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Kenji Wada, Akihito Toda and Tomura Kazuki

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# The Effect of Job Training Programs at a Juvenile Correctional Facility in Japan*

Kenji Wada†

Faculty of Business and Commerce, Keio University, Japan

Akihito Toda

Recruit Works Institute, Japan

Tomura Kazuki

Kawagoe Correctional Facility, Japan

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**Abstract**

We consider the effect of characteristics of prison inmates in general and the job training program participation in particular on the recidivism in Japan. By empolying individual level dataset from a Kawagoe Juvenile Correctional Facility, we find that some of the inmates characterstics will lower recidivism and the participation in job training is effective in lowering the probability of re-entry into prison.

**Key Words:** Job Training Program Evaluation, Crime, Rercidivism, Probit Analysis, Duration Analysis, Mathing Method

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†Corresponding Author: 2-15-45 Mita Minatoku Tokyo 108-8345 Japan phone +81-3-3453-4511 fax +81-3-5427-1578 email kwada@fbc.keio.ac.jp

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# 1 Introduction

Many criminals are unemployed when they commit a crime. According to the Annual Report of Statistics on Correction in Japan, 68.3% of the criminals in Japan were unemployed when they committed a crime in 2010. If they are unemployed when they enter a prison and do not receive any job training in prison, it is hard for them to find a job after they are released from prison. So we cannot stress the importance of a job training program for prison inmates. However, there have been few studies that investigate the effect of job training programs in prison on the recidivism. Many researchers have investigated the effect of job training programs on workers both theoretically and empirically since the seminal work by Heckman and Robb (1985). Also, many researchers have considered what types of regulations prevent people from committing a crime since the seminal work by Becker (1968). However, to the best of our knowledge, there has been few economic investigation into the effect of job training programs for inmates on re-incarceration.

Lochner (2004) showed that older, more intelligent and more educated adults should commit fewer street (unskilled) crimes. The effects of education, training, and wage subsidies, as well as enforcement policies on criminal behavior are also discussed. Lochner and Moretti (2004) estimated the effect of education on criminal activity using changes in state compulsory schooling laws and found that the effect is negative. Levitt (2004) investigated the cause of the decline in the crime rate in the U.S. in the 1990s and found that 1)increases in the number of police, 2)the rising prison population, 3)the waning crac epidemic and 4)the legalization of abortion can explain the decline. Burdett, Lagos, and Wright (2004) discussed the effect of changes in labor market and anti-crime policies on 2003. Freeman (1999) shows that empirical evidence supports the role of incentives in the criminal behavior, legitimate labor market experiences, sanctions including incarceration, and the risk of apprehension. Bailey (2006/2007) investigated the redicivism in the U.S. and reported a table on difference in re-incarcenation among parole, probation and expiration. Visher and Travis

(2003) investigated the prisoner's integration into community after release.

Witte (1977), Tomura (2001) and Tilley (2010) are a rare exception in the literature. Witte (1977) investigated the effect of work-release program in North Calorina on recidivism by interviewing 453 subjects between July 1973 and June 1974. This was one of the first papers on the effect of work-release program on recidivism. However, she did not control for any difference in ability. Tomura (2001) considered, in a single page report written in Japanese, the effect of the job training at Kawagoe Juvenile correctional facility on the re-entry ratio within five years after release. He showed that the re-entry ratio is higher for those who have not received any job training than those who have received some job training. He also considered the re-entry ratio difference among participants in different job training programs. However, he did not 1) conduct any statistical analysis on the difference in re-entry ratio among job training programs, 2) consider the effect of the job training on the length between release from and re-entry into prison or 3) correct for the difference in ability. Tilley (2010) considered the effect of both educational and vocational training program on recidivism. He relied on individual level dataset from five states in the U.S. in 1994. He found that participating in educational program reduced the risk of recidivism but that in vocational program did not. Also his result is based on a dataset of inmates relased from a single year so that the result may depend on hidden factors specific to that year. In addition, the dataset is for inmates relased in 1994 so that the result in his paper may not apply to more recent period.

All the three papers above did not control for the difference in ability such as educational attainment or IQ so that their results suffer from a hidden ability difference between participants and non-participants in educational program.

In this paper, we consider the effect of job training program in prison for inmates on recidivism based on two separate, individual level observations from Kawagoe juvenile correctional facility in Japan. As the social cost of crime is high, evaluating the effect of each type of inmates characteristics

in general and job training programs in particular in reducing a future crime is an important criminal justice policy topic.

In the next section, we discuss the criminal activities and their in-prison job training programs in Japan and the U.S. We also explain the job training programs at Kawagoe Juvenile Correctional Facility. In the third section, we first show the re-entry ratio within five years after relase for inmates at Kawagoe Juvenile Correctional Facility. Then we discuss which inmates are likely to participate in the job training program there. Finally we investigate the factors affecting recidivism in general and the effectiveness of the job training program in particular for inmates at Kawagoe Juvenile Correctional Facility. In the fourth section, we conclude the paper.

# 2 Criminals and their Job Training Programs

## 2.1 The Case of Japan

In this section, we give a brief summary of the characteristics of criminals in Japan and job training programs for inmates in Japan. In Japan, after being arrested, criminals are put into a police cell during the police investigation. After the investigation, they are sent to a detention house during the trial. After the trail, all of them are sent to a prison whether their sentences are longer than one year or not. In the U.S. criminals whose sentences are longer than one year are sent to prison while criminals with sentences less than one year, the accused and the suspect are sent to jail. In Japan, there are two types of a prison. The first type is for adults. The second type is for minors. By law, the second type is for male inmates stricly less than 20 years old but in practice it is also for male inmates stricly less than 26 years old. The number of criminals has increased in Japan. According to the Annual Report of Statistics on Correction, the daily average number of criminals in a detention house and a prison per year was 46,535 or 37.1 per 10,0000 people (44,304 for male or 72.0 per

100,000 male population and 2,231 for female or 3.5 per 100,000 female population) in 1995 and it reached 74,232 or 57.9 per 100000 people (68,948 for male or 110.6 per 100000 male population and 5,284 for female or 8.0 per 100000 female population) in 2010. Out of 29,461 prisoners released from prison in Japan, 28,728 (97.5%) served a prison time because of a new crime. Only 342 (1.2%) served a sentence due to a parole violation and 391(1.3%) served a prison time because of a new crime and a parole violation.

Figure 1 shows the frequency of imprisonment. The ratio of repeated offenders was stable in the 1970s and 1980s, but it has declined in the 1990s. Figure 2 shows the length of a sentence for criminals. The ratio of those criminals whose sentence is less than six months is decreasing and the ratio of those criminals whose sentence is three years and longer is increasing. The average length of sentence is also increasing from about 1.5 years in 1980 to 2.3 years in 2010. Figure 3 shows the unemployment ratio of ex-criminals when the probation was completed. The ratio is cyclical but the trend is increasing. As is shown in Figure 3, it is hard for ex-criminals to obtain a job after the probation. Thus, the job training program on criminals in prison is quite important, as it helps criminals acquire job skills and find a job after they are released from prison. Figure 4 shows the length of time between a release from, and a re-entry into prison for repeated offenders. The average length was about 1.85 years in 1980, increased between 1991 and 1993 to 2.15 years and declined to 1.96 years in 2007. Then between 2007 and 2010, it increased and reached 2.01 in 2010. If a job training program can successfully make the duration between exit from and re-entry into prison longer for criminals, it can reduce the cost of future crimes by making the frequency of crimes less often. Thus, the job training program for criminals in prison is crucial if it can reduce the probability of re-entry into prison and if it can make the duration between exit and re-entry longer.

When criminals enter a prison, all of them are assigned a single grade such as A, B, JA, JB,

YA, YB and so on. A stands for those whose crimes are not serious and who are not foreigners, not in confinement, not minors, not younger than 26 years old, without mental handicap or physical handicap. B stands for those whose crimes are serious and who are not foreigners, not in confinement, not minors, not younger than 26 years old, without mental handicap or physical handicap. JA stands for minors whose crimes are not serious. JB stands for minors whose crimes are serious. YA stands for those who are less than 26 years old whose crimes are not serious. YB stands for those who are less than 26 years old whose crimes are serious. At the end of 2010, there are 63,845 inmates in Japan. Out of these 63,845, 16,777 are A, 30,425 are B, 13 are J (JA and JB) and 2,787 are Y (YA and YB). Figure 5 shows the ratio of criminals who committed a crime again and re-entered into prison within five years from a release to those criminals release from prison. It is clearly shown in Figure 5 that A grade criminals have much lower re-entry ratio than B grade criminals and that young criminals (JA and YA) have a higher re-entry ratio than A grade criminals.

Figure 6 shows the ratio of participants in job training program in prison and the acquirers of some qualifications. As one individual can acquire more than one qualifications, the acquisition ratio of qualifications is sometimes higher than the participation ratio. The participation ratio is between 4 and 6%.

Table 1 shows the number of participants in each job training program who are released for prison between 1976 and 2007. The total participants increased from 1355 in 1976 to 1578 in 1984. There is a sudden decrease to 1381 in 1985, another sudden decrease to 1108 in 1988 and the number is between 1068 and 1201 between 1995 and 2006. The number increased again from 2007 and reached 1861 in 2010. There was a fluctuation of participants for each job training program at the aggregate level. The reruirment for job training participants are as follows. First, the applicants are willing to participate in the job training program. Second, the remaining prison time is longer

than the period necessary for job training program. Third, Applicants are in good physical condition suitable for job training program. Fourth, the applicants are suitable for the job training program after a suitability test. Fifth, appliants satisfy certain qualifications for the license or a qualification for which they plan to take an examination.

## 2.2 The Case of the U.S.

In this section, we briefly summarize the characterstics of prison inmates and jail inmates in the U.S. and the job training programs in New Jersey in order to comapre them between Japan and the United States.

First, we report the charactersitcis of prison inmates. According to the Bulletin by Bureau of Justice Statistics, "Prisoners in 2009", published in December 2010, the number of prisoners under state and federal jurisdiction at yearend increased from 1,391,261 (145,416 federal and 1245,845 state) in 2000 to 1,613,740 (208,118 federal and 1405,622 state) in 2009. The imprisonment rate (the number of prisoners sentenced to more than one year under state or federal jurisdiction per 100,000 U.S. residents) increased from 478 in 2000 to 502 in 2009. In 2009, 674,836 sentenced prisoners were admitted into state prisons. Out of these, 422,910 (62.7%) were due to new court commitments and 237,449 (37.3%) were due to parole violations. So slightly larger than one third of the sentenced state prisoners commited parole violations which is much larger fraction than that of Japan. The distribution of time served by prisoners released from state prison in 2008 (2000) is as follows: one year or less is 56.0% (49.8%), between one year and two years is 20.0% (21.5%), between two years and three years is 8.7% (10.2%), between three and five years is 7.0% (8.6%) and more than five years is 8.4% (9.8%). The share of release prisoners with shorter length of stay slightly increased between 2000 and 2008. The distribution for other years for state prisoners and that for federal prisoners for any years were not available. The Sepcial Report "Recidivism of

Prisoners Released in 1994" was published in June 2002 and investigated the redicivism for those released in 1994. This covers about two-thirds of all prisoners released in the U.S. that year and includes prisoners from 15 States. The Special Report, "Recidivism of Prisoners Released in 1983", was published in April 1989 and studied the redicivism for prisoners releassed in 1983. This covers more than half of all prisoners released in the U.S. that year and includes prisoners from 11 States. According to these reports, Out of 272,111 prisoners released from prison in 15 States in 1994, 67.5% of them were rearressted within 3 years, an increase over the 62.5% found for 108,580 State prisoners relased in 1983. Among prisoners released in 1983, 46.8% were reconvicted within 3 years compared to 46.9% among those released in 1994. From 1983 to 1994, reconviction rates remained stable for the released. The 1994 study also estimated that within 3 years, 51.8% of prisoners relased during the year were back in prison either because of a new crime for which they received another prison sentence, or because of a technical violation of their parole. This rate was not calculated in the 1983 study.

The Pew Center on States complements the above study by investigating the recidivism in 1999 and 2004. The 1999 study covers the prisoners from thirty three states and represents 87% of all releases from state prison. The 2004 study covers them from 41 states and represents 91% of all releases from state prison. The reincarceration within 3 years after release was 45.4% in 1999 and 43.3% in 2004 Although it is difficult to compare figures in the Special Report by Bureau of Justice Statistics with these in one by Pew Center, the recividivm rate have been largely stable over time.

According to unpublished analysis performed and verified by BJS Corrections Unit statisticians in August 2011, the employment rate for state prisoners and federal prisoners one month before arrest was 72.5% and 72.4%, respectively in 2004. According to unpublished analysis performed and verified by BJS Corrections Unit statisticians in September 2009, 23.5% (35.3%) of state (federal) prisoners did not have any prior criminal history in 2004. According to the same analysis, 45.8%

(55.6%) of state (federal) prisoners did not have any prior incarceration, 21.8% (21.1%) of state (federal) prisoners had one prior incarceration, 20.4% (16.8%) of state (federal) prisoners had two to four prior incarcerations, 8.3% (4.8%) of state (federal) prisoners had five to nine prior incarcerations and 3.7% (1.7%) of state (federal) prisoners had ten or more prior incarcerations[1].

Second, we summarize the charactersitcs of jail inmates. According to "Jail Inmates at Midyear 2010 - Statistical Tables" by Bureau of Justice Statistics published in April 2011, the numer of inmates confined in local jails at midyear increased from 621,149 (550,162 male inmates and 70,987 female inmates) in 2000 to 748,728 (656,360 male inmates and 92,368 female inmates) in 2010. The jail incarceration rate also increased from 220 in 2000 to 242 in 2010.

The most recent detailed profile of jail inmates, "Profile of Jail Inmates, 2002" was published in July 2004 and reported characteristics of jail inmates in 2002. This coverd all the local jail inmates in 2002. According to this report, there were 665,475 persons held in local jails at midyear 2002. At midyear 2002 (1996), 26.9% (27.3%) had served zero prior sentences to incarceration or probation, 17.5% (17.4%) served one prior sentences to incarceration or probation, 16.8% (11.3%) served two prior sentences to incarceration or probation, 21.9% (20.2%) served three to five prior sentences to incarceration or probation, 11.0% (15.1%) served six to ten prior sentences to incarceration or probation and 5.9% (8.7%) served eleven or more prior sentences to incarceration or probation. The average sentence length of jail inmates increased from 23 months in 1996 to 24 months in 2002. Also 71% of jail inmates was employed (57.4% full time, 10.9% part time and 18.4% occasional) one month before arrest in 2002 while only 64% (49.3% full time, 10.4% pat time and 4.5% occasional) were employed in 1996.

All of the above reports above do not have a continuous time series data on recidivism in the U.S. or address the nation-wide job training programs in prison or in jail in the U.S. Thus we will report the job training program in New Jersey. At the State of New Jersey, there were 27,389

[1]The authors thank BJS statistician, Minton Todd, for providing this information.

inmates at the end of January 2002 and 24670 inmates at the end of January 2011. Each year about 4,000 inmates participate in the job training programs and each program services about 60 students each year. The lengh of the program is 6 to 12 months.

## 2.3 Kawagoe Juvenile Correctional Facility

We obtained two related but separate individual level dataset of Kawagoe Juvenile correctional facility by permission from Correction Bureau of Ministry of Justice in Japan. The grade of all the inmates (both participants and non-participants of job training programs) at Kawagoe Juvenile correctional facility is either YA or JA, that is, young Japanese male who are less than 26 years old whose criminal activities are not serious.

The first dataset covers all the criminals at Kawagoe Juvenile correctional facility who were released from it between 2002 and 2005. This dataset includes both the participants (five hundred and sixty seven inmates in total) and non-participants (one thousand five hundred and one inmates in total) of any job training program at Kawagoe Juvenile correctional facility. The characteristics available is as follows: 1) the type of a job training program for those who have joined any job training program, 2) the date of completion of a job training program for those who have joined any job training program 3) the date of release from prison 4) the number of days (rounded to the nearest ten) between the release and the re-entry for those who re-entered a prison 5) IQ 6) educational attainment and 7) initial, sentensed prison term, 8) parole dummy and 9) type of offenses. The mean ratio of re-entry into prison within five years after release for those with any type of job training is 23.1% while that for those without is 33.7%. The mean duration between release from, and re-entry into prison is 856 days for those with any type of job training while that for those without is 722 days.

The second dataset covers all the criminals who received any job training at Kawagoe Juvenile

correctional facility between 1989 and 2000 and who were released from it by the end of 2000 (1518 participants in total). This dataset does not include non-participants. The characteristics available for each individual is as follows: 1) the type of a job training program received, 2) the date of completion of a job training program 3) the date of release from Juvenile correctional facility 4) the number of days (rounded to the nearest ten) between the release and the re-entry for those who re-entered a prison. The average ratio of re-entry into prison within five years after release is 40.0%. It is highest at 54.5% for those with a training on gardening while it is lowest at 19.0% for those with a training on hair dressing. The mean duration between release from, and re-entry into prison is 732 days. It is longest at 913 days for those with a training on forklift driving and it is shortest at 594 days for those with a training on gardening.

The two datasets completent each other. The first dataset covers both participants and non-participants which makes it possible to analyze the absolute effect of the job training program. It contains various types of charactersitics for each individual, such as educational attainment and IQ, which are generally used as a control variable for ability in the literature. The second dataset has a relatively large number of observations in total as well as for each type of a job training program which enables us to consider the relative effect of each type of a job training program. By employing these two dataset, we investigate both the relative and the absolute performace of the job training program on the prevention of future crime.

# 3 The Analysis on Recidivism

In this section, we analyze the recidivism at Kawagoe Juvenile Correctional Facility. We conduct several different analyses. First we give a brief sample statistics on the characteristics of both participants and non-participants of job training program at a Kawagoe Juvenile Correctional Facility. Second, we consider what type of characteristics of inmates affect the job training program

parcitipation. Third, we investigate what types of inmates charactersitics will affect the time between release from and re-entry into prison. Fourth, we specifically focus on the effect of job training program and consider both the absolute and the relative effectiveness of a job training program on criminals on the probability of, and the duration till the re-entry to the prison. As the reorganization of a job training program may lead to more effective future crime prevention, the investigation into both the absolute and the relative performance of each job training program is important. We conduct two related analyses. The first analysis is a probit analysis. We investigate if criminals who joined any job training program are less likely to commit a crime again after release than when they would not have joined any job training program at all. The second analysis is a duration analysis. We consider if it takes longer for criminals with any job training to commit a crime again and come back to prison than when they would not have taken any job training program at all. The Probit analysis provides an insight into the absolute effectiveness of any job training program in terms of the prevention of future offences. Even though some criminals repeat offences, it is still important to consider if any kind of a job training program has an effect on extending the duration between exit from, and re-entry into prison. The duration analysis makes it possible to understand the absolute effectiveness of any job training program in terms of the reduction of repeated offences.

Second, we investigate the relative effectiveness of a job training program by comparing criminals with a specific type of a job training and those with another type of job training in the second dataset. We also conduct similar Probit and duration analyses. We investigate if criminals who received a particular type of job training prorams are less likely to commit a crime again after release than when they would have taken other job training programs. The second analysis is a duration analysis. We consider if it takes longer for criminals with a specific job training to commit a crime again than when they would have taken other job training programs. In order to measure

the effect of job training programs, we need to control for the following fact that criminals with higher ability may enroll in a job training program with a higher effect. Therefore we employ the matching method in order to control for the unobservable difference in the ability of the criminals in both Probit and duration analyses using both of the dataset.

### 3.1 The Re-entry Ratio for Participants and Non-participants

Table 2 shows the re-entry ratio for both participants and non-participants of the job training programs at Kawagoe Juvenile Correctional Facility. There were 2,068 inmates in total. Twenty eight percent of the inmates took the job training program and seventy two percent of them did not. Out of these inmates, 31% returned to prison within five years after release. If we compare the re-entry ratio between participants and non-participants, 23% of participants returned to prison within five year after relase but 34% of non-participants returned to prison within the same period of time. As for the effect of age on prion re-entry, 32% of those who were less than or equal to twenty two years old and 34% of those twenty five years or twentry six years old at the time of relase returned to prision within five years after release. These figures are slightly lower for those who were twenty three or twenty four year old (28%) and those who were twenty seven years old or older (27%).

In terms of the effect of educational attainment on re-entry, those with higher educational attaiment are less likely to come back to prison. The re-entry ratio was highest for those who are junior high school graduate (40%) and lowest for those with more than high school degree (16%). The same tendency is true for IQ. Those with highest IQ are least likely to come back to prison (22%) and those with lowest IQ are most likely to come back to prison (43%). If we look at the effect of initial sentenced prison term on re-entry, those within the shortest term are most likely to put into prison (36%) and those with the longest term are least likely to put into prison (25%)

within five years after release. There is also a varation in the re-entry ratio with respect to the type of crime commited. Those who commited a theft are most likely to come back to prison at 45% and those who commited a fraud are least likely to come back to prison at 20% followed by those who commited a violent crime at 21%. If inmates are released on parole, the re-entry ratio is lower at 30% than when they are not released on parole at 40%.

## 3.2 Job Training Program Participation

In this section, we consider what types of inmates are likely to participate in any job training program at a Kawagoe Juvenile Correctional Facility by estimating the following Probit model:

$$\begin{aligned} Y_i^* &= \alpha + X_i^{'}\beta + \varepsilon_i \\ \varepsilon_i &\mid X_i \sim N(0,1) \end{aligned}$$

$$\begin{aligned} Y_i^* &\geq 0 \text{ if } Y_i = 1 \\ Y_i^* &< 0 \text{ if } Y_i = 0 \end{aligned}$$

where $Y_i^*$ is a latent variable, $X_i^{'}$ is a set of characteristics for each inmate, $(\alpha, \beta)$ are parameters, $\varepsilon_i$ is an error term and $Y_i$ is a training dummy which takes one if the inmate has joined any job training program at Kawagoe Juvenile Correctional Facility and zero otherwise. Here we employ IQ and educational attainment variables to correct for the different ability of each inmate. We have 1) IQ, 2) educational attainment, 3) prison term, 4) prison term squared, 5) five types of crimes commited as an explanatory variable for the job training participation decision. Table 3 shows the

results.

Each inmate's IQ has a statistically signigicant positive effect but educational attaiment does not have any statistically significant effect on job training participation decision. So inmates with a higher IQ are more likey to participate in the program.

Also, a prison term has a statistically significant positive effect and a prison term squared has a statistically significant negative effect. Thus inmates with a longer prison term are more likely to join a job training program but the marginal effect is negative. Also other crimes have a statisitically significant negative effect on job training program participation. So inmates who commited other crimes are less likely to join the training program. A drug related crime, a violnet crime, a theft or a fraud do not have any significant effect on the job training program participation.

### 3.3 The Effect of Inmate Charactersitics on Recidivism

In this section, we consider what sorts of inmate charactersitics affect recidivism. Specifically we consider their effect on both the probability of re-entry and the time between release from and re-entry into prison for both participants and non-participants of job training programs at Kawagoe Juvenile Correcitional Facility. We implement both Probit Analysis and a Cox's proportional hazard model (See Cox (1972)).

We have already explained the Probit model in the previous section. The term $Y_i$ is a re-entry dummy which takes one is the inmates has come back to prison within five years after release and zero otherwise. As a set of charactersitics $X_i^{'}$ for each inmate, we consider 1) job training 2) IQ, 3) educational attainment, 4) type of a crime, 5) age at the time of release, 6) prison term and 7) release year. Next we explain Cox's proportional hazard model. Suppose $T_i$ denotes the time between relkease from and re-entry into prison. Then hazard rate $\lambda_i(t)$ is defined as follows:

$$\lambda_i(t) = \lim_{h \to 0} \frac{P[t \leq T_i < t + h \mid t \leq T_i]}{h}$$

where $\lambda_i(t)$ can be decomposed into two terms as follows:

$$\lambda_i(t \mid x_i, \beta) = \lambda_0(t) \exp(x_i^{'} \beta)$$

Here $\lambda_0(t)$ is a baseline hazarda rate and the above equation for $\lambda_i(t \mid x_i, \beta)$ is done by partial likelifood approach in Cox (1975).

Table 4 Panel A shows the results for Probit model. Program participation, IQ,educational attainment and release on parole have all stastisitcally singificant effct on reducing the probability of re-entry. On the other hand, a drug related crime and a theft have a statistically significant effect of increasing the probability of re-entry. All of the release years have signicicant effect of raising the probability of re-entry. Age and initial length of the sentence, a violent crime, a fraud and other crimes do not have statistically significant effect.

Table 4 Panel B shows the results for Cox's model. Program participation, IQ,educational attainment, and release on parole have all stastisitcally singificant effct on lengthing the time till re-entry. On the other hand, age at release, a drug related crime and a theft have a statistically significant effce of shortening the time till re-entry. All of the release years have signicicant effect of shortening the time till re-entry. Initial length of the sentence, a violent crime, a fraud and other crimes do not have statistically significant effect.

### 3.4 The Absolute Effect of Job Training for Participants vs. Non-participants

In this section, we specifically focus on the effect of job training program on recidivism. We implement this analysis in order to account for a possibility that an IQ and educational attainment

cannot fully control for the unobserved heterogeneity. The matching method can account for the selection bias which cannot be addressed by a Cox's proportional hazard model.

There are both participants and non-participants in the job training program. We denote each participant or non-participant by $i$. There are $N_1$ number of individuals who have participated in any job training programs at Kawagoe Juvenile correctional facility. We denote the status of individual $i$ for the re-entry within five years after release by a set of dummy variables $(Y_i(0), Y_i(1))$ where $Y_i(1)$ is the outcome of the re-entry for those who have joined at least one of the job training programs and $Y_i(0)$ is the outcome of the re-entry for those who have not. We cannot observe both $Y_i(0)$ and $Y_i(1)$ at the same time for any individual $i$. Let $Y_i$ denote the observabled outcome for an individual $i$. We call a group of individuals who have taken at least one of the job training programs "a treatment group" and those who have not taken any of the job training programs "a control group". Then,

$$Y_i = Y_i(D_i) = \begin{cases} Y_i(0) & \text{if } D_i = 0 \\ Y_i(1) & \text{if } D_i = 1 \end{cases} \tag{1}$$

where $D_i$ is a dummy variable which takes one if an individual $i$ has taken at least one of the job training programs and zero otherwise. Then the effect of the job training program, or $ATT$ (Average Treatment of the Treated) of the job training program, is written as follows:

$$ATT = \frac{1}{N_1} \sum_{i|D_i=1} (Y_i(1) - Y_i(0)|D_i = 1) \tag{2}$$

We cannot observe the outcome of the job training program if an individual in the treatment group does not participate in any one of the job training programs, that is, we cannot observe $(Y_i(0)|D_i = 1)$. In this paper, we estimate the outcome $(Y_i(0)|D_i = 1)$ by following the approach in Abadie et. al, (2001). Let $||a||_V = (a'Va)^{1/2}$ be a vector norm for a positive definite weight

matrix V. We define $||a-b||_V$ to be the distance between the vectors $a$ and $b$. Let $X_i$ be a vector covariate for individual $i$ who have taken at least one of the job training programs. Then we define $d_M(i)$ as the distance between a vector $X_i$ and the vector corvatiate of the Mth nearest individual who has not taken any job training program. Let $J_M(i)$ denote the set of individuals who have not taken any job training program and whose covariates $X_l$ are within distance of $d_M(i)$:

$$J_M(i) = \{l = 1, ..., N_l | D_l = 0, ||X_l - X_i||_V \leqq d_M(i)\} \tag{3}$$

Then we can obtain the matching estimator $ATT_m$ for $ATT$ as follows:

$$ATT_m = \frac{1}{N_1} \sum_{i|D_i=1} (Y_i(1) - \widehat{Y}_i(0)) \tag{4}$$

where

$$\widehat{Y}_i(0) = \begin{cases} Y_i & \text{if } D_i = 0, \\ \frac{1}{\#J_M(i)} \sum_{l \in J_M(i)} Y_l & \text{if } D_i = 1, \end{cases} \tag{5}$$

and $\#J_M(i)$ is the number of individuals in $J_M(i)$.

When we analyze both of the two dataset, we set $M$ equal to five (a small M is preferable and we tried a set of diferent values for $M$ ranging from 1 to 10, but the results were similar.) Let $V = S^{-1}$ where $S$ is the sample covariance matrix of the covariates. In the empirical analysis below, we follow the approach in Abadie and Imbens (2007) and further correct for the bias that converges at a rate that may be slower than $N^{1/2}$ by running regresions. In this section, we choose the element of a six by one vector $X_i$ as 1)the released date, 2)IQ, 3)educational attainment, 4)prison term, 5)parole dummy and 6) the type of offenses.

We conduct both a Probit analysis and a duration analysis. In the Probit analysis, we set the

outcome variable $Y_i$ as the probability for whether the ex-criminals commit a crime again and come back to prison within five years after release. In duration analysis, we set the outcome variable $Y_i$ as the duration till the re-entry to prison within five years after release. Although we have to consider the right censoring issue which is important in the duration analysis, we employ an alternative model focusing on the re-entry within five years after release because most of the criminals tend to re-enter into prison within five years. Figure 7 shows that the survival rate for those who do not re-enter into prison steadily declines until about five years after release and then the rate stays at the same level. For that reason, we set $Y_i$ to be about five years (1800 days, to be exact) for those who does not re-enter into prison within five years and employ the matching method described above. We ignore the right censoring issue by using observations that make it possible to track all the ex-criminals whether they re-enter into prison within five years after release.

### 3.5 The Relative Effect of Job Training among Participants

There are $N$ number of individuals who have participated in any one of the eighteen job training programs at Kawagoe Juvenile correctional facility. We denote each individual by $i$ and each job training program by $j$. We denote the staus of individual $i$ for the re-entry within five years after release by a set of dummy variables $(Y_i^j(0), Y_i^j(1))$ where $Y_i^j(1)$ is the outcome of the re-entry for those who have joined the job training program $j$ and $Y_i^j(0)$ is the outcome of the re-entry for those who have not. We cannot observe both $Y_i^j(0)$ and $Y_i^j(1)$ at the same time for any individual $i$. Let $Y_i^j$ denote the observabled outcome for an individual $i$. We call a group of individuals who have taken a job training program $j$ "a treatment group" and those who have taken job training programs other than $j$ "a control group". Then,

$$Y_i^j = Y_i^j(W_i^j) = \begin{cases} Y_i^j(0) & \text{if } W_i^j = 0 \\ Y_i^j(1) & \text{if } W_i^j = 1 \end{cases} \tag{6}$$

where $W_i^j$ is a dummy variable which takes one if an individual $i$ has taken a job training program $j$ and zero otherwise. Then the effect of the job training program $j$, or $ATT^j$ (Average Treatment of the Treated) of the job training program $j$, is written as follows:

$$ATT^j = \frac{1}{N^j} \sum_{i|W_i=1} (Y_i^j(1) - Y_i^j(0)|W_i^j = 1) \tag{7}$$

where $N^j = \sum_i W_i^j$ is the number of individuals who have taken the job training program $j$. We cannot observe the outcome of the job training program $j$ if an individual in the treatment group does not participate in the job training program $j$, that is, we cannot observe $(Y_i^j(0)|W_i^j = 1)$. In this paper, we estimate the outcome $(Y_i^j(0)|W_i^j = 1)$ by following the same approach as in previous sub-section. Let $X_i^j$ be a vector covariate for individual $i$ who have taken a job training program $j$. Then we define $d_M(i,j)$ as the distance between a vector $X_i^j$ and the vector corvatiate of the Mth nearest individual who has not taken a job training program $j$. Let $J_M(i,j)$ denote the set of individuals who have not taken a job training program $j$ and whose covariates $X_l^{k \neq j}$ are within distance of $d_M(i,j)$:

$$J_M(i,j) = \left\{ l = 1, ..., N | W_l^j = 0, ||X_l^{k \neq j} - X_i^j||_V \leqq d_M(i,j) \right\} \tag{8}$$

Then we can obtain the matching estimator $ATT_m^j$ for $ATT^j$ as follows:

$$ATT_m^j = \frac{1}{N^j} \sum_{i|W_i^j=1} (Y_i^j(1) - \widehat{Y}_i^j(0)) \tag{9}$$

where

$$\widehat{Y^j}_i(0) = \begin{cases} Y_i^j & \text{if } W_i^j = 0, \\ \frac{1}{\#J_M(i,j)} \sum_{l \in J_M(i,j)} Y_l^j & \text{if } W_i^j = 1, \end{cases} \tag{10}$$

and $\#J_M(i,j)$ is the number of individuals in $J_M(i,j)$. **In this section, we chose the element of a two by one covariate vector as 1) the date of completion of a job training received and 2)the date of release from Juvenile correctional facility**

We also conduct both a Probit analysis and a duration analysis. In the Probit analysis, we set the outcome variable $Y_i^j$ as the probability of committing a crime again and coming back to prison within five years after release for criminals with a specific job training $j$. In duration analysis, we set the outcome variable $Y_i^j$ as the duration till the re-entry to prison within five years after release for criminals with a specific job training $j$ .

### 3.6 The Effect of Job Training Program on Recidivism

The results on both Probit analysis and duration analysis for the first dataset are given in Table 5. We tried five separate combinations of covariate $X$.

First, we compare the probability of re-entry into prison for both the treatment group (participants) and the control group (non-participants). Each coefficient in part A of Table 5 shows the difference in probability of re-entry into prison within five years after release between participants and non-participants. The part A of Table 5 shows that those who took any job training have a statisitically significant smaller probability of re-entry into prison compared with a situaiton when they would not have taken any job training programs at all for all the combinations of covariates except for the case when we omit the prison term as a covariate. Second, we compare the duration till the re-entry into prison within five years after release for the same two groups. Each coeffi-

cient in part B of Table 5 shows the difference in duration between the release from and reentry into prison between participants and non-participants. The part B of Table 5 shows there is no statisitically significant difference in duration between the participants and non-participants for all the combinations of covariates. Thus, the job training programs have the effect of decreasing the probability of re-entry into prison but does not extend the duration till the re-entry into prison. As a result, we find that job training programs have a positive effect on preventing criminals from committing a crime again after release from a prison.

The results on both Probit analysis and duration analysis for the second dataset are given in Table 6. In the first column, we compare the probability of re-entry into prison for the treatment group (participants in a specific job training program) and for the control group (participants in other job training programs) for each of the eighteen job training programs. Each coefficient in the first column shows the difference in probability between taking a specific job training program and not taking that specific job training program. The first column shows that those who took forklift driving, automobile repair, information processing and hair dressing have a statisitically significant smaller probability of re-entry into prison compared with a situaiton when they would have taken any other job training programs. However, those who took construction machine and tatami mat have a statistically higher probablity of re-entry into prison compared with a situaiton when they would have taken other job training programs.

In the second column, we compare the duration till the re-entry into prison within five years after release for the treatment group and for the control group for each of the eighteen job training programs. Each coefficient in the second column shows the difference in duration between taking a specific job training program and not taking that specific job training program. The second column shows that those who took automobile repair, information processing extend the duration till re-entry into prison compared with the situaiton when they would have taken other job training

programs. Also, those who took gardening and tatami mat production and repair shorten the duration till re-entry into the prison compared with the situaiton when they would have taken other job training programs.

Thus, the job training programs on automobile repair and information processing have the effect of not only decreasing the probability of re-entry into prison but also extending the duration till the re-entry into prison. Also, the job training program on tatami mat production and repair has the effect of not only increasing the probability of re-entry into the prison but also shorten the duration till the re-entry into the prison. As a result, we find that some job training programs have a positive effect on preventing the crime again and other job training programs have a negative effect on preventing the re-entry into prison. **One possible explanation for this is that there is more demand for automoble repair than tatami mat production and repair at the time the inmates are released. However, we do not know if inmates who have taken a job training in automobile repair has got a job in that or related field so we do not know the reason. If the Ministry of Justice in Japan can send a questionare to both the randomly selected inmates with a job training and those without a job training we can investigate in more detail the relative effect of the job training program.**

In order to archieving the purpose of providing an effective job training program, we have to examine the variety of the job training programs including the abolishment of job training programs with a negative effect.

# 4 Conclusion

In this paper, we compared the re-entry ratio for inamates at Kawagoe Juvenile Correctional Facility in Japan. Then we considerd who are more likely to come back to prison by the charactersitics

of inmates. We also investigated the effect of various characteristics on re-entry probability and duration till re-entry. We finally considered both the relative and absolute effect of a job training program for criminals inside a prison on the probability of re-entry and duration till re-entry. By working with two separate observations, we showed that 1) inmates with higher IQ and longer initial prison term are more likely to participate in the job training program, 2) characteristics of inmates such as program participation, IQ, educational attainment and release on parole will both lower the probability of re-entry and lengthening the duration till re-entry, 3) a job training program in general has a statisitcally positive effect on lowering the probability of re-entry and 4) some types of job training programs have a statistically stronger effect than others in lowering the probability of re-entry and making the duration till re-entry longer. Thus, a job training program is effective for the prevention of future crime by criminals and a shift of participants from less effective programs to more effective programs may lead to the improvement of the overall effectiveness of the job training programs in prison.

**As for future research topics, we could investigate the effectiveness of job training programs on recidivism in more detail if we have observations on the characteristics of each inmate after release such as the empoyment status, the type of jobs for those who are employed and so on. Although there is no such survey for the two observations in this paper, we hope that the Ministry of Justice in Japan or in any other countries will send a questionare after release to two sets of randomly selected inmates who have taken a job training program and who have not so that we can implement more detailed analyses on the recidivism.**

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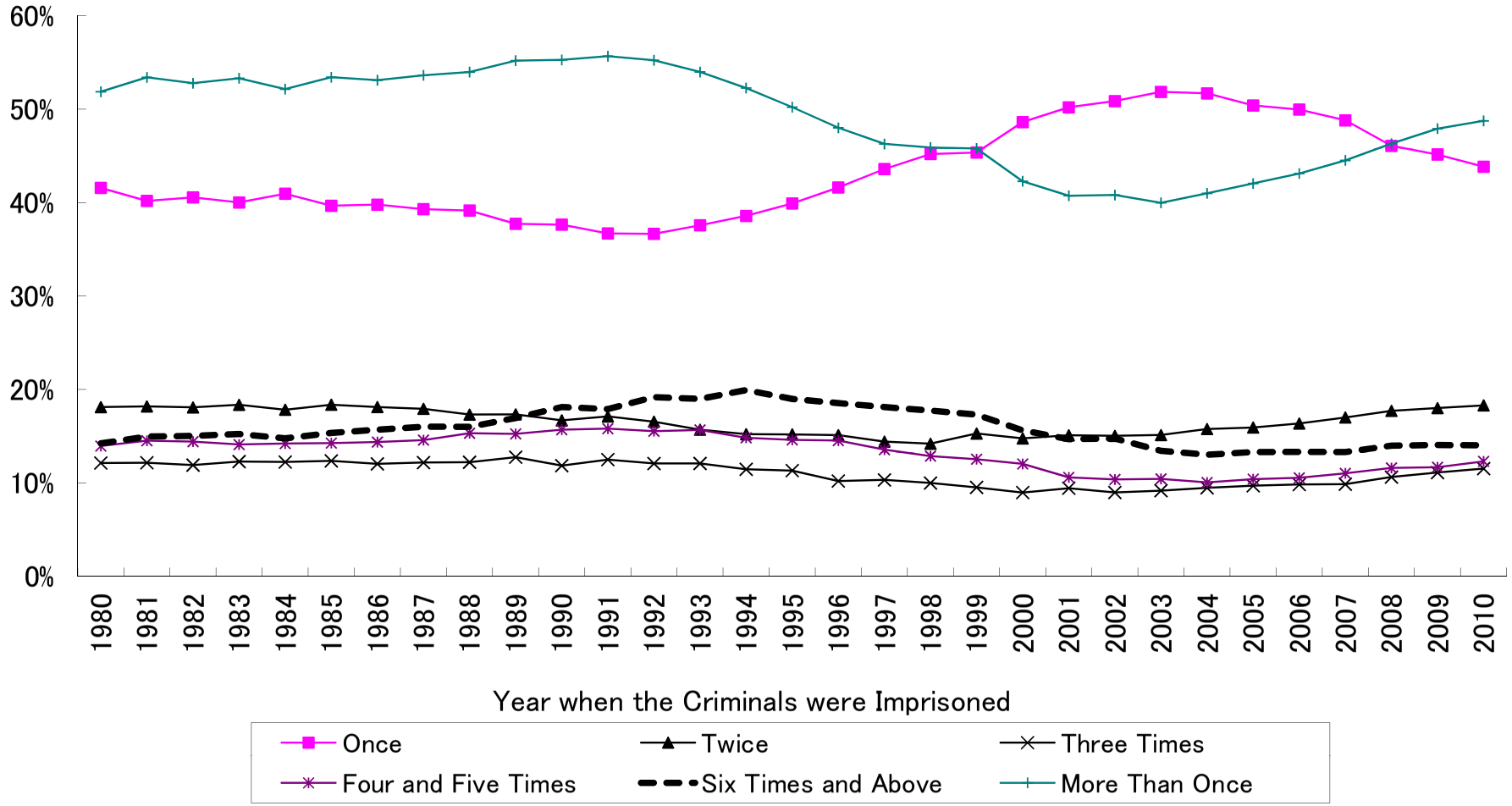
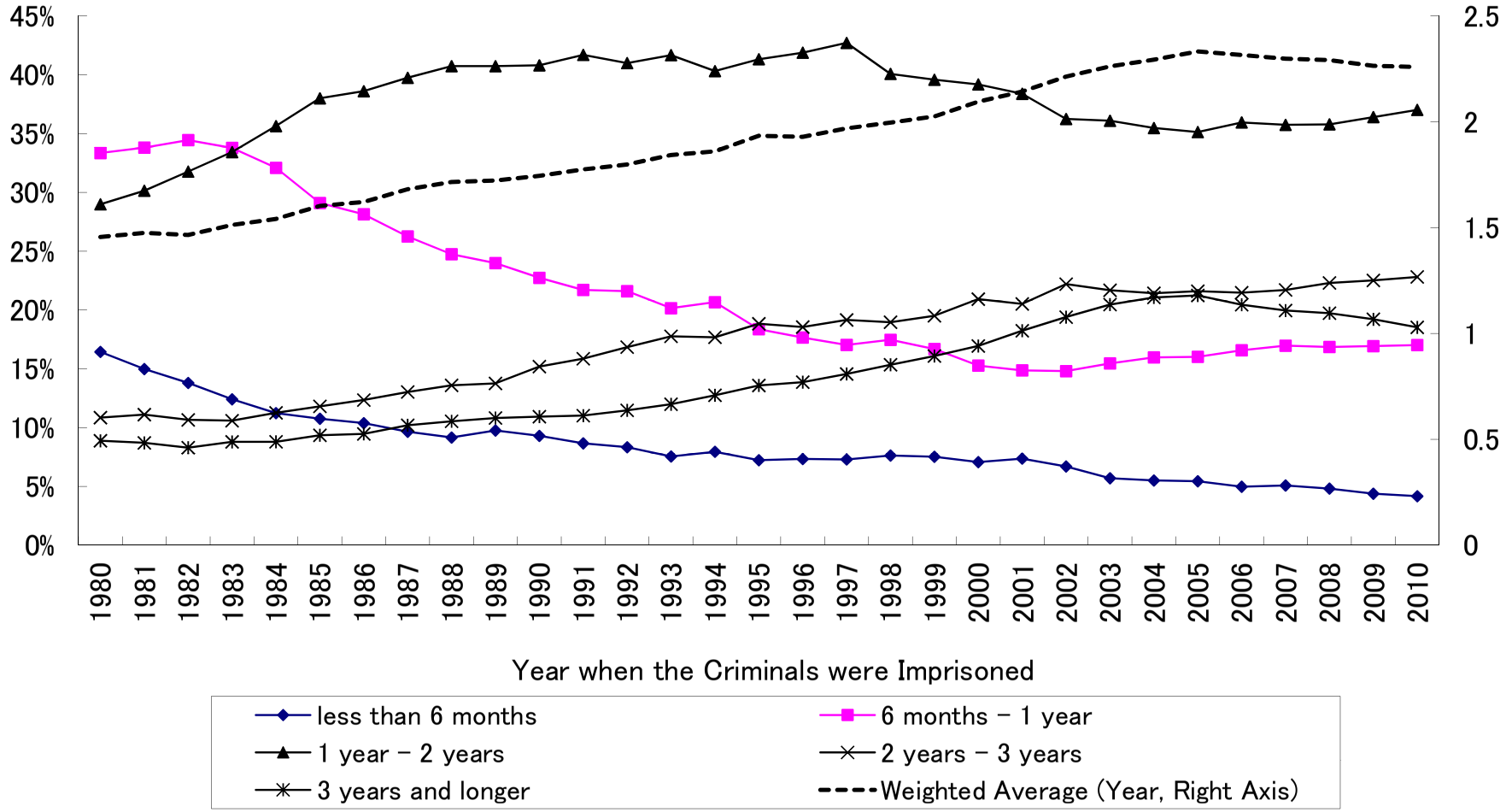
Figure 1

The Frequency of Imprisonments for Criminals




Source: Annual Report of Statistics on Correction (Table 10-23)

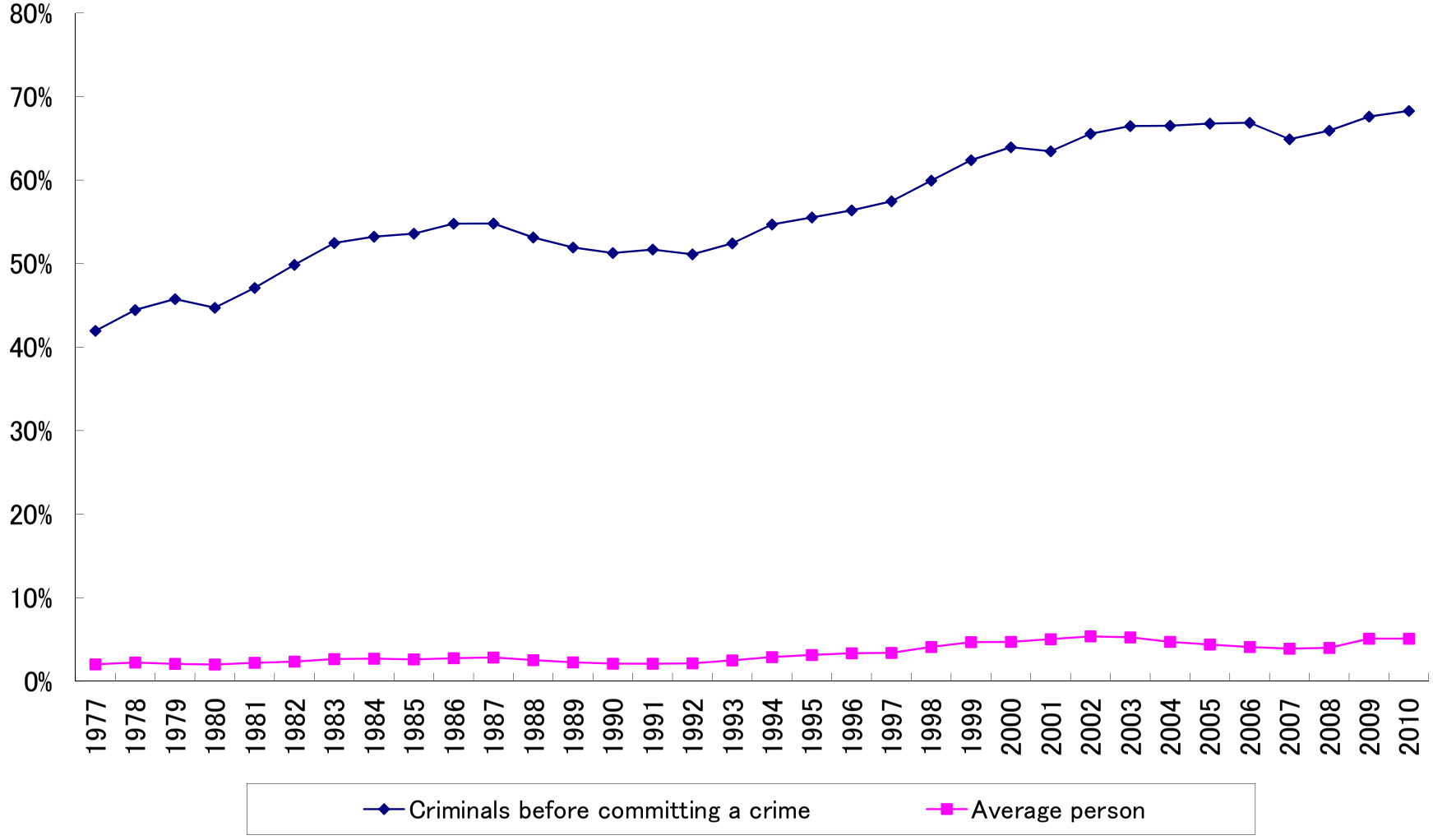
Figure 2
The Initial Length of Sentences




Source: Annual Report of Statistics on Correction (Table 10-19)

Figure 3

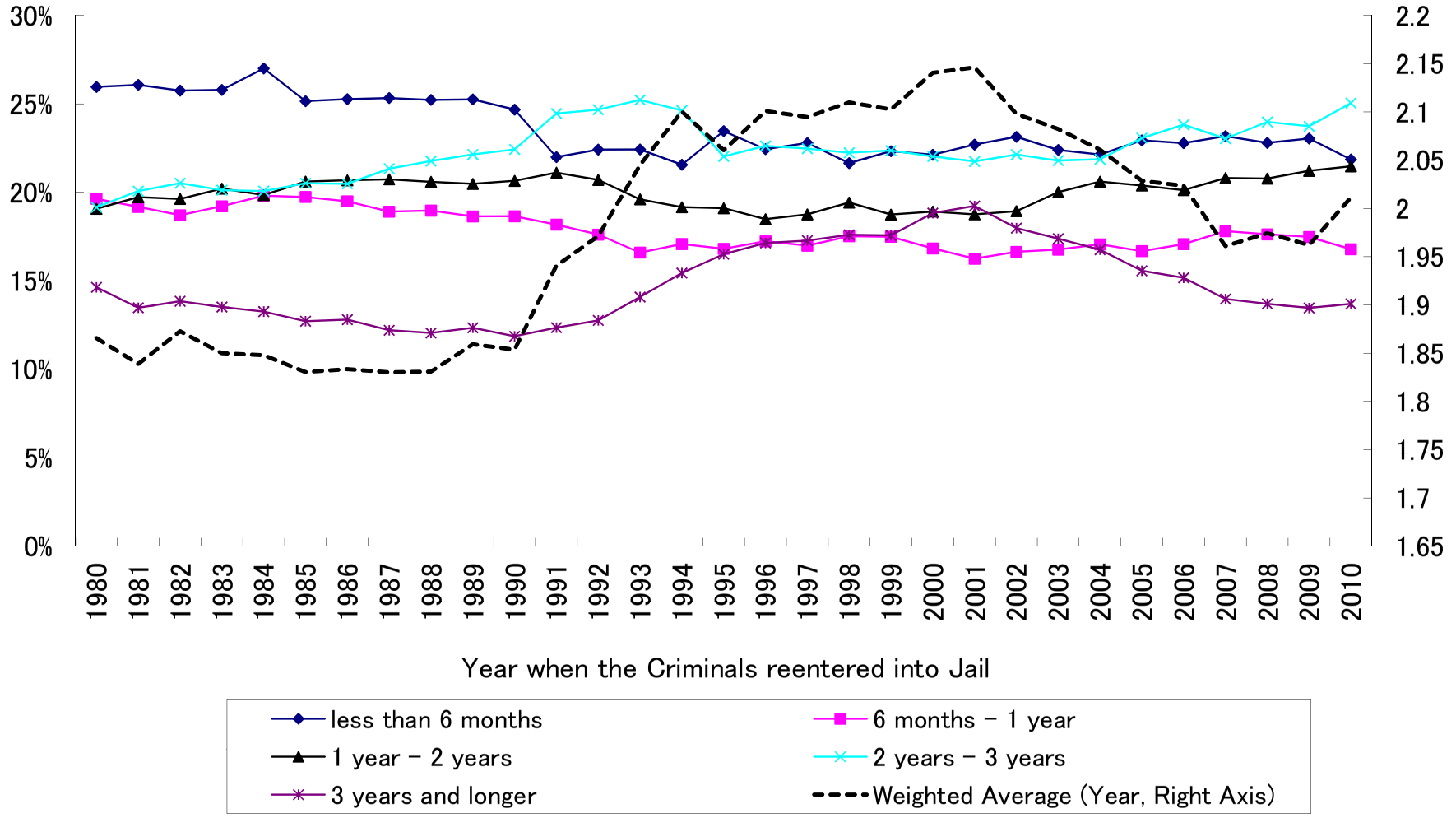
Unemployment Rate (Criminals before Comitting a Crime and Average People in Japan)




Source: Annual Report of Statistics on Rehabilitation (Table 10-32)

Figure 4

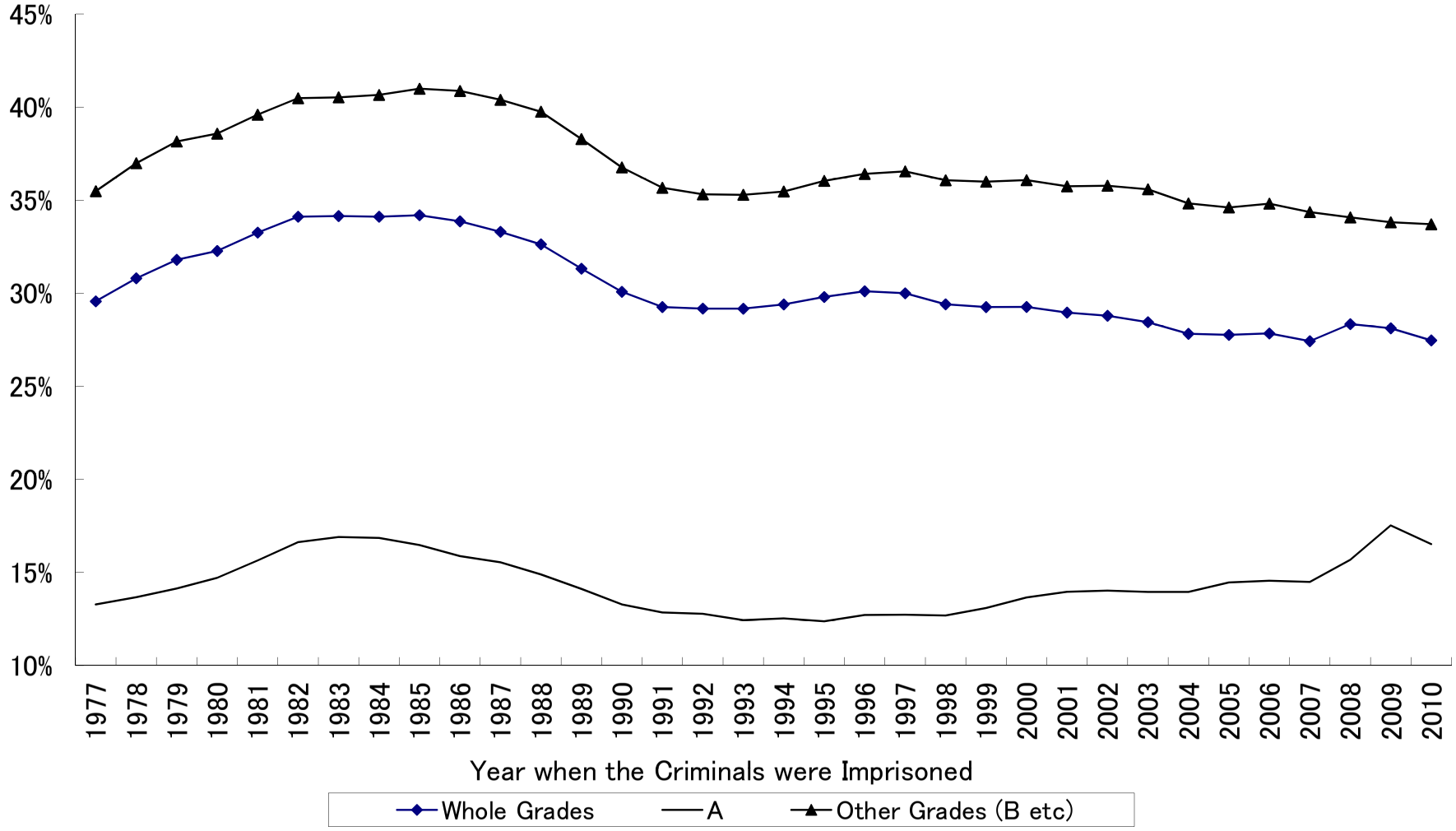
The Time Period betweem the Release and Re-entry




Source: Annual Report of Statistics on Correction (Table 10-54)

Figure 5

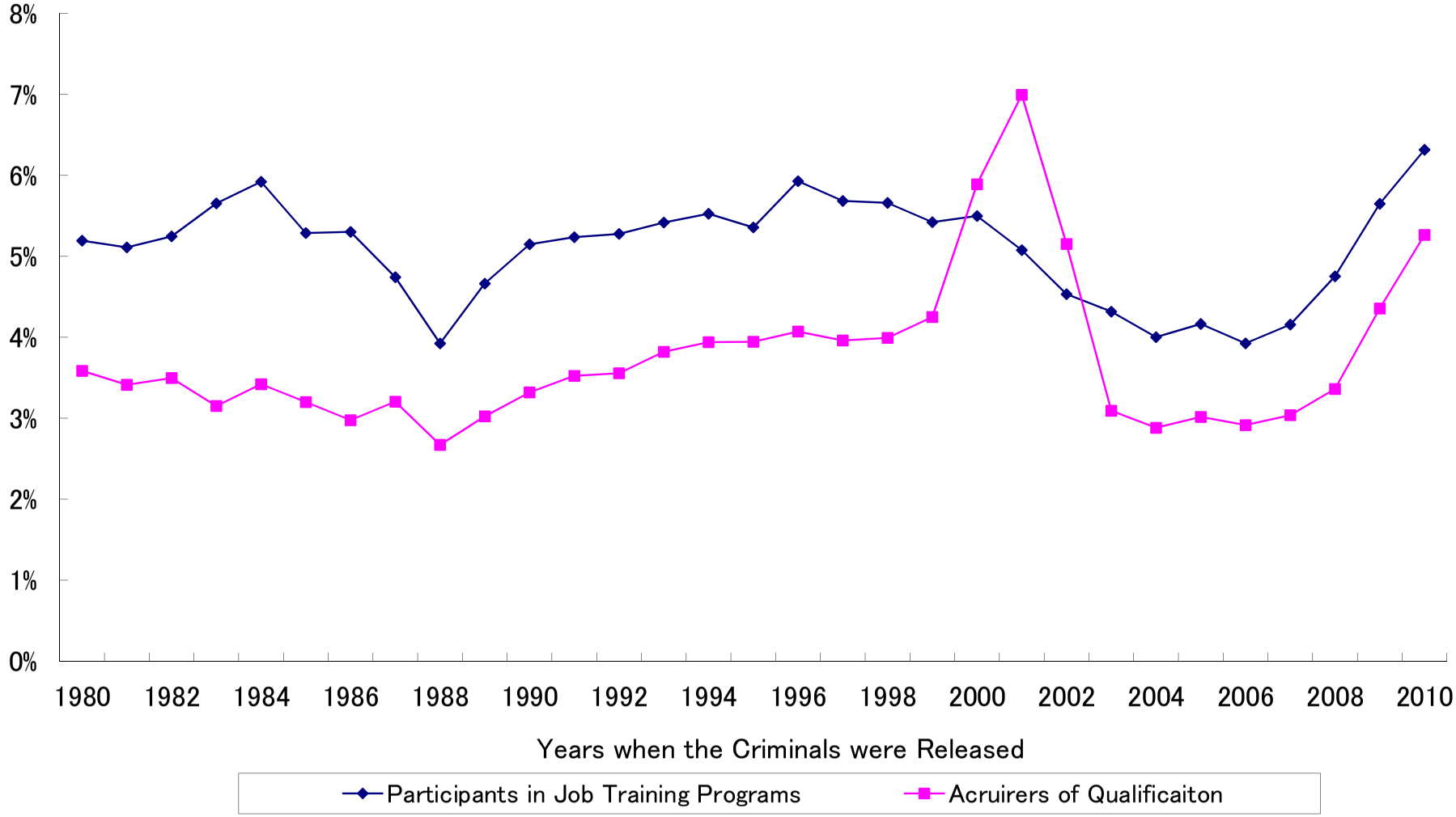
Recividism Rate by the Criminal Type




Source: Annual Report of Statistics on Correction (Table 10-66)

Figure 6

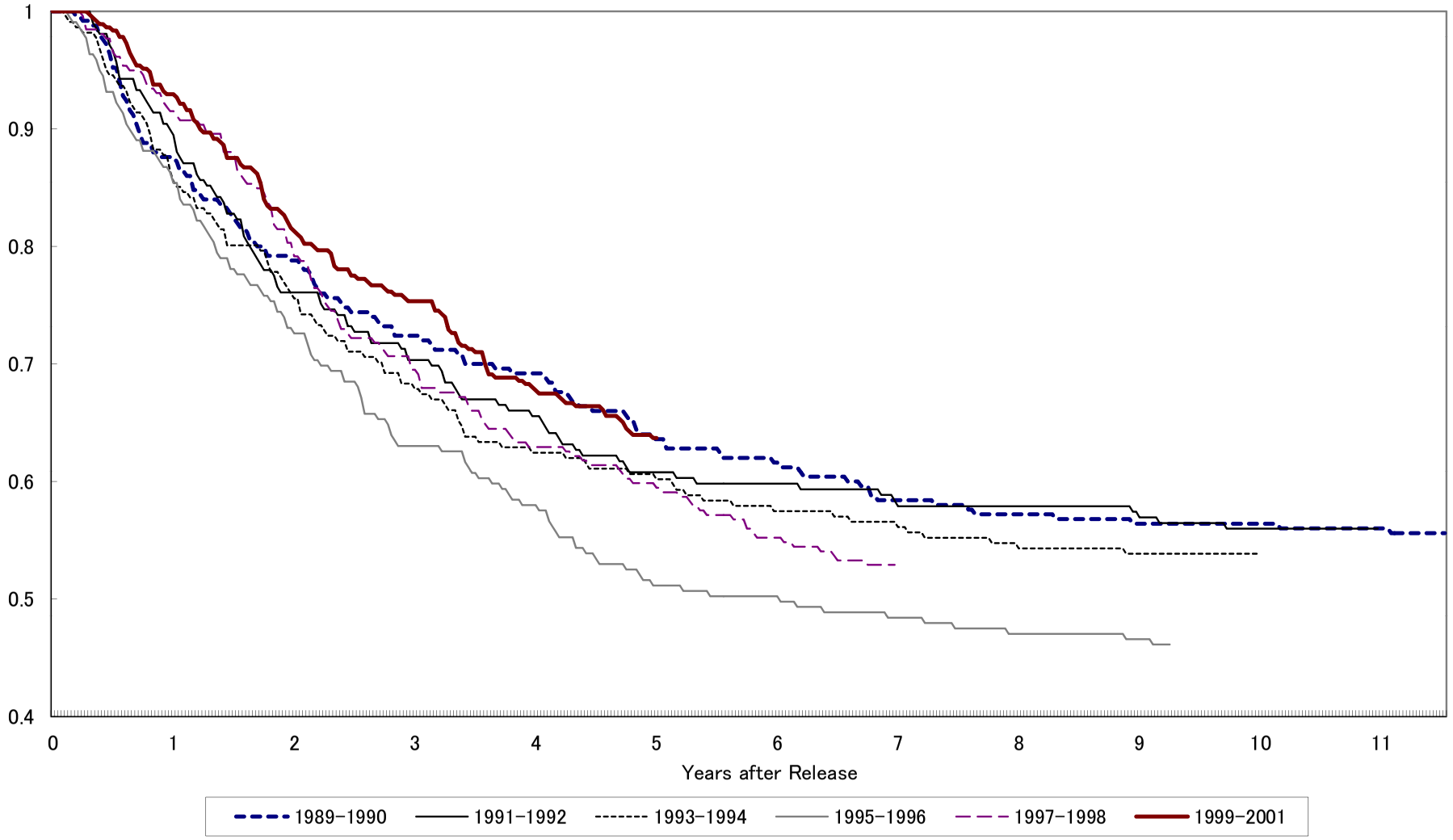
Participation Ratio for Job Training Programs and Certificate Acquisition




Source: Annual Report of Statistics on Correction (Table 10-67,72,73)

Figure 7

The Ratio of Those Who Have Not Re-entered into Jail after Release by Released Year




Source: Authors' Calculation by using microdata of Kawagoe Juvenile Correction Facility

**Table 1**

Participants in Job Training Programs in Correctional Facilities in Japan

| Year when the Criminals were Released | Construction Machine Driving | Welding | Boiler Maintenance | Software Management | Electric Construction | Plasterer | Automobile Repairs | Car Driving | Woodwork | Printing | Construction Machine Maintenance | Hair Dressings | Radio Communication | Clarial Work | Others | Total |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1976 | 40 | 194 | 95 | . | 69 | 110 | 61 | 171 | 75 | 34 | 40 | 39 | 5 | 0 | 422 | 1355 |
| 1977 | 50 | 194 | 122 | . | 75 | 120 | 72 | 246 | 62 | 51 | 50 | 44 | 6 | 1 | 385 | 1478 |
| 1978 | 46 | 218 | 99 | . | 63 | 120 | 89 | 192 | 59 | 51 | 46 | 40 | 11 | 2 | 391 | 1427 |
| 1979 | 45 | 200 | 101 | . | 88 | 99 | 96 | 188 | 54 | 45 | 45 | 54 | 11 | 1 | 375 | 1402 |
| 1980 | 49 | 222 | 90 | | 84 | 107 | 70 | 62 | 45 | 45 | 49 | 51 | 10 | 0 | 488 | 1372 |
| 1981 | 36 | 252 | 90 | | 65 | 119 | 88 | 76 | 36 | 37 | 36 | 47 | 12 | 4 | 451 | 1349 |
| 1982 | 64 | 246 | 90 | | 72 | 115 | 80 | 118 | 4 | 27 | 64 | 68 | 9 | 3 | 409 | 1369 |
| 1983 | 47 | 275 | 77 | | 77 | 114 | 105 | 95 | 48 | 40 | 47 | 56 | 8 | 4 | 515 | 1508 |
| 1984 | 52 | 303 | 109 | | 97 | 122 | 104 | 90 | 35 | 54 | 52 | 47 | 10 | 3 | 500 | 1578 |
| 1985 | 67 | 245 | 100 | | 84 | 110 | 82 | 64 | 42 | 53 | 67 | 52 | 7 | 2 | 406 | 1381 |
| 1986 | 62 | 254 | 87 | | 96 | 107 | 80 | 77 | 47 | 49 | 62 | 48 | 7 | 3 | 414 | 1393 |
| 1987 | 66 | 220 | 79 | | 96 | 102 | 83 | 72 | 43 | 35 | 66 | 45 | 11 | 2 | 400 | 1320 |
| 1988 | 45 | 234 | 57 | | 65 | 95 | 58 | 52 | 30 | 28 | 45 | 35 | 9 | 3 | 352 | 1108 |
| 1989 | 55 | 251 | 81 | | 87 | 110 | 77 | 64 | 25 | 47 | 55 | 50 | 7 | 1 | 373 | 1283 |
| 1990 | 54 | 266 | 86 | | 95 | 95 | 78 | 64 | 45 | 39 | 54 | 46 | 9 | 0 | 389 | 1320 |
| 1991 | 54 | 252 | 84 | | 85 | 80 | 83 | 52 | 33 | 31 | 54 | 50 | 10 | 0 | 341 | 1209 |
| 1992 | 60 | 225 | 105 | | 67 | 66 | 46 | 44 | 33 | 28 | 60 | 63 | 8 | 0 | 323 | 1128 |
| 1993 | 61 | 232 | 95 | | 75 | 73 | 68 | 33 | 25 | 25 | 61 | 54 | 13 | 0 | 344 | 1159 |
| 1994 | 76 | 229 | 105 | | 63 | 77 | 51 | 36 | 31 | 31 | 76 | 54 | 10 | 0 | 321 | 1160 |
| 1995 | 71 | 164 | 91 | | 62 | 62 | 54 | 28 | 32 | 27 | 71 | 50 | 11 | 0 | 380 | 1103 |
| 1996 | 73 | 187 | 96 | | 75 | 79 | 52 | 22 | 32 | 37 | 73 | 48 | 6 | 0 | 438 | 1218 |
| 1997 | 98 | 169 | 84 | | 78 | 74 | 50 | 20 | 34 | 25 | 98 | 46 | 10 | 0 | 404 | 1190 |
| 1998 | 72 | 139 | 91 | | 62 | 68 | 58 | 23 | 34 | 40 | 72 | 45 | 7 | 0 | 437 | 1148 |
| 1999 | 134 | 122 | 81 | | 57 | 70 | 43 | 29 | 26 | 34 | 134 | 57 | 9 | 1 | 342 | 1139 |
| 2000 | 146 | 135 | 105 | | 70 | 57 | 63 | 18 | 34 | 34 | 146 | 69 | 8 | 1 | 298 | 1184 |
| 2001 | 128 | 109 | 99 | 22 | 59 | 52 | 54 | | 31 | 33 | 128 | 34 | 1 | 14 | 318 | 1082 |
| 2002 | 103 | 95 | 46 | 32 | 37 | 32 | 20 | | 12 | 9 | 103 | 28 | 1 | 9 | 606 | 1133 |
| 2003 | 118 | 113 | 75 | 72 | 60 | 51 | 41 | | 18 | 31 | 118 | 11 | 1 | 6 | 390 | 1105 |
| 2004 | 83 | 115 | 81 | 71 | 57 | 54 | 54 | | 22 | 21 | 83 | 40 | 8 | 4 | 375 | 1068 |
| 2005 | 123 | 136 | 104 | 92 | 52 | 40 | 63 | | 36 | 30 | 88 | 30 | 3 | 24 | 430 | 1251 |
| 2006 | 124 | 148 | 76 | 112 | 68 | 47 | 57 | | 32 | 23 | 26 | 29 | | 27 | 432 | 1201 |
| 2007 | 108 | 157 | 77 | 135 | 50 | 43 | 62 | | 35 | 9 | 25 | 45 | | 18 | 539 | 1303 |
| 2008 | 115 | 161 | 64 | 136 | 59 | 44 | 62 | | 28 | 15 | 10 | 41 | | 22 | 749 | 1506 |
| 2009 | 100 | 157 | 154 | 147 | 66 | 38 | 58 | | 23 | 10 | 32 | 56 | | 69 | 797 | 1707 |
| 2010 | 147 | 180 | 206 | 142 | 58 | 24 | 61 | | 32 | 6 | 76 | 58 | | 95 | 776 | 1861 |

Source: Annual Report of Statistics on Correction

Table 2
Renentry Ratio for Inmates

| | Reentry ratio |
|---|---|
| TOTAL | 31% |
| Age at release | |
| −22 | 31% |
| 23 − 24 | 28% |
| 25 − 26 | 34% |
| 27 − | 26% |
| Educational Attainment | |
| Junior high school graduate | 40% |
| Senior high school dropouts | 30% |
| Senior high school graduate | 25% |
| More than senior high school | 16% |
| IQ | |
| < 80 | 43% |
| 80 − 89 | 31% |
| 90 − 99 | 24% |
| 100 − | 22% |
| Initial, sentenced prison term | |
| Less than one years | 36% |
| Less than two years | 33% |
| Less than three years | 32% |
| Three years and more | 25% |
| Type of Offenses | |
| Drugs | 35% |
| Violent | 21% |
| Fraud | 20% |
| Theft | 44% |
| Other | 31% |
| Parole | |
| Yes | 29% |
| No | 39% |
| Program Participation | |
| Yes | 23% |
| No | 34% |

Number of Total Inmates = 2068
Number of Participants =567
Number of Non−participants = 1501

**Table 3**

Estimation Results on the Participation in the Job Training Program

| VARIABLES | training |
|---|---|
| IQ | 0.0059*** |
| | (0.00089) |
| Educational Attainment | 0.012 |
| | (0.0079) |
| Prison Term | 0.031*** |
| | (0.0023) |
| Prison Term Squared | −0.00021*** |
| | (2.70e−05) |
| Drugs | 0.0091 |
| | (0.0320) |
| Violent | −0.0069 |
| | (0.0300) |
| Theft | 0.018 |
| | (0.039) |
| Fraud | −0.018 |
| | (0.026) |
| Other | −0.13*** |
| | −0.049 |
| Observations | 2,083 |

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Table 4A: Probit Model on Reentry

| | Coef. | Robust Std. Err. |
|---|---|---|
| Program Participation | −0.219* | 0.112 |
| IQ | −0.0181*** | 0.004 |
| Educational attainment | −0.0770** | 0.036 |
| Age at release | 0.050 | 0.026 |
| Initial, sentenced prison terr | 0.000 | 0.004 |
| Parole | −0.255** | 0.105 |
| Drugs | 0.420*** | 0.137 |
| Violent | −0.222 | 0.167 |
| Fraud | −0.129 | 0.191 |
| Theft | 0.813*** | 0.119 |
| Other | 0.259 | 0.245 |
| Release Year =2002 | 0.369*** | 0.134 |
| Release Year =2003 | 0.592*** | 0.107 |
| Release Year =2004 | 0.304*** | 0.103 |
| Log pseudolikelihood | −4618.6847 | |
| Number of obs | 2068 | |

Table 4B: Cox's Model on Duration

| | Coef. | Robust Std. Err. |
|---|---|---|
| Program Participation | −0.051** | 0.026 |
| IQ | −0.004*** | 0.001 |
| Educational attainment | −0.028*** | 0.009 |
| Age at release | 0.017** | 0.007 |
| Initial, sentenced prison terr | −0.001 | 0.001 |
| Parole | −0.0065** | 0.03 |
| Drugs | 0.122*** | 0.038 |
| Violent | −0.033 | 0.036 |
| Fraud | −0.021 | 0.042 |
| Theft | 0.217*** | 0.03 |
| Other | 0.066 | 0.067 |
| Release Year =2002 | 0.094*** | 0.037 |
| Release Year =2003 | 0.163*** | 0.031 |
| Release Year =2004 | 0.090*** | 0.029 |
| Psuedo R2 | | |
| Number of obs | | |

*** p<0.01, ** p<0.05, * p<0.1

## Table 5

Estimation Results on the Difference in Probability of, and Duration till Reentry into the

(A) The Difference in Probability of Reentry into Prison

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| Coefficient | −0.063* | −0.066** | −0.066* | −0.040 | −0.078** | −0.099** | −0.047* |
| Standard Error | 0.030 | 0.028 | 0.030 | 0.028 | 0.030 | 0.030 | 0.028 |
| Composition of X: | | | | | | | |
| IQ | Yes | No | Yes | Yes | Yes | Yes | Yes |
| Educational Attainment | Yes | Yes | No | Yes | Yes | Yes | Yes |
| Prison Term | Yes | Yes | Yes | No | Yes | Yes | Yes |
| Released on Parole | Yes | Yes | Yes | Yes | No | Yes | Yes |
| Name of Offenses | Yes | Yes | Yes | Yes | Yes | No | Yes |
| The Date of Release | Yes | Yes | Yes | Yes | Yes | Yes | No |

(B) The Difference in Duration till Reentry into Prison

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) |
|---|---|---|---|---|---|---|---|
| Coefficient | 26.223 | 40.486 | 20.093 | −41.285 | 100.929 | −19.888 | −7.564 |
| Standard Error | 156.529 | 62.579 | 146.170 | 64.977 | 151.032 | 149.479 | 67.359 |
| Composition of X: | | | | | | | |
| IQ | Yes | No | Yes | Yes | Yes | Yes | Yes |
| Educational Attainment | Yes | Yes | No | Yes | Yes | Yes | Yes |
| Prison Term | Yes | Yes | Yes | No | Yes | Yes | Yes |
| Released on Parole | Yes | Yes | Yes | Yes | No | Yes | Yes |
| Name of Offenses | Yes | Yes | Yes | Yes | Yes | No | Yes |
| The Date of Release | Yes | Yes | Yes | Yes | Yes | Yes | No |

Note. Treatment group consists of participants (567) and control group consists of non−participants (1,50
in any job training program at the Kawagoe Correctional Facility in Japan between 2002 and 2005.
Standard errors in parentheses are robust due to Abadie and Imbens (2007).
* significant at 5%; ** significant at 1%

**Table 6**

Estimation Results on the Difference in Probability of, and Duration till Reentry into the Prison among Participants

| Treatment Group | The Difference in Probability of Reentry into Jail | | The Difference in Duration till Reentry into Jail | | Number of | |
|---|---|---|---|---|---|---|
| | | | | | Treatment Group | Control Group |
| (1) Cleaners | .050 | | −77.66 | | 180 | 1,238 |
| | (.046) | | (57.81) | | | |
| (2) Forklift Driving | −.608 | ** | −81.43 | | 23 | 1,395 |
| | (.225) | | (220.69) | | | |
| (3) Prefabricated Construction | .049 | | −62.14 | | 26 | 1,392 |
| | (.110) | | (148.16) | | | |
| (4) Boiler Maintenance | .016 | | −2.91 | | 92 | 1,326 |
| | (.061) | | (77.66) | | | |
| (5) Gardening | .160 | | −249.51 | * | 33 | 1,385 |
| | (.091) | | (114.25) | | | |
| (6) Metal Molding | .046 | | −77.87 | | 141 | 1,277 |
| | (.049) | | (59.16) | | | |
| (7) Architecture | −.003 | | 27.01 | | 41 | 1,377 |
| | (.082) | | (93.69) | | | |
| (8) Architectural Painting | −.039 | | 32.77 | | 62 | 1,356 |
| | (.068) | | (85.79) | | | |
| (9) Plasterer | .052 | | −23.35 | | 132 | 1,286 |
| | (.049) | | (57.90) | | | |
| (10) Automobile Repair | −.074 | * | 135.15 | * | 127 | 1,291 |
| | (.033) | | (57.19) | | | |
| (11) Construction Machine | .173 | * | −65.83 | | 97 | 1,321 |
| | (.079) | | (96.22) | | | |
| (12) Information Processing | −.156 | ** | 167.17 | ** | 141 | 1,277 |
| | (.048) | | (58.53) | | | |
| (13) Tatami mat | .113 | * | −153.60 | * | 106 | 1,312 |
| | (.113) | | (69.72) | | | |
| (14) Numerically-Controlled Machine | .012 | | 48.22 | | 44 | 1,374 |
| | (.083) | | (94.29) | | | |
| (15) Electric Construction | −.088 | | 89.69 | | 152 | 1,266 |
| | (.046) | | (53.91) | | | |
| (16) Sheet Metal Working | −.040 | | 75.26 | | 20 | 1,398 |
| | (.150) | | (179.65) | | | |
| (17) Woodwork | .055 | | −24.30 | | 58 | 1,360 |
| | (.071) | | (84.20) | | | |
| (18) Hair Dressing | −.303 | ** | −69.79 | | 63 | 1,355 |
| | (.059) | | (70.33) | | | |

Note. The treatment group consists of participants in a specific job training program at the kawagoe Correctional Facility in Japan between 1989 and 2000. The control group consists of participants in other job training programs at the Kawagoe Correctional Facility between the same period.
Standard errors in parentheses are robust due to Abadie and Imbens (2007).
* significant at 5%; ** significant at 1%