Parolees' physical closeness to social services: A study of California Parolees

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Parolees' physical closeness to social services: A study of California Parolees

Abstract

This study examines the proximity of service providers to recently released parolees in California over a two-year period (2005-06). We geocode the addresses of parolee residences and service providers, and measure the number of various types of service providers within two miles of a parolee. We measure "potential demand" as the number of parolees within two miles of a provider. We find that although racial and ethnic minority parolees have more service providers nearby, these providers appear to be particularly impacted based on potential demand. We also find that the parolees arguably most in need of social services—those who have spent more time in correctional institutions, have been convicted of more serious or violent crimes in their careers, or are sex offenders—either live near fewer social services, or the providers near them appear impacted.

Keywords: parolees, social services, neighborhoods, propinquity.

Parolees' physical closeness to social services: A study of California Parolees

Over the last 25 years, imprisonment rates in the U.S. have increased dramatically. The number in U.S. prisoners has increased from 330,000 in 1980 to over 1.5 million in 2005, a 450 percent increase (Harrison and Beck 2006; Lynch and Sabol 2001). One important implication of this massive increase in incarceration has been the corresponding increase in the number of offenders returning to communities from prison. The number of offenders returning annually from prison to U.S. neighborhoods increased from 170,000 in 1980 to about 700,000 in 2005 (Lynch and Sabol 2001; Sabol and Harrison 2007). As a consequence, the number of ex-offenders residing in communities has risen from 1.8 million in 1980 to 4.3 million in 2000 (Raphael and Stoll 2004). These large numbers of ex-offenders make it all the more important that they have access to the types of social services that may be crucial in preventing recidivism. If the geographic location of offenders returning to communities, and the social service providers in those communities, are not coterminous, the ability of these offenders to reintegrate into the community may be seriously hampered. This is particularly relevant to reentry models that incorporate the idea of a continuum of care from institutions into the community (Byrne, Taxman, and Young 2002; Lin and Turner 2007).

Prisoners returning to their communities often have serious problems with substance abuse, financial problems, family conflict, low educational attainment, and lack strong social networks of support (Petersilia 2003), resulting in difficulties obtaining employment and stable housing, and desisting from criminal behavior. If offenders are returning to neighborhoods that do not provide access to the range of services that are important for reintegrating them into the broader community, it stands to reason that they will be less likely to succeed in their post-release transition and more likely to recidivate. Given the evidence of the importance of services

for reintegrating offenders (Zhang, Roberts, and Callanan 2006), and evidence from the public health and workforce literature that proximity to social services is an important facilitator of accessing them (Allard, Tolman, and Rosen 2003; Brameld and Holman 2006; Gregory, Malka, Kostis, Wilson, Arora, and Rhoads 2000; Piette and Moos 1996; Weiss and Greenlick 2007), investigating the proximity of released offenders to services in the community represents a key first step in understanding successful reentry of offenders.

Nonetheless, evidence regarding the proximity of returned offenders and services is sparse, and somewhat contradictory. Watson et al. (2004) found that few of the organizations providing services to ex-prisoners in Houston were located in the neighborhoods with the greatest concentration of returning offenders. By contrast, Fleming et al. (2005) found that the locations of substance abuse and mental health services in Allegheny County, Pennsylvania mapped quite closely with the residences of prison releases. However, both of these studies addressed these issues using bivariate analyses only, leaving open the possibility that spurious effects could be driving the results.

We have even less systematic evidence regarding whether there are differences in access to service providers by the characteristics and service needs of offenders. That is, do all offenders have equal access to various types of services? Or does this access differ based on demographic characteristics of the offender (e.g., race or age) or the criminal history of the offender (e.g., long-term criminals or violent criminals)? Given their particular need for such social services, do racial/ethnic minorities indeed have reasonable access to such services? And do those with a long history of criminal offending, or those who engage in more serious or violent crime—and thus are in need of such services—have reasonable access? Despite the importance of these questions given the large increase in incarceration of the last 20 years, answers based on empirical evidence are lacking.

We address this void by constructing and analyzing a unique data set to test the relative availability of social services to parolees in the state of California in two recent years: 2005 and 2006. Due to California's determinant sentencing laws, parolees account for virtually all releases from prison. In 2006, only 1,994 of 129,811 felons (1.5%) released from state prison were not released to parole supervision (California Department of Corrections and Rehabilitation 2007). We test whether the number of social service providers near parolees differs systematically based on the demographic characteristics of parolees or their criminal history. We also test whether the potential demand of these service providers differs based on these parolee characteristics.

Literature Review

Why might closeness of social services matter for offenders?

Accessing services after release from prison is necessary for the successful integration of most, if not all, offenders released from prison. Parolees face numerous challenges during the re-entry process, and social services can assist them in meeting those challenges (Petersilia 2003). For instance, employment services can provide information on job openings, job training, and assistance with job search techniques such as résumé-writing and interviewing. Housing services can help parolees secure a stable residence, a necessary first step in community reintegration. Parolees may have similar needs for substance abuse treatment, legal assistance, family servies, transportation help, and other services.

There is considerable evidence that the utilization of various social services has positive consequences for ex-offenders. For instance, post-release attendance of community-based substance abuse programs is associated with less substance use and reduced recidivism (Anglin, Prendergast, Farabee, and Cartier 2002; Visher and Courtney 2007; Wexler, DeLeon, Thomas,

Kressel, and Peters 1999). Program evaluation evidence suggests that community employment programs reduce recidivism (Bouffard, Mackenzie, and Hickman 2000). Zhang, Roberts and Callanan (2006) found that meeting the service goal of one of the constituent programs of California's Preventing Parolee Crime Program (PPCP) was associated with about 15 percent lower recidivism rates, and that parolees who participated in multiple programs had even better outcomes. The fact that only about 40 percent of the parolees in this same study met at least one of these program goals highlights the importance of actual utilization of available services.

We suggest that one important characteristic that might increase the extent to which ex-offenders access services is physical proximity to the provider. We build on the behavioral model of health care access from the public health literature, which posits that services located near populations in need is an important enabling resource, and that the interaction of this closeness with predisposing service-seeking characteristics and need (both perceived and assessed) on the part of individuals will increase the likelihood of accessing these services (Anderson 1995). While this model was developed on non-offender populations, there seems little reason to suppose that it would not operate similarly for the ex-offender population. For our population of parolees, access of services might increase simply because the presence of proximate services makes ex-offenders more aware of them. Beyond simple awareness of services, nearby services might encourage utilization because they require the expenditure of less time and fewer resources on the part of ex-offenders. That is, traveling longer distances takes more time and thus can be perceived as burdensome for some parolees who experience other time demands in their lives. Furthermore, simply obtaining transportation for traveling the longer distances can pose an additional burden for parolees: those relying on public transportation may find increasing distances to result in a nonlinear increase in travel time due to the peculiarities of negotiating public transportation routes.

Nonetheless, there is little evidence regarding the extent to which proximity to social services contributes to service utilization by ex-offenders. Qualitative studies on the dynamics of prisoner reentry have found that lack of access to transportation (La Vigne, Wolf, and Jannetta 2004; Visher, Palmer, and Gouvis Roman 2007) and lack of information regarding the existence of service providers (Visher and Farrell 2005; Visher, Palmer, and Gouvis Roman 2007) deter ex-offenders from accessing services. Issues of difficulty with transportation as a barrier to employment for residents of low-income urban communities, to which a large proportion of offenders return, are well-established (Blumenberg and Manville 2004). This is particularly salient given evidence of racial disparities in access to transportation (Hess 2005).

On the other hand, there is a much larger literature in the public health field showing that physical closeness increases access to various types of services. For instance, multiple studies have provided support for the proposition that proximity to health care services results in increased service utilization (Brameld and Holman 2006; Gregory et al. 2000; Piette and Moos 1996; Weiss and Greenlick 2007). Proximity to social services has been shown to increase the likelihood that welfare recipients will access those services (Allard, Tolman, and Rosen 2003). Likewise, proximity to employment opportunities increases the likelihood that welfare recipients will be employed and transition off of welfare rolls (Allard and Danziger 2003; Blumenberg and Ong 1998). Welfare recipients are a useful reference group, because they frequently lack job skills, have low levels of educational attainment, suffer from mental health problems and substance abuse (Allard, Tolman, and Rosen 2003), difficulties that are also common among offenders. Given this evidence, it seems plausible to presume that physical closeness to providers enables access of these services for offenders as well.

Is the presence of services more important for some types of ex-offenders?

While a less-explored question, it is important to ask whether there are systematic differences in the types of offenders who have greater access to social services. We consider three characteristics that often indicate parolees in particular need of such services: 1) their race/ethnicity, 2) their criminal history, and 3) whether or not the parolee is a sex offender.

First, it is likely that accessing various social services is particularly important for racial/ethnic minorities. For instance, given the considerable prior evidence that African-Americans experience discrimination in the labor force regardless of whether or not they are ex-offenders (Pager and Quillian 2005; Pager 2003), it may be particularly important that minorities have adequate access to employment services. A study finding that employers felt "soft" skills—such as motivation and good customer relations—are the most important and that African-American men are frequently lacking such skills suggests that employment services that address such skills may pay significant dividends for minorities (Moss and Tilly 1996). Access to housing services may also be particularly important for racial/ethnic minorities. Several studies have shown that whites are more likely to own a home than blacks or Latinos, and there is evidence that the gap in homeownership is growing (for a review, see Painter, Gabriel, and Myers 2001). Zhang, Roberts and Callanan (2006) found that African Americans were more likely than other racial and ethnic groups to access services in the Preventing Parolee Crime Program relative to their representation in the parolee population, again suggestive of particular needs of such services. In general, research indicates that racial, ethnic and cultural factors affect whether people access services in general (Allard, Tolman, and Rosen 2003; Williams, Pierce, Young, and Dorn 2001).

While racial/ethnic minority parolees may have a particularly acute need of various social services, there is also reason to expect that they may live near many such services. For instance, research has shown that urban census tracts with high poverty rates are located in closer

proximity to social service providers than census tracts with lower poverty rates (Allard 2004), and there have been similar findings on a national scale in New Zealand (Pearce, Witten, Hiscock, and Blakely 2007). Thus, offenders living in low-income, urban areas are likely to be proximate to more social services than offenders living elsewhere. These neighborhood differences, combined with patterns of residential segregation in which minorities often reside in such low income neighborhoods, can result in differential proximity to service providers along racial and ethnic lines (Allard 2004).

Second, it is also crucial to understand whether the criminal history of an ex-offender is related to their proximity to services. This is an important factor for two reasons. First, criminal history, in terms of both severity of the most recent offense and the extent of prior criminal activity, is a key determinant of recidivism risk for offenders (Gottfredson and Gottfredson 1986). Therefore, access to services that might address the needs of serious, violent and/or habitual offenders and make them less likely to re-offend is very important from a public safety standpoint. Second, offenders with more serious convictions, or with multiple convictions, will have served longer prison sentences on average. This greater time of incarceration may impact both their service needs (e.g., employment, housing) and their willingness to access necessary services. Nonetheless, despite this presumably greater need for services, one study found negligible differences between ex-offenders who did and didn't access services in terms of number of prior incarcerations and commitment offense (Zhang, Roberts, and Callanan 2006).

Third, a special category of offender type to consider is sex offenders given that they have been the subject of particular public concern and interest in recent years, as demonstrated by the passage in 2006 of Proposition 83 in California (popularly known as "Jessica's Law"). Sex offenders have treatment needs specific to their offenses, and are subject to residency restrictions that are likely to impact their proximity to services. This is particularly the case in

California after the passage of Jessica's Law, the residency restriction component of which makes large portions of many California urban areas off-limits for sex offenders to reside (California Coalition Against Sexual Assault (CALCASA) 2006). To the extent that such residency restrictions limit the access to services of this particular population, this would suggest a rather undesirable unintended consequence of such laws.

Are all service providers alike?

An analysis of the proximity of ex-offenders to social services that considers only the attributes of the ex-offenders illustrates only half of the picture. Equally important is the capacity of the service providers to furnish those services. Spatial proximity to social services is greatest for poor populations in urban areas, relative to suburban areas, but social service providers in urban areas are also proximate to many more low-income households (Allard 2004). As a result, service provision in low-income urban neighborhoods may fall short of demand despite greater proximity to low-income populations that are likely to need those services. Returning ex-offenders tend to cluster in a few urban areas, and even within a few neighborhoods within those urban areas (La Vigne, Kachnowski, Travis, Naser, and Visher 2003; Solomon, Thomson, and Keegan 2004; Watson et al. 2004). Service providers may be concentrated in those areas as well, but service providers in those areas may also be proximate to more ex-offenders who need their services than service providers in other areas.

This likely occurs due to a dynamic process. On the one hand, many service providers may choose to locate in neighborhoods that have large numbers of ex-offenders as potential clients. On the other hand, ex-offenders returning from prison may choose to reside in neighborhoods with larger numbers of available services. Additionally, when ex-offenders choose to change residences, they may select a neighborhood based on the number of services. This dynamic process suggests an equilibrium solution of neighborhoods with both many service

providers as well as many ex-offenders. Of course, other social processes can also drive the system towards such a result, including the income level and housing costs of neighborhoods, as well as the racial/ethnic composition. Our interest here is in simply observing the equilibrium solution of these processes in this study, and not in attempting to tease out causal relationships.

Unfortunately, we do not have information on the capacity or utilization levels of the service providers in our study. Allard (2004) adopted a strategy of estimating what he termed "potential demand": the number of persons living near each service provider. We employed this strategy here. While this provides only a rough estimate of the impact of parolee clustering on service access, as service providers may differ in the number of persons to whom they can provide services at any given time, it does allow for a rough analysis of the differential burden on the service provision environment of offenders returning to California communities.

Data and Methodology

Data

We address our research questions of the number of social service providers near different types of parolees, and their potential demand, by using a unique dataset with information on parolees in the state of California in 2005 and 2006, their addresses during this time period, and information on social services geared towards these returning parolees. The data on parolees were obtained from the California Department of Corrections and Rehabilitation (CDCR). We defined our sample as those who began parole at some point between January 1, 2005 and December 31, 2006. These data provide information on all parolees during the time period, the dates of entry to and exit from a CDCR institution, and certain characteristics of the parolees. We geocoded all addresses of a parolee during this two-year period and placed them at a specific latitude-longitude point. Addresses were geocoded with a success rate of 81 percent

for the parolees and 89 percent for the service providers, and analyses were performed on these parolees.

Outcome measures

The data on social services available to parolees comes from California Department of Corrections and Rehabilitation provider database. While this dataset is not exhaustive of all service providers available in California, given that it was constructed for parole agents to guide parolees towards service providers suggests that it captures the most important service providers. That is, it is these providers that parolees will be made aware of; additionally, should parolees discover additional service providers, this information can be added to the database by the parole agent. We geocoded these organizations based on the address provided and placed them at a specific latitude-longitude point. We initially created a taxonomy of 13 types of services of importance to parolee reintegration and classified each organization based on the type of services it provides. Since we are theoretically interested in the availability of services to parolees, and not the existence of providers, we allowed a service provider to be counted for each type of service it provides. Given that the initial analyses using these 13 categories showed considerable similarity over the different types of services offered, we further collapsed these into four broad categories: 1) social services; 2) self-sufficiency (financial, transportation, employment, education, identification, and legal services); 3) family/housing; 4) linking with the community (community and networking services).[1] These broader categories ease the interpretation of the results; we also provide the full results of the 13 categories in the Appendix.

For each individual in our sample, we calculated the number of social service organizations within two miles of the parolee's current address offering each type of service. While two miles is a somewhat arbitrary figure, it does comport with the distance used in prior work and has been suggested as an important distance by county social service administrators

(Allard 2004; Allard, Tolman, and Rosen 2003).[2] We measured distance from parolee address to service provider "as the crow flies" based on the latitude and longitude of the parolees and the services. This provides a more precise assessment of the presence of nearby services than other approaches that simply count the number of service providers co-residing in the same census tract. Our outcome measures are the number of social service organizations providing a particular type of service located within two miles of the parolee. Table 1 provides the summary statistics for our analysis variables. We note that the average number of service providers within two miles of parolees ranges from 4.59 (for social services) to 9.98 (for self-sufficiency services).

<<<Table 1 about here>>>

Additionally, as another outcome measure, we computed a proxy for server capacity by calculating the "potential demand" for services. We accomplished this by first calculating the number of parolees within two miles of each service provider on the initial date of our study period (January 1, 2005)—this is the *potential demand*—and then calculating for each parolee the average potential demand for all service providers within two miles of the specific parolee. This gives a sense of how impacted the service providers are near the parolee. In our sample, service providers near the average parolee have approximately 400 other parolees residing within two miles. We log transformed this outcome to reduce the possibility of extreme cases as well as to ease interpretation of the results.[3]

Given that parolees are able to change residences, the unit of analysis for our study is parolee address spells. Whereas about half of the parolees only had a single address over the study period, others moved about. We include information for all of these addresses for a particular parolee (and how many service providers each address places them near), and account for this non-independence in the analyses by computing the standard errors using a Huber/White

correction. In this sample, 50% did not change residences, 26% moved just once, 12% moved twice, and 12% moved more than twice.

Characteristics of parolees

We took into account several characteristics of parolees to determine their impact on the number of services near a parolee. For each parolee, we have information from their criminal record on the total number of prior offenses, the number of prior property offenses, the number of prior violent offenses, and the total number of days they have spent in a CDCR institution. By California statute, violent offenses include all murders, about 80% of rapes, 50% of assaults, and 40% of robberies. Serious offenses include all of the above four violent offenses as a subset, as well as property crimes as defined in Cal. Penal Code Sections 667.5(c), 1192.7(c), and 1192.8. Consequently, 60% of burglaries and about 95% of arsons are included as serious crimes (For a complete description of these categories, see pages 44-47 in Greenwood, Rydell, Abrahamse, Caulkins, Chiesa, Model, and Klein 1994). For each parolee, we also computed the total number of days they have spent in CDCR institutions over their lifetime. This provides a measure of whether this is a parolee with a long record of institutionalization, and hence perhaps particularly in need of services. We also created an indicator of whether the parolee is a sex offender.

We also accounted for demographic characteristics of these parolees. To account for racial/ethnic differences, we created measures of the race/ethnicity of the parolee indicating whether the parolee is African-American, Latino, Asian, white, or other race. Given that ex-offenders likely have different service needs as they age, we created a measure of the age of the parolee at the first date at the address. For instance, some prior evidence suggests that employment services may be particularly effective for older ex-offenders as opposed to younger ones (Uggen 2000). To take into account possible nonlinear effects of age, we also included measures of age squared and age cubed to test their relationship to relative closeness of services.[4]

Given the evidence that female ex-offenders have service needs that differ significantly from those of male offenders (Bloom, Owen, and Covington 2002), we created an indicator of whether the parolee is female to account for possible gender differences in access to services.

Methodology

Given that our outcome measures are counts of the number of social service providers within a two-mile radius of the parolee, we estimated fixed effects negative binomial regression models. The negative binomial model treats the outcome measure as a Poisson distribution with an additional parameter with an assumed gamma distribution to account for the overdispersion created by the nonindependence of events. Whereas a simplistic approach would simply compare all parolees, it is arguably not appropriate to compare the number of service providers near parolees living in urban areas with the number near parolees living in more suburban or rural areas. One strategy is to account for these differences by including county-level variables capturing important differences over counties and to estimate a multilevel model. A risk with such an approach is that failing to include all relevant county-level covariates will result in biased coefficients at the parolee-level. Given this, and the fact that we are not interested in explaining differences between counties in the current research project, a safer approach is to simply condition out *all* differences between counties through a fixed effects approach. We adopted the fixed effects approach advocated by Allison and Waterman (2002), since it appropriately conditions out differences across counties.[5] In this approach we are estimating the following model:

(1) $$y = \alpha + P\beta + COUNTY\delta$$

where y is the number of social services within five miles of the parolee, α is an intercept, P is the particular characteristic of interest of the parolee that has β effect on the outcome, COUNTY is a matrix of K-1 indicators for the K counties in California, δ is a vector of the effects of each

of these counties. Note that whereas this strategy of accounting for differences across tracts by including indicator variables results in the 'incidental parameters' problem for logistic regression models, Allison and Waterman (2002) highlight that such is not the case in the negative binomial regression model. In this model, we are effectively only comparing parolees with other parolees *living in the same county*. For the model using the potential demand for the providers near a particular parolee as the outcome measure, we estimated equation 1 with a normally distributed error term (an OLS model), given that this is a continuous measure. All analyses were estimated in Stata 9.2. We tested for and found no evidence of multicollinearity problems or outliers in any of these models.

Results

Relationship between returning parolees and proximity to services

We begin by focusing on the relative closeness of various social service providers to our sample of parolees. An advantage of the negative binomial regression model is that the coefficients are easily interpreted as percentage effects on the outcome measure. For instance, the model with the number of self-sufficiency service providers near parolees as the outcome in Table 2 (column 1) shows that an African-American has 26.0 percent more such providers within two miles, on average, than does a white parolee. A Latino parolee has 7.5 percent more self-sufficiency service providers within two miles than does a white parolee.

<<<Table 2 about here>>>

It is also clear that the general pattern for race/ethnicity is similar across these different types of service providers. African-Americans have more providers nearby of all types: ranging from 20.3 percent more social service providers on average than whites to 29.4 percent more family and housing providers. Latinos also have more providers nearby than whites, though

considerably less than African-Americans. Latinos have more service providers nearby than whites, ranging from, on average, 5.6 percent more social service providers to 7.5 percent more self-sufficiency service providers. The rates are similar for other race parolees. While these results may seem somewhat surprising, recall that prior studies have suggested that poverty areas—the types of neighborhoods minorities in general, and minority parolees in particular, tend to live in—have more services nearby (Allard 2004). Although minorities have more social service providers nearby, these providers may be particularly impacted. We explore this possibility next.

Whereas the number of nearby service providers implicitly assumes that all service providers are equally impacted—and therefore their services are equally available to the nearby parolees—it may be that the providers near some parolees are overburdened in terms of capacity relative to need. If this is the case, obtaining the needed services from such providers may be difficult. We addressed this question in the final column of Table 2 in which the outcome is our measure of average potential demand for the providers near a parolee. These analyses show considerable evidence that the service providers near minorities are indeed overburdened. Given that the outcome measure in this linear regression model is natural log transformed, we once again can interpret the coefficients in terms of percentages. Thus, the service providers near African-Americans have 65 percent more parolees within 2 miles than do the providers near white parolees. Given that, on average, an African-American parolee has about 23 percent more service providers nearby than does a white parolee, these combined results suggest that minority parolees in general, and African-American parolees in particular, live clustered in neighborhoods with both many service providers but also many more parolees. The net result may well be overburdened service providers in these neighborhoods. The pattern is similar for other minority parolees: for instance, Latinos have about 6 percent more service providers nearby on average,

but these service providers have 28 percent more potential demand in their catchment areas. For other race parolees these percentages are 7 percent and 20 percent.

Turning to the other demographic measures, we see that the effect for females is much more modest than the race effects: whereas females have 2.5 percent more social service providers nearby than do males, the differences for the other types of services are not significantly different when comparing males and females. On the other hand, there is evidence here that the providers near women are more impacted. The service providers near female parolees have, on average, about 9 percent more parolees nearby than do service providers near male parolees.

The effects of age are somewhat stronger. To get a sense of the magnitude of these effects for age, we plotted in Figure 1 the marginal effect on the number of nearby self-sufficiency service providers as age increases, holding all other variables in the model constant. This figure highlights the nonlinear effect of age in which older parolees tend to be located nearer to more self-sufficiency providers than are younger parolees. If younger parolees have more need for such services (given their greater propensity to recidivate), this suggests that those most in need are not necessarily the ones with the most service providers nearby. The effect of age on the other types of service providers is generally similar to that depicted in Figure 1. Whereas older parolees have more service providers nearby, these providers appear to be more impacted based on our measure of potential demand in the catchment areas. Figure 2 illustrates this nonlinear effect by plotting the effect of age using the coefficients from the model in the last column of Table 2. Note that this Figure largely follows the pattern in Figure 1 for the number of nearby services by age of parolee. This suggests that older parolees are clustered in neighborhoods that have both more providers, but also more parolees.

<<<Figure 1 about here>>>

<<<Figure 2 about here>>>

We next turn to the results for our more direct measures of parolees most in need of such services. The general pattern for parolees most in need of services is that they either live near fewer providers or else live near more potentially impacted providers. First, we see consistent evidence that parolees who have spent long periods of time behind bars have more service providers nearby. For instance, an additional 3.5 years in prison (a one standard deviation increase in this sample) increases the number of social service providers nearby 1.1 percent, the number of self-sufficiency and community networking services 1.5 percent, and the number of family and housing service providers 1.7 percent. While significant, these are rather modest effects. Furthermore, it appears that these providers near these long-term offenders may be more overburdened. Each additional 3.5 years of time behind bars results in 5 percent more parolees near these providers.

On the other hand, we see that the most troubled parolees—those with more property and violent crimes on their permanent record—actually have *fewer* service providers nearby. Each additional property crime and each additional violent crime on a parolee's record reduces the number of various nearby service providers between 2 and 2.7 percent. This effect is observed for all of these types of service providers.

The story for the special case of sex offenders is a similar one of living near providers that may well be overburdened. While there is variability in the closeness of sex offenders to different types of service providers, they have, on average, nearly 4 percent more service providers nearby. Nonetheless, it should be highlighted that these service providers have about 15 percent more parolees nearby. Again, to the extent that such providers are limited in their ability to serve nearby parolees, sex offenders may have difficulty in accessing these services.[6]

Finally, an unexpected finding was the evidence here that those just released from prison tend to have more service providers nearby. In general, a parolee just released from prison has between 5 and 6 percent more providers nearby than does a parolee who has moved to a new address since re-entering the community. However, there is no evidence that these providers near parolees who have just re-entered the community are more overburdened. This may suggest that later residential mobility decisions by parolees are taking them to worse neighborhoods vis a vis service providers.

Conclusion

While recent scholarship has noted the large increase in prison incarceration over the last 20 years and the potentially important role that service providers play in re-integrating these parolees into society, little systematic evidence exists regarding whether parolees live near these service providers. Given the literature on other populations suggesting that physical distance plays a large role in whether those in need actually utilize services, there is a crucial need to know whether parolees live near service providers. This is an important consideration for reentry models that stress the continuity of services from institutions into the community (Byrne, Taxman, and Young 2002; Lin and Turner 2007). Our study has utilized a unique dataset to address these questions, as well as the question of whether certain *types* of parolees live near more service providers.

By also asking whether physical closeness to service providers differs systematically based on the characteristics of parolees, our findings have illuminated important differences. One key finding is that the parolees arguably most in need of services—specifically, those who have spent more time in CDCR institutions, have committed more property or violent offenses in their careers, or are sex offenders—tend to either live near fewer service providers, or to be near

providers that may well be overburdened. While we could not directly measure how overburdened providers are—but rather simply measured the number of parolees living near such providers—a key question is the accuracy of this proxy. Note that our approach assumes that the capacity of these providers is the same. For this proxy to be flawed requires that the service providers located closest to these more long-term and serious offenders systematically have greater capacity levels. We know of no evidence supporting this conjecture.

The question of overburdened service providers also played a large role in the story regarding minority parolees. Although we found that nonwhite parolees actually have *more* service providers near them than do white parolees, these providers have far more potential demand in their catchment areas. In general, it appeared that the level to which these providers were overburdened was about 2 to 4 times greater than the advantage minorities obtained from living near more providers. Paralleling the discussion regarding long-term and serious parolees above, it would be necessary for service providers near minority parolees to have systematically larger capacity levels than the providers near white parolees for these findings to be overturned. Although we are aware of no such evidence, this does suggest an avenue for future research.

A somewhat unexpected finding was that the first address after release from prison appears to place parolees near more service providers. Given that we know of no systematic programs by the CDCR to place parolees in advantageous locations—instead, parolees are generally allowed to locate at their own discretion, and often into the same neighborhoods they left prior to imprisonment (Visher and Farrell 2005)—this may suggest the obverse: parolees are moving into subpar neighborhoods vis a vis the nearby presence of service providers in *subsequent* residential moves. This suggests that parolees may move into less desirable neighborhoods in future residential mobility decisions, and suggests an additional direction for future research.

The fact that residential moves appear to be taking parolees to areas where there are fewer service providers indicates a potential problem of which policy makers must be made aware. The factors driving this process need to be understood, and suggests an avenue for future research. Understanding these factors would provide insight for policy makers: if parolees are moving out of service-rich neighborhoods, then steps would need to be taken to assist parolees in staying in residences proximate to services. On the other hand, if parolees are simply unaware of the lack of services in new neighborhoods, then a policy geared towards providing information on the existence of such services would be called for. This suggests a need for collaboration between housing service providers administering parolees, and agencies with an awareness of the physical location of such services.

Despite the uniqueness of our data and the importance of our findings, certain limitations should be acknowledged. First, our data only contained information on parolees and service availability for one state. While these data allowed us to carefully explore the predictors of parolee proximity to services, the generalizability of our findings hinges on the extent to which this state is representative of other states. Confidence in the findings will therefore be increased by replications on other states. Second, our data were limited to two recent years. Our ability to generalize our findings to other time points thus should be treated with caution. Nonetheless, the recentness of the data at least provides important evidence on the current status of parolees' access to social services designed to serve them. Third, we did not have information on all service providers available in California, suggesting that we may have missed some potential providers. However, given that our dataset was constructed for parole agents to guide parolees towards such providers suggests that it captures most service providers of which parolees will be aware.

Fourth, we had limited information on the characteristics of these parolees. Although we took into account a few key demographic characteristics as well as some information on their criminal history, we lacked information regarding their marital status, presence of children, income or education level, whether they own their home, or their social support resources. Although this is a limitation common to nearly all data sources on parolees, the importance of these constructs for the reintegration of parolees suggests an important avenue for future research. These characteristics have important implications for the type of services these parolees need, and future work will want to match the closeness of service providers to the specific needs of parolees. Indeed, the CDCR has recently implemented a survey instrument ("Correctional Offender Management Profiling for Alternative Sanctions") that is geared towards assessing such needs among California parolees, and may be useful for future assessments. Additionally, the combination of the informal social resources that a parolee has, along with access to the formal resources provided by these service providers, is likely important for understanding the successful reintegration of parolees into the community.

Finally, we did not have information on the actual capacity level or current demand of these service providers. Following other studies, we employed a proxy of the number of parolees living nearby to the providers. This is, of course, an approximation given that these providers serve other populations as well, and measuring the actual capacity levels of these providers as well as their current demand is a crucial next step for future analyses. It is possible that these providers are even more overburdened than we estimated here, if parolees reside in neighborhoods with many other non-parolee residents who also utilize such services. While beyond the scope of the present study, this suggests an avenue for future research. Furthermore, although we focused simply on the closeness to service providers under the assumption that this will affect the degree to which parolees access such services, future researchers will also want to

explicitly test what effect this physical closeness has upon the actual use of these providers. Although the public health literature suggests that there are likely important effects, there is still a crucial need for research on this for the specific population of parolees.

That the service provider database does not include information about the capacity of these service providers is itself telling and suggests policy implications. Correctional and parole agencies need to know not only what service providers exist that might be of use to parolees, but the capacity of both individual providers and the service provision environment as a whole to serve them. To that end, it would be valuable to conduct an analysis of existing service capacity in the communities to which large numbers of parolees return, to determine which provider services are most appropriate for which types of parolees, where service capacity is insufficient, which of those capacity gaps are most significant (both in terms of which services are most lacking or overburdened, and in terms of which services have the greatest impact on offender recidivism and reintegration). With the information from that analysis, corrections and parole agencies can work to link parolees with services that can meet their needs and strategically allocate resources to fill service capacity gaps.

Despite these limitations, it should be highlighted that the uniqueness of our data allowed us to explore important questions that have heretofore not been addressed. With more parolees returning to neighborhoods after a long period of mass incarceration, understanding the relative access to social services of these returning parolees is absolutely crucial, especially as California corrections incorporates a logic model that considers linkages with the community as part of the reentry phase (National Research Council 2007). Our finding that minority residents live in neighborhoods in which the service providers may well be more overburdened based on our measure of potential demand suggests the possibility of inequality in access to services, and suggests a policy need to address this inequality. And our finding that the most long-term and

serious parolees live near fewer service providers, or near providers that may be overburdened due to larger potential demand, suggests an important policy implication for officials in guiding service providers to areas most in need of such services.

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Notes

[1] We also empirically tested the degree of clustering among the initial 13 types of services. A principal components analysis of the number of such types of services near the parolees in our sample found that they loaded on a single factor. This suggests that there is considerable clustering of all types of services in particular geographic areas. We therefore focused on models with the four theoretically derived outcome measures described here.

[2] We also estimated our models using a five-mile circle around parolees and found very similar results.

[3] With a log-transformation, the coefficients of this model can be interpreted as percentage changes in the outcome measure. We also estimated models with the unlogged outcome and the results were substantively the same.

[4] We tested higher level polynomials and found no significant effects. Additionally, we also created a series of categorical measures of the age of parolees, and found a similar nonlinear effect. The age categories were: 1) less than or equal to 18 years of age; 2) 19-21 years of age; 3) 22-25 years; 4) 26-29 years; 5) 30-34 years; 6) 35-39 years; 7) 40-44 years; 8) 45-49 years; 9) 50-54 years; 1) 55-59 years; 11) 60 and older.

[5] As Allison and Waterman (2002) discuss, the conditional fixed effects negative binomial regression of Hausman, Hall, and Griliches (1984) does not appropriately account for differences across units, as it only accounts for the difference in the distribution of the overdispersion across units, rather than accounting for the differences in the parameters.

[6] We point out that our data come from the time period before the passage and implementation of "Jessica's Law" in California. The additional mobility restraints of this law will likely impact sex offenders' access to services even greater than what we observed in our study.

Tables and Figures

Table 1. Summary statistics for measures used in analyses, California parolees in 2005-06

	Mean	Std Dev.
African-American	28.3%	45.1%
Latino	28.3%	45.1%
Asian	0.6%	7.9%
Other race	3.4%	18.1%
Female	13.6%	34.2%
Age	35.6	9.8
Property offenses	0.349	0.713
Violent offenses	0.327	0.787
Total violations on record	3.467	2.891
Days spent in CDCR institutions	1,182.7	1,250.4
Registered sex offender	9.8%	29.8%
Outcome measures, types of service providers		
Self sufficiency	9.975	12.851
Family & housing	7.563	11.406
Community networking	5.861	7.565
Social Services	4.591	7.225
Average number of parolees within 2 miles of service	403.80	387.50

N = 223,129 person observations

Table 2. Number of service providers within two miles of parolee, by characteristics of parolee

	Number of service providers within two miles				
	Self-sufficiency	Family & housing	Community networking	Social services	Number of parolees near services (logged)
Age (x 1000)	7.630 **	8.516 **	7.092 **	6.834 **	8.562 **
	(18.24)	(18.93)	(16.63)	(14.63)	(11.02)
Age squared (x 1000)	0.126 **	0.139 **	0.118 **	0.125 **	0.180 **
	(4.70)	(4.94)	(4.36)	(4.19)	(3.69)
Age cubed (x 1000)	-0.007 **	-0.008 **	-0.007 **	-0.006 **	-0.010 **
	-(5.75)	-(6.30)	-(5.47)	-(4.28)	-(4.12)
African-American	0.231 **	0.258 **	0.235 **	0.185 **	0.652 **
	(34.07)	(36.29)	(34.64)	(25.10)	(53.60)
Latino	0.072 **	0.057 **	0.062 **	0.055 **	0.277 **
	(10.41)	(7.76)	(8.84)	(7.10)	(21.44)
Asian	0.037	0.040	0.049	0.018	0.157
	(1.13)	(1.11)	(1.47)	(0.47)	(2.43)
Other race	0.077 **	0.070 **	0.080 **	0.068 **	0.197 **
	(5.18)	(4.43)	(5.39)	(4.03)	(6.95)
Female	0.014	0.011	0.009	0.025 **	0.092 **
	(1.82)	(1.33)	(1.20)	(2.86)	(6.65)

Years in prison	0.004 **	0.005 **	0.004 **	0.003 **	0.014 **
	(4.13)	(4.42)	(4.17)	(2.78)	(7.62)
Violent offenses	-0.022 **	-0.027 **	-0.020 **	-0.021 **	-0.016
	-(5.34)	-(6.43)	-(4.85)	-(4.67)	-(2.25)
Property offenses	-0.024 **	-0.023 **	-0.023 **	-0.022 **	-0.027 **
	-(5.90)	-(5.54)	-(5.61)	-(4.94)	-(3.69)
Sex offender	0.033 **	0.047 **	0.036 **	0.036 **	0.149 **
	(3.59)	(4.81)	(3.89)	(3.54)	(8.69)
Just released from prison	0.056 **	0.062 **	0.058 **	0.054 **	-0.028 **
	(8.43)	(8.77)	(8.66)	(7.30)	-(2.70)
Intercept	1.968 **	1.350 **	1.479 **	0.700 **	5.266 **
	(177.35)	(127.37)	(140.50)	(50.08)	(267.63)
R-squared	0.023	0.035	0.025	0.045	0.209

*** p < .01(two-tail test). Fixed effects (by county) negative binomial regression models. Standard errors corrected for clustering by parolee.*

N = 223,129

Figure 1. Marginal effect of age on number of self-sufficiency service providers nearby

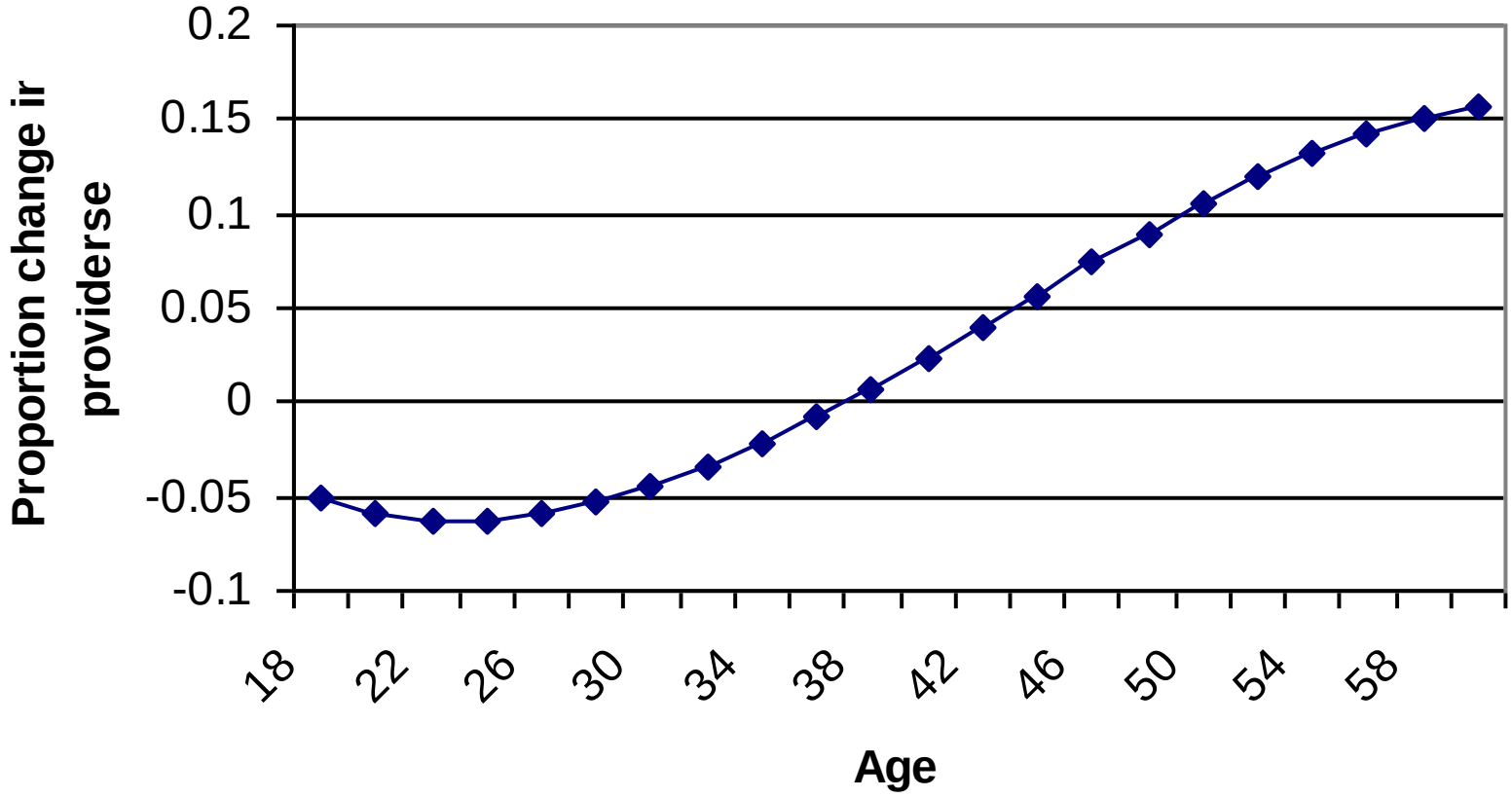
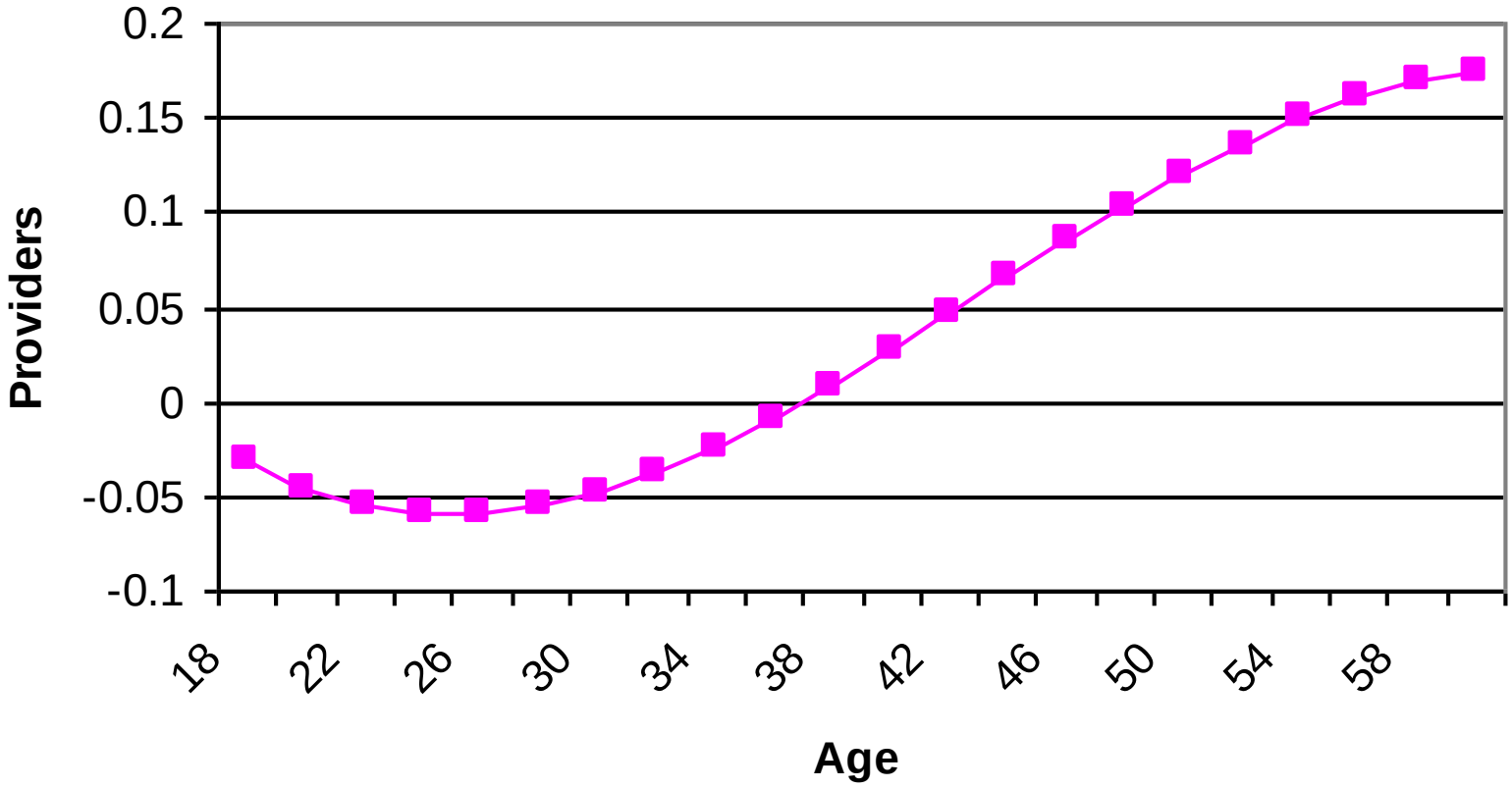


Figure 2. Marginal effect of age on potential demand of service providers



Appendix

Table A1. Number of service providers within two miles of parolee, by characteristics of parolee

	Number of service providers within two miles						
	Social services: general	Social services: clothing	Social services: food	Education	Labor	Transportation	Financial
Age (x 1000)	6.817 **	7.502 **	7.720 **	7.328 **	8.086 **	9.941 **	7.320 **
	(14.20)	(13.90)	(14.42)	(17.24)	(17.11)	(14.18)	(16.13)
Age squared (x 1000)	0.127 **	0.144 **	0.101 **	0.118 **	0.114 **	0.145 **	0.126 **
	(4.11)	(4.12)	(2.91)	(4.41)	(3.79)	(3.21)	(4.31)
Age cubed (x 1000)	-0.006 **	-0.007 **	-0.006 **	-0.007 **	-0.007 **	-0.009 **	-0.006 **
	-(4.29)	-(3.95)	-(3.77)	-(5.43)	-(5.09)	-(4.18)	-(4.61)
African-American	0.208 **	0.152 **	0.179 **	0.247 **	0.289 **	0.143 **	0.198 **
	(27.38)	(17.99)	(21.04)	(36.55)	(37.77)	(12.85)	(27.12)
Latino	0.073 **	0.035 **	0.049 **	0.066 **	0.089 **	0.023	0.072 **
	(9.13)	(4.00)	(5.48)	(9.48)	(11.21)	(2.05)	(9.52)
Asian	0.038	-0.004	0.013	0.071	0.092	0.026	0.025
	(0.99)	-(0.09)	(0.30)	(2.18)	(2.54)	(0.47)	(0.68)
Other race	0.078 **	0.061 **	0.066 **	0.090 **	0.103 **	0.087 **	0.071 **
	(4.54)	(3.18)	(3.41)	(6.10)	(6.24)	(3.52)	(4.37)
Female	0.024 **	0.037 **	0.022	0.020 **	0.017	0.037 **	0.011
	(2.69)	(3.78)	(2.18)	(2.67)	(2.01)	(2.91)	(1.29)

Years in prison	0.004 **	0.002	0.003	0.005 **	0.005 **	0.001	0.004 **
	(3.06)	(1.57)	(2.35)	(4.72)	(4.25)	(0.58)	(3.60)
Violent offenses	-0.022 **	-0.023 **	-0.024 **	-0.020 **	-0.020 **	-0.020 **	-0.026 **
	-(4.74)	-(4.32)	-(4.75)	-(4.99)	-(4.41)	-(2.97)	-(5.81)
Property offenses	-0.023 **	-0.017 **	-0.024 **	-0.025 **	-0.022 **	-0.019 **	-0.024 **
	-(4.98)	-(3.41)	-(4.79)	-(6.18)	-(4.86)	-(2.81)	-(5.62)
Sex offender	0.035 **	0.016	0.053 **	0.014	0.027 **	0.099 **	0.030 **
	(3.27)	(1.40)	(4.48)	(1.50)	(2.64)	(6.79)	(2.98)
Just released from prison	0.054 **	0.042 **	0.052 **	0.058 **	0.049 **	0.030	0.055 **
	(7.18)	(4.71)	(6.11)	(8.86)	(6.51)	(2.52)	(7.58)
Intercept	0.017	-0.558 **	-0.855 **	0.893 **	0.280 **	-1.322 **	0.645 **
	(1.09)	-(36.73)	-(41.14)	(80.42)	(21.51)	-(50.78)	(48.16)
R-squared	0.058	0.052	0.088	0.044	0.058	0.055	0.035

*** p < .01(two-tail test). Fixed effects (by county) negative binomial regression models. Standard errors corrected for clustering by parolee.*

N = 223,129

Table A2. Number of service providers within two miles of parolee, by characteristics of parolee

	Number of service providers within two miles						
	Housing	Family	Community	Networking	Legal	Identification	Number of parolees near services (logged)
Age (x 1000)	9.241 **	7.595 **	6.317 **	7.444 **	14.582 **	5.436 **	8.562 **
	(19.32)	(17.10)	(13.30)	(17.52)	(19.59)	(10.06)	(11.02)
Age squared (x 1000)	0.140 **	0.125 **	0.099 **	0.118 **	0.085	0.150 **	0.180 **
	(4.73)	(4.41)	(3.30)	(4.37)	(1.73)	(4.27)	(3.69)
Age cubed (x 1000)	-0.009 **	-0.007 **	-0.006 **	-0.008 **	-0.008 **	-0.006 **	-0.010 **
	-(6.42)	-(5.42)	-(3.99)	-(5.80)	-(3.73)	-(3.37)	-(4.12)
African-American	0.275 **	0.239 **	0.203 **	0.245 **	0.265 **	0.102 **	0.652 **
	(36.69)	(33.78)	(27.21)	(36.23)	(22.07)	(11.82)	(53.60)
Latino	0.052 **	0.065 **	0.061 **	0.063 **	0.071 **	0.045 **	0.277 **
	(6.75)	(8.83)	(7.80)	(8.99)	(5.82)	(4.87)	(21.44)
Asian	0.057	0.019	0.043	0.053	-0.005	-0.103	0.157
	(1.54)	(0.52)	(1.17)	(1.59)	-(0.08)	-(2.21)	(2.43)
Other race	0.074 **	0.070 **	0.085 **	0.082 **	0.079 **	0.014	0.197 **
	(4.45)	(4.43)	(5.16)	(5.56)	(2.95)	(0.69)	(6.95)
Female	0.006	0.025 **	-0.001	0.011	-0.028	-0.037 **	0.092 **
	(0.67)	(3.13)	-(0.10)	(1.49)	-(1.98)	-(3.63)	(6.65)

Years in prison	0.005 **	0.005 **	0.004 **	0.004 **	0.005	0.001	0.014 **
	(4.22)	(4.40)	(3.37)	(4.33)	(2.51)	(0.98)	(7.62)
Violent offenses	-0.029 **	-0.027 **	-0.019 **	-0.021 **	-0.049 **	-0.010	-0.016
	-(6.44)	-(6.36)	-(4.29)	-(5.08)	-(6.59)	-(1.99)	-(2.25)
Property offenses	-0.024 **	-0.023 **	-0.020 **	-0.024 **	-0.030 **	-0.021 **	-0.027 **
	-(5.48)	-(5.58)	-(4.42)	-(5.98)	-(4.09)	-(4.03)	-(3.69)
Sex offender	0.053 **	0.030 **	0.041 **	0.032 **	0.066 **	0.006	0.149 **
	(5.22)	(3.04)	(3.97)	(3.48)	(4.18)	(0.48)	(8.69)
Just released from prison	0.062 **	0.057 **	0.052 **	0.057 **	0.027	0.063 **	-0.028 **
	(8.39)	(8.11)	(7.05)	(8.66)	(2.12)	(6.81)	-(2.70)
Intercept	0.773 **	0.532 **	0.738 **	0.849 **	-1.956 **	0.167 **	5.266 **
	(69.75)	(44.13)	(65.88)	(78.98)	-(75.24)	(11.43)	(267.63)
R-squared	0.050	0.040	0.044	0.031	0.075	0.057	0.209

*** p < .01(two-tail test). Fixed effects (by county) negative binomial regression models. Standard errors corrected for clustering by parolee.*

N = 223,129