

SAFER AT HOME?

Domestic Violence in the time of
COVID-19

Stat 198 Final Project - Natalie Asmus, Stacy Chen, and
Samuel Liu



<https://ywaspokane.org/how-to-help/endthesilence/>

WHAT IS DOMESTIC VIOLENCE?

- Domestic violence = intimate partner violence (IPV) → sexual or physical violence, stalking, psychological manipulation
- 1 in 4 women and 1 in 10 men will experience some form of domestic violence in their lifetime (1)
- Significant public health issue → individual, societal, and economic costs



COVID-19 AND DOMESTIC VIOLENCE

- Increased time spent at home with abusive partner
- Restricted privacy and freedom
- Cut-off from outside support system
- Disrupted livelihoods, increased stress
- Worldwide increase in reports, hotline use, etc. during quarantine

If you are experiencing violence during COVID-19:



Reach out
to supportive family,
friends or neighbours



Call a hotline or
access information
online if possible

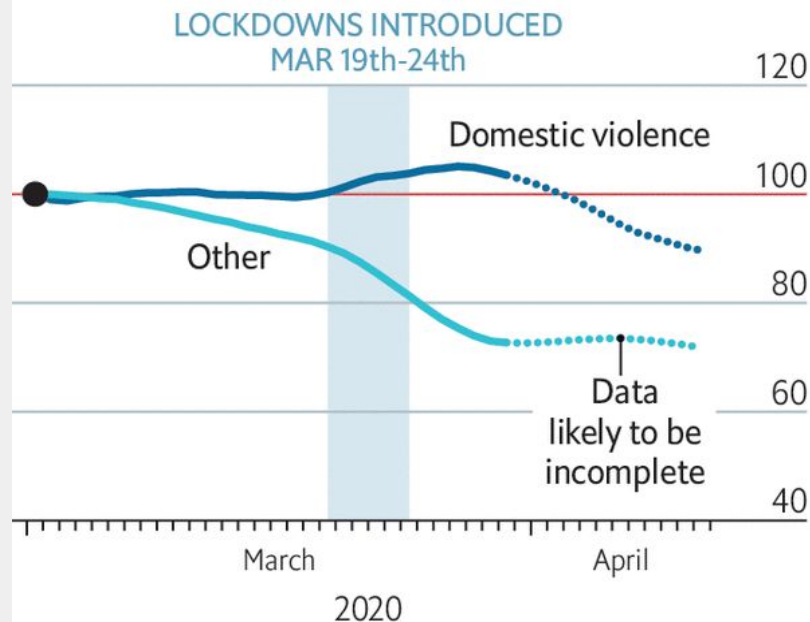


Seek out local
services for survivors

Too close for comfort

United States, reported crimes per day

Selected cities*, Mar 1st 2020=100, 7-day moving average

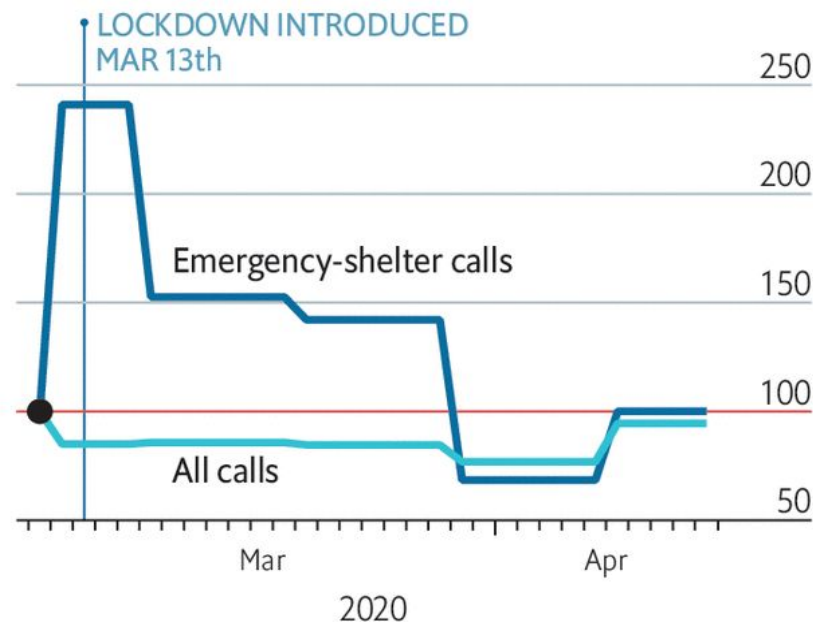


Sources: Police and municipal records; Danish National Domestic Violence Hotline (Lev Uden Vold)

The Economist

Denmark, calls to domestic-violence hotline

Jan 1st-Mar 11th average=100

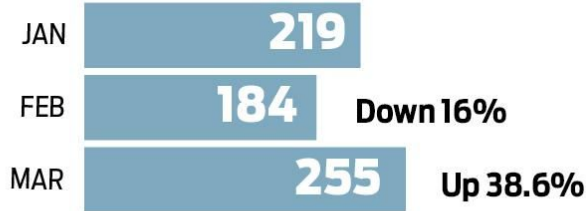


*Chicago, Kansas City, Los Angeles, Memphis and New Orleans

Aggravated Assault/ Family



Assault/ Family



Disturbance / Family



Domestic violence surges during COVID-19

As advocates expected, the novel coronavirus pandemic has increased rates of domestic violence in Houston. Harris County Sheriff's Office deputies responded to a total of 1,558 reports of domestic violence in March.

Massive Rise in Domestic Violence Expected in Prolonged Lockdowns

Effects of COVID-19 lockdowns on gender-based violence and contraception worldwide (2020)

■ 6 months of lockdown ■ 9 months of lockdown

Cases of gender-based violence



Women losing access to contraception



Source: UN Population Division

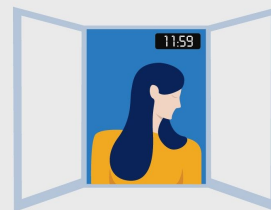


statista

<https://www.statista.com/chart/21566/global-rise-in-gender-based-violence-covid-19/>

Every **12 minutes** in the world
one woman dies as a result of domestic violence*

*Source: UNODC



ONLINE
SESSION

Q&A on violence against women and
domestic violence

Joint initiative of Council of Europe project "Promoting an integrated approach to end violence against women and enhancing gender equality in Georgia" and Interagency Commission on Gender Equality under the Human Rights Council.

STAYING HOME
DOES NOT MEAN
STAYING SILENT!

ASK A QUESTION ONLINE



<https://www.coe.int/en/web/tbilisi/launch-of-the-online-sessions-q-a-on-violence-against-women-and-domestic-violence-during-covid-19-pandemic>



HM Government

AT HOME
SHOULDN'T
MEAN AT RISK
OF DOMESTIC ABUSE
#YOUARENOTALONE



<https://www.crawleynews24.co.uk/new-branded-shopping-bags-aim-to-reach-domestic-abuse-victims-top-scared-or-unable-to-seek-help/>

RESEARCH QUESTION AND HYPOTHESES

- *Is there a relationship between the proportion of crimes that are reported as domestic violence and the COVID-19 pandemic?*
- *Are we seeing a spike in domestic violence as people are forced to spend more time in their homes?*
- *How has this changed throughout the course of the pandemic?*

RESEARCH QUESTION AND HYPOTHESES

- *There will be a spike in cases at the beginning of lockdown.*
- *As states begin to open up, we would expect rates of domestic violence (measured by the proportion of cases reported) to decrease back to “normal” levels.*

THE CITY OF CHICAGO AND COVID-19

- Data pulled from Chicago Police Department's CLEAR (Citizen Law Enforcement Analysis and Reporting) system
- **July 10, 2019** - earliest date recorded in the dataset - Before COVID
- **January 24, 2020** - First confirmed case in Illinois (a Chicago resident) reported - Before Lockdown
- **January 30, 2020** - First US case of person-to-person transmission recorded (in Chicago)
- **March 22, 2020** - First full day of strict stay at home order for all individuals except those considered essential workers - Lockdown
- **May 1, 2020** - Chicago enters phase 2 of its gradual reopening plan
- **June 3, 2020** - Chicago enters phase 3 of its gradual reopening plan
- **June 26, 2020** - Chicago enters phase 4 of its gradual reopening plan

PROTECTING CHICAGO

I STRICT STAY-AT-HOME

Limit the amount of contact with others



Goal is to **limit interactions to rapidly slow the spread of COVID-19**

WORK

- Essential workers go to work; everyone else works from home

LIFE

- Stay at home and limit going out to essential activities only

HEALTH

- Physically distance from anyone you do not live with, especially vulnerable friends and family

II STAY-AT-HOME

Guard against unsafe interactions with others



Goal is to **continue flattening the curve** while safely being outside

- Essential workers go to work; everyone else works from home

- Stay at home as much as possible
- Wear a face covering while outside your home

- Physically distance from anyone you do not live with, especially vulnerable friends and family

III CAUTIOUSLY REOPEN

Strict physical distancing with some businesses reopening



Goal is to **thoughtfully begin to reopen Chicago safely**

- Non-essential workers begin to return to work in a phased way
- Select businesses, non-profits, city entities open with demonstrated, appropriate protections for workers and customers

- When meeting others, physically distance and wear a face covering
- Non-business, social gatherings limited to <10 persons
- Phased, limited public amenities begin to open

- Stay at home if you feel ill or have come into contact with someone with COVID-19
- Continue to physically distance from vulnerable populations
- Get tested if you have symptoms

IV GRADUALLY RESUME

Continued staggered reopening into a new normal



Goal is to **further reopen Chicago while ensuring the safety of residents**

- Additional business and capacity restrictions are lifted with appropriate safeguards

- Additional public amenities open
- Continue to wear a face covering and physically distance

- Continue to distance and allow vulnerable residents to shelter
- Get tested if you have symptoms or think you have had COVID-19

V PROTECT

Continue to protect vulnerable populations



Goal is to **continue to maintain safety until COVID-19 is contained**

- All businesses open
- Non-vulnerable individuals can resume working

- Most activities resume with health safety in place
- Some events can resume

- Set up screenings and tests at work or with your family
- Sign up for a vaccine on the COVID Coach web portal

HOW WE WILL TRANSITION BETWEEN PHASES

Chicago is monitoring answers to these 4 questions in order to decide when and how to reopen

01

Is the **rate of disease spread** across the city and surrounding counties decreasing?



- Tracking cases, hospitalizations, ICU admissions, testing, and deaths across city and region
- Monitoring cases over time by zip code, age, sex, race, and ethnicity (and direct resources where they are most needed)

03

Are there enough **support systems in place for vulnerable residents?**



- Shelters and housing for vulnerable populations
- Increased testing at nursing homes
- Food delivery and specific store times for senior citizens
- Food security for CPS students and meals through Greater Chicago Food Depository

02

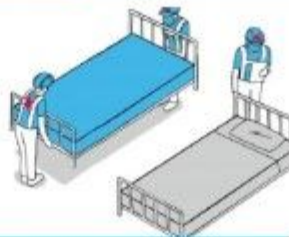
Does the city have the **testing and contact-tracing capacity** to track the disease and limit spread?



- Scaled-up testing across the city
- Tracking percent of positive tests

04

Can the **healthcare system** handle a potential future surge (including beds, ventilators, PPE)?

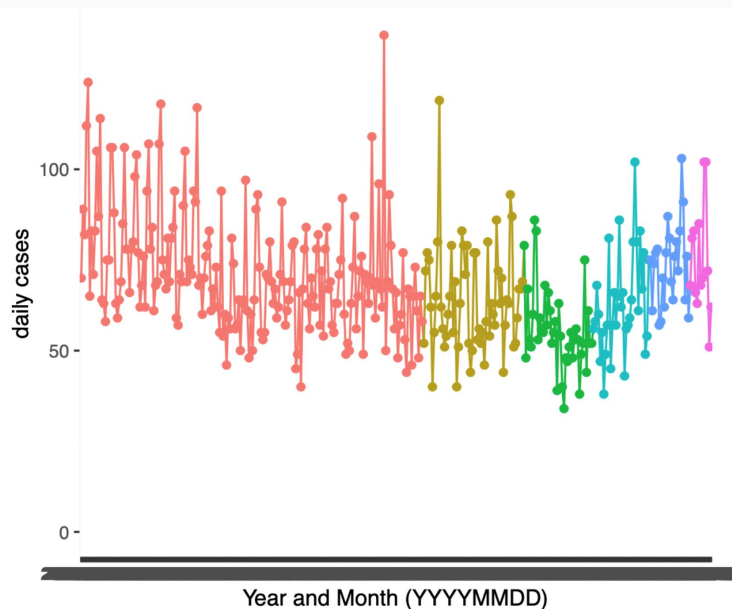


- Adequate ventilator and PPE supply
- Surge capacity for hospital and ICU beds
- McCormick ready for overflow

VISUALIZATIONS

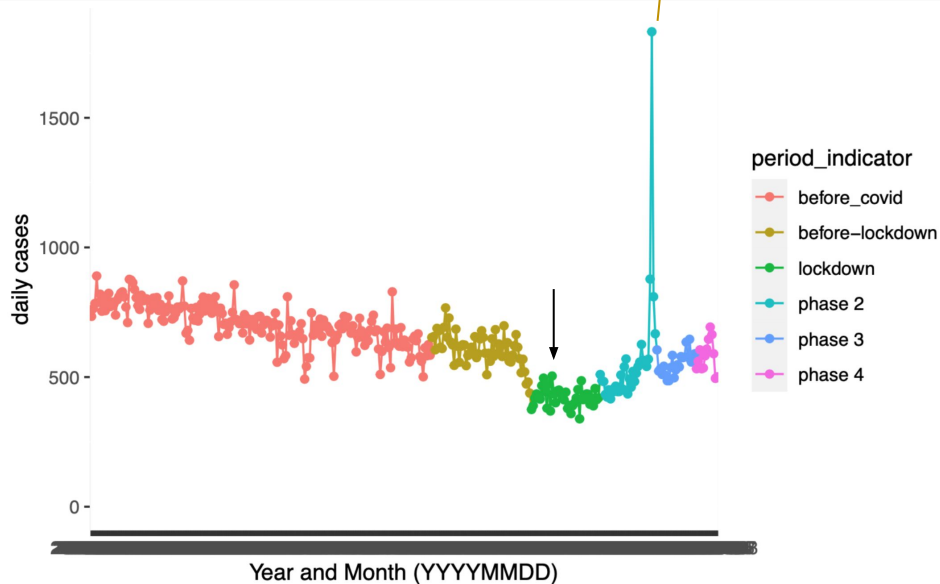
01

DAILY DOMESTIC VIOLENCE CASES REMAINED
RELATIVELY CONSTANT THIS PAST YEAR



02

TOTAL # DAILY CRIME CASES DIPPED
AT THE ONSET OF LOCKDOWN



03

MONTHLY DOMESTIC VIOLENCE PROPORTION SHOT UP IN MARCH

PHASES:

BEFORE
COVID

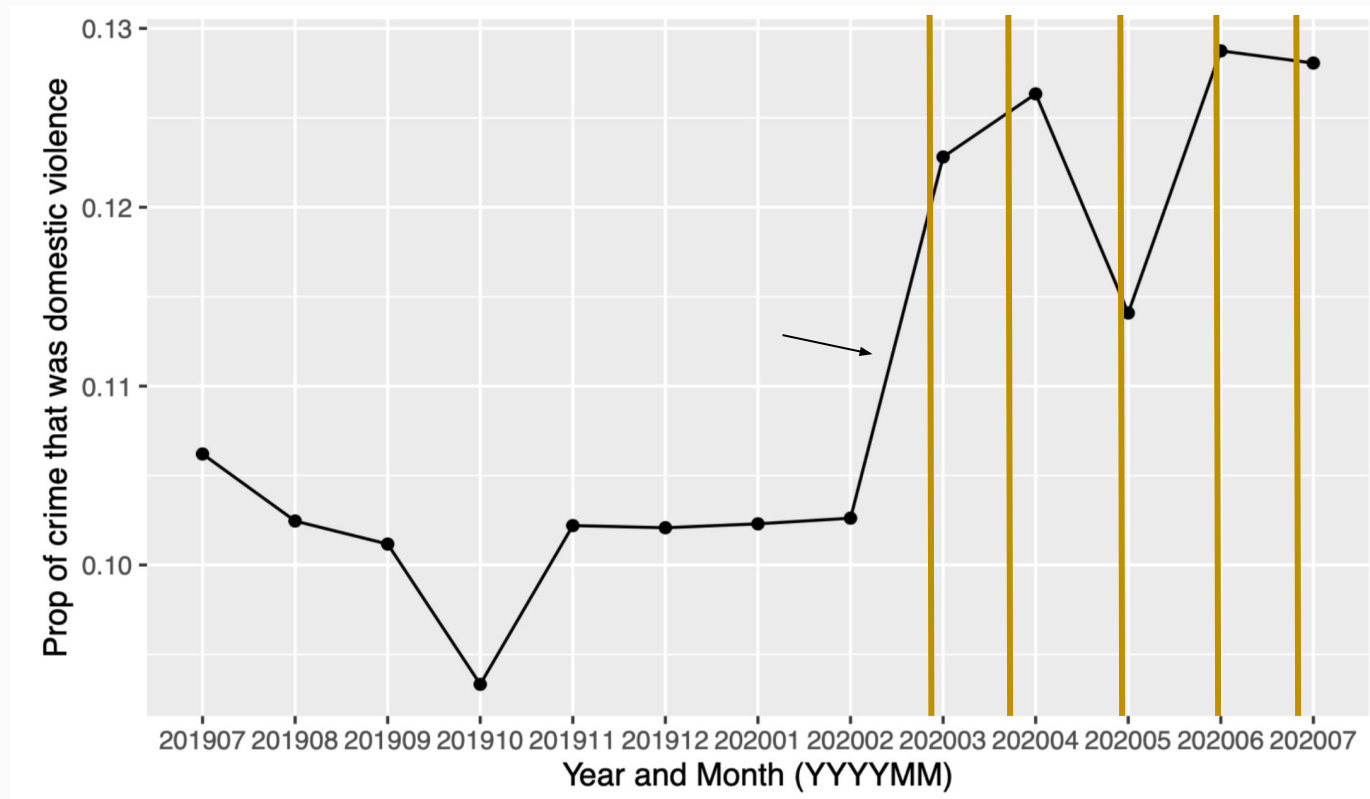
BEFORE
LOCKDOWN

LOCKDOWN

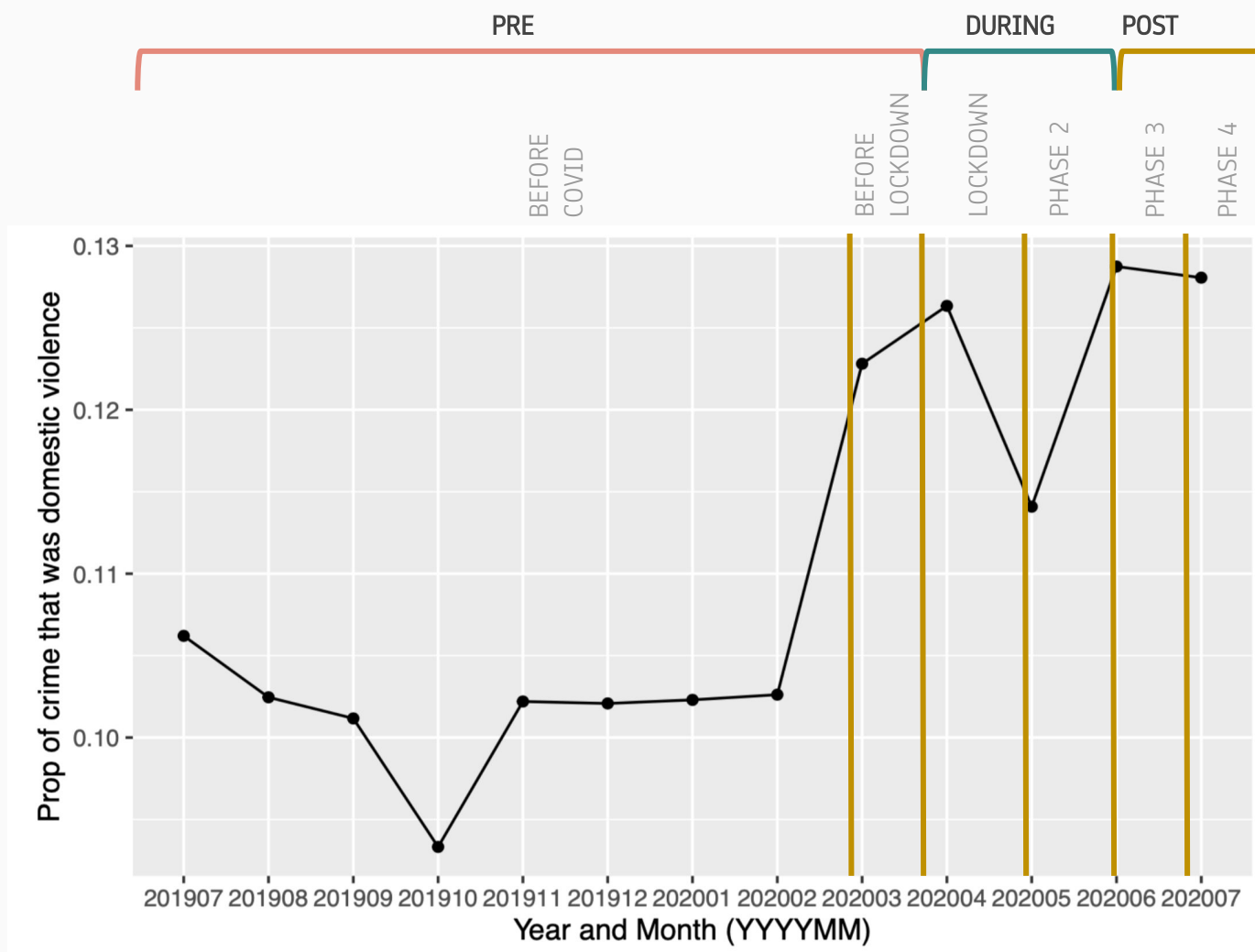
PHASE 2

PHASE 3

PHASE 4



CHI-SQUARE CATEGORIES (PERIODS)



```
##      during  post   pre
##    0  31109  17599 157397
##    1   4311   2667  17919

##
## Pearson's Chi-squared test
##
## data:  table(domvio_mut$isdomviolence, domvio_mut$PERIOD)
## X-squared = 247.63, df = 2, p-value < 2.2e-16
```

**THE PROPORTION OF
CRIME CASES THAT
WERE DOMESTIC
VIOLENCE IN CHICAGO
IS RELATED TO THE
PERIODS OF THE
PANDEMIC.**

```
##  
## 2-sample test for equality of proportions with continuity correction  
##  
## data: c(4311, 2667) out of c(35420, 20266)  
## X-squared = 11.411, df = 1, p-value = 0.0007303  
## alternative hypothesis: two.sided  
## 95 percent confidence interval:  
## -0.01569439 -0.00408326  
## sample estimates:  
## prop 1 prop 2  
## 0.1217109 0.1315997
```

DURING VS. POST

```
## data: c(2667, 17919) out of c(2667 + 17599, 17919 + 157397)  
## X-squared = 166.3, df = 1, p-value < 2.2e-16  
## alternative hypothesis: two.sided  
## 95 percent confidence interval:  
## 0.024497 0.034283  
## sample estimates:  
## prop 1 prop 2  
## 0.1315997 0.1022097
```

POST VS. PRE

```
## data: c(4311, 17919) out of c(35420, 17919 + 157397)  
## X-squared = 118.55, df = 1, p-value < 2.2e-16  
## alternative hypothesis: two.sided  
## 95 percent confidence interval:  
## 0.01579582 0.02320653  
## sample estimates:  
## prop 1 prop 2  
## 0.1217109 0.1022097
```

DURING VS. PRE

STEP-DOWN TESTS WERE ALSO SIGNIFICANT

There is sufficient evidence to suggest that the proportion of crime cases that were related to domestic violence in Chicago differs between each period of the pandemic.

LOGISTIC REGRESSION

models the predicted logit of the probability of a reported crime related to domestic violence, predicted by the phase and time of day

$$\beta^0 + \beta^1 * (\text{PHASE} == \text{before lockdown}) + \beta^2 * (\text{PHASE} == \text{lockdown}) + \beta^3 * (\text{PHASE} == \text{phase2}) + \beta^4 * (\text{PHASE} == \text{phase3}) + \beta^5 * (\text{PHASE} == \text{phase4}) + \beta^6 * (\text{is9_5})$$

fitted model

BASLINE CATEGORIES

(PHASE==before covid) & *not* within the 9-to-5 timeframe

```
# A tibble: 7 x 5
```

	term <chr>	estimate <dbl>	std.error <dbl>	statistic <dbl>	p.value <dbl>
1	(Intercept)	-2.07	0.0101	-205.	0.
2	PHASEbefore-lockdown	0.0528	0.0196	2.69	7.11e- 3
3	PHASElockdown	0.303	0.0244	12.4	1.87e- 35
4	PHASEphase 2	0.105	0.0249	4.23	2.37e- 5
5	PHASEphase 3	0.301	0.0276	10.9	8.43e- 28
6	PHASEphase 4	0.262	0.0355	7.37	1.77e- 13
7	as.factor(is9_5)1	-0.314	0.0142	-22.2	1.00e-108

$$-2.07 + .0528*(\text{PHASE} == \text{before lockdown}) + .303*(\text{PHASE} == \text{lockdown}) + .105*(\text{PHASE} == \text{phase2})$$
$$+ .301*(\text{PHASE} == \text{phase3}) + .262*(\text{PHASE} == \text{phase4}) - .314*(\text{is9_5})$$

SLOPE COEFFICIENT CONFIDENCE INTERVALS (IN ODD RATIOS)

95% confidence intervals for the *odd ratios* corresponding to each predictor:

BEFORE LOCKDOWN: (1.014, 1.097)

LOCKDOWN: (1.292, 1.419)

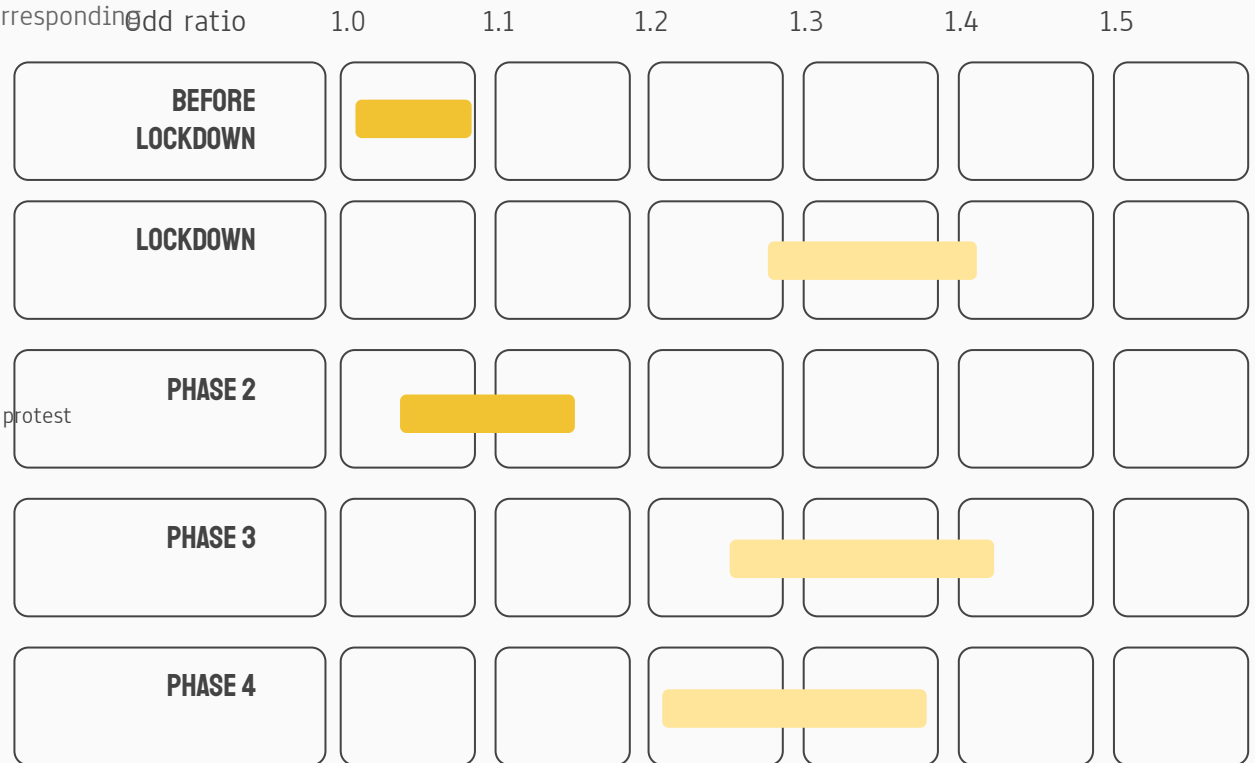
PHASE 2: (1.058, 1.166)

PHASE 3: (1.279, 1.427)

PHASE 4: (1.210, 1.393)

9-to-5: (0.711, 0.751)

*abnormally low b/c
includes day of BLM protest



RECALL OUR ORIGINAL RESEARCH QUESTION AND HYPOTHESES

- *Is there a relationship between the proportion of crimes that are reported as domestic violence and the COVID-19 pandemic?*
- *Are we seeing a spike in domestic violence as people are forced to spend more time in their homes?*
- *How has this changed throughout the course of the pandemic?*

A SUMMARY OF WHAT WE'VE LEARNED

1

We observed increased proportions of domestic violence cases reported over the phases of lockdown and reopening (as predicted).

2

Contrary to predictions, we do not see a decrease in the odds of a crime being related to domestic violence during the reopening periods.

3

One reason for the increased proportion of domestic violence crimes in our study was partially due to decreases in other crimes; reported rate of domestic violence cases did not appear to increase during the initial lockdown

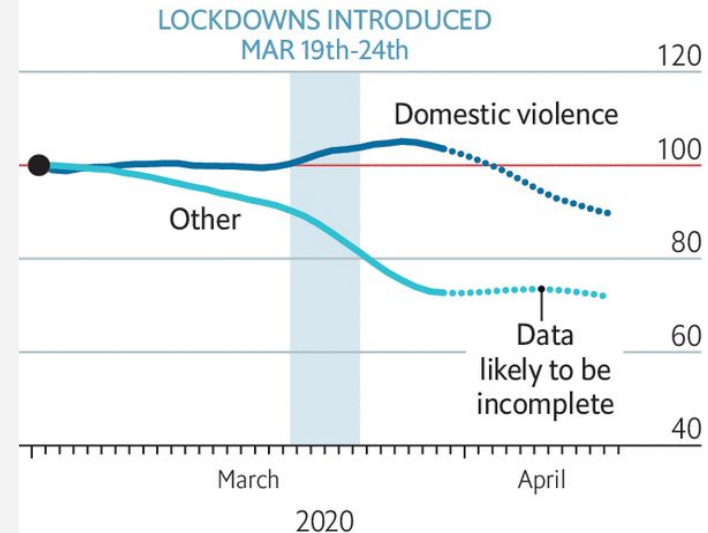
BRIEF COMPARISON WITH PAST FINDINGS

- We were able to extend the analysis over a larger period of time
- We were also able to investigate the proportion of crimes that were related to domestic violence
- The trends we identified were similar but not identical to those identified and/or predicted in other studies

Too close for comfort

United States, reported crimes per day

Selected cities*, Mar 1st 2020=100, 7-day moving average



Sources: Police and municipal records; Danish National Domestic Violence Hotline (Lev Uden Vold)

The Economist

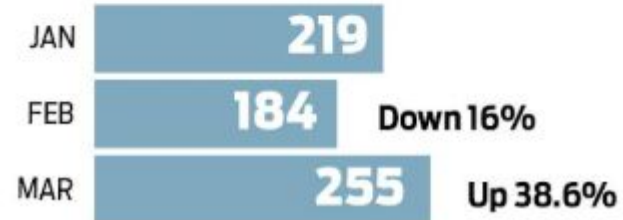
BRIEF COMPARISON WITH PAST FINDINGS

- We were able to extend the analysis over a larger period of time
- We were also able to investigate the proportion of crimes that were related to domestic violence
- The trends we identified were similar but not identical to those identified and/or predicted in other studies

Aggravated Assault/ Family



Assault/ Family



2020

Sources: Police and municipal records; Danish National Domestic Violence Hotline (Lev Uden Vold)

The Economist

WEAKNESSES AND LIMITATIONS

I. WE WERE ONLY ABLE TO LOOK AT POLICE REPORTS OF CASES OF DOMESTIC VIOLENCE

2. LIMITED EFFECTIVENESS OF OUR 9-5 INDICATOR.

3. WE WERE UNABLE TO INCLUDE OTHER (POTENTIALLY RELEVANT) PREDICTORS IN OUR MODEL

4. POTENTIAL FACTORS UNIQUE TO CHICAGO'S RE-OPENING

**Future directions for
investigation**

01

**VALIDATING POLICE
REPORT DATA AS
REFLECTIVE OF
DOMESTIC VIOLENCE
CASES**

03

**INVESTIGATING THE
NUMERICAL
REPORTED
DOMESTIC VIOLENCE
CASE RATE**

02

**ADDING RELEVANT
PREDICTORS AND
INTERACTION
TERMS TO THE
MODEL**

04

**EXPANDING THE
POPULATION OF
INTEREST
TEMPORALLY OR
GEOGRAPHICALLY**

REFERENCES

- [1] CDC - U.S. Department of Health & Human Services. (2019, February 26). Preventing Intimate Partner Violence. Retrieved from <https://www.cdc.gov/violenceprevention/intimatepartnerviolence/fastfact.html>
- [2] Domestic violence has increased during coronavirus lockdowns. (2020, April 22). Retrieved from <https://www.economist.com/graphic-detail/2020/04/22/domestic-violence-has-increased-during-coronavirus-lockdowns>
- [3] Dellinger, H. (2020, April 22). Houston to help prevent domestic violence during COVID-19. Retrieved from <https://www.houstonchronicle.com/news/houston-texas/houston/article/Houston-to-help-prevent-domestic-violence-during-15219710.php>
- [4] Reopening Chicago. (n.d.). Retrieved from <https://www.chicago.gov/city/en/sites/covid-19/home/reopening-chicago.html>

THANKS

Does anyone have any questions?

youremail@freepik.com

+91 620 421 838

yourcompany.com



CREDITS: This presentation template was created by **Slidesgo**, including icons by **Flaticon**, and infographics & images by **Freepik** and illustrations by **Stories**

Please keep this slide for attribution.

