill on February 24, approximately one month after the first case was reported in Ontario on January 25.

The number of new cases per day steadily increased until the Ontario State of Emergency was declared on March 17.

The estimated R_t peaked in Durham Region on March 16 at 2.5, which is similar to scientific research on how infectious COVID-19 is without control measures in place.

Flattening (March 18 to May 18):

The flattening period occurred from the beginning of the Ontario State of Emergency until Durham Region moved to Stage 1 Reopening on May 19.

It corresponds to Phase 1 of the Government of Ontario's COVID-19 Response Action Plan.

As physical distancing and other public health measures were implemented throughout the end of March, the number of new cases per day stabilized as the R_t decreased and began to hover around one until mid-April.

There was then a large increase in the number of new cases per day and the R_t increased to 1.5. This corresponds with the introduction of the provincial COVID-19 action plan for long-term care homes (LTCHs) on April 15 which introduced expanding testing for LTCH outbreaks.

There were several large outbreaks in Durham Region institutions occurring during this time which is reflected by the large peak in new cases seen on the figure.

As containment of the virus in institutions improved, the number of new cases and the R_t decreased throughout the end of April and the first half of May. During this time the R_t remained below one, indicating the curve had been flattened and the epidemic was under control in the region.



Recovery (May 19 to Present):

Durham Region began Stage 1 Reopening on May 19.

Stage 1 is the first part of Phase 2 of the Government of Ontario's COVID-19 Response Action Plan.

There was a small increase in case numbers following reopening. Rt also increased and hovered around one until the beginning of June.

There was a noticeable decrease in case numbers in June and Rt stayed below 1, indicating the epidemic was under control.

Durham Region began Stage 2 Reopening on June 19.

What are the Phases and Stages in the Ontario COVID-19 Action Plan?

Phase 1: Protect & Support

March 18 to May 19

Emergency orders put in place to protect people. Physical distancing in effect.



Phase 2: Restart

Physical distancing in effect for all stages.

Stage 1: May 19

Select workplaces opened.
Some small gatherings allowed.

Stage 2: June 19

More workspaces and outdoor spaces opened.
Some larger gatherings allowed.

Stage 3: July 20

All workplaces opened.
Large outdoor gatherings restricted.

Phase 3: Recovery

Date to be determined.

Continue to ensure health and safety of the public.



Institutional Outbreaks

- 34** Confirmed institutional outbreaks of COVID-19 in Durham Region
- 3** Outbreaks active at the end of Stage 1 reopening

What is a health care institution?

A place which provides medical, nursing and personal care services to residents who live there or patients who are being treated there.

These include **long-term care homes**, **retirement homes**, and **hospitals**.

What is an institutional outbreak?

An institutional outbreak occurs when one or more cases of COVID-19 are detected in a health care institution. This can include patients, residents and staff.

When is an outbreak declared in an institution?

Long-term care or retirement home:

When **ONE or more cases** of COVID-19 is detected in a staff or resident of the long-term care or retirement home.

Hospital:

When **TWO or more cases** (patients and/or staff) are reported from a specific area in the hospital and they likely acquired their infection in the hospital.

When is an outbreak declared over?

This is based on the last case identified.

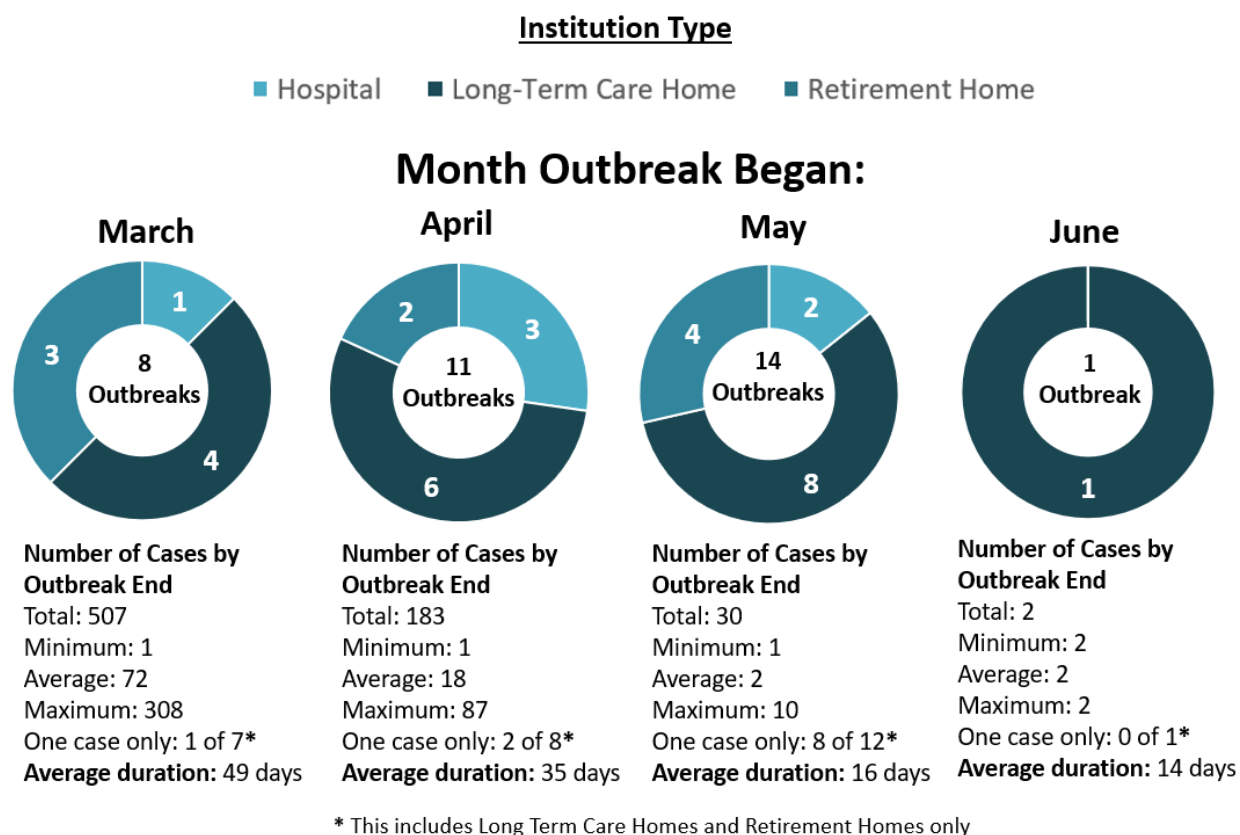
Last case is a resident or patient:

When **no new cases** have been identified in the past 14 days since the last case became ill or was isolated.

Last case is a staff member:

When **no new cases** have been identified in the past 14 days since the last shift the staff worked.

Figure 2: Outbreaks in Durham Region Institutions



Data Source: Ontario Ministry of Health, integrated Public Health Information System (iPHIS) database, extracted by Durham Region Health Department on July 3, 2020 at 9:00AM.

Figure 2 shows number of outbreaks declared in Durham Region institutions based on outbreak onset date, or in other words, the date the first case at the institution became ill. It also shows the number of cases involved and the average length of time the outbreaks lasted, which is helpful in understanding how well the virus was contained in institutional settings. Only cases in Durham Region residents are shown in this figure.

As containment of COVID-19 in Durham Region institutions improved over the course of the pandemic, outbreaks were controlled more quickly and involved fewer cases.

Over half of all institutional outbreaks occurred in long-term care homes.

Case Numbers:

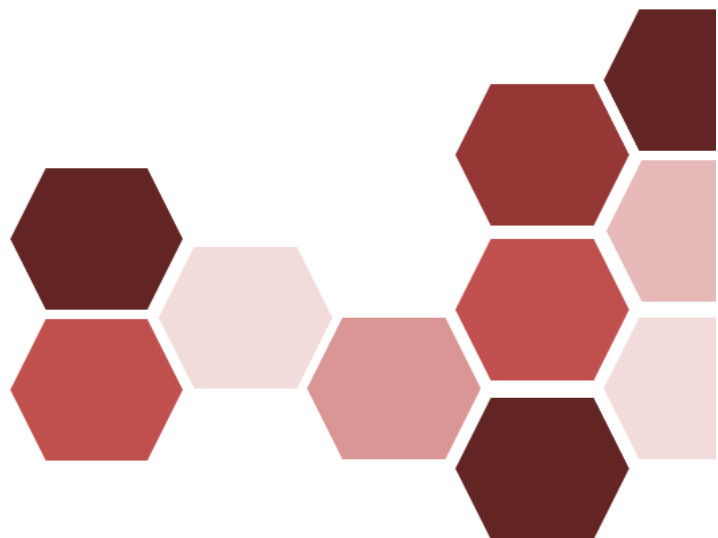
Of the 722 Durham Region cases linked to institutional outbreaks, 507 cases (70%) resulted from the eight outbreaks which began in March.

The number of cases involved in an outbreak from when it began to when it was declared over decreased over time, as containment of the virus in Durham Region institutions improved.

What is the minimum number of cases involved in an institutional outbreak?

- **One case** in long-term care or retirement homes.
- **Two cases** in hospitals.

- Outbreaks in March involved many more cases compared to outbreaks which began in later months.
- March outbreaks involved an average of 72 cases, compared to May outbreaks which only involved an average of two.
- Although the greatest number of outbreaks to date were declared in May, eight out of 12 (67%) outbreaks in long-term care and retirement homes involved only one case.



Outbreak Duration:

Half of the outbreaks beginning in March lasted at least two months.

The average length of time from when an outbreak began to when it was declared over decreased overtime, as containment of the virus in Durham Region institutions improved.

- Outbreaks in March lasted an average of 49 days, and 50 per cent lasted at least two months before they were resolved.
- In comparison, outbreaks in May lasted an average of 16 days.
- There were no outbreaks in May or June that lasted more than three weeks.

What is the shortest possible duration of an outbreak?

14 days, the incubation period for COVID-19.

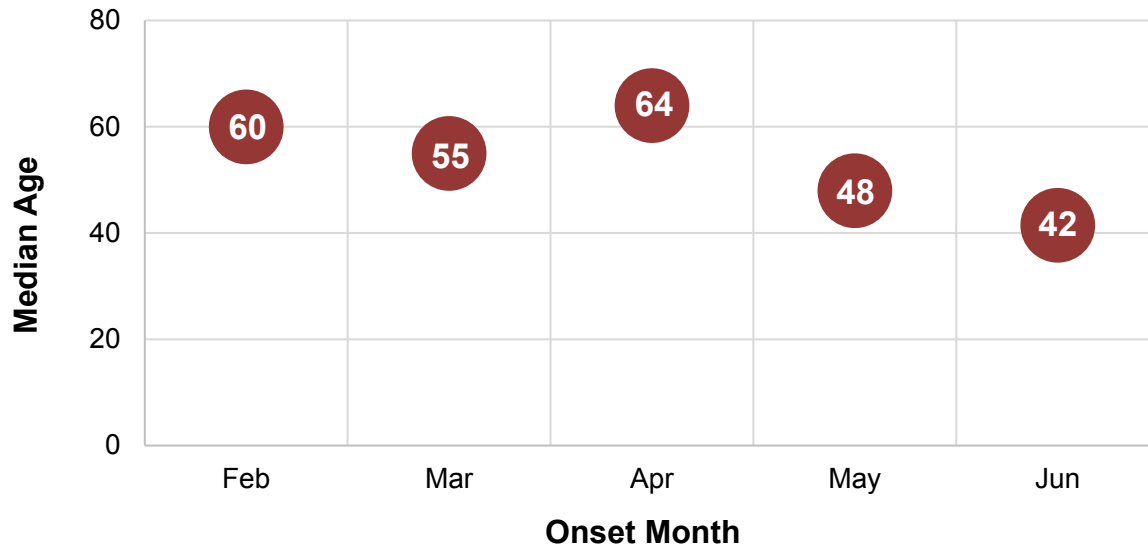
What is an incubation period?

The time it takes between when a person is exposed to the COVID-19 virus and the day they start having symptoms.

Outbreak duration is also related to the number of cases involved in the outbreak. The largest institutional outbreak to date began in March and involved 308 cases by the time it was successfully contained in June.

Case Demographics: Age

Figure 3: Median age of Durham Region COVID-19 Cases



Data Source: Ontario Ministry of Health, integrated Public Health Information System (iPHIS) database, extracted by Durham Region Health Department on July 3, 2020 at 9:00AM.

Note: there were only two cases in February.

Figure 3 shows the median age (in other words, the middle age if you lined up all of the ages from youngest to oldest) of COVID-19 cases in Durham Region by onset month. Note, there were only two cases in February.

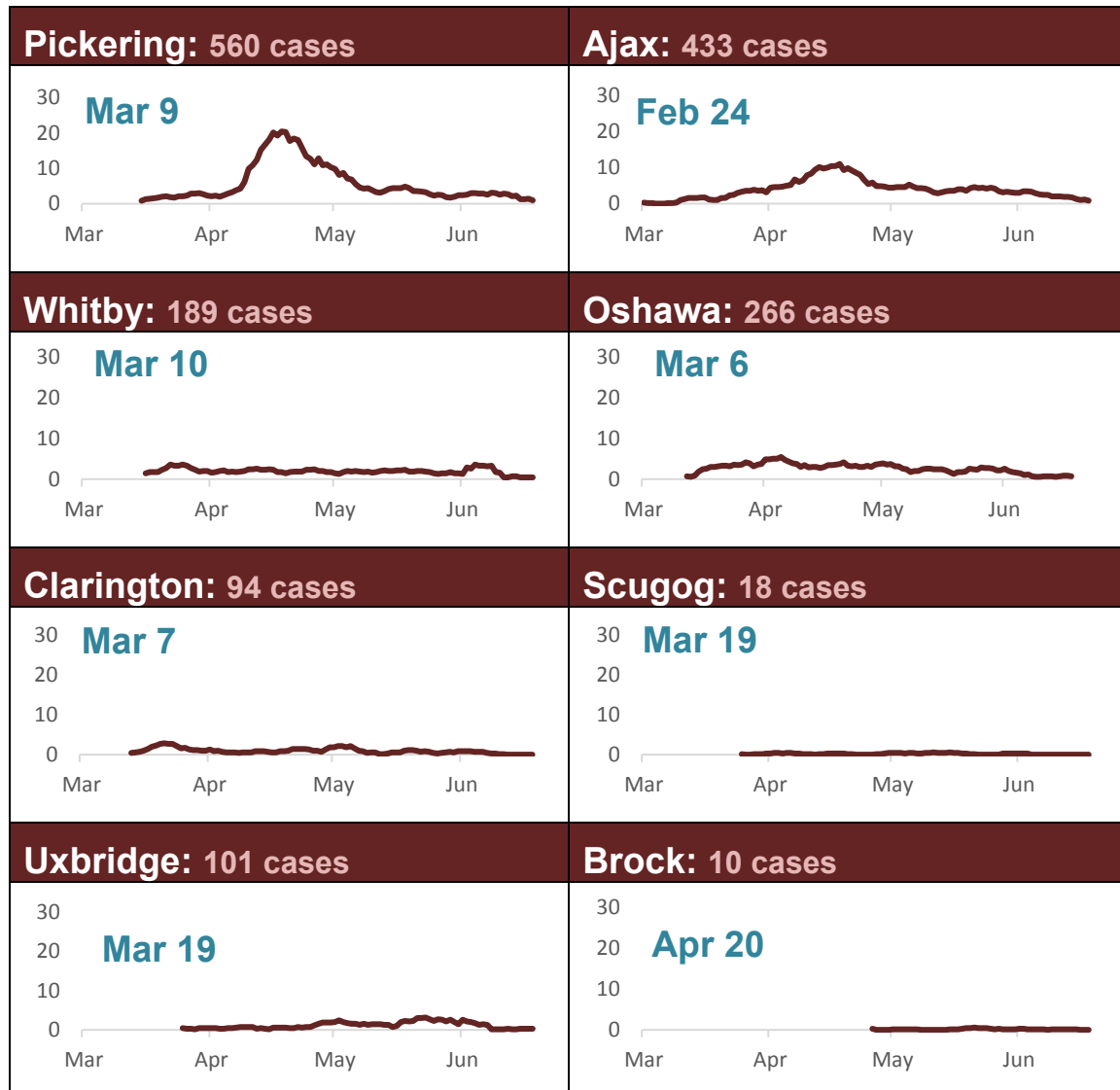
At the beginning of the outbreak in March, the median age of cases was 55 years. In April, the median age of cases increased to 64. This was due to the substantial impact institutional outbreaks had in shaping the COVID-19 pandemic within Durham Region. As containment of the virus in institutions improved and Durham Region began reopening, the median age of cases decreased through May (48 years) and June (42 years).

There was no significant difference in the median age of cases by month between male and female cases.

Case Demographics: Municipality

Cases Over Time

Figure 4. Number and 7-day Average of COVID-19 Cases per Day by Municipality of Residence



Data Source: Ontario Ministry of Health, integrated Public Health Information System (iPHIS) database, extracted by Durham Region Health Department on July 3, 2020 at 9:00AM.

Figure 4 shows the number of confirmed COVID-19 cases per day as a moving average for the past seven days, based on illness onset date.

The date on top of the graph is the onset date of the first case reported in that municipality.

Within two months of the first COVID-19 case identified in Durham Region, all municipalities had reported at least one confirmed case.

The first confirmed COVID-19 case in Durham Region became ill on February 24 and was from Ajax. Within three weeks, all Durham Region municipalities, except for Brock, reported at least one confirmed case. Brock did not have a confirmed COVID-19 case until April 20, almost two months after the first Durham Region case became ill.

Pickering and Ajax had the highest number of cases mostly due to large institutional outbreaks in those communities. This corresponds to the large peaks in the number of new cases per day seen in April.

In contrast, Scugog and Brock had the fewest cases, with less than 20 cases each.



Exposure Source

Figure 5. COVID-19 Cases by Exposure Source and Municipality of Residence

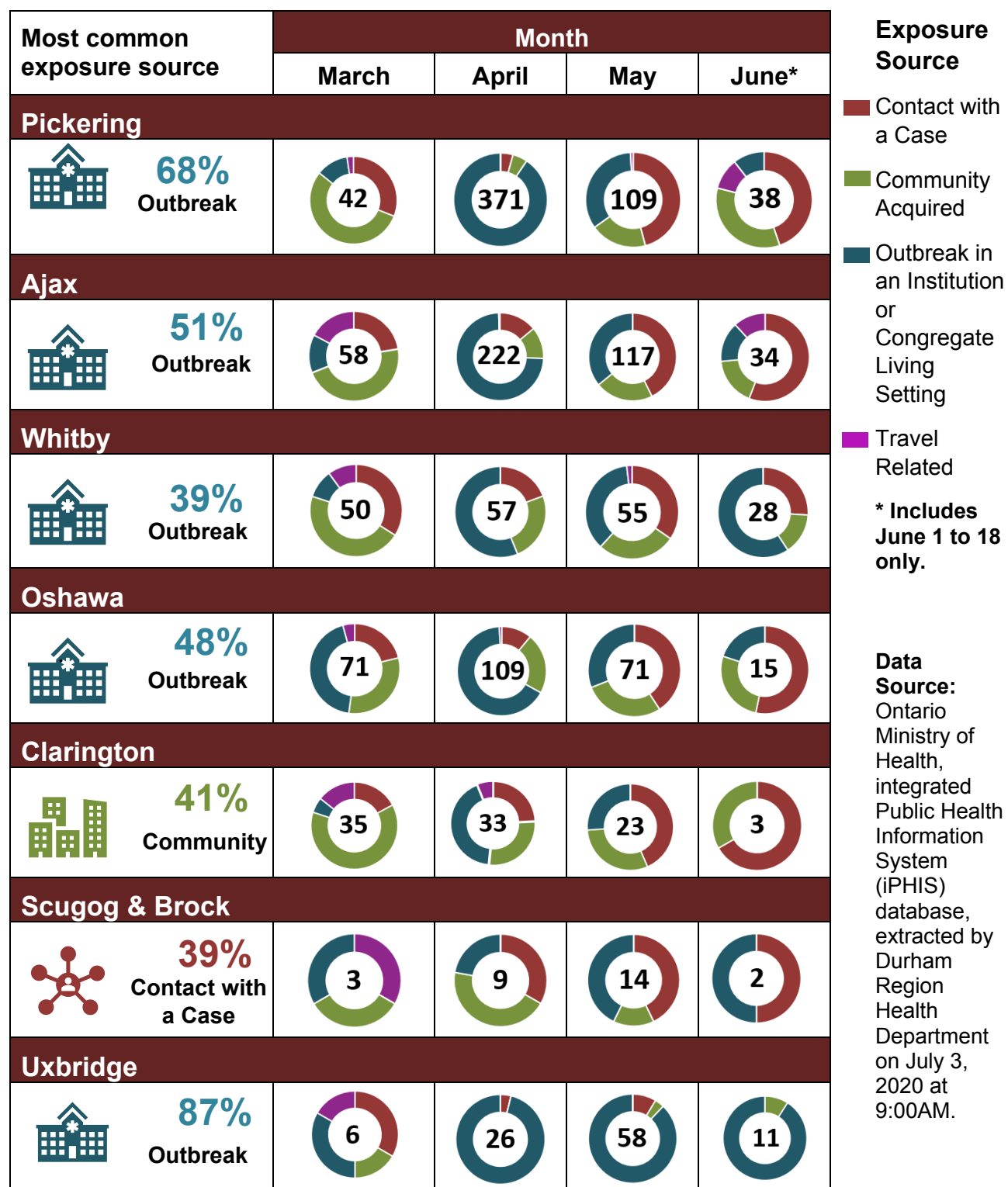
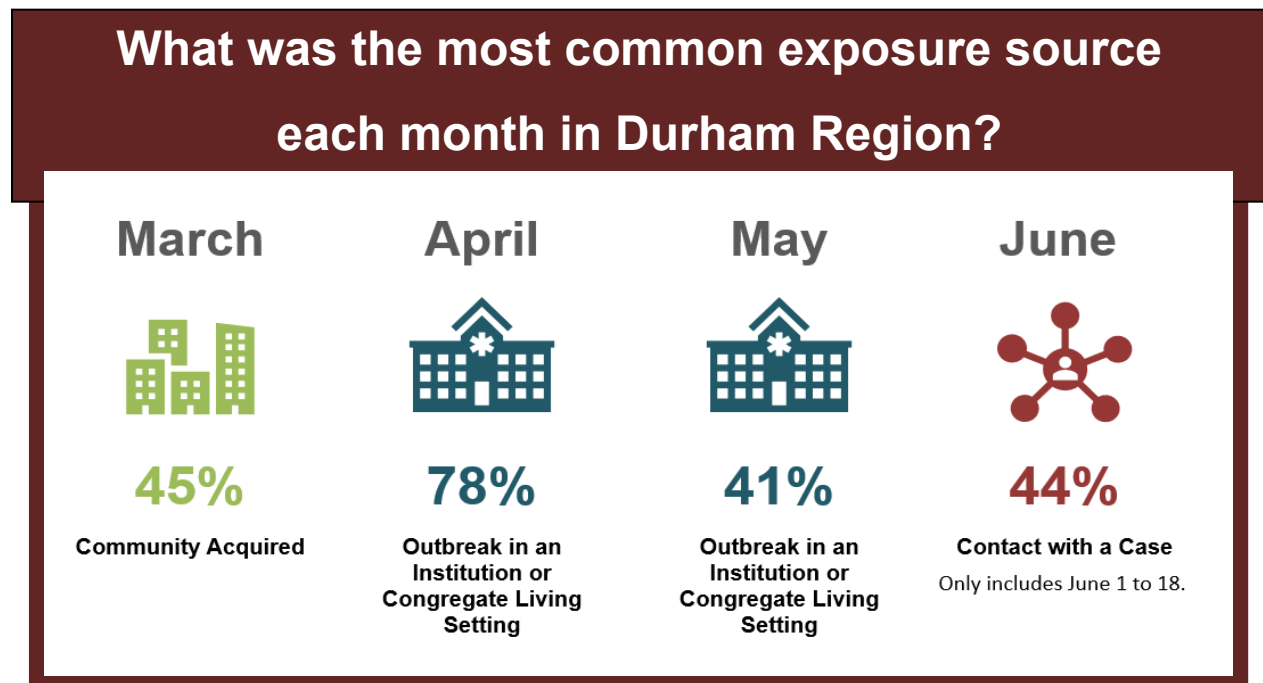


Figure 5 highlights the municipal differences in how cases acquired COVID-19 as the pandemic progressed from its onset on February 24 to the end of Stage 1 reopening on June 18. The circles show a breakdown of exposure source by each month and the numbers in each circle represent the total number of COVID-19 cases who became ill in each municipality for that month.

Note:

- Exposure source is not shown for February as there were only two cases, both from Ajax.
- Due to small case numbers, Scugog and Brock are shown together.



The most likely exposure source for Durham Region COVID-19 cases changed over time and varied by municipality.

Pickering, Ajax, Whitby and Oshawa

Overall, outbreaks in institutions or congregate living settings was the most common exposure in Pickering, Ajax, Whitby and Oshawa. These outbreaks had a large part in shaping COVID-19 in these communities.

The most common exposure source changed over time, and is similar to what is seen for Durham Region as a whole, due to the large proportion of cases residing in these municipalities:

- In **March**, the most common exposure source was the community.
- In **April**, the most common exposure source was outbreaks in institutions or congregate living settings.
- In **May**, as containment of the virus in institutions improved, and Durham Region entered Stage 1 reopening, the proportion of outbreak-related cases decreased and contact with a case and community acquisition became the most common exposure sources.
- In **June**, contact with a case remained the most common exposure source for all municipalities except Whitby, where there was a relatively large outbreak in a congregate living setting and outbreak exposure was the most common exposure source.



Clarington

Although Clarington was similar to the urban municipalities when considering the most common exposure each month, community acquisition was the most common exposure source overall and accounted for 41 per cent of all cases.

This is likely due to the smaller impact outbreaks had in this community, compared to the others.

Scugog & Brock

Scugog and Brock had the fewest cases out of all the municipalities and contact with a case was the most common exposure source overall, accounting for 39 per cent of cases.

These municipalities were impacted by outbreaks in long term care and congregate living settings later than the other municipalities, as seen by the small proportion of dark blue in the April circle on the graph above.

Uxbridge

The impact outbreaks have had on Uxbridge is quite noticeable, as it was the most common exposure from March to June and accounted for 87 per cent of cases.



COVID-19 Data Tracker - durham.ca/covidcases

Durham Health Connection Line | 905-668-2020 or 1-800-841-2729

If you require this information in an accessible format, contact 1-800-841-2729.

