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KEMENTERIAN KEUANGAN
REPUBLIK INDONESIA



From
the People of Japan



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Impact Evaluation of Kartu Prakerja as a COVID-19 Recovery Program



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LIST OF ABBREVIATIONS

APEC	: Asia-Pacific Economic Cooperation
ATT	: Average Treatment Effect on the Treated
BIA	: Benefit Incidence Analysis
BKF	: Fiscal Policy Agency
BLK	: <i>Balai Latihan Kerja</i> or vocational training center
BNI	: <i>Bank Negara Indonesia</i>
COVID-19	: Coronavirus disease 2019
E-wallet	: Electronic wallet
IDR	: Indonesian Rupiah
ILO	: International Labour Organization
IV	: Instrumental variables
Ojol	: <i>Ojek online</i> or online dispatcher
OLS	: Ordinary least squares
PMO Prakerja/MPPKP	: Project Management Office or Manajemen Pelaksana Program Kartu
PODES	: <i>Potensi Desa</i> or Village Potential Census
PPKM	: <i>Pemberlakuan Pembatasan Kegiatan Masyarakat</i> or The Community Activities Restrictions Enforcement (CARE)
PSBB	: <i>Pembatasan Sosial Berskala Besar</i> or Large-scale social restrictions (LSSR)
PSM	: Propensity Score Matching
UNDP	: The United Nations Development Programme



EXECUTIVE SUMMARY

The Indonesian labor market faces significant challenges, as educational qualifications do not necessarily guarantee that an individual will fit the needs of an industry or a workplace. Moreover, the rapid digital transformation brought by the Industrial Revolution 4.0, and the COVID-19 pandemic crisis, present a 'double-disruption' scenario for workers (World Economic Forum, 2020).

Statistics Indonesia (2021) claims that the pandemic has caused at least 15.7 million workers to experience reduced working hours, 1.6 million workers become unemployed, 1.1 million of them to be furloughed, and 0.7 million workers to exit the labor force. On the other hand, around 2.5 million people enter the labor force every year. Indeed, the pandemic has affected workers in the short and medium-term, even creating lasting consequences in the longer term. Thus, advanced skilling, reskilling, and upskilling programs are required to ensure a prosperous future work and economy in the post-pandemic.

The Kartu Prakerja Program (hereafter Kartu Prakerja), launched in April 2020, aims to

improve workforce competencies, increase workforce productivity and competitiveness, and develop entrepreneurship (Government Regulation 76/2020). Thus, Kartu Prakerja is one of many government efforts to provide skilling, reskilling, and upskilling programs for future work. In response to the pandemic, Kartu Prakerja encountered adjustments to adopt aspects of social assistance measures by employing cash plus post-training transfers for the beneficiaries.

Kartu Prakerja uses an on-demand application program to improve work competencies, competitiveness, productivity, and entrepreneurship skills; it allows its beneficiaries to choose the training and the training providers. By the end of 2020, Kartu Prakerja has reached 5.5 million beneficiaries from 514 cities/districts across Indonesia. Kartu Prakerja also has more than 1,700 courses from 154 training providers that can be accessed through seven digital platforms. Kartu Prakerja has established a collaborative, integrated, and extensive ecosystem that includes training providers, digital platforms, payment partners, and educational institutions.

Although the program is relatively new (implemented for less than two years), the impact of Kartu Prakerja is evident, as 88.9 percent of beneficiaries claim that their skills have improved after completing Kartu Prakerja training (Statistics Indonesia, 2020). The impact is confirmed by the findings of this study, whereas the effect of Kartu Prakerja revolves around work competencies, productivity, and competitiveness. Kartu Prakerja also significantly affects the beneficiaries' entrepreneurial skills, which can create a multiplier effect on job creation. Thus, Kartu Prakerja has effectively achieved its goals.

Moreover, there is also the evidence that Kartu Prakerja significantly impacts wages. This study uses the Mincer Wage Equation - based on Human Capital theory which is widely used in empirical economics and has been applied to numerous areas of labor economics. The equation plays a central part in the literature devoted to exploring the return to human capital investment. It is worth noting that further observations and investigations on Kartu Prakerja's impact in the medium and long term might be needed to validate this study's results further.

As the pandemic accelerates technological adoption, Kartu Prakerja also contributes to the changes of nature of learning (from face-to-face to online learning) and the adoption of digital financial services. Kartu Prakerja has also effectively helped beneficiaries to cover their daily needs during the pandemic, with some beneficiaries using the post-training incentive as working capital.

In addition to being innovative (as it combines competency improvement and social protection in Indonesia), Kartu Prakerja can be an example of good practice at the international level. The success story of Kartu Prakerja may contribute to the development of empirical study on the human capital theory, which proves that Kartu Prakerja is one of the most significant government training initiatives with a positive impact and an effective and efficient implementation system.

As part of the impact evaluation of the Kartu Prakerja, this study conducted an online survey from September 24 to November 1, 2021. The total number of respondents reached 2,156, comprising two groups, 1,078 respondents for

beneficiaries (treatment group) and the remaining were non-beneficiaries (control group). The response rate was 11 percent, with a margin of error of around 3 percent and a confidence level of 5 percent. The qualitative approach was analyzed based on 188 in-depth interviews with various stakeholders in the program ecosystem.

Key Finding 1: Kartu Prakerja improves work competencies, productivity, and competitiveness. It also strengthens the entrepreneurial skills of beneficiaries by providing them with new ideas and strategies to encourage them to start a new business.

After completing the training, Kartu Prakerja beneficiaries have 74 percentage points (2.2 percent) higher in work competencies than non-beneficiaries, that estimated using the Propensity Score Matching (PSM) model. Meanwhile, improvements in beneficiaries' productivity, competitiveness, and entrepreneurial skills are 24 percentage points (2.7 percent), 67 percentage points (3.8 percent), and 177 percentage points (48.5 percent) higher than non-beneficiaries, respectively.

These results also indicate that the beneficiaries have improved their time management, self-confidence, and work efficiency after completing Kartu Prakerja training. In terms of job-shifting or job-hunting, beneficiaries reported a better chance at getting a job or starting a business.

In terms of entrepreneurial skills, the beneficiaries claimed that one of the benefits of joining the program is increased self-confidence that empowers them to start or expand their business. The program can also strengthen their entrepreneurial skill, particularly in producing new products, selling and marketing products on online platforms, and managing business finance. Kartu Prakerja encourages its beneficiaries to have new strategies and ideas, fostering innovation. Moreover, 70 percent of beneficiaries used the post-training incentive as working capital, evincing that Kartu Prakerja has helped (and continues to help) its beneficiaries in creating or expanding their business and persevered amidst the pandemic.

Finally, the improvement in competencies, productivity, competitiveness, and entrepreneurial skills depended on the quality of training provided. Overall, there are positive responses to the quality of training courses from all stakeholders involved, including training providers, digital platforms, and other related partners.

Key Finding 2: Kartu Prakerja has a positive and significant effect on wages.

Kartu Prakerja increases the average beneficiaries' wage by 17-21 percent or around IDR255 thousand to IDR315 thousand, the wage becomes IDR1.8 million per month. This result is robust based on the Pooled Ordinary Least Square (OLS,) Instrumental Variable (IV), and PSM methods. In-depth interview results also support this finding, as some working beneficiaries claimed to have experienced a rise in their wage after joining Kartu Prakerja. Although the economic condition is not favorable due to the COVID-19 pandemic, Kartu Prakerja gives its beneficiaries ideas for alternative sources of income to compensate for their income decline.

Key Finding 3: Kartu Prakerja supports financial inclusion, especially e-wallet ownership.

Kartu Prakerja has made positive contributions to financial inclusion, particularly the increase of bank account and e-wallet ownership. The study found that 80 percent of beneficiaries opened their first bank or e-wallet account when they were confirmed as Kartu Prakerja beneficiaries. When beneficiaries open an account in financial institutions, they gain access to the many benefits provided, including easy and fast payment services and transfers. Thus, it is evident that the program has helped expand financial literacy.

Key Finding 4: Kartu Prakerja Program improves women's competencies, productivity, competitiveness, and entrepreneurial skills, as well as their income.

Female beneficiaries of Kartu Prakerja improve their competence by 96 percentage points (around 2.9 percent) higher compared to female non-beneficiary. Comparing females' and males' coefficient of competences, the

female's coefficient is about 1.3 percent higher than the male's coefficient (2.9 vs. 1.6 percent). A similar pattern was also seen in the productivity, competitiveness, and entrepreneurial skills coefficients. Higher increases in competence, productivity, competitiveness, and entrepreneurial skills of women confirm that women have similar learning abilities to men, even preparing themselves better compared to men in various training and learning programs (Quadlin, 2018; Delgado, 2019; Delaney and Devereux, 2021). In terms of wage, the participation in the Kartu Prakerja Program correlated with a 33 percent increase in women beneficiary's income relative to women non-beneficiary's income (if the average women's wage is IDR600 thousand, the increase is around IDR200 thousand).

Key Finding 5: Beneficiaries of Kartu Prakerja residing outside Java reported a higher increase in competencies than those in the Java region. However, in terms of productivity, competitiveness, and entrepreneurial skills, beneficiaries from Java outpaced those from outside Java regions.

Comparing beneficiaries of Kartu Prakerja who live in Java and who live outside Java, the increase in competence is higher for beneficiaries residing outside Java or around 0.18 percent (2.19 percent for the increase in the competency of beneficiaries outside Java vs. 2.01 percent for beneficiaries in Java). Kartu Prakerja's online training system allows the same opportunities for people within and outside Java to take the same quality courses. This can accelerate human capital development outside Java at a lower investment cost compared to establishing offline courses across Indonesia. This proves that Kartu Prakerja can become an effective channel for competency enhancement programs across regions.

However, the increase in productivity, competitiveness, and entrepreneurial skills of beneficiaries is relatively higher in Java than outside Java. One of the causes is the unequal access and development of digital infrastructure, which is an important factor to participate in Kartu Prakerja training, knowing that all courses are conducted online during the pandemic. Further studies are needed to

investigate how the program can be more effective for beneficiaries outside Java to increase productivity, competitiveness, and entrepreneurial skills.

Key Finding 6: Kartu Prakerja is effective for beneficiaries at productive age, living in a city (urban-living), and graduating from high school or higher.

The impacts of Kartu Prakerja on competence, productivity, competitiveness, and entrepreneurial skills are more significant for the productive age group, between 26-35 and 36-45 years old. Kartu Prakerja also has a positive and significant effect on the competence, productivity, and competitiveness of beneficiaries who live in urban areas. However, its impact on rural areas needs to be optimized. One of the causes is the availability of higher quality of digital technology and infrastructure in the cities. Moreover, the level of education also affects the improvement of competence, productivity, competitiveness, and entrepreneurship skills. The effect of Kartu Prakerja on beneficiaries with a high school education background or higher is positive and significant.

Key Finding 7: The COVID-19 pandemic affected both beneficiaries and non-beneficiaries, as reflected on lower-income and shift in consumption patterns. Kartu Prakerja has successfully served its role as a social assistance program, showing that the poorest income group enjoyed Kartu Prakerja's benefits the most.

Kartu Prakerja beneficiaries are able to persevere amidst the pandemic, as the incentives had not only helped them cover daily expenses but also provided them with a working capital that can be used to start their own business. This is in line with Evaluation Survey by PMO of Kartu Prakerja (2020), where beneficiaries reported to have used the incentive for staple foods (95 percent) and working capital (70 percent).

Meanwhile, a separate analysis using the Labor Force Data (Sakernas) of February 2021 shows that 41 percent of Kartu Prakerja beneficiaries had no income in February 2021. The estimate was conducted using a simple BIA (Benefit Incidence Analysis), and this implies that the poorest group enjoys the benefits of Kartu

Prakerja the most. Thus, these findings also confirmed the success of Kartu Prakerja as a social protection measure have been successfully achieved.

Based on those key findings, this study recommends that:

Kartu Prakerja Program is worth continuing: since it improves beneficiaries' competence, productivity, competitiveness, and entrepreneurial skills; increases income; enhances the chances of beneficiaries to obtain a job or to set up a new business amidst the pandemic; this program also provides a solution to overcome learning loss or the scarring effect during the pandemic; supports financial inclusion initiatives, and promotes women empowerment. Moreover, Kartu Prakerja effectively distributes social assistance during the pandemic. Thus, it can be an alternative distribution channel for government subsidy programs in the future. In addition, Kartu Prakerja is not only an innovative program that combines capacity building and social assistance in Indonesia but also a pilot project for the world. Its success story can contribute to the development of empirical evidence on human capital theory by delivering the fact that Kartu Prakerja is one of the largest government-funded training programs implemented effectively and efficiently.

During the selection process, a higher weight could be placed on candidates with the most optimal characteristics, i.e.: live in urban areas within the Java region, are young, and at a productive age. However, this may potentially increase the gap between urban-rural, Java-non-Java, and productive-non-productive age groups. Therefore, further studies are required to mitigate these impacts. Other government programs might also be required to address these issues.

Improving certain aspects of training: The impact of Kartu Prakerja in improving entrepreneurial skills is stronger than work competence, productivity, and competitiveness. However, there are other factors that may cause this result, such as the

prolonged COVID-19 pandemic, which led to job termination and inability to secure a new job due to challenging economic conditions. Consequently, many beneficiaries chose to be self-employed or entrepreneurs. In the future, Kartu Prakerja can improve work competence, productivity, and competitiveness by ensuring that the certificates issued by Kartu Prakerja's partners are also acknowledged by the potential employers. For this reason, the PMO of Kartu Prakerja and the employers' association are expected to form a collaboration to tackle this issue.



1. CONTEXT

1.1 RECENT DEVELOPMENT OF LABOR MARKET IN INDONESIA

From the supply side, 2.5 million people enter the Indonesian workforce every year. The proportion of highly skilled labor with university qualifications has increased from 2.53 percent in 2007 to 19.41 percent in 2021 (Statistics Indonesia, 2021). On the demand side, education has become the most important factor in career progression, particularly in the formal sector (Allen, 2016). In line with this, rapid technological growth continues in Indonesia, transforming the nature of work, including the technology of production and digital marketing.

Consequently, too many people are unable to get well-paid jobs because they lack the right

skills. Meanwhile, lower-skilled jobs are increasingly threatened by automation. The labor market continues to face major challenges, including a decrease in the return to education¹ (Purnastuti *et al.*, 2013; Mugijayani, 2020) and lower worker productivity when compared to other economies (ILO, 2021). Both these factors result in a less competitive workforce. According to the Global Competitiveness Index (GCI) 2019, Indonesia ranks 85th out of 141 economies in its labor market competitiveness.

Educational qualifications do not necessarily guarantee that an individual will fit the needs of the industry or workplace. This signifies that strengthening vocational education, skilling, upskilling, and reskilling² is a necessary step forward to help prepare the youth and labor force for a smooth transition to employment. However, educational reform takes a longer process and time. Unlike this reform, the

¹ One of the possible reasons for the decrease in the return to education in Indonesia is the low quality of the education system that affects the quality of the graduates (Purnastuti *et al.*, 2013; Dumauli, 2015).

² Upskilling is adding on to current skill sets. Reskilling is learning new skill sets for a different job (Baker, 2021).

processes of skilling, reskilling, and upskilling are relatively shorter and require a much smaller investment than hiring and training a new worker. Skilling, reskilling, and upskilling require establishing the right kind of training programs, making them affordable, and giving people incentives to participate (World Economic Forum, 2020).

Similar to education, training has a positive effect on productivity and wages (Konings and Vanormelingen, 2010), based on knowledge, skills and positive worker behavior (Awang et al., 2015). In addition, entrepreneurial training can improve business knowledge, develop good business practices, and foster self-confidence, and also empower entrepreneurs (Ismail, 2018).

1.2 THE COVID-19 PANDEMIC

The COVID-19 pandemic took a toll on Indonesia's economy, affecting its labor market, as travel restrictions and social distancing measures halted business activities. The negative consequences were associated mainly with the effect of the shock on labor demand, as Statistics Indonesia (2021) states that pandemic has caused at least 15.7 million workers to experience reduced working hours, 1.6 million workers become unemployed, 1.1 million of them to be furloughed, and 0.7 million workers to exit the labor force.

Moreover, demand in the labor market weakened with declining job vacancies in 2020, particularly in the services and manufacturing sectors (Statistics Indonesia and the PMO of Kartu Prakerja, 2021). Not only the formal sector, the pandemic also heavily affected the informal sector, as lockdowns severely decreased their economic activity, leading to an immediate loss of revenue.

Indeed, the pandemic has affected workers in the short and medium term, bringing lasting consequences in the long run. The human capital theory asserts that economic inactivity has long been seen to lead to the deterioration of future labor market prospects, often termed as 'scarring' or 'earning loss'. It can occur due to human capital reduction as workers miss out on the potential job-specific training and suffer from the depreciation of general work skills. Moreover, a longer duration of inactivity may

depreciate the previously acquired skills, as they are not used and brought up to date through training and/or working. Furthermore, the World Economic Forum (2020) stated that rapid digital transformation brought about by Industrial Revolution (IR) 4.0, in tandem with the COVID-19 recession, presents a 'double-disruption' scenario for workers. Thus, a massive training is crucial as part of a radical reskilling and upskilling effort to ensure a prosperous future work post pandemic.

1.3 KARTU PRAKERJA PROGRAM

The Government of Indonesia (GoI) launched the Kartu Prakerja Program (the Pre-Employment Card Program) in April 2020. The program is expected to complement and fill the gaps in education and vocational training to meet the demands of future work. The program's aims are (1) to develop workforce competencies, (2) to increase workforce productivity and competitiveness, and (3) to develop entrepreneurship, as stated in Government Regulation 76/2020 (revising Government Regulation 36/2020). Since its launch, Kartu Prakerja has made some adjustments in response to the pandemic, adopting aspects of social assistance via cash transfers for beneficiaries after they complete their training.

Kartu Prakerja is open to all Indonesian citizens aged 18 years and above. It is not limited to job seekers, new graduates, or those currently unemployed, but is also open to the currently employed, and entrepreneurs not currently attending formal education, not receiving other government assistance, and those who are not members of the military, civil servants or other government-related workers. The beneficiaries must complete one training to be eligible for post-training incentives, as indicated in Table 1.

Table 1. Total post-training incentives

Training assistance	IDR1 million
Post-training incentive IDR600,000 x 4 months	IDR2.4 million
Incentive for evaluation surveys IDR50,000 x 3 surveys	IDR150,000
Total	IDR3.55 million

Source: PMO Kartu Prakerja, 2021.

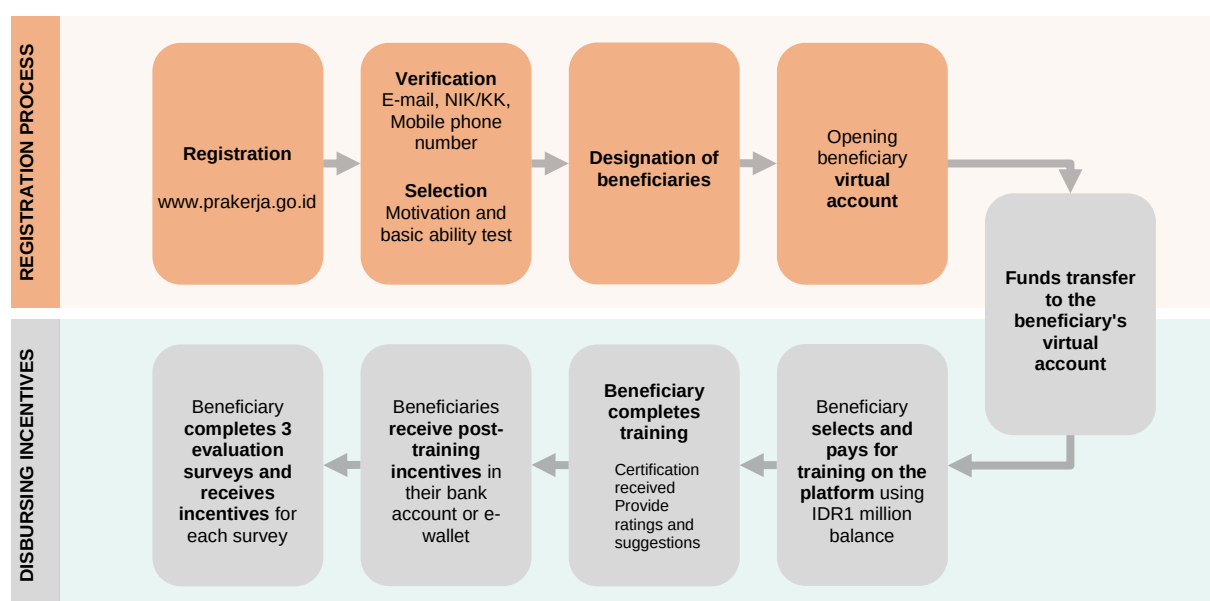
In terms of training, the program is unique in its flexibility for both beneficiaries and training providers. Beneficiaries can choose their training programs according to their interests, talents, and future career needs, not only as workers in the formal sector, but also as entrepreneurs. Similarly, training providers can offer any training courses that meet the criteria determined by the PMO of Kartu Prakerja. The courses are curated based on their interactivity, training module structure, training quality, and relevance. After completing the training, participants can give feedback, testimonies and ratings on the website that is publicly accessible.

In the pre-training stage, Kartu Prakerja Program provides funds of IDR1 million to the registered beneficiaries account to make a training purchase. Then, the beneficiaries must complete the training that has been purchased to completion and get a certificate of completion of the training. After the first training is

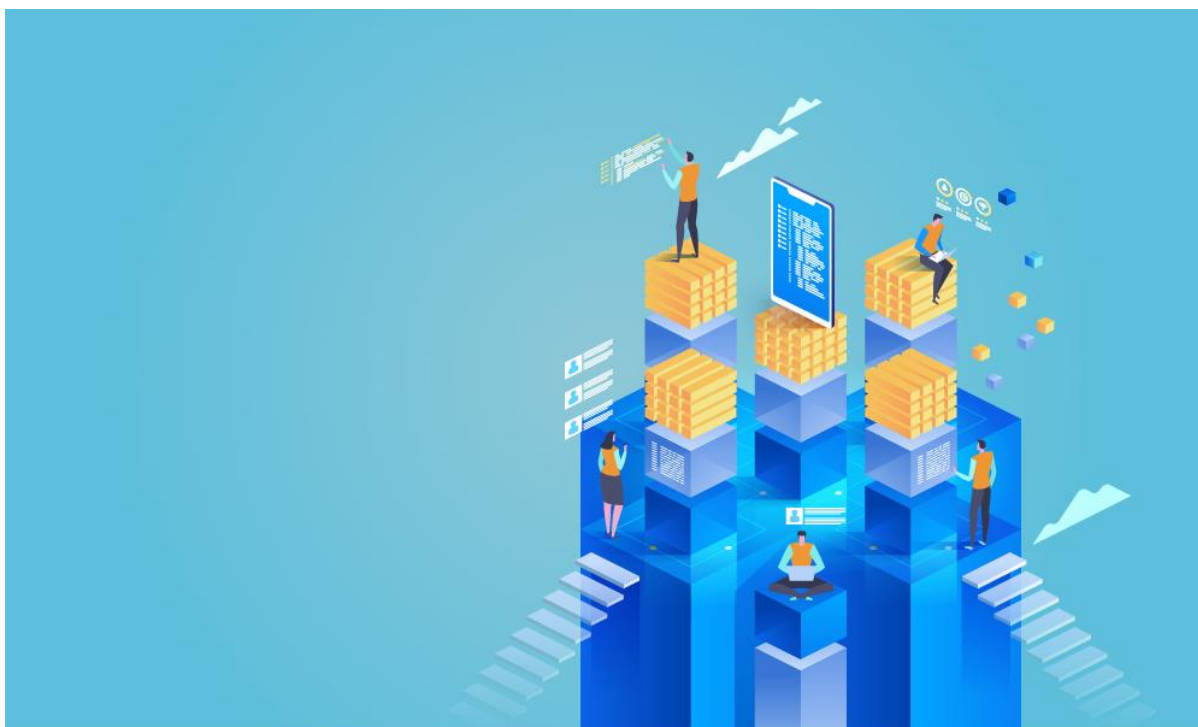
completed, Kartu Prakerja sends post-training incentives of IDR600 thousand for 4 months with a total value of IDR2.4 million. Kartu Prakerja Program also conducts an evaluation involving recipients to fill out a survey with a total incentive of IDR150 thousand, or IDR50 thousand respectively three times.

Kartu Prakerja Program has established an integrated, extensive ecosystem that includes training providers, digital platforms, payment partners, and educational institutions. By the end of 2020, Kartu Prakerja has reached 5.5 million beneficiaries from 514 cities/districts across Indonesia. Kartu Prakerja also has more than 1,700 courses from 154 training providers that can be accessed through seven digital platforms. Out of the total beneficiaries in 2020, 82 percent were unemployed, 78 percent were young (18–35-years-old), 84 percent had no previous training qualifications, had relatively low education and low income.

Figure 1. Flowchart of Kartu Prakerja Program



Source: PMO Kartu Prakerja, 2021.



2. COLLABORATIVE SURVEY

To assess the impact of Kartu Prakerja as a COVID-19 recovery program, the United Nations Development Programme (UNDP), Fiscal Policy Agency (BKF) of the Ministry of Finance, the Project Management Office (PMO) of Kartu Prakerja, and Presisi Indonesia undertook an online survey of **2,156 individuals** from September 24 to November 1, 2021. To gain insights from these respondents, phone interviews and virtual in-depth interviews were conducted among **188** beneficiaries and non-beneficiaries, 5 training providers, 3 digital platforms and 2 payment partners, all of whom are part of Prakerja's ecosystem.

The online survey included both factual questions such as working status and income, as well as perception questions of competencies, competitiveness, and productivity improvements after receiving the program. On the other hand, the interviewer focused on enhancing and providing insights into the result of the surveys. Moreover, some

feedback or suggestions from all respondents were also collected from surveys and in-depth interviews to improve the program's implementation in the future.

The main objectives of this study are to assess the impact of Kartu Prakerja after approximately a year of the intervention, on several aspects including: (1) competencies, productivity, competitiveness, and entrepreneurial skills (2) Income; (3) financial inclusion; (4) gender gap; (5) residential location gap; (6) a measure to cushion the pandemic and its effect on employment status; and (7) disadvantaged groups such as: rural residents, elderly groups, and people with lower levels of education.

As this study is an impact evaluation³, a control or non-beneficiaries' group is required aside from the main group of beneficiaries to act as the benchmark. This study took the sub-population of Kartu Prakerja, i.e., applicants of Kartu Prakerja in September 2020 or from batches 7 to 10. These batches were selected because the period between program intervention and online survey was exactly one

³ The USAID Automated Directives System (ADS) 203 defines impact evaluations as those that measure the change in a development outcome which can be attributed to a defined intervention. Impact evaluations are based on

models of cause and effect and require a credible and rigorously defined counterfactual to control for factors (other than the intervention) that might account for the observed change.

year, and the number of beneficiaries was large enough, around half of total beneficiaries in 2020. The control group includes individuals who applied and have not received Kartu Prakerja in batch 7-10, until batch 20 in 2021. This is to ensure that the control group is clear from the program intervention.

The number of beneficiaries in batches 7-10 is 2,409,571 individuals⁴. The number of beneficiaries (treatment group) and non-beneficiaries' sample (control group) in this study are 1,078 individuals, respectively. This is slightly higher than the target of 2134 individuals or 1,067 respondents for each group. The sample size is established by setting the margin of error for this survey to be +/- 3 percent, at a 95 percent confidence level, and a power test of 5 percent (Israel, 2018)⁵. The response rates of this survey are around 13 percent for beneficiaries; 9 percent for non-beneficiaries; and 11 percent on average. Non-beneficiaries were relatively reluctant to fill the survey because they have not been admitted to the program. To minimize differential attrition issue, the research team gave more efforts to increase the response rate of non-beneficiaries by sending reminder text and calling them more often than the beneficiary group.

In terms of sampling method, this study implemented the stratified random sampling method with two main controls, i.e., the proportion of gender and residential location by region. 'Region' is classified into Sumatera, Java, Bali-Nusa Tenggara, Kalimantan, Sulawesi, and Maluku-Papua. This method was used to ensure equal representation of gender, and residential location of Java/non-Java, considering infrastructure and human resources development in Java is more advanced than non-Java regions.

For method analyses, the Mincer Wage Equation based on the Human Capital theory was used in this study. The Mincer Wage Equation is one of the most widely used tools of empirical economics. The equation has been applied to numerous areas of labor economics

and plays a central part in literature devoted to exploring the return to education or human capital investment (Belzil, 2007). Moreover, a combination of econometrics methods was also used to evaluate the impact. Pooled OLS and Instrumental Variables (IVs) were used as a general approach to the estimation of causal relations using observational data. Moreover, the Propensity Score Matching (PSM) approach is commonly used to estimate the impact of interventions like the Kartu Prakerja Program, where unobserved factors cannot be covered. Finally, each key finding is based on robust analyses because this study combined several methods and carried out a robustness test (see Annex 2 for a more detailed explanation of estimation methods).

BOX 1: CHARACTERISTICS OF INDIVIDUALS THAT TOOK PART IN THE SURVEY

Figure 2 shows the distribution of the sample based on gender and region compared to Kartu Prakerja's population in 2020. The total sample used in this study is 2,156 respondents, including both beneficiaries and non-beneficiaries. Meanwhile, the total number of Kartu Prakerja applicants is 43.8 million, and the total number of Kartu Prakerja beneficiaries is 5.5 million. The total beneficiaries of batch 7-10 is 2.4 million.

The proportion of women and men in this study is relatively balanced, 49 percent and 51 percent respectively. This is very similar to the batch 7-10 population distribution that is 47 percent women and 53 percent men. By region, the proportion of respondents in Java is around 50 percent, which is very close to the proportion of the population distribution (48 percent). This difference arises because online survey systems and self-assessment surveys follow a first-come-first-serve system. Moreover, the distribution of the sample size that lives in other regions is lower than that of Java residents. Of the total sample size, 23 percent of the respondents reside in Sumatera, while 10

⁴ Randomisation from this population is conducted from around 2.4 million beneficiaries by PMO Kartu Prakerja, resulting with around 24,600 samples (10,000 for beneficiaries and 14650 non-beneficiaries). These potential respondents were texted to participate in the online survey.

⁵ As the sample size increases, the margin of error decreases. Most social studies use a margin of error of 3-5 percent (Brase & Brase 2013; Ary et al. 2014).

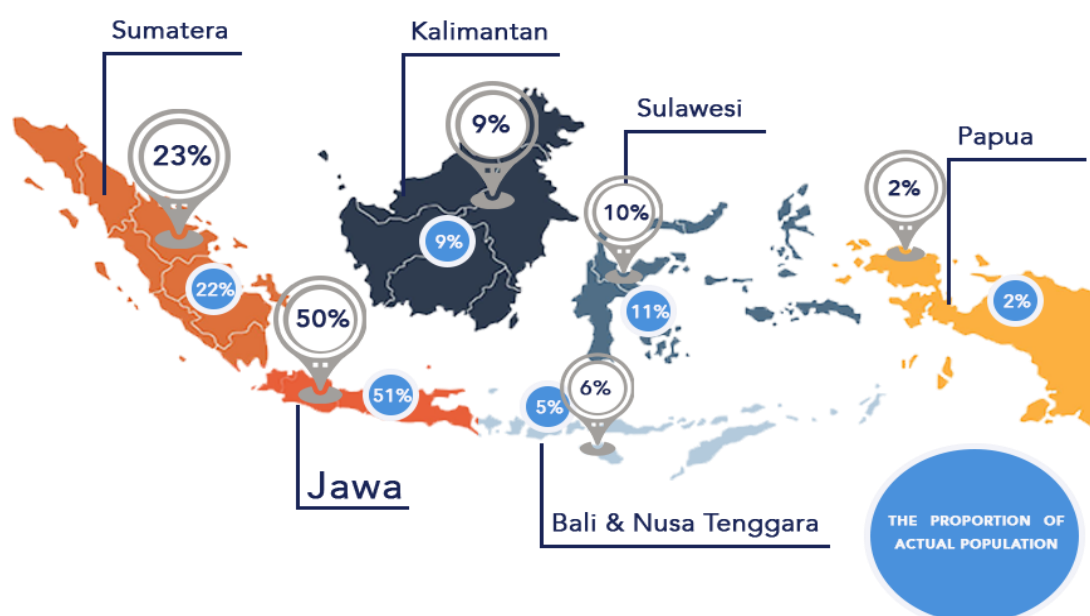
percent come from Kalimantan and Sulawesi respectively. Meanwhile, the proportions of respondents that live in Papua-Maluku and Bali-Nusa Tenggara are the lowest due to population size. Those proportions are in line with Kartu Prakerja beneficiaries quota that considers unemployment rate, the COVID-19 case, and job vacancies (The Coordinating Ministry for Economic Affairs, 2021). In addition to this, most of the respondents in this study live in urban areas (82 percent); while urban areas definition follows PODES definition.

In terms of education background, most beneficiaries and non-beneficiaries are high school graduates (55-56 percent). The proportion of beneficiaries with a university

degree is around 21 percent, which is slightly lower than the proportion for non-beneficiaries.

By age group, most beneficiaries and non-beneficiaries are 27–36 years old (more than 40 percent), followed by the age group of 17-26 years old. This confirms that most beneficiaries are part of the young and productive group⁶, in line with the fact that more than 50 percent of Indonesia's population is dominated by young people, born between 1980s-2010s (Statistics Indonesia, 2021). Moreover, around 30 percent are employed, 14-15 percent respondents are job seekers, 13-14 percent are freelancers, and 6-9 percent are entrepreneurs. Meanwhile, the proportion of non-beneficiaries who take care of household needs is slightly higher at 16 percent than beneficiaries.

Figure 2. Distribution of Sample and Population of Kartu Prakerja Beneficiaries



⁶ Age group 60 years old or older is excluded due to a small sample proportion.

Figure 3. Respondent Characteristics

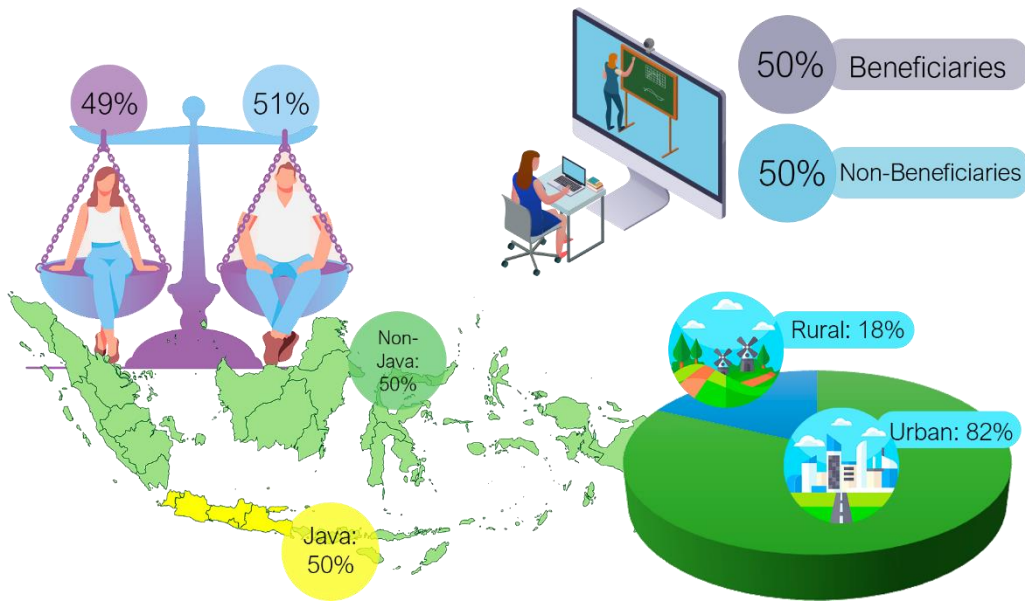


Figure 4. Respondent Characteristics by Age Group

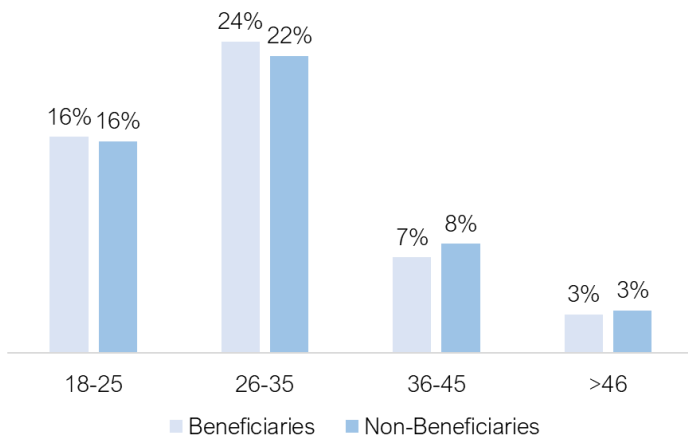
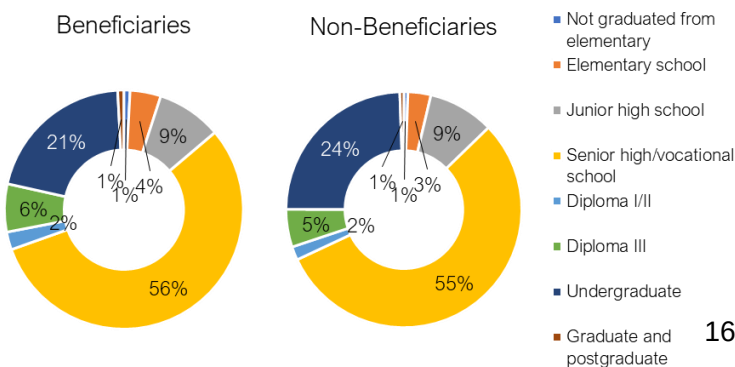
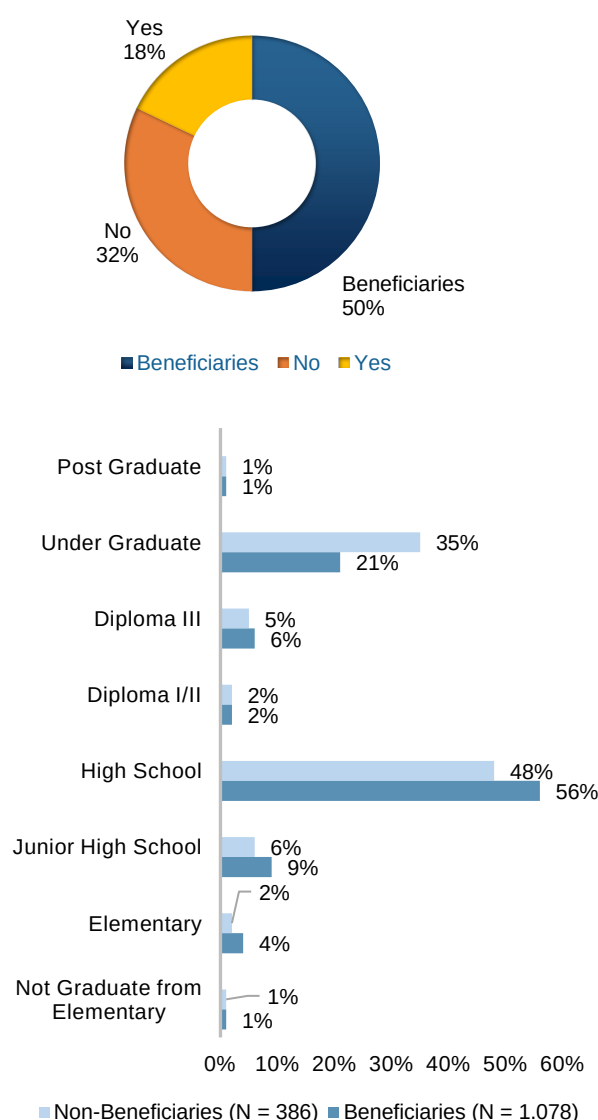


Figure 5. Respondent Characteristics by Education



The PMO of Kartu Prakerja data indicated most beneficiaries took around 1-2 courses on average. Based on this study sample, beneficiaries took 3 kinds of training, while non-beneficiaries took 2. This number is slightly higher because all certified courses are identified in the survey, meaning not only Kartu Prakerja but self-funded and on the job-trainings are also included. In non-beneficiaries, most respondents who took the training have at least graduated senior high school (48 percent) or university (35 percent). It is worth noting that overestimation may occur due to different definitions or perceptions of “training” (i.e., watching YouTube and learning through social media might be considered as certified training by some respondents). Most respondents claim that the three most in demand course categories are sales-marketing, lifestyle, and foreign language. This is in line with the PMO’s data in 2021.

Figure 6. Respondents who took the training by educational background



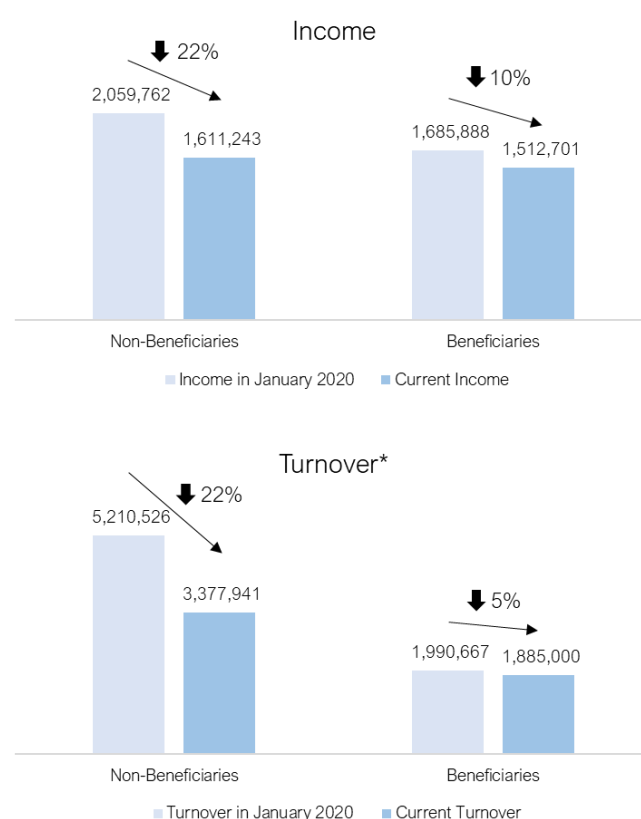
Source: Authors' calculation.

In terms of income, most beneficiaries who work have a lower income than non-beneficiaries on average in January 2020 or pre-pandemic period (Figure 5). The average income for both beneficiaries and non-beneficiaries declined when the pandemic hit. However, the reduction of income for beneficiaries was relatively smaller than non-beneficiaries, with a reduction value of 10 percent for beneficiaries and 22 percent for non-beneficiaries. This may imply that beneficiaries have better buffers/cushions to income shocks than non-beneficiaries, which is

most likely due to Kartu Prakerja's efforts in providing improvements in work competencies and incentives.

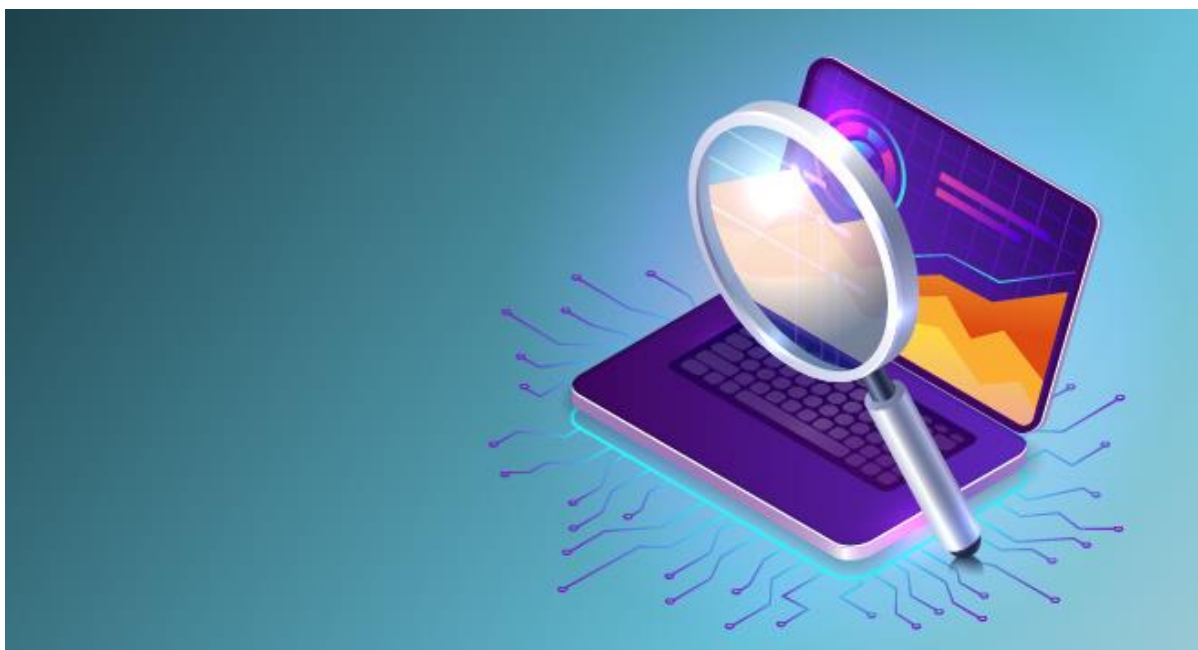
Similarly, the average sales or turnover for entrepreneurship declined at a lesser rate for beneficiaries (around 5 percent), while non-beneficiaries faced a significant decrease of sales of 35 percent in a year (Figure 7). As mentioned previously, Kartu Prakerja implores its beneficiaries to have new strategies and new ideas, including a survival strategy to grapple with the unprecedented pandemic. This may include going online, selling different products (e.g., masks), or pivoting their business to minimize loss. It is worth noting that the number of observations for entrepreneurs who have sales data in the survey is relatively small, with a mere 164 observations.

Figure 7. Comparison of Income and Sales of the Sample in 2020 and 2021



Note: t-test for income is 0.21, while for turnover is 0.06*.

Source: Authors' calculation.



KEY FINDING 1

Kartu Prakerja improves work competencies, productivity, and competitiveness. It also strengthens entrepreneurial skills of beneficiaries by providing them with new ideas and strategies to encourage them to start a new business

Using the pooled OLS model, the results show that there is a positive correlation among work competencies, productivity, competitiveness, and entrepreneurial skills with Kartu Prakerja⁷

⁷ Prakerja is a dummy variable. Dependent variables are competencies, productivity, competitiveness, and entrepreneurial skills. Independent variables are age, year of schooling, dummy of Java, dummy of female or gender, and dummy of marital status, see Annex 3.

⁸ The mean of productivity score is 8.9; the mean of competitiveness score is 17.8; and the mean of entrepreneurship skill score is 17.8

⁹ It is worth noting that the result is based on self-assessment. Hence, there may be a potential bias, as most

The results imply that beneficiaries can increase their competencies by 77 percentage points higher than non-beneficiaries (2.3 percent with the mean of competencies score is 33.3). Meanwhile, the increase in beneficiaries' productivity, competitiveness, and entrepreneurial skills are 24 percentage points (2.7 percent), 52 percentage points (2.9 percent), and 150 percentage points (41 percent)⁸ respectively⁹, as shown in Figure 8.

The result from the pooled OLS model is confirmed by an analysis that utilized the Propensity Score Matching (PSM) model¹⁰ that also shows a positive and significant effect of Kartu Prakerja on beneficiaries' skills compared to non-beneficiaries.

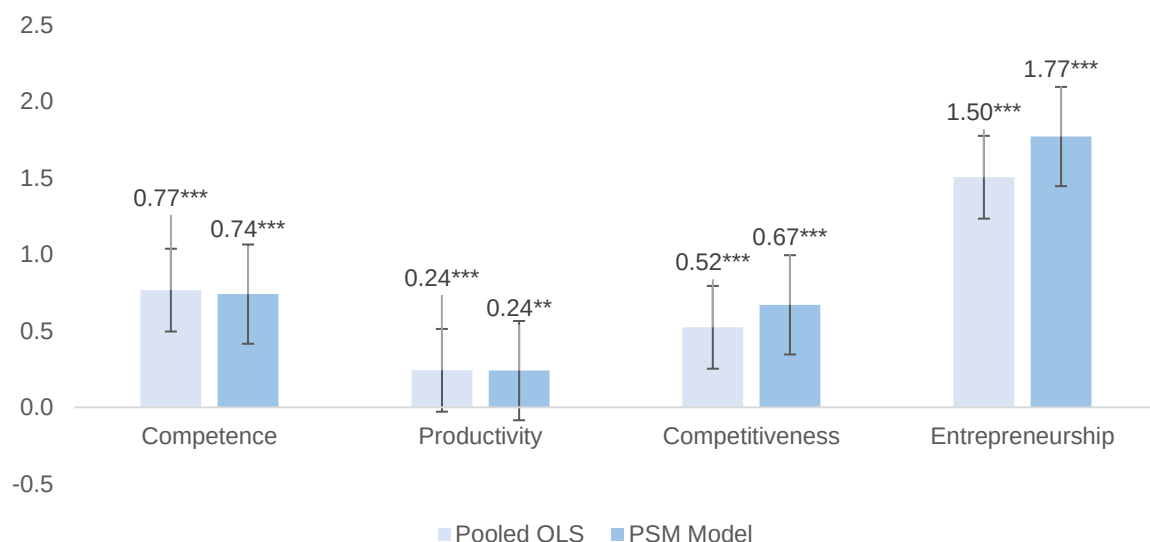
individuals are risk averse and tend to avoid extreme answers. Yet, the bias can be controlled by the control group.

¹⁰ PSM model is comparing beneficiaries and non-beneficiaries that match based on similar characteristics. In this case, demographic factors such as age, marital status, years of schooling, and location are considered. Using PSM allowed us to assess program impact without having baseline data while simultaneously considering selection bias. Nearest-neighbour matching is being used to match each participant with a (set of) non-participant(s) with closest propensity score, with or without replacement.

Kartu Prakerja influences the beneficiaries' work competencies by 74 percentage points (2.2 percent), productivity by 24 percentage

points (2.7 percent), competitiveness by 67 percentage points (3.8 percent), and entrepreneurial skills by 177 percentage points (48.5 percent).

Figure 8. The Impact of Kartu Prakerja on Beneficiaries' Competencies, Productivity, Competitiveness, and Entrepreneurial Skills Relative to Non-Beneficiaries (in Percentage Points)



Note: Pooled OLS Model, F-stat of competencies is 6.91***, productivity is 8.71***, competitiveness is 4.69***, and entrepreneurship is 6.65***, all F-stats are significant at 1 percent

The mean of productivity score is 8.9; the mean of competitiveness score is 17.8; and the mean of entrepreneurship skill score is 17.8

* p<.1, ** p<.05, *** p<.01

Source: Authors' calculation.

Work competencies was measured by 11 elements¹¹, meaning the beneficiaries can be more superior than non-beneficiaries in some or all elements such as: get new knowledge, be

more confident, be more optimistic to improve career, better critical thinking, and better network (Figure 9). Similar interpretations can be drawn for productivity, competitiveness, and entrepreneurial skills.

¹¹ Competencies were measured by 11 indicators, such as new strategies in the workplace, time management, self-confidence, etc. (Noor et al., 2015). The respondent needed to self-assess all elements: score 3 and 4 for agree and very agree respectively, score 1 and 2 for very disagree and disagree. Competencies score is the summation of those 11 elements. The higher the score means the higher the competencies. Meanwhile, productivity

was measured by 3 variables: faster, completed more jobs, and accuracy (OECD, 2001). Productivity score is the summation of these 3 elements. Moreover, competitiveness was measured by 3 variables, in terms of productivity, competencies, and work performance compared to peers (Wang et al., 2018). Finally, entrepreneurial skills were measured by their confidence to start the business, and their ability to take risks soon (Al-Awlaqi, 2018). The complete variables list is indicated in Annex 1.

Figure 9. Competencies Comparison between Kartu Prakerja Beneficiaries and Non-Beneficiaries



Note: t-test result for competencies is 0.32.
Source: Authors' calculation.

Comparing among the coefficients seen in Figure 8, Kartu Prakerja has the highest effect on entrepreneurial skills, as beneficiaries reported an improvement in such skills of 1.5 times more than non-beneficiaries. This signifies those beneficiaries realized improvements in their capabilities, particularly when producing new products, selling and marketing products in online platforms, and managing business finance (Figure 10). Specifically for innovation as part of entrepreneurial skills, comparing among three elements, Kartu Prakerja encourages its beneficiaries to have new strategies and new ideas (Annex 4). Moreover, the PMO of Kartu

Prakerja (2020) noted that 70 percent of beneficiaries used incentives as working capital, indicating that Kartu Prakerja also helped beneficiaries to create or expand their business, or at least to remain afloat during the pandemic.

These results are in line with in-depth interviews that provided insights on the benefit of Kartu Prakerja in boosting self-confidence to start or expand a business. As an example, some beneficiaries took applied skills (like digital marketing, mask production, or cooking) to improve their product delivery to customers or offer new services with their newly gained or improved skills.

Figure 10. Entrepreneurship Skill Comparison Between Kartu Prakerja Beneficiaries and Non-Beneficiaries



Note: t-test result is 0.50 implies the distribution of perceptions from both samples is almost the same.

Source: Authors' calculation.

It is also interesting to further investigate job changes or shifts in activity (Table 2). Comparing between beneficiaries and non-beneficiaries, the percentage of beneficiaries who successfully found a job is 15.15 percent, which is higher than that of non-beneficiaries. Similarly, the percentage of beneficiaries who successfully shifted their job from domestic workers (household) to workers is 3.37 percent, again this is higher than that of non-beneficiaries. This implies that Kartu Prakerja can empower the society.

For entrepreneurs, 4.38 percent of beneficiaries succeeded in starting their business in 2021, the proportion is lower for non-beneficiaries, with a mere 2.29 percent. The higher proportion of beneficiaries that become entrepreneurs can also be attributed to the new knowledge they have gained from Kartu Prakerja training, in particular sales and marketing, since more than 40 percent of beneficiaries took sales and marketing training. Considering limited sample size in this study, further investigations on the job shifts will be interesting.

Table 2. Shifting of Working Status (in %)

	Non beneficiaries	Beneficiaries	Non beneficiaries	Beneficiaries	Non beneficiaries	Beneficiaries
	Preparing for business		Job Seeker		Household	
Worker	1.53	1.68	13.00	15.15	1.53	3.37
Freelance	2.45	2.19	9.17	7.58	1.22	1.85
Unpaid Worker	1.68	2.19	5.50	4.21	5.05	5.39
Entrepreneur	2.29	4.38	1.68	2.36	1.22	1.85
Other	2.75	4.55	16.67	16.16	24.77	15.32
Total	11	15	46	46	34	28
	Non beneficiaries	Beneficiaries	Non-Beneficiaries	Beneficiaries	Non beneficiaries	Beneficiaries
	Unemployed		Other		Grand Total	
Worker	0.15	0.17	1.07	2.53		
Freelance	0.00	0.17	1.68	2.36		
Unpaid Worker	0.00	0.00	1.83	0.67		
Entrepreneur	0.00	0.00	0.61	0.84		
Other	0.46	1.01	4.89	4.04		
Total	1	1.35	10	10.44	100	100

Note: Other occupations include preparing the business (no shifting), job seekers, doing household chores, and unemployed.

Source: Authors' calculation.

"I work as a tailor in a convection house. The restriction in people's mobility as a result of the government's PPKM caused difficulties in obtaining textile materials. Consequently, a significant number of convection houses were forced to close down amidst the pandemic. Post-training incentive given by Kartu Prakerja helped me cover my daily expenses and also my parent's. Meanwhile, the online marketing courses that I took through Kartu Prakerja's digital platform have improved my productivity, as I now can better use my leisure time to generate income. I now engage in online sales, partnering with a friend to sell whatever goods are in demand by the market, such as textile or automotive spare parts."

In-depth interview, Male, 19 years old, West Java, Beneficiary, Worker, 28 Sep 2021

"I have been working as a Sales Promotion Girl (SPG) at a shoe distributor since 2012. The COVID-19 pandemic caused a significant drop in the company's sales, as the number of customers declined substantially. However, thanks to Kartu Prakerja Program, I managed to increase my sales because I learned about selling strategy through the program's platform. I became more confident and now have a stronger motivation to sell the products. I also feel that my competitiveness has improved, as reflected on the 30% increase in my sales."

In-depth interview, Female, 29 years old, East Kalimantan, Beneficiary, Worker, 29 Sep 2021

*"I have been working in a restaurant for three months now. Due to the pandemic, my salary payment is sometimes delayed. Thanks to post-training incentives from Kartu Prakerja Program, I managed to survive the pandemic. The incentives had not only helped me in covering my daily expenses, but also provided me with a working capital that helped me build my own business as a fried sausages seller. Training from the program helped me boost my **confidence**, as I now have the **courage to promote my product** in front of people. I am looking forward to growing my business in the future as I plan to have a modern food stall (angkringan modern)."*

In-depth interview, Male, 24 years old, Central Java, Beneficiary, Worker, 26 Sep 2021

The improvement in competencies, productivity, competitiveness, and entrepreneurial skills cannot be isolated from the quality of training issues. Beneficiaries need to complete one training to be eligible for post-training incentives. As they tend to choose applied trainings, most beneficiaries claimed to have understood the training material. In the event of difficulties, they tended to ask the facilitator, re-run the training material, search online, or ask their relatives.

The trainers had to ensure that they received good ratings from beneficiaries, as it will be posted on the digital platform's dashboard. Not only is it required by the PMO, but a good rating can also support their sales. Thus, they have tried to improve their training methods and materials. Moreover, the PMO has continuously developed policies to improve the quality of training. This is acknowledged by training providers in the in-depth interviews of this study. At times, amendments to existing training courses need to be undertaken in order to comply with new policies. Such continuous efforts from the PMO have helped to ensure that good quality training is delivered to beneficiaries.

One of the improvements promoted by the PMO of Kartu Prakerja is the requirement to provide a consultation session every week for every course offered by the training providers. In regard to this, one of the training providers stated that only a limited number of training participants has subscribed to this consultation session so far. Yet, they also noticed that there are questions sent through other channels of communication like e-mail.

Finally, these results provide new empirical evidence that general training conducted by the government can also contribute to human capital. Previously, the literature relating the human capital theory distinguishes among several types and means of education, i.e., formalized education at primary to higher level (Cohn & Gekse, 1990), informal education at home and at work (Schultz, 1981), on-the-job

training and apprenticeship (Mincer, 1974), and specialized vocational education at secondary and higher levels (Corazzini, 1967). For policy makers, these results provide scientific evidence to improve and to sustain the program.

"I feel lucky to finally get a job as an administrative staffer at a motorcycle dealership. Getting a new job is very difficult in times of pandemic. I thank Kartu Prakerja for helping me get a job, because I was able to go through the interview process done in English."

In-depth interview, Female, 26 years old, East Kalimantan, beneficiary, worker, 28 Sep 2021

"Our company was established in 2014 and we have engaged in the program since 2020. Before producing content for the program, we usually conducted research on the types of training that are mostly required by markets, analyzed the competition, designed value-added courses and ensured a certain level of competence. Our institution focuses on fundamental skills – like developing critical and analytical thinking skills – as we aim to ensure that the benefit of our training can be long lasting."

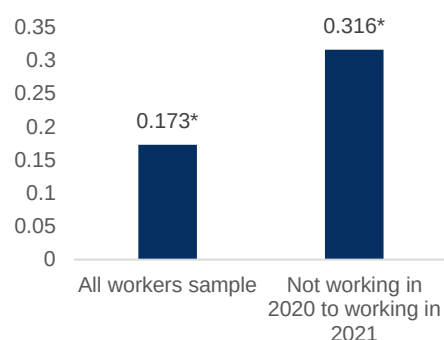
In-depth interview, Training provider, 17 Sep 2021

KEY FINDING 2

Kartu Prakerja has a positive and significant effect on wages

For workers, Kartu Prakerja recipients correlated with an increase in income of 17.3 percent (Annex 5 - Model 5.1). The increase is even higher (31.6 percent) if the sample experiences a shift in working status from not working in 2020 to working in 2021 (Figure 11). These results are estimated using the pooled OLS method.

Figure 11: Wage estimation results for workers and workers who experienced job status shifting



Note: * $p < .1$, ** $p < .05$, *** $p < .01$
Source: Authors' calculation

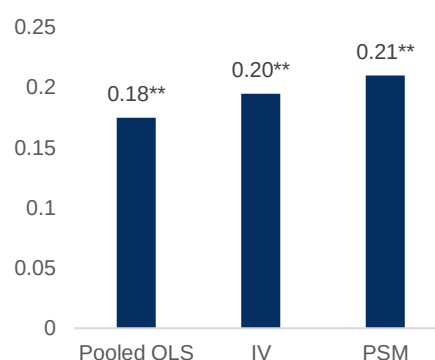
This study recognizes a major issue of the Mincer wage equation, i.e.: endogeneity bias (Card, 2001)¹². Using mother's education as instrument variable and year of schooling as instrumented variables¹³, the result shows a slightly different coefficient of Kartu Prakerja or increased to 0.195. This implies that participating in Kartu Prakerja is correlated with an increase in income of 19.5 percent (Annex 5 - Model 5.3). Meanwhile, the magnitudes of control variables are relatively the same. Using PSM method for Model 5.1, the result shows a positive and significant effect of Kartu Prakerja on beneficiaries' wages compared to non-beneficiaries by 21 percent.

The three methods (OLS, IV and PSM) indicate similar results (Figure 12), suggesting that **Kartu Prakerja increases the average beneficiaries' wage by 17-21 percent or around IDR255 thousand to IDR315 thousand, the wage becomes IDR1.8 million per month**. Thus, this finding is robust when accounting for the endogeneity of education. In this case, PSM¹⁴ models are preferred, as it attempts to reduce this bias – due to the

¹² Endogeneity problem arises due to unobservable variables such as ability. Ability can determine wage in the labor market and at the same time can be correlated with education. This problem leads to biased results in the OLS estimations because the education variable will be correlated with the error term in wage equation. Thus, the instrumental variable (IV) method can be used to address this bias. One of the instruments that is commonly used is family background, including parents/mother's education. The idea behind this is that more educated families affect their wage by providing education friendly environment or

confounding variables that can be found in an estimate of the treatment effect obtained – by simply comparing outcomes among units that received the treatment versus those that did not.

Figure 12: Wage estimation results using pooled OLS, IV, and PSM



Note: * $p < .1$, ** $p < .05$, *** $p < .01$
Source: Authors' calculation

In-depth interview results supported this finding, where some employee beneficiaries claimed to have their income rising post joining the program.

*"I have been working as an online motorcycle taxi driver since 2017. The pandemic sent my income as Ojol (online dispatch) down 50%. However, thanks to Kartu Prakerja, I was able to build my own business as a clothing reseller in 2020. The marketing training through social media I participated in boosted my spirits, encouraged me to seek out and have other sources of income. Now, this **reseller business** can replace the decline in my income as an Ojol."*

In-depth interview, Male, 45 years old, Central Java, Beneficiary, Worker, 26 Sep 2021

by providing more financial help for their children (Blackburn and Neumark, 1993).

¹³ Endogeneity test indicates there is no endogeneity, so pooled OLS model is preferable in this case.

¹⁴ Further information on Average Treatment Effect on the Treated (ATT), see Annex 2.

"I have worked as a non-permanent primary school teacher since 2018. Because of the PPKM policy that prevented schools from opening, I was forced to look for other sources of income in order to make a living. As a result, I am now trying to stay afloat by becoming a seller as well as a tutor teaching some school subjects. Through Kartu Prakerja's platform, I took English courses that has enabled me to offer English lessons. This generates additional income to support my daily expenses."

In-depth interview, Female, 25 years old, East Java, Beneficiary, Worker, 27 Sep 2021

KEY FINDING 3

Kartu Prakerja supports financial inclusion, especially e-wallet ownership

Kartu Prakerja has made a positive contribution to financial inclusion, in particular the increase of e-wallet ownership of around 22 percentage points or 33 percent (Annex 6).

This implies that Kartu Prakerja Program has provided access to quality financial services for beneficiaries, i.e., secure, smooth, convenient at affordable cost. Kartu Prakerja Program offers several options for beneficiaries to receive post-training incentives, i.e., either through bank account or e-wallet. The survey indicated that there were 80 percent of beneficiaries who only opened their first bank or e-wallet account when they were confirmed to be beneficiaries of Kartu Prakerja.

When beneficiaries open their account at financial institutions, they have access to the many benefits provided, including easy and fast payment services and transfer. Hence, the Kartu Prakerja Program has evidently helped them improve their knowledge of finance. Statistics prove that around 72 percent of beneficiaries chose to use e-wallet. This is similar to PMO Kartu Prakerja data that more than 70 percent of beneficiaries chose to use e-wallet (Kartu Prakerja PMO, 2020) as their preferred financial account.

"I have been working as a cashier at a minimart for five months after more than a year of job-hunting. I feel fortunate to become one of the beneficiaries of Kartu Prakerja Program, as I received a post-training incentive that has helped me cover my daily expenses. When I was called as one of the beneficiaries, I opened a bank account at Bank Negara Indonesia (BNI). It was a long process because the queue was very long. Apart from the long queue, I did not have a problem when dealing with the bank, as I can disburse the incentive from the program easily. I usually take the money in cash, and it is usually depleted within a week."

In-depth interview, Female, 22 years old, Maluku, Beneficiary, Worker, 28 Sep 2021

"I have been working as an outsourced worker for more than a year. Large-scale social restrictions (PSBB) due to the Covid-19 pandemic has negatively affected my income, as I often find myself needing to take days off due to the low number of orders or lack of raw materials. I was accepted as Kartu Prakerja Program's beneficiary on my first attempt, and I am grateful because this program has not only expanded my knowledge through trainings, but also provided working capital for my family's business. Following my enrolment in the Kartu Prakerja Program, I opened my first e-wallet account with OVO based on recommendations from my friends."

In-depth interview, Male, 34 years old, East Java, Beneficiary, Worker, 28 Sep 2021

*"We have been one of the payment partners of Kartu Prakerja since the beginning of the program' operation. We are working with BNI – as a financial center – to channel post-training incentives to the beneficiaries of Kartu Prakerja. **All beneficiaries of Kartu Prakerja are our premium users**, who must upload their identity cards for verification."*

In-depth interview, Payment Agent, 17 Sep 2021

KEY FINDING 4

Kartu Prakerja Program improves women's competencies, productivity, competitiveness, and entrepreneurial skills as well as their income

In terms of gender, this study found that women beneficiaries' work competencies, productivity, competitiveness, and entrepreneurial skills were higher than women non-beneficiaries, even higher than beneficiaries who are men.

Women beneficiaries of Kartu Prakerja improve their competence by 96 percentage points (around 2.9 percent) higher compared to women non-beneficiary, based on Pooled OLS Model (Figure 13) PSM also shows similar results for Kartu Prakerja's impact on women's competencies, productivity, competitiveness, and entrepreneurial skills. It is shown that the impact of Kartu Prakerja on these enumerated skills are positive and significant for women (Table 3). Notably, Kartu Prakerja has had an impact on women's competencies by 89 percentage points (2.7 percent). PSM results are preferred, as it controls potential bias.

Comparing women' and men' coefficient of competences, the women's coefficient is about 1.3 percent higher than the men's coefficient (2.9 vs. 1.6 percent as in Figure 13, Annex 7 – Model 7.1 and 7.2). Similar pattern was also seen in the productivity, competitiveness, and entrepreneurship coefficients (Annex 7 – Model 7.3-7.8).

Table 3. PSM Method Result on Women Beneficiaries's Skills Relative to Women Non-Beneficiaries' Skills

ATT	Treated	Controls	Difference	S.E.	T-stat
Competence	33.91	33.03	0.89	0.32	2.75***
Productivity	9.25	8.98	0.27	0.10	2.75***
Competitiveness	18.13	17.50	0.63	0.23	2.71***
Entrepreneurship	4.60	3.08	1.52	0.73	2.10***

Notes: * p<.1, ** p<.05, *** p<.01
Source: Authors' calculation.

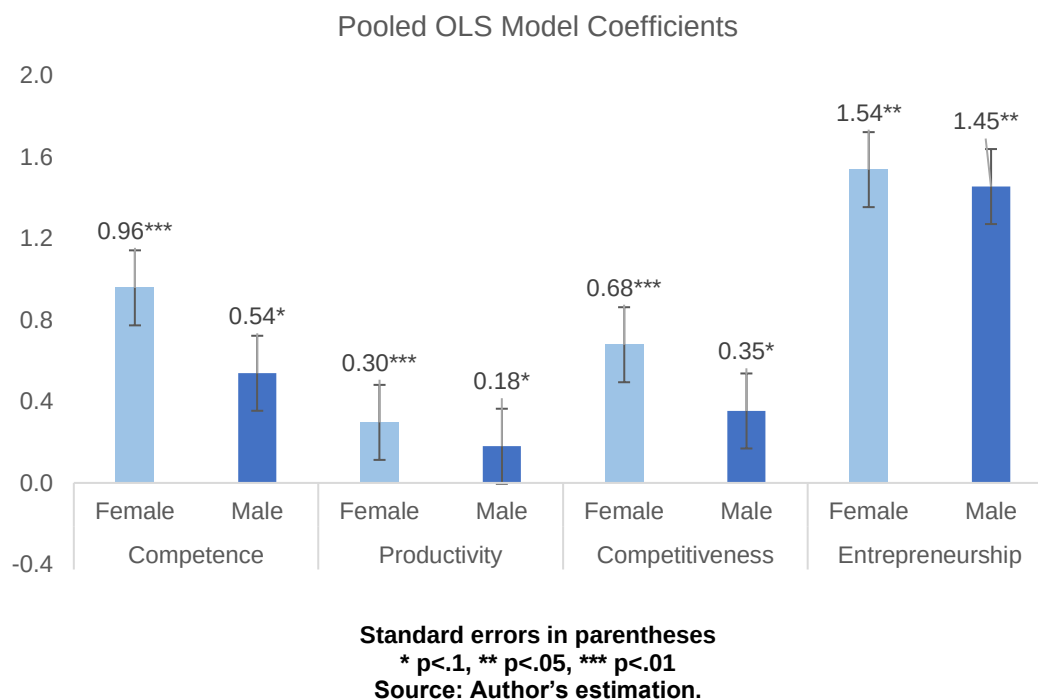
However, a cautious interpretation is required, as this gender difference in the benefits earned can come from different aspects, i.e.: the effect of Kartu Prakerja on women is higher than men because the competencies of men are already high, thus limiting the significance.

Higher increases in competence, productivity, competitiveness, and entrepreneurial skills of women confirm that women have similar learning abilities to men, even preparing themselves better compared to men in various training and learning programs (Quadlin, 2018; Delgado, 2019; Delaney and Devereux, 2021). For example, women have higher rates of college completion than men, mostly because they earn better grades in high school, making them more prepared for the rigors of higher education. Similar conditions can be applied for training, meaning women are presumed to be more prepared when participating in the training. On the other hand, there is a persisting digital divide on gender in Indonesia, as Marsan and Ruddy (2020) stressed that Indonesia has one of the largest digital gender divides among the APEC economies. Hence, it is worth mentioning that since Kartu Prakerja trainings are still conducted online, better performance of women can be attributed to the low initial competencies of women pre-training, or the evident aptitude women have for learning.

*"I took two training when I was accepted as a beneficiary of Kartu Prakerja. One training is related to knitting and cooking skills, while the other training revolves around online marketing strategies. The second training is more beneficial because it helps build an online business. The training material was actually quite elusive, so I had to repeat it a few times before actually understanding it. But I love it because I can **access it from home**, so it gives me time to take care of my kids."*

In-depth interview, Female, 27 years old, Beneficiary, Self-employed, 29 Sep 2021

Figure 13. Gender Analysis of the effect of Kartu Prakerja Trainings on the improvement of competencies, productivity, competitiveness, and entrepreneurial skill



With regard to income, the average income of women beneficiaries was IDR618 thousand, which is higher than that of women non-beneficiaries (IDR517 thousand). However, the average income of women beneficiaries and non-beneficiaries are still far lower than men

(Figure 14). This is because gender stereotypes remain, forcing women to shoulder a disproportionate burden of household chores, child-rearing, and caregiving (APEC, 2020). This implies that gender disparity in income in Indonesia still persists.

Figure 14. Average Income and working hours by gender



Source: Author's estimation.

Moreover, the higher competencies, productivity, and competitiveness of women are translated into their wage. Using the Mincer Wage Equation for women samples, the effect of Kartu Prakerja is positive and significant with a value of 31 percent (Model 7.9 – Annex 7). This implies that women beneficiaries have a higher wage of 31 percent compared to women non-beneficiaries. A similar result is also shown using IV method, the participation in the Kartu Prakerja Program correlated with a 33 percent increase in women beneficiary's income relative to women non-beneficiary's income (if the average women's wage is IDR600 thousand, the increase is around IDR200 thousand). Again, this result is robust in controlling endogeneity bias.

KEY FINDING 5

Beneficiaries of Kartu Prakerja residing outside Java reported a higher increase in competencies than those in the Java region. However, in terms of productivity, competitiveness, and entrepreneurial skills, beneficiaries from Java outpaced those from outside Java regions

Comparing beneficiaries of Kartu Prakerja who live in Java and who live outside Java, the increase in competence is higher for beneficiaries residing outside Java or around 0.18 percent (2.19 percent for the increase in the competency of beneficiaries outside Java vs. 2.01 percent for beneficiaries in Java). Kartu Prakerja's online training system allows the same opportunities for people within and outside Java to take the same quality courses. This can accelerate human capital development outside Java at a lower investment cost compared to establishing offline courses across Indonesia. This proves that Kartu Prakerja can become an effective channel for competency enhancement programs across regions, see Table 4 and Annex 8.

However, the increase in productivity, competitiveness and entrepreneurial skills of beneficiaries in Java is still relatively higher than outside Java. One of the causes is

the unequal access and development of digital infrastructure, which is an integral element when seeking to engage in Kartu Prakerja.

Table 4. PSM Method Result on Residential Location

The Average Treatment Effect on the Treated (ATT)		
	Java	Non-Java
Competence	0.673**	0.726**
Productivity	0.270***	0.209**
Competitiveness	0.596***	0.547***
Entrepreneurship	1.714**	0.657**

Note: * p<.1, ** p<.05, *** p<.01

Source: Authors' calculation.

Despite the emergence of new urban centers in other regions, the Indonesian population remains concentrated in Java, which is also in line with Indonesia's economic distribution that also remains concentrated in the region. We notice there is still inequality in access and development. Digital infrastructure is one of the keys and has become an integral element to engage in Kartu Prakerja, knowing that all courses are conducted online during the pandemic. Further studies are needed to investigate how the program can be more effective for beneficiaries outside Java to increase productivity, competitiveness, and entrepreneurial skills.

The Jakarta Globe (2020) sheds light on the concerning truth that many regional areas in Java still do not have adequate internet access. This also rings true at a higher rate for areas outside Java. For instance, internet speed in Jakarta can reach up to 10 Mbps while people in Maluku and Papua are lucky to enjoy 300 kbps. In Jakarta, a two-gigabyte internet package costs IDR65 thousand (\$4.50), but in Papua and Maluku it can cost IDR120 thousand.

*"I currently live in Central Lombok, near the Mandalika circuit area. Since October 2020, I have worked as an honoree teacher, as well as being a prepaid mobile voucher reseller. I took three training through the Digital Program in Kartu Prakerja platform – barista, digital marketing, and quantitative data analytics – to spend the funds provided. My problem during the learning process was a **poor internet connection**, even though I actually lived in a relatively large city."*

In-depth interview, Male, 30 years old, West Nusa Tenggara, Beneficiary, Worker, 27 Sep 2021

“We established since 2018 and is a part of the Telkom group. Telkom has a division focusing on the provision of an educational digital platform. Currently, around 10% of the training provided via our digital platform belongs to Kartu Prakerja’s training programs. We curated training programs proposed by training providers to ensure that they comply with the requirements set by the PMO. We understand that internet capacity and quality often act as a hurdle for beneficiaries. As a result, we collaborated with Telkomsel to allow beneficiaries to use WiFi Corner, which is located at Telkom’s offices for a low fare (IDR5 thousand/24 hours access).”

In-depth interview, Digital platform, 14 Sep 2021

“As a digital platform, we have collaborated with Kartu Prakerja Program since 2020.

Currently, there are over 400 courses onboarded in our digital platform and over 3 million users have joined the courses. To address users with limited bandwidth or home credit, we provide tools that allow users to adjust the quality of the video in order to not drain phone credits. In addition to this, the user is also given the option to download the training material to be accessed at any time, even when there is no internet connection.”

In-depth interview, Digital platform, 14 Sep 2021

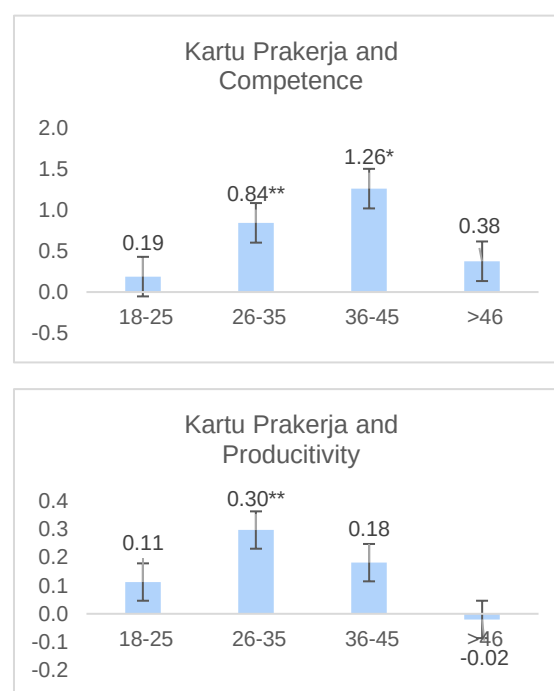
The improvement in work competencies, productivity, and competitiveness is also translated to income. Using the Mincer Wage Equation, the correlation between the beneficiaries in Java and their incomes is positive and significant. Using interaction variables also reveal the same result, where beneficiaries in Java have a positive and significant coefficient (Annex 8 – Model 8.4). This implies that the beneficiaries in Java have higher incomes of 24-25 percent (or around IDR360 thousand to IDR370 thousand, increases to IDR1.8 million) compared to non-beneficiaries outside Java (Annex 8 – Model 8.3 and 8.5).

KEY FINDING 6

Kartu Prakerja is effective for beneficiaries at productive age, living in a city (urban-living), and graduating from high school or higher.

Using the competencies model (Annex 3 - Model 3.1) with age group as one independent variable, the result shows that the effect on competencies is positive and significant for younger age groups (Annex 9). Kartu Prakerja beneficiaries that belong to age group 26-35 claim to have improved by 84.3 percentage point (2.5 percent) higher than non-beneficiaries in the same age group. A higher percentage improvement was seen in the 36-45 age group, i.e., by 126 percentage points (3.8 percent) higher than non-beneficiaries in the same age group. Similar results also ring true for productivity and competitiveness scores.

Figure 15: Impact of Kartu Prakerja on beneficiaries by age group



Source: Authors' calculation.

The older age group, commonly assumed, is more likely to be less tech-savvy (Nurhayati-Wolff, 2021). This is because older adults are slower to adopt new technologies than younger adults (Czaja et al., 2006), but will do so if those technologies appear to have value, for example in maintaining their quality of life (Heinz et al., 2013). While, Rosell (2021) claims that the real obstacle in this case has to do with the ability of older adults learning how to use it.

Findings from in-depth interviews shed light on the reliance of this age group on their relatives when applying for Kartu Prakerja Program (from the start up until its completion where they can receive post-training incentives). This is evident when there was an ambiguous answer during the in-depth interviews, where respondents were asked about the types of training they undertook and their opinion of the program, although further investigation is required to confirm the case.

Moreover, this study also finds that the effect of Kartu Prakerja is positive and significant in urban areas, but not in rural ones (Annex 9 - Model 9.20-9.25). However, it is worth noting that the sample size of rural residents is relatively small, with a mere 383 respondents. Similar to Java-outside-Java disparities, better digital, technology and infrastructure are available in urban areas.

Finally, educational background indeed affects competencies, productivity, competitiveness, and entrepreneurial skills. Coefficients of Kartu Prakerja for individuals with senior high school or higher are positive and significant in increasing competencies, productivity, competitiveness, and entrepreneurial skills. This is in contrast to samples with lower educational attainment (i.e., junior high school or lower), where the effect of Kartu Prakerja is insignificant (Annex 9 - Model 9.10-9.21). As the learning outcome is expected to be sustainable in order to improve the welfare of the beneficiary.

"I am currently looking for a job, which is very challenging due to the pandemic. I was previously a contract worker in a factory for about four months. I became a Kartu Prakerja Program beneficiary after my fifth or sixth attempt of applying. Through Kartu Prakerja's platform, I took F&B courses, which expanded my knowledge on culinary. However, the training did not encapsulate practical and skill development, as it was limited by the theoretical approach. Training through public vocational training center (BLK) is more useful for me as it comprehensively covers both theoretical and practical knowledge."

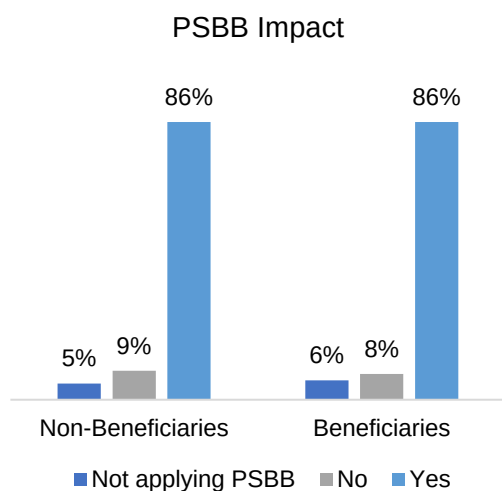
In-depth interview, Female, 22 years old, Central Java, Beneficiary, Job seeker, 29 Sep 2021

KEY FINDING 7

The COVID-19 pandemic affected both beneficiaries and non-beneficiaries, as reflected on lower-income and shift in consumption patterns. Kartu Prakerja has successfully served its role as a social assistance program, showing that the poorest income group enjoyed Kartu Prakerja's benefits the most.

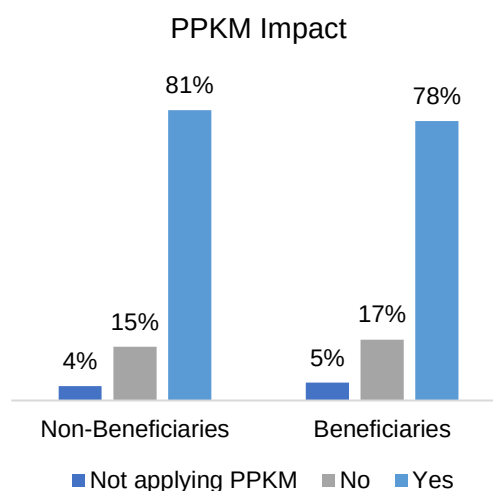
Most respondents reveal that both PSBB (The Large-Scale Social Restrictions imposed in March-April 2020) and PPKM (the emergency public activity restriction in July 2021) have created negative impacts for them (Figure 16 and 17). Most agree that the main effects are declining income, changing consumption patterns, and the use of savings to cover daily expenses (Table 5). In an effort to reduce the burden, Kartu Prakerja has helped beneficiaries stay afloat amidst the pandemic. According to the PMO of Kartu Prakerja (2020), most beneficiaries use the incentive for staple food (95 percent) and for working capital (70 percent). These findings also confirm that the aims of Program Kartu Prakerja as a social protection measure is successfully achieved.

Figure 16. Both beneficiaries and non-beneficiaries affected by social restriction (PSBB) in March – April 2020



Source: Authors' calculation.

Figure 17. Both beneficiaries and non-beneficiaries affected by social restriction (PPKM) in July 2021



Source: Authors' calculation.

Table 5. The main effects of Social Restriction (PPKM) in June 2021

Indicators	Beneficiaries	Non-Beneficiaries
Declining income	93%	90%
Changing consumption patterns	93%	94%
Using savings	81%	81%
Other	67%	71%
Office doing restrictions (Work from Home)	68%	65%
Temporarily housed	68%	65%
Loss of job/layoff during PSBB	59%	57%
Changing jobs during PSBB	56%	57%

Meanwhile, a separate analysis using the Labor Force Data (Sakernas) of February 2021. Using the Benefit Incidence Analysis (BIA) with the weight to make the inference, 41 percent of Kartu Prakerja beneficiaries have no income and 12 percent have an income between IDR500 thousand to IDR800 thousand per month (Table 6). This implies that the poorest group enjoys more benefits of Kartu Prakerja. It

is worth mentioning that the result of BIA analysis can determine whether the government's target on social protection program is achieved, i.e., the benefits are received by lower-income groups in need of social support. This result implies that Kartu Prakerja does not only aim for the improvement of work competencies, productivity, and competitiveness, but also has successfully achieved its social security aim.

Table 6. Simplified Benefit Incidence Analysis

	Income (IDR)	Number of Beneficiaries	Distribution of Beneficiaries	Proportion of Beneficiaries to Total Workers in Indonesia
Q1	No Income	1,031,310	41%	0.86%
Q2	IDR5, – IDR800,000	308,539	12%	1.65%
Q3	IDR801,500 – IDR1,520,000	375,016	15%	1.85%
Q4	IDR1,524,000 – IDR2,900,000	446,269	18%	1.97%
Q5	> IDR2,900,000	376,614	15%	1.58%
Total		2,537,748	100%	1.24%

Source: Authors' calculation based on Sakernas (Feb 2021).

STRATEGIC POLICY RECOMMENDATIONS

RECOMMENDATION 1

KARTU PRAKERJA PROGRAM IS WORTH CONTINUING

Kartu Prakerja Program is worth continuing since it improves beneficiaries' competence, productivity, competitiveness, and entrepreneurial skills; increases income; enhances the chances of beneficiaries to obtain a job or to set up a new business amidst the pandemic; this program also provides a solution to overcome learning loss or the scarring effect during the pandemic; supports financial inclusion initiatives, and promotes women empowerment. Moreover, Kartu Prakerja effectively distributes social assistance during the pandemic. Thus, it can be an alternative distribution channel for government subsidy programs in the future. In addition, Kartu Prakerja is not only an innovative program that combines capacity building and social assistance in Indonesia but also a pilot project for the world. Its success story can contribute to the development of empirical evidence on human capital theory by delivering the fact that Kartu Prakerja is one of the largest government-funded training programs implemented effectively and efficiently.

RECOMMENDATION 2

A HIGHER WEIGHT COULD BE PLACED ON CANDIDATES WITH THE MOST OPTIMAL CHARACTERISTICS

During the selection process, a higher weight could be placed on candidates with the most optimal characteristics, i.e.: live in urban areas within the Java region, are young, and at a productive age. However, this may potentially increase the gap between urban-rural, Java-non-Java, and productive-non-productive age groups. Therefore, further studies are required to mitigate these impacts. Other government programs might also be required to address these issues.

RECOMMENDATION 3

IMPROVING CERTAIN ASPECTS OF TRAINING

The impact of Kartu Prakerja in improving entrepreneurial skills is stronger than work competence, productivity, and competitiveness. However, there are other factors that may cause this result, such as the prolonged COVID-19 pandemic, which led to job termination and inability to secure a new job due to challenging economic conditions. Consequently, many beneficiaries chose to be self-employed or entrepreneurs. In the future, Kartu Prakerja can improve work competence, productivity, and competitiveness by ensuring that the certificates issued by Prakerja's partners are also acknowledged by the potential employers. For this reason, the PMO of Kartu Prakerja and the employers' association are expected to form a collaboration to tackle this issue.

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ANNEXES

ANNEX 1: COMPETENCE, PRODUCTIVITY, COMPETITIVENESS, ENTREPRENEURSHIP SKILLS MEASUREMENT – QUESTIONNAIRE

Competence

TR02	Compared to JANUARY 2020, please give your opinion on the following statements as per your CURRENT situation:	Very disagree	Disagree	Agree	Very Agree
a.	I get more knowledge				
b.	I found a new method to finish my job				
c.	I have better time management				
d.	I have more friends/co-workers				
e.	I am more comfortable working in a team				
f.	I am more confidence to speak in public				
g.	I am more selective in receiving information				
h.	I often question something				
i.	I become more optimistic to pursue my future career				
j.	I became more discipline				
k.	I became more responsible				
l.	I became more confident				

Productivity

TR03	Compared to JANUARY 2020, please give your opinion on the following statements as per your CURRENT situation:	Very disagree	Disagree	Agree	Very Agree
a.	I finish work faster				
b.	I can get more work done				
c.	I complete work more precisely/accurately				

Competitiveness

		Very disagree	Disagree	Agree	Very Agree
TR04	What do you think about the following statement, compare your colleagues (Example: colleagues in similar job/with the same position) in January 2020:				
a.	I am more competent to get the job done than my colleagues				
b.	I am more productive than my colleagues				
c.	My work performance is better than my colleagues				
TR05	What do you think about the following statement, compare your CURRENT situation with your colleagues (Example: colleagues in similar job/with the same position)				
a.	I am more competent to get the job done than my colleagues				
b.	I am more productive than my colleagues				
c.	My work performance is better than my colleagues				

Entrepreneurship Skills

		Very Disagree	Disagree	Agree	Very Agree
TR06	Do you think your new knowledge can help you to run the business currently, in particular to:				
a.	Business finance management				
b.	Product marketing (online marketing logo)				
c.	How to produce or make products				
d.	Purchase/choose raw materials				
e.	Understand/buy the necessary machinery				
f.	Managing employees				
TR07	Compared to JANUARY 2020, please give your opinion on the following statements according to your current situation:				
a.	I am more confidence to start a business				
b.	I'm more willing to take risks				
c.	I expand/adjust my products				
d.	I expand my business scope/open new branches				
e.	I need more employees				

ANNEX 2: ESTIMATION MODELS

Pooled OLS Model

Competence, productivity, competitiveness and entrepreneurship skills model:

$$Y_{n,t} = prakerja_{n,t} + Z_{n,t} + \varepsilon_{n,t}$$

Mincer Wage Equation:

$$Y_{n,t} = prakerja_{n,t} + year_school_{n,t} + Z_{n,t} + \varepsilon_{n,t}$$

Where:

$Y_{n,t}$	: dependent variables, can be competence, productivity, competitiveness, entrepreneurship skills, business creation and financial inclusion.
$prakerja_{n,t}$	: dummy of beneficiaries of Kartu Prakerja (1 is Prakerja beneficiaries, 0 is non- beneficiaries)
$year_school_{n,t}$	: year of schooling
$Z_{n,t}$	: control variables, can be age,, residential location (Java), marital status (married), gender (female), etc.
$\varepsilon_{n,t}$	: error terms

There are some limitations of the Mincer wage equation (Mugijayani, 2020), i.e.:

- 1) an endogeneity of education exists due to an ability bias and other omitted variable bias (this will be explained in detail in the next section);
- 2) measurement error in education variable causes the biased and inconsistent OLS estimates. Bias due to measurement error in the schooling variable is generally known to produce an attenuation bias in the coefficient of schooling;
- 3) sample selection bias occurs due to non-random selection of the sample used for the estimation process, when the sample is only based on a subpopulation;
- 4) the relationship between education and wages could be non-linear, this may be because of sheepskin effects, where achieving the final credential (e.g., a high school certificate or university degree) is more important than non-credentialed education. For instance, completing four out of four years of a higher education degree may well result in a large wage premium, but a person who completes only three out of four years of the same degree may receive a much smaller wage premium, as Mincer (1997) argues;
- 5) there are differences in experience profile in the labor market or heterogeneous experience, for example: high-skilled jobs may include a significant amount of "on the job" training and greater opportunities for professional advancement, while low-skilled jobs could only

have little experience (Humphreys, 2012; Firpo et al., 2005)).

IV Model

$$Y_{n,t} = prakerja_{n,t} + year_school_{n,t} + Z_{n,t} + \varepsilon_{n,t}$$

Instrumented variables are either year of schooling or prakerja The Instrumental Variable (IV) is used to gauge the role of the omitted variables (particularly the ability bias) or the endogeneity problem in the OLS model. If endogeneity issues do not exist than Pooled OLS Model is preferable than IV model.

Instruments variables are year of schooling of mother for year of schooling as instrumented variables. Year of schooling empirically and mathematically proved that endogeneity problem occurs (Mincer, 1974 and Card, 2001), as mentioned previously.

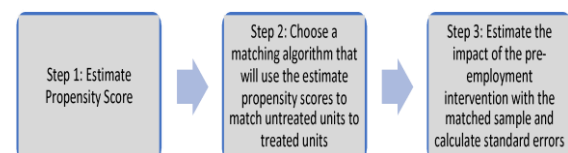
Propensity Score Matching (PSM) Model

The PSM approach generates a control group and then addresses the bias due to selection-on-observables, overt bias (Awotide et al. 2015). The PSM is used in observational studies to adjust for differences in pre-treatment variables, and to draw inferences about the effects of binary treatments or participants (Rosenbaum and Robin 1983). The basic idea is to match each participant with an otherwise identical nonparticipant (the comparator) –based on observed pre-treatment characteristics –and then to measure the average difference in the outcome variable between the participants and the comparison group (Haughton and Haughton, 2011).

The model is

$$w = prakerja_{n,t} + X_{n,t} + \varepsilon_{n,t}$$

w is labor market outcomes (wages or turnover). Prakerja is a dummy variable for Kartu Prakerja intervention, 1 is Prakerja beneficiaries and 0 is non-beneficiaries. X are covariates with the crucial assumption, X should cover all variables that can influence the probability of treatment.



it is worthy of note that the estimation of the propensity score is a necessary but not sufficient condition to calculate the parameters of interest such as the Average Treatment Effect (ATE), Average Treatment Effect on the Treated

(ATT), and Average Treatment Effect on the Untreated. There is a need to search for the appropriate counterfactuals that match each participant depending on its propensity score.

Moreover, the ATT is the most important parameter to us in this study, is then estimated by averaging within-match differences in Prakerja variables between beneficiaries and non-beneficiaries (the control group).

Average treatment effects on the treated (ATT) and the untreated (ATU) are useful when there is interest in: the evaluation of the effects of treatments or interventions on those who received them, the presence of treatment heterogeneity, or the projection of potential outcomes in a target (sub-) population (Wang, et al., 2017). The calculation formula is as follow:

The impact of a treatment for an individual i , noted δ_i , is defined as the difference between the potential outcome in case of treatment and the potential outcome in absence of treatment:

$$\delta_i = Y_{1i} - Y_{0i}$$

In general, an evaluation seeks to estimate the mean impact of the program, obtained by averaging the impact across all the individuals in the population. This parameter is known as **Average Treatment Effect or ATE**:

$$ATE = E(\delta) = E(Y_1 - Y_0)$$

where $E(.)$ represents the average (or expected value).

Another quantity of interest is **the Average Treatment Effect on the Treated**, or ATT, which measures the impact of the program on those individuals who participated:

$$ATT = E(Y_1 - Y_0 | D = 1)$$

Finally, the **Average Treatment Effect on the Untreated (ATU)** measures the impact that the program would have had on those who did not participate:

$$ATU = E(Y_1 - Y_0 | D = 0)$$

The problem is that all of these parameters are not observable, since they depend on counterfactual outcomes. For instance, using the fact that the average of a difference is the difference of the averages, the ATT can be rewritten as:

$$ATT = E(Y_1 | D = 1) - E(Y_0 | D = 1)$$

The second term, $E(Y_0 | D = 1)$ is the average outcome that the treated individuals would have obtained in absence of treatment, which is not observed. However, we do observe the term $E(Y_0 | D = 0)$, that is, the value of Y_0 for the untreated individuals. Thus, we can calculate:

$$\Delta = E(Y_1 | D = 1) - E(Y_0 | D = 0)$$

What is the difference between Δ and the ATT? Adding and subtracting the term $E(Y_0 | D = 1)$:

$$\Delta = E(Y_1 | D = 1) - E(Y_0 | D = 1) + E(D = 1) - E(Y_0 | D = 0)$$

$$\Delta = ATT + E(D = 1) - E(D = 0)$$

$$\Delta = ATT + SB$$

The second term, SB, is the selection bias: the difference between the counterfactual for treated individuals and the observed outcome for the untreated individuals. If this term is equal to 0, then the ATT can be estimated by the difference between the mean observed outcomes for treated and untreated:

$$\widehat{ATE} = E(D = 1) - E(Y | D = 0)$$

However, in many cases the selection bias term is not equal to 0 (see the teacher- training example below). In these cases, the difference in means will be a biased estimator of the ATT. The main goal of an evaluation is to ensure that the selection bias is equal to 0 in order to correctly estimate the parameter of interest.

Benefit Incidence Analysis (BIA)

Benefit Incidence Analysis (BIA) is a tool which is used to measure the impact of tax policy or government subsidy (the Pre-Employment Card program here is equal to government subsidy) on the distribution of people welfare. In other words, BIA can be used to evaluate the distribution of subsidy policy or government social expenditure to various income groups in society. The result of BIA analysis could determine whether the government program of social expenditure is a good target, namely the benefits are received by a group of society with lower income. If the poorest group as the main target of government social budget only enjoys the little of the budget benefits, and substantial amount of the benefits received by middle- and high-income classes, then the government's social assistance policy can be categorized as a failed program.

For this analysis, we use 2021 Labor Force Data (SAKERNAS 2021) from Statistics Indonesia (BPS). BIA is obtained by calculating the distribution of Kartu Prakerja beneficiaries based on income group. Further, we also calculated the proportion of Kartu Prakerja beneficiaries over total population by income group. The result shows that the majority of Kartu Prakerja beneficiaries have no income or in the poorest group.

ANNEX 3: CORRELATION AMONG COMPETENCE, PRODUCTIVITY, COMPETITIVENESS, AND ENTREPRENEURSHIP SKILL WITH PRAKERJA USING OLS

The dependent variables are competence score (Model 3.1), productivity score (Model 3.2), competitiveness score (Model 3.3), and entrepreneurship score (Model 3.4).

The independent variables are prakerja (dummy of Kartu Prakerja beneficiaries, 1 for beneficiaries, and 0 for no-beneficiaries), age (in year), year of schooling in year, java (dummy for Java residence, 1 for Java residence, otherwise. 0), female (dummy of gender, 1 is female, 0 is male), married (dummy for marital status, 1 is married, otherwise 0).

The method used is pooled OLS.

Durbin and Wu-Hausman tests indicate there is no endogeneity issues, so pooled OLS model is sufficient to analyze the impact of Kartu Prakerja on competence, productivity, competitiveness, and entrepreneurship skills.

	3.1 Competence score	3.2 Productivity score	3.3 Competitiveness score	3.4 Entrepreneurship score
Prakerja	0.766*** (3.64)	0.242*** (3.64)	0.523*** (3.90)	1.504*** (3.41)
Age	-0.0322* (-2.51)	-0.009* (-2.15)	-0.023** (-2.76)	0.133*** (4.93)
Year of schooling	0.161*** (4.05)	0.042*** (3.32)	0.340 (1.93)	0.48055556 (0.83)
Java	0.469* (2.22)	0.141* (2.12)	0.1375 (1.47)	0.24305556 (0.79)
Female	0.101 (0.07)	0.265*** (3.95)	-0.102 (-0.76)	0.19097222 (0.62)
Married	0.197 (0.45)	0.071 (0.52)	0.07847222 (0.28)	-1.357 (-1.03)
constants	31.37*** (33.00)	8.249*** (27.46)	17.46*** (28.78)	-0.957 (-0.48)
R-squared	0.019	0.024	0.014	0.018
Observations	2156	2156	2156	2156

Note: t statistics in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Multicollinearity test

Competence Model							
e(V)	prakerja	age	Year of schooling	of java	female	married	constants
prakerja	1.00						
age	0.01	1.00					
year of schooling	0.03	0.06	1.00				
java	0.01	-0.01	0.10	1.00			
female	0.01	0.04	-0.12	0.02	1.00		
married	-0.03	0.18	-0.05	0.01	0.07	1.00	
constants	-0.12	-0.56	-0.52	-0.17	-0.11	-0.69	1.00

Productivity							
e(V)	prakerja	age	female	married	Year of schooling	of java	constants
prakerja	1.00						
age	0.01	1.00					
female	0.01	0.04	1.00				
married	-0.03	0.18	0.07	1.00			
year of schooling	0.03	0.06	-0.12	-0.05	1.00		
java	0.01	-0.01	0.02	0.01	0.10	1.00	
constants	-0.12	-0.56	-0.11	-0.69	-0.52	-0.17	1.00

Competitiveness							
e(V)	prakerja	age	female	married	Year of schooling	of java	constants
prakerja	1.00						
age	0.01	1.00					
female	0.01	0.04	1.00				
married	-0.03	0.18	0.07	1.00			
year of schooling	0.03	0.06	-0.12	-0.05	1.00		
java	0.01	-0.01	0.02	0.01	0.10	1.00	
constants	-0.12	-0.56	-0.11	-0.69	-0.52	-0.17	1.00

Entrepreneurship							
e(V)	prakerja	age	female	married	Year of schooling	of java	constants
prakerja	1.00						
age	0.01	1.00					
female	0.01	0.04	1.00				
married	-0.03	0.18	0.07	1.00			
year of schooling	0.03	0.06	-0.12	-0.05	1.00		
java	0.01	-0.01	0.02	0.01	0.10	1.00	
constants	-0.12	-0.56	-0.11	-0.69	-0.52	-0.17	1.00

VIF

The rule of thumb of multicollinearity is if the VIFs exceed than 10. And the correlation between variables in the matrix is less than 60. In this case, multicollinearities do not exist.

Variable	VIF	1/VIF
age	1.04	0.962
married	1.04	0.962
year of schooling	1.03	0.968
female	1.02	0.980
java	1.01	0.990
prakerja	1.00	0.998
Mean VIF	1.02	

Individual t-test of Competence Elements

Individual t-test is comparing a difference between beneficiaries and non-beneficiaries in terms of each competence elements. It shows that there are a significant different between beneficiaries and non-beneficiaries for 8 out of 11 in competence elements.

Variables	Beneficiaries		Non-Beneficiaries		t-test
	Mean	Standard Deviation	Mean	Standard Deviation	
I found a new method to finish my job	3.09	0.56	2.93	0.61	-6.33***
I have better time management	3.04	0.57	2.97	0.58	-2.92***
I have more friends/co-workers	2.93	0.68	2.85	0.66	-2.93***
I am more comfortable working in a team	2.95	0.61	2.88	0.64	-2.85***
I am more confident to speak in public	2.91	0.64	2.81	0.65	-3.54***
I am more selective in receiving information	3.11	0.56	3.09	0.57	-0.68
I often question something	3.02	0.58	3.00	0.57	-0.41
I become more optimistic to pursue my career	3.13	0.60	3.07	0.61	-2.42**
I became more responsible	3.13	0.54	3.09	0.56	-1.61
I became more discipline	3.21	0.56	3.16	0.56	-1.96*
I became more confident	3.16	0.59	3.09	0.60	-2.79***

Note: * p<0.05, ** p<0.01, *** p<0.001

Source: Authors' calculation

Sensitivity Analysis of Competence, Productivity, Competitiveness and Entrepreneurship skills variables

Sensitivity Analysis of Competence

Dependent variables:

Model 3.5: 11 elements or full set of competence (see Annex 1)

Model 3.6: 6 elements of competence comprise of: (1) new methods for working, (2) better time management, (3) more selective in receiving information, (4) more discipline, (5) more responsible, and (6) more confident.

Model 3.7: 3 elements of competence comprise of: (1) new methods for working, (2) better time management, and (3) more discipline.

Independent variables:

prakerja (dummy of Kartu Prakerja beneficiaries, 1 for beneficiaries, and 0 for no-beneficiaries), age (in year), year of schooling in year, java (dummy for Java residence, 1 for Java residence, otherwise 0), female (dummy of gender, 1 is female, 0 is male), married (dummy for marital status, 1 is married, otherwise 0). The method used is pooled OLS. This is similar to main model (**Model 3.1**).

All models have the same pattern for significance and effect (positive/negative effect) on competence. Fewer elements of competence affect lower coefficient values.

	Competence Model		
	3.5 11 Elements of Competence (Main Model)	3.6 6 Elements of Competence	3.7 3 Element of Competence
prakerja	0.766*** (0.210)	0.424*** (0.120)	0.300*** (0.064)
age	-0.032* (0.013)	-0.017* (0.007)	-0.008* (0.004)
year of schooling	0.161*** (0.040)	0.073** (0.023)	0.034** (0.012)
java	0.469* (0.211)	0.275* (0.121)	0.133* (0.064)
female	0.015 (0.212)	0.130 (0.121)	0.104 (0.065)
married	0.283 (0.627)	0.196 (0.358)	0.139 (0.190)
constants	31.37*** (0.951)	17.60*** (0.542)	8.524*** (0.289)
Observations	2156	2156	2156
R-squared	0.019	0.016	0.019

Notes: Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Sensitivity Analysis of Productivity

Dependent variables:

Model 3.8: 3 elements of productivity comprise of (1) finishing work faster, (2) larger work coverage, (3) more precisely/accurate work (see Annex 1)

Model 3.9: 1 elements of productivity i.e.: more precisely/accurate work.

Independent variables:

prakerja (dummy of Kartu Prakerja beneficiaries, 1 for beneficiaries, and 0 for no-beneficiaries), age (in year), year of schooling in year, java (dummy for Java residence, 1 for Java residence, otherwise 0), female (dummy of gender, 1 is female, 0 is male), married (dummy for marital status, 1 is married, otherwise 0). The method used is pooled OLS. This is similar to main model (Model 3.2).

Productivity Model		
	3.8	3.9
	3 Element of Productivity (Main Model)	1 Element of Productivity
prakerja	0.242*** (0.067)	0.0874*** (0.024)
age	-0.009* (0.004)	-0.004* (0.001)
year of schooling	0.042*** (0.013)	0.014** (0.005)
java	0.141* (0.067)	0.046 (0.024)
female	0.265*** (0.067)	0.052* (0.024)
married	0.102 (0.198)	-0.031 (0.072)
constants	8.249*** (0.300)	2.883*** (0.108)
Observations	2156	2156
R-squared	0.024	0.017

Note: Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Sensitivity Analysis of Competitiveness

Dependent variables:

Model 3.10: 6 elements of competitiveness, see Annex 1.

Model 3.11: 1 elements of competitiveness, i.e.: better performance compared to their colleagues.

Independent variables:

prakerja (dummy of Prakerja beneficiaries, 1 for beneficiaries, and 0 for no-beneficiaries), age (in year), year of schooling in year, java (dummy for Java residence, 1 for Java residence, otherwise. 0), female (dummy of gender, 1 is female, 0 is male), married (dummy for marital status, 1 is married, otherwise 0). The method used is pooled OLS. This is similar to main model (**Model 3.3**).

Competitiveness Model		
	3.10	3.11
	6 Element of Competitiveness	1 Element of Competitiveness
prakerja	0.523*** (0.134)	0.0820** (0.0259)
age	-0.0226** (0.00819)	-0.00347* (0.00158)
year of schooling	0.0490 (0.0253)	0.0110* (0.00488)
java	0.198 (0.135)	0.0265 (0.0260)
female	-0.102 (0.135)	-0.0139 (0.0261)
married	0.113 (0.400)	0.0468 (0.0770)
constants	17.46*** (0.607)	2.856*** (0.117)
Observations	2156	2156
R-squared	0.014	0.010

Note: Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Sensitivity Analysis of Entrepreneurship

Dependent variables:

Model 3.12: Main model, similar to **Model 3.4**.

Model 3.13: 5 elements of entrepreneurship skills are: (1) confidence to start the business, (2) willing to take the risks, (3) expand/adjust the business, (4) expand the business scope/open new branches, (5) add more employees.

Model 3.14: 2 elements of entrepreneurship skills are: (1) confidence to start the business, (2) willing to take the risks

Model 3.15: 6 elements of entrepreneurship skills are: (1) manage the business finance, (2) sell the products, (3) produce new products, (4) buy raw materials, (5) buy machines or tools, (6) manage employees.

Independent variables:

prakerja (dummy of Prakerja beneficiaries, 1 for beneficiaries, and 0 for no-beneficiaries), age (in year), year of schooling in year, java (dummy for Java residence, 1 for Java residence, otherwise 0), female (dummy of gender, 1 is female, 0 is male), married (dummy for marital status, 1 is married, otherwise 0). The method used is pooled OLS. This is similar to main model (**Model 3.4**).

The main model is relatively sensitive, using some elements or full elements of entrepreneurship skills give different results. Entrepreneurship skills are affected by many elements (Sohn, 2016; Efrata et al., 2021).

	Entrepreneurship skills			
	3.12	3.13	3.14	3.15
	Main Model	5 Elements of entrepreneurship	2 Elements of entrepreneurship	6 Elements of entrepreneurship
prakerja	1.504*** (0.441)	0.157 (0.302)	-0.0598 (0.128)	0.514 (0.326)
age	0.133*** (0.0269)	-0.00295 (0.0176)	-0.00499 (0.00748)	-0.00362 (0.0190)
year of schooling	0.0692 (0.0832)	0.126* (0.0579)	0.0841*** (0.0246)	0.143* (0.0624)
java	0.350 (0.443)	0.475 (0.301)	0.123 (0.128)	0.594 (0.324)
female	0.275 (0.445)	0.0257 (0.299)	-0.0154 (0.127)	0.324 (0.322)
married	-1.357 (1.314)	0.0220 (0.708)	0.153 (0.300)	-0.423 (0.763)
constants	-0.957 (1.993)	12.65*** (1.198)	5.122*** (0.508)	15.62*** (1.291)
Observations	2156	245	245	245
R-squared	0.018	0.029	0.053	0.049

Note: Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Balance test PSM

Individual t-test before matching

Individual t-test is conducted before matching to ensure that variable used to match beneficiaries and non-beneficiaries are not significantly different. The test above shows that there are no significant different between beneficiaries and non-beneficiaries in terms of years of schooling, gender, location, age, and marital status, hence we can use these variables for matching.

Variables	Beneficiaries		Non-Beneficiaries		t-test
	Mean	Standard Deviation	Mean	Standard Deviation	
Years of schooling	12.50	2.74	12.67	2.63	1.47
Female	0.48	0.50	0.50	0.50	0.82
Java	0.50	0.50	0.51	0.50	0.43
Age	29.9	8.13	30.2	8.58	0.67
Married	0.97	0.16	0.96	0.18	-1.38

Source: Authors' calculation.

Individual t-test after matching

Variable	Unmatched		Mean		% reduct		t-test		V(T)/ V(C)
	Matched	Treated	Control	% Bias	bias		t	p>t	
Years of schooling	U	12.51	12.68	-6.30			-1.47	0.14	1.09
	M	12.52	12.66	-5.40	15.00		-1.29	0.20	1.18*
Female	U	0.49	0.50	-3.50			-0.82	0.41	.
	M	0.49	0.47	2.60	26.20		0.60	0.55	.
Java	U	0.50	0.51	-1.90			-0.43	0.67	.
	M	0.50	0.49	1.00	48.00		0.22	0.82	.
Age	U	29.97	30.21	-2.90			-0.67	0.50	0.90
	M	29.98	29.14	10.00	-247.90		2.38	0.02	0.98
Married	U	0.97	0.96	6.00			1.39	0.17	.
	M	0.97	0.98	-0.50	90.90		-0.14	0.89	.

* if variance ratio outside [0.89; 1.13] for U and [0.89; 1.13] for M

Source: Authors' calculation

Overall Statistics

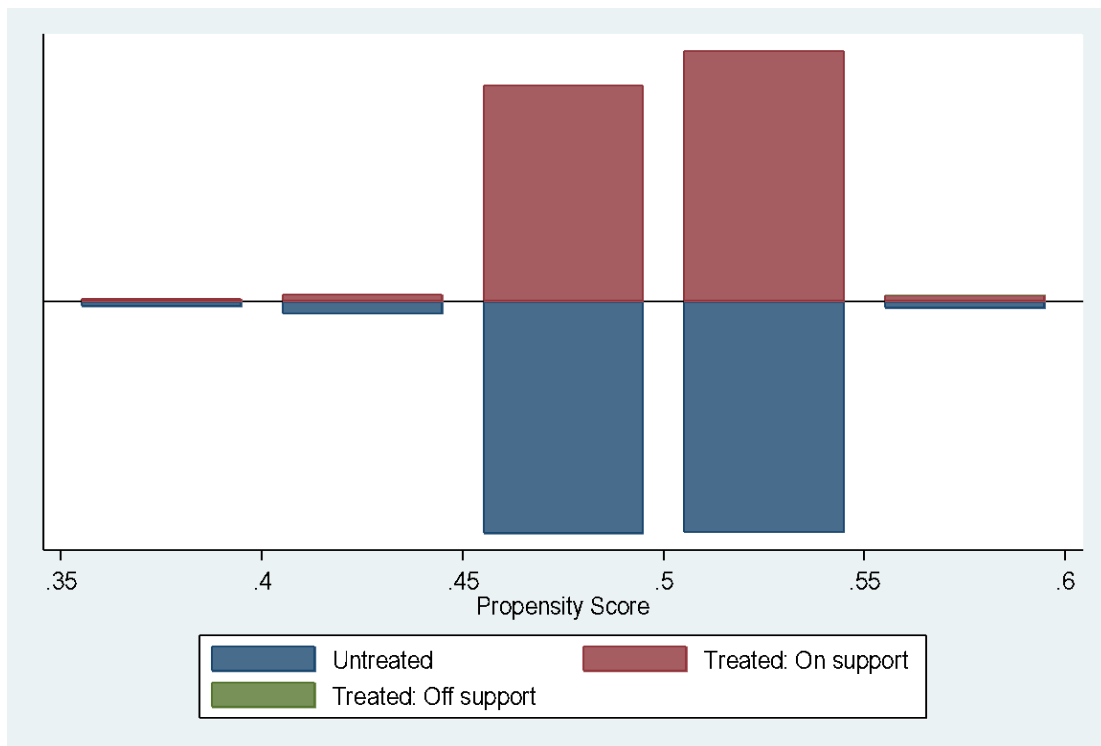
Individual t-test after matching is conducted to check whether the variables used in matching are similarly distributed in both groups after matching. The individual t-tests indicate that after matching all have average values of years of schooling, gender, location, age, and marital status are not significantly different from zero. Further, LR test statistics in overall statistics indicates accepted null hypothesis of all slope parameters equal to zero, meaning that there are no different between subset of beneficiaries and non-beneficiaries used in matching. The common support for this analysis is attach below.

	Ps R2	LR chi2	p>chi 2	Mean Bias	Med Bias	B	R	%Var
Unmatched	0.002	5.30	0.38	4.10	3.50	9.90	0.92	0.00
Matched	0.003	8.09	0.15	3.90	2.60	12.30	1.16	50.00

* if B>25%, R outside [0.5; 2]

Source: Authors' calculation.

Propensity score distribution and common support for propensity score estimation



Source: Authors' calculation.

ANNEX 4: PRAKERJA DAN INNOVATIONS

Model 4.1 examines the relationship between Kartu Prakerja and new product as a proxy of innovation. The independent variable is Prakerja and the dependent variable is new product.

Model 4.2 is similar to **Model 4.1**, added by some control variables, i.e.: entrepreneurship skills (see the explanation in Annex 3), and dummy of Java. Java has better infrastructure that the other regions that can support innovations. According to Roig-Tierno et al. (2015) support infrastructure such as incubators, technology centers, and university can positively affect young innovation companies' growth.

The model used is pooled OLS.

	4.1 New Product	4.2 New Product
Prakerja	0.043 (0.058)	0.017 (0.056)
Entrepreneurship skills		0.024*** (0.006)
Java		0.112* (0.055)
Constants	0.240*** (0.044)	-0.589** (0.202)
Observations	245	245
R-squared	0.002	0.083

Note: Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Model 4.3 examines the relationship between Kartu Prakerja and new idea as a proxy of innovation. The independent variable is Prakerja and the dependent variable is new idea.

Model 4.4 is similar to **Model 4.3**, added by some control variables, i.e.: entrepreneurship skills (see the explanation in Annex 3), and dummy of Java. Java has better infrastructure that the other regions that can support innovation (Roig-Tierno et al., 2015).

The model used is pooled OLS.

	4.3 New idea	4.4 New idea
Prakerja	0.139** (0.050)	0.131** (0.050)
Entrepreneurship skills		0.014* (0.006)
Java		-0.040 (0.049)
Constants	0.730*** (0.039)	0.317 (0.182)
Observations	245	245
R-squared	0.031	0.055

Note: Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Model 4.5 examines the relationship between Kartu Prakerja and new strategy as a proxy of innovation. The independent variable is Prakerja and the dependent variable is new strategy.

Model 4.6 is similar to **Model 4.5**, added by some control variables, i.e.: entrepreneurship skills (see the explanation in Annex 3), and dummy of Java. Java has better infrastructure than the other regions that can support innovation (Roig-Tierno et al., 2015).

The model used is pooled OLS.

	4.5	4.6
	New strategy	New strategy
Prakerja	0.232*** (0.053)	0.213*** (0.052)
Entrepreneurship skills		0.022*** (0.006)
Java		0.024 (0.051)
Constants	0.630*** (0.041)	-0.089 (0.189)
Observations	245	245
R-squared	0.073	0.128

Note: Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

ANNEX 5: MINCER WAGE EQUATION

Model 5.1 shows Mincer Wage Equation using pooled OLS. Dependent variable is log of income in 2021. Independent variables are *prakerja* (dummy of *prakerja* beneficiaries, 1 is beneficiaries, 0 is non-beneficiaries), year of schooling (in year), age, age squared, female (dummy of gender, 1 is female, 0 is male), married (dummy of marital status, 1 is married, 0 is other status), *java* (dummy of residential, 1 is Java, 0 is non-Java), *services2021* (dummy of industry, 1 is services, 0 is non-services), *working_hour2021* (average working hour every week). The sample is only workers that have income.

Model 5.2 uses Mincer Wage Equation using Instrumental Variables (IV). Dependent and independent variables are similar to **Model 5.3**. Instrumented variable is year of schooling, instrument variable is mother year of schooling. There is endogeneity issue, IV estimation result is more appropriate. The first and second stages of IV is indicated in the table below.

	5.1	5.2	5.3
	Pooled OLS	IV: instruments: mother year of schooling. Instrumented variable: year of schooling	Pooled OLS for sample with the change job status (from not working in 2020 to working in 2021)
	Ln income in 2021	Ln income in 2021	Ln income in 2021
<i>prakerja</i>	0.173* (0.0798)	0.195* (0.082)	0.316* (0.1248)
year of schooling	0.0972*** (0.0151)	0.204*** (0.0474)	0.102*** (0.0244)
age	0.0641* (0.0277)	0.0347 (0.0312)	0.109* (0.044)
age squared	0.000754 (0.000409)	-0.000286 (0.000466)	-0.001* (0.00065)
female	-0.462*** (0.084)	-0.554*** (0.0929)	-0.624*** (0.1286)
married	-0.0416 (0.279)	-0.104 (0.285)	-0.17 (0.517)
<i>java</i>	0.222** (0.0801)	0.262** (0.0834)	0.257* (0.1258)
<i>services2021</i>	-0.144 (0.108)	-0.197 (0.113)	-0.182 (0.1651)
workhour in 2021	0.0161*** (0.00202)	0.0172*** (0.00211)	0.0175*** (0.00303)
constants	10.59*** (0.56)	9.727*** (0.666)	9.761*** (0.9142)
Observations	1223	1221	594
R-squared	0.113	0.076	0.1465

Note: Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

	1st Stage: Dependent variable: year schooling			2nd Stage: Dependent variable ln of income in 2021		
	Coefficient	Standard error	P>t	Coefficient	Standard error	P>t
year of schooling				0.20	0.05	***
prakerja	-0.12	0.14		0.20	0.08	**
age	0.30	0.05	***	0.04	0.03	
age squared	0.00	0.00	***	0.00	0.00	
female	0.75	0.15	***	-0.55	0.09	***
married	0.49	0.50		-0.10	0.29	
java	-0.41	0.14	***	0.26	0.08	***
services2021	0.46	0.20	**	-0.20	0.11	
work_hour2021	-0.01	0.00	**	0.02	0.00	***
year of schooling of mother	0.19	0.02	***			
Constant	5.98	1.00		9.73	0.67	***
Observations		1221			1221	
R-squared				0.11		
Test results on instruments						
F-test	142.33		***	14.13		***
Under identification test (Anderson canon. corr. LM statistic):					128.41	***
Sargan statistic (overidentification test of all instruments):					equation exactly identified	
Endogeneity test of endogenous regressors:					6.02	**

Note: * p<0.05, ** p<0.01, *** p<0.001

ANNEX 6: FINANCIAL INCLUSION

Model 6.1 shows the relationship between financial inclusion and Kartu Prakerja. Financial inclusion is measured by the ownership of any financial accounts including bank account, fintech account, and e-wallet. Prakerja is dummy variable, 1 is beneficiaries, 0 is non-beneficiaries. The other control variables are income in 2021 in nominal IDR, and dummy of Java (1 is Java, 0 is non-Java). The model used is pooled OLS.

Model 6.2 is further analysis of **Model 6.1**, instead of using financial inclusion variable in general, this model uses e-wallet ownership as dependent variable. Similar to **Model 6.1**, model used is pooled OLS method.

	6.1	6.2
	Financial inclusion	E-wallet ownership
Prakerja	0.217*** (11.26)	0.218*** (11.26)
Income in 2021	2.09e-08** (3.18)	2.09e-08** (3.18)
Java	0.090*** (4.65)	0.090*** (4.65)
Constants	0.511*** (28.86)	0.511*** (28.86)
Observations	2146	2146
R-squared	0.069	0.069

Notes: t statistics in parentheses

* p<0.5, ** p<0.01, *** p<0.001

ANNEX 7: GENDER ANALYSIS

Independent variables are: prakerja (dummy of Kartu Prakerja, 1 is beneficiaries, 0 is non-beneficiaries), age, married (dummy of marital status, 1 is married, 0 is other status), year of schooling, java (dummy of residential, 1 is Java, 0 is non-Java).

Dependent variables of: **Model 7.1 and 7.2** are competence scores; **Model 7.3 and 7.4** are productivity scores; **Model 7.5 and 7.6** are competitiveness score; and **Model 7.7 and 7.8** are entrepreneurship skill scores.

The models are separated by gender, for example: **Model 7.1** is competence model for female only, **Model 7.2** is competence model for male only, etc.

All models are estimated using pooled OLS.

Dependent variable	Competence score		Productivity score		Competitiveness score		Entrepreneurship score	
Explanatory Variables	7.1 Female	7.2 Male	7.3 Female	7.4 Male	7.5 Female	7.6 Male	7.7 Female	7.8 Male
prakerja in percent)	2.9	1.6	3.3	2.0	2.8	2.0	40.9	40.9
Mean	33.4	33.3	9.1	8.8	17.8	17.9	3.8	3.5
prakerja (in percentage point)	0.957*** (0.281)	0.538* (0.312)	0.297*** (0.086)	0.180* (0.101)	0.678*** (0.194)	0.353* (0.186)	1.537** (0.635)	1.454** (0.615)
age	-0.01 (0.018)	-0.052*** (0.018)	-0.007 (0.005)	-0.011* (0.006)	-0.016 (0.012)	-0.030*** (0.011)	0.153*** (0.041)	0.114*** (0.036)
married	-0.381 (0.75)	1.719 (1.09)	-0.239 (0.229)	0.725** (0.354)	-0.447 (0.517)	1.207* (0.649)	-1.747 (1.694)	-0.208 (2.145)
year of schooling	0.247*** (0.054)	0.089 (0.058)	0.044*** (0.017)	0.041** (0.019)	0.083** (0.036)	0.019 (0.034)	0.026 (0.123)	0.11 (0.113)
java	0.413 (0.284)	0.556* (0.312)	0.167* (0.086)	0.124 (0.101)	0.0501 (0.196)	0.361* (0.186)	-0.11 (0.641)	0.786 (0.615)
constants	30.17*** (1.26)	31.53*** (1.461)	8.734*** (0.384)	7.761*** (0.474)	17.25*** (0.869)	16.98*** (0.87)	-0.132 (2.848)	-2.204 (2.875)
Observations	1067	1093	1067	1093	1067	1093	1067	1093
R-squared	0.03	0.018	0.022	0.016	0.018	0.018	0.023	0.015

Note: Standard errors in parentheses

* p<.1, ** p<.05, *** p<.01

Mincer Wage Equation for Female

The dependent variable for those three models is ln of income in 2021.

Dependent variables for **Model 7.9** are: prakerja (dummy of prakerja, 1 is beneficiaries, 0 is non-beneficiaries), year of schooling, age, age squared, married (dummy of marital status, 1 is married, 0 is other status), java (dummy of residential, 1 is Java, 0 is non-Java), and working hours in 2021. The model used is pooled OLS with only working women sample, the number of samples is around 478 respondents.

Dependent variables of **Model 7.10** are similar to **Model 7.9**, but prakerja in the form of interaction with gender (prakerja #females).

Model 7.11 is instrumental variable (IV) model that used as robustness check, the instrumented variable is year of schooling, and instrument variables is year of schooling of mother.

	7.9	7.10	7.11
	Pooled OLS	Pooled OLS with interaction	IV (Robustness check)
	Ln income in 2021	Ln income in 2021	Ln income in 2021
Prakerja	0.309* (0.135)		0.332* (0.142)
year of schooling	0.143*** (0.027)	0.097*** (0.015)	0.324*** (0.090)
age	0.113 (0.064)	0.065* (0.028)	0.0267 (0.080)
age squared	-0.002 (0.001)	-0.001 (0.000)	-0.000 (0.001)
married	-0.250 (0.401)	-0.026 (0.279)	-0.338 (0.419)
java	0.167 (0.138)	0.221** (0.080)	0.207 (0.146)
work in services sector in 2021	-0.519* (0.217)	-0.141 (0.108)	-0.681** (0.244)
working hour in 2021	0.016*** (0.003)	0.016*** (0.002)	0.019*** (0.004)
dummy of prakerja – dummy of female dummy of prakerja (0) – dummy of female (1)		-0.582*** (0.118)	
dummy of prakerja (1) – dummy of female (0)		0.081 (0.102)	
dummy of prakerja (1) – dummy of female (1)		-0.267* (0.115)	
constants	9.576*** (1.132)	10.60*** (0.560)	8.572*** (1.259)
Observations	478	1223	476
R-squared	0.121	0.114	0.030

Note: Standard errors in parentheses

* p<.1, ** p<.05, *** p<.01

The Average Treatment Effect (ATT) on the Treated of Propensity Score Matching (PSM)

	ATT	
	Female	Male
Competence	0,886**	0,367
Productivity	0,271***	0,118
Competitiveness	0,627***	0,218
Entrepreneurship	1,524**	0,697***

Note: * p<.1, ** p<.05, *** p<.01

ANNEX 8: RESIDENTIAL ANALYSIS – JAVA AND NON-JAVA

Competence and Productivity Model by Java/Non-Java

Pooled OLS Model

Independent variables are: prakerja (dummy of prakerja, 1 is beneficiaries, 0 is non-beneficiaries), year of schooling, age, female (dummy of female, 1 is female, 0 is male), the restriction is java==1. So, the sample is only Java residents.

Dependent variables of: **Model 8.1** is competence score; **Model 8.2** is productivity score.

All models are estimated using pooled OLS.

	8.1 Competence Score	8.2 Productivity Score
Prakerja (in percentage point)	0.762* (0.296)	0.259** (0.095)
year of schooling	0.157* (0.060)	0.043*** (0.019)
Age	-0.025** (0.017)	-0.010* (0.006)
Female	0.009 (0.297)	0.287*** (0.095)
Constants	32.01*** (0.963)	8.484*** (0.308)
Observations	1084	1084
R-squared	0.014	0.024
Prakerja (in percent)	2.27	2.88
Mean	33.51	8.98

Note: Standard errors in parentheses
* p<.1, ** p<.05, *** p<.01

Mincer Wage Equation with Interaction Variables of Java and Prakerja

The dependent variable for those three models is ln of income in 2021.

Dependent variables for **Model 8.3** are: prakerja (dummy of Kartu Prakerja, 1 is beneficiaries, 0 is non-beneficiaries), year of schooling, age, age squared, female (dummy of female, 1 is female, 0 is male), married (dummy of marital status, 1 is married, 0 is other status), services 2021 (dummy of working in services sector, 1 is services, 0 is otherwise), and working hours in 2021.

Dependent variables of **Model 8.4** are similar to **Model 8.3**, but prakerja in the form of interaction with java (prakerja #java).

Model 8.5 is an instrumental variable (IV) model that used as robustness check, the instrumented variable is year of schooling, and instrument variable is year of schooling of mother.

	8.3	8.4	8.5
	Pooled OLS	Pooled OLS with	IV (Robustness Test)
	ln income in 2021	Interaction Variables ln income in 2021	ln income in 2021
prakerja	0.243* (0.117)		0.251* (0.119)
year of schooling	0.122*** (0.024)	0.097*** (0.015)	0.232*** (0.068)
age	0.012 (0.044)	0.065* (0.028)	-0.013 (0.047)
age squared	-0.000 (0.001)	-0.001 (0.000)	0.000 (0.001)
female	-0.583*** (0.127)	-0.462*** (0.084)	-0.684*** (0.139)
married	-0.116 (0.413)		-0.191 (0.419)
work in services sector in 2021	-0.343* (0.151)	-0.141 (0.108)	-0.392* (0.157)
working hour in 2021	0.011*** (0.003)	0.016*** (0.002)	0.013*** (0.003)
dummy of java – dummy of prakerja			
dummy of java (0) – dummy of prakerja (1)		0.121 (0.112)	
dummy of java (1) – dummy of prakerja (0)		0.169 (0.113)	
dummy of java () – dummy of prakerja (1)		0.395*** (0.113)	
Constants	11.87*** (0.855)	10.57*** (0.483)	10.97*** (0.991)
Observations	604	1223	603
R-squared	0.103	0.113	0.071

Note: Standard errors in parentheses

* p<.1, ** p<.05, *** p<.01

The Average Treatment Effect (ATT) on the Treated of Propensity Score Matching (PSM)

	Mean		(in percentage point)		(in percent)	
	Java	Non-Java	Java	Non-Java	Java	Non-Java
Competencies	33.51	33.15	0.673**	0.726**	2.01**	2.19**
Productivity	8.98	8.88	0.270***	0.209**	3.01***	2.35**
Competitiveness	17.90	17.74	0.596***	0.547***	3.33***	3.08***
Entrepreneurship	3.82	3.48	1.714**	0.657**	44.82**	18.89**

Note: * p<.1, ** p<.05, *** p<.01

ANNEX 9: PRAKERJA EFFECT ON AGE GROUP, RESIDENTIAL LOCATION AND EDUCATION LEVEL

Model 9.1: dependent variable is competence score, independent variables are prakerja (dummy of Kartu Prakerja beneficiaries), age group of 26–35-year-old, age group of 36–46-year-old, age group >46-year-old (meanwhile age group <25-year-old is benchmark group), year of schooling, java (dummy of Java resident), female (dummy of female), married (dummy of marital status/married).

Model 9.2: dependent variable is productivity score; independent variables are similar to **Model 9.1**.

Model 9.3: dependent variable is competitiveness score; independent variables are similar to **Model 9.1**.

	9.1	9.2	9.3
	Competence score	Productivity Score	Competitiveness Score
prakerja	0.766*** (0.21)	0.245*** (0.066)	0.525*** (0.134)
age group 26-35	-0.612* (0.242)	-0.250** (0.077)	-0.515*** (0.155)
age group 36-45	-0.895** (0.327)	-0.169 (0.103)	-0.664** (0.209)
age group >46	-0.705 (0.472)	-0.228 (0.149)	-0.451 (0.301)
year of schooling	0.170*** (0.040)	0.046*** (0.013)	0.058* (0.026)
java	0.448* (0.212)	0.125 (0.067)	0.177 (0.135)
female	0.004 (0.213)	0.271*** (0.067)	-0.11 (0.136)
married	0.328 (0.626)	0.126 (0.198)	0.155 (0.4)
constants	30.72*** (0.831)	8.064*** (0.262)	17.01*** (0.53)
Observations	2156	2156	2156
R-squared	0.021	0.027	0.017

Note: Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Model 9.4-9.7: the dependent variable is competence score, independent variables are prakerja (dummy of Kartu Prakerja beneficiaries), year of schooling, java (dummy of Java resident), female (dummy of female), married (dummy of marital status/married).

Model 9.4 is for age group of 18-25 years old, **Model 9.5** is for age group of 26-35 years old, **Model 9.6** is for age group of 36-45 years old, and **Model 9.7** is for age group > 46 years old.

	9.4	9.5	9.6	9.7
	Competence Model			
	Age Group 18-25	Age Group 26-35	Age Group 36-45	Age Group >46
prakerja	0.188 (0.379)	0.843** (0.300)	1.260* (0.574)	0.375 (0.777)
year of schooling	0.253** (0.093)	0.321 (0.054)	0.401*** (0.098)	0.128 (0.122)
java	0.370 (0.382)	0.005 (0.303)	1.564** (0.581)	0.153 (0.774)
female	-0.495 (0.383)	0.165 (0.302)	0.234 (0.594)	0.074 (0.804)
married	1.350 (2.266)	-0.025 (0.988)	1.792 (1.216)	-1.410 (1.209)
constants	29.12*** (2.528)	32.10*** (1.245)	24.61*** (1.695)	31.55*** (1.873)
Observations	709	986	333	132
R-squared	0.015	0.009	0.092	0.031

Note: Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001.

Model 9.8-9.11: the dependent variable is productivity score, independent variables are prakerja (dummy of Kartu Prakerja beneficiaries), year of schooling, java (dummy of Java resident), female (dummy of female), married (dummy of marital status/married).

Model 9.8 is for age group of 18-25 years old, **Model 9.9** is for age group of 26-35 years old, **Model 9.10** is for age group of 36-45 years old, and **Model 9.11** is for age group > 46 years old.

	9.8	9.9	9.10	9.11
	Productivity Model			
	Age Group 18-25	Age Group 26-35	Age Group 36-45	Age Group >46
prakerja	0.113 (0.120)	0.298** (0.094)	0.182 (0.175)	-0.020 (0.283)
year of schooling	0.072* (0.030)	0.100 (0.017)	0.093** (0.030)	0.541 (0.045)
java	0.147 (0.121)	-0.010 (0.095)	0.385* (0.177)	-0.120 (0.282)
female	0.107 (0.121)	0.288** (0.095)	0.525** (0.181)	0.133 (0.293)
married	-0.147 (0.716)	0.074 (0.311)	0.748* (0.371)	-0.548 (0.441)
constants	8.07*** (0.799)	8.27*** (0.392)	6.49*** (0.517)	8.37*** (0.682)
Observations	709	986	333	132
R-squared	0.018	0.020	0.085	0.038

Note: Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001.

Model 9.12-9.15: the dependent variable is productivity score, independent variables are prakerja (dummy of Kartu Prakerja beneficiaries), year of schooling, java (dummy of Java resident), female (dummy of female), married (dummy of marital status/married).

Model 9.12 is for age group of 18-25 years old, **Model 9.13** is for age group of 26-35 years old, **Model 9.14** is for age group of 36-45 years old, and **Model 9.15** is for age group > 46 years old.

	9.12	9.13	9.14	9.15
	Competitiveness Model			
	Age Group 18-25	Age Group 26-35	Age Group 36-45	Age Group >46
prakerja	0.133 (0.237)	0.619*** (0.187)	0.942* (0.396)	0.181 (0.516)
year of schooling	0.353 (0.058)	0.151 (0.034)	0.177** (0.067)	0.115 (0.081)
java	0.209 (0.239)	-0.102 (0.189)	0.949* (0.400)	-0.333 (0.514)
female	-0.416 (0.239)	0.43680556 (0.188)	-0.093 (0.409)	0.108 (0.534)
married	1.254 (1.417)	-0.283 (0.616)	1.003 (0.837)	-0.512 (0.804)
constants	16.26*** (1.581)	17.38*** (0.777)	13.44*** (1.167)	17.96*** (1.245)
Observations	709	986	333	132
R-squared	0.009	0.012	0.060	0.008

Note: Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001.

Model 9.16-9.19: the dependent variable is productivity score, independent variables are prakerja (dummy of Kartu Prakerja beneficiaries), year of schooling, java (dummy of Java resident), female (dummy of female), married (dummy of marital status/married).

Model 9.16 is for age group of 18-25 years old, **Model 9.17** is for age group of 26-35 years old, **Model 9.18** is for age group of 36-45 years old, and **Model 9.19** is for age group > 46 years old.

	9.16	9.17	9.18	9.19
	Entrepreneurship Model			
	Age Group 18-25	Age Group 26-35	Age Group 36-45	Age Group >46
prakerja	1.118 (0.619)	1.780** (0.666)	2.810* (1.355)	-0.990 (2.221)
year of schooling	-0.135 (0.152)	0.324 (0.120)	0.144 (0.231)	0.365 (0.349)
java	-1.044 (0.623)	1.190 (0.672)	1.173 (1.370)	-1.830 (2.213)
female	-0.422 (0.625)	0.301 (0.671)	2.102 (1.402)	0.476 (2.298)
married	-4.450 (3.697)	1.216 (2.193)	-1.150 (2.868)	-5.004 (3.459)
constants	8.53* (4.125)	0.16 (2.765)	1.47 (3.998)	5.78 (5.357)
Observations	709	986	333	132
R-squared	0.012	0.011	0.026	0.036

Note: Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001.

Model 9.20 and 9.21 are competence model, so dependent variables are competence scores. Independent variable is prakerja (dummy of Kartu Prakerja beneficiaries). **Model 9.20** is model for rural; **Model 9.21** is for urban.

Model 9.22 and 9.23 are productivity model, so dependent variables are productivity scores. Independent variable is prakerja (dummy of Kartu Prakerja beneficiaries). **Model 9.22** is model for rural; **Model 9.23** is for urban.

Model 9.24 and 9.25 are competitiveness model, so dependent variables are competitiveness scores. Independent variable is prakerja (dummy of Kartu Prakerja beneficiaries). **Model 9.24** is model for rural; **Model 9.25** is for urban.

Competence Score		
	9.20	9.21
	Rural	Urban
prakerja	0.736 (0.451)	0.747** (0.238)
constants	32.66*** (0.319)	33.02*** (0.168)
Observations	383	1777
R-squared	0.007	0.006
Productivity Score		
	9.22	9.23
	Rural	Urban
prakerja	0.22 (0.144)	0.235** (0.0752)
constants	8.749*** (0.102)	8.832*** (0.0531)
Observations	383	1777
R-squared	0.006	0.005
Competitiveness Score		
	9.24	9.25
	Rural	Urban
prakerja	0.336 (0.278)	0.562*** (0.152)
constants	17.46*** (0.197)	17.58*** (0.107)
Observations	383	1777
R-squared	0.004	0.008

Note: Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Model 9.26-9.28 are competence model, so dependent variables are competence scores. Independent variable is prakerja (dummy of Kartu Prakerja beneficiaries). **Model 9.26** is model for all sample (lower and higher education level), **Model 9.27** is only for lower education graduates (junior high school or lower), **Model 9.28** is only for higher education graduates (senior high school or higher).

Model 9.29-9.31 are productivity model, so dependent variables are productivity scores. Independent variable is prakerja (dummy of Kartu Prakerja beneficiaries). **Model 9.29** is model for all sample (lower and higher education level), **Model 9.30** is only for lower education graduates (junior high school or lower), **Model 9.31** is only for higher education graduates (senior high school or higher).

Competence Score			
	9.26	9.27	9.28
	All Sample	Junior high school and below	Senior high school and higher
prakerja	0.754*** (0.211)	0.622 (0.609)	0.774*** (0.225)
education background (senior high school/SMA)	0.834** (0.311)		
constants	32.23*** (0.309)	32.30*** (0.439)	33.05*** (0.158)
Observations	2156	287	1873
R-squared	0.009	0.004	0.006

Productivity Score			
	9.29	9.30	9.31
	All Sample	Junior high school and below	Senior high school and higher
prakerja	0.235*** (0.0668)	0.149 (0.201)	0.248*** (0.0707)
education background (senior high school/SMA)	0.282** (0.0984)		
constants	8.571*** (0.098)	8.616*** (0.145)	8.846*** (0.0498)
Observations	2156	287	1873
R-squared	0.009	0.002	0.007

Note: Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

Model 9.32-9.34 are competitiveness model, so dependent variables are competitiveness scores. Independent variable is prakerja (dummy of prakerja beneficiaries). **Model 9.32** is model for all sample (lower and higher education level), **Model 9.33** is only for lower education graduates (junior high school or lower), **Model 9.34** is only for higher education graduates (senior high school or higher).

Model 9.35-9.37 are entrepreneurship model, so dependent variables are entrepreneurship skill scores. Independent variable is prakerja (dummy of prakerja beneficiaries). **Model 9.35** is model for all sample (lower and higher education level), **Model 9.36** is only for lower education graduates (junior high school or lower), **Model 9.37** is only for higher education graduates (senior high school or higher).

Competitiveness Score			
	All Sample	Junior high school and below	Senior high school and higher
	9.32	9.33	9.34
prakerja	0.525*** (0.134)	0.521 (0.354)	0.525*** (0.145)
education background (senior high school/SMA)	0.294 (0.198)		
constants	17.30*** (0.197)	17.30*** (0.255)	17.60*** (0.102)
Observations	2156	287	1873
R-squared	0.008	0.008	0.007
Entrepreneurship skills			
	All Sample	Junior high school and below	Senior high school and higher
	9.35	9.36	9.37
prakerja	1.434** (0.443)	0.31 (1.268)	1.606*** (0.473)
education background (senior high school/SMA)	-0.529 (0.653)		
constants	3.395*** (0.65)	3.978*** (0.914)	2.781*** (0.333)
Observations	2156	287	1873
R-squared	0.005	0	0.006

Note: Standard errors in parentheses

* p<0.05, ** p<0.01, *** p<0.001

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