Dynamic relationships between criminal offending and victimization

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Disclaimer #1

These results are not official statistics. They have been created for research purposes from the Integrated Data Infrastructure (IDI) which is carefully managed by Stats NZ. For more information about the IDI please visit https://www.stats.govt.nz/integrated-data/.

Disclaimer #2

- Sensitive research area
  - Victim blaming
    - Esp. intimate partner violence, crimes of a sexual nature
- We aim to better understand the behavioral patterns that put victims and offenders into contact, not to cast any blame

Motivation

- Why the overlap between criminals and victims of crime?
- Four intuitive reasons:

1. Retaliation
2. Institutionalization
3. Simultaneous victim/offender events
4. Risk preferences

Motivation

- From a 5% random sample of NZ residents over 2014 - 2020:

Table 2. Unadjusted conditional probabilities of any victimization and any offending in New Zealand, 2014 – 2020

$\Pr(V_i = 1 \mid O_i = 0)$	.0510
$\Pr(V_i = 1 \mid O_i = 1)$	.1979
$\Pr(O_i = 1 \mid V_i = 0)$	.0405
$\Pr(O_i = 1 \mid V_i = 1)$	.1623

Source: New Zealand Police Recorded Crime – Victims Statistics (RCVS) and Recorded Crime – Offenders Statistics (RCOS).

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Preview of Findings

- Victimization and offending are jointly determined
  - Fixed effects are important
  - Environment and risk preferences appear to mask the causal relationship between victimization and criminal behaviour
- Events where individuals are simultaneously deemed victims and offenders drive the V/O overlap story
- Overlap is also driven by incidents that occur close to each other in time (0-2 months)

Table 3. Descriptive statistics, 2014 – 2020

variable	(1) $V_i = 0, O_i = 0$	(2) $V_i = 0, O_i = 1$	(3) $V_i = 1, O_i = 0$	(4) $V_i = 1, O_i = 1$
female	.521	.172	.485	.396
age	46.84 (19.17)	37.56 (13.63)	38.44 (15.46)	34.18 (11.66)
European	.643	.402	.549	.371
Māori	.126	.434	.215	.501
Pacific	.059	.110	.064	.073
Asian	.151	.044	.156	.042
MELAA	.015	.010	.015	.013
other	.006	< .001	.001	< .001
parent charged	.034	.092	.061	.108
annual earnings	31,379 (40,704)	20,081 (24,234)	32,918 (38,983)	13,033 (19,235)
observations	355,200	15,000	19,100	3,700

Source: New Zealand Police Recorded Crime – Victims Statistics (RCVS), Recorded Crime – Offenders Statistic (RCOS), Immigration New Zealand, Inland Revenue, and Ministry of Justice. Standard deviations are shown in parentheses. The population consists of all victims and offenders investigated within New Zealand and included the country's estimated resident population. "Parent charged" equals one if any parent was charged with a crime, and zero otherwise.

Empirical Model

1. Pool data over 2014-2020 and estimate recursive bivariate probit models

   - Is there a truly simultaneous relationship between victimization and offending?

   - Tetrachoric correlation is key

(1) $V_i^* = \alpha O_i^* + \boldsymbol{X_i \beta_i} + \varepsilon_{1,i}, \quad Victim_i = 1(V_i^* > 0)$

(2) $O_i^* = \gamma V_i^* + \boldsymbol{X_i \delta_i} + \varepsilon_{2,i}, \quad Offender_i = 1(O_i^* > 0)$

(3) $\begin{pmatrix} \varepsilon_1 \\ \varepsilon_2 \end{pmatrix} \sim N\left[\begin{pmatrix} 0 \\ 0 \end{pmatrix}, \begin{pmatrix} 1 & \rho \\ \rho & 1 \end{pmatrix}\right]$

Empirical Model

2. Construct a monthly panel and estimate fixed effects models

(4) $V_{it} = \alpha_0 + \sum_{j=1}^{12} \alpha_j V_{i,t-j} + \sum_{k=0}^{12} \beta_{k+1} O_{i,t-k} + \boldsymbol{X_{it}\Gamma} + \delta_t + \delta_i + \varepsilon_{it}$

(5) $O_{it} = \gamma_0 + \sum_{m=1}^{12} \gamma_m O_{i,t-m} + \sum_{n=0}^{12} \theta_{n+1} V_{i,t-n} + \boldsymbol{X_{it}\Pi} + \delta_t + \delta_i + \mu_{it}$

- Individual fixed effects, δ_i, control for all time-invariant individual characteristics (e.g., environment, neighborhood, risk preferences, etc.)
- Time fixed effects, δ_t, control for monthly effects (e.g., holidays, summer months, etc.)

Empirical Model

3. Dynamic panel models (i.e., Arellano-Bond, 1991) serve as an empirical check

   - Using various lags in the dependent variable as instruments, the story remains the same
   - We report estimated parameters as well as tests of the identifying assumption
     - No autocorrelation in the idiosyncratic error terms

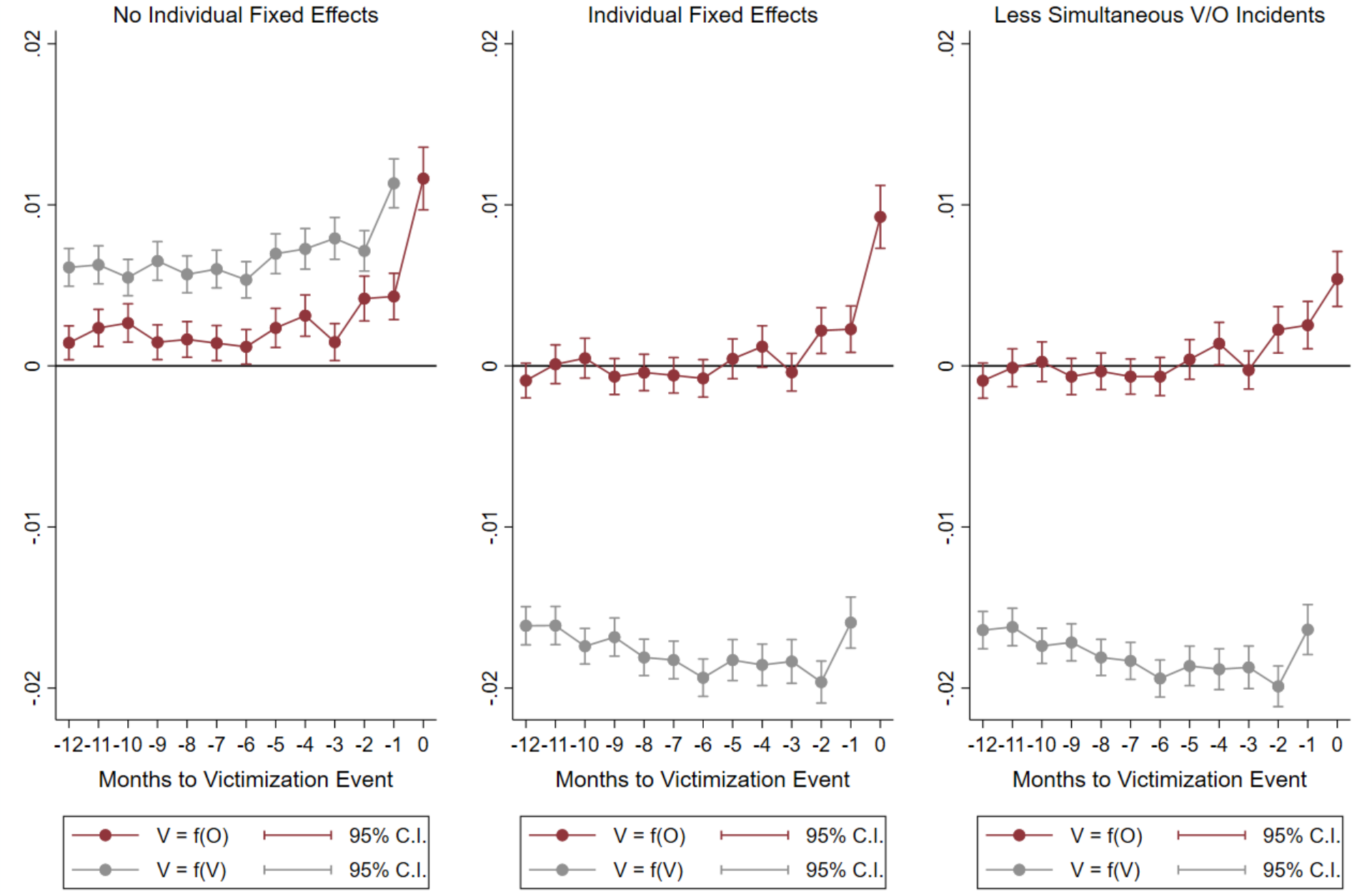
Results Pt. 1

- Seemingly unrelated bivariate probit models:
  - Confirm positive (and significant) overlap between criminality and victimhood
  - Criminals were 6% more likely to be victims of crime over the sample period
  - Victims of crime were 2.5% more likely have offended
  - Significant $\hat{\rho}$ observed ($\hat{\rho}$ =.320, SE = .006)
  - (+) : Māori, Pacific, convicted parent
  - (-) : Female, annual earnings, Asian

Results Pt. 2

- Fixed effects models…
  - Confirm positive correlations between criminality and victimhood
  - Positive relationship between criminality/victimhood in current periods
  - Importance of incidents close in time (or simultaneous in nature)

Any Victimization = f(Any Offending, **X**)



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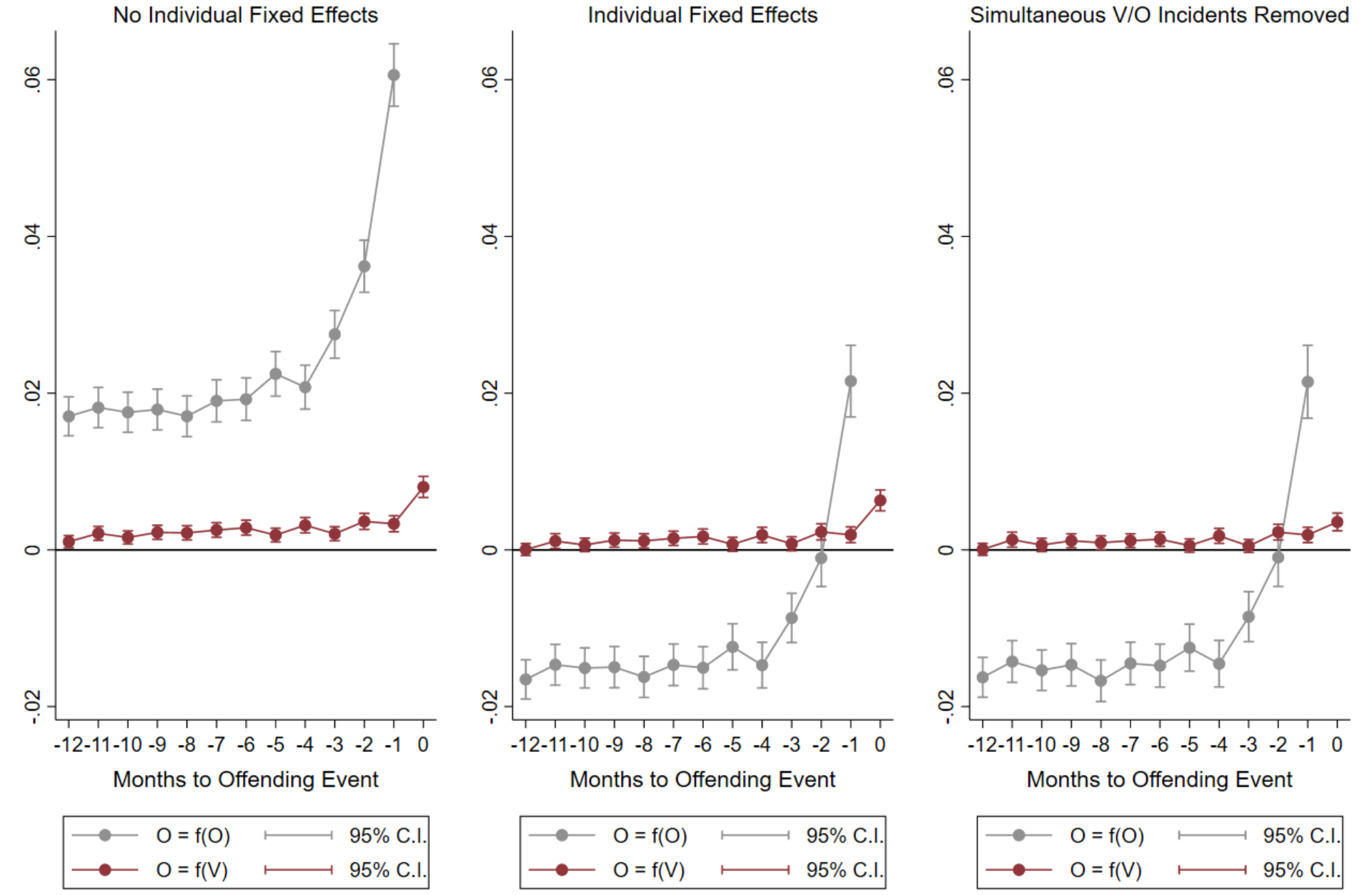
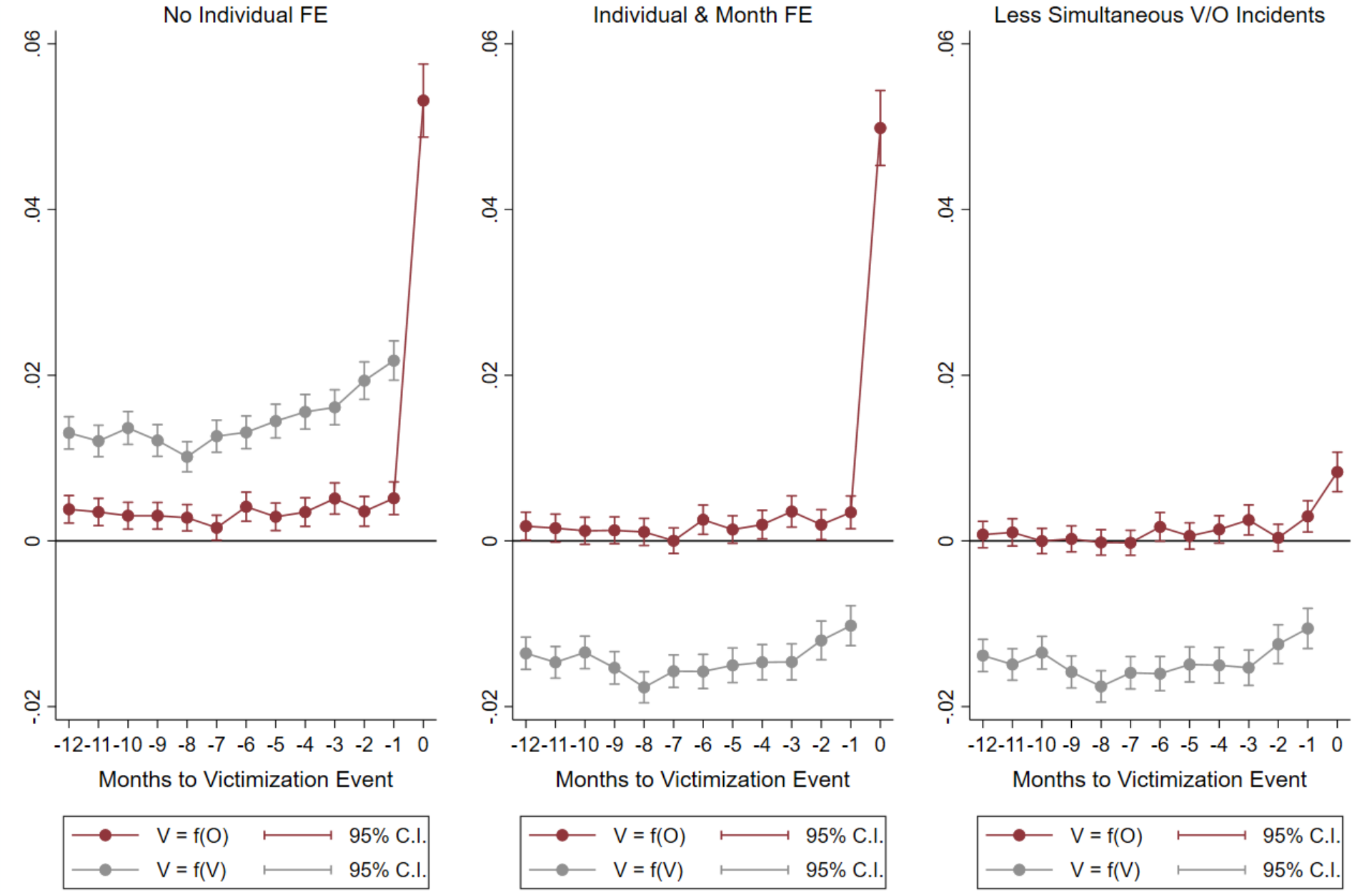


Violent Victimization = f(Violent Offending, **X**)



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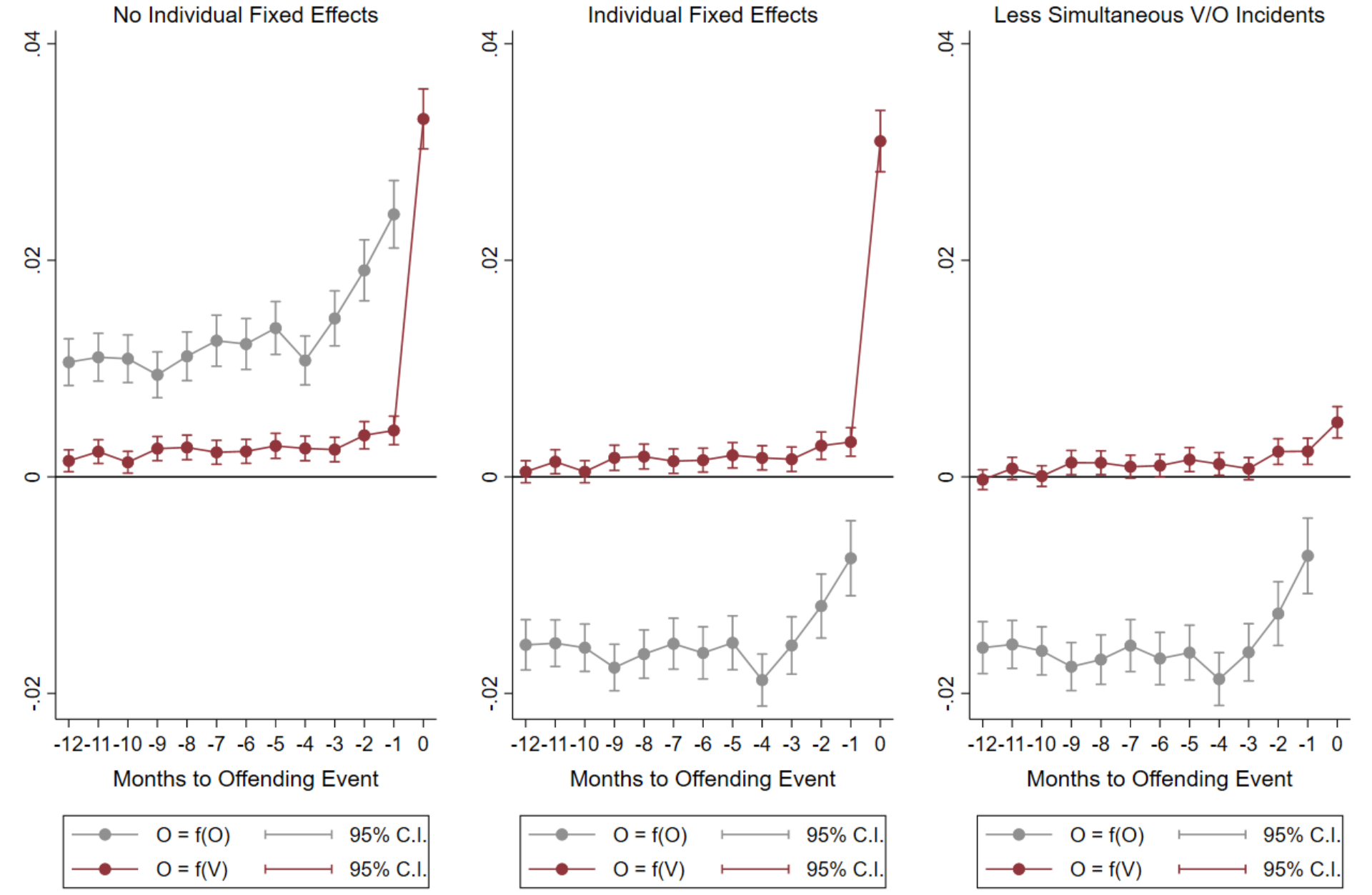

Results Pt. 3

- Dynamic panel estimates (via Arellano and Bond, 1991)…
  - Support our results (specifically- the positive overlap between criminality and victimhood)
  - Pass their identification tests (which is rare).

Table 6. Dynamic panel (Arellano-Bond) estimates, 2019

	(1)	(2)	(3)	(4)
	Only lagged dependent variables considered endogenous		All V/O variables considered endogenous	
variable	*Victim(t)*	*Offender(t)*	*Victim(t)*	*Offender(t*
Offender(*t*)	.014***		.194***	
	(.004)		(.065)	
Offender (*t-1*)	.010***	.066***	-.005	.039***
	(.005)	(.007)	(.034)	(.011)
Offender (*t-2*)	.013***	.027***	.024	.025***
	(.003)	(.005)	(.025)	(.008)
Offender (*t*-3)	-.004	.012***	.015	.013**
	(.004)	(.004)	(.030)	(.005)
Victim(*t*)		.006**		.194**
		(.002)		(.092)
Victim (*t-1*)	.010***	.009***	.005**	-.019
	(. 003)	(.002)	(.002)	(.0082)
Victim (*t-2*)	.008***	-.003	.004*	-.087
	(.003)	(.002)	(.002)	(.093)
Victim (*t-3*)	.006**	.0004	.002*	-.005
	(.003)	(.002)	(.001)	(.066)
Tests for zero autocorrelation in first-differenced errors:				
order	*p*-value	*p*-value	*p*-value	*p*-value
1	.000	.000	.0000	.000
2	.665	.570	.819	.120
year effects	YES	YES	YES	YES
individual effects	YES	YES	YES	YES
obs.				2,926,600

Source: New Zealand Police Recorded Crime – Victims Statistics (RCVS) and Recorded Crime – Offenders Statistics (RCOS). In order to satisfy the requirement of having a "short" panel, only the latest

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Conclusions

- Victimization and offending are jointly determined
  - For a myriad of crime types
- Overlap is largely driven by fixed environmental and individual characteristics
  - Incidents where individuals are at once classified as criminals and offenders
- Proximity in time (i.e., usually within 2 months of each other)

Policy Implications

- Act fast and follow-up
  - These events occur closely in time
- Acting fast may help to break the chain of recurring victimization/criminal incidents

Thank You

- Thank you for your time
- Questions?
- Contact:
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