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Enhancing civil court-ordered domestic violence firearm relinquishment using dedicated and interdisciplinary units

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ABSTRACT

Research Summary. Firearms are used in domestic violence (DV) in profoundly harmful ways ranging from non-fatal coercion to serious bodily harm to homicide. Removing access to firearms by people who perpetrate DV and are restrained by a civil Domestic Violence Protection Order (DVPO) is an important federal policy solution, but local efforts are needed to coordinate compliance with DVPO provisions like firearm relinquishment. This study examines the effectiveness of enhanced implementation of Washington state's DVPO firearm relinquishment law by dedicated units in Washington counties that support firearm relinquishment efforts. Dedicated units work across agencies (e.g., law enforcement, courts) to support and facilitate firearm relinquishment by restrained individuals. We used stratified random sampling to select DVPOs issued in four counties in Washington state and collected data directly from court records. We compared DVPOs issued in two counties with a dedicated unit to DVPOs issued in two counties without a dedicated unit using staggered differences-in-differences designs (because units in different counties were created at varying times). We hypothesized that dedicated units would increase relinquishment orders as well as actual weapon and firearm relinquishment by restrained individuals. We found that compared to DVPOs issued in counties without a unit, DVPOs issued in counties with a unit had an average 9.0 percentage point increase in the probability that a judicial officer ordered firearm and weapon relinquishment at a full hearing (95%CI = [0.06, 0.12]) and a 12.1 percentage point increase in relinquishment orders issued on an emergent basis at an ex parte hearing. In addition, there was a 10.8 percentage point increase in the probability that individuals restrained by a DVPO in a county with a unit relinquished at least one weapon or firearm compared to individuals restrained by a DVPO in a county without a unit.

Policy Implications. Enhanced implementation of Washington's firearm relinquishment law by dedicated units in two counties improved judicial officer issuance of relinquishment orders and relinquishment of weapons and firearms by individuals restrained by DVPOs.

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Disclosures: Sandra Shanahan is currently the Program Manager in the Regional Domestic Violence Firearms Enforcement Unit in the King County Prosecuting Attorney's Office. Amie Simeral is currently the Domestic Violence Firearms Investigative Analyst in the Spokane Regional Domestic Violence Task Force. The other authors declare no conflicts of interest.

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Firearms escalate the risk of homicide in domestic violence (DV) cases, and temporary restrictions on the possession and ownership of firearms are a logical policy response. However, efforts to safely and legally enforce restrictions on firearm possession among prohibited individuals has been a persistent and consequential policy challenge across the United States (US). Ensuring that weapons and firearms are relinquished as required by restrained individuals is a critical component of protecting survivors of DV and preventing fatalities. Though individuals who are subject to or restrained by a civil domestic violence protection order (DVPO) are prohibited from possessing or purchasing firearms based on federal law,[1] challenges in facilitating these federal restrictions are abundant. One strategy used by jurisdictions across the US to address these challenges is the creation of dedicated units that collaborate across agencies to gather information about firearm access and support firearm relinquishment. The goal of this collaboration is to address information-sharing problems, support issuance of relinquishment orders based on existing statute, and facilitate compliance by restrained individuals. Leveraging nearly a decade of data from DVPOs issued across four counties in Washington state (WA), this study quantitatively examines the impact of dedicated units on judicial orders to relinquish weapons, including firearms, as well as on actual relinquishment of weapons by individuals restrained by those orders.

1. Background

1.1 Domestic violence, civil protection orders, and firearm relinquishment

Domestic violence (DV) includes physical, sexual, and psychological abuse as well as stalking by a family or household member, most commonly an intimate, romantic, or dating partner. According to the most recent estimates, 42.2 percent of WA women have experienced sexual or physical violence or stalking by an intimate partner in their lifetime, higher than the national average for US women, 34.0

[1] 18 U.S.C. § 922(g)(8),(9) prohibits individuals subject to DVPOs from possessing or purchasing a firearm

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percent (Zhang Kudon et al., 2026). Men also experience DV, though less commonly. About 13.9 percent of WA men have experienced sexual or physical violence or stalking by an intimate partner (Zhang Kudon et al., 2026). In addition, psychological aggression and coercive control are prominent in relationships with violence. Violence and intimidation are used instrumentally to maintain control, often in a clear and consistent pattern (Douglas, 2021; Hamberger et al., 2017; Myhill & Hohl, 2019; Stark, 2007, 2009; Stark & Hester, 2019).

Firearms play a critical role in these forms of violence and intimidation. They can be used in both lethal and non-lethal ways to injure and threaten intimate partners and family members (Sorenson & Schut, 2018; Sullivan et al., 2025). Nearly one in ten adults in the US have been threatened by an intimate partner with easy access to firearms (Adhia et al., 2021). Access to a firearm substantially increases the risk of homicide in abusive relationships (J. C. Campbell et al., 2003, 2007). In fact, over half of domestic homicides in the US are perpetrated with firearms (Kivisto & Porter, 2020). Perpetrators who use firearms to kill their partner often threaten to do so before the fatal event, demonstrating a clear pattern of intent and planning. Research has found that some of these patterns are so common that they can be broadly summarized by a staged progression to intimate partner homicide (Monckton Smith, 2020). Domestic Violence Protection Orders (DVPOs) attempt to interrupt this progression via a policy to remove firearms in high-risk situations. DVPOs are civil legal orders that provide specific protections to individuals experiencing DV, including prohibiting or limiting an abusive partner's contact with a victim-survivor (DeJong & Burgess-Proctor, 2006; Lopez & Ramos, 2026).

1.2 Historical advancements in addressing firearm possession by restrained individuals

Since 1994, federal law (18 U.S.C. § 922(g)(8),(9)) has recognized the lethal danger of firearms in the context of DV and prohibited individuals subject to qualifying DVPOs from possessing or purchasing a firearm. Despite these long-standing federal laws, many DVPO respondents continue to own and access firearms even when legally prohibited for numerous reasons. First, federal law contains many gaps that inadvertently permit access to firearms. For several decades, firearm prohibitions were

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primarily achieved by restricting the purchase of new firearms through a background check denial (Goggins & Gallegos, 2016; Vernick et al., 2017; Wintemute, 2019). While background check denials limit new purchases, restrained individuals could still purchase a firearm in settings where a background check was not required (e.g., at gun shows in some states). In addition, there was no mechanism in the federal law to disarm an individual who already owned firearms at the time the DVPO was granted. Guns that restrained individuals already possessed when they became prohibited were largely left untouched, because the federal law did not outline or prescribe processes for removal or relinquishment (Frattaroli et al., 2021; Webster et al., 2010). The federal firearm prohibition largely relied on an "honor system" of voluntary firearm relinquishment. However, there is little incentive to relinquish anything if a restrained person prefers to retain their firearms and sees no potential negative consequences of doing so. Qualitative research has shown clear motivation among people who perpetrate DV to retain firearms even after prohibitions take effect (K. R. Lynch et al., 2018; Nanasi, 2025). In addition, the federal law used a narrow definition of relationships for which the prohibition would apply, often called the boyfriend loophole, eliminating the ability to seek protections in many modern romantic or intimate relationships.

To address these gaps, WA state expanded an existing law in 2014 authorizing and, in some cases, mandating courts to order individuals restrained by a DVPO to relinquish firearms and other dangerous weapons. States across the US have adopted similar laws requiring or authorizing judicial officers to order firearm relinquishment (Oliphant & Zeoli, 2024). A recent ruling by the United States Supreme Court in *US v Rahimi* reaffirmed the constitutionality of these laws (Womeldorf, 2024). These laws vary in what conditions must be met before ordering relinquishment and in which cases ordering relinquishment is authorized or required (Oliphant & Zeoli, 2024). Broadly, these laws created state-level statutory conditions to close many loopholes left open by the federal law. Population-level studies have shown that DVPO firearm relinquishment state laws are associated with reductions in intimate partner homicide (Diez et al., 2017; Wallin et al., 2021; Zeoli et al., 2018a, 2018b), making them a priority for both policymakers and practitioners. Among states who have enacted or expanded laws that

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mirror or strengthen federal firearm prohibitions, ongoing implementation challenges are highly localized. Even within states, local practices have diverged as jurisdictions have adopted their own procedures to implement relinquishment laws based on available resources, leadership, and cross-agency coordination (K. Lynch et al., 2025).

1.3 Differential implementation of state-level laws

The gap between statutory firearm prohibitions and their practical implementation reflects longstanding challenges documented within the broader policy implementation literature. Even well-supported policies can be weakened when implementation requires several decision points across sectors and systems, presenting opportunities for gaps and diffused responsibility for execution (Hudson et al., 2019; Moulton & Sandfort, 2017; Sandfort & Moulton, 2020). This is evident in DVPO-related firearm relinquishment: even where states have enacted strong relinquishment laws, implementation varies across jurisdictions and can be incomplete, inconsistent, and extremely limited (Blackwatters et al., 2023; Frattaroli et al., 2021; K. Lynch et al., 2025).

Actual implementation of firearm relinquishment is a critical precursor to the intended impact of DVPOs reducing harm to victim-survivors. Local processes differ in how courts ascertain whether restrained individuals have access to firearms (e.g., through DVPO petitions, judicial inquiry during hearings, checks of purchase history and concealed licenses), how relinquishment occurs (e.g., voluntary, direct removal with warrant), and how compliance with relinquishment orders is verified (e.g., proof-of-surrender forms, follow-up hearings). Further, judicial officers may not inquire about firearm access by restrained individuals, may lack adequate information to guide decision making, or may choose to not issue relinquishment orders even when statutorily required (Kafka et al., 2022). Even when relinquishment is ordered by the court, it may fail to issue specific guidance to restrained individuals about their legal obligation, how they should relinquish, or the court may fail to hold compliance hearings requiring restrained individuals to prove their compliance.

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Jurisdictions differ further in the extent to which monitoring and enforcement are conducted proactively (e.g., compliance hearings, cross-agency information sharing) versus reactively (e.g., only investigating noncompliance when later criminal behavior by the restrained individual occurs). For DV victim-survivors, many of whom already face high levels of trauma, ongoing risk for harm, and structural barriers in the legal system, these gaps could weaken or fully negate the protective value of DVPOs. This prior research underscores several structural barriers: limited communication across agencies, fragmented legal response from the courts and law enforcement, insufficient resources devoted to facilitate relinquishment, and absence of personnel responsible for bridging gaps between systems (Hudson et al., 2019; Moulton & Sandfort, 2017; Sandfort & Moulton, 2020).

Recent work in the last decade has focused on strategies to overcome these limitations, including cross-disciplinary teams, judicial training, information sharing, and specialized units that support relinquishment efforts (Ellyson et al., 2024; Frattaroli et al., 2021; K. R. Lynch et al., 2026). These studies highlight the value of structured processes and dedicated personnel for improving both the issuance of orders and compliance with them. For instance, qualitative research across four jurisdictions from four states has shown that improving information sharing, clarifying agency and leadership roles, and creating routine follow-up systems can strengthen implementation (Frattaroli et al., 2021). Yet, quantitative evaluations of specific implementation models remain scarce, and gaps in knowledge remain about how to effectively increase firearm relinquishment. Strengthening DVPO firearm relinquishment requires more than statutory authority alone; it requires coordinated structures and dedicated capacity to gather and share information, support judicial decision-making, and ensure collaboration throughout the implementation process (K. Lynch et al., 2025). To help achieve these goals, some jurisdictions have established dedicated units that centralize responsibility for firearm relinquishment and foster collaboration across different types of legal system agencies (e.g., survivor advocacy, legal aid, civil and criminal courts, law enforcement).

1.4 Interdisciplinary and dedicated units

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This study assessed the impact of dedicated units that facilitate firearm relinquishment by restrained individuals. Local units vary in size, composition, and organizational setting. However, they share a set of common features that are designed to facilitate information gathering to support judicial decision-making, fill gaps across legal systems (e.g., law enforcement, courts), and improve accountability so individuals restrained by DVPOs better understand and can meet their legal obligations. These common features of dedicated units include (1) having at least one full-time staff member whose effort is allocated entirely to relinquishment efforts; (2) investigating and supporting compliance with court orders; and, (3) collaborating across agencies, alongside those with current and prior professional experience as advocates, law enforcement, investigation, social workers, attorneys, court staff, judicial staff, among others. These units also utilize a common set of strategies to facilitate firearm and weapon relinquishment in compliance with court orders such as: (1) gathering information about former and current firearm access by restrained individuals (e.g., reviewing case documents for allegations of firearms, posts on public forums, and querying firearm purchase history, when available) and sharing that information with law enforcement and courts as indicated, (2) conducting interviews with at least one DVPO party (i.e., protected individuals, restrained individuals) to inquire about the quantity and location of weapons and firearms as well as their relinquishment status, (3) educating both protected and restrained individuals about their rights and responsibilities as outlined in court orders, and (4) monitoring relinquishment by restrained individuals to promote swift accountability. The units are also well-connected to advocacy and social service resources (e.g., housing, legal aid) to help facilitate needed support for victim-survivors and their families as well as for restrained individuals, when indicated.

2. Current Study

This study assessed the impact of dedicated units on the issuance of judicial orders to relinquish weapons including firearms and on actual relinquishment by restrained individuals. Using a stratified

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random sample of DVPOs issued in four counties in WA state over almost a decade, we evaluated the effects of units by comparing DVPOs issued in two counties with dedicated units to DVPOs issued in two counties without dedicated units. Building on the prior ecological literature showing that firearm relinquishment laws are associated with reductions in intimate partner homicides (Diez et al., 2017; Vigdor & Mercy, 2006; Zeoli et al., 2018a, 2018b), and recent evidence suggesting that dedicated units can also reduce crime (Ellyson et al., 2026), this article makes three primary contributions to the existing literature. First is the focus on mechanisms. We evaluated two important aspects of the process at the local level of implementation: judicial decision-making about ordering relinquishment and relinquishment of weapons including firearms by restrained individuals (***Figure 1***). These process mechanisms are intermediary steps that would help relinquishment laws translate into reduced injury, homicide, and/or crime. The majority of existing studies have not examined the mechanism by which we expect relinquishment laws would reduce homicide or crime, and they have generally not verified that enacted laws meaningfully translate into actual relinquishment. Furthermore, we assess relinquishment orders issued ex parte, a particularly high-risk period for intimate partner homicide because a person experiencing abuse is separating from their partner and seeking court-ordered protection (Monckton Smith, 2020).

Second is the methodological improvement on previous studies. We used DVPO case-level data paired with a differences-in-differences design to assess the causal impact of dedicated units on the issuance of relinquishment orders by judicial officers and relinquishment of weapons including firearms by restrained individuals. This methodological approach complements existing literature that richly describes relinquishment efforts using qualitative methods (Blackwatters et al., 2023; Frattaroli et al., 2021; Kafka et al., 2022; K. Lynch et al., 2025; K. R. Lynch & Logan, 2020; Vittes et al., 2013; Webster et al., 2010). These qualitative studies are invaluable for elucidating rich detail on the strengths and shortcomings of local implementation but do not capture broad or causal trends. Further, this study strengthens and extends limited quantitative research on relinquishment that falls short of identifying causality. One descriptive study conducted in California found that nonrecovery of firearms

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was most common when restrained individuals were not served or when they denied having firearms (Wintemute et al., 2014), Another pre-/post-study in only one county with a dedicated unit in WA found that the unit was associated with improvements in both judicial orders to relinquish and respondent compliance (Ellyson et al., 2024). The current study builds on this prior quantitative work by employing a rigorous causal inference framework and using data from multiple dedicated units as well as control counties. In addition, while prior qualitative and quantitative research has documented variation across jurisdictions in relinquishment implementation, we leverage a multi-county cohort within a single state spanning nearly a decade to compare similar counties that adopted distinct implementation strategies.

Third, we evaluated a specific form of firearm relinquishment efforts (dedicated units) that are replicable and adjustable to meet the needs of local communities. Dedicated units address multiple gaps identified in the broader policy implementation research that can reduce policy effectiveness (Hudson et al., 2019; Moulton & Sandfort, 2017; Sandfort & Moulton, 2020). By assessing the impact of a reproducible policy intervention that can be locally modified, this study stands to inform practical decision-making in a critically important domain of public safety. Counties or broader jurisdictions around the country can benefit from this study's insights on process mechanisms and implementation. In summary, these contributions provide actionable information to policymakers and practitioners on the potential effects of enacting and implementing these laws using dedicated units to facilitate accountability for relinquishment of weapons, including firearms.

3. Methodology

3.1 Study design and sampling

To estimate the effect of a dedicated unit on judicial orders and relinquishment by restrained individuals, we implemented a differences-in-differences approach using DVPOs issued after a full hearing in four counties in WA (King, Spokane, Pierce, and Yakima) between January 1, 2014 and

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June 30, 2022.[2] Two counties established dedicated units (King in 2018; Spokane in 2020) to actively improve relinquishment by restrained individuals in compliance with the state level relinquishment law. Two additional counties were purposely selected as control counties (Pierce and Yakima) because (1) they did not have dedicated units to facilitate firearm relinquishment in the years of the study and (2) they were similar to treatment counties in terms of population size and demographic characteristics (household size, race and ethnicity) as well as geographic region. Characteristics of included counties are provided in ***Table A1.***

The **treatment group** included DVPOs issued after a dedicated unit was fully operational. The **control group** included DVPOs that were issued before the dedicated unit in counties with a unit or DVPOs issued in any year in the study period in counties without a dedicated unit (i.e., where the state law was enacted and in effect but never fully implemented by a dedicated unit). Our evaluation was anchored on the time that a dedicated unit was fully operational in a county rather than when statewide legislation was enacted (2014) in order to examine the causal effects of unit implementation and understand the mechanisms by which the unit's enhanced implementation of the law may lead to firearm relinquishment. We obtained data on the full population cohort, all DVPOs issued after a formal hearing across WA state between January 1, 2014 and June 30, 2022, from the Administrative Office of the Courts. We conducted stratified random sampling to select DVPOs for our study from these administrative records, selecting a 50% random sample of granted DVPOs for larger population counties (750,000 people or more) and a 60% random sample for smaller population counties (under 750,000 people). Based on this sampling, about 27% of the sample were DVPOs issued with a unit (treatment) and about 73% were DVPOs issued without a unit (control). This study was approved by the [INSTITUTION NAME REDACTED] Institutional Review Board.

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[2] DVPOs can also be issued emergently without a full hearing, often called ex parte, temporary, or emergency orders. When DVPOs are issued ex parte, the restrained individual responding to the court does not have an opportunity to appear before a judge or respond to the allegations. We relied on orders issued at a full hearing to minimize differential DV exposures across the sample (e.g., stalking, weapon use) and because ex parte DVPOs fall under different legal requirements regarding firearm relinquishment.

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3.2 Study data

Data sources

We obtained DVPO data from two sources. First, we used data from a statewide administrative data source maintained by the Administrative Office of the Courts (AOC) with information on protected and restrained individuals, issued orders, hearings, and judicial officers. Because WA state does not have a unified court system, only certain data fields are administratively required to be collected and centrally maintained in this dataset, so the type and amount of information available statewide varies. Second, we conducted primary data collection from files contained in county-level court record systems across the state. Despite administrative data variability, all courts use a set of standard pattern forms, legal forms that are completed by petitioning parties, attorneys, and court officials that are filed into court records. These statewide pattern forms are updated centrally by AOC, creating a high level of consistency in what is documented in court record systems across the state. A team of nine research staff reviewed case files from court record systems to supplement limited administrative data for each DVPO in the study sample, using methodology employed in prior protection order research (Barnard et al., 2025; Ellyson et al., 2024; Holt et al., 2002; Kafka et al., 2022; Vittes & Sorenson, 2008).

Data collection procedures

The research team used an extensive codebook to collect information from DVPO case documents and generate quantitative data using REDCap (Research Electronic Data Capture), a secure, web-based application designed to support data abstraction for research (Paul A et al., 2009). The codebook was developed and refined in the initial stages of training and used throughout the five-year data collection period. Prior to initiating data collection for the project, the PI trained nine coders from the research team to review and collect data on DVPOs. At the end of training, all coders independently recorded data from a set of twelve cases not included in the study. They were required to meet pre-determined thresholds for performance including at least 90% agreement (proportion of the number of measures

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where coding agreed between coders divided by the total number of measures coded across all cases (Roaché, 2017)) and at least a 90% on the Holsti method for intercoder reliability (proportion of the number of agreements between two coders divided by the maximum number of agreements that could be achieved (Mao, 2017)) before collecting project data. Coders met weekly to discuss progress and resolve questions, ambiguities, or discrepancies in coding with guidance from project leadership.

Two procedures were used to ensure continued data accuracy and reliability throughout the rest of data collection. To ensure accuracy, 1% of all cases were reviewed at random by the PI and/or a data manager to assess errors in coding. Cases randomly-selected for accuracy review included at least 10% of the cases coded by each individual research team member during the project and at least 1% of the cases from each county in the study, a total of more than 115 overall. The average rate of error (number of errors detected divided by number of measures reviewed) in cases reviewed for accuracy was 2.2%. To ensure reliability, another 10% of all cases (separate from cases reviewed for accuracy) were randomly-selected to be "double-coded" (i.e., coded independently by two coders and compared for discrepancies). Overall, the average rate of discrepancy (number of disagreements between coders divided by the number of measures coded) in double-coded cases was 3.8%.

Information and variables

Table 1 provides a summary description of information and data sources used in the study. We obtained (1) demographic information on the individuals who were either protected or restrained by the civil court order including age, sex, race, and ethnicity from administrative data. The study team verified or corrected this information (e.g., name misspellings, missing race or ethnicity) using details from court record review. We collected (2) abuse information directly from legal forms contained in court record systems including petitions for a civil protection order (completed and filed with the court by the person requesting protection), because this information is not available in administrative databases. Petition forms prompt the individual filing the petition, almost always the victim-survivor experiencing DV, to

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provide specific details about the abuse. They are asked to describe both the most recent and prior acts of physical, sexual, and psychological violence and threats of violence. Individuals filing for protection are also asked to describe any time the person harming them has ever harmed or threatened to harm children, stalked them, expressed thoughts of suicide or made threats to die by suicide, and used weapons or firearms to harm or threaten to harm them. They are also asked if the person harming them has previously or currently uses substances including alcohol and other drugs or if they own or possess firearms. We obtained (3) legal information from administrative records which were verified and supplemented using case files and case forms including details from both ex parte (temporary) and full Orders of Protection (hereafter, ex parte orders and full orders). Ex parte orders are issued on an emergency basis for a temporary period of time (usually 14 days) until a full hearing can be held. Full orders are issued after a full hearing where both parties are given adequate notice to appear before the court and participate in proceedings. Both ex parte and full orders are issued by a judicial officer in civil court, and both orders specify how an individual is restrained by the order. Legal data included information on the court of record, order issuance dates (as well as renewals and terminations, when applicable), DV type (either intimate partner or other household violence), and specific stipulations ordered by the court (e.g., ordering the restrained person to stop harming, stalking, or monitoring protected individuals, prohibiting them from coming near the home or school of protected individuals, or from a shared residence, as well as requiring the restrained person to relinquish weapons and firearms). Lastly, we obtained (4) firearm relinquishment information from court record documents and (5) county-level information from publicly available sources including the Washington State Coalition Against Domestic Violence (e.g., DV-related fatalities) and the Washington state Office of Financial Management (population-level data). Additional details on the data collection protocol and codebook are available in an Open Science Framework registration [DETAILS REDACTED FOR PEER REVIEW].

Final sample

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There were 11,381 DVPO cases that were randomly selected for inclusion in the sample. Of these, 381 cases (3.3%) were excluded because (1) the case was not eligible, n=312 [e.g., the order was issued in another jurisdiction (e.g., another state, tribal court), the issued order was another type of civil protection order (e.g., antiharassment order), there was no order for protection filed from a full hearing in the court record (e.g., DVPO was denied at a full hearing)], or (2) the case files were incomplete, n=69 (e.g., full pages were never scanned into the court record). The final sample contained 11,000 DVPOs issued across all four counties, ranging between 1,100 and 1,450 per year.

3.3 Empirical strategy

We estimated the effect of dedicated units on relinquishment orders issued by judicial officers and relinquishment by restrained individuals using a two-stage differences-in-differences (DID) approach (Butts, 2021; Gardner, 2021). We compared DVPOs issued with a dedicated unit to DVPOs issued without a dedicated unit. We employed the two-stage DID estimation procedure with case-level data because it is built to work naturally with case-level regressions and outcomes (e.g., restrained individual relinquishment) while still addressing potential pitfalls of staggered unit starts as opposed to other estimators that aggregate to the group-level (Callaway & Sant'Anna, 2021; Sun & Abraham, 2021). Specifically, we estimated

$$y_{ict}(0) = \alpha_c + \gamma_t + \epsilon_{ict}$$

$$y_{ict}(1) - \hat{y}_{ict}(0) = \delta Unit_{ct} + v_{ict}$$

where $y_{ict}(1)$ and $y_{ict}(0)$ are relinquishment outcomes for order i in county c in six-month periods t in the treatment (with a unit) and control (without a unit) counties, respectively. The two-stage DID estimates county and time fixed effects (α_c, γ_t) using only untreated observations (DVPOs issued in county without a dedicated unit) in the first stage to avoid contaminating those fixed effects with treatment effects. Fixed effect estimates from the first stage are used in the second stage to determine the effect of the unit. The resulting estimates should be unbiased by the staggered or varying timing of implementation for the two units in two different counties. We included county and six-month period

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fixed effects to account for unobserved heterogeneity between judicial officers between counties (e.g., differential access to legal counsel) and over time (e.g., changes in WA statute provisions including those enacted statewide like a July 2019 provision requiring a law enforcement officer rather than a process server to serve DVPOs that included relinquishment orders).

To causally identify the effect of these units on both judicial decision making and relinquishment by restrained individuals using the DID approach, the following assumptions must hold: (1) there must be similar trends in relinquishment orders and actual relinquishment by prohibited individuals prior to the establishment of the units, (2) there cannot be spill-over effects from counties with dedicated units to counties without dedicated units, and (3) there must be stability in the composition of groups (counties with and without units) over time, i.e., persistence in the characteristics of DVPOs and restrained individuals. To address the first concern, we used event studies to analytically evaluate potential violations of the parallel trends assumption. In event study specifications, we replaced the binary indicator for $Unit_{ct}$ with a series of indicator variables representing time to and time since the dedicated unit was fully operational. To ensure that all event study coefficients were estimated using observations from both counties with a dedicated unit, we grouped all six-month periods that were 30 months or more prior to implementation by the dedicated unit into one event study time indicator. In terms of spillover, both dedicated units work strategically within their own counties to facilitate DVPO firearm prohibitions and relinquishment. While the units are interdisciplinary and work across agencies, their engagement with other counties is mostly limited to facilitating compliance regardless of where a restrained person lives. They do not cross county boundaries to support DVPOs issued in other counties, limiting potential contamination of treatment due to spill-over between treatment and control counties. Lastly, DVPO issuance exhibits a very high degree of regularity both across counties and over time.

We estimated the effect of dedicated units on both binary outcomes, relinquishment orders issued by judicial officers and firearm/weapon relinquishment by restrained individuals, using ordinary least squares regression under a linear probability model specification in two stages, with time and

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county fixed effects estimated in the first stage and unit effects estimated in the second stage. We used sample weights to adjust estimates since the random sampling procedure oversampled counties with smaller populations. While it is standard to cluster standard errors at the policy-level, in this case at the county-level, clustering standard errors with such a small number of counties (n=4) would likely severely underestimate the size of standard errors (C. A. Cameron et al., 2008; C. Cameron & Miller, 2015), leading to unrealistically narrow confidence intervals and a substantial increase in the likelihood of a type 1 error. To avoid underestimation of the magnitude of standard errors, we clustered standard errors at the judicial officer-level. Judicial officers who make determinations on these orders rule on cases strictly within county, allowing us to capture within county serial correlation despite the small number of counties in the study. Furthermore, we suspect serial correlation is likely present at both the county-level as well as the judicial officer-level, allowing us to better approximate variation in the data generating process. All analyses were performed using Stata version 19.

First, we examined the effect of the dedicated unit on judicial decision making by assessing whether an explicit order to relinquish weapons and firearms (i.e., relinquishment order) was issued after a full hearing (yes/no). Typically, full hearings are scheduled to occur within 14 days of a petition filing. During this time, unit personnel work to uncover information about firearm access and possession by the restrained person, time needed to review records (prior court orders or police reports), conduct outreach to protected parties, review social media, and query available firearm purchasing information. Relinquishment orders after full hearings are mandatory in cases meeting specific criteria (e.g., if the respondent is already prohibited from possessing a firearm, the relationship between the victim-survivor and respondent is an intimate partner relationship, or if the respondent used or displayed a firearm during a felony according to WA state law), but prior research has shown that units can enhance judicial officer adherence to those criteria (Ellyson et al., 2024). Second, we estimated the effect of a dedicated unit on judicial officer issuance of a relinquishment order during ex parte proceedings on the first (i.e., the earliest) temporary order (yes/no). Ex parte hearings are held on an emergent basis, and

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issuance of a relinquishment order ex parte is fully based on judicial discretion. In many cases, a temporary order may be re-issued several times before a full hearing is held. In analyses assessing relinquishment orders, we restricted the analysis to DVPOs issued after the first half of 2015 because of systematic variation across counties in the uptake of updated standardized forms. Forms were updated in 2014 with a dedicated section allowing judicial officers to clearly indicate an explicit order to relinquish weapons, but utilization of updated forms varied in 2014 and 2015 differentially across counties. Following applied DID recommendations to use contextual knowledge (Rambachan & Roth, 2023; Roth et al., 2023), we omitted data until after the first half of 2015 when the majority of cases in our sample (more than 70%) utilized the updated form.

Third, we assessed the effect of the dedicated unit on actual relinquishment by restrained individuals (yes/no). In analyses examining actual relinquishment, we restricted only to individuals for whom relinquishment would be expected. Ideally, we would assess actual relinquishment by anyone who owned or possessed a firearm that should have been relinquished. Because there is no database that directly measures firearm ownership or possession in WA, we relied on documentation in the court record of either (1) firearm ownership or possession by the restrained individual or (2) the use of prior threats of harm or actual harm using firearms by the restrained individual to serve as a proxy for owning or possessing a firearm that should have been relinquished. Both of these were reported by the individual petitioning the court for protection (i.e., the victim-survivor).

3.4 Falsification test

Next, we validated our findings by conducting a falsification test, also known as a placebo test or negative outcome test, where we assessed the effect of the unit on an attribute of civil legal proceedings that should be unaffected by the unit's work. If we found evidence of differences, it would bring into question the validity of our primary findings and suggest that something other than the unit

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may be driving the observed effects. To conduct this test, we assessed the effect of the unit on judicial orders giving the protected person the exclusive custody and control of specific family pets.

3.5 Adjustment for covariates, within judicial officer effects, and additional sensitivity analyses

A useful feature of the DID design is that estimated effects can be interpreted as causal if there are similar trends in the outcome before treatment. The design accounts for time-constant differences across counties, as well as time-varying factors that are similar across counties. However, factors that vary over time and across counties (e.g., patterns of firearm ownership at the county-level, rates of DV-related homicide) can bias findings if omitted from regressions. High rates of intimate partner violence and DV-related homicide, high levels of firearm possession, and patterns of law enforcement service activities related to civil protection orders could all bias our findings if they are associated with unit status and the examined outcomes. Therefore, we conducted additional analyses where we adjusted regressions for a set of county-level covariates including the annual rate of DV-related homicides per 1,000 people, the proportion of DVPOs issued that addressed intimate partner violence instead of another kind of family or household violence in each half year, the proportion of DVPOs where restrained individuals had a history of firearm possession in each half year, and the proportion of DVPOs where the restrained individual was served prior to the full hearing in each half year. In addition, the primary specification accounted for unobserved heterogeneity across counties, so we also estimated a specification swapping county fixed effects for judicial officer fixed effects to account for unobserved heterogeneity between judicial officers (e.g., different underlying levels of judicial tendency to issue a relinquishment order). Only one set of fixed effects can be estimated at a time since all judicial officers are nested within counties. We also adjusted for characteristics observed at the case-level, which will generally improve estimation precision if they are strongly related to the outcome but fail to address omitted variable bias because they are not likely to be highly associated with a county-level decision to create a unit. Lastly, we re-estimated specifications that did not use sampling weights that account for stratified sampling procedures. Estimates without sampling weights slightly

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overrepresent the effects of smaller counties with units since smaller counties were oversampled in our sampling procedures.

3.6 Stratification based on risk factors influencing lethal harm

Prior research shows that the risk of lethal harm varies substantially depending on several factors including (1) whether or not the protected and restrained individuals are current or former intimate partners, (2) history of the use of stalking as part of violence, (3) history of threats to commit or attempts of suicide by the restrained person, (4) history of the use of weapons as part of violence, and (5) access to a firearm (e.g., possession, ownership) by the restrained person. Given the increased lethality risks with intimate partner violence, stalking, suicide threats, weapon use, and firearm possession (J. C. Campbell et al., 2003, 2009; Kafonek et al., 2022; Kivisto & Porter, 2020; Rai et al., 2020; Smith et al., 2014), judicial officers may be more inclined to order firearm and weapon relinquishment when any of these factors are reported. Further, though the vast majority of DVPOs are issued to protect against violence and other forms of abuse used by an intimate partner, other family members including relatives related by blood or marriage (e.g., siblings, children, grandchildren, aunts, uncles) and household members (e.g., roommates) are eligible to obtain a DVPO to address these harms. During the study period (January 2014-June 2022), WA law mandated that courts order firearm relinquishment in any DVPO issued at a full hearing when certain criteria were met, including when the parties were intimate partners (RCW 9.41.040 (2)(A); RCW 9.41.800).[3] When those criteria were not met (e.g., protected and restrained individuals were roommates, in-laws, or related by blood), judicial officers can use their discretion in determining whether to issue a relinquishment order or not. As a

[3] Courts were required to order firearm relinquishment in DVPOs issued at a full hearing when any of the following three conditions were met: (1) the protected party and the restrained party were intimate partners or shared a child in common, (2) there were allegations of firearm use or display in a felony, (3) the court already restricted the the restrained individual's firearm rights based on another legal case (e.g., a criminal case), (4) or there were other qualifying circumstances. In addition to the criteria above, the court was required to determine that the restrained individual actually received notice about the DVPO hearing and had an opportunity to appear.

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result, differences in statutory requirements (i.e., mandatory vs. discretionary) may lead to heterogeneous or differential effects of the unit among DVPOs addressing intimate partner violence than DVPOs addressing other types of household or family violence. History of stalking, threats/attempts of suicide, weapon use, and firearm access may also play a role in terms of relinquishment of weapons and firearms. For example, prior research shows that abusers with a history of stalking are more likely to violate terms of DVPOs than when there is no history of stalking (Cordier et al., 2021). These risk factors indicate higher severity of violence, which may lead to differences in the effectiveness of dedicated units. To assess differential effects of the units on both judicial officer decision-making and relinquishment by restrained individuals based on these factors (i.e., intimate partner violence, stalking, suicide threats, weapon use, and firearm possession), we estimated stratified regressions for each risk factor to examine differences in the effects of the unit when the risk factor was or was not identified in court records. Since primary analyses estimating the effect of dedicated units on restrained individual relinquishment were conducted only among those with history of weapon use or firearm access, no further stratification was evaluated for weapon use or firearm possession.

3.7 Assessing relinquishment at the extensive and intensive margins

While it is useful and informative to understand whether any weapons and/or firearms were relinquished, ideal practice would ensure that all weapons, especially firearms given their lethality, possessed by a restrained individual were relinquished. Unfortunately, unit personnel rarely have any degree of certainty about the exact number or type of firearms a restrained individual may possess. Thus, we are unable to examine the proportion of possessed firearms and other weapons that were relinquished. However, we collected data on the exact number of firearms and other weapons that were relinquished by each restrained individual using information entered into the court record after weapons/firearms were relinquished to law enforcement agencies. We used this information to describe the probability of any weapon and/or firearm relinquishment (extensive margin) by unit status, and described the distribution of the number of weapons/firearms relinquished (intensive margin) by unit

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status. While we are able to causally assess effects of dedicated units on the extensive margin, there were only between 1 and 12 restrained individuals with positive relinquishment in each pre-unit event study period, making event study estimates uninformative due to sparse outcomes and small cell sizes[4] for the intensive margin. To assess relinquishment at the extensive and intensive margins, we collapsed event time into coarse categories: DVPOs issued before the unit (i.e., pre-unit reference period including all DVPOs issued the 6 months before the unit and DVPOs issued in counties who never had a unit) and DVPOs issued after the unit. We estimated pooled treatment effects using the two-stage DID estimator, and we applied this approach separately to (1) the probability of any relinquishment (extensive margin) and (2) the number of weapons and firearms relinquished among cases with positive relinquishment (intensive margin).

4. Results

4.1 Characteristics of DVPOs, relinquishment orders, and relinquishment by unit status

Table 2 describes outcomes and case characteristics of DVPOs included in the sample by unit status. Relinquishment was ordered at a full hearing in less than 9% of DVPOs issued in counties that were never treated (n=387 of 4689) compared to almost 82% of DVPOs (n=2471 of 3018) issued after unit treatment. DVPOs issued after unit treatment were twice as likely to include a relinquishment order issued ex parte (n=844 of 3018; 28%) compared to DVPOs issued in counties that were never treated (n=503 of 4689; 10.7%). The scale of relinquishment was relatively small, but the proportion of DVPOs where the restrained individual relinquished at least one weapon or firearm was higher after unit treatment (19.9%; n=180 of 905) compared to less than 5% of DVPOs in counties that were never treated (n=76 of 4689). The demographic characteristics (age, sex) of both protected and restrained

[4] More specifically, pre- event-time periods 54 months (1 individual), 48 months (2 individuals), 42 months (1 individual), 36 months (2 individuals), 30 months (5 individuals), 24 months (12 individuals), 18 months (9 individuals), 12 months (11 individuals), 6 months including DVPOs issued in juridictions who never had a unit (90 individuals).

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individuals were similar regardless of unit status, but there were slightly more protected individuals who were male in the never treated group and slightly more females who were restrained in the never treated group. The proportion of DVPOs where the restrained individual had a history of stalking (ranging from 60.9-68.5%), substance use (62.4-67.6%), suicidal threats (52.8-55.3%), or violence and threats of violence against children (43.1-52.6%) varied slightly by unit status, but broadly shared similar lethality risks. Both history of firearm possession by the restrained person and use of weapons in threats or violence were more common in DVPOs issued in counties that were never treated (35.3% and 43.4%, respectively) compared to DVPOs issued before unit treatment (23.0% and 39.6%) and DVPOs issued after unit treatment (24.6% and 38.1%). Regardless of unit status, the weapon most commonly used in violence and threats of violence was a firearm.

The relationship between unit status and each relinquishment outcome (relinquishment orders at a full hearing, relinquishment orders ex parte, and relinquishment by restrained individuals) over time is presented descriptively in ***Figure 2***. The proportion of DVPOs issued with a relinquishment order after a full hearing was substantially higher and grew more quickly over time in counties with a unit starting at 67.1 percent in the second half of 2015 to 93.3 percent in the second half of 2022 compared to counties without a unit from 1.5 percent to 19.6 percent over the same time period. The proportion of relinquishment orders ex parte was generally higher in counties with a unit with larger differences after 2020 compared to counties without a unit. Relinquishment of at least one weapon and/or firearm was similar in counties with and without a unit in 2014 and 2015, less than 5 percent, but grew more quickly over time in counties with a unit from no relinquishment in the first half of 2014 to 18% in the second half of 2022. Taken together, these trends broadly suggest that relinquishment grew more rapidly in counties with a unit than those without a unit.

4.2 Pre- and post-unit differences in relinquishment orders and relinquishment

Figure 3 plots the pre- and post-unit effects on the probability of a relinquishment order, either at a full hearing or ex parte, where the solid line indicates estimated event study indicators and shaded areas

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depict 95 percent confidence intervals. We found little evidence of pre-trend differences in relinquishment orders issued at a full hearing in Panel a) between DVPOs issued with a unit and DVPOs issued without a unit. There was a clear trend break in the post-period, with slow growth in the effects of units on judicial decision-making over time, likely with ongoing improvements made in unit efforts or approach. We find evidence of pre-trend differences in relinquishment orders issued ex parte in ***Figure 3*** Panel b). While not statistically significant in most time points prior to the unit, DVPOs in counties with a unit appear slightly more likely to include a relinquishment order ex parte 24-36 months before the unit, and slightly less likely to include a relinquishment order ex parte 6-18 months before the unit compared to counties who never had a unit. There is a break in the post-period, but with some volatility in changes over time, suggesting the unit may be associated with increases in relinquishment orders issued ex parte but the unit is unlikely to be the root cause of those changes. ***Figure 3*** Panel c) plots the pre- and post-unit effects on the probability that a restrained individual relinquished at least one weapon and/or firearm among those with either a history of firearm possession or a history of weapon use. We find little to no evidence of pre-trend differences by unit status. There is a gradual but clear trend break following the unit with larger increases in relinquishment 12 months or more after unit start. ***Figure A1*** plots pre- and post-unit effects estimated along with judicial officer fixed effects instead of county-level fixed effects. Similar to event study findings using county-level fixed effects, we find no clear pre-trend differences and clear trend breaks post-unit for both relinquishment orders at a full hearing and relinquishment by restrained individuals. We find slightly less evidence of pre-trend differences in relinquishment orders issued ex parte when judicial officer fixed effects are used instead of county-level fixed effects, though the issuance of relinquishment orders ex parte appears to be declining pre-unit. Further, post-unit effects are imprecisely estimated.

4.3 Average treatment effect of dedicated unit on relinquishment orders and relinquishment

Among those with either a history of firearm possession or the use of firearms in threats or violence with weapons, only 1,222 of 2,755 (44%) DVPOs without a unit and 846 of 905 (93%) DVPOs with a

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unit were ordered to relinquish, either ex parte or at a full hearing. ***Table 3*** reports the average effect of dedicated units on relinquishment orders by judicial officers (issued at a full hearing and issued ex parte) and relinquishment of at least one weapon and/or firearm by restrained individuals. The first column describes estimates from our main specification. Overall, we found a statistically significant average increase in the probability that a judicial officer issued a relinquishment order, both at a full hearing and ex parte, as well as actual relinquishment of at least one weapon or firearm by restrained individuals for DVPOs with a unit compared to DVPOs without a unit. Compared to DVPOs issued in counties without a unit, DVPOs issued in counties with a dedicated unit had an average 9.0 percentage point increase in the probability that a judicial officer issued a relinquishment order at a full hearing (9.00, 95%CI=[3.56, 14.43]). Among DVPOs with history of firearm possession or weapon use by the restrained person, there was an average 10.5 percentage point (10.55, 95%CI=[6.73, 14.36]) increase in the probability that the restrained individual relinquished at least one weapon or firearm in DVPOs issued in counties with a unit compared to those issued in counties without a unit. Similarly, there was about a 12.9 percentage point (12.93, 95%CI=[7.12, 18.75]) average increase in the probability that a judicial officer issued a relinquishment order ex parte in DVPOs issued in counties with a unit compared to those issued in counties without a unit. Based on evidence of parallel trends violations from event studies, dedicated units are likely associated with or spilling over into judicial decision-making ex parte rather than directly causing these increases in relinquishment orders issued ex parte.

4.4 Falsification test

To assess the strength of the identification strategy, we also estimated a separate event study assessing the effect of the unit on judicial orders giving the protected person the exclusive custody and control of specific family pets. Plotted in ***Figure A2,*** we find no differences in the likelihood of orders granting exclusive custody and control of specific family pets to protected individuals, either before units were active (pre-trend) or after. The lack of pre- and post-treatment effects in this internal validity assessment provide evidence supporting causal interpretation of the two-stage DID design and suggest

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that the main findings showing that units influence relinquishment orders and relinquishment of weapons including firearms by restrained individuals are likely not driven by general trends over time or pre-existing differences between treatment and control units.

4.5 Adjustment for county-level covariates and judicial officer fixed effects

Main findings were robust to a series of sensitivity analyses which broadly found larger effects of dedicated units on relinquishment orders issued at full hearings and firearm/weapon relinquishment by restrained individuals shown in Columns (2), (3), and (4) in **Table 3**. For example, after adjusting for county-level covariates including DV-related homicide rates, the proportion of DVPOs with restrained individual history of firearm possession and history of weapon use, as well as the proportion of DVPOs with notice served to the restrained individual prior to the full hearing, we found that DVPOs issued with a unit were 12.4 percentage points more likely to include a relinquishment order at a full hearing compared to DVPOs issued without a unit. After accounting for both county-level covariates and judicial officer fixed effects, the effects are considerably larger, over 20 percentage points, but less precisely estimated. The observed effects of dedicated units on relinquishment by restrained individuals were smaller after adjusting for county-level covariates. After adjusting for county-level factors, the estimated effect of the unit was an average 9.2 percentage point increase in the probability that the restrained individual relinquished at least one weapon or firearm in DVPOs issued in counties with a unit compared to DVPOs issued in counties without a unit. The estimated effects were larger after accounting for both judicial officer fixed effects and county-level covariates – there was almost a 14 percentage point increase in the probability that a restrained person relinquished weapons and/or firearms in DVPOs issued in counties with a unit compared to DVPOs issued in counties without a unit. Findings were also robust in regressions including case-level covariates and excluding sampling weights (***Figure A3***).

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After adjusting for county-level covariates, DVPOs issued in counties with an active unit had an average 19.8 percentage point increase in the probability that a judicial officer issued a relinquishment order ex parte compared to DVPOs issued in counties without a unit. But effects on relinquishment orders ex parte are attenuated once judicial officer fixed effects are included. There are two primary reasons we observe this attenuation. First, because ex parte hearings are held on an emergent basis, usually within 24 hours of petition filing, judicial officers are limited to information in the petition at the time they issue an order ex parte. The unit's work is largely conducted after the ex parte hearing and before the full hearing. Second, the decision to issue a relinquishment order ex parte is fully at the discretion of the judicial officer, which likely makes estimates for this outcome more sensitive to the inclusion of judicial officer fixed effects where within judicial officer tendencies to issue or not issue relinquishment orders ex parte are a driving force.

4.6 Differential effects of dedicated units based on lethality risk factors

Next, we ascertained whether the effect of dedicated units varied based on various lethality risk factors. ***Figure 4*** plots average treatment effects of dedicated units on relinquishment orders issued at a full hearing (panel a), relinquishment orders issued ex parte (panel b), and relinquishment of at least one weapon or firearm (panel c) among cases when each lethality risk factor (intimate partners, stalking, suicide, weapon use, firearm access) was identified and when each risk factor was not identified. For most risk factors (stalking, suicide, weapon use, and firearm access), estimated effects of dedicated units were very similar regardless of whether a risk factor was identified or not. However, dedicated units increased the probability that a judicial officer issued a relinquishment order at a full hearing by over 25 percentage points among cases involving other family and household members, compared to an increase of only around 10 percentage points among DVPOs involving intimate partners. At the ex parte stage, firearm access played a more important role in differences in the effects of dedicated units. On average, there was a 19 percentage point increase in the probability that a judicial officer issued a relinquishment order ex parte compared to DVPOs issued in counties without a unit. This increase was

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much higher (over 30 percentage point increase) among cases where firearm access was identified, and much lower (closer to 10 percentage point increase) among cases where firearm access was not identified. Judicial officers make a determination about whether or not to order firearm and weapon relinquishment based only on information provided in the petition at the time of the ex parte hearing. Unit educational efforts focused on judicial officers after unit creation may have helped clarify in what circumstances a judicial officer may issue a relinquishment order ex parte like when the court finds irreparable injury could result or there is serious and imminent threat to public health or safety, or to the health or safety of any individual (RCW 9.41.800(3)). We also found that the effect of the unit on firearm and weapon relinquishment by restrained individuals did not vary substantially by intimate partners, stalking, or suicide, though there was only a 10 percentage point increase in the probability of relinquishment of at least one firearm or weapon by restrained individuals with a history of suicide threats or behaviors. This was lower than the effect of the unit among cases involving intimate partners and stalking or among restrained individuals without a history of suicide, but these differences may not be statistically significant.

4.7 Relinquishment at the extensive and intensive margins

Descriptively, the probability of any weapon and/or firearm relinquished (extensive margin, panel a) in **Figure 5**) increased from around 6% among DVPOs without a unit to almost 20% among DVPOs with a unit. At the intensive margin (panel b) in ***Figure 5***), the distribution of the number of firearms and weapons relinquished was concentrated between 1 and 16 firearms and weapons regardless of unit status with some large outliers (>30) observed. Among DVPOs issued in a county that never had a unit and indicating restrained individual firearm access (n=1,855), only 76 individuals relinquished weapons and firearms (4.1%) with a mean number of firearms and weapons relinquished of 3.2 (SD=4.4) and a median number of 2 firearms and weapons (IQR=1,4). Among DVPOs issued in a county before a unit was active and indicating restrained individual firearm access (n=900), 57 individuals relinquished weapons and firearms (6.3%) with a mean number of firearms and weapons relinquished of 3.1

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(SD=2.6) and a median number of 2 firearms and weapons (IQR=1.5,4). Among DVPOs issued with a unit and indicating restrained individual firearm access (n=905), 180 individuals relinquished weapons and firearms (19.9%) with a mean number of firearms and weapons relinquished of 3.3 (SD=4.8) and a median number of 2 firearms and weapons (IQR=1,4).

Figure 6 depicts pooled treatment effects estimated using the two-stage DID estimator (using coarse event time categories including DVPOs issued before the unit, a reference period, and DVPOs issued after the unit) and applied separately to the probability of any relinquishment and the number of weapons and firearms relinquished among cases with positive relinquishment. Extensive margin findings are precisely estimated and mirror primary findings showing about a 10 percentage point increase in any relinquishment. Estimated effects of the unit at the intensive margin in the pre-period are precise, finding no statistically significant differences pre-unit, but with a possibly rising trend pre-unit. Post-unit estimates are imprecise, reflecting limited statistical power due to small sample sizes with positive relinquishment and moderate dispersion (coefficients of variation approximately 1-1.5) in the measure of weapons and firearms relinquished.

5. Discussion

Dedicated units collaborating across agencies helped increase relinquishment orders issued at full hearings and increased relinquishment of at least one weapon and/or firearm by around 10 percentage points or more. These findings suggest that the information provided to the court and the actions taken to facilitate compliance as part of DVPO proceedings by dedicated units can measurably improve weapon relinquishment, including firearms, by restrained individuals. While prior research has indicated that dedicated units show promise in facilitating firearm relinquishment (Ellyson et al., 2026), this study provides rigorous and causal evidence to this fact. About 90-100% of DVPOs issued at a full hearing in counties with a unit included an order to relinquish weapons and firearms by the end of the study period suggesting that dedicated units help facilitate judicial officer alignment with the WA state law in addition

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to supporting and facilitating relinquishment of weapons and firearms among restrained individuals. These unit effects were achieved by (1) gathering information about firearm access by restrained individuals and sharing that information with law enforcement and the courts, (2) conducting interviews with protected individuals and/or restrained individuals, (3) educating both protected and restrained individuals about their rights and responsibilities, and (4) monitoring relinquishment by restrained individuals to promote swift accountability. Both units in the treatment group in this study (1) had at least one full-time staff member allocated entirely to relinquishment efforts; (2) investigated and supported compliance with court orders; and, (3) collaborated across agencies. Further, we found these significant effects even as both units had been operational for less than five years during the study period for this evaluation. We likely see these positive effects because these units directly and effectively address barriers identified in prior research by devoting resources to relinquishment, enhancing communication across agencies, addressing fragmentation in the legal system, and bridging gaps in execution.

There are minor differences between the dedicated units we studied that are important practical considerations for local practitioners and policy makers. First, stability and reliability of funding vary substantially across units, likely a major point of consideration for communities seeking to achieve relinquishment goals. One unit is housed within a prosecuting attorney's office, and the funding stream supporting their work is allocated from primarily county and city budgets. The other unit is housed within a community-based domestic violence advocacy agency with their work funded by non-renewable federal awards. Given the potential cost savings from crime deterrence found in prior research (Ellyson et al., 2026) and the high levels of federal funding uncertainty facing DV organizations, policymakers should consider maximizing efficiency in unit designs and prioritizing local or regional resources to address these priorities as they align with local preferences (Oates, 1969, 1999; Tiebout, 1956). Further, local or regional funding designs are likely to be the most successful in assuring stable, reliable, and adaptable unit design and function. While the start-up and long-term costs need to be

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considered, local funding streams would give counties, or groups of counties, the ability to design units and their funding based on a localized assessment of volume of civil protection orders, level of DV-related crime, among other factors.

Despite dedicated unit success in enhancing judicial officer issuance of relinquishment orders at full hearings and increasing weapon and firearm relinquishment by restrained individuals, we found that judicial officers issued relinquishment orders ex parte less than 40 percent of the time and there were less pronounced effects of dedicated units on relinquishment orders issued ex parte. Ex parte, judicial officers are asked to make a determination on DVPOs with less time to review the case, the decision is discretionary, and no additional information is provided at the ex parte stage based on investigation by a dedicated unit. Therefore, the lack of effects observed on relinquishment orders issued ex parte are unsurprising. Effects that we did find may be spillover effects from unit engagement at the full hearing stage, but they appear to be highly reliant on within judicial officer tendency to issue relinquishment orders ex parte. Importantly, the emergent phase is the highest risk period for intimate parter homicide (J. C. Campbell et al., 2003; Vittes & Sorenson, 2008), making gaps in issuance of relinquishment orders ex parte particularly concerning for safety and well-being of both protected and restrained individuals as well as other family members.

There are three important ways to meaningfully address gaps in relinquishment orders issued ex parte. First, judicial officers interventions to enhance education, like education efforts by dedicated units alongside those with experience as judicial officers, may help support and supplement judicial officer decision-making when they have limited to information available and must use discretion. Decades of research has demonstrated that judicial officers are influenced by personal bias, misbeliefs, heuristics, and sometimes stereotypes in making these determinations (Agnew-Brune et al., 2017; Freetly Porter et al., 2024; MacNeil et al., 2025; Park, 2025). Survivors accurately assess their own risk of lethal harm with prior research showing that survivor assessments of lethality risk are identical or very similar to

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scientifically validated risk assessments (J. Campbell et al., 2005). Educating judicial officers on the importance and validity of issuing protections that survivors indicate they need is a critically important area of intervention including related to concerns with firearms, child safety, and other matters. Judicial officers should be regularly required to participate in judicial officer training on violence, including the risks of firearms in DV situations, and trauma-informed courtrooms prior to presiding over DVPO hearings, and receive training on court requirements related to relinquishment law compliance. Courts should also receive funds to support holding compliance calendars including hiring a weapons compliance specific coordinator to help facilitate the compliance calendar and interact with restrained individuals to help them file required records with the court. Second, adequate investment in supporting dedicated unit investigation ex parte is critical for timely and adequate firearm relinquishment. Dedicated units have a process to expedite investigation if a relinquishment order is issued ex parte, but the unit's ability to adequately address firearm and weapon risk in the highest risk period is impeded by (1) a lack of a relinquishment orders issued ex parte and (2) a lack of law enforcement resources and efforts to adequately serve ex parte orders, immediately recover, and temporarily store firearms and other dangerous weapons until a full hearing is held. Lastly, to more broadly address these challenges, policymakers should consider revisions in the law mandating the issuance of relinquishment orders ex parte when a case meets well-defined high-risk criteria (e.g., protected and restrained parties are current or former intimate partners). Prior research suggests that clearly delineating when relinquishment orders are mandatory helps reduce racial and ethnic disparities in the issuance of relinquishment orders (Kafka et al., 2025). The size of disparities in the issuance of relinquishment orders is higher when the decision is discretionary compared to mandatory. Therefore, in addition to addressing lethality risk by eliminating access to firearms and other dangerous weapons in the highest risk period, specific policy mandates may also help ensure that restrictions are equitably issued for protected individuals.

5.5 Limitations

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There are some important limitations of these analyses. First, we found that relinquishment of weapons and firearms among those with either a history of firearm access or firearm use was fairly low (between 20-30%) even with the work of dedicated units. Notably, these findings on relinquishment were assessed among all restrained individuals with a reasonable expectation that something should be relinquished (i.e., when there was a history of firearm possession or ownership reported or when a firearm was used as part of violence). Because of data and practical limitations, this measure is a *very* rough proxy for the real measures that are needed to fully assess relinquishment efforts. Restrained individuals may no longer own or possess the firearms, or they may never have been the owner of firearms they were using as part of violence. The lack of a systematic and reliable measure of firearm and weapon ownership or possession as what should be relinquished is a key limitation in both research and practice. While dedicated units use multiple methods to ascertain weapons and firearms (e.g., querying available records of limited types of firearm purchases, conducting interviews with protected or restrained parties), this information may be outdated and restrained individuals may have more or less access to weapons including firearms than the units are able to detect. In the absence of better measures or proxies for items that need to be relinquished, we are unable to answer the most pressing questions in research and in practice to prevent firearm possession by restrained individuals.

Second, this study examined relinquishment orders issued by judicial officers and actual relinquishment by restrained individuals, but law enforcement plays an important role as well. This study is missing data on service by law enforcement, which is a key process mechanism. Law enforcement officers are required to serve any DVPO issued that includes an order to relinquish weapons and firearms. In addition, law enforcement are required to recover firearms at the time of service which some agencies do regularly, but others do not. Local agencies may face personnel and time constraints as well as trade-offs in assigning officers to carry out various duties of their position. Future research should investigate the connection between law enforcement capacity for and training on relinquishment. In addition, existing qualitative research with law enforcement has found that officers often lack training or

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guidance in handling civil protection order relinquishment, leading to reliance on officer discretion or other creative means to facilitate relinquishment (Blackwatters et al., 2023; Frattaroli et al., 2021). Mixed support for firearm restrictions (e.g., concerns about Second Amendment rights (K. R. Lynch et al., 2018)) and logistical constraints (e.g., insufficient personnel to adequately service civil orders, insufficient legal authority to search for firearms when restrained individuals deny firearm or hide firearms) could also lead to inconsistent or incomplete implementation by law enforcement officers (K. Lynch et al., 2025; Vittes et al., 2013; Webster et al., 2010). While rich qualitative assessments have been conducted, systematic and quantitative research is needed on law enforcement (1) capacity (e.g., what is their ability to immediately recover with real-time competing patrol demands, storage and return requirements), (2) perceptions of the constitutionality of relinquishment laws and their role in enforcing them, and (3) knowledge of DV-related risks for both families experiencing DV and responding risks for law enforcement officers.

Lastly, standard forms used in the study did not explicitly ask petitioning parties to disclose all risk factors associated with lethality (e.g., strangulation, coercive control, sexual assault, separation, unemployment) and questions about violence are asked in a narrative format that make it challenging to fully capture all elements influencing lethality that may be relevant to assess. While many individuals petitioning the court disclose this information, some risk factors were not measured because they would be more prone to selection bias (e.g., individuals petitioning the court with support from an advocate or legal aid may be more likely to include relevant lethality details than someone who does not have this support).

6. Conclusions

This study demonstrated that dedicated units improve two important process mechanisms that are necessary for state-level relinquishment laws to translate into reduced homicide and harm: the

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issuance of relinquishment orders by judicial officers and actual weapon relinquishment by restrained individuals. These findings extend prior qualitative and quantitative literature by causally identifying the effects of a specific implementation approach – dedicated units – that can be replicated and adapted to local community needs and resources to address DV and firearms. By revealing the effects of implementing state relinquishment laws using dedicated units, this study highlights the actionable steps that counties can take to coordinate relinquishment with courts and law enforcement.

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Tables and Figures

Figure 1. *Functions of and gaps in federal and state laws along with local procedures and practices*

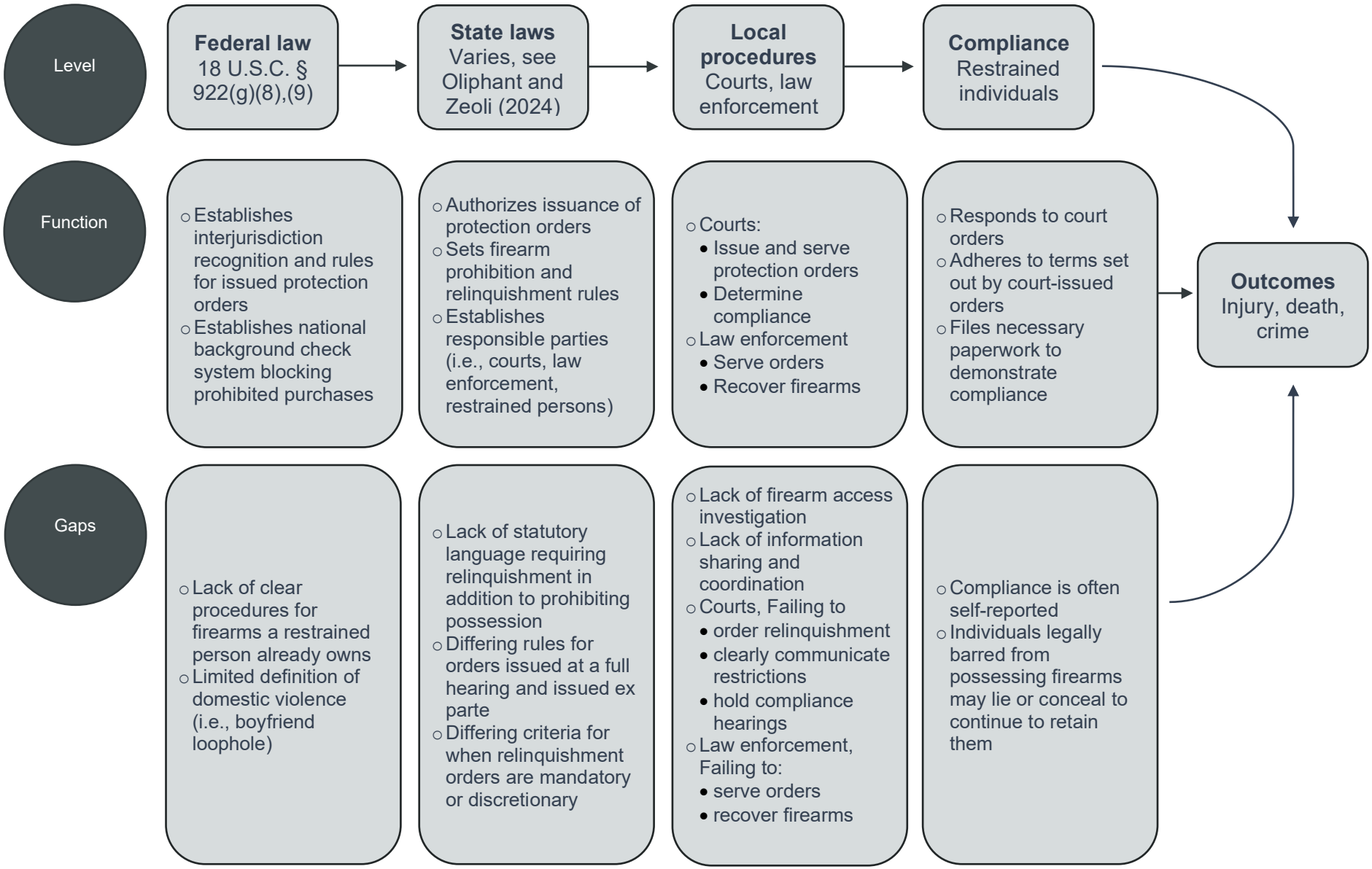

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Table 1. Types. Sources, and Descriptions of Data

Type of Information	Data Source	Data description
Demographic	Administrative data, verified by review of electronic court records	Age, gender, race/ethnicity of protected and restrained individuals
Abuse	Review of electronic court records	Descriptions of threats, abuse, weapons, suicidality, substance use
Legal	Administrative data, verified and supplemented by review of electronic court records	Presiding court and judicial officer, hearing and order issuance dates, terms of issued orders
Firearm relinquishment	Review of electronic court records	Details about items included in, locations of, and dates of relinquishment
County characteristics	Publicly available administrative data	Number of DV-related fatalities in each county/year, population- and household-level characteristics

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Table 2. Characteristics of Domestic Violence Protection Orders (DVPOs), n=11,000 by unit status

	Never treated n = 4,689		Before unit treatment n = 3,293		After unit treatment n = 3,018	
Outcomes	*n*	*(%)*	*n*	*(%)*	*n*	*(%)*
Relinquishment order issued at a full hearing						
Not issued	*4,302*	*91.8*	*1,370*	*41.6*	*547*	*18.1*
Issued	*387*	*8.2*	*1,923*	*58.4*	*2471*	*81.9*
Relinquishment order issued ex parte						
Not issued	*4064*	*86.7*	*2713*	*82.4*	*2100*	*69.6*
Issued	*503*	*10.7*	*553*	*16.8*	*844*	*28.0*
Not applicable (no order issued ex parte)	*122*	*2.6*	*27*	*0.8*	*74*	*2.4*
Relinquishment of at least one weapon or firearm among restrained individuals with a history of firearm possession or weapon use (n=3,660) [a]						
Yes	*76*	*4.1*	*57*	*6.33*	*180*	*19.9*
No	*1,779*	*95.9*	*843*	*93.7*	*725*	*80.1*
DVPO and individual characteristics	*n*	*(%)*	*n*	*(%)*	*n*	*(%)*
DV-related fatalities (per million persons),[b] *Mean (SD)*	8.1	(3.6)	6.3	(3.9)	4.2	2.2
Domestic violence type						
Intimate partner violence	3,205	68.4	2,496	75.8	2277	75.5
Family or household member violence	1,484	31.6	797	24.2	741	24.5
Relationship petitioner and victim-survivor						
Petitioner is the victim-survivor	4527	96.6	3112	94.5	2873	95.2
Petitioner is family, household member, guardian, guardian ad litem, or another relation to victim-survivor	162	3.4	181	5.5	145	4.8
Protected person's age [c] *Mean (SD)*	40.0	(14.7)	38.6	(13.4)	39.4	(13.5)
Median [IQR]	37	[21.3]	35.9	[18.2]	36.9	[17.2]
Restrained person's age [c] *Mean (SD)*	37.0	(11.5)	37.7	(11.4)	38.6	(11.5)
Median [IQR]	35.4	[16.3]	36.0	[16.2]	37.1	[15.6]
Protected person's sex [d]						
Female	3755	80.1	2823	85.7	2510	83.2
Male	833	17.8	452	13.7	471	15.6
Unknown	101	2.1	18	0.6	37	1.2
Restrained person's sex [d]						
Female	861	18.4	441	13.4	443	14.7
Male	3741	79.8	2836	86.1	2554	84.6
Unknown	87	1.8	16	0.5	21	0.7
History of stalking by restrained person						
No	1831	39.1	1050	31.9	952	31.5
Yes	2858	60.9	2243	68.1	2066	68.5
History of substance abuse by restrained person						
No	1518	32.4	1175	35.7	1135	37.6
Yes	3171	67.6	2118	64.3	1883	62.4

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History of suicidal threats or attempts by restrained person						
No	2592	55.3	1740	52.8	1669	55.3
Yes	2097	44.7	1552	47.2	1349	44.7
History of violence or threats of violence against children						
No	2670	56.9	1561	47.4	1495	49.5
Yes	2019	43.1	1732	52.6	1523	50.5
History of firearm possession, ownership by restrained person [e]						
No	2674	57.0	1866	56.7	1513	50.1
Yes	1654	35.3	758	23.0	741	24.6
Unknown	361	7.7	669	20.3	764	25.3
History of weapon threats or use by restrained person [f]						
No	2602	55.5	1947	59.1	1828	60.6
Yes	2036	43.4	1303	39.6	1150	38.1
Unknown	51	1.1	43	1.3	40	1.3
Type of weapon when weapon use was reported [f]						
Firearm	821	40.3	495	38.0	506	44.0
Improvised household items	605	29.7	332	25.5	283	24.6
Sharp	654	32.1	508	39.0	369	32.1
Blunt	255	12.5	126	9.7	107	9.3
Something else	526	25.8	287	22.0	221	19.2
Number of children involved [g]						
None	2702	57.6	1339	40.7	1318	43.7
One	994	21.2	871	26.5	730	24.2
Two	575	12.3	634	19.2	566	18.7
Three	277	5.9	297	9.0	262	8.7
Four	96	2.1	105	3.2	107	3.5
Five or more	45	0.9	47	1.4	35	1.2

Notes. *a* Relinquishment is described only among those for whom there was evidence in the court record of either a history of firearm possession or ownership or weapon use as part of violence *b* DV-related fatalities per million persons were summarized at the county level for every 6 months. *c* Petitioner age was missing for n=3 DVPOs (0.X% of the sample). Respondent age was missing for n=177 DVPOs (X% of the sample). *d* Forms request information on both protected person and restrained person's sex, not gender, but they do not specify sex at birth. *e* Respondent firearm possession / ownership was reported on the petition by the petitioner at the time they filed for a DVPO. *f* Weapon use and the type of weapon were both reported on the petition by the petitioner at the time of filing. Percentages for the type of weapon were calculated using the number of cases reporting any weapon use as the denominator (n=3339 among cases without a unit and n=1150 among cases with a unit). Percentages do not add to 100% because many reported the use of more than one weapon. *g* DVPOs involved minors if they were explicitly listed by the petitioner as additional parties requiring protection or minors were listed as the victim-survivor as part of child abuse or dating violence.

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Figure 2. *Percent of DVPOs issued with a relinquishment order and with relinquishment of weapons and firearms over time by unit status*

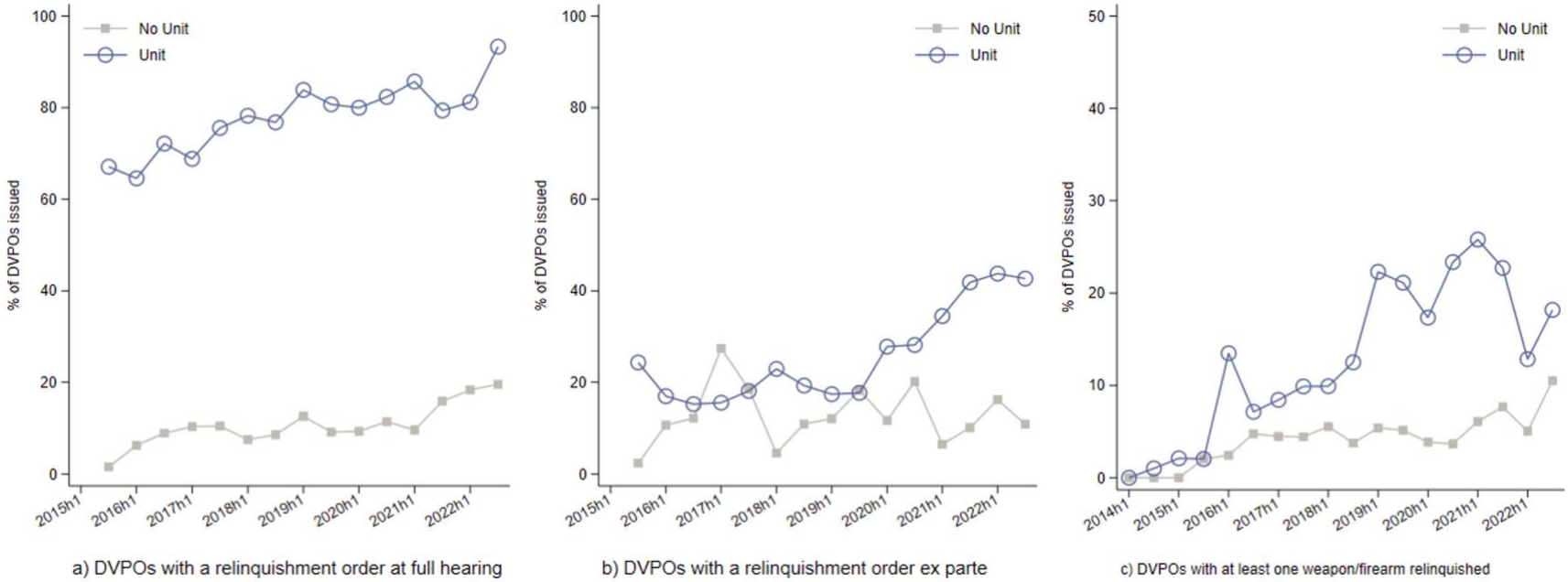

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Figure 3. *Effect of dedicated unit on relinquishment orders and relinquishment*

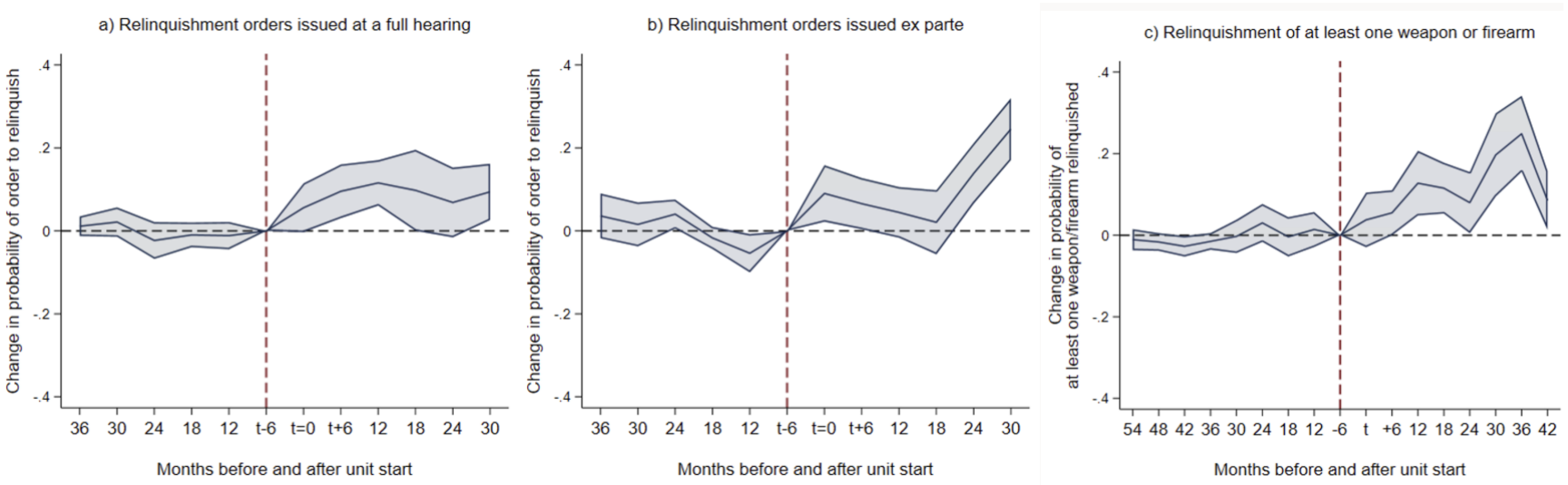

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Table 3. Effect of dedicated units on relinquishment orders by judicial officers and firearm and weapon relinquishment by restrained individuals

	(1) County and time fixed effects	(2) County and time fixed effects with county-level covariates	(3) Judicial officer and time fixed effects	(4) Judicial officer and time fixed effects with county-level covariates
Relinquishment orders issued at a full hearing				
Unit status				
No unit (reference)				
Unit	0.090***	0.124***	0.223***	0.258***
	(0.028)	(0.027)	(0.063)	(0.066)
Observations	9,072	9,072	8,968	8,968
County and time fixed effects	Yes	Yes	No	No
Judicial officer and time fixed effects	No	No	Yes	Yes
County-level covariates	No	Yes	No	Yes
Relinquishment orders issued ex parte				
Unit status				
No unit (reference)				
Unit	0.129***	0.198***	0.109	0.153*
	(0.030)	(0.034)	(0.084)	(0.086)
Observations	8,880	8,880	8,778	8,778
County and time fixed effects	Yes	Yes	No	No
Judicial officer and time fixed effects	No	No	Yes	Yes
County-level covariates	No	Yes	No	Yes
Weapon and firearm relinquishment				
Unit status				
No unit (reference)				
Unit	0.105***	0.092***	0.146***	0.137***
	(0.019)	(0.026)	(0.024)	(0.029)
Observations	3,660	3,660	3,630	3,630
County and time fixed effects	Yes	Yes	No	No
Judicial officer and time fixed effects	No	No	Yes	Yes
County-level covariates	No	Yes	No	Yes

Notes. This table reports the estimates for the effect of units on relinquishment orders by judicial officers (at a full hearing and ex parte) and relinquishment by restrained individuals. All estimates are based on a two-stage differences-in-differences method proposed by Gardner (2022). All regressions were weighted by sampling weights to account for oversampling of less populous counties, and standard errors in all regressions were clustered at the judicial officer level. Regressions including county-level covariates adjusted for the annual rate of DV-related homicides per 1,000 people, the proportion of DVPOs issued that addressed intimate partner violence instead of another kind of family or household violence in each half year, the proportion of DVPOs where restrained individuals had a history of firearm possession in each half year, and the proportion of DVPOs where the restrained individual was served prior to the full hearing in each half year. Regressions estimating the effect of dedicated units on relinquishment orders excluded all orders issued prior to the second half of 2015 (due to differential county-level shifts in the use of updated forms). Regressions estimating the effect of dedicated units on relinquishment orders were estimated only among cases where the restrained individual had either a history of firearm possession or ownership or a history of using firearms as part of acts of domestic violence.

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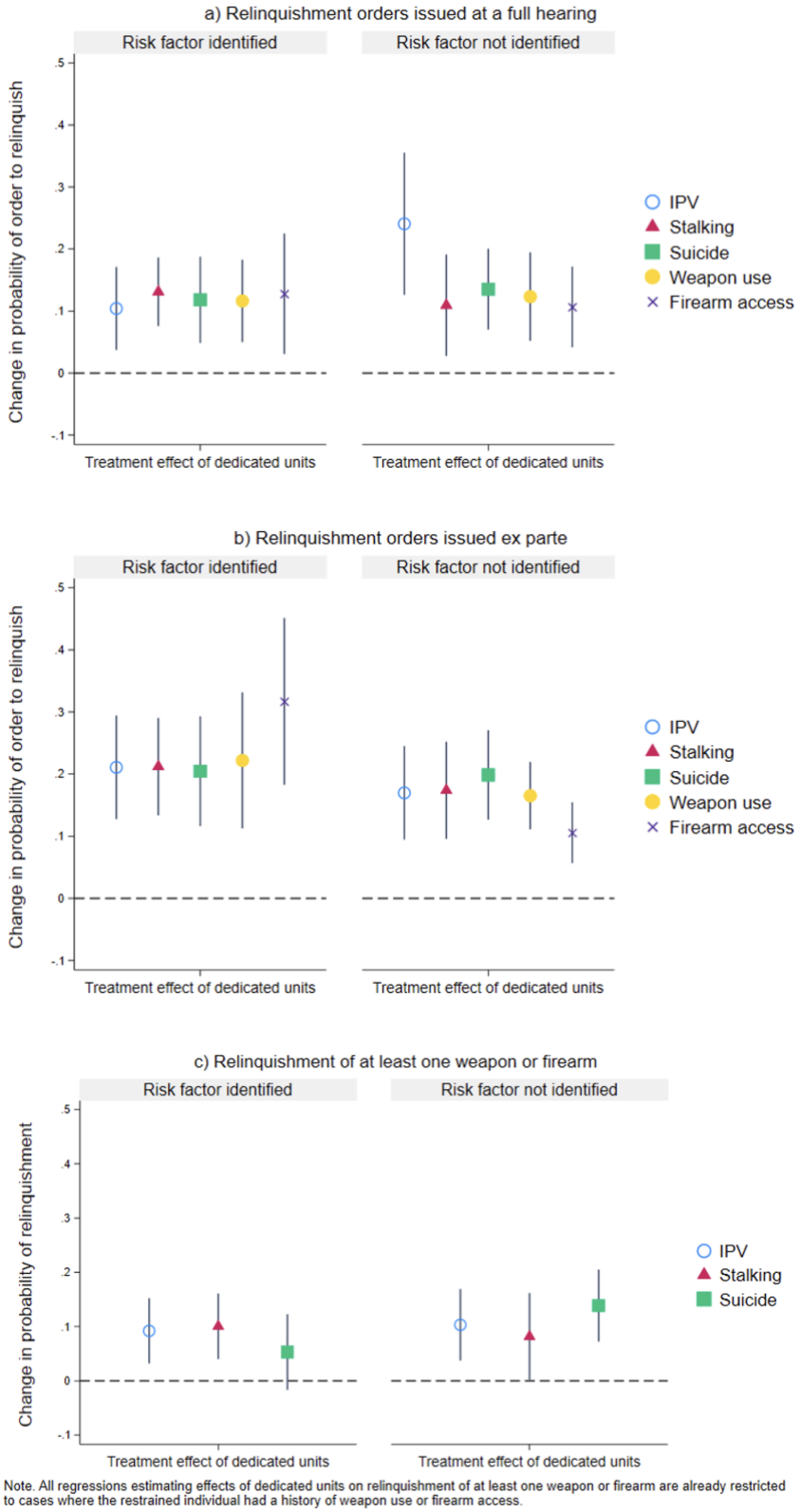
Figure 4. *Differential effects of dedicated units based on five risk factors*



Note. All regressions estimating effects of dedicated units on relinquishment of at least one weapon or firearm are already restricted to cases where the restrained individual had a history of weapon use or firearm access.

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Figure 5. *Total number of weapons and firearms relinquished by unit status*

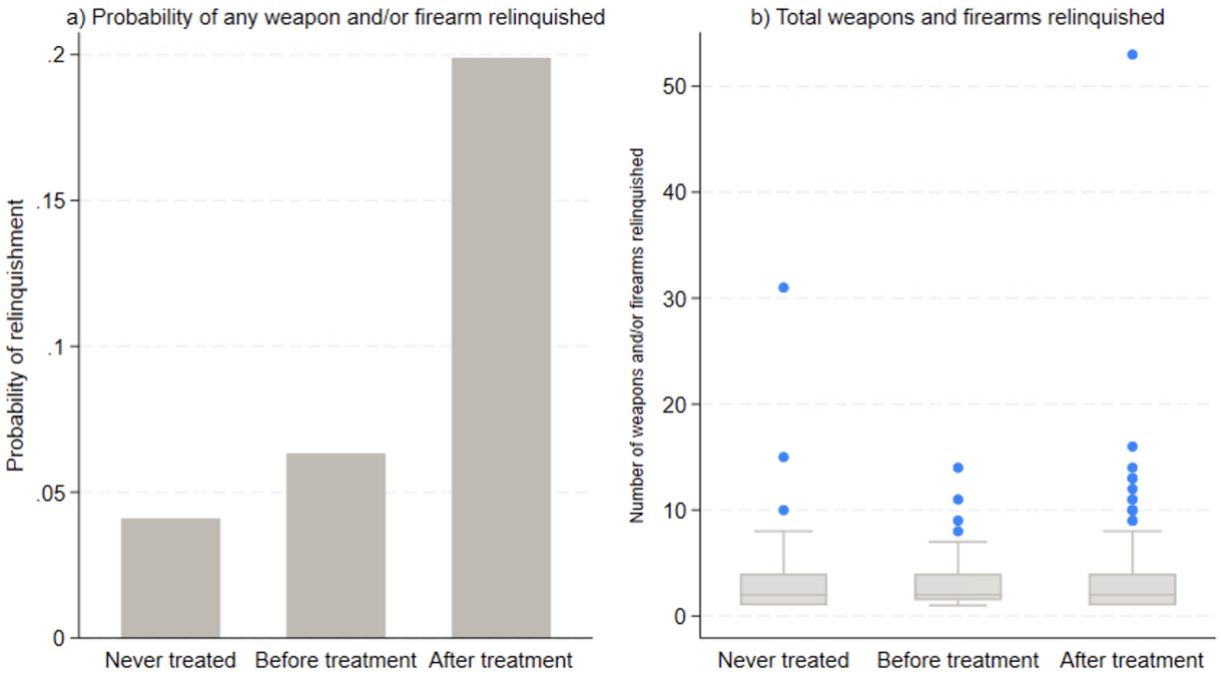
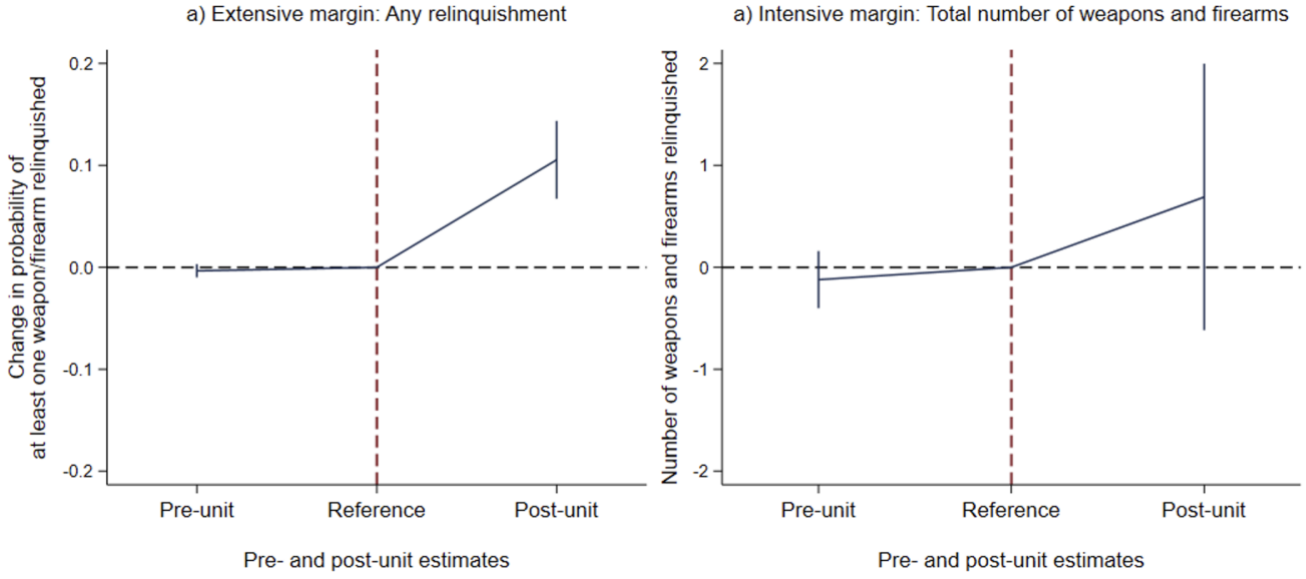


Figure 6. *Pre- and post-unit effects on relinquishment estimated at the extensive and intensive margins*



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Appendix

A.1 Additional details about the study setting

Table A1. *Characteristics of counties in the study*

Characteristics	*County 1 (King, Unit)*	*County 2 (Pierce, No unit)*	*County 3 (Spokane, Unit)*	*County 4 (Yakima, No unit)*
Total population	1,931,249	795,225	471,221	243,231
Population by race/ethnicity (%)				
American Indian and Alaska Native (Not Hispanic)	0.7	1.1	1.4	3.7
American Indian and Alaska Native (Hispanic)	0.2	0.2	0.2	0.6
Asian (Not Hispanic)	14.5	5.8	2.1	1.0
Asian (Hispanic)	0.1	0.1	0.0	0.1
Black or African American (Not Hispanic)	6.0	6.5	1.6	0.7
Black or African American (Hispanic)	0.2	0.3	0.1	0.2
Native Hawaiian / Pacific Islander (Not Hispanic)	0.7	1.3	0.4	0.1
Native Hawaiian / Pacific Islander (Hispanic)	<0.1	<0.1	<0.1	<0.1
White (Not Hispanic)	64.8	70.3	86.7	47.7
White (Hispanic)	3.9	3.9	2.5	16.0
Another race (Not Hispanic)	0.2	0.2	0.1	0.1
Another race (Hispanic)	3.7	3.3	1.1	25.9
Two or more races (Not Hispanic)	0.9	5.6	3.2	1.7
Two or more races (Hispanic)	4.1	1.2	0.6	2.1
Population by age (%)				
Under 18	21.4	24.9	23.2	30.5
18-34	25.4	24.0	24.6	23.0
35-64	42.2	40.0	39.1	34.9
65 and over	10.9	11.0	12.9	11.5
Median age of all household members	37.1	35.9	36.8	32.2
Total households	789,232	299,918	187,167	80,592
Total children	412,026	197,728	109,090	73,868
Average household size	2.40	2.59	2.44	2.97
Household composition (%)				
Family households	58.5	67.4	63.2	72.9
Non-family households	41.5	32.6	36.8	27.1
People in family households (%)				
Householder	31.7	31.1	32.2	27.7
Spouse	24.6	22.6	24.1	19.5
Parent	1.7	1.4	1.0	1.5
Child	33.8	35.7	34.9	38.6
Grandchild	1.5	2.3	1.9	3.7
Sibling	1.8	1.6	1.3	2.3
Other relatives	1.8	1.6	1.0	2.5
Nonrelatives	3.1	3.7	3.5	4.2
People in non-family households (%)				
Householder living alone	55.8	58.8	59.7	63.0
Householder not living alone and Nonrelatives	44.2	41.2	40.3	37.0
People in group quarters (%)				
Institutional	28.3	49.5	38.6	72.7
Non-institutional	71.7	50.5	61.4	27.3

Table A.1 provides additional demographic information about the counties included in the study. This population and household information was extracted from published 2010 census data. The average household size across all counties ranged from 2-3, most >55% households were comprised of family members, and family households were similar in their composition. Counties were selected compared to other counties in Washington in terms of race and ethnicity based on having similar proportions of Black and American Indian and Alaska Native individuals due to the increased risk of both DV and DV-related deaths in those groups.

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A.2 Additional results

Figure A1. *Effect of dedicated units on relinquishment orders and relinquishment using judicial officer fixed effects*

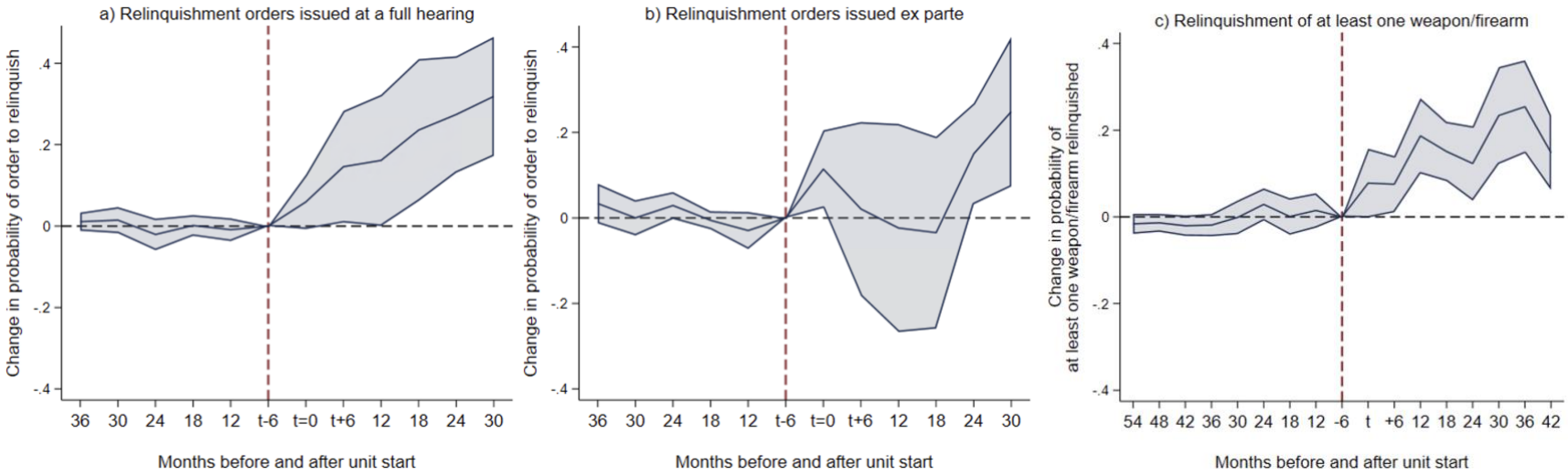

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Figure A2. Falsification test: Effect of dedicated units on judicial orders granting the protected person exclusive custody and control of specific family pets

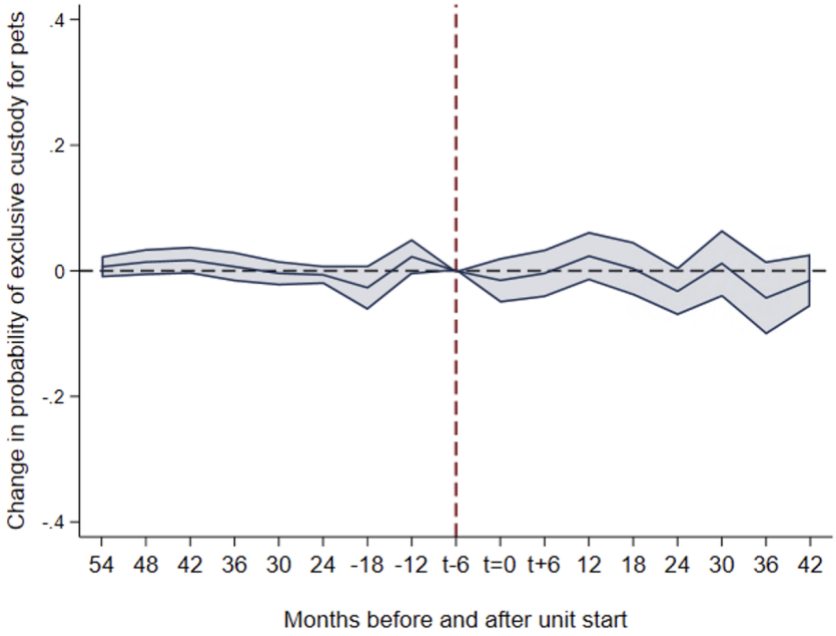

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Figure A3. *Sensitivity analyses of the effect of dedicated units*

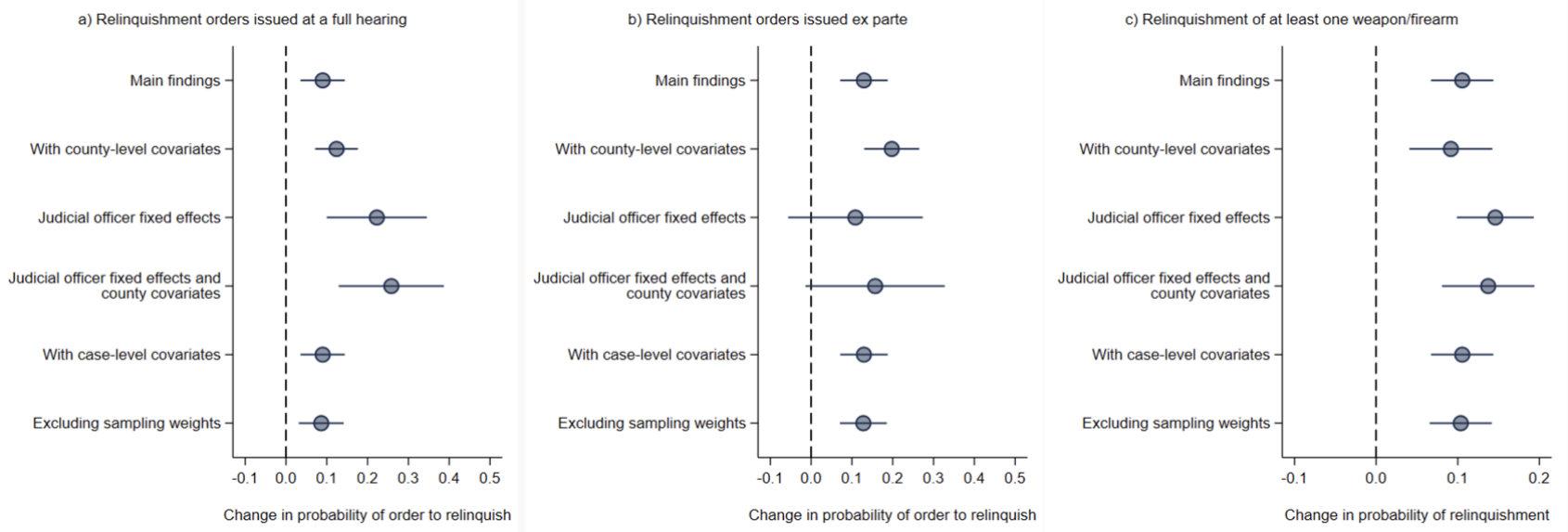

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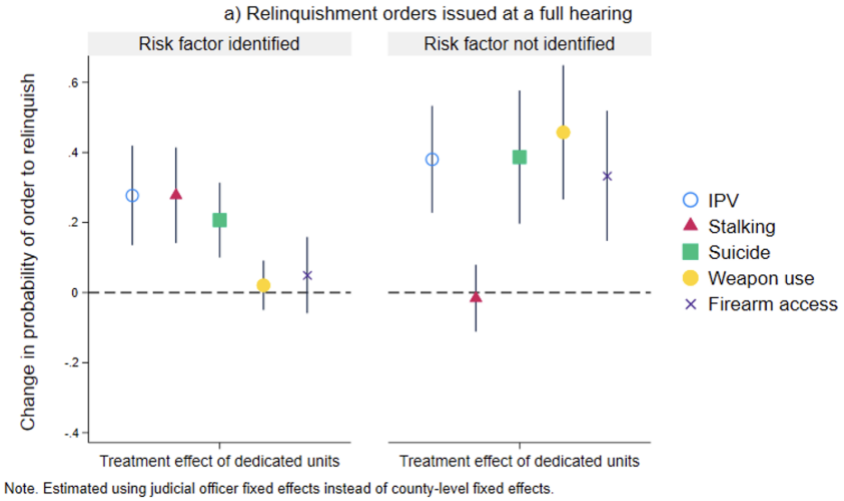
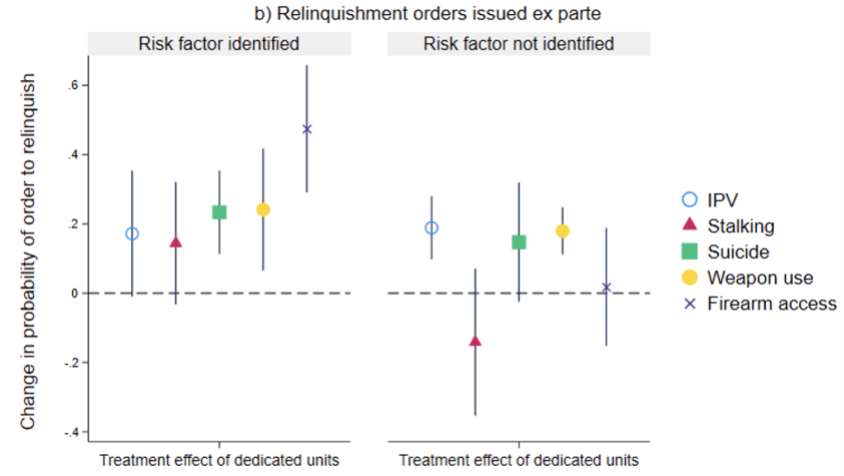
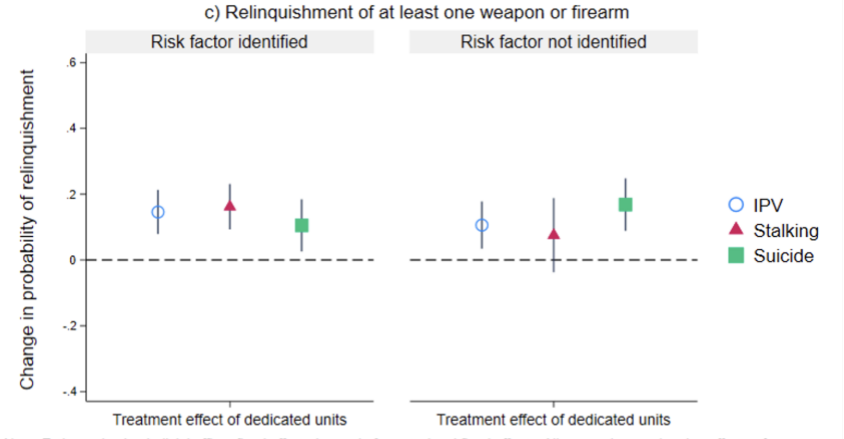
Figure A4. *Differential effects of dedicated units based on five risk factors using judicial officer fixed effects*



Note. Estimated using judicial officer fixed effects instead of county-level fixed effects.



Note. Estimated using judicial officer fixed effects instead of county-level fixed effects.



Note. Estimated using judicial officer fixed effects instead of county-level fixed effects. All regressions estimating effects of dedicated units on relinquishment of at least one weapon or firearm are already restricted to cases where the restrained individual had a history of weapon use or firearm access.