The impact of domestic violence on the employment, educational, and mental health outcomes of young women

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Abstract

Drawing on a nationally representative, longitudinal survey on women's health, this paper evaluates the impact of the first time women experience domestic violence as an adult, on their labour market, educational, and mental health outcomes. Using a staggered difference-in-difference approach, the results suggest that while employment rates remain unaffected, paid hours worked decline and difficulties managing on income increase. The share of women precluded from attaining a university degree is also substantial: nearly 10 percentage points fewer women attain a university degree three years following the first reported instance of abuse. The share of women with suicidal thoughts or who engage in self harm also spikes when violence is first reported (7.4 and 5.6 percent, respectively). Since the data permit differentiation by type of abuse (physical, sexual, harassment or emotional) the results reveal heterogenous effects on women's outcomes by type of abuse and the frequency of abuse. While women's university attainment is negatively impacted by all forms of abuse (captured in the survey), irrespective of abuse persistence, the labour market impacts, relationship dissolution, suicidal ideation and self-harm are impacted differently, depending on the persistence and type of abuse experienced.

JEL Codes: J12; J16

Keywords: domestic violence; coercive control; employment

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1 Introduction

For most of the 20th century, domestic violence[1] in Australia remained a largely private and "silent epidemic", unrecognised by the law (Piper and Stevenson, 2019). Greater public visibility of domestic violence started to emerge in 1974 when a group of women broke into an unoccupied home in Sydney owned by the Church of England and declared squatters' rights (Summers, 1999). In doing so, they opened Australia's first domestic violence shelter, named Elsie, and sparked a national movement, raising public awareness about domestic violence and leading to the establishment of domestic violence shelters nationwide (Elsie, 2024). The establishment of domestic violence shelters also enabled researchers to begin to consolidate their understanding of domestic violence, as women began to share their experiences in these newly created safe spaces (Hill, 2019). When they did, researchers began to realise that the techniques employed by perpetrators of domestic violence shared characteristics with another group: the captors of prisoners of war (POWs) who had subjected their prisoners to coercive control (Biderman, 1957; Russell, 1982). The only difference between the two groups was that "...whereas captors in North Korea deployed techniques tactically, husbands appeared to be replicating the system of coercive control unconsciously (Hill, 2019)."

Coercive control encompasses a series of behaviours and patterns used by perpetrators to exert control over victims, create dependency, and ensure compliance (Hill, 2021). The techniques used by perpetrators to exert coercive control, as well as the negative effects of those tactics on victims, have been documented, largely based on qualitative interviews, since the 1950s.[2] It is only recently however, that the economic cost of coercive control on victims could be quantified at a national level, owing to advances in the availability of national administrative data sources. In groundbreaking research, Adams et al. (2024), Bhuller et al. (2024), and Bindler and Ketel (2022) use administrative police records to document the large and negative economic cost of domestic violence on women. Using Finnish administrative data, Adams et al. (2024) focus on the moment a woman enters a relationship with a partner who will physically or sexually assault her in the future (and where the incident will be reported to the police). They show that five years prior to starting a relationship with the abusive partner, women's employment rates and annual earnings increase by 21 percent and 34 percent, respectively, but they fall by 4 and 6 percent, respectively, in the two years following cohabitation with an abusive partner. Bhuller et al. (2024) document similar decreases in employment rates (-4 percent) and earnings (-5 percent) using Norwegian administrative records, relying on "violence, harassment, threat, sexual abuse, nonsexual abuse or specifically family-related crime[s]" that are reported to the police. The authors also find an increase in disability insurance that mirrors the decline in employment and a 35 percent increase in mental health diagnoses in the year the violence is reported to the police, which tapers off after three years. Bindler and Ketel

[1] In this paper, domestic violence refers to violence perpetrated by an intimate partner who cohabitates or does not cohabitate with the victim-survivor. The term abuse also refers to domestic violence, but is used to refer to particular types of violence, such as emotional, physical or sexual abuse. The definition of domestic violence is discussed in detail in the data section.

[2] The techniques were initially documented by Biderman (1957) in his "Chart of Coercion", based on interviews with returned American POWs from the Korean War. The tactics used by perpetrators of domestic violence, identified by Russell (1982) in her book, Rape in Marriage, largely mirror the list produced by Biderman.

(2022) consider the impact of crime victimisation more broadly (not just domestic violence) using administrative data from the Netherlands, which includes data on crimes reported to the police. One year after victimisation, earnings decrease by up to 8.4 percent and 12.9 percent for males and females, respectively. Welfare receipt increases by up to 5 and 6 percent for males and females, respectively. The reference to "up to" in this paper arises because their labour market effects are calculated separately by type of offense. For physical violence offences (assault, robbery) the effects are immediate and large in the short-term, whereas other offences result in a more gradual change following victimisation.

Researchers' reliance on administrative data to quantify the economic consequences of domestic violence has largely been determined by data availability because nationally representative panel data on victimisation are rare (though this paper exploits one such dataset). However, while administrative data have many strengths, including reduced measurement error for particular variables, such as income, and large sample sizes, they also have important limitations for the purposes of analysing the impact of domestic violence. First, despite a longstanding understanding of the negative impact of coercive control on men and women, it remains unrecognised as a criminal offence in most jurisdictions globally.[3] The recent criminalisation of coercive control in a limited number of jurisdictions implies that judicial recourse for most women who experience it is limited in the absence of legislation criminalising the abusive behaviours that they experience. It also implies that types of abuse that are not defined as a criminal offence, such as emotional or financial abuse, are absent from administrative police records in those jurisdictions. This phenomenon is distinct from underreporting, also common (but less pronounced) in survey data[4], because women who actually want to report coercive controlling behaviour are legally precluded from doing so. In New South Wales (NSW), Australia, when 2022 legislation criminalising coercive control went into force in July 2024, there were 77 incidents of coercive control reported to or detected by police between July and September 2024 (NSW Bureau of Crime Statistics and Research, 2024) (*limitation #1*). Second, it can be very challenging or impossible to define a non-cohabitating relationship in administrative records, both underestimating the number of domestic violence incidents and potentially limiting the external validity of analyses to non-cohabitating relationships (*limitation #2*). Third, since it is not possible to detect episodes of domestic violence that go unreported to an administrative body, effects estimated from the onset of the first instance reported to the police (or other administrative body) may represent the accumulation of several episodes of violence, rather than the first incident of abuse (physical or otherwise) (*limitation #3*).

This research addresses these administrative data limitations by exploiting a nationally representative panel survey of women born between 1989 to 1995 to quantify the impact of domestic violence on the employment, mental health and educational outcomes of victim-survivors using the staggered difference-in-difference approach proposed

[3] England and Wales introduced legislation in 2015, followed by others, such as Northern Ireland (2021), and the states of Hawaii (USA, 2020), New South Wales (Australia, 2022) and Queensland (Australia, 2022) (Kim and Karystianis, 2023).

[4] Australian Bureau of Statistics (2011) discusses how and why reporting effects can differ between admin and survey data by different types of offenses.

by Callaway and Sant'Anna (2021).[5] The survey includes questions on domestic violence that permit identification of — and differentiation between — emotional, physical abuse, sexual abuse, and harassment that goes reported and unreported to the police.[6] It also includes and can distinguish between cohabiting and non-cohabiting partnerships. Finally, since the longitudinal survey used in this research started as the respondents became adults (18+), I argue that I observe the first time women report experiencing domestic violence as an adult, thereby eliminating (at best), or greatly attenuating (at worst), the impact of previous unreported episodes of domestic violence experienced as an adult.

By exploiting this unique dataset, this research makes three types of contributions to the literature. First, descriptive analyses document the characteristics of future victim-survivors before they have ever reported experiencing domestic violence as an adult, as well as the characteristics and dynamics of the abuse they experience. These trends reveal that even prior to the first time domestic violence is reported by women as young adults, future victim-survivors have higher rates of depression, anxiety and other mental illness, compared to non-victims. In addition, a higher share of future victim-survivors have experienced child abuse (33 percent), compared to non-victims (20 percent). Turning to the type of abuse women experience, when young women report domestic violence for the first time as adults, at least half of victim-survivors exclusively experience emotional abuse, with the remainder of women experiencing harassment, physical and/or sexual abuse (in some cases, in addition to emotional abuse). The results also show that emotional abuse does not always escalate to other forms of abuse that are defined as criminal offences in most jurisdictions, such as physical or sexual abuse. Among women who report experiencing abuse in more than one year, if exclusive emotional abuse is reported in the first year it is usually followed by exclusive emotional abuse in the second year. These findings imply that analyses based on administrative police records of harassment, physical and/or sexual violence likely omit a sizable share of domestic violence incidents from the scope of analysis.

Leveraging the survey's comprehensive measures of domestic violence, the second type of contribution quantifies the economic consequences of domestic violence on various outcomes. Consistent with Adams et al. (2024), Bhuller et al. (2024), and Bindler and Ketel (2022), domestic violence imposes a negative impact on the labour market outcomes of women. However, inconsistent with pre-existing research, the results show that domestic violence does not exert a statistically significant effect on the employment rates of young women, but instead reduces their hours worked. About 2.9 percent of women shift out of full-time employment in the year they first report experiencing domestic violence and the effect increases over time to 9.1 percent two years later. Also consistent with the negative mental health outcomes observed by Bhuller et al. (2024), when domestic violence is first experienced by young women, it causes a surge in the percent of women who have suicidal thoughts (7.4 percent) or who engage in self-harm (5.6 percent). Finally, since the survey used focuses on very young female adults, highest educational attainment varies over time,

[5] This is also the approach applied by Bhuller et al. (2024)

[6] Unfortunately, it is not possible to differentiate between the cases that are reported and not reported to the police using this dataset.

permitting quantification of how domestic violence impacts university degree attainment (rather than using education as a time invariant control variable). To my knowledge, this is the first paper to document the causal impact of domestic violence on university degree attainment and shows that 5.2 percent fewer women attain a university degree as a result of domestic violence in the year following when domestic violence was first reported and this effect grows to 9.7 percent of women three years later. The large share of women precluded from attaining a university degree as a result of domestic violence provides evidence of the negative economic impact of violence over women's lifetimes. (Wei, 2010) estimates the return to a university degree amounted to 15.3 percent in 2006 for males and 17.8 percent for women in 2006, a sizable earnings penalty engendered by domestic violence.

Finally, the third contribution is a series of descriptive analyses that aim to identify if, and to what magnitude, different types of abuse, the frequency of abuse, and cohabitation impact young women's outcomes differently. Heterogeneity analyses also help shed light on how the effects estimated in this paper compare to those estimated by Adams et al. (2024), Bhuller et al. (2024), and Bindler and Ketel (2022). Descriptive analyses reveal heterogeneous effects of both abuse type and abuse frequency on women. The negative labour market effects that are observed (i.e. reductions in hours worked) seem largely driven by women who experience harassment, physical and/or sexual abuse in multiple years. By contrast, declines in the attainment of a university degree emerge across all types of abuse, irrespective of the number of years the abuse is reported, pointing to the deleterious lifetime consequences that any form of abuse imposes on women. The surge in suicidal thoughts and self-harm also emerge across all abuse types, while the persistence of the heightened suicidal ideation or self-harm aligns with the years abuse is reported (i.e. they decline when the abuse stops and persist if the abuse continues).

Relationship dissolution is also considered and the results suggest that while a significant share of women (14.5 percent) separate when abuse is first reported, these effects seem largely driven by women who separate from non-cohabitating relationships. Focusing on cohabitating women, heterogeneous effects also emerge. Descriptive analyses suggest that severe forms of abuse (harassment, physical or sexual abuse) are more likely to result in dissolution. By contrast, cohabitation seems to cause or coincide with the first reported instance of emotional abuse among women who only report experiencing emotional abuse.

The next sections describes the data (section 2) and present descriptive statistics (section 3). This is followed by a discussion of the empirical strategy (section 4) and the results (section 5). Section 7 concludes.

2 Data

The data used are from the Australian Longitudinal Survey of Women's Health (ALSWH). The ALSWH is a nationally representative survey of women born across four birth cohorts: 1921-26, 1946-51, 1973-78, and 1989-95. While the survey began in 1996 for the three oldest cohorts, it began in 2013 for the youngest cohort when they were between

18-23 years old. While the survey is usually undertaken at three year intervals, it was carried out annually for the youngest cohort between 2013 - 2017, then again in 2019, and in 2023 (data are not yet available for 2023). This paper focuses exclusively on the 1989-95 cohort since it is the only cohort with annual data. As will be shown, annual data periodicity proves quite important to understand the dynamics of abuse in relationships over time.

Eligibility for the 1989-95 cohort required women to be aged 18 - 23 in 2013, possess a Medicare (national health insurance) number, and consent to have their data linked to administrative records. Traditionally, for the older three birth cohorts, survey participants were identified from a random sample of the national Medicare database. Participants were then mailed the survey (by post) every three years, which they also returned via post once completed. The sampling approach differed for the 1989-95 cohort since other surveys using this "traditional" approach proved ineffective for this particular age group (Harris et al., 2014). A series of strategies were used to recruit participants via online advertising (i.e. Facebook, Twitter, Instagram, etc), referrals (i.e. emails to professional bodies, emails to the other three cohorts, emails from ALSWH staff to personal/professional networks), and traditional media (posters, magazines, radio, television). The modality of the survey also changed for the 1989-95 cohort from a postal survey to an online survey. Loxton et al. (2015) and Mishra et al. (2014) extensively document the recruitment process and benchmark the final sample to Census records. They show the new sampling approach resulted in a nationally representative sample of 17,012 women aged 18 - 23, who completed the survey, with a slight overrepresentation of tertiary educated women and underrepresentation of women with English as a non-primary language.

Since this paper employs an event-study framework (discussed in section 4) that requires at least two consecutive years of data for an individual, the magnitude and potential bias of attrition is of importance. Loxton et al. (2019) analyse the magnitude and bias of attrition in the 1989-95 birth cohort across the first four surveys. They show that relative to the first year the survey was carried out, women who responded to more than one survey had better health and were more likely to mange on their available income. Women who only responded to the survey in the first year were more likely to report smoking, drinking or other drug use, be sedentary or report having experienced domestic violence. For example, 16.5 percent of female attritors (i.e. women who only responded to the first survey) reported ever experiencing partner violence in year 1, compared to 13.2 percent of female non-attritors (i.e. women who responded to at least two surveys). The positive selection induced by attrition suggests that the results should represent the lower bound. In other words, the exclusion of more vulnerable groups due to attrition will likely underestimate the magnitude of (negative) effects observed.

There are two measures of domestic violence captured in the ALSWH. One question asks if an individual "Has ever been in a violent relationship with a partner/spouse". The second measure of domestic violence is based on a variant of the Composite Abuse Scale (CAS). The Composite Abuse Scale (CAS) was developed in Australia in the 1990s to comprehensively assess different types of intimate partner violence. The CAS addressed problems with existing questionnaires which were too narrowly defined; did not have discrete measures of physical, emotional and

sexual abuse; and had not been validated on abused and non-abused samples (Hegarty et al., 1999).

The original CAS contained 30 questions, focused on harassment, physical, emotional and severe combined abuse. It was initially validated using a sample of Australian nurses before being psychometrically tested with a large clinical population of 1,836 general practice patients. Validation studies found the CAS to have high internal consistency reliability and it has been used in clinical populations in Australia, Russia, the Netherlands, Canada, and the United Kingdom (Ford-Gilboe et al., 2016). The CAS is the preferred measure used to identify domestic violence in this paper for two reasons. First, the CAS questions allow differentiation between different types of abuse. Second, the formulation of the CAS identifies whether the abuse occurred in the last 12 months. In this paper, a victim-survivor of domestic violence is defined as a woman who has experienced at least one CAS behaviour, by a current or previous partner, within the last 12 months.

The CAS was modified for inclusion in the ALSWH because it had primarily been administered face-to-face in clinical samples, with support for participants made available (Loxton et al., 2013). To distinguish it from the original, face-to-face questionnaire, it was also renamed the Community Composite Abuse Scale (CCAS). To make it more appropriate for distribution through a mailed survey to a residential dwelling, three items about sexual abuse were collapsed into one. As a result, the CCAS included 28 items. The CCAS was further modified with the aim to develop a brief self-report measure of intimate partner violence that captured the complexity of IPV, including severity, while limiting participant burden and enhancing emotional safety (Ford-Gilboe et al., 2016). A shortened 12 item abbreviated version of CCAS is used in the first four surveys for the 1989-95 cohort. The questions ask if an individual has experienced any of the 12 situations listed, with a current or previous partner, in the last 12 months, more than 12 months ago, or never. The list and format of the questions is included in the appendix.

A longer, 21 question version of the CCAS, was used for the 2017 and 2019 1989-95 birth cohort surveys. Four of the nine additional questions disaggregated some of the original 12 questions into two questions. To facilitate comparison across all of the surveys, these CCAS questions were re-aggregated to align with the categories used in the first four surveys. In addition, five new questions were added. The five additional questions asked about whether a current or previous partner: (1) choked me; (2) kept my money or credit cards; (3) confined or locked me in a room or other space; (4) threatened to harm or kill me, my family, children or pets; and (5) threatened to use a knife or gun or other weapon. Unfortunately, in order to retain comparability over time these five new questions were excluded for the purposes of identifying a victim-survivor of domestic violence.

The different CCAS questions are classified into abuse categories: emotional, physical, harassment, and sexual. Following the approached defined in Loxton et al. (2013), emotional abuse captures the following behaviours that a partner inflicted on a woman in the last 12 months: told me that I was ugly, stupid or crazy, or that I wasn't good enough or that no one would ever want me; tried to turn my family, friends or children against me or tried to convince them I was crazy; tried to keep me from seeing or talking to my family, friends, or children or didn't want me to

socialise; became upset if dinner/housework wasn't done when they thought it should be; or refused to let me work outside the home or took my wallet and left me stranded. Physical abuse encompasses: Kicked, bit, slapped or hit me with a fist or tried to hit me with something; pushed, grabbed, shoved, shook or threw me; used a knife or gun or other weapon or beat me up; or blamed me for causing their violent behaviour. Harassment includes: Followed me or harassed me around my neighborhood/work; or harassed me over the telephone, email, Facebook or internet. Sexual activity is captured by women who report a partner who: forced me to take part in unwanted sexual activity.

Relationship dissolution is also considered as an outcome and is a self-reported measure of an individual's relationship status. Relationship status is a categorical variable that asks whether an individual is: in a relationship (not living together), living with a partner, engaged, married, single, divorced, separated or "other" (less than one percent of observations). The first four categories define partnered individuals, whereas single individuals include those who are single, divorced or separated. Individuals who identify as having an "other" relationship are excluded from analysis. There are two limitations to the relationship status variable. First, relationship status is reported at the time of the survey, rather than at the time a domestic violence incident occurred. Second, it is impossible to know if an individual is in the same relationship over time. These limitations imply that if a woman experiences domestic violence, leaves her current relationship as a consequence, and re-partners with a different person within the same year, her relationship status will remain constant between the two surveys. For this reason, the relationship dissolution outcomes should be interpreted as the lower bound of the percentage of women who leave a relationship as a result of domestic violence.

To accommodate an event-study framework, the data are refined in several ways. First, the data are restricted to women who respond to the survey for at least two consecutive years. Second, women who report having ever experienced domestic violence in the first year they are observed are excluded from the sample; since they are "always treated" and a pre-domestic violence period is not observed in the data. Third, to retain an identical sample across various descriptive analyses and regression specifications, individuals who do not respond to one of the outcomes of interest (described in 4) are excluded. When these sample restrictions are imposed, 21,275 observations remain for women who are never victims of domestic violence and an 7,497 observations for women who experience domestic violence for the first time between 2014 and 2019. These observations equate to 6,810 women: 5,163 who never experience domestic violence and 1,647 who eventually report domestic violence between 2014 and 2019.

TABLE 1: SAMPLE SIZE

	Cohort (calendar year) domestic violence reported						
	Never	2014	2015	2016	2017	2019	Total
Survey wave							
1	5,163	595	411	336	166	139	6,810
2	5,163	595	411	336	166	139	6,810
3	4,128	472	411	336	166	139	5,652
4	3,674	412	363	336	166	139	5,090
5	3,147	359	316	283	166	139	4,410
Total	21,275	2,433	1,912	1,627	830	695	28,772

Source: Author's calculations using ALSWH.

3 Descriptive Statistics

The descriptive analyses described in this section have two objectives. First, the analyses aim to characterize the outcomes of women who experience domestic violence relative to those who never experience domestic violence. Second, since the survey encompasses comprehensive forms of abuse, it aims to characterize the abuse experienced by women the first time they report experiencing it as an adult.

3.1 How do women who never experience domestic violence compare to victim-survivors?

Figures I and II plot various outcomes for women who never experience domestic violence, relative to domestic violence victim-survivors, prior to and following the first time they report experiencing domestic violence. The first time a woman reports experiencing domestic violence is defined as event-time, t=0. Event-time differs from cohort-time, c, defined as the year in which a woman experiences violence for the first time. For example, a woman who reports experiencing violence for the first time in 2015 would be defined as c=2015 and t=0. Women who never experience domestic violence are randomly assigned a particular cohort-time, c, when they first experience domestic violence for the purposes of the descriptive analyses[7] To calculate the descriptive statistics, each outcome (described below), is calculated for each cohort, c, at each event-time, t. The event-time outcome is then weighted by the sample size of each cohort, c. For example, the employment rate is calculated separately for women who experience violence for the first time for each cohort (i.e. 2014 to 2017).Women who experience violence for the first-time in 2019 are excluded from the analyses since including them would be misleading in the figure. The 2019 survey was conducted two years after 2017, instead of all other surveys that were conducted annually. Women who experience violence for the first time in 2013 are also excluded since we cannot observe them in the survey for at least one period prior to when the violence first occurs. These four, cohort specific, employment rates are then weighted by the sample size in

[7]Unless a woman who never experiences violence only responds to the surveys in two years. In this case, domestic violence is assumed to take place in the second year she is observed in the dataset.

each cohort, for each event-time.

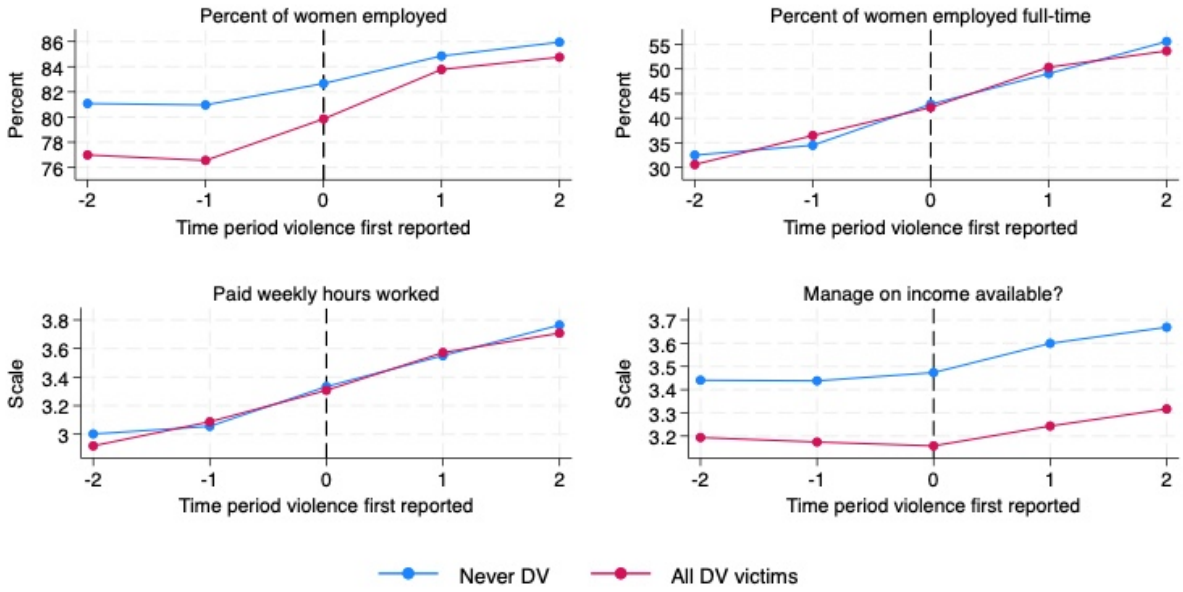
The panel used is neither balanced in calendar nor event-time and as a result, the sample size is smaller at the smallest and largest event-times in part due to attrition, but also because, even absent the attrition, the latest and earliest time periods only capture one cohort. For example, the results reflected in t=3 only capture women who experienced domestic violence for the first time in 2014 and who responded to the survey for five or six consecutive years. By contrast, the results presented in t=1 capture violence experienced by women who report domestic violence in 2014 to 2016. In other words, greater confidence should be placed on the effects detected closer to t=0. While not reflected in the descriptive analyses, the effect of the differing sample sizes is captured in section 5, where a more sophisticated difference-in-difference methodology is applied and confidence intervals are presented.

Figure I considers several outcomes: employment rates, full-time employment rates, hours worked, income, the share of women in a relationship, money stress, study stress, the share with a university degree, and two mental health related questions. The employment rate is a binary variable equal to one if a woman is employed and zero otherwise. The full-time employment rate is a binary variable equal to one if a woman worked at least 30 paid hours or more per week and zero otherwise. Hours worked is a categorical variable that refers to paid hours of work undertaken in a usual week. Zero refers to zero hours, and the subsequent 6 categories refer to: 1 - 15; 16 - 29; 30 - 34; 35 - 40; 41 - 49; and 50+ hours per week. Income is also a categorical variable capturing the responses to the question, "How do you manage on the income you have available?". There are five responses: (1) It is impossible; (2) It is difficult all the time; (3) It is difficult some of the time; (4) It is not too bad and; (5) It is easy. Money stress and study stress are based on a categorical question that asks "Over the last 12 months, how stressed have you felt about the following areas of your life (i.e. study, money, etc.)?". The responses are: (1) Not stressed at all; (2) Somewhat stressed; (3) Moderately stressed; (4) Very stressed; and (5) Extremely stressed. University degree attainment is a binary variable equal to one if a woman reports having attained a university degree. The first mental health question (denoted by "suicidal thoughts" in the figure) asks whether a woman "Ha[s] been feeling that life isn't worth living (in the last 12 months)?" and the second (denoted by self-harm in the figure) asks "Have you deliberately hurt yourself or done anything that you knew might have harmed or even killed you (in the last 12 months)?". Both of these variables are also binary variables equal to one if a woman responds affirmatively to either question and zero otherwise.

Focusing on the employment outcomes, Figure I reveals that there are some differences in the levels of various outcomes observed between women who experience violence and those who never experience violence. For example, a higher share of women who never experience violence are employed across all periods. Similarly, women who never experience violence consistently have greater ease managing on the income they have available. Following the first reported instance of violence (t=0), very little happens to the employment rates of both groups of women. By contrast, for income, in t=0, ease of managing on income declines for women who experience violence, and increases for women who do not. Focusing on the intensive margin (i.e. hours worked), very similar shares of women work

full-time and work a similar number of hours prior to t=0. However, both indicators decline slightly in subsequent periods. These descriptive statistics suggest that the impact of violence for young women may be more important on the intensive, rather than extensive margin.

Figure I. Descriptive graphs: Domestic violence (DV) victim-survivors compared to women who never report experiencing DV



Note: Paid weekly hours worked is a categorical variable ranging from 0 to 6, where 0 equals zero hours and the subsequent values refer to: 1 - 15; 16 - 29; 30 - 34; 35 - 40; 41 - 49; and 50+ hours per week. Income is a categorical variable ranging from 1 to 5, where 1 indicates 'It is impossible [to manage on my income]' and 5 indicates 'It is easy'. The y-axis on these variables, 'Scale', represents the mean of these values.

What are some of the factors through which domestic violence could exert an effect on hours worked? Table 4 and Figure II shed light on some potential factors. First, one factor which could impact hours worked is if the abuse continues in subsequent periods. Table 4 shows the number of years women will report experiencing domestic violence between 2014 and 2017. The table shows that the majority of women (65.8 percent) will report domestic violence in one year, while the remaining share (34.2 percent) will report it in at least two years. This estimate is however, a lower bound and the share of women who experience domestic violence more than once is likely higher. If women experience domestic violence and attrit from the survey in the subsequent year, they will only appear as having experienced domestic violence in one year.

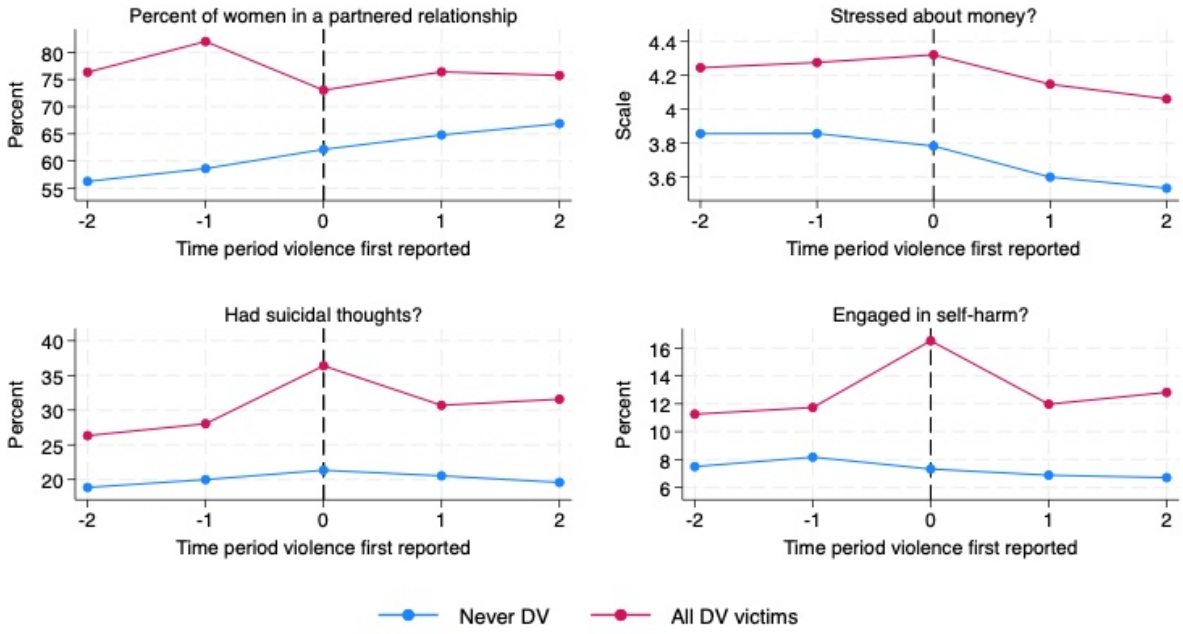
TABLE 4: NUMBER OF YEARS DOMESTIC VIOLENCE IS REPORTED

	Number of nonmissing values	Percent
Number of years DV is experienced		
1	992	65.78
2	364	24.14
3	122	8.09
4	30	1.99
Total	1,508	100.00

Source: Author's calculations using ALSWH.

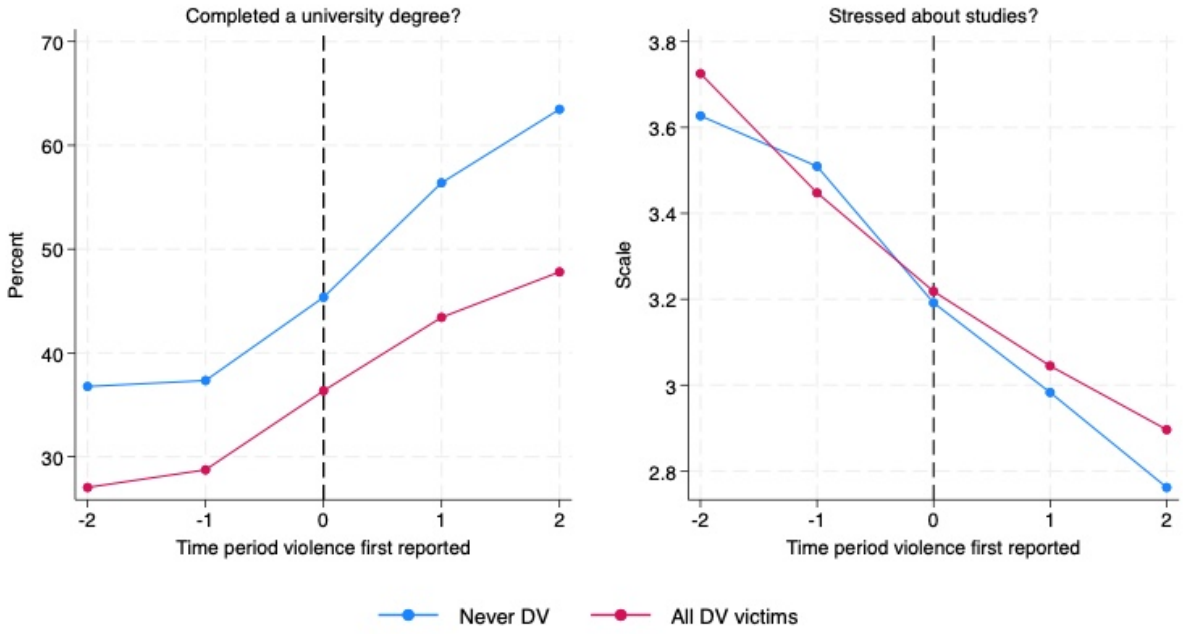
If the majority of women in the survey only report domestic violence once, to what extent is relationship dissolution an explanation? Looking at relationship dissolution, presented in Figure II, while a much higher share of women who experience domestic violence are in relationships in all periods, only about 10 percent leave the relationship when the violence occurs (t=0). So why do hours worked decline in periods following the first reported instance of domestic violence if the majority of women report it has stopped? One potential explanation is undereporting; woman do not report additional episodes of abuse. A second explanation could however, be a consequence of the lingering effects abuse has on the other outcomes of women. To this end, Figure II also reports descriptive evidence about the two mental health questions related to: suicidal thoughts and self-harm. The results show that while a greater share of women who experience domestic violence have these thoughts prior to the abuse, the percent that has them spikes upward when the abuse is reported, and then declines, but to a slightly higher share (relative to the period preceding abuse). The abuse also seems to impact the trajectory of women who would have attained a university degree. While a lower share of women who report experiencing abuse attain a university degree, the trend diverges and stagnates, relative to women who never experience abuse, from t=1 and beyond. Similarly, study stress declines for women in this age group (as they get older), but it declines at a slower rate for victim-survivors of domestic violence, relative to non-victims, consistent with the trends in university degree attainment.

Figure II. Descriptive graphs: Domestic violence (DV) victim-survivors compared to women who never report experiencing DV



Note: Stressed about money is a categorical variable ranging from 1 to 5, where 1 indicates 'Not stressed at all' and 5 indicates 'Extremely stressed'. The y-axis on this variable, 'Scale', represents the mean of these values.

Figure III. Descriptive graphs: Domestic violence (DV) victim-survivors compared to women who never report experiencing DV



Note: Stressed about studies is a categorical variable ranging from 1 to 5, where 1 indicates 'Not stressed at all' and 5 indicates 'Extremely stressed'. The y-axis on this variable, 'Scale', represents the mean of these values.

Figures I and III illustrates that the trends observed for most outcomes, prior to the first episode of domestic violence, are quite similar for women who experience and do not violence violence. There are however, some exceptions most noticeably for the share of women in a relationship and to some degree for the mental health outcomes. These differences also emerge for other descriptive statistics presented in Table 2, which shows data for women who never experience violence and future victim-survivors of domestic in 2013. The data are presented for 2013 because they show various outcomes for victim-survivors of domestic violence before they have yet to experience the violence. Even before domestic violence has been reported, a larger share of future victim-survivors has had depression, an anxiety disorder or other mental illness, relative to women who will never report experiencing domestic violence. Relative to non-victims, a higher share of future victim-survivors will also become pregnant at some point between 2014 to 2019; not surprisingly, a larger share will also become mothers.

TABLE 2: DESCRIPTIVE STATISTICS PRECEDING DOMESTIC VIOLENCE, 2013

	Ever experienced DV?		
	Never	Not yet	Total
Participant age at time of survey return	20.6	20.6	20.6
Highest qualification (4 levels)			
Less than year 12	4.14%	6.62%	4.74%
Year 12 or equivalent	46.37%	43.17%	45.59%
Certificate/diploma	21.89%	28.17%	23.41%
University	27.60%	22.04%	26.26%
Status in employment			
Paid employment	73.12%	69.40%	72.22%
Unemployed	6.12%	6.01%	6.09%
Out of the labour force	20.76%	24.59%	21.69%
Full or part-time employment?			
Part-time	53.09%	44.38%	50.98%
Full-time	26.15%	31.03%	27.33%
Not employed	20.76%	24.59%	21.69%
Manage on income available?			
It is impossible	3.25%	3.89%	3.41%
It is difficult all the time	16.21%	22.71%	17.78%
It is difficult some of the time	34.92%	36.19%	35.23%
It is not too bad	32.73%	27.63%	31.50%
It is easy	12.88%	9.59%	12.09%
In a partnered relationship			
Single	44.39%	25.44%	39.81%
Partnered	55.61%	74.56%	60.19%
Ever had depression			
No	71.74%	59.81%	68.85%
Yes	28.26%	40.19%	31.15%
Ever had anxiety disorder			
No	76.97%	67.88%	74.77%
Yes	23.03%	32.12%	25.23%
Ever had other mental illness			
No	93.53%	91.14%	92.95%
Yes	6.47%	8.86%	7.05%
Ever pregnant across all surveys?			
No	87.78%	74.86%	84.65%
Yes	12.22%	25.14%	15.35%
Ever live birth across all surveys?			
No	93.72%	86.40%	91.95%
Yes	6.28%	13.60%	8.05%
Health care card			
No	68.56%	66.36%	68.03%
Yes	31.44%	33.64%	31.97%
N	5,163	1,647	6,810

Source: Author's calculations using ALSWH.

The 2015 survey posed questions about child abuse and similar trends emerge. Table 3 shows that 19.5 percent of women who never experience domestic violence have experienced child abuse compared to 32.6 percent of future

domestic violence victim-survivors. The differences in descriptive statistics suggest that there could be other unobservable differences between women who experience and never experience domestic violence. For this reason, as part of the empirical strategy (discussed in section 4) used to causally identify the impact of domestic violence on various outcomes, both women who have never experienced violence and women who have yet to experience domestic violence are used as control groups.

TABLE 3: DESCRIPTIVE STATISTICS PRECEDING DOMESTIC VIOLENCE, 2015

	Ever experienced DV?		
	Never	Not yet	Total
Did you experience child abuse?			
No	80.49%	67.39%	76.96%
Yes	19.51%	32.61%	23.04%
N	4,128	1,524	5,652

Note: Questions about child abuse are posed in 2015. For this reason, data are presented for respondents in 2015.
DV victim-survivor status is however, determined using all survey years.

Source: Author's calculations using ALSWH.

3.2 What are the types and patterns of abuse women experience when they first report domestic violence?

The top panel of Figure IV categorises the type(s) of abuse that 1,647 women experience in the first year that they report experiencing domestic violence. The categories of abuse are mutually exclusive and add to 100 percent. They show that 50.1 percent of women only experience emotional abuse (denoted by "E") in the first year they report experiencing domestic violence, compared to 9.2 percent that only experience physical abuse, and 0.3 percent who experience harassment, physical abuse and sexual abuse (denoted by "HPS"). They imply that for most young women, domestic violence begins with emotional abuse. The 50.1 percent should also be interpreted as a lower bound due to the survey's periodicity, meaning that domestic violence begins with emotional abuse for at least 50.1 percent of young women. For example, it is possible that for more than 50.1 percent of women, domestic violence begins with emotional abuse, but escalates to other forms of abuse within the one year period.

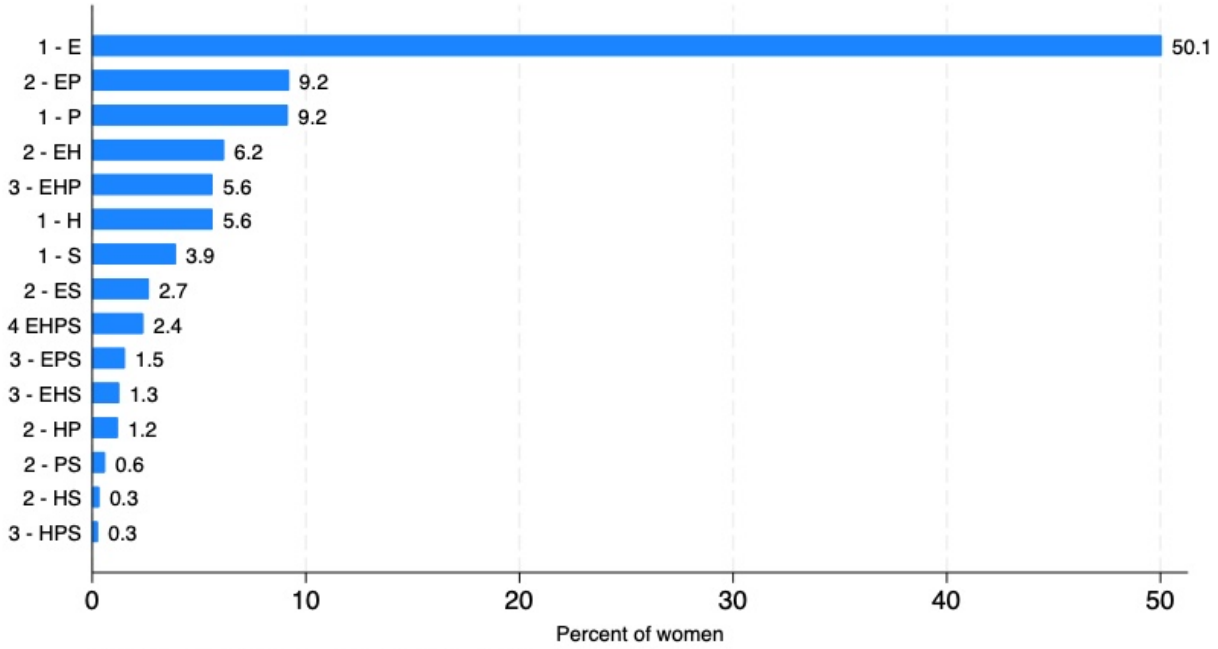
The bottom panel in Figure IV also reports the type of abuse experienced by women in the first year they report it, but disaggregates the women by number of years they report domestic violence across all of the surveys. The disaggregation helps understand if the perpetrators of women who experience abuse in one year employ different tactics, relative to those women who experience abuse in repeated years, in the first year both groups of women report abuse. The results show that among women who only experience abuse once, "emotional abuse only" is most common, followed by "emotional and physical", "physical only", and "harassment only", which are equally likely. Similar trends emerge for women who experience abuse in multiple years, with the exception of harassment, which

is less likely for this group. These results reveal two important findings. First, research that exclusively focuses on physical, harassment, or sexual abuse likely omits a large share of total domestic violence incidents. Second, if we assume that women who experience abuse in multiple years experience it by the same partner[8], repeat offenders do not seem to use different types of abuse, relative to single time offenders, in the first period.

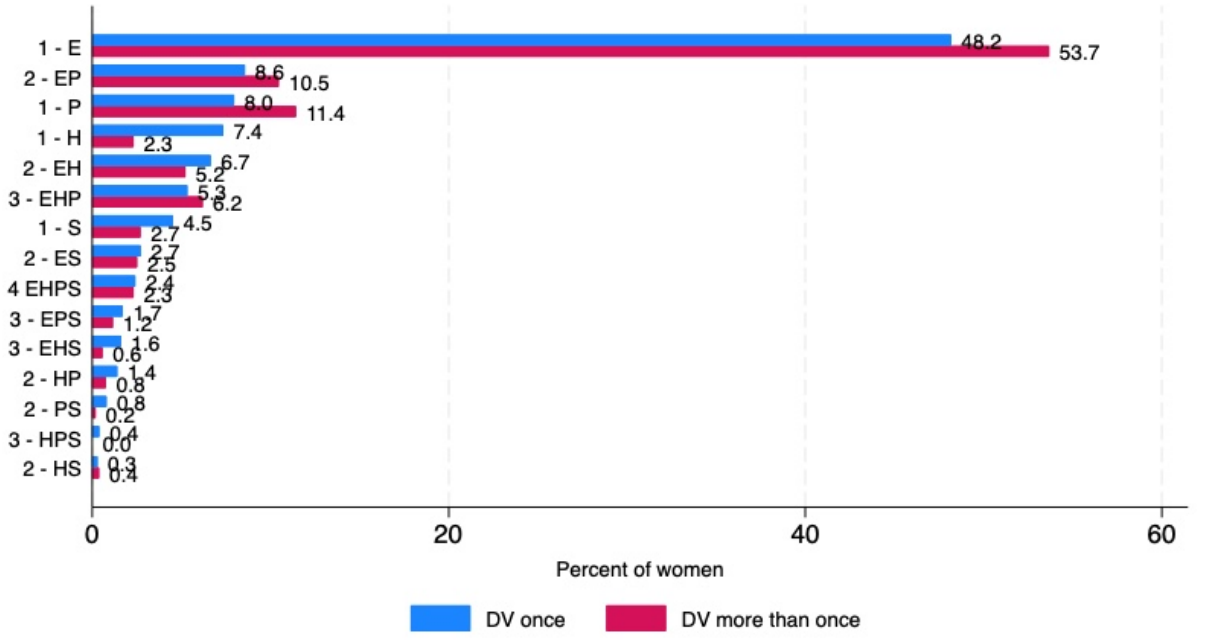
Among women for whom domestic violence occurs more than once, does the violence escalate over time? In this case, escalation is defined as a shift from one type of violence (i.e. emotional abuse) to more than one type of violence (i.e. emotional and physical). Figure V presents the type of abuse women experience in the second year they report violence, by type of abuse they experience in the first year. The sample is limited to women who report experiencing violence in two consecutive periods. For example, among women who reported experiencing "emotional abuse only" in t=0, the majority, 62.1 percent, indicate only experiencing emotional abuse in the subsequent year (t=1). Meanwhile, the abuse escalated for 30.4 percent of women and the abuse switched to another type for 7.5 percent of women (i.e. "physical only"). Turning to women who only experienced physical abuse in t=0, 23.4 percent of women continued to only experience physical abuse in t=1. Meanwhile, for nearly half, 46.7 percent, the abuse escalated, and for 29.8 percent the abuse switched to another singular type (i.e. emotional abuse only). Finally, among women who experienced "emotional and physical" abuse in t=0, 43.9 percent experienced a deescalation of abuse (i.e. a shift to just one type of abuse) in t=1, 41.4 percent continued to experience two types of abuse, and 14.6 percent experienced an escalation of abuse.

[8]Unfortunately, it is not possible to identify if a woman is in the same partnership across multiple years. It is only possible to identify if she is in a partnership and whether she is living with the partner.

Figure IV. Types of abuse reported by women in the first year they ever report domestic violence

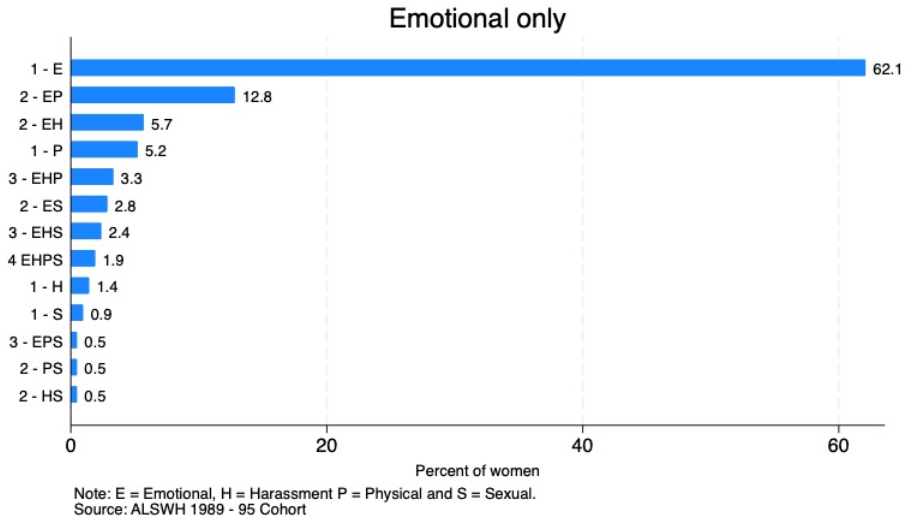


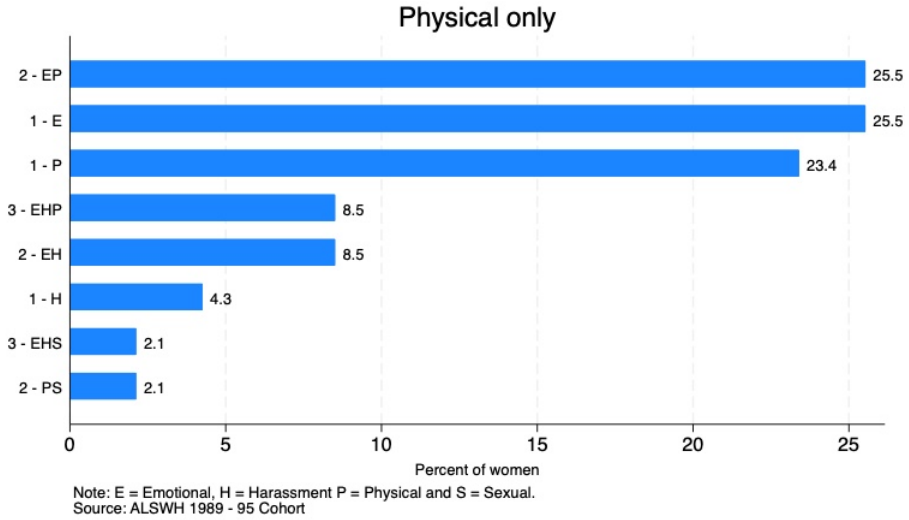
Note: E = Emotional, H = Harassment P = Physical and S = Sexual.
Source: ALSWH 1989 - 95 Cohort

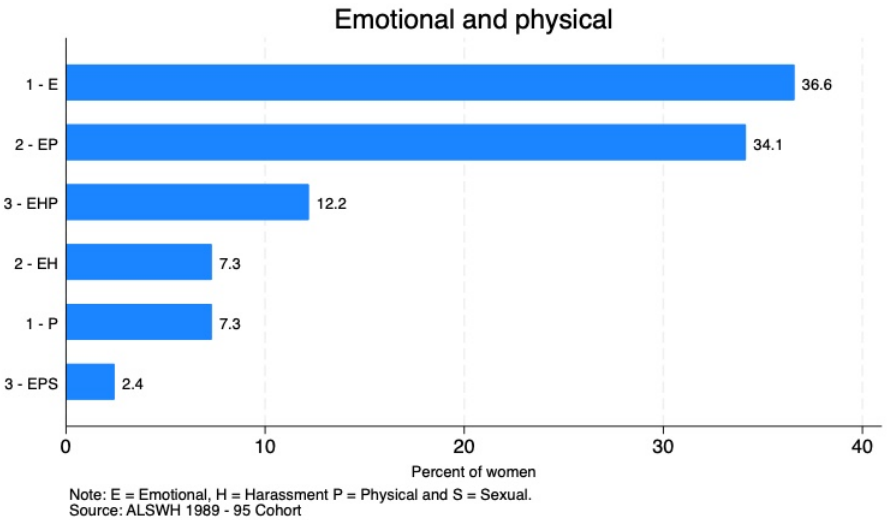


Note: E = Emotional, H = Harassment P = Physical and S = Sexual.
Source: ALSWH 1989 - 95 Cohort

Figure V. Types of abuse reported by women in the second year they ever report domestic violence, by the first type of abuse experienced (among women who report violence for at least two consecutive years)

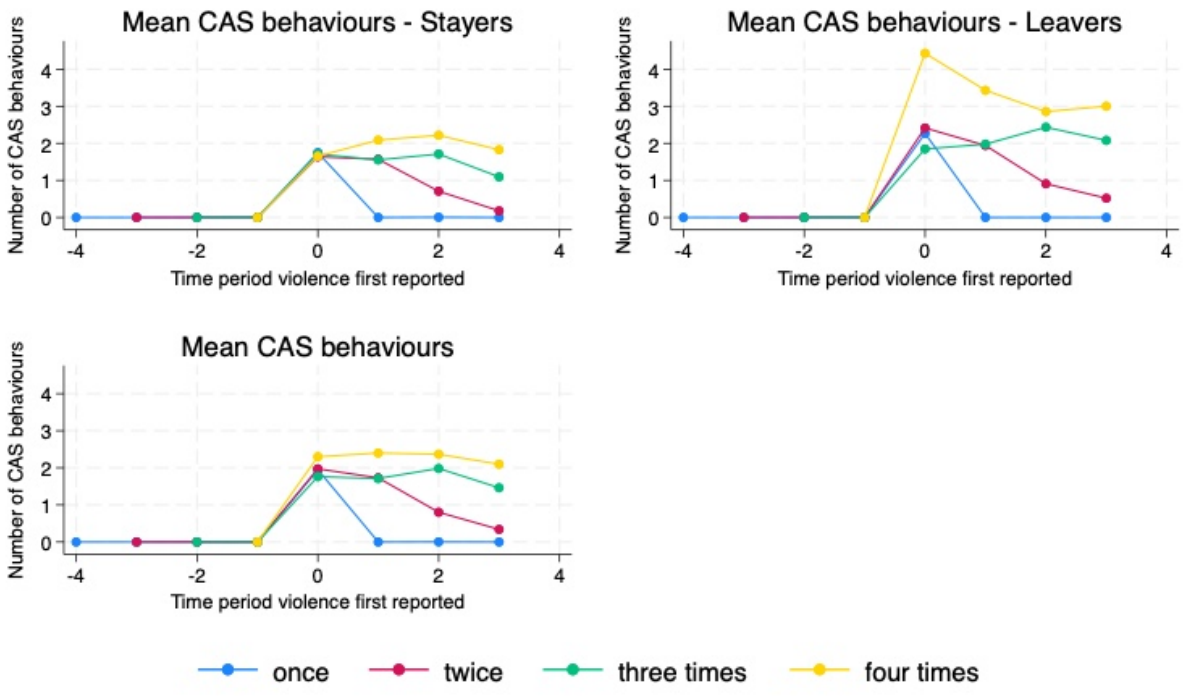






Another way to visualise escalation and patterns of abuse is to look at changes in the number of behaviours "checked" in the survey of the Community Composite Abuse Scale (see appendix). The bottom graph aggregates women who stay in the relationship and leave, while the top two graphs disaggregate women by whether they stay in the relationship or leave the relationship (at least once). Years of abuse are not required to be consecutive. For example, a woman who reports abuse twice, in t=0 and t=2, will be included in the figures. The results for women who report abuse 4 times should be treated with caution because of the small sample size. Bearing this limitation in mind, focusing on t=0, the first time a woman reports abuse, it seems that women who eventually leave the relationship at least once experience a greater number of CCAS behaviours. In other words, leaving an abusive relationship may provide an indication of the severity of the abuse inflicted.

Figure VI. Number of CCAS behaviours reported, by number of years they report abuse and whether they have left the relationship at least once



4 Empirical Strategy

In order to move from descriptive analysis to causal identification, the staggered difference-in-difference (SDiD) approach proposed by Callaway and Sant'Anna (2021) is applied using panel data to empirically estimate the causal impact of domestic violence on various outcomes by exploiting variation in the timing of domestic violence. The

potential outcomes framework, research design, and control group selection are similar to those applied in Bhuller et al. (2024). I leverage variation in the timing of the first reported instance of domestic violence in order to estimate group-event time average treatment effects. The variation in timing results in 5 cohorts, c, 2014 to 2019, which indicate the year a woman first reports domestic violence in the survey. As described earlier, women who experience domestic violence in 2013 are excluded since a pre and post-period cannot be observed.

The use of panel data enables comparison of the same individual before and after reporting domestic violence, which eliminates observed and unobserved time invariant heterogeneity. Then, to address concerns about the influence of time varying factors, such as economic conditions, three control groups are used as our counterfactual in the SDiD estimates. As described in the descriptive analyses, for some outcome variables, the parallel trends assumption is violated when victim-survivors of domestic violence are compared to non-victims, thereby precluding estimation of a casual effect using SDiD. To redress this shortcoming, three control groups are used: (1) the group of women who never experience domestic violence (the "never treated") and (2) two groups of women who have yet to experience violence, referred to as the "not yet" groups.

The first "not yet" treated group comprises future victim-survivors of domestic violence (i.e. women who will experience domestic violence between 2015 and 2017), using only the years before these women report experiencing domestic violence. The second control group exclusively comprises women who experience domestic violence for the first time in 2019. Since the 2019 survey was conducted two years after the 2017 survey, it deviates from the 2013 to 2017 annual survey periodicity. Including the 2019 data in regression estimates would conflate effects observed annually with those observed after two years. For this reason, while 2019 data are omitted from the regression estimates, women who experience domestic violence for the first time in 2019 are used as a second, "not yet treated", control group.

Formally, the group-event time average treatment effects are estimated for each cohort, c, in each event-time period, t, by comparing units in c that are not yet treated in t (or to individuals who are "never treated" for this control group). The cohort-event-time average treatment effect for cohort c at event-time t is:

$$ATT(c,t) = E[O_t - O_{c-1}|C_c = 1] - E[O_t - O_{c-1}|D_t = 0] \tag{1}$$

where O_t refers to each of the outcomes described in section 3.1 and O_{c-1} is the year prior to treatment. C_c is a dummy variable equal to one for individuals in cohort, c, and D_t is a dummy variable equal to zero for individuals not yet treated at event time, t. Each $\widehat{ATT(c,t)}$ is then estimated and an aggregated effect, $\widehat{ATT(t)}$, is calculated by weighting each $\widehat{ATT(c,t)}$ effect by the sample size.

Per Callaway and Sant'Anna (2021), control variables should not be included in the model unless they are exogenous. For example, previous work on domestic violence controls for highest degree of educational attainment,

assuming domestic violence does not impact it. This may be true for women who experience domestic violence after they have completed their "final" degree. However, as this research shows, for women in their 20s, domestic violence impacts their educational attainment. For this reason, two continuous variables, age and age-squared, are the only two covariates included in the model since employment and earnings tend to have a steep age gradient, particularly for women in their 20s who often transition from school to employment.[9]

For the event-study graphs, Roth (2024) shows that the default event-study graphs calculated using newer difference-in-difference approaches can differ from those calculated using two-way fixed effects. In particular, he cautions that "Owing to the asymmetric construction of the pre-treatment and post-treatment coefficients, a kink or jump in the plot may arise even if there is no treatment effect and parallel trends is equally violated in all periods." To simplify interpretation of the event-study graphs presented below, they have been modified per Roth (2024) to align with the interpretation used in two-way fixed effects models. Specifically, all point estimates should be interpreted relative to event-time t=-1, where t=-1 refers to the year prior to the first year a woman reports experiencing domestic violence. Since the results do not substantially differ between the two "not yet" control groups, the estimates are presented for the "never treated" control group and the first "not yet treated" control group. Since the sample size of women who never experience violence is however, larger than the "not yet" groups, using the "never treated" control group produces smaller confidence intervals.

4.1 Interpretation

Underreporting is a common challenge associated with analysing administrative and survey data on domestic violence. WHO (2014) estimates that "Population-based surveys of intimate partner violence against women show that 20 to 60 percent of women have told no one about the violence and few have sought institutional help, including from healthcare services". While women who report having experienced domestic violence prior to first year the survey was conducted are excluded from analysis (the "always treated"), domestic violence may have been experienced by women in the treatment group, prior to the first year they reported it in the survey. If this were the case, a woman would be classified as "not yet" treated, when in fact she may have been treated in an earlier period ("always treated"). While this possibility cannot be ruled out, if the proportion of women who experienced, but did not report, domestic violence in the survey was large, differential pre-trend outcomes should appear. Since these are not detected across most outcomes, it is assumed the impact of non-reporting in the treatment group does not substantially alter the results.

Underreporting also seems less problematic for the birth cohort considered in this paper, relative to older women. Appendix figure XVI presents both the lifetime prevalence of partner violence[10] and the prevalence for the last five

[9]Dummy variables were also applied for each age, instead of the continuous variables, and the results do not change. For this reason, the continuous variables were included.

[10]The Australian Bureau of Statistics defines partner violence as any incident involving the occurrence, attempt or threat of either sexual or

years by age group using data from the 2016 Personal Safety Survey (PSS), a national, cross-sectional survey that took place in the same year one of the ALSWH survey waves was carried out. It would be expected that lifetime prevalence rates, by age, would mechanically increase as women grow older. Instead, appendix figure XVI shows that lifetime prevalence rates increase as expected for the 18 to 24 and the 25 to 34 age groups, but then decline for those aged 35+, suggesting that underreporting is a more common phenomenon for the latter age group. Misclassification may also arise if domestic violence victim-survivors do not report it in the survey and are subsequently misclassified as part of the non-victim control group. While this cannot be ruled out either, the use of multiple control groups, such as those who have yet to experience domestic violence and who report it in the survey, attenuate the impact on the results. Moreover, if women in the control group of non-victims experience domestic violence and do not report it in the survey, this would merely bias the estimates of the impact of domestic violence downwards.

Non random attrition (described in detail in the data section) is also a concern and, in light of the negative selection of individuals who attrit, the point estimates should be interpreted as the lower bound of the negative effects (i.e. in the absence of attrition the effects observed would likely be "more negative", or larger in absolute value). In addition, since information is not provided about whether the incident was reported to the police, hospital, or other types of front-line services, which may provide support to victim-survivors, the effects observed incorporate the impact of any assistance that may or may not have been provided to victim-survivors. Relative to other research that relies exclusively on administrative records however, the impact of this effect will be smaller on the results in this study, since the survey data capture both domestic violence incidents that are reported and unreported to authorities, healthcare providers, or other front-line services. As discussed in detail by Bhuller et al. (2024), reverse or simultaneous causality is a concern "...in any event study examining the effects of people's choices (as opposed to externally manipulated treatments)..."; this study is no exception. For example, a reduction in a victim-survivor's paid hours worked could reduce family income, increase family stress and cause a perpetrator to inflict violence or, alternatively, the violence could cause the victim-survivor's paid hours worked to decrease. This concern has been partially addressed by examining and ruling out anticipation effects in the years preceding violence. However, if the two events occur simultaneously, the reporting event would capture both effects. A particularly salient example of this challenge, further discussed in section 6, shows that a larger share of women start to cohabitate with their partner the first time they report experiencing emotional abuse; the more probable explanation is that commencing cohabitation leads to emotional abuse, rather than the other way around.

physical assault by a current or previous cohabiting partner.

5 Results

Figures VII, VIII and IX present the event-study graphs for all outcomes. Tables 4 to 7 provide the point estimates presented in the event-study graphs. Each figure has two panels. The top panel presents the results for the "never treated" control group of women, while the bottom panel uses the "not yet" control group, denoted "NY". Two key findings emerge from the figures using both control groups. First, the results do not substantially differ for most outcomes when the "never treated" or "not yet" control group is used. As previously discussed however, the greater number of women who never experience domestic violence does however, increase the precision of the point estimates and reduce the confidence intervals. Second, the econometric results are consistent with (or strengthen) the descriptive trends presented in section 3. As further discussed below, the larger effects detected using DiD, relative to the descriptive statistics, point to the importance of controlling for age. Excluding age attenuates the effects observed in the descriptive analyses (relative to the econometric estimates) since some of the outcomes considered in this paper, such as employment rates, grow quite rapidly for individuals in their 20s, undergoing various life course transitions from home to school to full-time work (and combinations thereof).

Since the results for the "not yet" treated are similar to the "never treated", the discussion which follows focuses on the latter, except where the results greatly differ. Focusing on the employment outcomes presented in Figure VII, consistent with the descriptive trends, the effect of domestic violence on employment rates is statistically insignificant. By contrast, the full-time employment rate estimates are negative, statistically significant and exclude zero from the confidence interval. The results indicate that full-time employment rates decline by 2.9 percentage points in the year domestic violence is reported, and 5.6 and 9.1 percentage points in t=1 and t=2, respectively. Not surprisingly, the impact of domestic violence on hours worked is also negative and statistically significant. The impact of domestic violence on income is negative and statistically significant, with domestic violence pushing some women into a lower "managing on income" category. The effects on income also linger for the subsequent periods observed in the dataset. Consistent with the impact of domestic violence on income, there is a notable increase in money stress in the year domestic violence is reported, which remains statistically significant for the subsequent periods.

Shifting from descriptive analysis to causal effects also reveals that a larger share of women leave the relationship when they experience domestic violence. While 12.1 percent of women leave the relationship in the first year they experience violence (t=0), 15.1 percent have become single three years later (t=3). Since the pre-trends observed in the descriptive statistics differed between the "never treated" control group and victim-survivors of domestic violence (for the share in a relationship outcome), it is also useful to consider the results from the "not yet" treated control group. The "not yet" treated estimates yield even larger effects: 14.5 percent of women leave the relationship when they first experience violence (t=0) and 20 percent have become single three years later (t=3).

The impact of domestic violence on the mental health and university degree attainment are also disconcertingly

important. In the first year women report experiencing domestic violence, the share of women who experience suicidal thoughts increases by 7.4 percentage points and the share who engage in self-harm increases by 5.6 percentage points; these effects are statistically significant at the 0.1 percent level. Meanwhile, as a result domestic violence, 5.2 percentage points fewer women attain a university degree in the first year after they experience violence. Three years following the first instance of reported violence 9.7 percentage points fewer women have completed a university degree. These changes are accompanied by statistically significant increases in study stress. The impact of domestic violence on the educational attainment of young women has devastating implications for their future labour market earnings trajectory. Borland et al. (2000) note that the private return to a bachelor's degree in the 1980s and 1990s in Australia ranged between 10 to 15 percent, on average. Wei (2010) shows similar results using different years of Census data and finds the return amounted to 15.3 percent in 2006 for males and 17.8 percent for women in 2006. These studies suggest the cost of domestic violence extends throughout these women's lifetimes and is significant in terms of foregone earnings.

Figure VII. The impact of domestic violence on employment outcomes

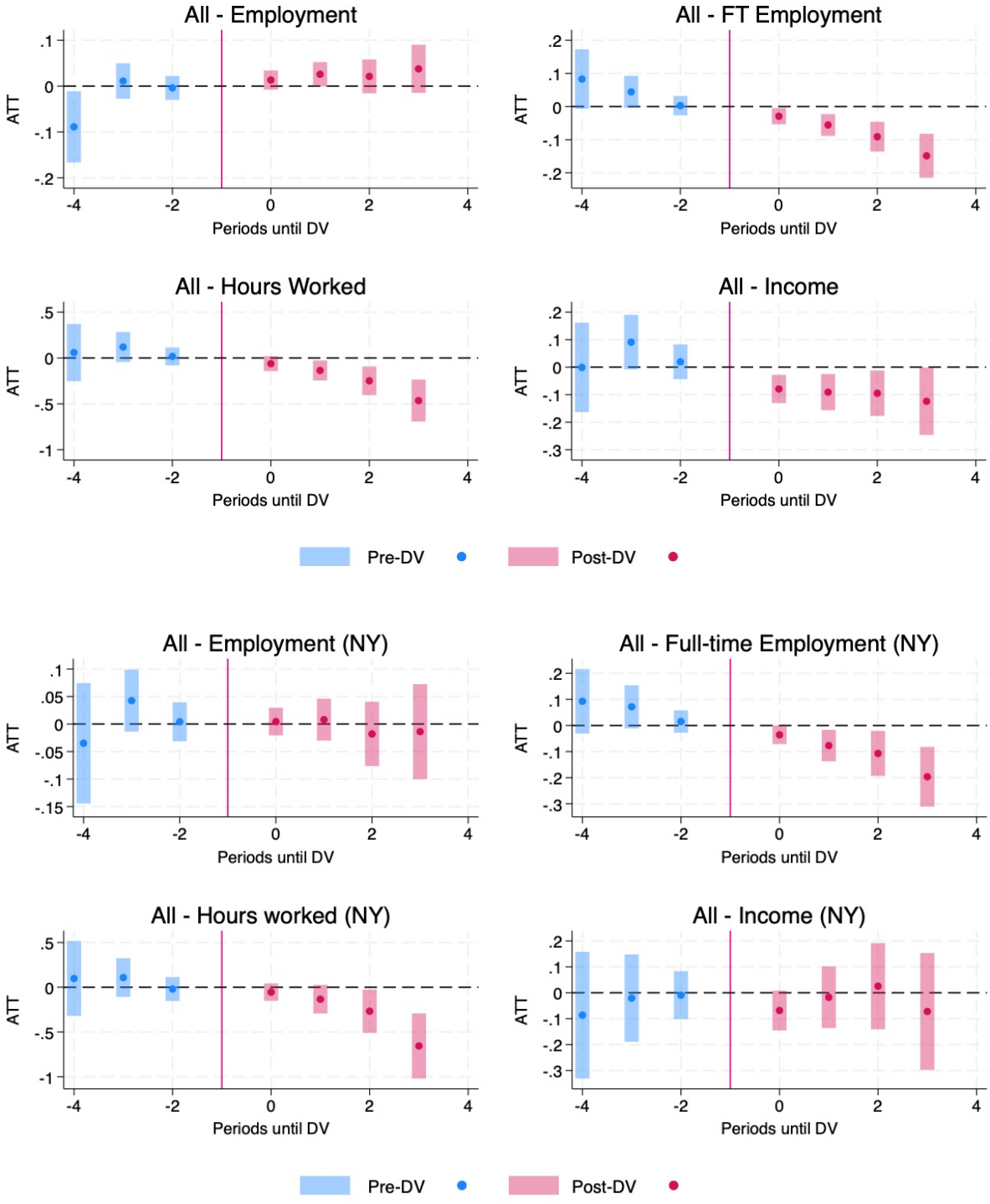


TABLE 4: EVENT-STUDY DID REGRESSION ESTIMATES, NEVER TREATED CONTROL GROUP

	Emp		FTEmp		Hours		Inc	
Pre_avg	-0.027		0.043		0.066		0.037	
	(0.018)		(0.023)		(0.077)		(0.042)	
Post_avg	0.024		-0.081	***	-0.227	***	-0.097	**
	(0.014)		(0.017)		(0.057)		(0.031)	
Tm4	-0.089	*	0.083		0.060		-0.001	
	(0.040)		(0.046)		(0.159)		(0.083)	
Tm3	0.011		0.044		0.120		0.091	
	(0.020)		(0.025)		(0.084)		(0.051)	
Tm2	-0.004		0.003		0.018		0.020	
	(0.013)		(0.015)		(0.050)		(0.032)	
Tp0	0.013		-0.029	*	-0.061		-0.079	**
	(0.011)		(0.012)		(0.041)		(0.026)	
Tp1	0.026		-0.056	***	-0.135	*	-0.091	**
	(0.014)		(0.017)		(0.056)		(0.034)	
Tp2	0.021		-0.091	***	-0.249	**	-0.095	*
	(0.019)		(0.023)		(0.080)		(0.042)	
Tp3	0.038		-0.149	***	-0.464	***	-0.124	*
	(0.027)		(0.034)		(0.116)		(0.063)	

*** p<.001, ** p<.01, * p<.05

Emp: Employment rate; FTEmp: Full-time employment rate; Hours: Paid weekly hours worked; Inc: Managing on income

TABLE 5: EVENT-STUDY DID REGRESSION ESTIMATES, NOT YET TREATED CONTROL GROUP

	Emp		FTEmp		Hours		Inc	
Pre_avg	-0.003		0.032		0.037		-0.032	
	(0.027)		(0.032)		(0.103)		(0.062)	
Post_avg	-0.002		-0.092	**	-0.291	**	-0.050	
	(0.023)		(0.029)		(0.095)		(0.055)	
Tm4	-0.048		0.098		0.081		-0.134	
	(0.058)		(0.065)		(0.219)		(0.127)	
Tm3	0.038		0.023		0.063		0.036	
	(0.030)		(0.034)		(0.113)		(0.071)	
Tm2	0.003		-0.025		-0.035		0.001	
	(0.019)		(0.021)		(0.071)		(0.044)	
Tp0	0.008		-0.021		-0.053		-0.067	*
	(0.013)		(0.016)		(0.051)		(0.033)	
Tp1	0.012		-0.038		-0.129		-0.054	
	(0.020)		(0.025)		(0.085)		(0.050)	
Tp2	-0.016		-0.091	*	-0.294	*	-0.017	
	(0.031)		(0.038)		(0.127)		(0.071)	
Tp3	-0.011		-0.216	***	-0.686	***	-0.063	
	(0.045)		(0.059)		(0.192)		(0.117)	

*** p<.001, ** p<.01, * p<.05

Emp: Employment rate; FTEmp: Full-time employment rate; Hours: Paid weekly hours worked; Inc: Managing on income

Source: Author's calculations using ALSWH.

Figure VIII. The impact of domestic violence on outcomes related to employment

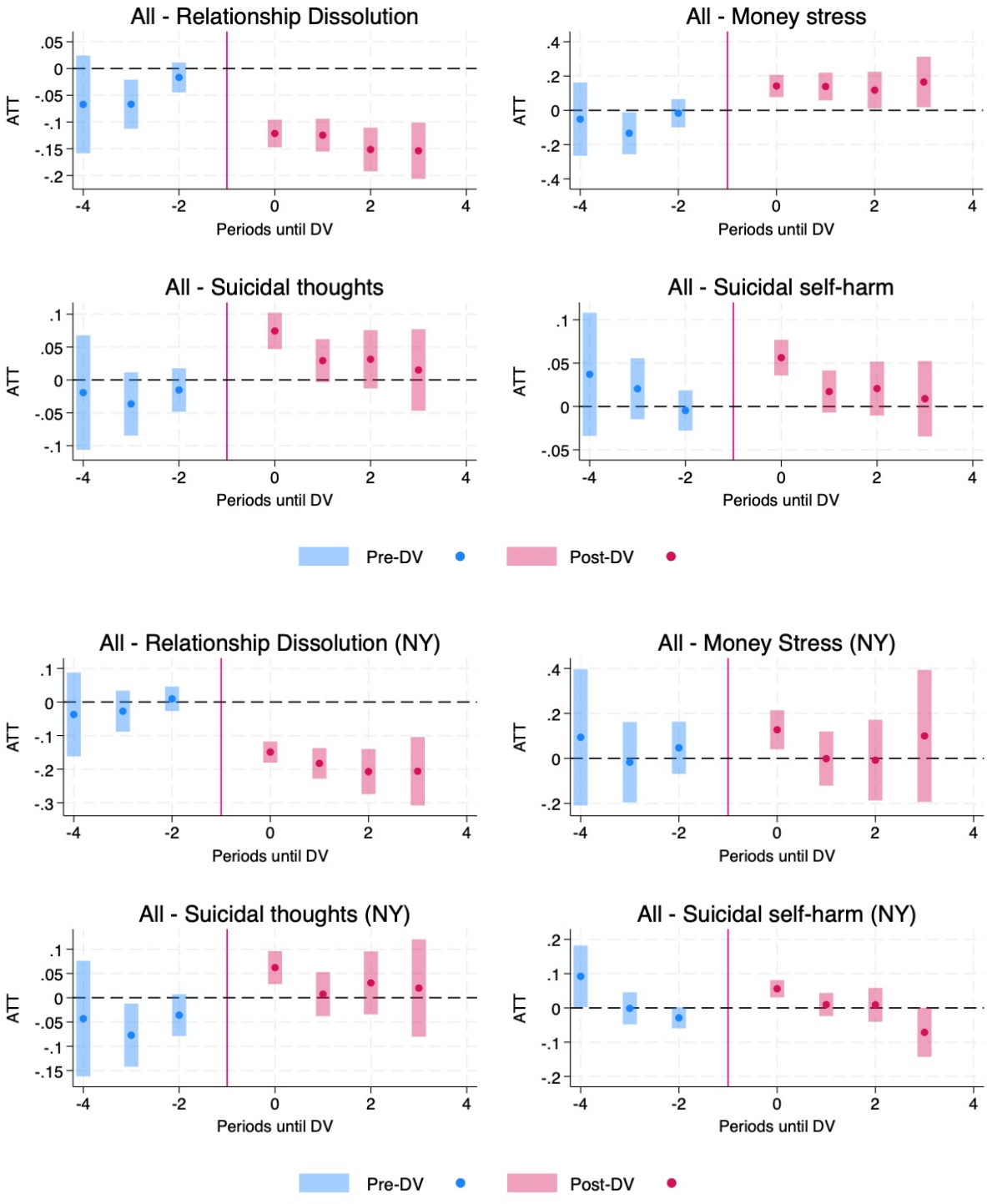


Figure IX. The impact of domestic violence on university degree attainment

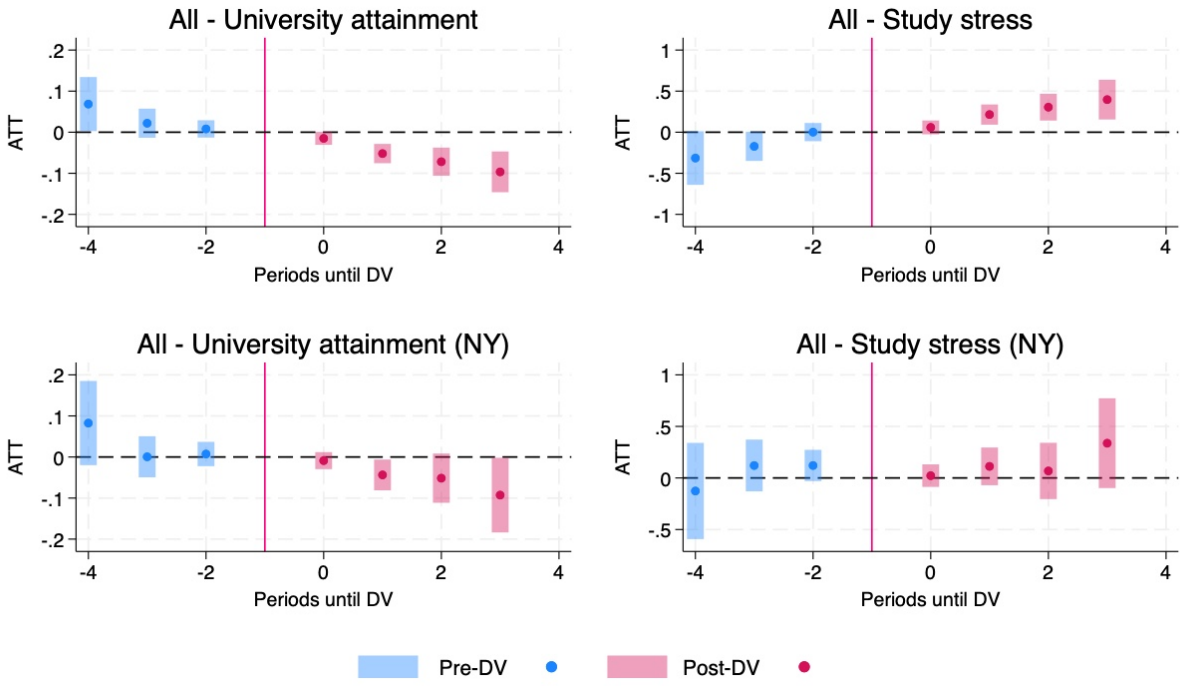


TABLE 6: EVENT-STUDY DID REGRESSION ESTIMATES, NEVER TREATED CONTROL GROUP

	Rel		MS		SuiT		SuiH		Uni		Study	
Pre_avg	-0.050	*	-0.067		-0.024		0.018		0.033		-0.162	
	(0.023)		(0.056)		(0.022)		(0.017)		(0.017)		(0.083)	
Post_avg	-0.138	***	0.141	***	0.038	*	0.026	*	-0.059	***	0.244	***
	(0.014)		(0.039)		(0.016)		(0.011)		(0.013)		(0.060)	
Tm4	-0.067		-0.052		-0.019		0.037		0.068	*	-0.315	
	(0.047)		(0.109)		(0.044)		(0.036)		(0.034)		(0.166)	
Tm3	-0.067	**	-0.134	*	-0.037		0.020		0.022		-0.172	
	(0.023)		(0.062)		(0.025)		(0.018)		(0.018)		(0.091)	
Tm2	-0.017		-0.017		-0.015		-0.005		0.008		0.001	
	(0.014)		(0.042)		(0.017)		(0.012)		(0.011)		(0.057)	
Tp0	-0.121	***	0.142	***	0.074	***	0.056	***	-0.015		0.059	
	(0.013)		(0.033)		(0.014)		(0.010)		(0.008)		(0.043)	
Tp1	-0.125	***	0.139	***	0.029		0.017		-0.052	***	0.215	***
	(0.016)		(0.041)		(0.017)		(0.012)		(0.012)		(0.063)	
Tp2	-0.151	***	0.118	*	0.031		0.021		-0.072	***	0.305	***
	(0.021)		(0.055)		(0.023)		(0.016)		(0.017)		(0.083)	
Tp3	-0.154	***	0.165	*	0.015		0.009		-0.097	***	0.397	**
	(0.027)		(0.075)		(0.032)		(0.022)		(0.025)		(0.123)	

*** p<.001, ** p<.01, * p<.05

Rel: Relationship dissolution; MS: Money stress; SuiT: Suicidal thoughts; SuiH: Suicidal self-harm; Uni: University attainment; Study: Study stress

TABLE 7: EVENT-STUDY DID REGRESSION ESTIMATES, NOT YET TREATED CONTROL GROUP

	Rel		MS		SuiT		SuiH		Uni		Study	
Pre_avg	-0.024		0.082		-0.047		0.028		0.030		0.038	
	(0.031)		(0.077)		(0.031)		(0.022)		(0.026)		(0.118)	
Post_avg	-0.185	***	0.033		0.030		-0.001		-0.049	*	0.135	
	(0.027)		(0.070)		(0.026)		(0.019)		(0.023)		(0.106)	
Tm4	-0.045		0.197		-0.045		0.092		0.083		-0.126	
	(0.065)		(0.153)		(0.065)		(0.049)		(0.052)		(0.238)	
Tm3	-0.038		-0.022		-0.075	*	0.010		0.000		0.121	
	(0.032)		(0.088)		(0.034)		(0.024)		(0.026)		(0.128)	
Tm2	0.010		0.073		-0.022		-0.018		0.007		0.121	
	(0.019)		(0.055)		(0.023)		(0.016)		(0.015)		(0.077)	
Tp0	-0.145	***	0.106	*	0.066	***	0.056	***	-0.009		0.022	
	(0.017)		(0.043)		(0.018)		(0.013)		(0.011)		(0.056)	
Tp1	-0.181	***	0.022		0.011		0.010		-0.044	*	0.112	
	(0.024)		(0.060)		(0.024)		(0.018)		(0.019)		(0.093)	
Tp2	-0.215	***	-0.010		0.026		-0.003		-0.052		0.068	
	(0.035)		(0.092)		(0.034)		(0.026)		(0.031)		(0.139)	
Tp3	-0.200	***	0.013		0.018		-0.067		-0.093	*	0.337	
	(0.053)		(0.144)		(0.054)		(0.039)		(0.046)		(0.222)	

*** p<.001, ** p<.01, * p<.05

Rel: Relationship dissolution; MS: Money stress; SuiT: Suicidal thoughts; SuiH: Suicidal self-harm; Uni: University attainment; Study: Study stress

Source: Author's calculations using ALSWH.

6 Heterogeneity by type of abuse and number of years reported

To what extent are the estimated effects influenced by the type and number of years of abuse women have experienced? This section reproduces some of the figures presented in section 3, but disaggregates them by type of abuse (emotional harassment, physical, and sexual) and number of years abuse is reported. Since disaggregating the results by abuse type and years of reported abuse reduces the sample size of the sub-groups, the event-time window is restricted from t=-2 to t=2, where the sample sizes are bigger. In addition however, since the reduction in sample size for the disagregated subgroups limits the statistical power of regression analysis, only descriptive analysis is provided. The top left results panel disaggregates the results by the four types of abuse, while the top right panel disaggregates the data by the number of years a woman reports experiencing abuse. The bottom panels intersect the type of abuse experienced in t=0 with the number of years a woman experiences it. The bottom left panel aggregates three categories of "severe" abuse: harassment, physical and sexual abuse. A women who reports experiencing at least one of the "severe" types of abuse is included in the figure. Women who report a "severe" type of abuse and emotional abuse are also included in the bottom left figure. The bottom right figure limits the sample to women who only report experiencing emotional abuse, by number of years the abuse is reported. The impact of abuse type and abuse frequency vary by outcome.

For some outcomes, such as employment, abuse type and frequency of abuse impact women differently. The causal estimates suggested that domestic violence did not exert a statistically significant impact on employment rates, but instead negatively impacted their number of hours worked, full-time employment rates, and their ability to manage on their income. Descriptive evidence presented in Figures X and XI corroborate these findings, but also suggest the employment effects are driven by women who experience severe abuse in multiple years. In other words, for employment - related outcomes, different types of abuse and their frequency seem to interact and impact women differently.

By contrast, for other outcomes, such as university attainment, the type or frequency of abuse does not seem to matter; all women are negatively impacted, irrespective of the type of abuse or frequency. Causal estimates revealed that domestic violence precluded (or slowed) women from attaining a university degree. Unlike the impact on employment outcomes, Figure XII shows the negative impact on university degree attainment seems to emerge across all forms of abuse (captured in the survey), irrespective of the number of years abuse is reported. The negative impact on university attainment is further supported by data on study stress, which tends to increase when domestic violence begins for both victim-survivors of severe and emotional abuse (bottom panel Figure XII).

For suicidal ideation, all abuse types impact women negatively, but the frequency of abuse affects the persistence of suicidal thoughts and self-harm among women. Figure XIII shows that while all forms of abuse (captured by the survey) increase the share of women who experience suicidal thoughts or who engage in self-harm in t=0, severe forms of abuse have a larger impact on the share of women with these feelings or who engage in suicidal self-harm. The

persistence of the abuse also impacts suicidal ideation; the uptick observed in t=0 persists if the abuse continues and declines once the abuse ceases across emotional and severe forms of abuse.

Figure X. The impact of domestic violence on employment outcomes, by type and frequency of abuse

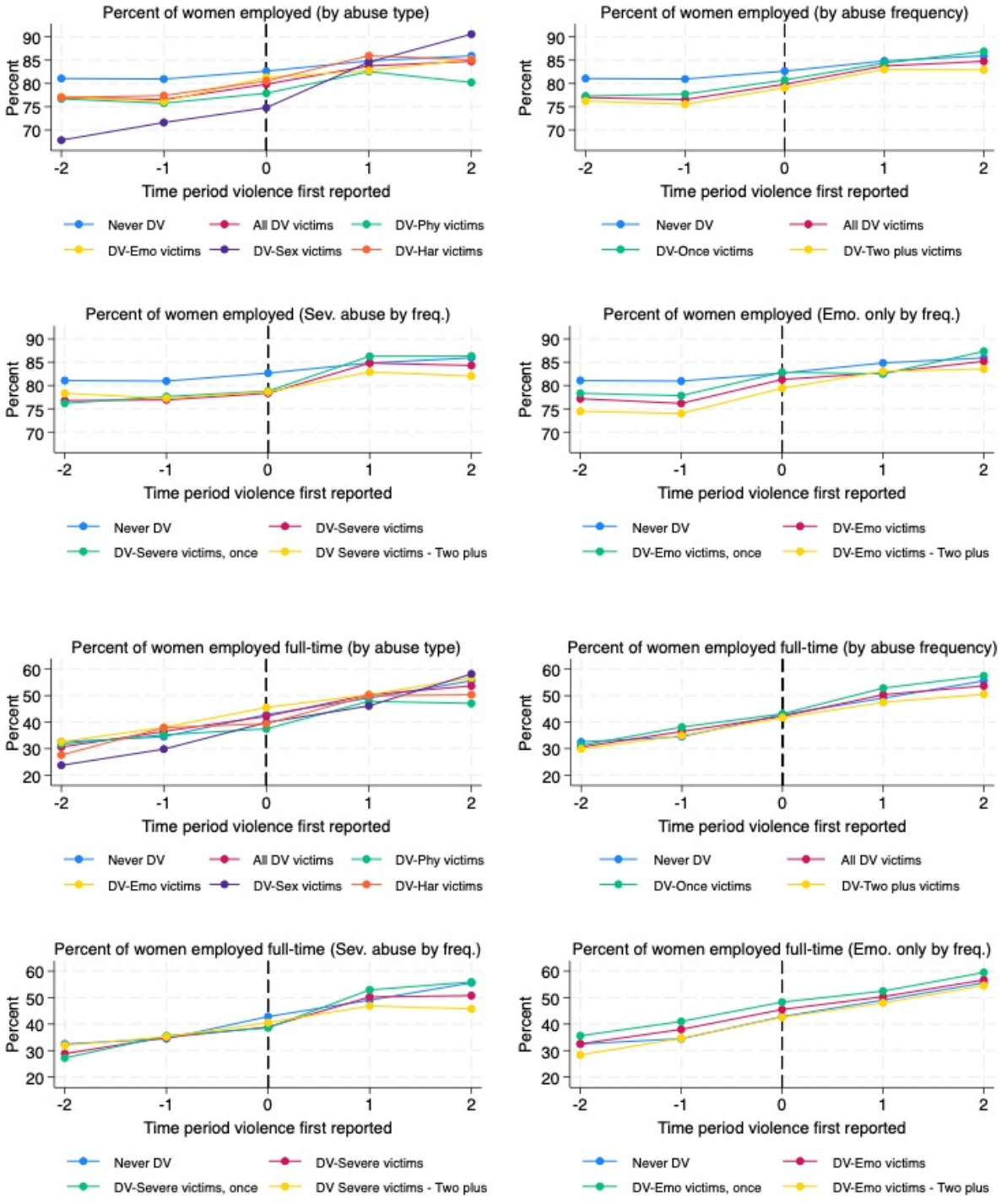
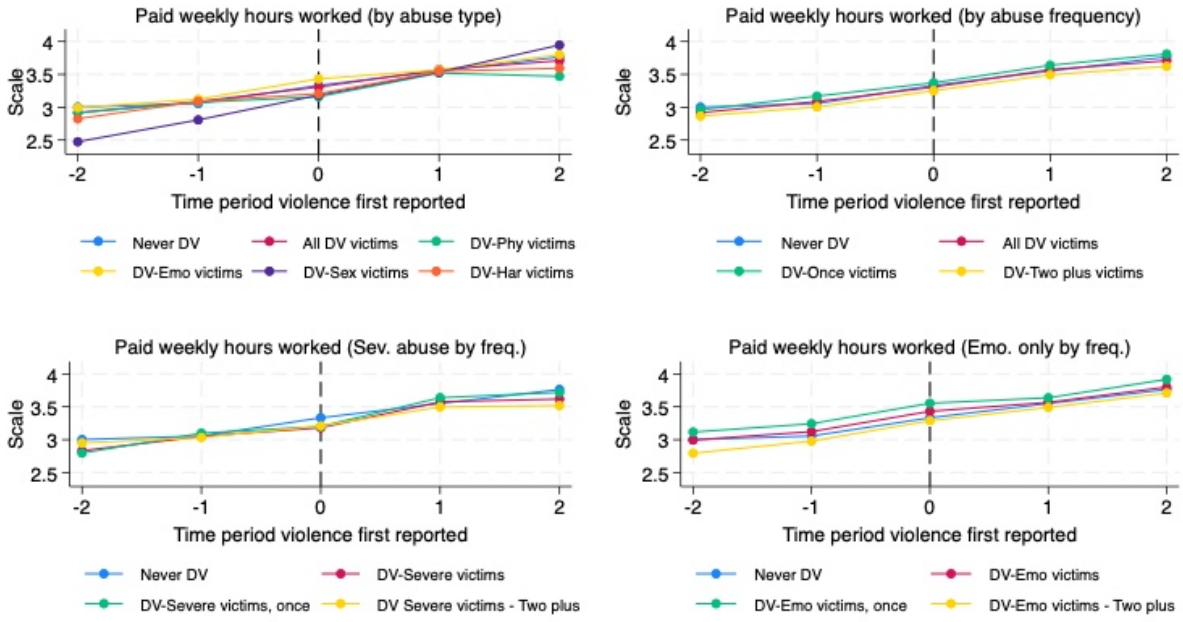
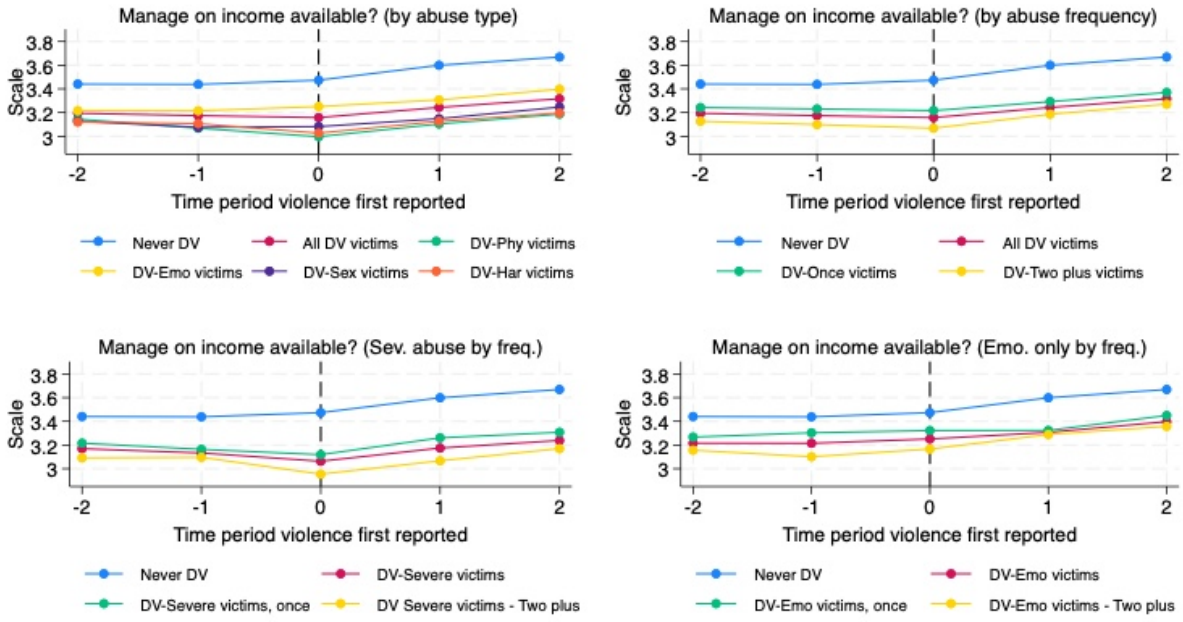


Figure XI. The impact of domestic violence on hours worked and ability to manage on income, by type and frequency of abuse

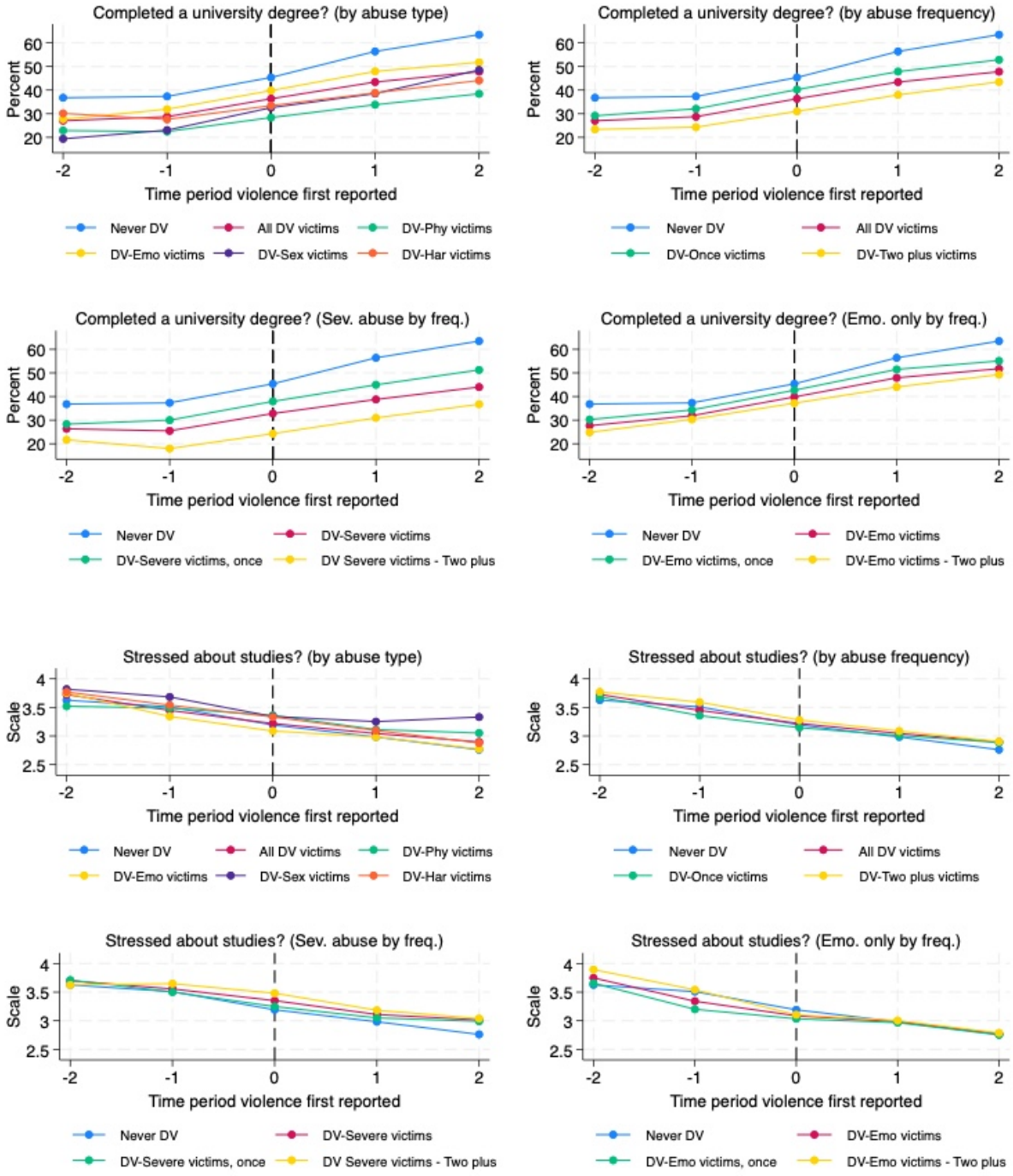


Note: Paid weekly hours worked is a categorical variable ranging from 0 to 6, where 0 equals zero hours and the subsequent values refer to: 1 - 15; 16 - 29; 30 - 34; 35 - 40; 41 - 49; and 50+ hours per week. The y-axis, 'Scale', represents the mean of these values.



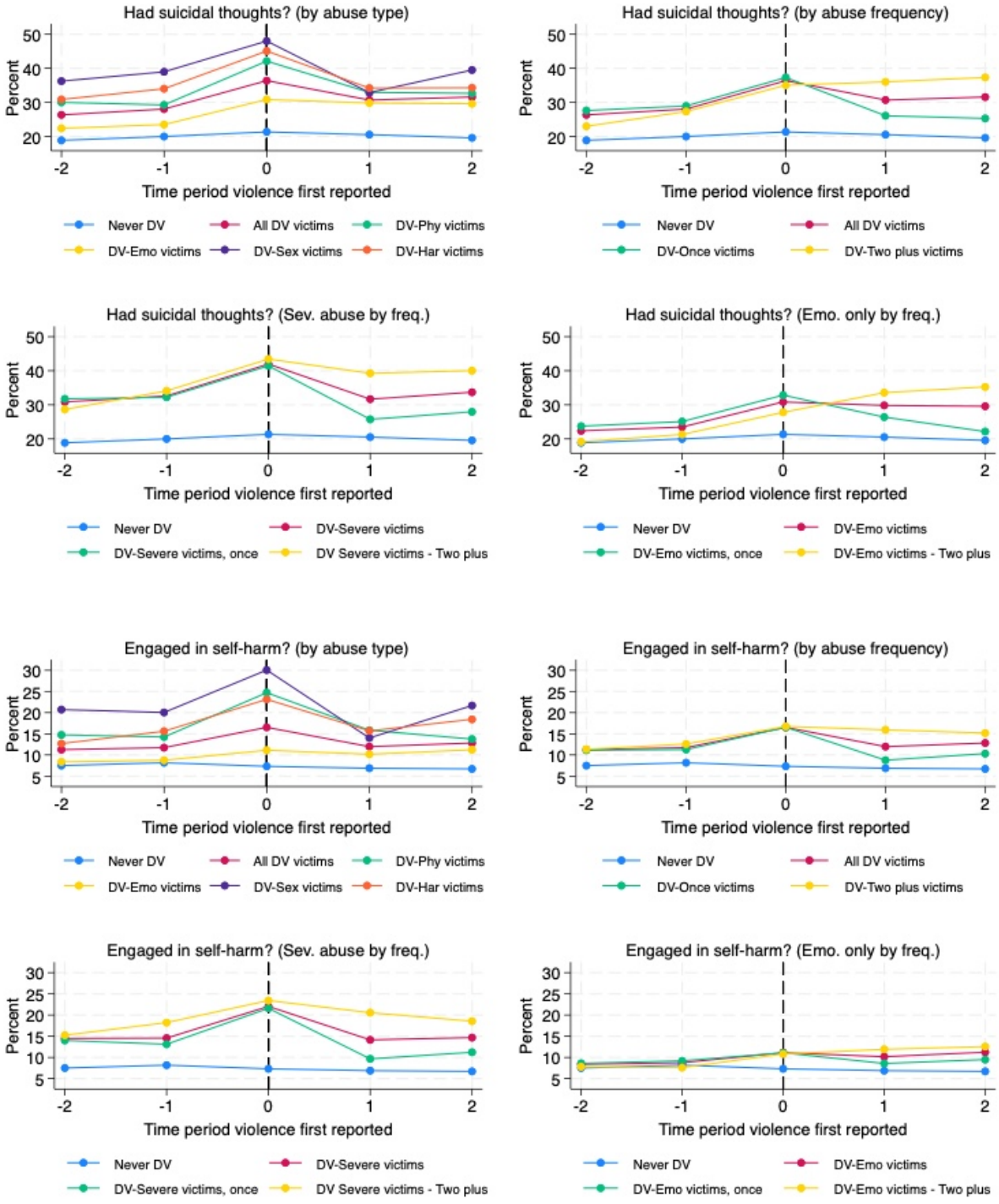
Note: Income is a categorical variable ranging from 1 to 5, where 1 indicates 'It is impossible [to manage on my income]' and 5 indicates 'It is easy'. The y-axis, 'Scale', represents the mean of these values.

Figure XII. The impact of domestic violence on university attainment and study stress, by type and frequency of abuse



Note: Stressed about studies is a categorical variable ranging from 1 to 5, where 1 indicates 'Not stressed at all' and 5 indicates 'Extremely stressed'. The y-axis on this variable, 'Scale', represents the mean of these values.

Figure XIII. The impact of domestic violence on suicidal ideation, by type of abuse and frequency of abuse

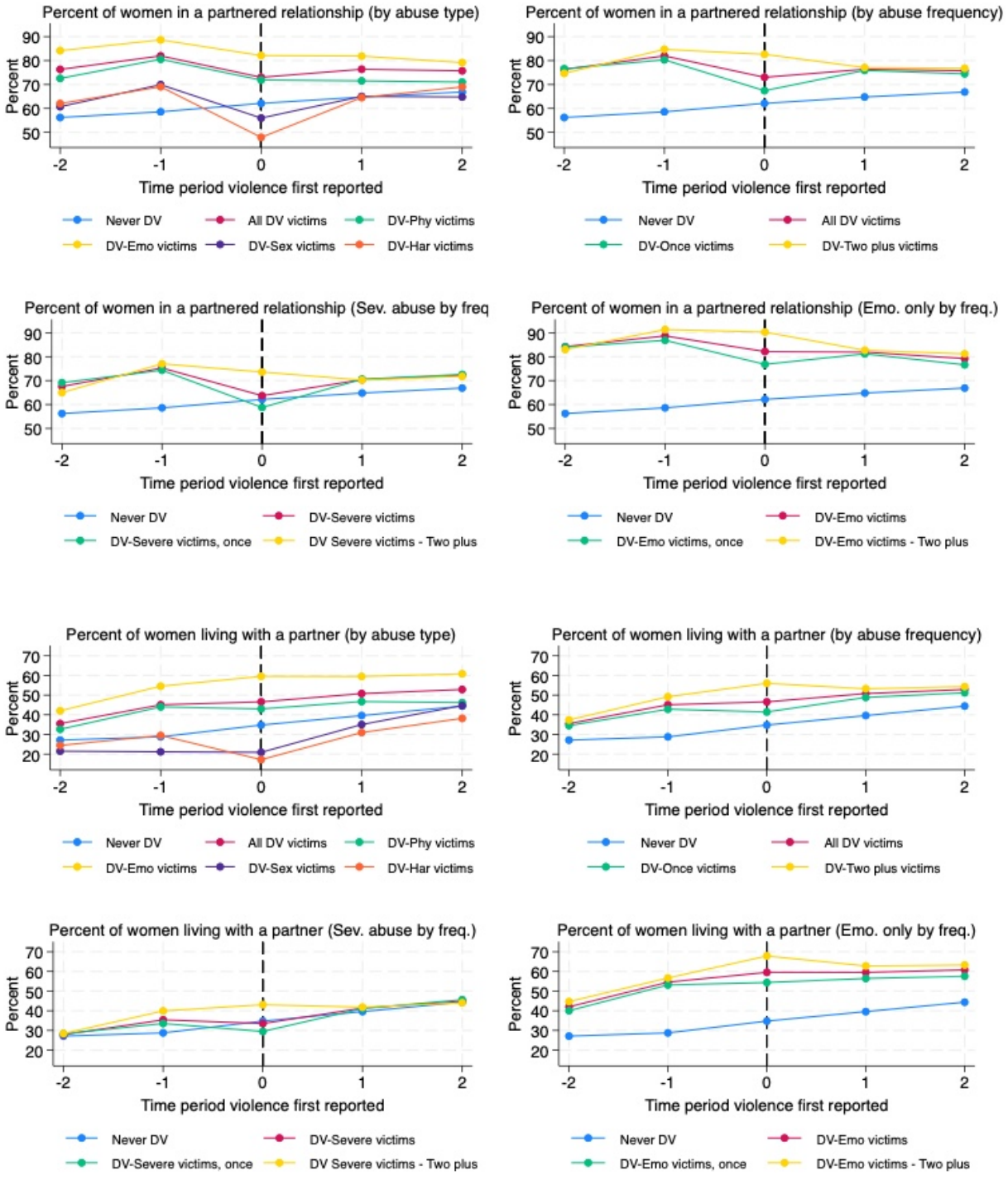


Were women who separated in cohabitating or non-cohabitating relationships?

To what extent does relationship separation underpin some of the heterogeneity of the results? For example, to what extent do women seek employment because they have left the relationship? The top panel of Figure XIV separates the results by whether a woman is in a "partnered relationship" (the variable used in the main results of the paper) and whether she was "living with a partner". "Living with a partner" is a binary variable equal to zero if a woman is single or in a relationship but not living with her partner and equal to one if a woman is in a relationship and living with her partner. Focusing on the "partnered relationship" variable, the results show that irrespective of type of abuse, a proportion of women leave their relationship with the onset of domestic violence. In addition, women who experience severe abuse types separate at a greater rate, relative to those who only experience emotional abuse and a larger share of women who experience abuse only once, separate relative to those who experience it in more than one year.

The bottom panel of Figure XIV presents results from the "living with partner" variable to understand if women are separating from cohabitating relationships, non-cohabitating relationships or a combination of both. With the exception of women who experience harassment, the percentage of women who are in a cohabitating relationship remains relatively stable both before and after t=0. Meanwhile, there is only a small decline in the share of cohabiting women who experience abuse only once (for all types of abuse and for severe abuse). These findings suggests that relationship dissolution is disproportionately driven by women in non-cohabitating relationships who separate, especially among those experiencing severe forms of abuse. However, among women who experience emotional abuse only, in more than one year, the descriptive trends suggest a slightly different result; the results suggest the share of women who only experience emotional abuse report experiencing it for the first time when they move in with their partner. These results provide suggestive evidence that cohabitation can trigger or coincide with the first reported instance of emotional domestic violence.

Figure XIV. The impact of domestic violence on relationship dissolution, by cohabitation, type and frequency of abuse



7 Concluding Remarks

This paper provides evidence of some of the long-lasting economic, educational and mental health consequences of domestic violence among women who experience it for the first time in their 20s. It also sheds light on the dynamics of the abuse experienced by these women. The results show that relative to women who never experience domestic violence in their 20s, women who do are more vulnerable. Victim-survivors of domestic violence tend to have higher rates of anxiety, depression, and other illness, even prior to experiencing intimate partner violence for the first time as an adult. A larger share also experienced child abuse, have suicidal thoughts and engage in self-harm, relative to non-victims (prior to the onset of partner violence).

The results also indicate that emotional abuse is the most common form of abuse experienced by women when they report it for the first time. About half of women exclusively experience emotional abuse when they report it for the first time, while the other half experience a mix of other forms such as emotional and physical abuse combined (9.2 percent of victim-survivors), only physical abuse (9.2 percent of victim-survivors), emotional abuse and harassment (6.2 percent), among other combinations. These findings suggest that research based on administrative data, which excludes women who exclusively experience emotional abuse or other types of abuse not reported to the police, omit a relatively sizable share of victims from analysis. The descriptive evidence also suggests different trends in escalation patterns by type of abuse. When a woman exclusively experiences emotional abuse in the first year, she is most likely to experience emotional abuse the second time she experiences domestic violence. By contrast, if a woman exclusively experiences physical abuse the first time she reports violence, the abuse is more likely to escalate in the second year, providing suggestive evidence that more severe forms of abuse may escalate faster than emotional abuse.

Having described the characteristics of women who experience domestic violence and the types of abuse inflicted, the impact of this abuse on various outcomes is then considered. The results suggest that by the age of 36 — the age of the eldest member of this birth cohort in 2025 — domestic violence has imposed a detrimental impact on their mental health and lifetime economic well-being. When young women report experiencing domestic violence for the first time, they tend to reduce their hours worked and their ability to manage on their income declines. Importantly, the percent that attain a university degree drops substantially. Three years following the first reported instance of violence, 9.7 percent fewer victim-survivors have completed a university degree relative to non-victims. Their mental health outcomes also plummet. In the first year domestic violence is reported, an additional 7.4 percent of victim-survivors have suicidal thoughts and an additional 5.6 percent of victim-survivors engage in self-harm.

To better understand the extent to which the results differ by frequency or type of abuse, additional descriptive analyses reveal that both frequency and type of abuse interact to engender heterogeneous effects on women's outcomes. In particular, while some victims' outcomes vary by type and/or frequency of abuse, other outcomes seem equally impacted by domestic violence irrespective of the type or frequency. For example, the labour market effects (declines

in hours worked and income) seem to be largely driven by women who experience severe abuse (harassment and/or physical and/or sexual) in multiple years; as suggested earlier, this is likely related to this particular subgroup of women who disproportionately tend to experience an escalation of abuse in the second period abuse occurs. By contrast, domestic violence seems to negatively impact university degree attainment, irrespective of the number of years or type of abuse experienced. The impact of domestic violence on suicidal ideation seems to impact all victim-survivors. All forms of abuse (captured by the survey) cause an increase in the share of victim-survivors who have suicidal thoughts and engage in self-harm, however, more severe forms of abuse have larger negative effects. In addition, the persistence of the effects of suicidal ideation tend to vary as a function of the persistence of the abuse. In other words, once the abuse ceases, the share of women with suicidal thoughts and who engage in self-harm declines, but they persist in subsequent years where the abuse continues (i.e. among women who experience abuse in more than one year).

Finally, the paper considered the impact of relationship dissolution and showed that about 14.5 percent of women leave the relationship when domestic violence is first reported and the share of women who leave increases over time. Rates of relationship dissolution are also higher among severe types of abuse (relative to emotional abuse). Relationship dissolution rates seem however, largely driven by women in non-cohabitating relationships who separate. In other words, women in cohabitating relationships tend to remain in cohabitating relationships even after the abuse is first reported. There are however, small differences observed among cohabiters. Among victims who experience severe abuse once, a small share leave cohabitating relationships when the abuse is first reported. Meanwhile, the percent of women who cohabitate with a partner increases in the first year violence is reported among women who experience emotional abuse in two or more years. These results provide suggestive evidence of two items: severity of abuse is a likely trigger for relationship dissolution and cohabitation can likely cause or coincide with the first reported instance of emotional abuse.

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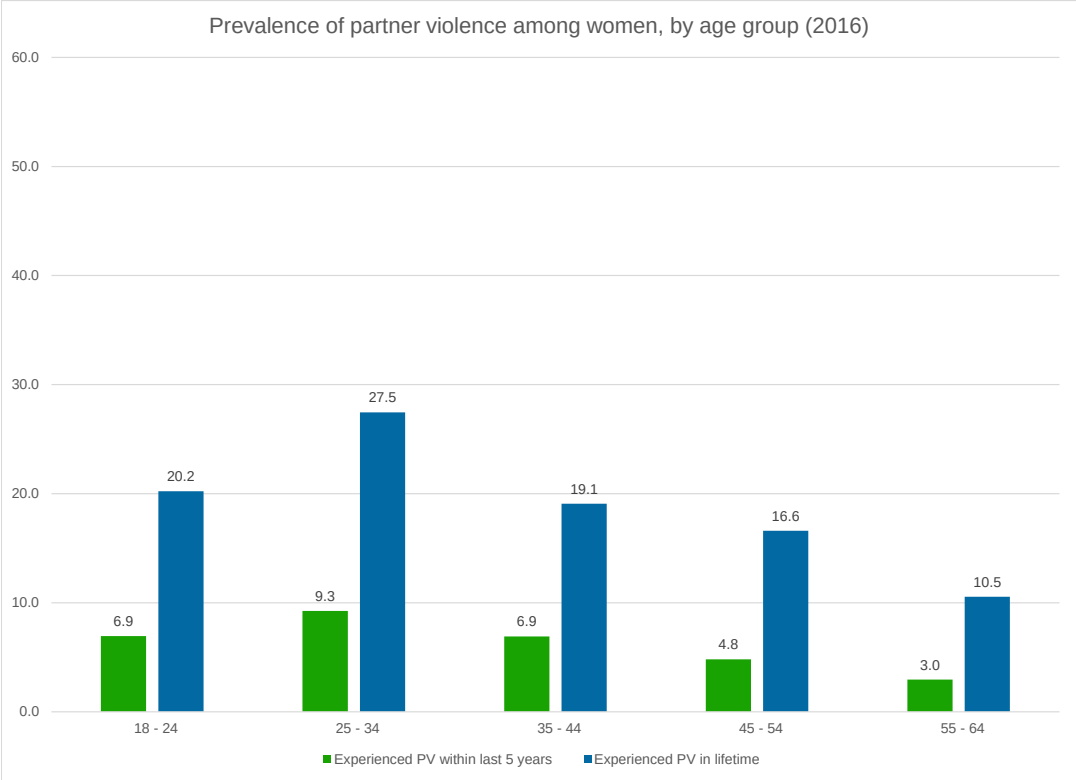
8 Appendix

Figure XV. Community Composite Abuse Scale (CCAS) Questions

This question asks about situations you may have experienced with current or past partners [?]
(Mark as many as apply on each line)

My partner:	In the last 12 months	More than 12 months ago	Never
Told me that I was ugly, stupid or crazy, or that I wasn't good enough or that no one would ever want me	☐	☐	☐
Followed me or harassed me around my neighbourhood / work	☐	☐	☐
Tried to turn my family, friends or children against me or tried to convince them I was crazy	☐	☐	☐
Kicked, bit, slapped or hit me with a fist or tried to hit me with something	☐	☐	☐
Forced me to take part in unwanted sexual activity	☐	☐	☐
Tried to keep me from seeing or talking to my family, friends or children, or didn't want me to socialise	☐	☐	☐
Pushed, grabbed, shoved, shook or threw me	☐	☐	☐
Blamed me for causing their violent behaviour	☐	☐	☐
Harassed me over the telephone, email, Facebook or internet	☐	☐	☐
Used a knife or gun or other weapon or beat me up	☐	☐	☐
Became upset if dinner / housework wasn't done when they thought it should be	☐	☐	☐
Refused to let me work outside the home or took my wallet and left me stranded	☐	☐	☐

Figure XVI. Suggestive evidence of reduced reporting effect among young women



Source: Author's calculations using the Australian Bureau of Statistics' Personal Safety Survey, 2016