

Impacts of Off-Peak Deliveries in the Toronto Area Before and During the Pandemic

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What is Off-Peak Delivery?

**Off-peak delivery (OPD) refers to
the delivery of goods
during the evening and overnight hours**

7 PM – 7 AM

OPD programs

- New York City
- London Olympics
- Chicago
- Toronto– Pan Am Games
- etc...

- Region of Peel – Pilot
- OPD during Pandemic



Region of Peel 2019 – Pilot Results

Participation:

3 large retail companies permitted to operate during off-peak hours in Peel Region

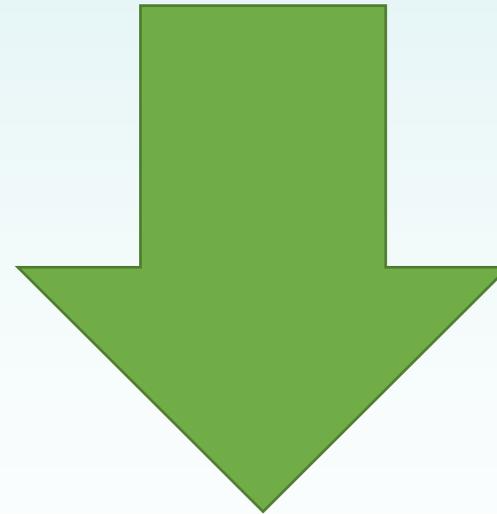
- 14 stores in Peel Region

- 6 month pilot

~1600 truck trips (30%) of trips to participating retail stores shifted to off-peak hours

Region of Peel 2019 – Pilot Results

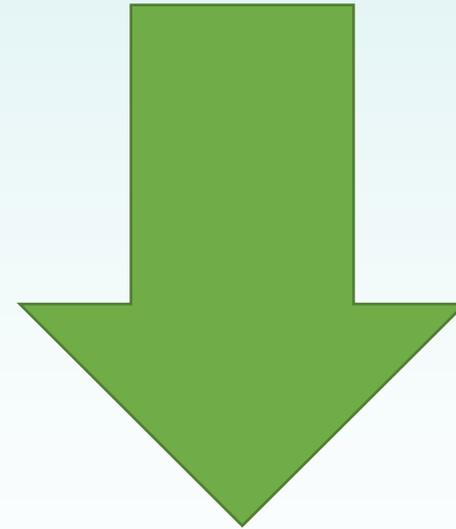
Travel Times



**15.3 percent lower
travel times during
off-peak hours**

Region of Peel 2019 – Pilot Results

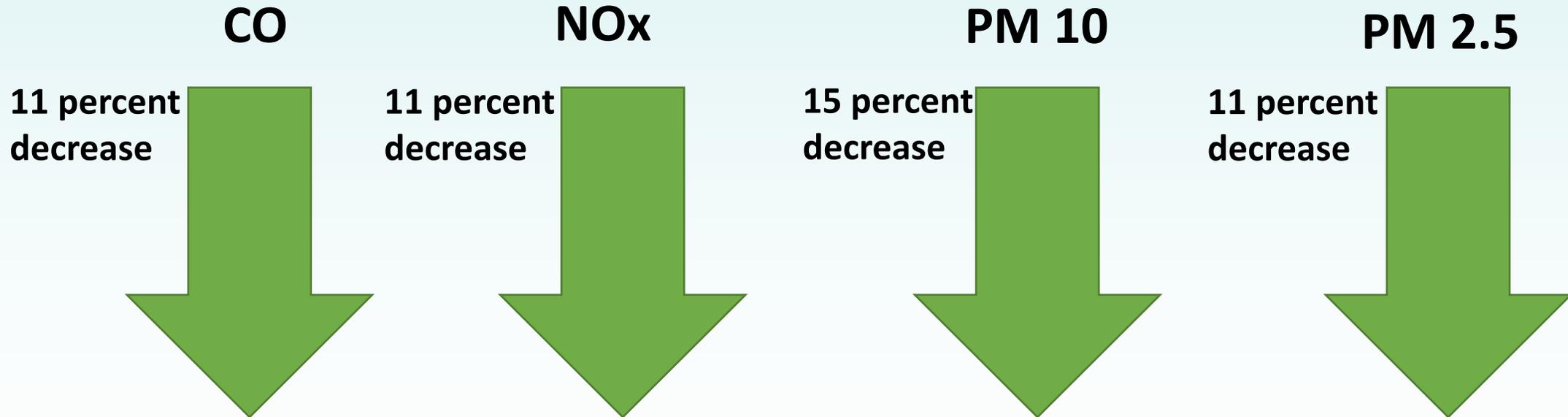
GHG emissions



**10.6 percent decrease
in GHG emission
factors (grams/km)
during off-peak hours**

Region of Peel 2019 – Pilot Results

Air quality pollutants



Results

Number of Noise Complaints

0

March 19, 2020 ... days after COVID-19 lockdown in Ontario

“The *Municipal Emergency Act, 2020* will ensure that for the near future, the delivery of goods to Ontario's businesses and consumers isn't impacted by municipal noise by-laws that may unintentionally be impeding such deliveries when they are most urgently needed.”

Ontario – Office of the Premier

November 30, 2020

Bill 215, the Main Street Recovery Act,

- Provides that municipalities do not have the power to prohibit and regulate with respect to noise related to goods delivery to specified destinations...
- Concerns raised about
 - delivery noise and
 - truck collision rates and severity at night

Natural Experiment

Assess off-peak deliveries at a regional scale

- Analysis of noise complaints
- Community noise survey
- Truck collision analysis
- Truck GPS Analysis for 3 major firms
- Transportation planning model of OPD and emissions

Noise Complaint Data and Community Noise Survey

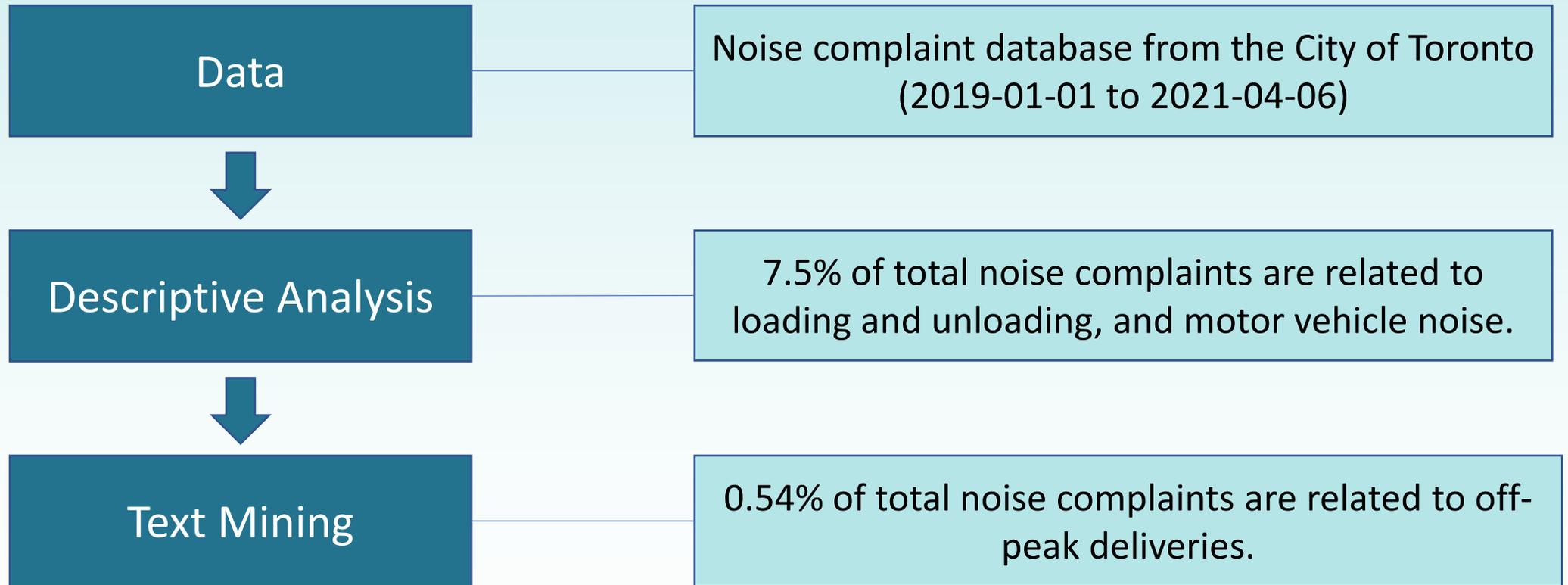
City Logistics for the Urban Economy



Noise complaint data

- Requested from the City of Toronto, Region of Peel and Region of York.
 - Detailed database from the City of Toronto

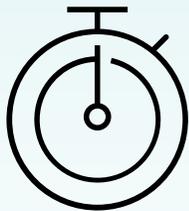
Analysis of the City of Toronto noise complaints



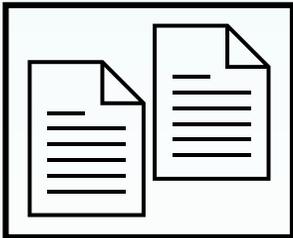
Caveats



1. Redeployment of City of Toronto staff between March 17 and June 24, 2020.



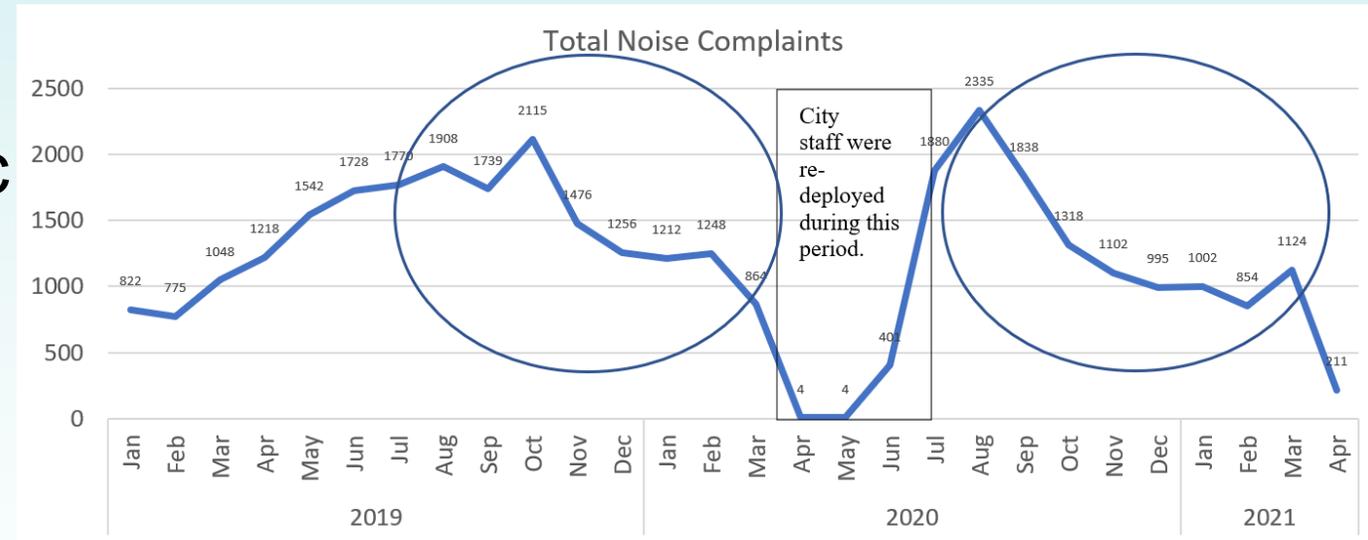
2. The recorded time of the complaint may not be a true reflection of when the noise occurred.



3. Several noise complaints may be in response to the same source of noise.

City of Toronto total noise complaints

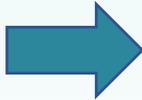
In the August to March period after the pandemic began, no major change in total noise complaint frequency was evident.



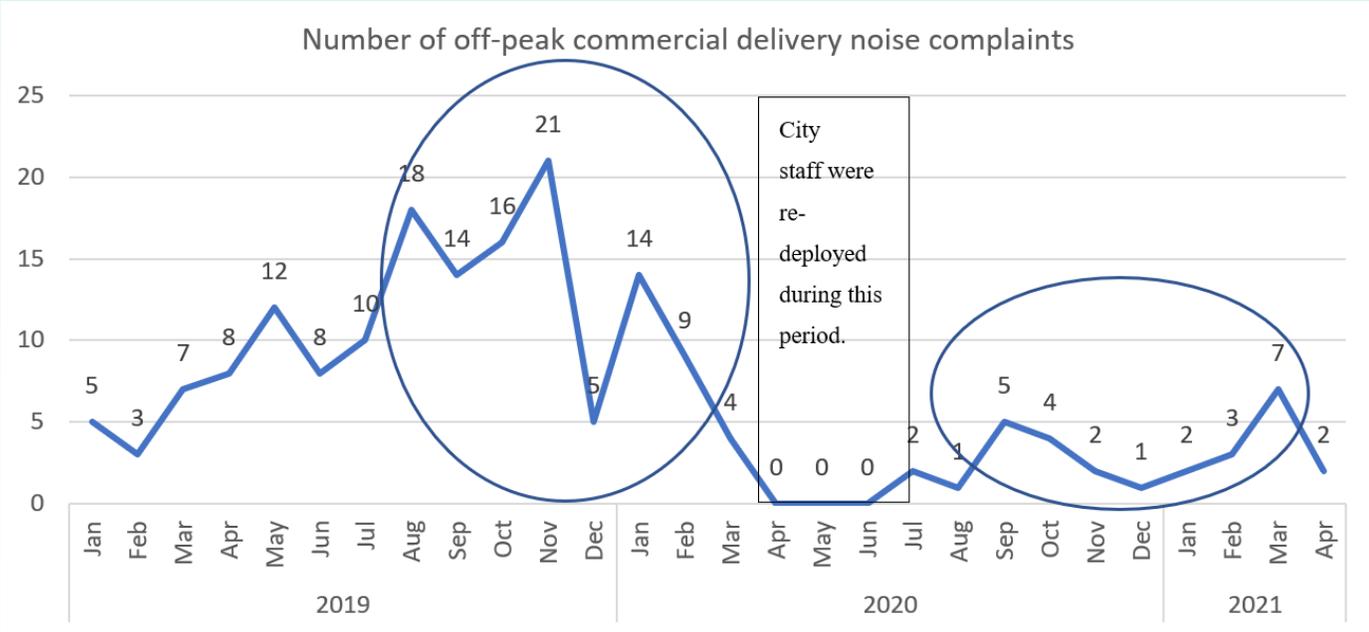
City of Toronto OPD noise complaints

Between August and March:

Pre-pandemic



During pandemic



Preliminary conclusions

- OPD are a small but non-negligible portion of the noise experienced in Toronto.
- No evidence that noise by-law relaxation on March 19, 2020 has exacerbated residents' perceptions of noise from commercial deliveries.
- Caveats
 - Less frequent deliveries to many stores during the pandemic.
 - Complaints are an imperfect indication of the impact of noise on residents. **BARRIERS TO REGISTERING A COMPLAINT.**

Community Noise Survey

Community Noise Survey

- An anonymous online questionnaire with 16 questions that take approximately 10 minutes to answer.



Community Noise Survey

Welcome to the Community Noise Survey

Consent form

We are delighted that you have accessed this survey! Thank-you!

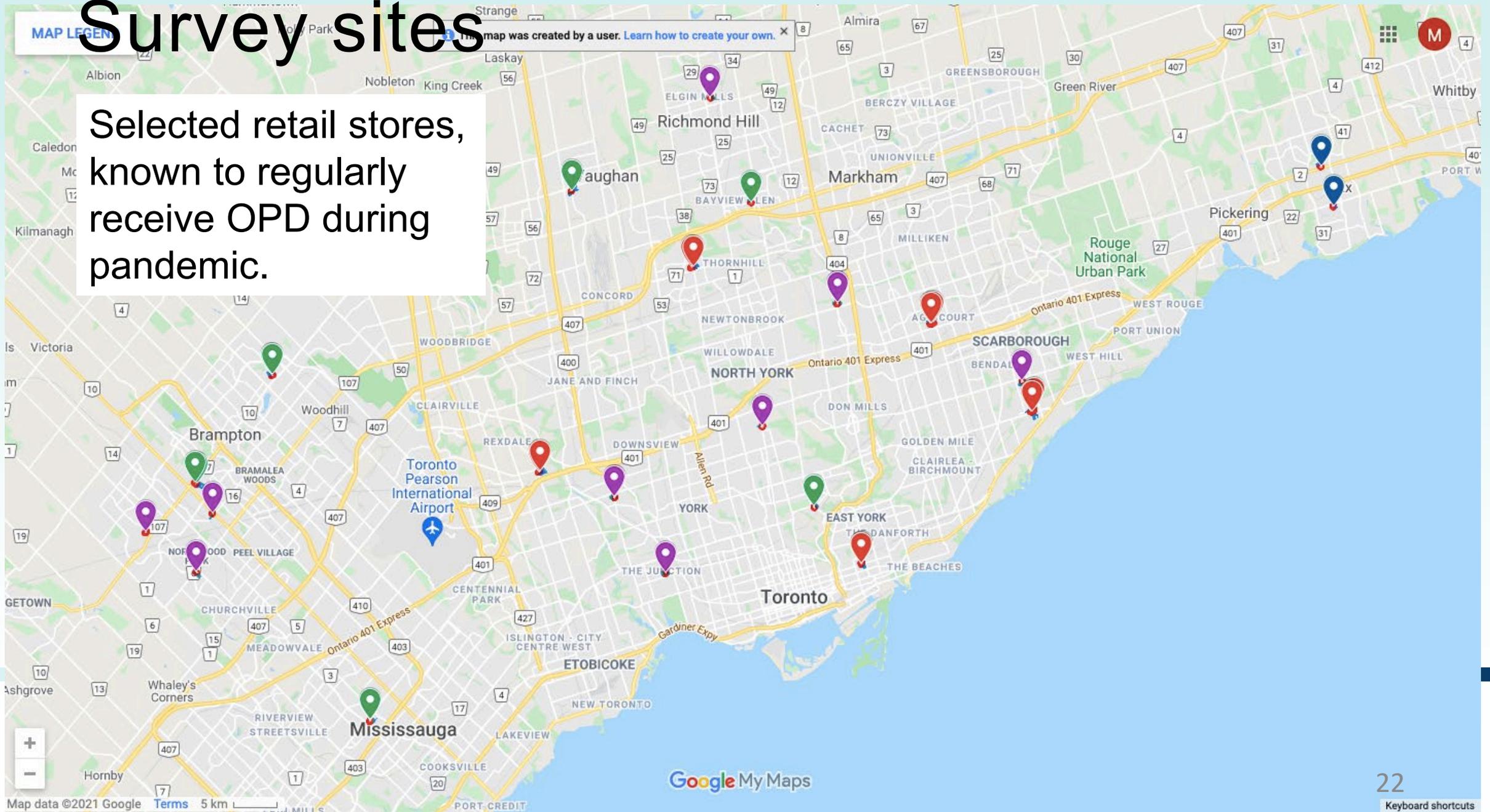
The purpose of this survey is to improve our understanding about how noise levels have changed during the COVID-19 pandemic. We hope to benefit your community by learning about important sources of noise and to influence noise-generating activities. This survey is conducted by the University of Toronto and is funded by the Atmospheric Fund, the Regions of Peel and York, the City of Toronto, and the Natural Science and Engineering Research Council.

Online questionnaire

- Noise related questions: where, when, and what source? (Q7 – Q12)
- Demographic information (Q13 – Q16)
 - To assess representativeness of the survey sample.

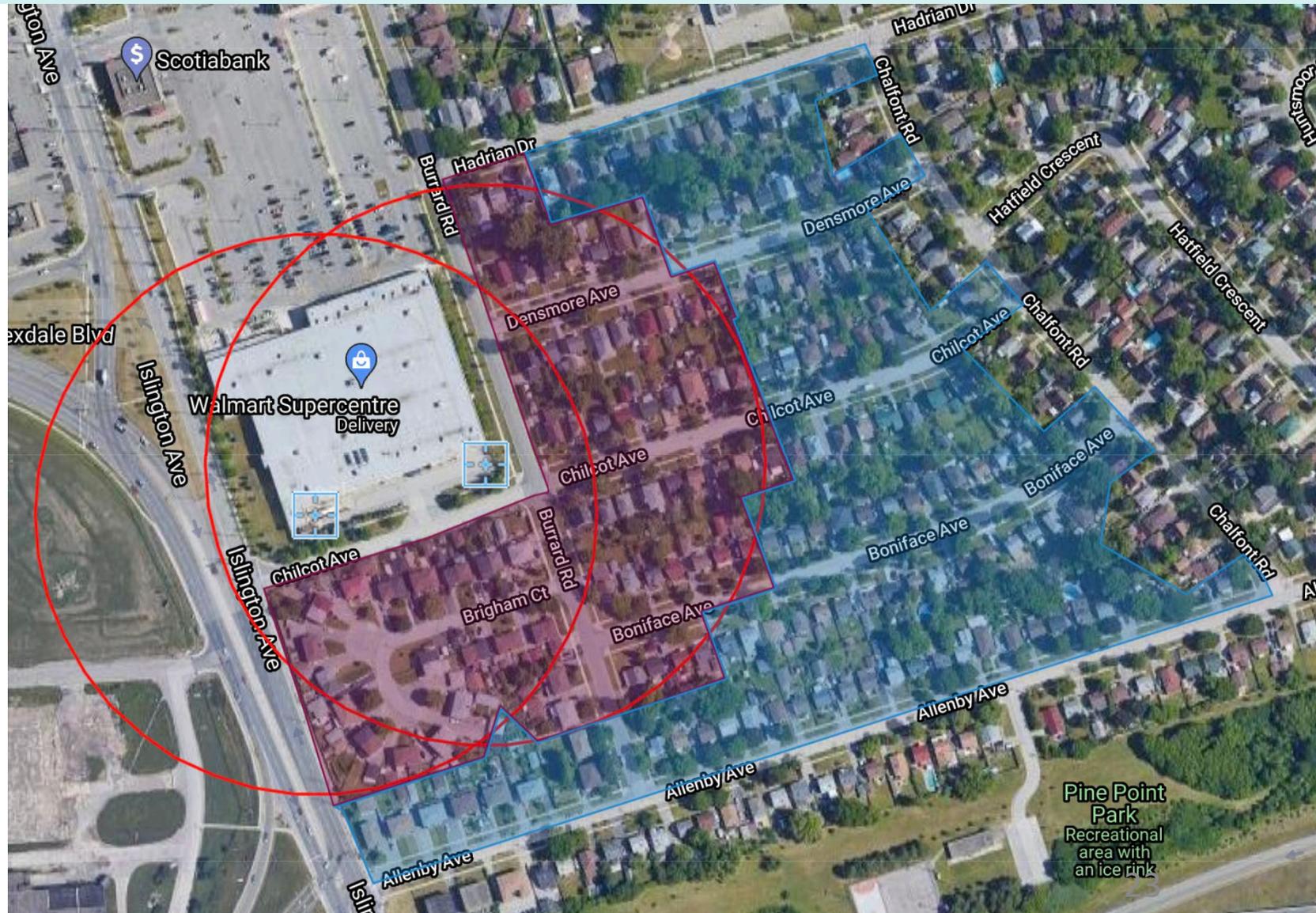
Survey sites

Selected retail stores, known to regularly receive OPD during pandemic.



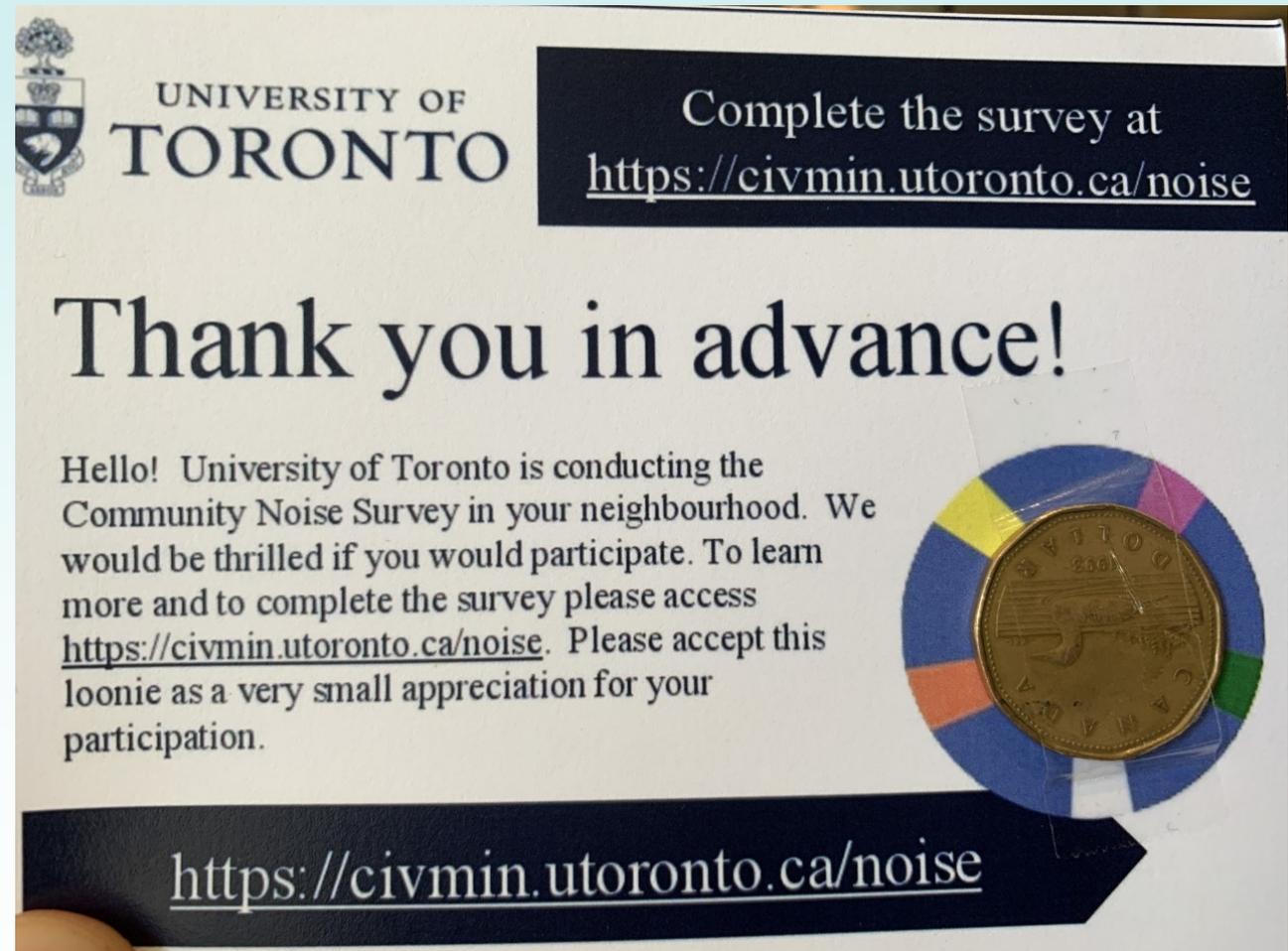
Surveyed households

- Red: 150m radius circles centred on loading docks
- Red: 'experimental' households within 150m
- Blue: 'control' group, outside 150m
- Beyond 150m, noise is reduced by 40dB.



Recruiting

- Postcards delivered to residents adjacent to 22 retail sites
- \$1 incentive (loonie taped to the postcard!)

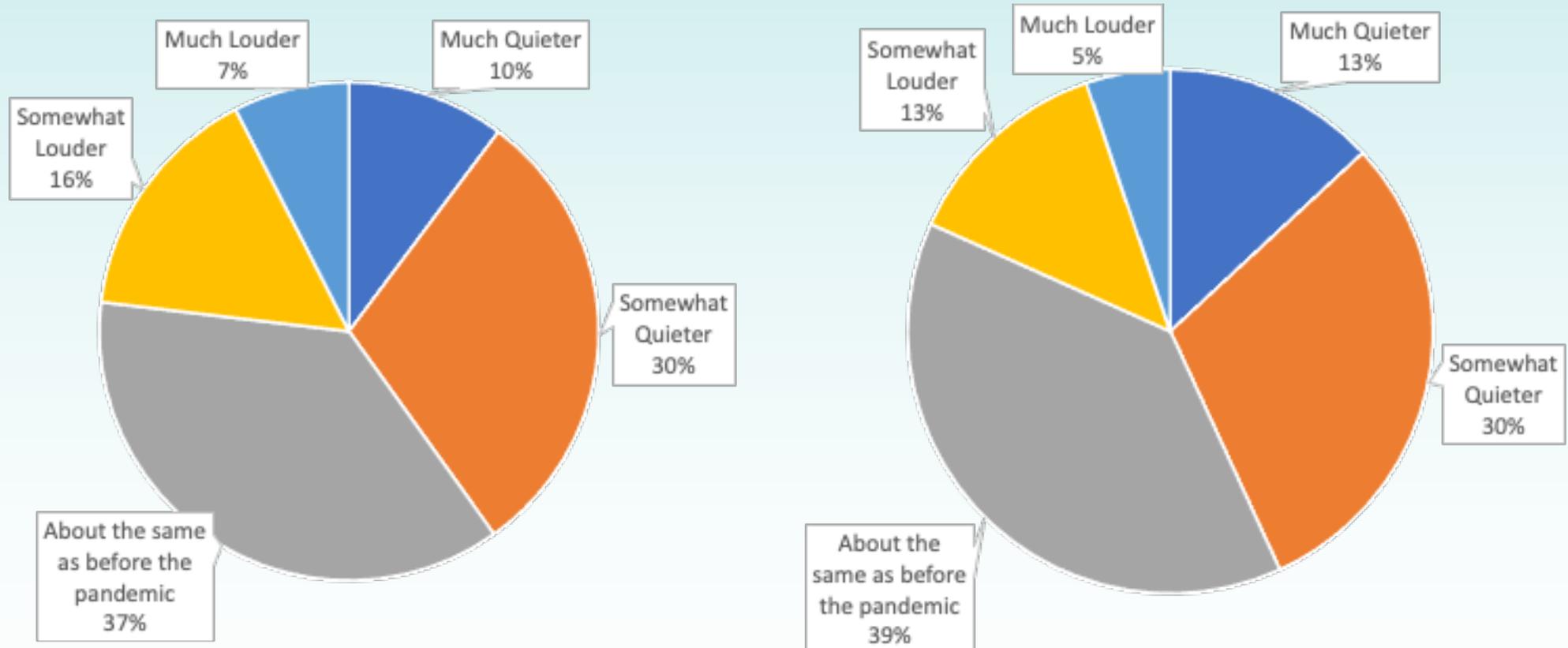


Survey outcomes

- 327 responses out of 3346 postcards distributed
- 48% experimental group, 52% control group

Response rate is 10%

“How has the noise level where you live changed since the March 2020 pandemic lockdown began?”



Responses within 150m of known site of OPD

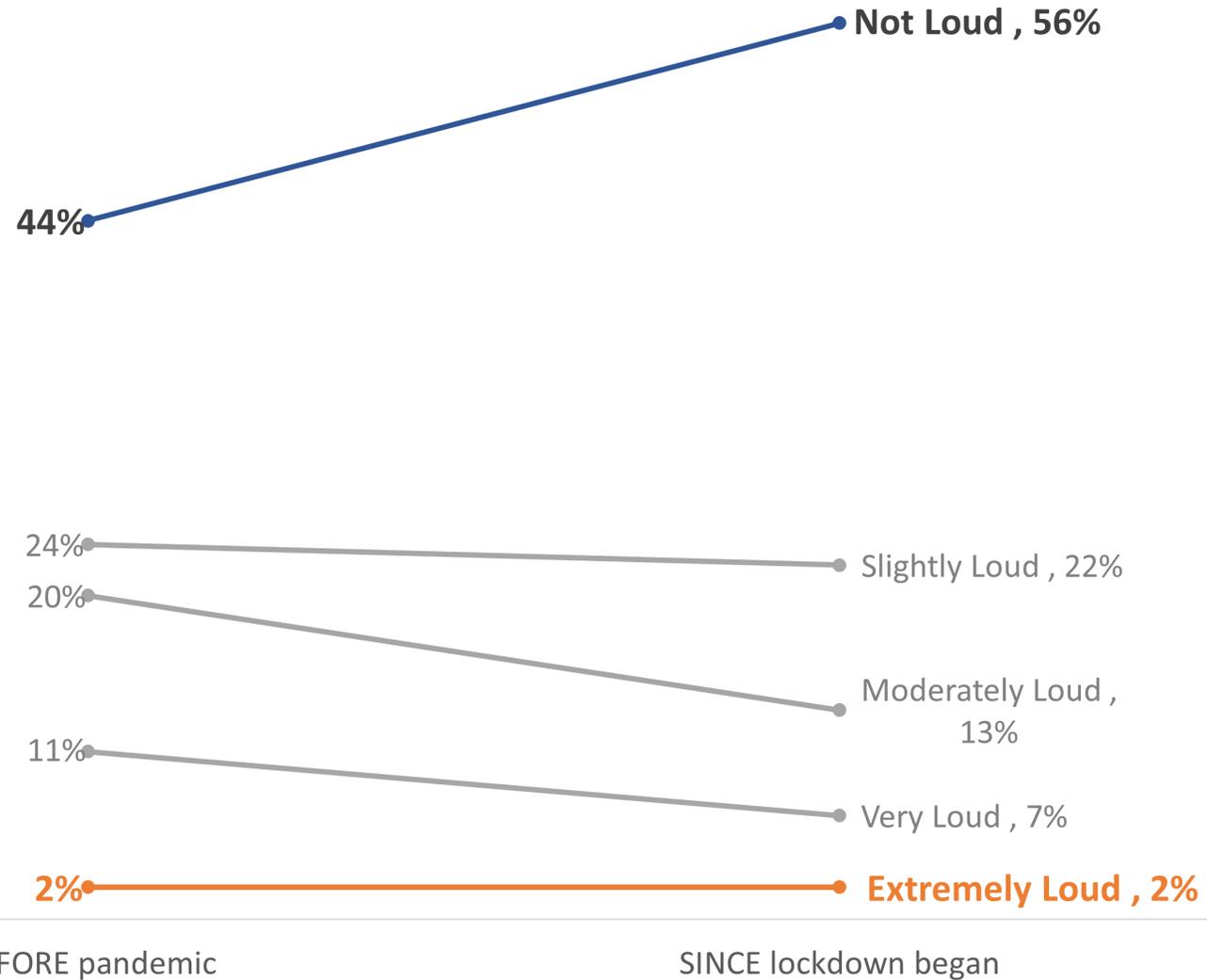
Responses beyond 150m of known site of OPD

Preliminary conclusions

Responses within 150m of known site of OPD					
Before the March 2020 pandemic lockdown began, from inside your home, how would you rate the noise coming from ...?					
	Not Loud	Slightly Loud	Moderately Loud	Very Loud	Extremely Loud
Your street	24.20%	28.80%	32.70%	11.80%	2.60%
Your neighbourhood	30.10%	26.10%	31.40%	11.10%	1.30%
Your nearby business establishments	43.80%	23.50%	20.30%	10.50%	2.00%
Inside your home	60.10%	30.70%	7.80%	1.30%	0.00%
Since the March 2020 pandemic lockdown began, from inside your home, how would you rate the noise coming from ...?					
	Not Loud	Slightly Loud	Moderately Loud	Very Loud	Extremely Loud
Your street	40.50%	22.20%	24.20%	9.20%	3.90%
Your neighbourhood	38.60%	27.50%	20.90%	9.80%	3.30%
Your nearby business establishments	56.20%	22.20%	13.10%	6.50%	2.00%
Inside your home	54.90%	27.50%	9.20%	7.20%	1.30%

From inside your home, how would you rate the noise coming from nearby business establishments?

Percentage of responses in communities that are within 150m of known site of OPD.



Preliminary conclusions

Responses within 150m of known site of OPD					
Before the March 2020 pandemic lockdown began, how would you rate the noise levels in your neighbourhood during these times?					
	Not Loud	Slightly Loud	Moderately Loud	Very Loud	Extremely Loud
Weekday DAY-TIME (7am - 7pm)	25.5%	32.7%	30.7%	8.5%	2.6%
Weekday EVENING (7pm – 11pm)	33.3%	31.4%	26.1%	7.8%	1.3%
Weekday NIGHT-TIME (11pm - 7am)	53.6%	33.3%	10.5%	2.0%	0.7%
Weekend DAY-TIME (7am – 7pm)	24.2%	36.6%	30.1%	6.5%	2.6%
Weekend EVENING (7pm – 11pm)	30.7%	33.3%	24.8%	10.5%	0.7%
Weekend NIGHT-TIME (11pm - 7am)	46.4%	35.3%	13.1%	3.9%	1.3%
Since the March 2020 pandemic lockdown began, how would you rate the noise levels in your neighbourhood during these times?					
	Not Loud	Slightly Loud	Moderately Loud	Very Loud	Extremely Loud
Weekday DAY-TIME (7am - 7pm)	30.7%	37.9%	22.2%	7.2%	2.0%
Weekday EVENING (7pm – 11pm)	39.9%	34.0%	17.0%	7.2%	2.0%
Weekday NIGHT-TIME (11pm - 7am)	59.5%	24.8%	11.8%	2.6%	1.3%
Weekend DAY-TIME (7am – 7pm)	33.3%	38.6%	19.6%	6.5%	2.0%
Weekend EVENING (7pm – 11pm)	39.9%	31.4%	18.3%	7.8%	2.6%
Weekend NIGHT-TIME (11pm - 7am)	54.9%	24.8%	13.1%	5.2%	2.0%

In the past year during the pandemic, how often did you hear these sounds from inside your home?

Within 150m of OPD

Ambulance, police, and fire trucks
Garbage pick-up, Street sweepers
Road/highway traffic
Day-time truck deliveries to nearby businesses
Car horns and car alarms
Construction
Evening/night-time truck deliveries to nearby businesses
Loud music and party
Train / streetcar noise
Airport noise

Most Often Heard



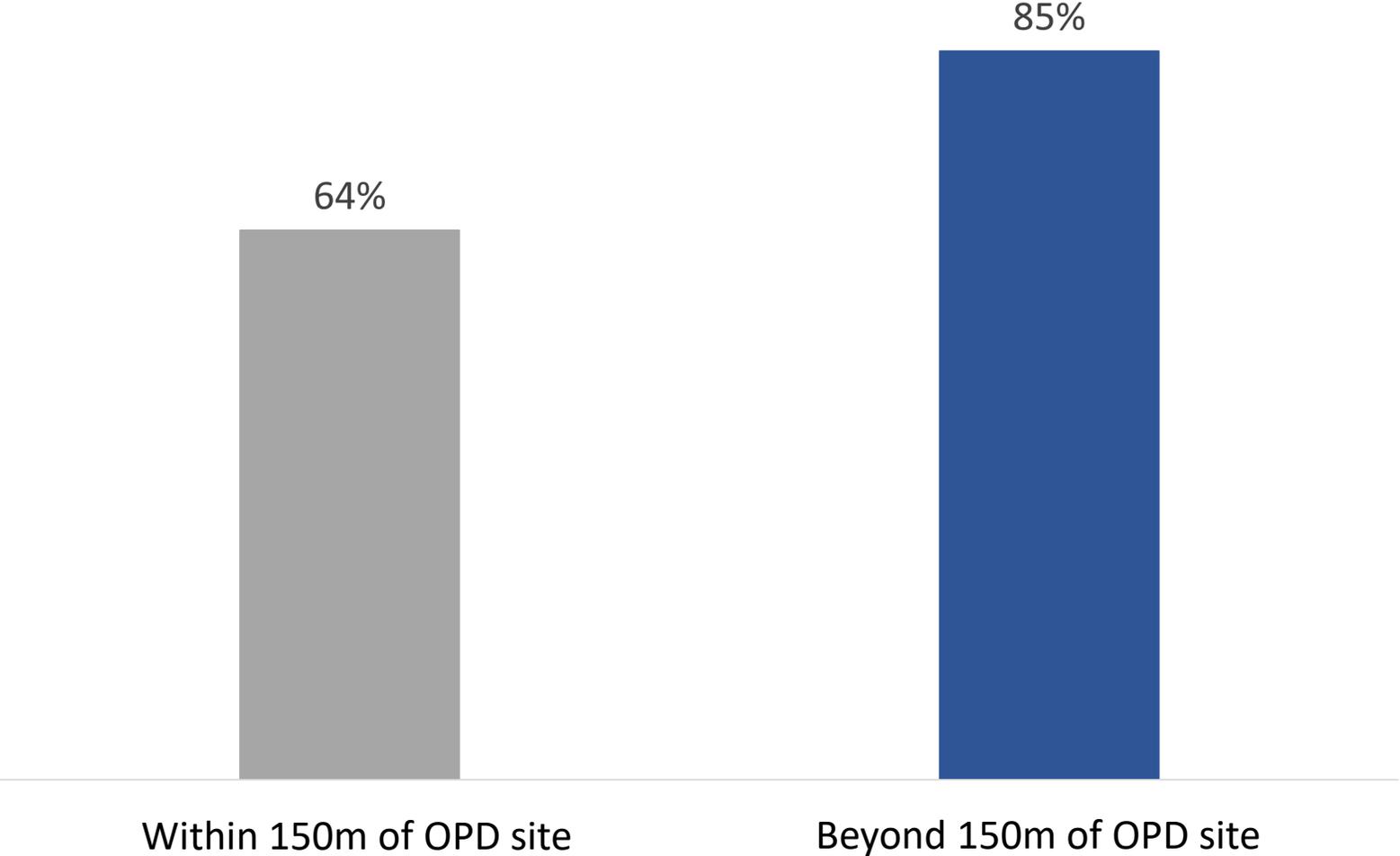
Least Often Heard

Beyond 150m from OPD

Garbage pick-up, Street sweepers
Ambulance, police, and fire trucks
Construction
Car horns and car alarms
Road/highway traffic
Loud music and party
Day-time truck deliveries to nearby businesses
Airport noise
Train / streetcar noise
Evening / night-time truck deliveries to nearby businesses

In the past year during the pandemic, how often did you hear evening / night-time truck deliveries to nearby businesses from inside your home?

Percentage of 'Never' and 'Rarely' responses in in two communities beyond and within 150m of known site of OPD.



Community Noise Survey conclusions

- Decrease in perception of noise during the pandemic in the vicinity of off-peak delivery sites.
- Reduction in the noise perception from 'nearby business establishments' during the pandemic, despite introduction of off-peak deliveries
- 70-85% of respondents in the experimental group, reported evening and night-time noise levels as 'not loud' or 'slightly loud' during the pandemic.
- 64% of respondents in the experimental group and 85% of respondents in the control group, 'never' or 'rarely' heard evening/nighttime deliveries to the nearby businesses.
- No clear evidence that OPD are problematic for people living in neighbouring communities.

Thank you!

Funding Partners:

Natural Science and Engineering Research Council

The Atmospheric Fund

Region of Peel

City of Toronto

City Logistics for the Urban Economy

