Far from Home and All Alone: The Impact of Prison Visitation on Recidivism

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Text

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Tightening corrections budgets, the lack of a legal right to in-person prison visitation, and the increasing availability of video visitation have led many prison and jail administrators to consider limiting opportunities for in-person visitation. This is concerning given the large literature which argues inmates receiving in-person visits are less likely to recidivate upon release. On the other hand, these studies have not determined whether this relationship is causal or is instead driven by the correlation between receiving visits and having a network of family and friends that can offer support upon release. In this article, I estimate the causal effect of in-person visitation on recidivism using unique, administrative data from the Iowa Department of Corrections. I find that visitation itself, as currently implemented in Iowa, has no impact on recidivism. Instead, my results suggest prison policies that create meaningful support networks available to prisoners upon release may yield significant benefits. (*JEL*: K42, C26)

1. Introduction

In an era of mass incarceration, preventing former inmates from returning to prison is an important policy goal with implications for costs, security, and social justice. Nationally, more than two-thirds of prisoners released

from state prisons are rearrested within 3 years (Durose et al., 2014). These high rearrest rates have spawned a broad body of literature that considers the causes of recidivism and suggests policies that may

be used to reduce it. One policy thought to be particularly promising is an expansion of in-person visitation. A recent meta-analysis finds that experiencing prison visitation reduces recidivism by 26% (Mitchell et al., 2016).

From a policy perspective, identifying the causal role of visitation is crucial. Prisons spend millions of dollars each year facilitating visitation. In some cases, prisons are passing these costs on to prisoners and their families in the form of visitation fees (Boudin et al., 2013). [1] More broadly, many states are currently considering implementing or expanding video visitation for inmates, often at the cost of in-person visitation. The Prison Policy Initiative recently found that 74% of jails that implemented video visitation banned in-person visitation (Rabuy and Wagner, 2015). Even where in-person visitation remains, there is significant variation across states in how frequently friends and family are allowed to visit and how they are allowed to interact with inmates when they do. For example, New York is currently considering cutting in-person visitation at their maximum-security prisons from seven days a week to three (Riback, 2017). While the decision to allow in-prison visitation is multifaceted, the ability of visitation to reduce recidivism has been cited again and again in efforts to expand or protect visitation in academic work (Adams and Fischer, 1976; Hairston, 1988; Schafer, 1994; Taylor, 2016), by prison policy advocates (Lowen and Isaacs, 2012; Rabuy and Wagner, 2015), in newspaper articles and policy briefs (Hairston et al., 2004; Friedmann, 2014; Sims, 2017) and by state and federal DOC's (Minnesota Department of Corrections, 2011; Hollihan and Portlock, 2014; Farmer, 2017). In this context, an understanding of the causal effects of in-person visitation on recidivism is of crucial importance.

Theoretically, visitation reduces recidivism because visited inmates are better able to maintain social ties that can aide in the transition back to society after release (Hirschi, 1969; Bales and Mears, 2008; Hickert et al., 2018). Of course, in order to be beneficial, the social ties maintained in this process must represent positive influences. To the extent that visitation

allows prisoners to continue relationships with people that may encourage antisocial behavior, visitation could actually increase recidivism. Moreover, some prison officials have raised concerns that visitation is a key method through which drugs and other contraband enter prisons (Newman, 2016). In this way, visitation may increase recidivism by either creating or continuing drug dependencies that persist after release.

The existing empirical literature has been largely unified in finding that visitation reduces recidivism. [2] On the other hand, the previous research on this topic has been unable to separate the effects of visitation from having a strong support network outside of prison. The extent to which this support network deteriorates in the absence of in-person visitation is unclear. Because a strong support network is likely correlated with both increased visitation and a reduced recidivism risk, a simple estimation of the impact of recidivism on visitation will be biased towards finding a reduction in recidivism.

[1] For example, in 2011 Arizona began charging potential visitors $25 to pay for the required background checks before new visitors can be approved.

[2] Some of the key papers suggesting visitation reduces recidivism include Ryan and Yang (2005), Bales and Mears (2008), Derkzen et al. (2009), Mears et al. (2012), Duwe and Clark (2013), Barrick et al. (2014), Cochran (2014), and Mitchell et al. (2016). Cochran (2012) and Tahamont (2011) also find that visitation reduces in-prison misconduct.

The separation of visitation and a strong support network is particularly important in light of evidence that strong social ties, as measured by LSI-R Scores, can delay recidivism (Berg and Huebner, 2011). [3] I build on this work by showing that controlling for LSI-R score in my sample halves the estimated impact of visitation on recidivism and eliminates the statistical significance of visitation. In addition, I offer a causal estimate of the impact of visitation on recidivism. To do this, I instrument for visitation with the distance between a prisoner and their visitation pool. [4] Importantly, if visitation plays a significant role in maintaining relationships outside prison

walls, my instrumental variable strategy will pick up that effect. Any erosion of support networks that could have been mitigated through visitation is reflected in my estimates.

I demonstrate the relevance of distance to visitation in a number of ways, and for a variety of distance measures. While my primary analysis uses the distance between a prisoner's jurisdiction and the first facility to which they were assigned, in subsequent analysis I consider four additional distance measures. [5] The Iowa visitation data are uniquely rich in that it records the city from which every visitor originated. This allows for the calculation of distance measures based on actual visitation. Indeed, a contribution of this research is to document the high correlation between distance measures based on jurisdiction and those based on actual visitation.

In direct opposition to the existing literature, I find no evidence that visitation reduces recidivism. Of course, the nature of individual visits varies widely and the value of a single visit depends on a number of factors including visitor type, visitation timing, and the visitation experience (Cochran and Mears, 2013; Tasca et al., 2016). Earlier papers in the literature have found that visits from immediate family members are the most valuable (Bales and Mears, 2008; Mears et al., 2012; Duwe and Clark, 2013). I find no evidence that any type of visitor reduces recidivism rates with parents, spouses, children, other relatives, and friends all yielding small and statistically insignificant coefficients in my preferred specification. Moreover, this null result holds across five unique distance measures, for both the intensive and extensive margins of visitation, and for a variety of subgroups.

These findings imply that prison resources earmarked for recidivism reduction are likely to be more effective when employed elsewhere. On the other hand, my results highlight the importance of having a support network outside of prison that can be relied upon after release. While increasing visitation among already established relationships does not appear to affect the strength of these support networks, if visitation could instead be used to

facilitate new relationship development during incarceration, it may serve as a key recidivism reduction tool. Furthermore, given the high fraction of recidivism that occurs within months of release, policies that can replace the financial and housing support some recently released prisoners receive from family and

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[3] LSI-R stands for the Level of Service Inventory-Revised score and is a risk assessment tool designed to predict an offender's risk of recidivism. It is based on ten distinct factors one of which is the strength of the prisoner's family and marital relationships (Kaemingk, 2015).

[4] This is not the first paper to use distance as an instrument for visitation. Tahamont (2011) used distance as an instrument for visitation in order to predict in-prison misconduct. Cochran et al. (2016) find a significant negative relationship between distance from home jurisdiction and number of visits received. Lindsey et al. (2017) find a nonlinear relationship between distance and misconduct that was partially mitigated by visitation. There is also significant precedent for using distance as an instrumental variable more broadly. Some of the best examples include Card (1993), Frankel and Romer (1999), and Tavares (2003).

[5] A prisoner's "jurisdiction" is the county in which they were convicted. Many papers have taken this to be a direct proxy for the county in which the individual resides (Cochran et al., 2018).

close friends could have a significant impact. [6] For example, Munyo and Rossi (2015) find that first day recidivism can be largely eliminated by increasing the gratuity provided to prisoners at the time of their release. [7]

Of course, prison visitation has value beyond its direct influence on recidivism. Visitation is an important part of maintaining human dignity while incarcerated. The American Bar Association includes visitation among their standards for the treatment of prisoners and many have argued that prisoner solitude violates basic human rights (American Civil Liberties Union, 2011; American Bar Association, 2018). There are also significant mental health consequences associated with complete or nearly complete isolation from the outside world (Loucks, 2002; Haney et al., 2003). More broadly, and as recognized by Becker (1968), prison affects not only prisoners, but also other members of society. Visitation restrictions thus punish not only prisoners, but their friends and family who often place significant value on the ability to visit their incarcerated loved ones (Tewksbury and DeMichele, 2005). [8] This is perhaps most disturbing for a particular type of visitation, visitation between an incarcerated mother and her child (Laughlin et al., 2008). Visitation may even be cost effective where it encourages good behavior during incarceration. There is evidence that expected visits reduce prison misconduct in the days before the visit occurs, likely because prisoners are concerned about losing visitation privileges (Siennick et al., 2013). I estimate that one additional visit per month, a

71% increase in visitation, would reduce the number of misconduct events by 14%. Probably as a direct result of the reduced misconducts, a similar increase in visitation would also reduce time served by 11%. Importantly, reductions in both sentence length and misconducts will reduce the total cost of incarceration.

The remainder of the article proceeds as follows: Section 2 describes the Iowa prison system and the mechanisms that determine in which facilities prisoners will serve time. The data are described in Section 3. Section 4 details the empirical model and provides evidence of the validity of distance as an instrumental variable for visitation. Section 5 presents my results and Section 6 concludes.

2. Background

State-level legislation and prison policies on visitation vary widely (Boudin et al., 2013). This is in large part due to a lack of federal legal protection for prison visitation. The supreme court case *Overton v. Bazzetta* (2003) established that broad restrictions on visitation do not constitute a cruel and unusual punishment as long as the restrictions can be justified with a penological goal (Farrell, 2004). Even an indefinite denial of visitation is allowed for prisoners with a history of substance abuse (American Civil Liberties Union, 2011). Neither conjugal visits nor visits with physical contact between visitors and prisoners are legally protected (American Civil Liberties Union, 2011). One area where visitation rights have been somewhat more protected is legal visits, i.e., visits from an inmate's lawyer. Confidential communication between prisoners and lawyers are generally protected (American Civil Liberties Union,

[6] These support networks may be particularly important among groups that face overlapping challenges upon release. For example, Clarke and Rothenberg (2018) finds that minority borrowers face higher mortgage rates. This may in turn effect former prisoners' ability to secure housing after release.

[7] Lee (2019) finds evidence that forced assignment to residential housing facilities after release increases recidivism. More broadly, there is evidence that increasing the number of police could significantly decrease crime and, by extension, recidivism (Weisburst, 2018).

[8] For a more complete discussion of optimal levels of punishment, see Friehe and Miceli (2017).

2011). State-level legislation and prison regulations can also create enforceable liberty interests that make new visitation restrictions more challenging. In Iowa, for example, courts have ruled that the state could not adjust its rules to limit weekend visitation without providing due process (Wright, 1994).

Even in the absence of strong federal guidelines, Iowa's visitation policies are similar to the majority of prison policies found elsewhere. Boudin et al. (2013) categorize Iowa as one of thirty states that actively promotes visitation. Iowa does not offer overnight visits nor does it offer any form of video visitation. Both restrictions put them in the majority, as only seven

states allow for overnight family visitation and only ten have made video visitation available to prisoners (Boudin et al., 2013). Potential visitors must fill out an application and be individually approved before they can begin visiting each prisoner. Prisoners always have the right to refuse to meet with visitors. Limited physical contact between prisoners and their visitors is allowed in most circumstances.

There are nine major prisons in Iowa, most of which are primarily designed for medium-security male prisoners. In addition to these medium-security prisons, there is one prison dedicated exclusively to female prisoners, one maximum-security prison, and one minimum-security prison. Despite a variety of prisons designed for the needs of particular prisoners, not all prisoners with a classification other than medium-security are sent to a specialized prison. For example, nearly 20% of female prisoners serve a majority of their sentence in a facility other than the dedicated women's prison or the Iowa Medical Classification Center (IMCC). Similarly, 39% of maximum-security prisoners and 65% of minimum-security prisoners spend the majority of their sentences somewhere other than the dedicated maximum-security or minimum-security prison. [9]

After sentencing, all prisoners in Iowa are first sent to the Iowa Medical and Classification Center (IMCC) for processing. The median prisoner stays at IMCC for 43 days. Typically, prisoners do not receive visits while in processing largely due to delays in the visitation approval process. As can be clearly seen in Figure 1, visitation begins in earnest around the time prisoners are moving out of processing.

Upon leaving IMCC, prisoners are sent to the facility closest to the county in which they were convicted (their "jurisdiction") subject to a number of constraints including security level, programming and health needs, the location of known enemies or accomplices, and availability of beds. The foundational principle behind facility assignment in Iowa is that "assignment will be made to the least restrictive and most cost-effective component of the continuum for the purposes of risk management, substance abuse treatment, education, and employment."(IDOC, 2015). [10] In

[9] Results that exclude women and maximum-security prisoners can be found in Appendix Table A1.

[10] Conversations with prison officials suggested that sorting prisoners to reduce distance is partially done to facilitate visitation. Because this sorting is a general principle and is not based on differences in the probability an individual prisoner would get visited, it should not be expected to influence recidivism except through visitation after facility and jurisdiction fixed effects have been included.

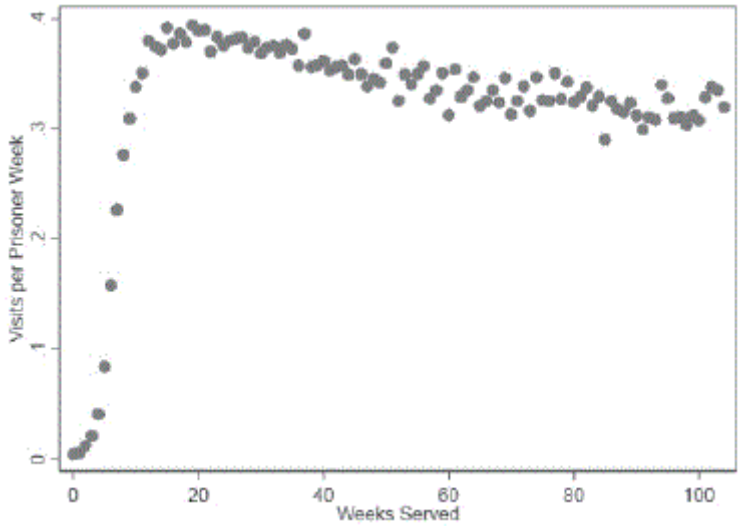

Figure 1. *Visitation by Weeks Served.*

Each point represents the total visits per prisoner week among all prisoners based on the number of weeks they had served up to that point. All visitors must be approved before they are allowed to visit.

cases where there are more prisoners who should be assigned to a given facility than available beds, priority is given to prisoners closer to their release date.

Subsequent facility moves occur at the discretion of the deputy director for offender services and fall into three categories. A little more than half of all facility moves (51%) are to a different facility with a higher or lower security level. This type of move is the direct result of prisoners earning their way into higher or lower custody levels. Most other moves (45%) take a prisoner towards their home jurisdiction. A key benefit of this type of movement is that releasing prisoners from facilities close to their jurisdiction reduces transportation costs. Prison officials are also cognizant that this type of move may facilitate visitation. The remaining moves (4%) involve special circumstances. Most often, prisoners are transferred to IMCC due to a particular medical need.

Prisoners are allowed to request transfers to other prisons. A large majority of these requests are denied, typically because one or more of the constraints listed earlier is binding. While the Iowa Department of Corrections (IDOC) does not record the reason behind prisoner movement, prison officials estimate that only 5% of prisoners ever change prisons by request. I discuss the implications of prisoner transfers by request and the empirical strategies used to mitigate their impact in Section 4.

3. Data

The data for this project come from the Iowa Department of Corrections (IDOC) and include every prisoner released from an Iowa prison between January 1, 2009 and December 31, 2011. Each observation in the data is a prisoner during a particular stint in prison. While most people only appear in my data once, 10% of my observations are comprised of individuals who have been released and returned to incarceration within the period I study. For each observation, the data include information about the

crimes each prisoner committed, the county in which they were convicted, the cells and facilities in which they were housed, demographic variables, and whether the prisoner recidivated within 3 years. [11]

Prisoners are categorized as recidivists if they return to incarceration in Iowa within 3 years of release. The cause of recidivism is also recorded. As can be seen in Table 1, the recidivism rate of 30% is somewhat below the national average. Using publicly available data from 23 states, Gelb and Velazquez (2018) found that 37% of people released from prison in 2012 had returned to prison within 3 years.

In addition to information about the prisoners themselves, the data contain every visit received, along with the relationship between the prisoner

Table 1. Summary Statistics

	(1)	(2)	(3)
	All Prisoners	Visited	Never Visited
New crime recid rate	0.19	0.18	0.20
	(0.39)	(0.39)	0.40
Technical recid rate	0.11	0.12	0.10
	(0.31)	(0.32)	(0.29)
Total recid rate	0.30	0.30	0.30
	(0.46)	(0.46)	(0.46)
Visits per month	1.41	2.28	-
	(2.69)	(3.12)	-
Jurisdiction distance	93.00	87.48	101.95
	(49.93)	(47.60)	(52.29)
First facility distance	92.69	88.12	100.11
	(53.26)	(51.99)	(54.47)
Weighted average distance	107.21	107.21	-
	(152.85)	(152.85)	-
Simple average distance	120.94	120.94	-
	(151.04)	(151.04)	-
Modal distance	104.16	104.16	-
	(188.95)	(188.95)	-
Days served	651.71	757.49	480.11
	(731.24)	(809.03)	(541.15)
LSI-R Score	31.57	30.50	33.30
	(7.72)	(7.82)	(7.24)
Male	0.88	0.88	0.87
	(0.33)	(0.33)	(0.33)

[11] One important limitation of the data is that I only observe recidivism that occurs in Iowa. To the extent that Iowa prisoners are moving to other states and becoming incarcerated there, I underestimate the true recidivism rate. This bias is likely limited by the fact that former prisoners in my data serve an average of 16 months on parole. During this period, are not allowed to leave their county of jurisdiction without explicit permission from the supervising judicial district director (IDOC, 2018). Moreover, Harding et al. (2013) found that just 1.2% of former prisoners had out-of-state addresses 2 years after release in Michigan.

Number of dependents	0.55	0.58	0.49
	(0.50)	(0.49)	(0.50)
Prior recidivist	0.49	0.48	0.51
	(0.50)	(0.50)	(0.50)
Total crimes	3.40	3.53	3.19
	(1.82)	(1.96)	(1.55)
Any violent crime	0.33	0.35	0.30
	(0.47)	(0.48)	(0.46)
Black	0.24	0.20	0.32
	(0.43)	(0.40)	(0.47)
Hispanic	0.06	0.06	0.06
	(0.24)	(0.23)	(0.25)
White	0.67	0.73	0.58
	(0.47)	(0.44)	(0.49)
Other race	0.03	0.02	0.04
	(0.16)	(0.13)	(0.20)
Observations	10,237	6,333	3,904

Prisoners are categorized as visited if they received at least one visit during their incarceration. Jurisdiction distance is the daily average distance between a prisoner and their home jurisdiction. First facility distance is similar but uses only the first facility to which the prisoner was assigned. Weighted average distance uses actual distance between prisoner and visitors and weights by visitation frequency. Simple average distance is identical but does not weight on visitation frequency. Modal distance is the average daily distance between the prisoner and their most frequent visitor. All distances measured in miles. Standard deviations in parentheses.

and visitor and the city from which the visitor traveled. [12] The data thus represent, to the best of my knowledge, the first opportunity to calculate actual distance measures between prisoners and visitors. Specifically, for my weighted average distance measure, I calculate the total distance traveled by all visitors for each prisoner and divide by the total number of visits received. I also calculate the distance traveled by the modal visitor (modal distance) as well as the average distance traveled among all unique visitors, regardless of visitation frequency (simple average distance). [13]

As will be further discussed in Section 4, each distance based on actual visitation faces inherent biases. Instead, for my primary analysis, I use the distance between each prisoner's county of conviction (their "jurisdiction") and the first facility to which they were assigned after leaving the Iowa Medical Classification Center. Specifically, first facility distance is defined as the distance between the geographic centroid of a given prisoner's jurisdiction and the prison to which they were first assigned. I also calculate jurisdiction distance as the average daily distance between each inmate's jurisdiction and the facilities in

[12] Following Bales and Mears (2008) I categorize visitors into six types; parent, spouse, child, relative, friend, and other. Bales and Mears (2008) also include a "significant other" category. In my data, however, non-spouse significant others are simply recorded as friends.

[13] All distances are calculated using Nichols (2003) and are measured in miles.

which they served time. [14] Unlike first facility distance, jurisdiction distance may be influenced by the behavior of a prisoner while they are incarcerated. On the other hand, jurisdiction distance is a more accurate measure of the real barriers faced by a prisoner's visitor pool. Summary statistics for all five visitation measures can be found in Table 1. Of course, distance measures based on actual visits cannot be calculated for the 38% of prisoners who did not receive any visits. It should also be noted that 75% of prisoners only served time in their first facility. [15]

Previous studies have used the distance between a prisoner's county of conviction and their facility to proxy for the distance a prisoner is from their visitation pool (Tahamont, 2011; Cochran et al., 2016; Lindsey et al., 2017).

One contribution of this research is to test the validity of that assumption. I find that two-thirds of visits come from a prisoner's home jurisdiction and the correlation between jurisdiction distance and weighted average visitation distance among visits originating in Iowa is 0.33. These values are significantly higher among people with closer ties to the inmate and among people who visit more often. For example, the correlation between jurisdiction distance and the weighted average visitation distance of their spouse is 0.74.

Like distance, visitation can be measured in a variety of ways and different types of visitation can reasonably be expected to have different effects. The previous literature has explored both the extensive and intensive margins of visitation (Bales and Mears, 2008; Mears et al., 2012; Duwe and Clark, 2013; Liu et al., 2016). Heterogeneity analysis based on the visitor's relationship to the prisoner is also common (Bales and Mears, 2008; Mears et al., 2012; Duwe and Clark, 2013; Barrick et al., 2014; Liu et al., 2016). In some cases, the timing of visitation (Bales and Mears, 2008; Duwe and Clark, 2013; Cochran, 2014) and the number of unique visitors (Duwe and Clark, 2013; Liu et al., 2016) have also been explored. In Section 5.1, I consider each of these aspects of visitation in detail.

From my initial sample of 11,361 prisoners, I drop any prisoners convicted outside of Iowa. The motivation for this is 2-fold. First, prisoners convicted outside of Iowa may be more likely to leave Iowa upon release and to serve time in other states in the future. Because I only observe recidivism that results in sentences served in Iowa prisons, including these prisoners will bias the recidivism rate towards zero. Second, I do not observe the county of jurisdiction for prisoners residing outside of Iowa. This precludes me from calculating first facility distance for this group. The restriction removes 499 prisoners from my sample. I also drop all prisoners who spend the entirety of their sentence in the Iowa Medical Classification Center (IMCC). These prisoners require medical care beyond what the other prison facilities in Iowa can offer and have a significantly different prison experience than other prisoners. More importantly, given jurisdiction fixed effects, distance measures for these prisoners are not well identified unless they can be compared to the general population. As prisoners with physical and mental health concerns are likely to have a different recidivism profile than other prisoners, I exclude them from my main analysis. This restriction removes an additional 625 prisoners.

4. Empirical Model

[14] To account for the lack of visits during the first 40 days of a prisoner's sentence and the fact that all prisoners are assigned to IMCC for roughly the first 40 days of incarceration, jurisdiction distance omits the first 40 days of a prisoner's sentence. Coefficient estimates are not sensitive to calculating distance using all prisoner-days but become somewhat less precise.

[15] Results including only prisoners that did not transfer to a different facility during their incarceration are presented in Appendix Table A2.

Both visitation and recidivism are likely dependent on a third unobservable factor, the strength of a prisoner's support network outside of prison. Previous studies have been unable to separate the influence of these support networks, and the additional visitation they cause, from the influence of visitation itself. In order to identify the causal influence of visitation on recidivism, I employ an instrumental variable specification that exploits plausibly exogenous variation in the distance between a prisoner and his or her visitors.

In practice, procuring an unbiased estimate of this distance is more challenging than it first appears. The most obvious way to calculate average visitation distance is to sum the total distance traveled by all visitors and divide by the total number of visits. If, however, visitation frequency is conditional on distance, this measure will underestimate the true visitation distance as more distant potential visitors visit less often and are thus given less weight all else equal. Moreover, potential visitors sufficiently far away to be completely deterred by the distance will never visit and will not appear in that data at all. This implies that even a simple average distance that gives equal weight to each unique visitor, regardless of visitation frequency, may still be biased downward. On the other hand, not every visitor has equal demand for visitation. Visitors that live in closer proximity to the prisoner, or those that lived closer to the prisoner before incarceration occurred, may place more value on visitation. Assigning equal weight to each unique visitor obscures this heterogeneity in demand.

Another possibility is to use jurisdiction distance, the average daily distance between a prisoner and the jurisdiction in which they were convicted. As described above, jurisdiction distance is free from concerns about visitation frequency biasing distance calculations. On the other hand, a potential concern with jurisdiction distance is that prisoners may be able to either transfer or behave their way into facilities closer to their visitors. Assuming that the prisoners with the most potential visitors are the most likely to move in this way, either possibility could create a correlation between distance and recidivism and violate the excludability assumption required for a causal interpretation of instrumental variable models.

One way to avoid this concern is to calculate distance as the distance between a prisoner's home jurisdiction and the first facility in which they served time. Because prisoners cannot request locations for their first facility and have not yet had an opportunity to behave their way into a lower (higher) security prison, this measure essentially sacrifices some ability to predict visitation in order to ensure excludability. [16] An additional benefit of using first facility distance is that I do not need to exclude prisoners suspected of moving by their own request.

For any given distance measure, the first stage relationship between visits and distance can be estimated as

$$\text{Visits}_{pjf} = \gamma_1 \text{ Distance}_{pjf} + \gamma_2 \text{ Distance}^2_{pjf} + \chi'_{pjf}\Gamma + \lambda_f + \lambda_j + \epsilon_{pjf}, \quad (1)$$

where p indexes prisoners convicted in jurisdiction j, and f indexes the modal facility for each prisoner. The average number of visits received by each prisoner per month of incarceration is represented by Visits pjf . A range of covariates are included in the vector X including; prisoner sex, number of dependents, LSI-R score, whether the prisoner had recidivated in the past, total crimes committed for this incarceration period, dummies for race and ethnicity, age deciles, year released, crime rates in the

[16] The reduced predictability comes from the fact that after a prisoner has been moved to a different prison, the distance between their home jurisdiction and first facility should no longer predict visitation.

prisoner's home county in the year of their release, and crime type. [17] Facility by security level and jurisdiction fixed effects are also included in λ_f and λ_j. [19]

The second stage relationship between recidivism and visitation is then modeled as:

$$\text{Recid}_{pjf} = \gamma \widehat{\text{Visits}}_{pjf} + \chi'_{pjf}\Gamma + \lambda_f + \lambda_j + \upsilon_{pjf} \quad (2)$$

Standard errors allow for clustering within jurisdiction. [20] Importantly, this model will return only the local average treatment effect (LATE) of visitation on recidivism (Angrist and Imbens, 1995). That is, the effect of visitation on recidivism can only be estimated for visitation that is influenced by distance. A potential threat to causal identification is thus that some types of visitation are not affected by distance and these types of visitation reduce recidivism. This is particularly likely in cases where I restrict my analysis to the extensive margin of visits, since whether an individual is ever visited may be less sensitive to distance than the frequency with which visitation occurred. To the extent that the visits that are least sensitive to distance are the most impactful in reducing recidivism, my instrumental variable results will fail to pick up real benefits of visitation. It is not clear, however, that distance-insensitive visits are more likely to reduce recidivism or that the fraction of visits that are insensitive to distance is significant. A number of qualitative studies have identified distance as the single largest barrier to prison visitation (Casey-Acevedo and Bakken, 2002; Christian, 2005).

In order for first facility distance to serve as an instrument for visitation, it must cause variation in visitation. Figures 2 and 3 demonstrate the relevance of first facility distance to visitation. Specifically, each panel of Figure 2 indicates the number of visits per capita from each county to that particular prison. Each prison is indicated with an asterisk while stars indicate the capital and only city with more than 150,000 people, Des Moines. Across all nine panels, visitation rates are highest in counties close to the prison

[17] Crime types are based on each individual's most severe crime and are categorized as Property (31% of observations), Drug (29% of observations), Violent (24% of observations), Public Order (15% of observations), and Other (2% of observations).

[19] The inclusion of both facility and jurisdiction fixed effects does not eliminate distance variation as a facility by jurisdiction fixed effect would. Instead, the facility fixed effect is included to control for the possibility that some facilities may be more or less criminogenic and that this attribute may be correlated with the distance. Similarly, jurisdiction fixed effects account for the possibility that counties that are farther from Iowa prisons may be more or less likely to see recidivism, all else equal. The identifying variation can be thought of as the difference between each prisoner's realized distance and the average distance among all prisoners in the same facility as well as among all prisoners from the same jurisdiction.

[20] As in Angrist and Evans (1996) and Angrist and Pischke (2008), I use a simple Ordinary Least Squares model in both the first and second stages despite the fact that my outcome variable in the second stage is binary and that Visits*pjf* is a binary variable when measured on the extensive margin. Results using a Probit model in the second stage are similar and can be found in Appendix Table A3.

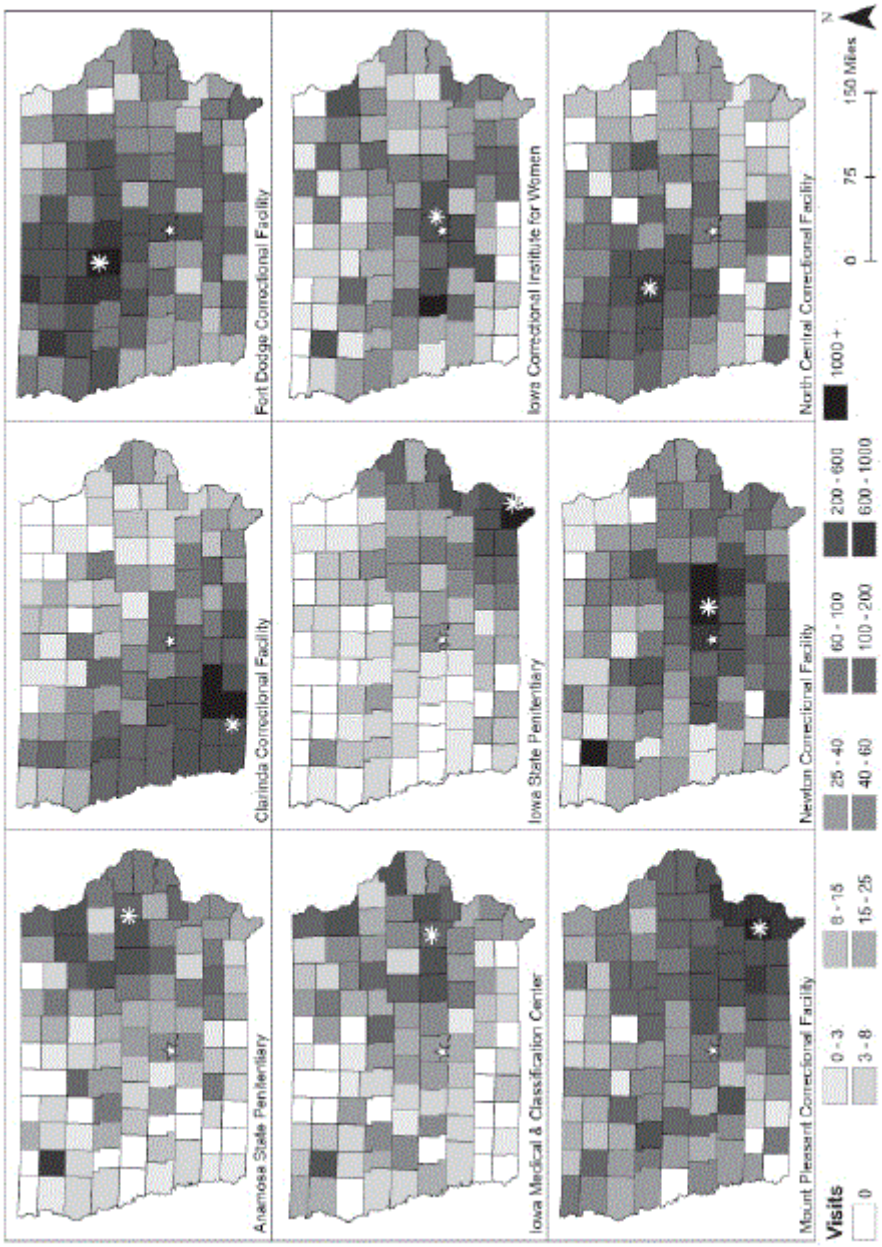

Figure 2. *Visits per 10,000 Population.*

Each map shows the annual number of visits from each county per 10,000 people in that county. Prison locations are indicated with an asterisk. The capital of Iowa, Des Moines, is represented with a star. Map created with the help of Grinnell College's Data Analysis and Social Inquiry Lab (DASIL).

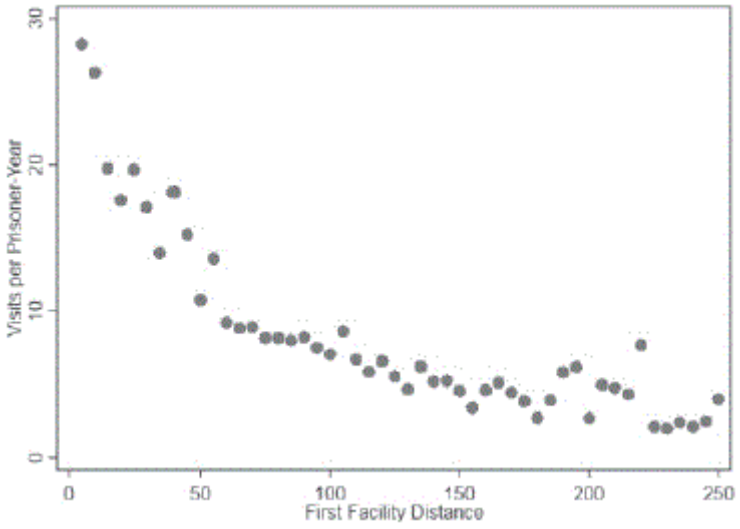

Figure 3. *Visitation by Distance.*

Each point represents the total number of visits per prisoner year that occur among visitors living in the indicated 5 mile first facility distance bin.

and decrease as distance increases. [21] To confirm this finding, Figure 3 plots the average number of visits per prisoner year occurring within each 5-mile first facility distance bin. There are two key takeaways from this figure. First, visitation clearly falls as distance increases. Second, the drop off appears to be non-linear with a large portion of the decrease in visitation coming within the first 100 miles of distance. To account for this, I use both first facility distance and first facility distance squared to instrument for visitation.

To further demonstrate relevance, Table 2 documents the first stage results from my preferred specification using all variation in visitation, the extensive margin of visitation, and the intensive margin of visitation for all five distance measures. As predicted by Figure 3, in all cases, increased distance is associated with reduced visitation. As distance increases, this effect

Table 2. First Stage Results

	(1)	(2)	(3)
	All Variation	Extensive Margin	Intensive Margin
First facility distance	-0.295***	-0.001***	-0.399***
	(0.019)	(0.000)	(0.024)
First facility distance ^{2}	0.001***	0.000**	0.001***

[21] Careful readers may notice a consistently dark county in northwest Iowa, O'Brien county. This county contains only 14,000 residents and a large religious organization that prioritizes prison visitation in its ministry. As can be seen in Appendix Table A4, results are not sensitive to the exclusion of O'Brien county.

[2] Some of the key papers suggesting visitation reduces recidivism include Ryan and Yang (2005), Bales and Mears (2008), Derkzen et al. (2009), Mears et al. (2012), Duwe and Clark (2013), Barrick et al. (2014), Cochran (2014), and Mitchell et al. (2016). Cochran (2012) and Tahamont (2011) also find that visitation reduces in-prison misconduct.

	(0.000)	(0.000)	(0.000
Jurisdiction distance	-0.378***	-0.001***	-0.504***
	(0.027)	(0.000)	(0.029)
Jurisdiction distance 2	0.001***	-0.000	0.001***
	(0.000)	(0.000)	(0.000)
Weighted average distance			-0.052***
			(0.007)
Weighted average distance 2			0.000***
			(0.000)
Modal distance			-0.039***
			(0.006)
Modal distance 2			0.000***
			(0.000)
Simple average distance			-0.025***
			(0.005)
Simple average distance 2			0.000***
			(0.000)
Observations	10,237	10,237	6,333

**P ≤ n0 . [1] **P ≤ n0 . n05 ***P ≤ n0 . n01 . This table reports the first stage relationship between visitation and distance. Each cell represents a unique regression using the indicated distance measure and type of variation. The complete set of controls described in Equation n1 is included but not reported. Standard errors allow for clustering within jurisdiction and are reported in parentheses.*

[2] Some of the key papers suggesting visitation reduces recidivism include Ryan and Yang (2005), Bales and Mears (2008), Derkzen et al. (2009), Mears et al. (2012), Duwe and Clark (2013), Barrick et al. (2014), Cochran (2014), and Mitchell et al. (2016). Cochran (2012) and Tahamont (2011) also find that visitation reduces in-prison misconduct.

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[1] For example, in 2011 Arizona began charging potential visitors $25 to pay for the required background checks before new visitors can be approved.

gradually declines as evidenced by the consistently positive coefficients on the squared distance terms. [22]

In addition to relevance, distance must also be excludable to serve as an unbiased instrument. That is, distance must not effect recidivism except through visitation. There are at least four potential threats to the excludability of distance. First, some families may move to follow inmates across the state of Iowa to facilitate easier visitation. Family moves are most likely

among prisoners with strong support networks potentially creating a correlation between distance and recidivism. [23] In practice, I see little evidence of visitor movement. Among more than 32,000 unique visitors, only eight report two or more different cities when visiting. Of course, it is still possible that visitors are simply waiting to make their first visit until they have moved closer to their incarcerated person, but given that visits can be coordinated much more easily than a full move, it seems unlikely that family movement is biasing my results. To fully address this potential, however, in some specifications I consider only incarcerated people who were never visited by a person reporting a different home city than they had reported in a previous visit. In addition, in order to ensure that results are not being driven by families that move to follow an incarcerated person before the first visit occurs, in specifications testing robustness to family and friend movement I also drop prisoners who eventually received visits, but had no visits during the first 6 months of their incarceration. The results of this analysis are described in Section 5.2.

Second, it may be the case that there are systematic differences in recidivism rates across jurisdictions, facilities, or both. [24] Given that some jurisdictions will have lower average distances and that these jurisdictions may be systematically different in ways that effect recidivism (e.g., more likely to be urban), there may be a correlation between distance and recidivism that is not related to visitation. A similar argument can be made for the prisons themselves. If, for example, prisons with harsher conditions are concentrated close to (or far from) population centers, distance could again

be correlated with recidivism. [25] To account for these concerns, I include both jurisdiction and facility by security level fixed effects in my preferred specification. Because no jurisdiction sends all of its prisoners to a single facility, nor does any facility receive all of its prisoners from a single jurisdiction, meaningful variation in distance remains even after the inclusion of both facility and jurisdiction fixed effects. [26]

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[22] As can be seen in Appendix Table A5, using only a linear term for first facility distance does not significantly change my results. Similarly, in Appendix Table A6, I find no effect of visitation when breaking distance in to close, medium, and long distance categories and using these dummies as the instrument.

[23] Even in the absence of family moves, it is possible that the type of person willing to visit changes with distance. If visitors more or less affected by distance are more or less likely to positively or negatively influence recidivism, this could create bias in my estimates. That being said, I find no evidence that any type of visitor (parent, spouse, child, other relative, or friend) significantly effects visitation. Moreover, in Appendix Figure A1, I show how the distribution of visitor types changes across visitation distance. With the possible exception of visits from children which appear to gradually decrease as distance increases, I find no evidence that the fraction of all visits comprised of any particular group is significantly changing with distance.

[24] For example, counties that border other states may be more likely to have former criminals commit crimes in those other states. Because incarceration in another state does not count as towards recidivism in Iowa, former criminals returning to border counties may be less likely to recidivate in Iowa, all else equal.

[25] Chen and Shapiro (2007) find that harsher prison conditions are associated with increased recidivism probability.

[26] Note that the inclusion of a facility fixed effect implies that estimates for groups of prisoners who are primarily sent to a single type of prison may not be well identified. For example, because 81% of female prisoners are sent to the one women's prison in Iowa, the distance measure for female prisoners is based primarily on the distance from their home county to that particular prison. To the extent that controlling

Third, as previously noted, in cases where multiple prisoners could be sent to a distance minimizing facility but there are not enough available beds at that facility, priority is given to prisoners closer to their release date. The idea behind this policy is that prisoners who are initially assigned to facilities further from their home jurisdiction will be moved towards their jurisdiction as beds become available. Individuals with more time left to serve have more opportunities to be transferred before release. This policy is potentially problematic from a research standpoint as it implies that sentence length may be correlated with both distance from home and recidivism. I mitigate this potential with controls for crime type and LSI-R score. Both variables are highly correlated with sentence length (Berg and Huebner, 2011). I also note that because prisoners with longer sentences tend to be more likely to recidivate, all else equal, any bias from this policy should cause me to find that increased visitation coming from close proximity to home jurisdiction reduces recidivism (Bushway and Owens, 2013). That is, I am biased towards finding that visitation reduces recidivism. More-over, in the Section 5.2 I estimate results among individuals who never transferred facilities. Individuals in this category are very unlikely to have been pushed into more distant facilities because of long sentences. Had that

occurred, these individuals would have been transferred closer to their home jurisdiction prior to release.

Finally, positive or negative peer effects may be correlated with both distance and recidivism. Specifically, the IDOC sorting strategy that systematically moves prisoners towards their home jurisdiction limits distance and increases the probability that prisoners who live in similar areas will meet while incarcerated. In practice, however, large groups of individuals of the same race, from the same jurisdiction, and serving in the same facility are rare. With the exception of prisoners from Polk and Black Hawk counties, the two counties that contain the Des Moines metropolitan area and which contribute 34% of all prisoners in my sample, no such group makes up more than 9% of their facility's population. Given the segmented nature of prison life, most prisoners will have limited opportunities to interact with peers from the same jurisdiction. To the extent that peer effects are occurring, they are likely not correlated with distance. [27]

Evidence of the excludability of first facility distance is presented in Table 3. Specifically, each column in Table 3 tests whether prisoner characteristics are predictive of first facility distance. As in my main results, I control for release year and include facility by security level and jurisdiction fixed effects. No single predictor is consistently significant across all three columns. On the other hand, there is evidence that prior recidivists are assigned to facilities closer to their home jurisdictions. Similarly, prisoners convicted of violent crimes and black prisoners seem to be assigned to facilities further from their jurisdictions than other prisoners. While these results potentially call into question the excludability of first facility as an instrument, it should be noted that the coefficient estimates in all cases are relatively small. For example, Column 1 suggests that prisoners convicted of a violent crime are assigned to facilities a little more than six miles further from their home jurisdictions than other prisoners. Given an average first facility distance of 93 miles, this represents a 7.2% increase in distance. More importantly, the increased distances faced by individuals convicted of

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for the average recidivism rate in that particular county does not adequately account for variation women may experience across jurisdictions, my estimates for women may be biased. To test this possibility, Appendix Table A1 in the data appendix excludes groups of prisoners who are primarily sent to a single prison. This includes women (81% to Iowa Correctional Institute for Women) and maximum-security prisoners (71% to Iowa State Penitentiary). After excluding these prisoners, I continue to find no significance.

[27] The one possible exception is prisoners from the Des Moines area who make up a significant portion of the residents at a number of facilities. As a robustness test, I estimate my primary results excluding prisoners convicted in either Polk or Black Hawk county. The results are consistent with the base results and can be found in Appendix Table A7.

a violent crime are a direct result of the limited number of prisons equipped to house these people. This reduces the opportunities for the IDOC to assign prisoners to facilities close to their jurisdictions. Similarly, prior recidivist status ensures the first facility to which individuals are assigned will be at least a medium-security prison. Because medium-security prisons are the most common type in Iowa, it is no surprise that medium-security prisoners are more like to enjoy shorter distances to home. Finally, the fact that black prisoners face slightly longer average distances may be due to the concentration of black individuals in certain parts of Iowa. More than half of the black population lives in just four of Iowa's 99 counties (AAI, 2018). The finding may also indicate racial discrimination. In either case, all significant variables in this balance test are likely to be solved by simply including those variables as controls in my models. There is good reason to believe that first facility distance is not problematically correlated with unobservable factors.

5. Results

Iowa has not previously been used to study the impact of visitation on recidivism. As such, it could be argued that any differences in my findings relative to the previous literature are based on the underlying sample rather than methodological differences. To allay this concern, I first follow previous studies in this area by estimating the impact of visitation on recidivism directly, without including distance as an instrumental variable. [28] Following Bales and Mears (2008), I begin by restricting my attention to visitation occurring in the final year of a prisoner's sentence and use a logit model

Table 3. Test of Randomization

	(1)	(2)	(3)
First Facility Distance	All Prisoners	Visited	Never Visited
LSR-R Score	-0.071	-0.106	-0.267∗
	(0.077)	(0.085)	(0.154)
Male	-5.270	-4.391	-10.345
	(4.938)	(5.738)	(6.755)
Number of dependents	-0.676	1.203	-1.259
	(0.836)	(1.057)	(1.050)
Prior recidivist	-2.943∗∗	-3.890∗∗∗	-1.995
	(1.384)	(1.478)	(1.685)
Total crimes	0.302	0.694 ∗∗	0.118
	(0.283)	(0.312)	(0.484)
Black	3.078∗∗∗	1.780	1.029
	(1.008)	(1.134)	(1.283)

[28] In keeping with the earlier literature, I primarily focus on recidivism occurring as the result of a new crime conviction rather than recidivism caused by a violation of parole (Bales and Mears, 2008; Cochran, 2014; Mitchell et al., 2016). Derkzen et al. (2009) used multiple measures of recidivism in their analysis of the impact of visitation. They found no effect of visitation when limiting their analysis to new crimes but did find that visitation reduced recidivism when they included technical violations. The general focus on new crimes reflects their significant cost to society relative to technical violations. A recent report in Illinois found that each new crime recidivism event cost the state more than $150,000 with half of the cost coming from damage to victims (Steinfeld et al., 2018). While the study did not explicitly estimate costs for technical violations, the limited harm to any victims and reduced courts costs associated with technical violations imply these infractions carry a much lower cost.

Hispanic	-0.026	-4.641	3.869
	(1.997)	(2.848)	(3.767)
Other race	-4.311	-3.762	-7.844*
	(3.593)	(3.694)	(4.362)
Age at release	-0.047	-0.143**	-0.040
	(0.060)	(0.068)	(0.098)
Crime rate per 100,000	0.000	0.000	0.000
	(0.000)	(0.001)	(0.001)
Property crime dummy	1.094	0.204	-1.459
	(1.052)	(1.406)	(2.211)
Public order crime dummy	-0.424	-3.150**	-0.802
	(1.218)	(1.348)	(2.903)
Violent crime dummy	6.707 ***	7.348***	3.882
	(1.349)	(1.622)	(2.827)
Other crime dummy	8.132	11.744*	0.350
	(7.292)	(6.910)	(10.367)
Observations	10,237	6,333	3,904

**P ≤ 0.1, **P ≤ 0.05, ***P ≤ 0.01. This table reports results testing the random assignment of prisoners to facilities. In each model, first facility distance is the outcome variable. Jurisdiction, facility by security level, and release year fixed effects are included but not reported. Column 2 includes only prisoners receiving at least one visit during their incarceration. Column 3 includes only prisoners who did not receive a visit during incarceration. White is the omitted race, drug crime dummy is the omitted crime type. Standard errors allow for clustering within jurisdiction and are reported in parentheses.*

controlling only for gender, whether the prisoner had previously recidivated, total crimes, whether the prisoner is white, age at release, and the type of crime of which the prisoner was convicted. [29]

Importantly, this list of controls excludes LSI-R score. LSI-R score is designed to predict the probability a given prisoner will recidivate. It is based on ten distinct factors one of which is the strength of the prisoner's family and marital relationships (Kaemingk, 2015). [30] Because LSI-R score is calculated at the beginning of a prisoner's sentence, visitation cannot be used as a measure of the strength of family bonds. Instead, the family portion of the LSI-R score is based on an interview in which an assigned case-manager determines how satisfied the prisoner is with their current relationships and whether those relations have criminal histories of their own. As can be seen in Figure 4, LSI-R score is highly predictive of visitation.

[29] Restricting visitation to visits in the last year of a prisoner's sentence will cause omitted variable bias if visits occurring before the final year of a prisoner's sentence affect recidivism rates. In order to be consistent with the previous research in this area, I do not control for visits prior to the first year in this specification. In subsequent tables, I consider all visits instead of restricting my analysis to visitation in the final year. InAppendix Table A8, I present results across visitor types based on my preferred specification for visits occurring only in the final year of a prisoner's sentence.

[30] Many of the other factors already appear in the above list of controls. As such, it is likely that a significant portion of the identifying variation in LSI-R score is based on family ties.

This reinforces the concern that visited prisoners are simply more likely to have family outside of prison that can act as a support network after release. Controlling for LSI-R score may help to isolate the impact of visitation itself rather than conflating visitation with strong family bonds.

Table 4 presents results of this exercise both with and without LSI-R score as a control variable. Specifically Columns 1, 3, and 5 exclude LSI-R score from the set of controls while Columns 2, 4, and 6 include it. Columns 1 and 2 consider the exogenous margin of visitation, whether a prisoner was ever visited, while the remaining columns consider all variation in visitation during the final year of a prisoner's sentence. Columns 1-4 employ a logit model and report log odds. Odds ratios for visits are additionally provided at the bottom of the Table. Columns 5 and 6 use an instrumental variable approach and report Ordinary Least Squares regression coefficients. Column 1 indicates that visited prisoners are 13 percentage points less likely to recidivate and Column 3 suggests that one additional visit per month reduces the probability of recidivism by 3.6 percentage points. Despite using different data sets, my replication of the Bales and Mears (2008) methodology yields results that are remarkably similar to the original estimates. For example, Bales and Mears (2008) estimate an odds ratio of 0.962 when considering the impact of total visits on recidivism. I estimate an odds ratio of 0.964.

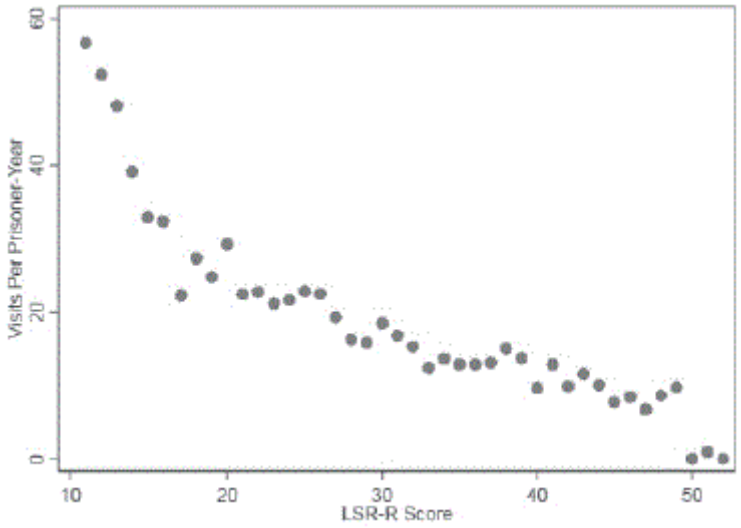

Figure 4. *Visitation by LSI-R Score.*

Each point represents the total number of visits per prisoner year that occur among visitors living in the indicated LSI-R Score Bin.

Once LSI-R score is included as a control, however, I find no evidence that visitation affects recidivism. Though far from definitive, this result suggests that the conflation of relational support and visitation may be a significant confounder in previous studies.

To move towards a causal estimate, In columns 5 and 6 of Table 4, I instrument for whether a prisoner was ever visited with the distance between the county in which the prisoner was convicted and the first facility in which they served time. [31] This identification strategy limits the role of support networks in causing visitation and instead looks for changes in recidivism caused by only variation in visitation that

[31] To facilitate this instrumental variable strategy, in Columns 5 and 6 I use a simple regression model instead of a logit model. IVProbit results can be found in Appendix Table A3.

can be explained by distance. As in Equation (1), I use both jurisdiction distance and jurisdiction distance squared to predict visitation in the first stage. Using this instrumental variable strategy, I find no evidence that visitation reduces recidivism whether or not LSI-R score is included as a control.

Table 4. Replication of Bales and Mears 2008

	(1)	(2)	(3)	(4)	(5)	(6)
	Extensive	With LSI-R	All Variation	With LSI-R	All Variation - IV	With LSI-R - IV
Visits	-0.119**	-0.054	-0.036***	-0.021	-0.006	-0.004
	(0.061)	(0.061)	(0.013)	(0.014)	(0.011)	(0.011)
Male	0.469***	0.463***	0.464***	0.460***	0.047***	0.046***
	(0.097)	(0.098)	(0.097)	(0.098)	(0.009)	(0.009)
Prior recidivist	3.919***	3.877***	3.915***	3.876***	0.363***	0.356***
	(0.130)	(0.130)	(0.130)	(0.130)	(0.013)	(0.013)
Total crimes	0.065***	0.067***	0.065***	0.067***	0.009***	0.009***
	(0.015)	(0.015)	(0.015)	(0.015)	(0.002)	(0.002)
Non-White	0.048	0.037	0.050	0.036	0.004	0.003
	(0.063)	(0.063)	(0.062)	(0.062)	(0.007)	(0.007)
Age at release	-0.010***	-0.008**	-0.010***	-0.008***	-0.001**	-0.001*
	(0.003)	(0.003)	(0.003)	(0.003)	(0.000)	(0.001)
LSR-R Score		0.034***		0.033***		0.003***
		(0.004)		(0.004)		(0.001)
Percent change recidivism	-11.2	-5.3	-3.6	-2.1	-3.1	-2.1
Observations	10,237	10,237	10,237	10,237	10,237	10,237
Mean value of recid	0.19	0.19	0.19	0.19	0.19	0.19
Mean value of visits	0.58	0.58	1.29	1.29	1.29	1.29
Odds ratio (visits)	0.888	0.947	0.964	0.979		
First stage F-Stat					179.13	138.38

**P ≤ 0.1, **P ≤ 0.05, ***P ≤ 0.01. Dependent variable is new crime recidivism within 3 years of release from incarceration. In Columns 1 and 2, Visits is a dummy variable equal to one if the prisoner received a visit during the last 365 days of incarceration and 0 otherwise. In Columns 3 through 6, Visits is the number of monthly visits received by the prisoner during the last year of their sentence. Columns 5 and 6 instrument for whether a prison was visited during the final year of their sentence with the distance between the first facility to which a given prisoner was assigned and the county in which that prisoner was convicted. Columns 2, 4, and 6 include LSI-R score as a control variable. Crime type dummies in four categories are included but not reported.*

There are two additional papers that estimate the impact of visitation on recidivism directly in a way that I can replicate using my data. Mears et al. (2012) uses propensity score matching in an effort to reduce selection bias by comparing similar visited and non-visited prisoners. They find that visited prisoners are 4.7 percentage points (10.2%) less likely to recidivate. Similarly, Duwe and Clark (2013) uses a Cox hazard model to estimate that visited prisoners are 13% less likely to commit a felony after release. Neither paper controls for LSI-R score or similar risk measures. In Table 5, I replicate the results of each of these papers adopting models as similar as possible

given my data and imposing similar sample restrictions. Specifically, Mears et al. (2012) excludes all prisoners who were incarcerated for more than 12 months. In Panel A, I adopt this same sample restriction. Duwe and Clark (2013) exclude prisoners who were discharged at the time of release. Thus, in Panel B, I exclude these prisoners. With these exclusions in place, in Table 5 I present the results of my replication exercises for both papers in Column 1. Column 2 presents the exact same analysis but with the addition of a control for LSI-R. Column 3 uses the original papers' control variables and sample restrictions in an instrumental variable model in which distance is used to predict visitation. Finally, Column 4 is identical to Column 3 but also includes a control for LSI-R score.

As expected, in both panels Column 1 suggests visited prisoners were significantly less likely to recidivate. My effect sizes are quite similar to those estimated in the earlier papers. My replication of Mears et al. (2012) suggests a 14% decrease in recidivism among visited prisoners while my replication of Duwe and Clark (2013) suggests an 11.1% reduction. In both cases, the inclusion of a control for LSI-R score reduces these estimates somewhat although the estimated effect remains significant using the Mears et al. (2012) methodology. When I isolate the effects of visitation using my instrumental variable identification strategy while still adopting the original sample restrictions and control variables, however, I find that visitation does not significantly affect recidivism. The results are particularly striking using the Duwe and Clark (2013) sample restrictions and control variables. There, my IV model suggests that being visited actually increases the probability of recidivism by 15.5%.

For my primary results, I measure visitation as the average number of visits a prisoner received each month. Table 6 shows the results of the instrumental variable regression described in Equation (2). As indicated in the Table, I present the results without control variables in Column 1, and gradually add controls in subsequent columns. My preferred specification is in Column 6 which includes a complete set of controls as well as facility by security level and jurisdiction fixed effects. Across columns, I see no evidence that visitation reduces recidivism. The only marginally significant point estimate is in Column 2, but the positive coefficient indicates visitation may actually increase recidivism. Importantly, standard errors are narrow enough to rule out significant decreases in recidivism. In my

Table 5. Replication of Mears et al. (2012) and Duwe and Clark (2013)

	(1)	(2)	(3)	(4)
	Replication	With LSI-R	IV Model	IV and LSI-R
Panel A-Mears et al. (2012)				
Percent change recidivism	-14	-13.5	-8	-3
Attempt to Treat estimate	-0.028 ***	-0.027***		
	(0.012)	(0.012)		

IV coefficient estimate			-0.016	-0.006
			(0.131)	(0.124)
Mean new crime recid	0.20	0.20	0.20	0.20
Mean ever visited	0.50	0.50	0.50	0.50
Observations	4,445	4,445	4,445	4,445
First stage F-Stat			95.04	81.28
Panel B-Duwe and Clark (2013)				
Percent change recidivism	-11.1	-8.4	15.5	18.5
Odds ratio	0.889 ∗	0.916		
	(0.061)	(0.063)		
IV coefficient estimate			0.031	0.037
			(0.052)	(0.055)
Mean new crime recid	0.20	0.20	0.20	0.20
Mean ever visited	0.69	0.69	0.69	0.69
Observations	5,547	5,547	5,547	5,547
First stage F-Stat			44.28	41.26

**P ≤ 0.1, **P ≤ 0.05, ***P ≤ 0.01. This table presents estimated percent change in probability of new crime recidivism within 3 years among prisoners receiving at least one visit while incarcerated. In Panel A, I drop prisoners serving more than 1 year and include controls for prior recidivism, age at release, sex, race, months incarcerated, crime type dummies, number of misconducts, and whether the individual was supervised after release from prison. In panel B, I exclude prisoners discharged at the time of release from prison and include controls for prior recidivism, age at release, sex, whether the individual is white, months incarcerated, crime type dummies, number of misconducts, supervision status after incarceration, whether the individual was admitted to prison due to a new crime, probation, or parole violation, whether the individual's jurisdiction was in a metro area (Polk and Warren counties), whether the individual participated in drug treatment, whether the individual participated in sex abuse treatment, and release year.*

preferred model, Column 6, the 95% confidence interval indicates that 1 additional visit per month (a 71% increase in visitation) will at most reduce the probability of recidivism by 2.3 percentage points. Even a 100% increase in visitation will reduce recidivism by no more than 3.2 percentage points. [32] In numerical terms, the point estimate suggests it would take 3,085 visits

Table 6. Base Results-New Crime Recidivism

	(1)	(2)	(3)	(4)	(5)	(6)
Visits per	0.011	0.014∗	-0.004	-0.001	-0.010	-0.007

[32] Note that the lack of significant effects is not the result of low power. My results are sufficiently precise that I would find visitation to have a statistically significant impact on visitation if one additional visit per month decreased recidivism by at least 1.6 percentage points.

month	(0.009)	(0.008)	(0.009)	(0.008)	(0.009)	(0.008)
LSR-R Score		0.008***	0.003***	0.003***	0.003***	0.003***
		(0.001)	(0.001)	(0.000)	(0.001)	(0.001)
Male			0.044***	0.003	0.044***	0.006
			(0.009)	(0.021)	(0.010)	(0.021)
Number of			-0.023***	-0.024***	-0.021***	-0.022***
dependents			(0.006)	(0.006)	(0.006)	(0.006)
Prior recidivist			0.355***	0.356***	0.352***	0.354***
			(0.013)	(0.013)	(0.015)	(0.015)
Total crimes			0.009***	0.009***	0.007***	0.006***
			(0.002)	(0.002)	(0.002)	(0.002)
Black			0.005	0.006	-0.005	-0.004
			(0.008)	(0.007)	(0.007)	(0.007)
Hispanic			0.007	0.009	0.010	0.011
			(0.012)	(0.013)	(0.012)	(0.013)
Other race			-0.011	-0.011	-0.004	-0.003
			(0.014)	(0.014)	(0.015)	(0.014)
County crime			0.000	0.000	-0.000	-0.000
rate			(0.000)	(0.000)	(0.000)	(0.000)
Mean visits per months	1.41	1.41	1.41	1.41	1.41	1.41
Observations	10,237	10,237	10,237	10,237	10,237	10,237
First stage F-Stat	206.46 1	66.88	183.99	159.27	114.96	195.99
LSI-R Score	No	Yes	Yes	Yes	Yes	Yes
Other controls	No	No	Yes	Yes	Yes	Yes
Facility by security Fixed Effects	No	No	No	Yes	No	Yes
Jurisdiction Fixed Effects	No	No	No	No	Yes	Yes

**P ≤ 0.1, **P ≤ 0.05, ***P ≤ 0.01. Dependent variable is new crime recidivism within 3 years of release from incarceration. Visits per month is the total number of visits during the inmate's incarceration divided by months served. Results based on an instrumental variable regression in which first facility distance was used to instrument for visits per month. The complete set of controls described in Section 4 are included, selected variables reported. Standard errors allow for clustering within jurisdiction and are reported in parentheses.*

to prevent one new crime recidivism. Even if we optimistically adopt the lower bound of a 95% confidence interval, it would still take 982 visits in order to prevent one new crime recidivism. [33]

The focus on new crime convictions in Table 6 may be masking beneficial reductions in technical violations caused by recidivism. Moreover, parolees who commit new crimes may be allowed in some cases to accept a technical violation instead. This practice prevents the costs associated with a new crime conviction and typically results in less additional prison time than would occur with a new crime conviction (Grattet et al., 2009). [34] To explore this potential, in Table 7 I present results for technical violations and returns to incarceration for any reason. In both panels and across all six columns, I find no evidence that visitation reduces recidivism. Again, the estimates are reasonably precise with the lower bound of a 95% confidence interval suggesting one additional visit per month will reduce technical violations by 1.3 percentage points and recidivism of any type by 2.6 percentage points. These values imply it would take 1,661 visits to prevent one technical violation (7,200 using the point estimate directly) and 841 visits to prevent a recidivism of any type (2,160 using the point estimate directly).

These findings are a dramatic departure from the literature and suggest that the purported benefits of visitation are likely the result of significant selection bias. [35] It is possible, however, that significant benefits occur among specific types of visitors. Similarly, the analysis above considers all variation in visitation while the prior literature has suggested the most significant benefits come from the extensive margin of visitation. As such, in the next section I explore whether certain family members or friends improve recidivism outcomes on both the intensive and extensive margins of visitation.

5.1. Heterogeneity

Earlier research in this area has suggested that certain types of visitors are more likely to reduce recidivism than others. Specifically, visits from parents and other relatives have been found to offer the greatest reductions

Table 7. Base Results-Technical and Total Recidivism

	(1)	(2)	(3)	(4)	(5)	(6)
Panel A: Technical Recidivism						
Visits per month	0.003	0.003	-0.009	-0.007	-0.005	-0.003
	(0.007)	(0.007)	(0.006)	(0.006)	(0.005)	(0.005)
Panel B: All Recidivism						
Visits per month	0.014**	0.017**	-0.013	-0.008	-0.015	-0.010
	(0.007)	(0.007)	(0.009)	(0.006)	(0.011)	(0.008)
Mean visits per months	1.41	1.41	1.41	1.41	1.41	1.41

[33] The value 982 comes from multiplying the number of visits per year required to achieve one fewer recidivism (545) by the average number of years served by prisoners in my sample (1.8).

[34] It is not clear how often this practice occurs in Iowa. However, because I am identifying differences in recidivism based on visitation, systematic mislabeling of new crimes as parole violations will only cause bias if visited prisoners are more or less likely to have new crimes prosecuted as parole violations.

[35] Selection bias is a key challenge in evaluating many prison policies (Lee, 2017).

Observations	10,237	10,237	10,237	10,237	10,237	10,237
First stage F-Stat	206.46	166.88	183.99	159.27	114.96 1	95.99
LSI-R Score	No	Yes	Yes	Yes	Yes	Yes
Other controls	No	No	Yes	Yes	Yes	Yes
Facility by security Fixed Effects	No	No	No	Yes	No	Yes
Jurisdiction Fixed Effects	No	No	No	No	Yes	Yes

**P ≤ 0.1, **P ≤ 0.05, ***P ≤ 0.01. Dependent variable is either technical (Panel A) or any (Panel B) recidivism within* [3] *years of release from incarceration. Visits per month is the total number of visits during the inmate's incarceration divided by months served. Results based on an instrumental variable regression in which first facility distance was used to instrument for visits per month. The complete set of controls described in Section* [4] *are included, but not reported. Standard errors allow for clustering within jurisdiction and are reported in parentheses.*

in recidivism in earlier research (Duwe and Clark, 2013). To test this possibility, in Table 8 I present results for a variety of visitor types. Across all types of visitors, I find no evidence that receiving a visit reduces prisoner recidivism. [36] On the other hand, visitation from some types of visitors, such as spouses, are sufficiently rare that standard errors are imprecise. It should be noted, however, that the first stage F-stat for spousal visits is marginal for causal interpretation at 10.96. [37]

In addition to visitor type, there is significant variation in whether prisoners were ever visited, particularly by specific types of visitors. Nearly 40% of prisoners in Iowa are never visited while incarcerated. As seen in Table 1, these prisoners are different on a number of important margins including sentence length, jurisdiction distance, and LSI-R score. The prior literature

Table 8. Extensive and Intensive Margin

	(1) Total	(2) Parent	(3) Spouse	(4) Child	(5) Other	(6) Friend

[3] LSI-R stands for the Level of Service Inventory-Revised score and is a risk assessment tool designed to predict an offender's risk of recidivism. It is based on ten distinct factors one of which is the strength of the prisoner's family and marital relationships (Kaemingk, 2015).

[4] This is not the first paper to use distance as an instrument for visitation. Tahamont (2011) used distance as an instrument for visitation in order to predict in-prison misconduct. Cochran et al. (2016) find a significant negative relationship between distance from home jurisdiction and number of visits received. Lindsey et al. (2017) find a nonlinear relationship between distance and misconduct that was partially mitigated by visitation. There is also significant precedent for using distance as an instrumental variable more broadly. Some of the best examples include Card (1993), Frankel and Romer (1999), and Tavares (2003).

[36] In Appendix Table A9, I present results that do not include a control for LSI-R score and that do not employ an instrumental variable identification strategy. This is designed to highlight that my results are not driven by sample differences relative to earlier research. I find consistently negative point estimates with total visits and visits from friends significant at the 99% level.

[37] Table A10 in the Appendix replicates these results for recidivism of any type.

					Relative	
Panel A: All Variation						
Visits per month	-0.007	-0.024	-0.112	-0.044	-0.035	-0.022
	(0.008)	(0.030)	(0.118)	(0.050)	(0.042)	(0.026)
Mean visits per month	1.41	0.36	0.11	0.23	0.30	0.41
Observations	10,237	10,237	10,237	10,237	10,237	10,237
First stage F-Stat	195.99	51.94	10.96	56.47	45.47	114.92
Panel B: Extensive Margin						
Any visits?	-0.081	-0.116	-0.463	-0.157	-0.128	-0.101
	(0.078)	(0.131)	(0.401)	(0.140)	(0.121)	(0.103)
Mean ever visited	0.62	0.38	0.07	0.22	0.37	0.39
Observations	10,237	10,237	10,237	10,237	10,237	10,237
First stage F-Stat	69.43	22.85	5.08	17.06	16.61	37.79
Panel C: Intensive Margin						
Visits per month	-0.003	0.010	-0.017	-0.036	B-0.017	-0.030*
	(0.009)	(0.021)	(0.031)	(0.022)	(0.032)	(0.017)
Mean visits per month	2.28	0.94	1.51	1.05	0.80	1.05
Observations	6,333	3,898	764	2,232	3,785	3,945
First stage F-Stat	239.62	56.22	8.53	45.53	52.26	95.73

**P ≤ 0.1, **P ≤ 0.05, ***P ≤ 0.01. Dependent variable is new crime recidivism within 3 years of release from incarceration. Any Visits is a dummy variable equal to one if the prisoner was visited at any point during their incarceration and 0 otherwise. Visits per month is the total number of visits during the inmate's incarceration divided by months served. Results based on an instrumental variable regression in which first facility distance was used to instrument for visits per month. The complete set of controls described in Section 4 is included but not reported. Panel C restricts the sample to prisoners receiving at least one visit during their incarceration. Standard errors allow for clustering within jurisdiction and are reported in parentheses.*

has also found that these unvisited prisoners are particularly likely to recidivate (Bales and Mears, 2008). In order to test whether getting at least one visit causes recidivism to fall, I estimate Equation (2) but measure visits as a dummy variable equal to 0 if the prisoner was never visited and 1 if the prisoner was visited. As is common in the literature, I present results by visitor type, allowing for heterogeneity in the responsiveness of recidivism based on the relationship the prisoner has with that visitor.

Results are presented in Panel B of Table 8. Unfortunately, standard errors are imprecise. Point estimates suggest that visited prisoners are 8.1 percentage points less likely to recidivate though that value is not significantly different from 0. An important caveat in interpreting these results is that the first stage F-

statistic for "spouses" is below the threshold at which causal interpretation is recommended (Staiger and Stock 1994;

Bound et al. 1995). The reason behind these weak values is the rarity of visitors of that type. Among one hundred prisoners, only seven are visited by a spouse while incarcerated. Like the "child" category, the rarity of these visit types is likely driven by the fact that many prisoners are unmarried and do not have children. As is often the case where first stage estimates are weak, the standard errors on these estimates are exceedingly large and meaningful improvements in recidivism cannot be ruled out. As should be expected, distance is not as predictive for whether a prisoner is ever visited as it is for the frequency with which visitation occurs. Furthermore, the extensive margin of visitation is far more likely to indicate whether a prisoner has some sort of support outside of prison. If visitation itself is the cause of reduced recidivism, the intensive margin is more likely to cleanly identify its effect.

In Panel C, I consider variation in the frequency with which prisoners were visited conditional on being visited at least once by the indicated type of visitor. Any prisoners who did not receive a visit from the indicated visitor type during their sentence were removed from the sample. Using only variation on the intensive margin of variation, I find weak evidence that visits from friends may reduce recidivism. Despite this, coefficient estimates are small and standard errors are sufficiently precise to rule out large reductions in recidivism. Even a 100% increase in visits from friends is only expected to reduce recidivism by 3 percentage points. Moreover, the lower bound of a 95% confidence interval suggests that a 100% increase in total visitation would reduce the probability of recidivism by 4.7 percentage points. As in Panel B, the first stage F-statistic for the spouse category falls below the threshold where causal estimation is advised due to the rarity of spousal visitation.

Two other forms of heterogeneity in visitation have been studied by the previous literature. First, the timing of visitation. In Table 9, I consider only visitation at the beginning and end of each prisoner's sentence as well as the difference between number of visits at the beginning and number of visits at the end. This difference measure is designed to capture the possibility that receiving many visits early on and few later or receiving few visits early on and many later may affect recidivism even if the raw number of visits in either period does not. In the first three columns, I restrict attention to visitation occurring in the first and last 6 months of each individual's

Table 9. Visitation Timing

	(1)	(2)	(3)	(4)	(5)	(6)
	First 6 Months	Last 6 Months	Difference	First Year	Last Year	Difference
Visits per month	-0.007	-0.007	0.144	-0.008	-0.009	0.039
	(0.009)	(0.008)	(0.116)	(0.009)	(0.010)	(0.038)
Mean visits	1.16	1.48	0.37	1.18	1.28	0.24
Observations	10,237	10,237	5,925	10,237	10,237	2,746
First stage F-Stat	147.08	179.47	2.119	119.24	105.35	7.06

**P ≤ 0.1, **P ≤ 0.05, ***P ≤ 0.01. Dependent variable is new crime recidivism within 3 years of release from incarceration. Each Column adjusts which visits are considered. Columns 1 and 4 include only*

visitation occurring during the first 6 months (year) of incarceration. Columns 2 and 5 include only visitation occurring in the final 6 months (year) of incarceration. Columns 3 and 6 are based on the difference in the number of visits received between the end and beginning of incarceration. Difference values are based on total difference rather than difference per month. To prevent overlap in the difference measure, individuals serving <1 year are omitted from Column 3 and individuals serving <2 years are omitted from Column 6. Results based on an instrumental variable regression in which first facility distance was used to instrument for visits. The complete set of controls described in Section [4] is included but not reported. Standard errors allow for clustering within jurisdiction and are reported in parentheses.

sentence. In Columns 4-6, I broaden this to the first and last year. To avoid overlap, I exclude prisoners serving less than 1 year in Columns 1 and 3 and prisoners serving less than two years in columns 4-6. Across all six columns, I find no evidence that visits during a particular part of the sentence significantly reduce recidivism.

Finally, I consider variation in the number of unique visitors. In Table 10, I present results based on the number of unique visitors for each prisoner. In Columns 2 and 3, I restrict this to visitors in the first and last years of each prisoner's sentence. As in the previous table, I exclude individuals serving <2 years from this analysis. I again find no statistically significant effect of visitation. While the coefficient on unique visitors in the first year predicts a 3.5 percentage point decrease in recidivism, the standard errors are sufficiently large that I cannot rule out an increase in recidivism. This is highlighted by the coefficient on unique visitors in the last year of incarceration, which is positive although also insignificant.

In addition to recidivism, first facility distance allows estimation of the impact of visitation on misconduct, days served, and whether the prisoner transferred to a lower security facility conditional on transferring at all. [38]

Table 10. Number of Unique Visitors

	(1)	(2)	(3)
Number of unique visitors	Ever	First Year	Last Year
	-0.011	-0.035	0.021
	(0.011)	(0.045)	(0.061)
Mean unique visitors	2.97	1.05	1.14
Observations	10,237	2,746	2,746
First stage F-Stat	31.25	27.09	3.82

[4] This is not the first paper to use distance as an instrument for visitation. Tahamont (2011) used distance as an instrument for visitation in order to predict in-prison misconduct. Cochran et al. (2016) find a significant negative relationship between distance from home jurisdiction and number of visits received. Lindsey et al. (2017) find a nonlinear relationship between distance and misconduct that was partially mitigated by visitation. There is also significant precedent for using distance as an instrumental variable more broadly. Some of the best examples include Card (1993), Frankel and Romer (1999), and Tavares (2003).

[38] Two additional outcome variables, whether the prisoner transferred and whether the transfer was to a facility closer to their home jurisdiction were also considered. Unfortunately, because the IDOC intentionally sorts prisoners towards their home jurisdiction, first facility distance is not excludable for these outcome variables. A greater first facility distance, regardless of visitation, predicts transfers and transfers towards the home jurisdiction conditional on a transfer occurring.

**P ≤ 0.1, **P ≤ 0.05, ***P ≤ 0.01. Dependent variable is new crime recidivism within 3 years of release from incarceration. Column 1 uses the total number of unique visitors to predict recidivism. Columns [2] and [3] restrict the measure to the number of unique visitors in the first and last year of incarceration. Results based on an instrumental variable regression in which first facility distance was used to instrument for number of unique visitors. The complete set of controls described in Section 4 is included but not reported. Standard errors allow for clustering within jurisdiction and are reported in parentheses.*

In Table 11, I estimate the impact of visitation on in-prison misconduct, days served, and the probability of transferring to a lower security prison. For all outcome variables, I use a model similar to Equation 2. Column 3 restricts the sample to those prisoners who transferred at least once during their incarceration. Because many prisoners are never transferred during their incarceration, the number of observations falls dramatically. I find that prisoners receiving more visits as a result of their relatively close proximity to friends and family are less likely to commit a misconduct and, potentially as a direct result, serve less time in prison. This result is reasonable in magnitude in addition to being statistically significant. One additional visit per month is expected to reduce misconduct by 14% and days incarcerated by 11%. On the other hand, visitation does not appear to make a prisoner transfer to a lower security facility more likely.

5.2. Robustness

As a robustness check, I next examine alternative measures of distance, including those based on actual visits received. Because these distance mea-

Table 11. Other Impacts of Visitation

	(1)	(2)	(3)
	Misconduct	Days Served	Lower Security
Visits per month	-0.665***	-71.504***	0.030
	(0.211)	(13.714)	(0.072)
Mean visits per month	1.41	1.41	1.36
Observations	10,237	10,237	2,275
First stage F-Stat	195.99	195.99	1.35

**P ≤ 0.1, **P ≤ 0.05, ***P ≤ 0.01. In Column 1, the dependent variable is number of misconducts citations. In Column 2, the dependent variable is the number of days the individual was incarcerated. In Column 3, the dependent variable is whether the individuals transferred to a lower security facility, conditional on transferring at all. Visits per month is the total number of visits during the inmate's incarceration divided by months served. The complete set of controls described in Section 4 is included but not reported. Standard errors allow for clustering within jurisdiction and are reported in parentheses.*

sures introduce a new potential source of bias, I also explore variation in the stability of visitor locations.

[2] Some of the key papers suggesting visitation reduces recidivism include Ryan and Yang (2005), Bales and Mears (2008), Derkzen et al. (2009), Mears et al. (2012), Duwe and Clark (2013), Barrick et al. (2014), Cochran (2014), and Mitchell et al. (2016). Cochran (2012) and Tahamont (2011) also find that visitation reduces in-prison misconduct.

[3] LSI-R stands for the Level of Service Inventory-Revised score and is a risk assessment tool designed to predict an offender's risk of recidivism. It is based on ten distinct factors one of which is the strength of the prisoner's family and marital relationships (Kaemingk, 2015).

Table 12 presents results based on the total number of visits a prisoner received using a variety of distance calculations and sample restrictions. In all cases, estimates are presented on the intensive margin only as many of the distance measures employed in this section are not available for prisoners who never receive a visit. Each cell is a unique estimate of an instrumental variable model similar to Equations (1) and (2). Each row details the sample restriction introduced for that specification while each column indicates the distance measure used.

Specifically, Column 1 presents results for the first facility distance measure used above. Column 2 instead uses jurisdiction distance, the average daily distance between a prisoner's convicting jurisdiction and facility. Column 3 presents estimates for the weighted average distance of all visitors in the indicated group. This distance is calculated as the total distance traveled for all visits divided by the total number of visits. Column 4 is similar to Column 3 but uses the distance traveled by the most frequent visitor as the visitation distance. Finally, in Column 5, distance is calculated by summing the distance traveled by each unique visitor and dividing by the total number of unique visitors. Unlike the previous two columns, frequency of visitation does not influence this distance measure.

Across all columns, the first row presents results among all prisoners who received at least one visit. In Row 2, I additionally exclude prisoners

Table 12. Other Distance Measures

		(1) First Facility	(2) Jurisdiction	(3) Weighted Average	(4) Modal	(5) Simple Average
All visitors	b	-0.003	-0.001	0.008	0.005	0.005
	SE	(0.009)	(0.007)	(0.007)	(0.009)	(0.012)
	Mean	2.28	2.28	2.28	2.28	2.28
	F-Stat	239.62	276.58	31.10	23.02	14.23
	N	6,333	6,333	6,333	6,333	6,333
No same security transfers	b	0.003	0.001	0.000	0.001	-0.013
	SE	(0.008)	(0.007)	(0.009)	(0.010)	(0.014)
	Mean	2.40	2.40	2.40	2.40	2.40
	F-Stat	233.96	255.80	31.72	29.80	14.62
	N	5,291	5,291	5,291	5,291	5,291
Visitors from Iowa	b	0.000	-0.000	-0.014	-0.012	-0.047 **
	SE	(0.008)	(0.007)	(0.010)	(0.009)	(0.024)
	Mean	2.48	2.48	2.48	2.48	2.48
	F-Stat	219.22	250.96	32.15	28.079	5.28
	N	4,994	4,994	4,994	4,994	4,994
No move visitors	b	-0.001	-0.004	-0.006	-0.005	-0.011
	SE	(0.009)	(0.007)	(0.008)	(0.008)	(0.017)
	Mean	2.79	2.79	2.79	2.79	2.79
	F-Stat	146.16	202.57	61.88	92.77	10.24
	N	4,798	4,798	4,798	4,798	4,798

**P ≤ 0.1, **P ≤ 0.05, ***P ≤ 0.01. Dependent variable is new crime recidivism within 3 years of release from incarceration. Each cell reports results based on an instrumental variable regression in which the indicated distance measure was used to instrument for visits per month. Only prisoners reeving at least one visit during incarceration are included. The sample is subsequently restricted to prisoners that did not transfer to another facility with the same security level (Row 2), prisoners exclusively visited by visitors originating in Iowa (Row 3) and prisoners exclusively visited by visitors that did not move during the period of imprisonment (Row 4). Distance measure calculations described in the text. The complete set of controls described in Section 4 is included in each specification but not reported. Standard errors allow for clustering within jurisdiction and are reported in parentheses. SE=Standard Error.*

who transferred to a different facility with the same security designation. [39] The motivation for this exclusion is that prisoners may be able to affect their distance from visitors either by requesting a transfer or by behaving their way into better/worse facilities. To the extent that the prisoners most motivated to move closer to their visitors are more likely to be visited and are more likely to have a strong support network, this type of prisoner movement poses a potential threat to my identification strategy. If prisoners with strong support networks are differentially able and/or motivated to reduce

the distance their visitors must travel, it will cause distance to be correlated with support network strength and potentially recidivism. [40] Row 3 further restricts this sample to those prisoners exclusively receiving visits that originated in Iowa. [41] Finally, Row 4 excludes prisoners who received visits from the same visitor (by relation) originating in more than one location as well as prisoners who did not receive their first visit for at least six months after incarceration. [42] The justification for this exclusion is a concern that visitors may be moving to be closer to the prisoners they intend to visit. [43]

Changing the sample and distance measure has little effect on my estimates. Of the 20 point estimates in Table 12, I find only one cell that suggests a statistically significant negative relationship between visitation and recidivism. Eight of the twenty coefficient estimates are positive. Moreover, these results do not adjust standard errors to account for multiple hypothesis testing. With such an adjustment, none of the results would be significant. In sum, this final robustness check confirms my earlier finding that visitation does not meaningfully reduce recidivism.

6. Conclusion

Understanding the relationship between in-person visitation and recidivism is increasingly important with recidivism rates continuing to climb and technological innovations offering low cost substitutes to visitation. Unfortunately, the significant literature devoted to this topic has been unable to separate the

[39] Prisoners may not request transfers to prisons with a different security level designation.

[40] A stronger version of this sample limitation is to restrict my sample to only those prisoners that did not change facilities at all during their sentence (with the exception of moving from IMCC to their main facility). This restriction yields results that are consistent with my main analysis. See Appendix Table A2 for details.

[41] Two prisoners received visits originating outside of the United States. All results are robust to the exclusion of these two prisoners.

[42] Excluding prisoners who did not receive a visit during the first 6 months of incarceration is designed to ensure that families are not moving to follow prisoners before visiting for the first time.

[43] Appendix Table A11 replicates these results for recidivism of any type.

causal effect of visitation on recidivism from the selection bias inherent in comparing visited prisoners to those that did not receive a visit. I document that controlling for LSI-R score, a risk measure that takes the strength of each prisoner's relationship with their family, largely eliminates

the estimated benefits of visitation. In addition, I use the distance between an inmate's jurisdiction and the first facility to which they were assigned as an instrumental variable for visitation. This instrumental variable approach allows for causal estimates of the role of visitation in preventing recidivism. I find no evidence that visitation reduces recidivism.

Earlier research in this area has estimated the combined effect of a strong support network and increased visitation and finds that this combination can be a potent tool for reducing recidivism (Ryan and Yang, 2005; Bales and Mears, 2008; Mears et al., 2012; Duwe and Clark, 2013; Cochran, 2014; Barrick et al., 2014; Liu et al., 2016). That I find no recidivism effect of visitation when the confounding influence of prisoner support networks is removed suggests that anything prisons can do to strengthen or create a support network outside of prison will lead to significant recidivism reductions. This will be particularly beneficial for prisoners who would not otherwise have a support network that can help the prisoner transition back to society upon release.

In addition, the overall trend towards technology-based communication opportunities, and the subsequent reductions in visitation they are likely to cause, should not be a major source of concern. Qualitative studies have found large social and economic costs to families that attempt to maintain close connections through in-person visitation. To the extent that cost-effective alternatives can be made available, these families may actually enjoy significant benefits from a shift away from in-prison visitation as the norm (Christian et al., 2006).

Importantly, my primary results can only speak to those prisoners whose visitation frequency is impacted by distance. While there is reason to believe that a large portion of prisoners are affected by distance, there are likely some prisoners who would have experienced similar visitation rates regardless of the distance their visitors had to travel. To the extent that the visitation sensitive to distance is the least likely to be impactful, it may be the case that important benefits of visitation are being missed in this analysis. Visitation may also improve behavior among inmates by relieving the boredom and monotony of prison life and by creating an important incentive that can entice prisoners to behave well (Wheatley and Jewkes, 2007; Cochran, 2012). I find that in-person prison visitation has a positive impact on the visited. Specifically, I find that one additional visit per month, a 71% increase

in visitation, would reduce misconduct by 14% and time served by 11%. While my estimates suggest that marginal increases in visitation will not lead to reduced recidivism, they should not be used to justify the complete removal of in-person visitation without more research that examines all costs and benefits of the program. Instead, the central policy prescription evident in these results is an increased focus on building strong support networks for incarcerated people that will be available after release.

A. Appendix

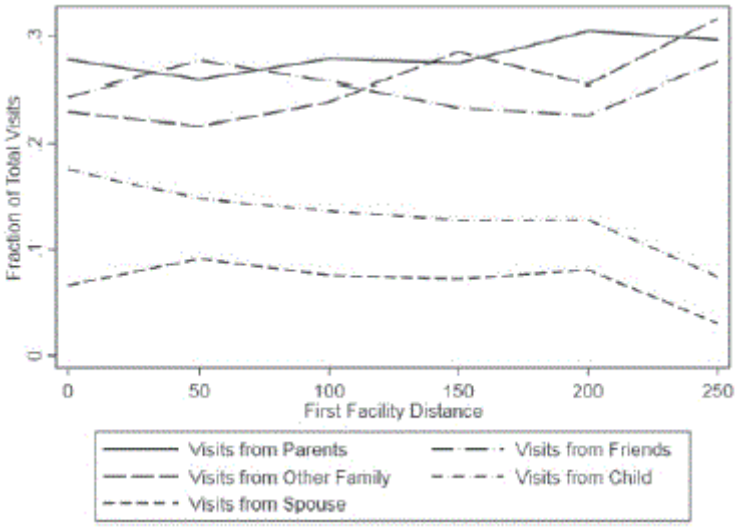

Figure A1. *Type of Visitor by Distance.*

This figure indicates the fraction of total visits made up of the indicated visitor types for each 50-mile distance bin.

Table A1. Dropping Prisons That Only Host One Type of Prisoner

	(1) Total	(2) Parent	(3) Spouse	(4) Child	(5) Other Relative	(6) Friend
Visits per month	-0.008	-0.026	-0.161	-0.066	-0.042	-0.022
	(0.012)	(0.044)	(0.222)	(0.094)	(0.064)	(0.036)
Mean visits per month	1.27	0.33	0.10	0.18	0.28	0.37
Observations	6,397	6,397	6,397	6,397	6,397	6,397
First stage F-Stat	49.36	24.82	6.55	18.85	20.55	41.20

**P ≤ 0.1, **P ≤ 0.05, ***P ≤ 0.01. Dependent variable is new crime recidivism within 3 years of release from incarceration. Visits per month is the total number of visits during the inmate's incarceration divided by months served. Results based on an instrumental variable regression in which first facility distance was used to instrument for visits per month. The complete set of controls described in Section 4 is included but not reported. The sample is restricted to exclude prisons that host only one type of prisoner (e.g. women, minimum-security). Standard errors allow for clustering within jurisdiction and are reported in parentheses.*

Table A2. Dropping Prisoners that Transferred Facilities During Incarceration

	(1) Total	(2) Parent	(3) Spouse	(4) Child	(5) Other Relative	(6) Friend

Visits per month	0.001	0.003	0.035	0.008	0.007	0.003
	(0.008)	(0.028)	(0.137)	(0.049)	(0.040)	(0.024)
Mean visits per month	1.43	0.363	0.115	0.23	0.29	0.42
Observations	7,655	7,655	7,655	7,655	7,655	7,655
First stage F-Stat	136.73	48.48	9.75	48.02	38.91	116.62

**P ≤ 0.1, **P ≤ 0.05, ***P ≤ 0.01. Dependent variable is new crime recidivism within 3 years of release from incarceration. Visits per month is the total number of visits during the inmate's incarceration divided by months served. Results based on an instrumental variable regression in which first facility distance was used to instrument for visits per month. The complete set of controls described in Section 4 is included but not reported. The sample is restricted to include only prisoners that did not transfer during their incarceration. Standard errors allow for clustering within jurisdiction and are reported in parentheses.*

Table A3. IV Probit Model

	(1)	(2)	(3)	(4)	(5)	(6)
	Total	Parent	Spouse	Child	Other Relative	Friend
Visits per month	-0.026	-0.088	-0.390	-0.160	-0.130	-0.081
	(0.038)	(0.143)	(0.526)	(0.242)	(0.196)	(0.123)
Mean visits per month	1.41	0.36	0.11	0.23	0.30	0.41
Observations	10,237	10,237	10,237	10,237	10,237	10,237
First stage F-Stat	195.99	51.94	10.96	56.47	45.47 1	14.92

**P ≤ 0.1, **P ≤ 0.05, ***P ≤ 0.01. Dependent variable is new crime recidivism within 3 years of release from incarceration. Visits per month is the total number of visits during the inmate's incarceration divided by months served. Results based on an instrumental variable probit model in which first facility distance was used to instrument for visits per month. The complete set of controls described in Section [4] is included but not reported. Standard errors allow for clustering within jurisdiction and are reported in parentheses.*

Table A4. Dropping Prisoners Receiving Visits From O'Brien County

	(1)	(2)	(3)	(4)	(5)	(6)

[4] This is not the first paper to use distance as an instrument for visitation. Tahamont (2011) used distance as an instrument for visitation in order to predict in-prison misconduct. Cochran et al. (2016) find a significant negative relationship between distance from home jurisdiction and number of visits received. Lindsey et al. (2017) find a nonlinear relationship between distance and misconduct that was partially mitigated by visitation. There is also significant precedent for using distance as an instrumental variable more broadly. Some of the best examples include Card (1993), Frankel and Romer (1999), and Tavares (2003).

	Total	Parent	Spouse	Child	Other Relative	Friend
Visits per month	-0.007	-0.024	-0.109	-0.043	-0.035	-0.021
	(0.008)	(0.030)	(0.119)	(0.050)	(0.042)	(0.026)
Mean visits per month	1.41	0.36	0.11	0.23	0.30	0.41
Observations	10,206	10,206	10,206	10,206	10,206	10,206
First stage F-Stat	194.45	51.70	11.13	56.88	45.21 1	14.40

**P ≤ 0.1, **P ≤ 0.05, ***P ≤ 0.01. Dependent variable is new crime recidivism within 3 years of release from incarceration. Visits per month is the total number of visits during the inmate's incarceration divided by months served. Results based on an instrumental variable regression in which first facility distance was used to instrument for visits per month. The complete set of controls described in Section 4 is included but not reported. The sample is restricted to prisoners that did not receive visits from O'Brien county and did not have O'Brien county as their jurisdiction. Standard errors allow for clustering within jurisdiction and are reported in parentheses.*

Table A5. Only Using a Linear Distance Instrument

	(1) Total	(2) Parent	(3) Spouse	(4) Child	(5) Other Relative	(6) Friend
Visits per month	-0.008	-0.031	-0.130	-0.052	-0.042	-0.026
	(0.007)	(0.027)	(0.106)	(0.044)	(0.038)	(0.023)
Mean visits per month	1.41	0.36	0.11	0.23	0.30	0.41
Observations	10,237	10,237	10,237	10,237	10,237	10,237
First stage F-Stat	71.76	45.32	15.94	70.44	40.35	78.72

**P ≤ 0.1, **P ≤ 0.05, ***P ≤ 0.01. Dependent variable is new crime recidivism within 3 years of release from incarceration. Visits per month is the total number of visits during the inmate's incarceration divided by months served. Results based on an instrumental variable regression in which first facility distance was used to instrument for visits per month. The complete set of controls described in Section 4 is included but not reported. Standard errors allow for clustering within jurisdiction and are reported in parentheses.*

Table A6. Instrumenting for Distance with Close, Medium, and Far Dummies

	(1) Total	(2) Parent	(3) Spouse	(4) Child	(5) Other Relative	(6) Friend
Visits per	-0.007	-0.026	-0.119	-0.043	-0.035	-0.021

month						
	(0.009)	(0.035)	(0.151)	(0.057)	(0.047)	(0.029)
Mean visits per month	1.41	0.36	0.11	0.23	0.30	0.41
Observations	10,237	10,237	10,237	10,237	10,237	10,237
First stage F-Stat	66.02	35.33	10.86	53.24	26.55	63.77

**P ≤ 0.1, **P ≤ 0.05, ***P ≤ 0.01. Dependent variable is new crime recidivism within 3 years of release from incarceration. Visits per month is the total number of visits during the inmate's incarceration divided by months served. Results based on an instrumental variable regression in which first facility distance dummies were used to instrument for visits per month. The complete set of controls described in Section [4] is included but not reported. Standard errors allow for clustering within jurisdiction and are reported in parentheses.*

Table A7. Dropping Prisoners From Des Moines

	(1)	(2)	(3)	(4)	(5)	(6)
	Total	Parent	Spouse	Child	Other Relative	Friend
Visits per month	0.007	0.026	0.090	0.043	0.035	0.022
	(0.006)	(0.023)	(0.123)	(0.041)	(0.032)	(0.020)
Mean visits per month	1.41	0.37	0.11	0.23	0.31	0.38
Observations	6,736	6,736	6,736	6,736	6,736	6,736
First stage F-Stat	106.35	36.52	5.93	30.07	28.86	85.86

**P ≤ 0.1, **P ≤ 0.05, ***P ≤ 0.01. Dependent variable is new crime recidivism within 3 years of release from incarceration. Visits per month is the total number of visits during the inmate's incarceration divided by months served. Results based on an instrumental variable regression in which first facility distance was used to instrument for visits per month. The complete set of controls described in Section [4] is included but not reported. The sample is restricted to jurisdiction counties other than Polk and Black Hawk. Standard errors allow for clustering within jurisdiction and are reported in parentheses.*

[4] This is not the first paper to use distance as an instrument for visitation. Tahamont (2011) used distance as an instrument for visitation in order to predict in-prison misconduct. Cochran et al. (2016) find a significant negative relationship between distance from home jurisdiction and number of visits received. Lindsey et al. (2017) find a nonlinear relationship between distance and misconduct that was partially mitigated by visitation. There is also significant precedent for using distance as an instrumental variable more broadly. Some of the best examples include Card (1993), Frankel and Romer (1999), and Tavares (2003).

[4] This is not the first paper to use distance as an instrument for visitation. Tahamont (2011) used distance as an instrument for visitation in order to predict in-prison misconduct. Cochran et al. (2016) find a significant negative relationship between distance from home jurisdiction and number of visits received. Lindsey et al. (2017) find a nonlinear relationship between distance and misconduct that was partially mitigated by visitation. There is also significant precedent for using distance as an instrumental variable more broadly. Some of the best examples include Card (1993), Frankel and Romer (1999), and Tavares (2003).

Table A8. Visits in the Last Year of Incarceration

	(1)	(2)	(3)	(4)	(5)	(6)
	Total	Parent	Spouse	Child	Other Relative	Friend
Visits per month	-0.009	-0.030	-0.142	-0.056	-0.043	-0.028
	(0.010)	(0.039)	(0.150)	(0.065)	(0.054)	(0.035)
Mean visits per month	1.28	0.33	0.10	0.21	0.28	0.36
Observations	10,237	10,237	10,237	10,237	10,237	10,237
First stage F-Stat	108.35	34.01	8.57	43.76	32.05	59.15

**P ≤ 0.1, **P ≤ 0.05, ***P ≤ 0.01. Dependent variable is new crime recidivism within 3 years of release from incarceration. Visits per month is the number monthly visits during the inmate's final year of incarceration. Results based on an instrumental variable regression in which first facility distance was used to instrument for visits per month. The complete set of controls described in Section 4 is included but not reported. Standard errors allow for clustering within jurisdiction and are reported in parentheses.*

Table A9. Logit Results by Visitor Type

	(1)	(2)	(3)	(4)	(5)	(6)
	Total	Parent	Spouse	Child	Other Relative	Friend
Visits per month	-0.038***	-0.037	-0.019	-0.039	-0.089	-0.091***
	(0.013)	(0.037)	(0.031)	(0.034)	(0.059)	(0.022)
Percent effect	-3.7	-3.6	-1.9	-3.9	-8.5	-8.7
Odds ratio	0.963	0.964	0.981	0.961	0.915	0.913
Mean recid rate	0.19	0.19	0.19	0.19	0.19	0.19
Mean visits per month	1.41	0.36	0.11	0.23	0.30	0.41
Observations	10,237	10,237	10,237	10,237	10,237	10,237

**P ≤ 0.1, **P ≤ 0.05, ***P ≤ 0.01. Dependent variable is new crime recidivism within 3 years of release from incarceration. Visits per month is the total number of visits during the inmate's incarceration divided by months served. Results based on a logit regression. Except for LSI-R score, the complete set of controls described in Section 4 is included but not reported. Standard errors allow for clustering within jurisdiction and are reported in parentheses.*

Table A10. Extensive and Intensive Margin-All Recidivism

	(1)	(2)	(3)	(4)	(5)	(6)

	Total	Parent	Spouse	Child	Other Relative	Friend
Panel A: All Variation						
Visits per month	-0.010	-0.036	-0.171	-0.067	-0.053	-0.032
	(0.008)	(0.031)	(0.114)	(0.052)	(0.043)	(0.027)
Mean visits per month	1.41	0.36	0.11	0.23	0.30	0.41
Observations	10,237	10,237	10,237	10,237	10,237	10,237
First stage F-Stat	195.99	51.94	10.96	56.47	45.47	114.92
Panel B: Extensive Margin						
Any visits?	-0.137*	-0.180	-0.896*	-0.286*	-0.217*	-0.167
	(0.080)	(0.132)	(0.508)	(0.153)	(0.118)	(0.103)
Mean ever visited	0.62	0.38	0.07	0.22	0.37	0.39
Observations	10,237	10,237	10,237	10,237	10,237	10,237
First stage F-Stat	69.43	22.85	5.08	17.06	16.61	37.79
Panel C: Intensive Margin						
Visits per month	-0.006	-0.017	0.003	-0.032	-0.004	-0.022
	(0.009)	(0.024)	(0.043)	(0.030)	(0.034)	(0.019)
Mean visits per month	2.28	0.94	1.51	1.05	0.80	1.05
Observations	6,333	3,898	764	2,232	3,785	3,945
First stage F-Stat	239.62	56.22	8.53	45.53	52.26	95.73

**P ≤ 0.1, **P ≤ 0.05, ***P ≤ 0.01. Dependent variable is recidivism within 3 years of release from incarceration. Any Visits is a dummy variable equal to one if the prisoner was visited at any point during their incarceration and 0 otherwise. Visits per month is the total number of visits during the inmate's incarceration divided by months served. Results based on an instrumental variable regression in which first facility distance was used to instrument for visits per month. The complete set of controls described in Section 4 is included but not reported. Panel C restricts the sample to prisoners receiving at least one visit during their incarceration. Standard errors allow for clustering within jurisdiction and are reported in parentheses.*

Table A11. Other Distance Measures-All Recidivism

		(1) First Facility	(2) Jurisdiction	(3) Weighted Average	(4) Modal	(5) Simple Average
All visitors	b	-0.006	-0.003	0.008	0.005	0.007
	SE	(0.009)	(0.007)	(0.008)	(0.009)	(0.012)
	Mean	2.28	2.28	2.28	2.28	2.28

	F-Stat	239.62	276.58	31.10	23.02	14.23
	N	6,333	6,333	6,333	6,333	6,333
No same	b	-0.000	B-0.000	0.005	0.004	-0.003
security transfers	SE	(0.008)	(0.007)	(0.010)	(0.011)	(0.017)
	Mean	2.40	2.40	2.40	2.40	2.40
	F-Stat	233.96	255.80	31.72	29.80	14.62
	N	5,291	5,291	5,291	5,291	5,291
Visitors from Iowa	b	-0.002	-0.001	-0.012	-0.012	-0.039*
	SE	(0.008)	(0.007)	(0.009)	(0.009)	(0.023)
	Mean	2.48	2.48	2.48	2.48	2.48
	F-Stat	219.22	250.96	32.15	28.08	5.28
	N	4,994	4,994	4,994	4,994	4,994
No move visitors	b	-0.008	-0.006	-0.011	-0.005	-0.025
	SE	(0.011)	(0.008)	(0.008)	(0.007)	(0.022)
	Mean	2.79	2.79	2.79	2.79	2.79
	F-Stat	146.16	202.57	61.88	92.77	10.24
	N	4,798	4,798	4,798	4,798	4,798

**P ≤ 0.1, **P ≤ 0.05, ***P ≤ 0.01. Dependent variable is recidivism within 3 years of release from incarceration. Each cell reports results based on an instrumental variable regression in which the indicated distance measure was used to instrument for visits per month. Only prisoners reeving at least one visit during incarceration are included. The sample is subsequently restricted to prisoners that did not transfer to another facility with the same security level (Row 2), prisoners exclusively visited by visitors originating in Iowa (Row 3) and prisoners exclusively visited by visitors that did not move during the period of imprisonment (Row 4). Distance measure calculations described in the text. The complete set of controls described in Section 4 is included in each specification but not reported. Standard errors allow for clustering within jurisdiction and are reported in parentheses. SE=Standard Error.*

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