

Does the state's approach to the citizen increase trust in public institutions? The Peruvian case of the Tambos platform in rural areas

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Abstract

A significant concern in developing countries is the disparity between urban and rural areas. The lack of access to health, education, and other services presents a worrying issue for the rural population. Places where access is complex and have less incentive for the private sector to invest in services put the government as the principal actor in providing services to these populations. The Peruvian government created the TAMBO national program to reduce the gap in access to essential services for the poor population. This paper seeks to measure how access to a social program such as TAMBO can affect trust in public institutions. The study exploits georeferenced information of TAMBO's and household's location to measure its effect on trust in public institutions: provincial municipality, district municipality, regional government, National Registry of Identification and Civil Status, and the Ministry of Education. Using a staggered Diff-in-Diff proposed by Callaway and Sant'Anna (2021) from 2008-2019, the study finds a negative effect on trust. The most affected institutions are the Provincial and District municipalities. The study provides evidence of a heterogeneous effect of the gender of the head of the household. It also shows that households with women as head are more likely to project the strongest reduction in trust. The results are robust after a different type of staggered Diff-in-Diff, event study, and falsification test.

1. Introduction

The disparity between urban and rural areas is a major concern in most of the developing countries (Kibriya, Bessler, & Price, 2019; Ravallion & Chen, 2007; Céspedes & Guabloche, 2002; Liu & He, 2019). This disparity has found widespread support empirically by several researchers. For example, Ferré et al. (2012) find that poverty is more widespread and deeper in small towns than in large cities due to the lack of basic services such as electricity or running water. Furthermore, the authors find that location matters. In this sense, small towns that are located nearer to large cities exhibit lower poverty rates, whereas those in remote areas are poorer. This could be because agriculture near the urban center can have a better result due to more intensive production of high-value crops and direct commercialization (FAO, 2017). Also, a closer relationship between urban and rural areas can improve food and nutrition security (Dubbeling et al., 2016) and the primary producer's lifestyle (Gundersen et al., 2017).

In addition, the lack of access to primary health services is a major concern in rural areas, and it is a direct threat to their residents (Douthit et al., 2015; Bolin et al., 2015). In this line, the lack of access to education is another primary concern due to the long-distance students need to travel to their schools and the sparsity of schools. Thus, the low population density can increment the investment in education because of the lack of infrastructure (electricity, roads, or internet), and as a result, can elevate the friction about the distance (Cattaneo et al., 2022). The difference between rural and urban areas is more remarkable in low- and middle-income countries, where children living in rural areas have a lower probability of completing primary school (World Bank, 2018) and transitioning to secondary school (Bashir et al., 2018). Besides, the gaps in access to education influence the quality of this topic; thus, students from rural areas have worse results in exams (Bashir et al., 2018; Mullis et al., 2012). In this regard, the distance to the nearest school can be the most substantial barrier for children that live in remote areas complicating their access to education and health services.

Pretending to promote policies to encourage competition between the private sector in the provision of services in rural areas is not the right path, and therefore, the role of the government to bring service in places where access is complex and the private sector does not have any incentive, at least initially, is the right policy (Commission for Rural Communities, 2008).

According to the information collected through the XI National Population Census and VI Housing Census of 2007 from Peru, 30.2% of the national population was in rural areas. This means a total of 8,228,715 inhabitants, with Cajamarca, Puno, and Cusco being the regions with the largest rural population in absolute value (INEI, 2014). In 2012, the Ministry of Inclusion and Social Development (MIDIS) from Peru created the National Strategy for Development and Social Inclusion: "Include to Grow." The objective was to establish the general framework of the development and social inclusion policy for the articulated interventions of the entities of the three levels of government linked to the sector, ordering them, and directing them to the priority results of development and social inclusion, recognizing the competencies and ongoing processes (MVCS, 2015).

Hence, MIDIS developed the Population map in the Process of Development and Social Inclusion, known as PEPI¹. This aims to show the special distribution of the most excluded Population in the country, which would prioritize the allocation of public spending. To be part of PEPI, the Population

¹ Initials in Spanish.

has to meet three out of four characteristics: (i) households residing in rural areas; (ii) households where the head of the household or his spouse learned to speak the native language (Quechua, Aymara, or Amazonian); (iii) households where the head of the household or the spouse of the head of the family did not complete primary education; and (iv) households that, due to their low-income level, are located in the lowest quintile of the distribution of per capita spending at the national level (MIDIS, 2013). In 2012, 4.7 million people were part of the PEPI, representing almost 15% of the Peruvian Population for this year. Also, 90.2% of the total of this Population mostly includes people who live in rural areas of the country (MIDIS, 2013).

The expected results of the Strategy are essential for the government within the framework of its social inclusion policy. Nevertheless, the problem facing implementing the actions that seek to achieve these goals is that in many cases, the population to be served is very dispersed and in remote areas, with which the possibility of reaching the necessary public services is reduced. Therefore, the population of remote areas does not receive services from the government or, in other cases, in suboptimal conditions. In this context, the National Program Tambos was created to bring government services closer to the most remote areas of Peru. The program gives its target population different services (health, education, and access to identity, among others). The program has been evaluated only once by Zavaleta (2016). Using a PSM radius matching, the author compares the results of the TAMBO's people living in the area of influence to other areas with similar characteristics from the years 2012 and 2015. The author measures the effect of access to sanitation, gas stove, health, identity, and social programs. However, the author finds effects of access to the gas stove in approximately 6 pp. and any significant effect on the other outcomes.

Nevertheless, studying the impact of TAMBO on different outcomes, such as health and education, can be difficult because of the large number of interventions that use the platform. It is impossible to identify all the interventions the program gives because it does not have a clear basket of interventions and a variation across regions. So, improving this factor could be necessary to correctly identify the causal effect. However, the program leads to an important point to be researched. With the creation of this program, it is possible to wonder if the government's appearance in remote areas can improve trust in public institutions.

Overall citizens tend to be skeptical toward the public sector when they are asked about general terms but more satisfied when the question is more specific (Huseby, 1995; Bennett & Bennett, 1990). Furthermore, there is also the "paradox of distance" proposed by Frederickson (1997). This paradox states that people are more likely to believe in government officials nearby while government officials far away are incompetent, dishonest, and lazy. This context further motivates the present research question whether TAMBO'S program improves the trust in public institutions.

To answer the present question, this research uses the National Household Survey (ENAHO) from Peru for the period 2008-2019 and administrative records. Due to the program's implementation sequentially, the estimation strategy will be a staggered Difference-in-Difference with multiple time periods following the methodology proposed by Callaway and Sant'Anna (2021). The assessment of TAMBO'S in the trust will be measured in the following direct outcomes: (i) provincial municipality; (ii) district municipality; (iii) regional government; (iv) National Registry of Identification and Civil Status (RENIEC); (v) Ministry of Education. In this context, the present study contributes to the discussion of policies that the government brings to its rural or dispersed population to create more

trust in public institutions. To the best of our knowledge, this also presents the second study that assesses social programs and institutional trust in Peru. Finally, the study estimates heterogeneous impacts by gender, as suggested in the literature (Malone 2010, Cozzubo et al. 2021).

The present research is organized as follows. Section 2 includes a brief description of the program. Section 3 presents the theoretical background that links access to public services and institutional trust and an exhaustive literature review. In section 4, the description of the dataset employees and the empirical strategy focuses on the virtues of the methodology proposed. Section 5 presents the descriptive statistics from the dataset. Section 6 shows the main results, the heterogeneous effects for females, and in section 7 the robustness test to secure the results. Finally, section 8 provides a discussion of the results and policy recommendations derived from the study.

2. The TAMBOS program

While TAMBOS has been running since 2012, it has not always been implemented as a nation-wide program. In 2013, the Supreme Decree N° 016-2013-VIVIENDA created the National Program Tambos. This program is a platform for providing services and activities of the Housing, Construction, and Sanitation Sector, as well as other sectors that provide services and activities aimed at the rural and dispersed population.

The purpose of the program is to "improve the quality of life of the poor and extremely poor population, especially that settled in rural or dispersed rural population centers, contributing to their economic, social and productive development that contributes to their social inclusion." The main goal is to "allow access for the poor population and extremely poor, especially the one settled in the populated centers of the rural area and in a dispersed way, to the services and activities, in social and productive matters provided by the government" (MVCS, 2015).

The target population is selected over two criteria. First, the program considers rural population centers with fewer than two thousand (2,000) inhabitants. Second, the program picks the poor and extremely poor population. Finally, the selection criteria for rural population centers are based on socioeconomic criteria, respiratory diseases, accessibility, and dispersion.

The program was transferred from the Ministry of Housing, Construction, and Sanitation (MVCS) to the Ministry of Development and Social Inclusion (MIDIS) in March of 2017 through the Supreme Decree N 012-2016-MIDIS. For the provision of different interventions using the platform, the MVCS would sign agreements with the three levels of government (local, provincial, and national) and, if applicable, with the private sector. In the case of public entities, actions could be implemented that allow their workers to develop activities and services using the TAMBOS due to the limitations of its functions. Thus, the program has a multisectoral view of interventions for its target population.

To date, the program does not have a structure for the interventions it will provide to the rural population. However, some sectors provide some services using the platform, such as development and social inclusion, education, agriculture, housing, and justice, among others. In this sense, some of the most known interventions that the program gives to the population are related to (i) access to citizenship providing an ID; (ii) access to infrastructures such as drinking water, adequate sanitation, and gas cooking; (iii) increment the temporary incomes due to access to a conditional transfer program, pension program for older people, training programs for farmers; and (iv) access to

vaccination programs and control of growth and development of children. (Zavaleta, 2016). Finally, the program's budget for 2013-2019 is approximately \$ 312.36 million².

3. Literature Review

3.1 Social Capital and Trust in Institutions

Following Coleman (1988), the concept of social capital is related to the value of the social structure that permits its actors achieve their goals. Taking into account some aspects of the social structure could help us understand different results at an individual level and transitions from micro to macro. *Social capital* is defined as “the interaction between individuals or households and the relation with the values and norms that create externalities for the community” (Putnam, 1993). In this line, Putnam (1993) argues that social capital has two elements the real extent of social obligations and the trustworthiness of the social environment. He suggests that these concepts have a correlation with the social norms within a society. Nevertheless, an essential effect of social capital is creating human capital. The relationship between the social capital created inside the family and outside (community or society) plays an important role in creating human capital for the next generations. Because social capital is based on the relations among persons, the experience in front of some situations can generate a peer effect that affects the outcomes related to social capital as trust. In this sense, the quality of public goods is an essential resource for the population and their behavior and perception of quality of life (Coleman, 1988). Furthermore, Fukuyama (1997) mentioned that trust works as a lubricant that makes an organization or a group work efficiently.

The OECD (2017) defines *trust* as “a person’s belief that another person or institution will act consistently with their expectations of positive behavior” (OECD 2017: 42). This report mentioned that this definition has two main elements. The first is related to the person’s beliefs, and the second to the expectations of positive behavior. Also, it makes the difference between two types of trust: interpersonal and institutional. The last one refers to all kinds of institutions as governmental and non-governmental. In addition, it could be considered a political or vertical trust, while trust in others is known as horizontal trust (Eek and Rothstein, 2005).

Inside the literature on institutional trust is possible to find the distinction between “trust in competence” and “trust in intentions.” The first relates to the people’s expectations about the behavior of the personnel in charge of institutions and their performance. The second captures the perception based on justice and ethics that people have about how the institution acts (Nooteboom, 2007). Also, other terminologies are used in this field as “logic of consequences,” which mentioned that the trust is derived from the results, and the “logic of appropriateness,” where the trust is based on values of transparency and integrity (Bouckaert, 2012).

An important fact is that the legitimacy of public institutions is based on trust. Thus, in a system where the citizens delegates to the government the elections and the correct use of the resources, a “healthy distrust” could be necessary to question the genuine interest of powerful actors (Christensen & Laegreid, 2005). In this sense, the ideology of the citizens could be a factor in supporting the government in a higher or lower way due to people believing in collective interests and aims (March & Olsen, 1989). The unemployment and economic performance level might influence the legitimacy level or create diffuse support (Miller & Listhaug, 1999).

² The information was taken from SIAF, and the value of the exchange currency is 1 dollar=3.9 soles.

People who follow the rules and trust in their authorities are highly correlated with the treatment they receive from the authorities in terms of procedure and outcomes (Tyler & Lind, 1992). For example, societies with high levels of horizontal trust, in other words, institutional trust, have a better performance in the democratic process (Putnam, 1993), fewer inequalities due to a better redistribution of the resources (Uslaner, 2002), a greater economic growth (Woolcock, 1998; Knack & Keefer, 1997; Economic and Social Council, 2018) and happier and healthier citizens (Heliwell, 2002). Also, in OCDE countries where the citizens perceive that the taxes and the social transfers are equitable and effective, the trust in the government and institutions is higher (OECD, 2019).

In contrast, the government's poor performance, corruption, and scandals can negatively affect trust in public institutions due to these situations undermining people's trust. In countries with a high level of corruption, institutional trust is lower than in countries with low rates of corruption, while government performance has a positive correlation with institutional trust (Van der Meer, 2017; Wang, 2016). The quality of public service is relevant for the engagement of the citizens and the trust of their in public institutions; however, the direction of the causal effects is ambiguous due to the level of trust in institutions that can affect the perception of the quality of services received (UN, 2021). Also, in a society where the citizens do not trust public institutions and are less likely to pay taxes, this situation generates fewer funds for the provision of public services. Unfortunately, this situation can create a vicious cycle that affects the function of the governance and institutions (UN, 2021).

On the one hand, it is important to note that trust could differ between the factors around the political system. For example, “distrust fashions” where the untrust could be based on symbols or myths pushed by the mass media or on negative experiences that the citizens lived. Besides, citizens may believe in some political leaders because they have personal achievements but not for the specific features of the political system. Also, citizens could be untrust in the political system and government representatives. Hence, in the long-term, trust in institutions could be given by diffuse support and, in the short-term, is more related to the situation of the current government (Rothstein & Stolle, 2003; Kumlim & Rothstein, 2002).

On the other hand, services that are locally based can generate more trust and satisfaction because the users know more about how it works and the provider, in contrast with the case that the service is long distance (Christensen & Laegreid, 2005). Nevertheless, the provision of the service by itself does not guarantee a good relationship and treatment between the providers and the users. On the contrary, we could expect an opposite effect on trust and satisfaction because proximity can generate a stigma inside the community. An example is classical research in Norway, where the authors found this effect (Löchen & Martinsen, 1962). The citizens play an important role in service satisfaction and the effects on trust in public institutions because they assume a “customer” position. They are the beneficiaries of the policies; thus, self-interest in dealing with the government is stronger, creating a direct connection between the government and citizens (Self, 2000).

Furthermore, losing institutional trust is a slow process, but rebuilding is a long-term goal. In this sense, reconstructing the institutional trust requires a public investment that permits close the social, political, and economic gaps. Public policies that give social protection and extend their coverage in the short-term build trust in public institutions (Evans et al., 2019).

3.2 Empirical Evidence

In literature, it is possible to find different research about the relation of social capital with different outcomes. For example, Whiteley (2000) studies the relationship between economic growth and social capital in thirty-four countries from 1970 to 1992³. The dataset employed comes from Penn World Database, World Values, and UNESCO cross-sectional data. Using an OLS method, the authors find that social capital has a meaningful impact on economic growth. Its effect could be comparable to the effect caused by education or human capital. La Porta et al. (1997) looked for empirical evidence to find the effects of trust on the performance of large organizations. For their purpose, they used different datasets: World Value Survey, and WDR1995, among others. Thus, employing an OLS method, the authors found that trust significantly affects performance. In this sense, holding the per capita GNP constant, an increase of one standard deviation in trust increment the judicial efficiency by 0.7, the bureaucracy quality and tax compliance by 0.3, and the anticorruption score by 0.3.

Knack and Keefer (1997) tried to measure if social capital has relevance in the economic performance of twenty-nine countries using the World Values Surveys. The authors employed an OLS and IV (percentage of people that belong to an ethnolinguistic group and percentage of law students over all the post-secondary students as instruments) methodologies, finding that in countries with a higher and more equal income, the trust and civic norms are stronger. The trust variable exhibits a huge relation with growth, so the increase of 10 pp. increments the economic growth by four-fifths of a percentage point in the OLS model, and this result is robust with the IV model.

Knack (2002) measures how different approaches to social capital can affect government performance in the United States using several sources of information. The performance was measured on a scale from A (best) – F (worst). Two methodologies are applied: (i) OLS and (ii) IV (religious composition of the state is used as an instrument). He found that an increase in 7 pp. doing unpaid work is associated with an increment of a point in the scale. The means past from -B to B. Also, he found an impact of four of six different indicators of social capital. These results are robust using the IV approach. Additionally, the author found in a disaggregate analysis of the performance dimension (financial and capital management, human resources, managing for results, and information technology) that at least four of six indicators of social capital are significant.

Keele (2007) tried to measure how social capital and government performance affect the variation in trust. The author used nine surveys from the Rope Center For Public Opinion for this analysis. Also, he used the Michigan Index of Consumer Sentiment as a measure of economic performance and other sources of information for measuring perception of crime, and congressional approval, among others. Employing a single-equation error correction model (ECM), he found that presidential approval and crime have significant effects on trust in the short-term period. In contrast, the indicators related to social capital (civic engagement and interpersonal trust) have effects in the short-term. However, it is in the long-term where the social capital gets more relevance of how this affects the confidence in government trust. Baliamoune-Lutz (2005) used panel data from the period of 1975-2000 of thirty-nine African countries, and a methodology of a panel with fixed effect measures the effect of social capital and institutions on the form of generalized trust. The results of the study showed the strongest

³ Countries that are part of the sample: Argentina, Austria, Belgium, Bulgaria, Canada, Chile, China, Czechoslovakia, Denmark, Finland, France, West Germany, East Germany, Hungary, Iceland, India, Ireland, Italy, Japan, Korea, Mexico, Netherlands, Nigeria, Norway, Poland, Portugal, Romania, South Africa, Spain, Sweden, Turkey, United Kingdom, United States, and the Soviet Union.

effect of social capital on income, but the institutions do not have an independent effect on income. In this sense, the author mentioned that these results suggested institutions and social capital could be complements rather than substitutes in the case of Africa.

Knowing that trust is an outcome related to social capital, until now, we do not have extensive literature on how being part of a social program can increase or decrease trust in public institutions. In this line, most studies try to measure the impacts on trust in public institutions related to insecurity. In the region of Latin America and the Caribbean, Corbacho et al. (2015) measure how being a victim of a crime could affect trust in institutions. Using a PSM technique and a micro dataset from the World Gallup Survey from 2007⁴, the authors find a reduction of 10 pp. in the trust in local Police. Also, Hernandez (2019) estimates the effects of victimization in outcomes related to trust in institutions (Electoral System, Comptroller, Ombudsman, Army, Unions, Judiciary, among others). Employing the dataset from the Latinobarometro between 2004-2014⁵ and the PSM technique, the author finds a reduction in the trust of public institutions between the range of 10.8 pp. -34.7 pp. Also, it affects trust in unrelated institutions in the fight against crime, and he finds that being a victim of crime affects more females. Liebertz and Bunch (2019) utilize the Latinobarometro, between 2009 and 2013, from 14 Latam countries⁶ to measure how the variance in crime salience in the media can generate different effects in support of the criminal justice system and the Police. To measure the crime salience, the authors used three indicators based on the emphasis on the front page of the newspapers and an extra indicator that tracks information about crime in all the newspapers. Thus, the authors use a multilevel model, and they find that the increase of news on the front page of the dailies about crime decrease the trust in the police. In this sense, for each percentage increase, trust decreases by 0.017 on a scale of 1 to 4. Specifically, for Central America, Malone (2010) analyzes the effect of crime on Public Trust in specific justice systems such as courts, police, and ombudsmen. The Latin American Public Opinion Project (LAPOP) is used for this objective. Thus, the author separated into three groups the countries: high crime and low performance (Guatemala, El Salvador, and Honduras), low performance and crime (Panama and Nicaragua), and low crime and high performance (Costa Rica). Using logistic regression, Malone found that in countries with lackluster justice systems, the fear of crime in the neighborhood reduces the trust in the justice system by 0.15 pp.; the attention to the newspapers reduces by 0.09 pp. the trust in countries with weak justice institutions but low crime; however, in the case of Costa Rica, the fear of crime in the neighborhood and in the country affects the trust in public institutions by 0.12 pp and 0.26 pp, respectively.

In addition, Cozzubo et al. (2021) measured how crime victimization can affect the trust in public institutions (Police, Local Police, Judiciary, and Prosecutor's Office) in Peru. Thus, the authors using a machine learning technique with a PSM, found that being a victim of a crime reduces the trust in the police in the short-term and long-term, about -7.0 and -4.0 pp., respectively. Additionally, they found a gender effect, which means that women suffered a strong reduction in the trust in public institutions, especially towards the local police. For the case of El Salvador and Guatemala, Perez

⁴ Countries that are part of the sample: Argentina, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, the Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, and Uruguay.

⁵ Countries that are part of the research: Argentina, Bolivia, Brazil, Chile, Colombia, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay, and Venezuela

⁶ Countries that are part of the study: Argentina, Bolivia, Brazil, Chile, Colombia, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Panama, Peru, and Venezuela.

(2003) used a logistic model to measure the relationship between crime and support for democracy. For this study, the author used two national surveys from these two countries and information from the Latinobarometro. The results show that fear and crime significantly reduce the trust in the National Civil Police in both countries, although in both countries people trust this institution the most. In addition, the author finds a reduction in support of democratic regimes. For Colombia, Blanco and Ruiz (2013) measure how crime and insecurity can affect trust in public institutions. The dataset comes from LAPOP from 2004-2010 and data from the Colombian National Department of Statistics. Using a logistic model in this cross-section, the authors find that being a victim of a crime or having a higher perception of insecurity reduces the trust in the judicial system more than in other institutions (Prosecutor's office, Attorney's office, Police, and Ombudsman's office). In addition, they find a reduction in trust in the National Government (-0.19) and Congress (-0.13) for victims of crime. In Mexico, Blanco (2013), using a similar methodology (ordered logic), the same period of study and dataset, but now with an additional dataset from Mexico (National Survey of Insecurity), tries to measure the effects of victimization and crime on trust in institutions. The study results show that the effect is higher in institutions related to the fight against crime such as the police and judicial systems.

Outside of the Latin American literature on public institutional trust, there are two studies concerning Pakistan and Tanzania related to this study's research question. Danish & Nawaz (2022) measured the relation between well-being (happiness, life satisfaction, and worthwhile) and institutional trust in Punjab-Pakistan. The authors used two methodologies: (i) order logistic regression and (ii) generalized structural equation model (GSEM). The final sample is about 1566 household that was randomly chosen. To measure the outcomes, the authors designed an index for a five-point and four-point Likert scale for the case of government effectiveness and institutional quality, respectively. Also, the authors employed income, sex, age, and education as control variables. The results are that government effectiveness, quality of public institutions, and satisfaction with hospital treatment positively correlate with well-being. In this sense, when people do not perceive corruption increase by 1.58, 1.64, and 1.46, the odds ratios for happiness, life satisfaction, and worthiness. In the same line, the institutional quality increases the odds ratios for the same variables in 1.15, 1.13, and 1.14, respectively.

Kosec and Mo (2021) using the methodology of Regression Discontinuity Design estimates the effects of the Benazir Income Support Program (BISP) in Pakistan on political support. Between the outcomes that the authors study is: (i) Government Support Index, (ii) Respect for political institutions, (iii) Proud of Political System, (iv) among others. In addition, the authors used individual-level administrative data with the poverty score, the Pakistan Rural Household Panel Survey (RHPS), and they collected two surveys. The authors found that the beneficiary of the program increase the government support index in 8 percentage points (pp.), but unfortunately the effects is not significant. Also, they do not find any impact on respect for political institutions and the proud of political system. Nevertheless, these outcomes are not significant with a robust p-value, but without a robust p-value all these outcomes are significant at 10%.

Evans et al. (2019) investigated the effects of a cash transfer program on trust in local government. In this sense, the authors explore a locally managed transfer program introduced randomly in Tanzania in 2010. The study used age, age square, sex, education level, improved toilet and roof, and piped water as control variables. The results show that cash transfers can significantly improve the trust in local leaders. Also, the authors mentioned that their results suggest little reason to worry that cash

transfer programs can affect the trust in local government when the environment has several high-information settings.

The effects on outcomes related to trust in public institutions are not widely studied in Peru. Hence, it is essential to contribute to closing this gap in the literature. Some investigation that tries to contribute to this point is Camacho (2014), using the methodology of Diff-in-Diff to analyze the effects of a conditional cash transfer program in Peru called "JUNTOS" on trust in public institutions and membership in social organizations. For this purpose, the authors focused on 133 districts where the program was implemented in 2005. Found that the programs do not have any effect on increasing participation in social organizations, but they find that beneficiaries increase their trust in public institutions such as the Ministry of Education, Ministry of Health, and National Office of Identification by 13.12%. However, they found a reduction in the trust in the Ombudsman's office of 18.22%, not the program's beneficiaries.

Beesley and Hawkins (2022) measured how the different dimensions of corruption can affect trust in public institutions (index) using an experimental method for Peru. The experiment consists of exposing people to different advertisements for petty corruption and grand corruption with a sample of 1000 people. The authors used an OLS regression and included some demographic features, city fixed effects, and robust standard errors clustered by city level. The results showed that exposure to any information about petty or grand corruption reduces the trust in public institutions by -0.108 standard deviations (sd). In addition, people exposed to petty corruption decreased their trust in public institutions by -0.139, but people exposed to grand corruption did not find a significant effect. Finally, when the authors slip the effect by the variables used to calculate the index, they found that people lost trust in political parties, criminal justice, the legal system, and congress.

4. Methodology

4.1 Data Sources

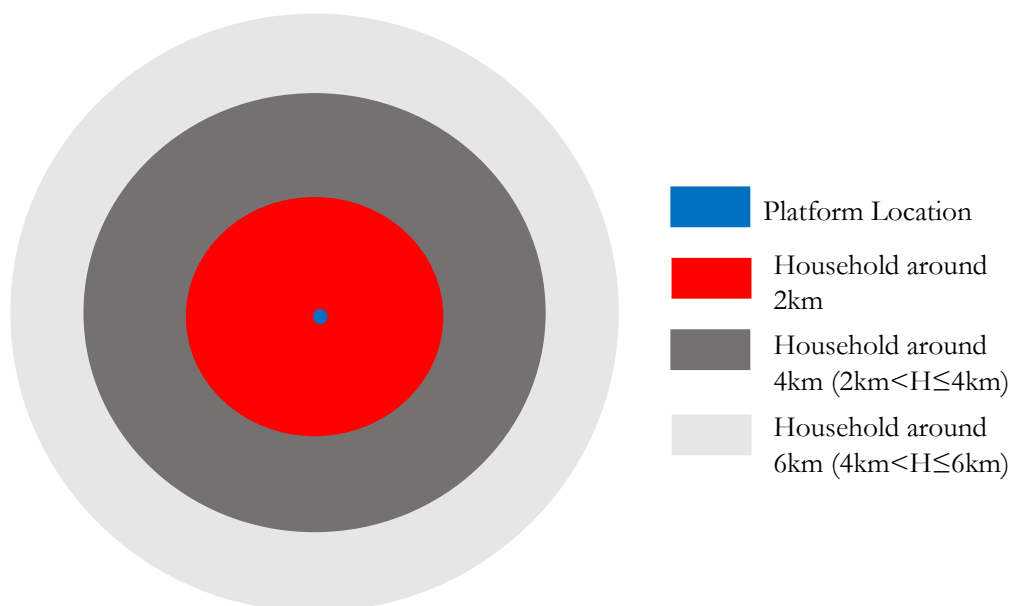
The primary source of information is the National Household Survey (ENAHO) for the period 2008-2019, a nationally representative survey whose objective is to collect individual information for demographic features of the Peruvian population. Also, this survey includes a specific module on trust at a household level, where the head of the household responds if they trust in a provincial municipality, district municipality, regional government, National Registry of Identification and Civil Status (RENIEC), and the Ministry of Education. It should be noted that the ENAHO sample design has a panel of districts, which permits the application of a more acceptable identification strategy. The most important advantage about panel data is that it allows us to control for some types of omitted variables without needing to observe it. Thus, it increases the precision of our estimations. In addition, this dataset was complemented with georeferenced data provided by the program TAMBOS. The location of the TAMBOS allows identifying the district of the exact location from the platform (Figure 1). Besides, in order to use some data from the municipality's public spending, the study benefits from the information of the Integrated Financial Administration System (SIAF) for all the periods of study. Therefore, using the information of the ENAHO and the administrative records permits us to measure the impact of the program in the intervention area.

4.2 Identification Strategy

Considering the design of the program TAMBOS, the population centers where the platform would be built were not chosen randomly. Thus, these population centers were targeted using population variables, access (rural), and socioeconomic status. Because the selection was not random, the causal estimator may contain some bias and invalidate the results; thus, attributing causality could be impossible for endogenous selection (Lee, 2005). Additionally, the program was implemented in a staggered manner from 2012 until 2019, and the last year is the cut-off year of the present investigation. In order to construct a valid control group to estimate the program's effects on trust in public institutions, the study selected the Staggered Difference in Difference with multiple periods by Callaway and Sant'Anna (2021). Fulfilling the parallel trend assumption, it is possible to estimate the causal effect due to this assumption holding the homogeneity between observable and unobservable features invariant despite the time on both groups (treatment and control).

To identify the treatment group, the research exploits the platform coordinates (latitude and longitude) and, at the same time, the coordinates of the conglomerates where the households are located. Using the STATA command called "geodist," the research calculated the distance between the platform and the conglomerate; thus, it defined the treatment group for all the households that it is conglomerate as around 2km, 4km, and 6km (Figure N° 1). In contrast, the control group is the household that does not receive the intervention in that specific year but is targeted by the program and beyond to the same distance. It is important to mention that in the difference distance created, the treatment household located at 2km covers the distance closer to the platform, the distance of 4km covers the household that is between more than 2km and until 4km, the distance on 6km covers the household that is between more than 4km and until 6km. Finally, we called "all the sample" when we used all the household from our sample (0km-6km) as an additional regression. This research exploits the program's phase-in characteristic using the next targeted distance, where the new TAMBO will be constructed, as a control on the staggered Diff-in-Diff.

Figure N° 1: Strategy identification based on distance from conglomerates to platform



The principal reason for using the methodology proposed by Callaway and Sant'Anna (2021) is related to the option that it is possible to incorporate covariates flexibly with multiple periods and groups. This is especially important because the difference between observable characteristics creates non-parallel outcome dynamics between different groups. After all, unconditional Diff-in-Diff is generally not appropriate to recover sensible causal parameters of interest (Heckman et al., 1997, 1998; Abadie, 2005). In this sense, the authors propose three different manners to estimate the causal effect using: (i) inverse probability weighting (Abadie, 2005); (ii) double-robust method (Sant'Anna and Zhao, 2020); and (iii) outcome regression (Heckman et al., 1997, 1998).

In this sense, following the methodology proposed by Callaway and Sant'Anna (2021):

$Y_{it}(0)$: is related to the potential outcome that unit i would have in period t if unit t does not participate in the treatment.

$Y_{it}(g)$: is related to the potential outcome of unit i in period t if unit i would have been treated in period g .

G_i : is related to the period that unit i becomes treated.

C_i : is related to a unit i that belong to a group that is not treated in the period t .

D_{it} : variable that indicates if the unit i was treated in the period t , taking the value of 1 is treated or zero otherwise.

Y_{it} : observable outcome for the unit i in the period t .

τ : denote the number of periods.

Nevertheless, the principal assumptions for the method to considering are the following:

Assumption 1 (Irreversibility of the treatment). $D_1 = 0$ almost surely (a.s) for $t = 2, \dots, \tau$

So, if $D_{t-1} = 1$ implies that $D_t = 1$ a. s

This assumption implies that no one is treated at a time $t = 1$, and when a unit or observation becomes treated, that will remain treated in the next periods. It is possible to interpret this assumption as the unit does not forget about the treatment experience.

Assumption 2 (Random Sampling). This means that $(Y_{i1}, Y_{i2}, \dots, Y_{i\tau}; D_{i1}, D_{i2}, \dots, D_{i\tau})_{i=1}^n$ is independent and identically distributed (iid).

This assumption implies that whether we have access to panel data will likely extend the results to cross-sectional data. Also, it does not restrict treatment allocation and potential outcomes nor the time series dependence of the observed random variables.

In this sense, the authors use the average treatment effect for the units that are part of a particular group g in a particular period t as the following equation:

$$ATT(g, t) = E[Y_t(g) - Y_t(0) | G_g = 1]$$

Thus, the $ATT(g, t)$ allow for analyzing how the different treatment effects change over time. Besides, the fact that the methodology enables fixing the time variation t and a group g is a possible measure of how the average treatment effect evolves over time for the specific group.

Assumption 3 (Limited Treatment Anticipation). There is a known $\delta \geq 0$

$$E[Y_t(G) | X, G_g = 1] = E[Y_t(0) | X, G_g = 1] \text{ a.s. for all } g \in \varphi, t \in \{1, \dots, \tau\} \text{ such that } t < g - \delta$$

This assumption consists of the treated unit not anticipating or having the capacity to anticipate the treatment for all pre-treatment periods. In other words, it is impossible to have the intervention's effects until the intervention is implemented.

Assumption 4 (Conditional Parallel Trends Based on a “Never-Treated” Group). For each $g \in \varphi, t \in \{2, \dots, \tau\}$ such that $t \geq g - \delta$. Maintained the δ as defined in the Assumption 3.

$$E[Y_t(0) - Y_{t-1}(0) | X, G_g = 1] = E[Y_t(0) - Y_{t-1}(0) | X, C = 1] \text{ a.s.}$$

Assumption 5 (Conditional Parallel Trends Based on “Not-Yet-Treated” Groups). For each $g \in \varphi$ and each $(s, t) \in \{2, \dots, \tau\} \times \{2, \dots, \tau\}$ such that $t \geq g - \delta$ and $t + \delta \leq s < \bar{g}$. Maintained the δ as defined in the Assumption 3.

$$E[Y_t(0) - Y_{t-1}(0) | X, G_g = 1] = E[Y_t(0) - Y_{t-1}(0) | X, D_s = 1; G_g = 0] \text{ a.s.}$$

Assumptions 4 and 5 are different conditional parallel trend assumptions that can be generalized from the usual two periods to multiple treatment groups and time periods. Both assumptions hold after the inclusion of covariates X . Then, these assumptions are very important when facing specific trends of covariates despite the time and when the distribution of these variables is not the same across groups. The difference between assumptions 4 and 5 are the different groups of comparison that will be used for the parallel trends' assumption. In particular, the authors emphasize that in assumption 4, conditionate by the covariates, the average outcomes for the group first treated in the period g and for the “never-treated” group would have followed the parallel trends assumption in the absence of the treatment. In contrast, assumption 5 considers the relation of the group g and the groups that are “not-yet-treated” in the time $t + \delta$ when it's imposed conditional parallel trends.

Assumption 6 (Overlap). For each $t \in \{2, \dots, \tau\}, g \in \varphi$ there exist some $\varepsilon > 0$ such that $P(G_g = 1) > \varepsilon$ and $p_{g,t}(x) < 1 - \varepsilon$ a.s.

The last assumption means that a fraction of the population that receives the intervention in the period g and for all g and t , the generalized propensity score is uniformly bounded away from one, ruling out the irregular identification (Kahn and Tamer, 2010).

Following the recommendations from the authors when research is facing a group that has a limited number of “never-treated” is preferable to follow assumption 5 instead of assumption 4 due to allowing the use of more groups as a valid comparison unit. Thus, we are going to have a better informative procedure. Unfortunately, the implication of choosing assumption 5 has some considerations. The authors said that in the absence of treatment anticipation ($\delta = 0$), this assumption restricting the pre-treatment trends across groups while assumption 4 does not. This could be worried when the economic environment during the first years of study could be different from later periods.

Nonetheless, this is not our case due to for the period 2010-2019, the economy grew at an interannual rate of 4.5% for the case of Peru (INEI, 2020).

In this sense, the average treatment effect is given by:

$$ATT_{unc}^{ny}(\mathbf{g}, t, \delta) = E[Y_t - Y_{\mathbf{g}-\delta-1} | G_{\mathbf{g}} = 1] - E[Y_t - Y_{\mathbf{g}-\delta-1} | D_{t+\delta} = 0]$$

Then, the average treatment for each group is:

$$\theta_{sel}(\tilde{\mathbf{g}}) = \frac{1}{\tau - \tilde{\mathbf{g}} + 1} \sum_{t=\tilde{\mathbf{g}}}^{\tau} ATT(\tilde{\mathbf{g}}, t)$$

Because this approach permits us to report the aggregate effect of all periods, the previous equation could be rewritten as:

$$\theta_{sel}^0 = \sum_{\mathbf{g} \in \varphi} \theta_{sel}(\mathbf{g}) P(G = \mathbf{g} | G \leq \tau)$$

Furthermore, to test the parallel trend assumption before the implementation of the treatment, the present study will be using the average treatment period-group to highlight the dynamics effects (short term and long term) of the treatment in an Event Studies (ES) configuration given by:

$$\theta_{es}^{bal}(e; e') = \sum_{\mathbf{g} \in \varphi} 1\{\mathbf{g} + e' \leq \tau\} ATT(\mathbf{g}, \mathbf{g} + e) P(G = \mathbf{g} | G + e' \leq \tau)$$

It is important to note that, as Callaway and Sant'Anna (2021) mentioned that the construction of the unconditional parallel assumption from assumptions 4 and 5 of their model is weaker than the parallel assumption imposed by de Chaisemartin and D'Haultfœuille (2020) and Sun and Abraham (2020). Nevertheless, this will not be a problem in the present research because we will pay more attention to the conditional parallel trends' assumption. Also, the present research will make different robustness tests to ensure that the results are valid.

4.3 Robustness check

In order to prove that the results found are consistent, the different specifications proposed for the main model will be used. In this sense, we will be using two different manners to estimate the causal effect using: (i) inverse probability weighting (Abadie, 2005) and (ii) double-robust method (Sant'Anna and Zhao, 2020). In addition, the present research will use the falsification test proposed by Lee and Lemieux (2010). This test will doubt the hypothesis that "TAMBOS" does not have any impact on pseudo-outcomes that are not being affected by the treatment. If we find significant results, therefore, the model's results will be put in doubt (Gertler et al., 2016). Finally, the study uses people that answer "do not know" about the question of trust and adds this to the control group. To test if the results are maintained.

5. Descriptive Statistics

In Table N° 1, it is possible to see how many platforms were created per year from the period 2012-2019. In this sense, the program created more platforms in 2013, followed by 2017 and 2018. In addition, the Region with more platforms during the period of study is Cusco (13.73%), Puno

(13.07%), Huancavelica (11.11%), and Ayacucho (10.89%). Thus, these four Regions concentrate 48.80% of the total platforms and are part of Peru's lands.

Table N° 1: Number of Tambos created during the period 2012-2019

Year	Freq.	Percent	Cum.
2012	60	13.07	13.07
2013	80	17.43	30.5
2014	56	12.2	42.7
2015	35	7.63	50.33
2016	36	7.84	58.17
2017	73	15.9	74.07
2018	73	15.9	89.98
2019	46	10.02	100
Total	459	100	

Source: TAMBOS program

Own Elaboration

Table N° 2 shows the number of interventions that the program gives from 2015 to 2019⁷. Unfortunately, we do not have information about the period 2012-2014. In this line, the year with more interventions given by the social program was 2019, with 151.67 on average. The maximum number of interventions was 1750, and the minimum was zero. However, it is important to mention that just five platforms did not give any service to the 459 workings. Additionally, the year with fewer interventions given by the platform was 2016, with 83.85 interventions on average.

Table N° 2: Number of interventions given by the program during the period 2015-2019

Variable	Number Tambos	Mean	Std. Dev.	Min	Max
Quantity of interventions in 2015	431	105.26	121.11	0	510
Quantity of interventions in 2016	431	83.59	83.85	0	371
Quantity of interventions in 2017	431	89.90	76.78	0	474
Quantity of interventions in 2018	431	142.87	71.62	0	593
Quantity of interventions in 2019	459	254.93	151.67	0	1750

Source: TAMBOS program

Own Elaboration

Table N° 3 contains the number of households that are part of the research by distance (kilometers). For the radio of 2km, the number of households is 7,093. For the radio of 4km, this number increased to 14,109; for 6km, the number of households is 17,159. Hence, for all the study periods, 38,361

⁷ Any activity carried out in the dairy and considered in its database is counted as an intervention. For example, a vaccination campaign for one day.

households are part of the group that will be analyzed. It is important to mention that we do not have observations for 2011. Thus, the test of the parallel trend will be used for the period 2008-2010.

Table N° 3: Treatment sample size during the period of 2008-2019

Year	Treatment-Distance-Nearest			
	2km	4km	6km	All
2008	626	971	1,089	2,686
2009	685	1,016	1,080	2,781
2010	673	1,040	1,133	2,846
2012	577	1,064	1,196	2,837
2013	691	1,262	1,773	3,726
2014	658	1,223	1,744	3,625
2015	676	1,310	1,624	3,610
2016	768	1,512	1,672	3,952
2017	457	1,505	1,781	3,743
2018	532	1,742	2,032	4,306
2019	750	1,464	2,035	4,249
Total	7,093	14,109	17,159	38,361

Source: ENAHO

Own Elaboration

Table N° 4 shows the trust in the six public institutions of study in the period 2008-2019. In this line, the question in ENAHO that we are going to use for the present research is, “Currently, do you have confidence in institutions such as RENIEC, District Municipality, Province Municipality, Regional Government, Ministry of Education, and Ombudsman” and the answer to this question is: “nothing, little, enough, pretty, and do not know.” Thus, it will create a dummy variable that takes the value of 1 if the answer is “enough” or “pretty” and 0 if the answer is “nothing” or “little.” In the case of the answer, “do not know” is considered a missing value.

Thus, the two public institutions with more trust are RENIEC and the Ministry of Education. The percentage of households expressing trust in RENIEC is 47%, compared with the beginning of the period when the value was 52%, which means a reduction of 5%. Nevertheless, it is the institution that has the most confidence in the population. In the case of the Ministry of Education, the percentage of households that trust in this institution maintained the same value for the beginning of the period and the last year of study, 40%. Both institutions, despite the years, maintain almost a constant value. In other words, the trust change in these institutions does not present a lot of variabilities.

The Ombudsman is the next institution that most households present more confident. Although in 2008, 27% of households answered that they trust this institution, unfortunately, by 2019, only 21% of the households answered the question of trust positively. The institutions related to a sub-level of government as the district and province municipality and the regional government are the institutions that households answer to as the less trusty. Hence, the worst institution is the regional government.

Only 10% of the households answered that they trust this institution, followed by the province municipality with 12%, and the district municipality with 14% for the last year of study.

Nonetheless, the trust in the district municipality is one of these three institutions that suffered the most dramatic reduction due to the beginning of the period, 23% of households mentioned trust in them. However, in the last year, the households lost 9% confidence in this institution. Followed by a reduction in trust by 6% points for the province municipality. In the case of the regional government, this institution experimented the most significant reduction during the years 2017 and 2018, where the percentage of households that trust this institution was 8% and 7%, respectively.

Table N° 4: Trust in six public institutions (percentage)- period 2008-2019

Year	RENIEC	District Municipality	Province Municipality	Regional Government	Ministry of Education	Ombudsman
2008	52%	23%	18%	11%	40%	27%
2009	50%	20%	17%	12%	41%	27%
2010	50%	20%	16%	12%	46%	30%
2012	49%	21%	19%	15%	38%	29%
2013	53%	23%	18%	15%	40%	27%
2014	50%	17%	16%	13%	41%	26%
2015	51%	20%	17%	14%	45%	27%
2016	50%	18%	16%	12%	43%	23%
2017	49%	14%	12%	8%	42%	19%
2018	48%	13%	11%	7%	43%	20%
2019	47%	14%	12%	10%	40%	21%

Source: ENAHO

Own Elaboration

In Table N° 5, it is possible to observe the summarized statistics for the six outcomes and some covariates used in the present research. In this sense, the households that are nearest to the platform in four of the six outcomes related to trust in institutions has a higher value than the household that are within 4km, 6km, or about all of the group, specifically, in the trust on district and province municipalities, regional government, and the Ministry of Education. In addition, the households that are nearest to the platforms are the poorest, have lower education, more household members, and a less efficient municipality. Thus, we can conclude that the programs effectively consider the poverty rate for the construction of the TAMBOS.

Table N° 5: Summarize statistics for the outcomes and the covariates - period 2008-2019

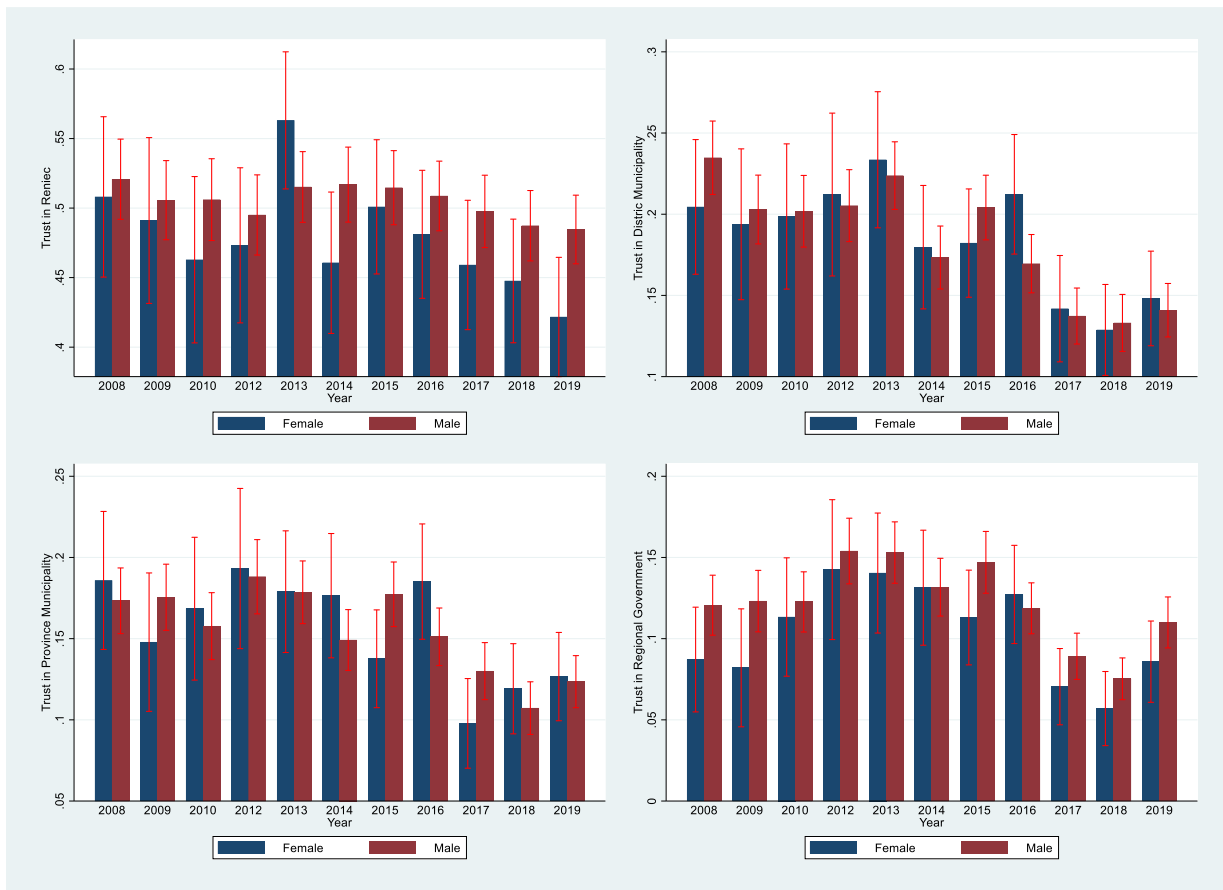
Variables	Distance: 2 km					4 km				
	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max
Trust in RENIEC	4,676	0.5	0.5	0	1	9,357	0.5	0.5	0	1
Trust in Provincial Municipality	4,617	0.17	0.37	0	1	9,119	0.16	0.37	0	1
Trust in District Municipality	4,876	0.21	0.4	0	1	9,659	0.2	0.4	0	1
Trust in Regional Government	4,204	0.14	0.34	0	1	8,336	0.13	0.34	0	1
Trust in Ministry of Education	4,834	0.46	0.5	0	1	9,562	0.45	0.5	0	1
Trust in Ombudsman Office	3,627	0.25	0.43	0	1	7,310	0.25	0.43	0	1
Poor household (1=poor)	5,627	0.48	0.5	0	1	10,989	0.42	0.49	0	1
Number of household members	5,627	3.58	1.97	1	12	10,989	3.45	1.91	1	13
Head of household sex	5,627	0.77	0.42	0	1	10,989	0.75	0.43	0	1
Head of household age	5,627	52.31	16.14	15	98	10,989	53.19	15.93	15	98
Average years of education in the household	5,627	5.33	3.54	0	18	10,989	5.67	3.71	0	18
Average age of household members	5,627	38.87	19.99	11.25	98	10,989	40.13	19.73	11.33	98
Logarithm of expenditure executed by the district municipality	7,074	0.74	0.14	0.13	0.99	14,097	0.75	0.15	0.15	0.99
Proportion of executed expenditure of the total amount received by the municipality	7,074	15.98	1.1	13.04	18.88	14,097	15.97	1.16	12.93	18.88
Number of platforms near in a radio of 6km	7,093	1.45	0.67	1	5	14,109	1.47	0.67	1	6
Variables	Distance: 6 km					All km				
	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max
Trust in RENIEC	11,878	0.51	0.5	0	1	25,911	0.51	0.5	0	1
Trust in Provincial Municipality	11,615	0.16	0.36	0	1	25,351	0.16	0.37	0	1
Trust in District Municipality	12,130	0.18	0.38	0	1	26,665	0.19	0.39	0	1
Trust in Regional Government	10,827	0.12	0.33	0	1	23,367	0.13	0.33	0	1
Trust in Ministry of Education	12,011	0.42	0.49	0	1	26,407	0.44	0.5	0	1
Trust in Ombudsman Office	9,698	0.27	0.44	0	1	20,635	0.26	0.44	0	1
Poor household (1=poor)	13,491	0.35	0.48	0	1	30,107	0.4	0.49	0	1
Number of household members	13,491	3.42	1.84	1	12	30,107	3.46	1.89	1	13
Head of household sex	13,491	0.75	0.43	0	1	30,107	0.75	0.43	0	1
Head of household age	13,491	52.79	15.96	16	98	30,107	52.84	15.98	15	98
Average years of education in the household	13,491	6.46	4	0	18	30,107	5.96	3.84	0	18
Average age of household members	13,491	39.74	19.13	11	98	30,107	39.72	19.52	11	98
Logarithm of expenditure executed by the district municipality	17,131	0.76	0.14	0.18	1	38,302	0.75	0.14	0.13	1
Proportion of executed expenditure of the total amount received by the municipality	17,131	16.29	1.26	13.08	20.32	38,302	16.11	1.2	12.93	20.32
Number of platforms near in a radio of 6km	17,159	1.19	0.44	1	5	38,361	1.34	0.6	1	6

Source: ENAHO

Own Elaboration

The variables where the household around a radius of 2km has a lower value than the rest are the average years of education, age of the head of the household, local government spending, and the efficiency in the local government public spending. The household that is beyond the radius of 4km is those that have, on average, more quantity of the platforms around them in comparison with the other ones.

Figure N° 2: Trust in RENIEC, District Municipality, Province Municipality, and Regional Government for the period 2008-2019 by sex of the head household (men=1)



Source: ENAHO
Own Elaboration

Figure N° 2 gives information about the trust in four public institutions by gender. In this sense, just in one year (2013), women have more trust in RENIEC than men. In contrast, women generally present more trust for the district municipality and the province municipality. For both outcomes, women tend to be more confident about the behavior of the local public servant. However, the trust in the regional government is higher for men than women in almost all periods. This trend in confidence is more marked in the trust in the Ministry of Education, but also men have more trust in Ombudsman, as we can see in the Annex N° 1 inside the Appendix.

The pre-treated period is defined as the years that the intervention does not exist; this means before 2012. Because we have the georeferenced of the platform, we use it to generate the false intervention area in this period 2008-2012 and develop the following test. Table N° 6 shows the mean test for the

pre-treated period for the treatment of 2km. In this sense, in the six outcomes related to trust in public institutions in five over six, we do not find any difference between the treatment and control groups. The variable that measures the trust in the Ministry of Education presents a significant difference between the treated and control group. The poverty level between the household treated and the control group does not present any significant difference. In the same direction, we can find the variable's average years of education in the household and the average age of all the household members. Nevertheless, the variables related to the municipality present significant differences in both groups. Finally, the variable related to the number of household members presents differences in the period 2008 against 2009-2010, and the variable of the age of the head of the household presents a difference for the period 2008-009 against 2010.

Table N° 6: Mean test pre-treated period (2008-2010)- 2km

Variable	08 (false T) vs 09-10 (false C)			08-09 (false T) vs 10 (false C)		
	Mean Control	Mean Treated	P-value	Mean Control	Mean Treated	P-value
Trust in RENIEC	0.51	0.47	0.28	0.49	0.5	0.64
Trust in Provincial Municipality	0.18	0.18	0.73	0.18	0.18	0.92
Trust in District Municipality	0.22	0.24	0.42	0.22	0.24	0.52
Trust in Regional Government	0.12	0.13	0.79	0.14	0.12	0.26
Trust in Ministry of Education	0.51	0.44	0.02	0.52	0.46	0.06
Trust in Ombudsman Office	0.26	0.27	0.78	0.27	0.25	0.59
Poor household (1=poor)	0.64	0.65	0.86	0.62	0.66	0.16
Number of household members	3.99	3.80	0.09	3.98	3.9	0.46
Head of household sex	0.79	0.78	0.47	0.8	0.78	0.59
Head of household age	50.11	50.35	0.78	51.18	49.7	0.07
Average years of education in the household	5.25	5.10	0.41	5.22	5.19	0.86
Average age of household members	35.42	36.47	0.29	36.4	35.45	0.34
Logarithm of expenditure executed by the district municipality	0.73	0.70	0.00	0.77	0.7	0.00
Proportion of executed expenditure of the total amount received by the municipality	15.83	15.59	0.00	15.81	15.73	0.13

Source: ENAHO

Own Elaboration

Table N° 7 shows the mean test for the treatment of a 4km pretreated period. In this sense, in half of the outcomes related to trust in the public, we do not find any statistical difference (RENIEC, Regional Government, and Ombudsman). Nevertheless, in the other three outcomes, District and Province Municipality and Ministry of Education, we can find some differences in some of the two periods before the treatment begins. Concerning the covariates, it is possible to note that the treated household is poorer than the control household for both periods. In the same direction are the variables related to the municipality level. The number of household members and the average education level of the household members do not present any statistical differences between both

groups in the two periods. However, the rest of the variables present some statistical differences in one of the two pretreated periods.

In the Appendix, it is possible to see the mean test for the pretreated period for the treatment of 6km (Annex N° 2) and considering all the distances (Annex N° 3). For the first one, it is possible to observe statistically differences in two of the four outcomes, especially in the Ministry of Education, where the control has more trust in this institution, and in the Ombudsman, where in the second cohort, the control household trust more in these institutions that the treated group. In addition, we do not have any statistical difference in three other variables: (i) the number of household members, (ii) the gender of the head of the household, and (iii) the average education level of the members of the household. The rest of the variables present significant differences between the treated and control group. For the second one, only the variables related to the trust in RENIEC, and Province Municipality do not present any significant differences between the treated and control group. But in the rest of the outcomes, we find the opposite result as in the radius of 6km.

Table N° 7: Mean test pretreated period (2008-2010)- 4km

Variable	08 vs 09-10			08-09 vs 10		
	Mean Control	Mean Treated	P-value	Mean Control	Mean Treated	P-value
Trust in RENIEC	0.51	0.48	0.18	0.5	0.5	0.79
Trust in Provincial Municipality	0.19	0.22	0.17	0.17	0.21	0.03
Trust in District Municipality	0.22	0.27	0.03	0.22	0.25	0.16
Trust in Regional Government	0.14	0.14	0.61	0.15	0.14	0.59
Trust in Ministry of Education	0.48	0.47	0.50	0.51	0.46	0.07
Trust in Ombudsman Office	0.3	0.28	0.37	0.31	0.28	0.24
Poor household (1=poor)	0.59	0.67	0.00	0.55	0.65	0.00
Number of household members	3.83	3.89	0.56	3.79	3.88	0.29
Head of household sex	0.78	0.78	0.77	0.76	0.79	0.08
Head of household age	51.32	50.65	0.33	52.15	50.6	0.03
Average years of education in the household	5.29	5.29	1.00	5.23	5.32	0.55
Average age of household members	36.64	35.66	0.22	37.32	35.84	0.07
Logarithm of expenditure executed by the district municipality	0.77	0.74	0.00	0.81	0.73	0.00
Proportion of executed expenditure of the total amount received by the municipality	15.53	15.35	0.00	15.52	15.44	0.08

Source: ENAHO

Own Elaboration

6. Results

6.1 Impact on influence area

In the present section, the study will show the model's results. On the one hand, using the unconditional parallel trend means that the program chooses its beneficiaries randomly, simulating a random experiment. Thus, the investigation does not use any covariate. On the other hand, the conditional parallel trends that use some basic covariates relate to the program's prioritization. It permits controlling for characteristics that present previous differences in the mean test and do not have a correlation with the intervention avoiding the generation of endogeneity. The comparison is relevant due to the program was not designed as an RCT. Thus, observing the difference between these two models permits us to understand how a bad specification can generate a biased estimator and invalidate the results (Lee, 2005). Table N° 8 shows the effect of the platform on trust indicators but with the unconditional parallel trend assumption. In this first model, it is possible to observe that the intervention does not significantly impact any of the six institutions.

Table N° 8: Effects of TAMBOS on trust in Public Institutions – Unconditional Parallel trend IPW

	RENIEC	Provincial Municipality	District Municipality	Regional Government	Ministry of Education	Ombudsman Office
Influence area (2km)	0.044	-0.076	-0.000	-0.070	0.051	-0.038
Standard Error	(0.072)	(0.047)	(0.049)	(0.050)	(0.071)	(0.049)
Observations	3933	3628	3959	3285	3773	2938
Mean Var	0.496	0.178	0.230	0.125	0.482	0.260
Influence area (4km)	0.035	0.014	0.027	0.054	0.002	0.052
Standard Error	(0.048)	(0.033)	(0.033)	(0.035)	(0.051)	(0.043)
Observations	6725	7405	6986	6540	7990	5734
Mean Var	0.497	0.201	0.236	0.141	0.478	0.292
Influence area (6km)	0.008	0.002	0.018	0.025	0.043	-0.072
Standard Error	(0.038)	(0.027)	(0.031)	(0.038)	(0.040)	(0.047)
Observations	9392	9499	9606	8953	9925	7868
Mean Var	0.536	0.171	0.209	0.126	0.414	0.323
Influence area (All)	0.007	-0.009	0.012	0.000	0.009	-0.037
Standard Error	(0.028)	(0.020)	(0.020)	(0.019)	(0.030)	(0.027)
Observations	21367	21682	21416	19297	23148	17478
Mean Var	0.513	0.183	0.223	0.131	0.453	0.298

Note: The dependent variable is indicated in the header of each column. The present model does not include control variables. Standard errors are clustered at the platform level. Fixed effects per year and natural region are included. The significance levels are: * p<0.10 ** p<0.05 *** p<0.01

Due to the program not choosing its target population randomly, the correct way to implement the staggered diff-in-diff is with a conditional parallel trend assumption based on the prioritization criteria and covariates with fewer probabilities of being influenced by the treatment. Table N° 9 shows the results of the approach with some basic control variables, so this is the main model. In this sense, the study finds a reduction in the trust in the provincial municipality for the area of 4km and 6km, about 65.7 pp. y 5.3 pp., respectively. The results over trust in the District Municipality show an effect in the

same distance that the previous outcome. However, in the influence area of 4km, the study finds a positive effect of 8.0 pp., but in the area of 6km, a reduction in trust of 6.9 pp. In the case of the Ombudsman, the reduction in the trust is 15.8 pp in a distance of 6km. A very interesting result is the effect found in the other three institutions. The study does not find any significant result in each radius. However, considering all the samples between 6km, it is possible to find a negative and significant result in RENIEC, Regional Government, and Ministry of Education of 17.3 pp., 9.9 pp., and 11.4, respectively.

Table N° 9: Effects of TAMBOS on trust in Public Institutions - Conditional Parallel trend basic covariates IPW

	RENIEC	Provincial Municipality	District Municipality	Regional Government	Ministry of Education	Ombudsman Office
Influence area (2km)	0.690	0.680	0.637	0.557	0.363	1.501
Standard Error	(0.464)	(0.706)	(0.538)	(0.490)	(0.238)	(1.180)
Observations	2890	2958	3125	2577	3085	1888
Mean Var	0.496	0.178	0.230	0.125	0.482	0.260
Influence area (4km)	0.130	-0.657**	0.080**	-0.015	0.048	-0.004
Standard Error	(0.090)	(0.275)	(0.038)	(0.113)	(0.052)	(0.077)
Observations	5902	5188	6728	5758	6664	3800
Mean Var	0.497	0.201	0.236	0.141	0.478	0.292
Influence area (6km)	-0.088	-0.053**	-0.069***	-0.046	-0.026	-0.152***
Standard Error	(0.060)	(0.021)	(0.020)	(0.031)	(0.047)	(0.042)
Observations	8729	8492	8922	7900	8857	6656
Mean Var	0.536	0.171	0.209	0.126	0.414	0.323
Influence area (All)	-0.173***	0.032	-0.028	-0.099***	-0.114***	-0.037
Standard Error	(0.031)	(0.058)	(0.026)	(0.037)	(0.030)	(0.029)
Observations	19521	19788	20814	17877	21176	14984
Mean Var	0.513	0.183	0.223	0.131	0.453	0.298

Note: The dependent variable is indicated in the header of each column. The present model includes control variables such as poverty, number of household members, head's household sex, head's household age, an average of years of education from household members, the average age of household members, logarithm of municipality's spending, the proportion of budget executed, and number of platforms near in a radius of 6km. Standard errors are clustered at the platform level. Fixed effects per year and natural region are included. The significance levels are: * p<0.10 ** p<0.05 *** p<0.01

The correct identification of a model is essential for correctly estimating a causal effect. Comparing Table N° 8 and N° 9, it is possible to observe how an inadequate specification given by Table N° 8 shows us biased estimators and invalidates the results. Because the assumption of a random assignment of the program, when in reality does not occur, shows us any effect on trust (Lee, 2005). Nevertheless, Table N° 9 shows the results on trust using a quasi-experimental approach. Hence, the study finds an overall negative and significant effect on trust in the six public institutions.

6.2 Event Study and exposure to the treatment

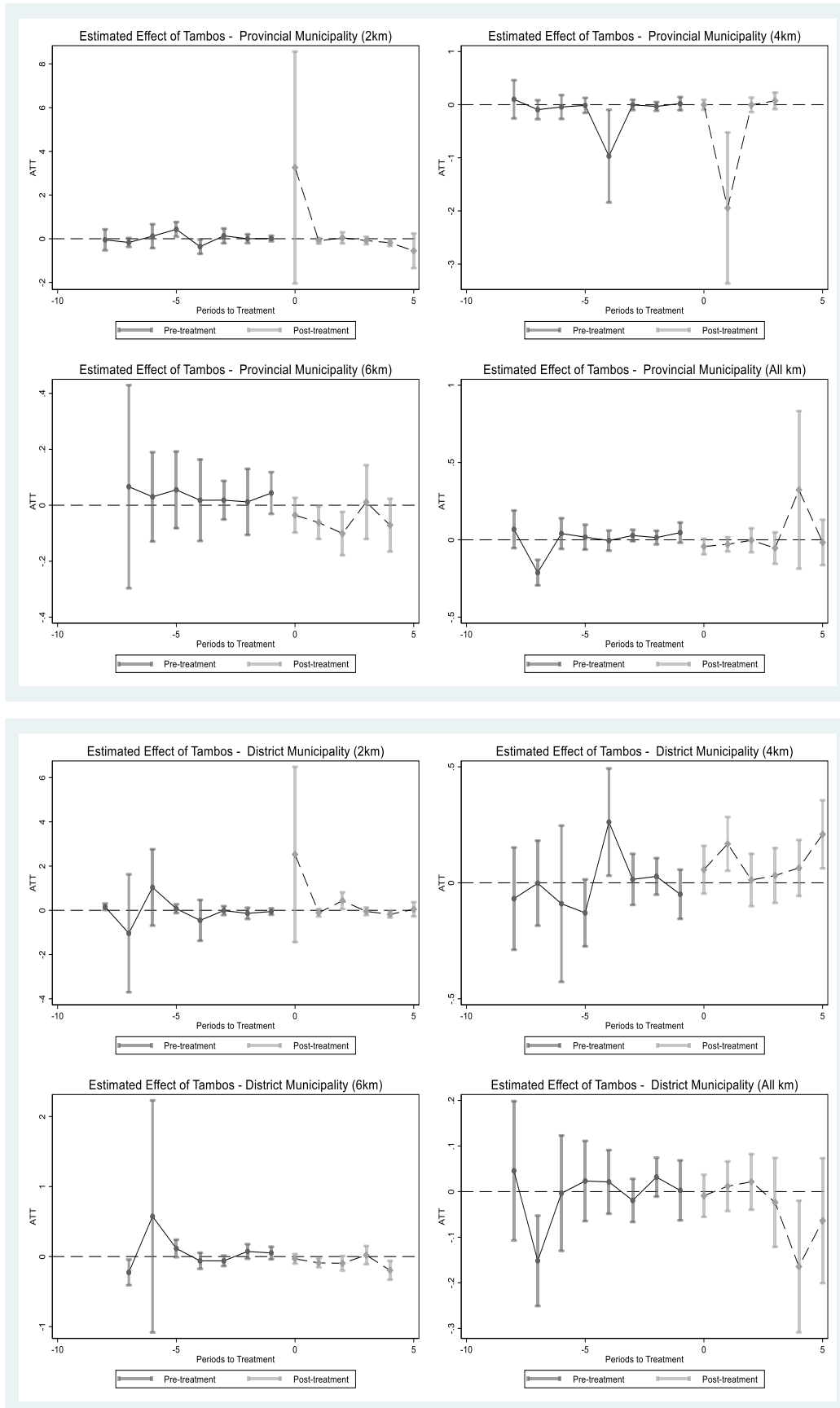
In the Diff-in-Diff methodology, the necessary condition to perform the correct interpretation of the results, that is, to be able to ensure that the study finds a causal effect to a given treatment, is that there should be no differences in pre-existing trends in the outcomes between the treatment and control groups. Finding this implies that the areas of influence of both groups (treatment and control) are similar in the pretreatment period, and if the program had not been given, they would have remained the same. Thus, for the present study, the research will test the pretreatment trends for its main regression.

Figure N° 3 shows the results of applying the empirical specification of the event study for the provincial and district municipality outcomes. First, the study finds that the platform has a negative effect on the trust of provincial and district municipalities within the distance of 6km. This result is robust because the pretreatment trends do not show any tendency. However, the result in the distance of 4km needs to be taken with precaution. Because the investigation finds a negative pretreatment trend for the case provincial municipality and a positive pretreatment trend for the district municipality, it is possible to overestimate the effect due to the direction of the sign being the same that both pretreatments.

In the appendix, Annex N° 4 shows the results for the case of the Regional Government and RENIC. For both outcomes in the main regression, the study finds impacts considering all the sample between the distance of 6km; however, in the event study for the Regional Government it not possible to find any effect. In contrast, for RENIEC the result is robust effect due to not exist any pretreatment trend. Additionally, it is important to mention that despite the negative effect there is a trend towards an improvement in confidence in this institution.

Furthermore, Annex N° 5 shows the event study for the Ministry of Education and Ombudsman. The main regression results find a negative and significant effect for both outcomes. For the Ministry of Education, considering all the sample, and in the case of the Ombudsman in the radius of 6km. Focusing on these specific distances for both outcomes, any pretreatment trend is not found; hence the result is robust. In addition, Ombudsman's office's effect is decreasing despite the time. Moreover, it is possible to find an impact almost immediately after the treatment. For the Ministry of Education, exists more variation despite the time, and the reduction in the trust in this institution does not occur immediately.

Figure N° 3: Event Study for Provincial and District Municipality IPW



6.3 Measuring access to social programs and organizations

Knowing that Tambos is an intervention of MIDIS but, unfortunately, in the survey, it does not have the option of this ministry, the study tries to measure other outcomes to think how the result in the trust in this institution could be. Thus, the variable access to MIDIS program can be used as a proxy. Also, to understand the effect on RENIEC, the study uses household members' average access to an ID card. Finally, given that many activities are carried out in TAMBOS, the research wants to answer if the probability of participating in an organization increase. In this sense, Table N° 10 shows the effect of TAMBOS on access to social programs, identification, and participation in some social organizations. The results show a non-significant effect on the household's mean of having an ID card. Also, we find a positive effect on the probability of participating in a MIDIS program for all the sample (6.7 pp.), but not in the influence area of 4km, where the effect is the opposite (-12.1 pp.). Finally, we found less participation in social organizations when we considered all the sample.

Table N° 10: Effects of TAMBOS on access- Conditional Parallel trend basic covariates IPW⁸

	ID card	MIDIS program	Participation in some organization
Influence area (2km)	-0.137	0.880	-0.398
Standard Error	(0.095)	(0.780)	(0.361)
Observations	1353	1353	3631
Mean Var			0.801
Influence area (4km)	-0.016	-0.121*	0.013
Standard Error	(0.033)	(0.068)	(0.045)
Observations	3815	3562	7483
Mean Var			0.827
Influence area (6km)	-0.016	0.021	-0.012
Standard Error	(0.010)	(0.034)	(0.045)
Observations	5606	5596	10132
Mean Var			0.749
Influence area (All)	-0.013	0.067*	-0.060**
Standard Error	(0.008)	(0.037)	(0.026)
Observations	14178	14148	23452
Mean Var			0.790

Note: The dependent variable is indicated in the header of each column. The present model includes control variables such as poverty, number of household members, head's household sex, head's household age, an average of years of education from household members, the average age of household members, logarithm of municipality's spending, the proportion of budget executed, and number of platforms near in a radius of 6km. Standard errors are clustered at the platform level. Fixed effects per year and natural region are included. The significance levels are: * p<0.10 ** p<0.05 *** p<0.01

⁸ The variable's mean is unavailable for the ID card and MIDIS program because it began to be collected in the survey in 2012. The pre-intervention period is being considered to give us this information.

Thus, it is likely that the lack of access to programs within a radius of 4km could affect the trust in MIDIS just at that specific distance. Nevertheless, it is possible to expect that the effect on trust in this institution could be positive due to the positive and significant effect when considering all the sample. Because of any significant results found in the ID card, it is vital to look deeper into employing the heterogeneous effect as a possible manner to find the answer. Finally, the lower participation in some organizations could be explained by people finding that being involved in societies does not make any difference in achieving society's common goals.

6.4 Heterogenous effect

The literature makes a difference in the relevance of measuring heterogeneous effects by gender due to women being less likely to trust public institutions (Cozzubo et al., 2021; Malone, 2010). The research tries to close the gap in the lack of evidence on this topic. In this sense, Table N° 11 presents the results for the men's head of the household, and in Table N° 12, the results for the women's head of the household for our principal outcomes about trust. Thus, in comparison with Table N° 9, from our main model, the study finds a positive and significant effect in trust for men's head of household of 115 pp. and 16.4 pp. in the radius of 2km and 4km, respectively, in RENIEC's trust. Regarding trust in the Provincial Municipality, a similar result is found compared to the main model in a radius of 6km. Although considering all sample for men's head of household, a reduction in trust at 5.6 pp. is found, and for District Municipality, the results are like the main model. Thus, in the distance of 4km and 6km, the effects are significant and with the same sign. Trust in the Regional Government has a different result, presenting a positive effect in the radius of 4km of 11.8 pp, but a negative effect in trust of 5.1 pp. in the radius of 6km. Finally, trust in the Ministry of Education and Ombudsman has observed a robust result in the same distance and with the same sign compared to the main model.

Table N° 11: Effects of TAMBOS on trust in Public Institutions - Conditional Parallel trend basic covariates IPW (Men's heads of the households)

	RENIEC	Provincial Municipality	District Municipality	Regional Government	Ministry of Education	Ombudsman Office
Influence area (2km)	1.150*	0.971	0.820	0.688	0.349	0.699
Standard Error	(0.694)	(0.889)	(0.664)	(0.599)	(0.243)	(0.495)
Observations	2335	2340	2451	2136	2504	1716
Mean Var	0.496	0.178	0.230	0.125	0.482	0.260
Influence area (4km)	0.164**	0.060	0.105**	0.118***	-0.036	0.043
Standard Error	(0.066)	(0.044)	(0.048)	(0.042)	(0.043)	(0.042)
Observations	4633	4387	4813	4016	4798	3054
Mean Var	0.497	0.201	0.236	0.141	0.478	0.292
Influence area (6km)	-0.052	-0.057**	-0.055*	-0.051**	0.021	-0.207***
Standard Error	(0.049)	(0.023)	(0.028)	(0.026)	(0.046)	(0.055)
Observations	6821	6186	6925	6126	6909	5119
Mean Var	0.536	0.171	0.209	0.126	0.414	0.323
Influence area (All)	-0.033	-0.056**	0.017	-0.033	-0.102***	-0.045
Standard Error	(0.030)	(0.024)	(0.020)	(0.024)	(0.029)	(0.031)
Observations	16223	15930	16650	14329	16622	12518
Mean Var	0.513	0.183	0.223	0.131	0.453	0.298

Note: The dependent variable is indicated in the header of each column. The present model includes control variables such as poverty, number of household members, head's household sex, head's household age, an average of years of education from household members, the average age of household members, logarithm of municipality's spending, the proportion of budget executed, and number of platforms near in a radius of 6km. Standard errors are clustered at the platform level. Fixed effects per year and natural region are included. The significance levels are: * p<0.10 ** p<0.05 *** p<0.01

In measuring the heterogenous effect when the head of the household is a woman, it is important to note that the sample size is very small. In this sense, the results from two outcomes in a radius of 2km were impossible to estimate. For that reason, findings need to be taken carefully, but we can try to be more certain about the trend in trust in general for this specific group. Thus, the study finds a more generally negative and significant result in the six trust outcomes. For RENIEC, women's heads of households perceive less trust in the first two radius nearer to the platform, but the households within the 6km distance tend to trust more in RENIEC. Trust in Provincial and District Municipality, it is possible to observe a negative effect on the trust. However, women's heads of the household tend to trust less in the District Municipality than the Provincial Municipality. Regarding trust in the Ministry of Education, the research finds an impact of 16.1 pp in reducing trust in a radius of 6km. Finally, we observe a positive and significant effect of 49.1 pp. on trust in the Ombudsman for the case of women.

Table N° 12: Effects of TAMBOS on trust in Public Institutions - Conditional Parallel trend basic covariates IPW (Women's heads of the households)

	RENIEC	Provincial Municipality	District Municipality	Regional Government	Ministry of Education	Ombudsman Office
Influence area (2km)	-1.432***	-0.085			-0.374	0.450
Standard Error	(0.275)	(0.055)			(1.002)	(0.316)
Observations	85	165			385	31
Mean Var	0.496	0.178			0.482	0.260
Influence area (4km)	-0.250**	-0.092	-0.306**	-0.018	0.105	-0.001
Standard Error	(0.121)	(0.077)	(0.124)	(0.065)	(0.118)	(0.120)
Observations	901	837	973	701	949	343
Mean Var	0.497	0.201	0.236	0.141	0.478	0.292
Influence area (6km)	0.345*	-0.081	-0.005	0.036	-0.161*	0.491**
Standard Error	(0.177)	(0.059)	(0.090)	(0.060)	(0.086)	(0.232)
Observations	1508	1241	1218	678	1312	767
Mean Var	0.536	0.171	0.209	0.126	0.414	0.323
Influence area (All)	-0.073	-0.107*	-0.111**	-0.053	-0.101	-0.006
Standard Error	(0.068)	(0.062)	(0.054)	(0.058)	(0.062)	(0.066)
Observations	4068	3967	4015	3398	4165	2879
Mean Var	0.513	0.183	0.223	0.131	0.453	0.298

Note: The dependent variable is indicated in the header of each column. The present model includes control variables such as poverty, number of household members, head's household sex, head's household age, an average of years of education from household members, the average age of household members, logarithm of municipality's spending, the proportion of budget executed, and number of platforms near in a radius of 6km. Standard errors are clustered at the platform level. Fixed effects per year and natural region are included. The significance levels are: * p<0.10 ** p<0.05 *** p<0.01

In summary, the heterogenous effects show differences in trust between men and women head of the household. Thus, analyzing these results is relevant for contributing to the literature and following previous findings on women's trust (Cozzubo et al., 2021). In general, households that have men as a head tend to have more trust in institutions than households that have women as a head, but for both genders is finding a robust negative effect on the trust in the Provincial and District municipalities and the Ministry of Education. Nonetheless, the results in RENIC are different, where men head of household trust more, but women head of household do not. Besides, a contrary result in trust in the Ombudsman is found, where women head of household tend to trust more in this institution, but men head of household do not.

In Table N° 13 and N° 14, it is possible to observe the effects on access for men's and women's heads of households. In this sense, the effect of having an ID card is negative and significant in the case of women's heads of households. This will be why the effect on trust in RENIEC when considering all the sample is negative. In contrast, we do not find any significant effect for men's heads of households. The lack of access to MIDIS's program is focused on a radius of 4km for men's and women's heads of households. But in the case of men, considering all the sample, a positive and significant effect on the probability of participating in at least one social program from MIDIS (13.2 pp) is found. Finally, is not finding any effect in the participation of social organization for men. However, for women, in the radius of 2km is finding a positive and significant effect, but the coefficient gets the opposite sign taking all the sample.

Table N° 13: Effects of TAMBOS on access- Conditional Parallel trend basic covariates IPW (Men's heads of households)

	ID card	MIDIS program	Participation in some organization
Influence area (2km)	-0.179	1.654	-0.211
Standard Error	(0.130)	(1.228)	(0.226)
Observations	1037	1037	2750
Mean Var			0.801
Influence area (4km)	-0.000	-0.126***	-0.030
Standard Error	(0.007)	(0.044)	(0.033)
Observations	2709	2892	5349
Mean Var			0.827
Influence area (6km)	-0.005	0.036	0.027
Standard Error	(0.007)	(0.038)	(0.031)
Observations	4302	4294	7717
Mean Var			0.749
Influence area (All)	-0.006	0.132***	-0.021
Standard Error	(0.005)	(0.035)	(0.029)
Observations	10766	10745	18885
Mean Var			0.790

Note: The dependent variable is indicated in the header of each column. The present model includes control variables such as poverty, number of household members, head's household sex, head's household age, an average of years of education from household members, the average age of household members, logarithm of municipality's spending, the proportion of budget executed, and number of platforms near in a radius of 6km. Standard errors are clustered at the platform level. Fixed effects per year and natural region are included. The significance levels are: * $p < 0.10$ ** $p < 0.05$ *** $p < 0.01$

Table N° 14: Effects of TAMBOS on access- Conditional Parallel trend basic covariates IPW
(Women's heads of households)

	ID card	MIDIS program	Participation in some organization
Influence area (2km)	0.045	0.012	0.449*
Standard Error	(0.057)	(0.364)	(0.261)
Observations	319	258	672
Mean Var			0.801
Influence area (4km)	-0.055**	-0.232**	-0.157
Standard Error	(0.022)	(0.099)	(0.097)
Observations	552	550	1374
Mean Var			0.827
Influence area (6km)	-0.114**	-0.019	-0.129
Standard Error	(0.051)	(0.067)	(0.123)
Observations	1104	1102	1864
Mean Var			0.749
Influence area (All)	-0.051*	0.042	-0.136**
Standard Error	(0.029)	(0.045)	(0.063)
Observations	3047	2986	5359
Mean Var			0.790

Note: The dependent variable is indicated in the header of each column. The present model includes control variables such as poverty, number of household members, head's household sex, head's household age, an average of years of education from household members, the average age of household members, logarithm of municipality's spending, the proportion of budget executed, and number of platforms near in a radius of 6km. Standard errors are clustered at the platform level. Fixed effects per year and natural region are included. The significance levels are: * $p < 0.10$ ** $p < 0.05$ *** $p < 0.01$

The heterogeneous effects help to understand the negative effect on RENIEC due to lower access to ID cards for household members where the head is a woman. The possible explanation of trust in MIDIS is the same as the main model. Additionally, the negative impact on participation in some organizations is explained by those household members where the head is a woman. However, households nearest to the platforms tend to participate more in these organizations. Finally, the program does not affect household members where the head is a man.

7. Robustness Check

7.1 Staggered Diff-in-Diff: doubly robust method

As an additional estimation to check the robustness of our main results, we developed the methodology proposed by Sant'Anna and Zhao (2020). This is a doubly robust (DR) method inside the staggered diff-in-diff. The DR approach combines the outcome regression (Heckman et al., 1998) and IPW (Abadie, 2005) due to DR can model both methodologies, and it only requires the

specification of one of them. Thus, the DR approach can have additional robustness against model misspecification when the authors add the population outcome regression as a factor that affects the ATT (Callaway and Sant'Anna, 2021).

The results using the DR approach are presented in Table N° 15. In this line, the results obtained in our main regression are robust. Because in all the distance and outcomes using the DR approach, the results in our six outcomes have the same coefficient and the significant level that in our main regression. The loss of confidence in the provincial and district municipality within the radius of 6km is 5.3 pp. and 6.9 pp., respectively. Remember that in the event study for these two outcomes, the study finds that the results in the distance of 4km need to be taken carefully. This methodology finds an impact of -65.7 pp. on Provincial Municipality and 8.0 pp. on District Municipality. The rest of the results of the outcomes are robust; thus, the conclusion is that the effects found in our main specification are consistent.

Table N° 15: Effects of TAMBOS on trust in Public Institutions - Conditional Parallel trend basic covariates DR

	RENIEC	Provincial Municipality	District Municipality	Regional Government	Ministry of Education	Ombudsman
Influence area (2km)	0.690	0.680	0.637	0.557	0.363	1.501
Standard Error	(0.464)	(0.706)	(0.538)	(0.490)	(0.238)	(1.180)
Observations	2890	2958	3125	2577	3085	1888
Mean Var	0.496	0.178	0.230	0.125	0.482	0.260
Influence area (4km)	0.130	-0.657**	0.080**	-0.015	0.048	-0.004
Standard Error	(0.090)	(0.275)	(0.038)	(0.113)	(0.052)	(0.077)
Observations	5902	5188	6728	5758	6664	3800
Mean Var	0.497	0.201	0.236	0.141	0.478	0.292
Influence area (6km)	-0.088	-0.053**	-0.069***	-0.046	-0.026	-0.152***
Standard Error	(0.060)	(0.021)	(0.020)	(0.031)	(0.047)	(0.042)
Observations	8729	8492	8922	7900	8857	6656
Mean Var	0.536	0.171	0.209	0.126	0.414	0.323
Influence area (All)	-0.173***	0.032	-0.028	-0.099***	-0.114***	-0.037
Standard Error	(0.031)	(0.058)	(0.026)	(0.037)	(0.030)	(0.029)
Observations	19521	19788	20814	17877	21176	14984
Mean Var	0.513	0.183	0.223	0.131	0.453	0.298

Note: The dependent variable is indicated in the header of each column. The present model includes control variables such as poverty, number of household members, head's household sex, head's household age, an average of years of education from household members, the average age of household members, logarithm of municipality's spending, the proportion of budget executed, and number of platforms near in a radius of 6km. Standard errors are clustered at the platform level. Fixed effects per year and natural region are included. The significance levels are: * p<0.10 ** p<0.05 *** p<0.01

The appendix in Annex N° 6 shows the results for the model without covariates for the DR approach. It found similar results to the main model and ensure the robustness of the main regression.

7.2 Falsification Test

The falsification test proposed by Lee and Lemieux (2010) is carried out to verify that the results of our main regression are not spurious and show a real causal relationship between the program and the outcome. For this test, four pseudo-outcomes were chosen, on which the program should have no impact. Therefore, being within a radius of the treatment (TAMBOS) should not have a statistically significant effect on these indicators.

As verified in Table N° 16, none of the pseudo-outcomes was statistically significant at the traditional levels for the influence area of 2km, 4km, and 6km. Hence, for all these distances, we can be sure that we are identifying the causal effect. Nonetheless, for two pseudo-outcomes, it is possible to find an effect when it is considering all the sample between 6km. In this sense, it is important to take precautions for this specific radius.

Table N° 16: Falsification test on pseudo-outcomes basic covariates IPW

	Home equipment: Car	Home equipment: Truck	Home equipment: Bike	Home equipment: Motorcycle
Influence area (2km)	-0.095	0.003	0.117	-0.072
Standard Error	(0.071)	(0.003)	(0.129)	(0.046)
Observations	3636	3636	3636	3636
Mean Var	0.027	0.001	0.185	0.004
Influence area (4km)	-0.019	0.009	-0.051	0.000
Standard Error	(0.045)	(0.021)	(0.037)	(0.009)
Observations	7493	7493	7687	7687
Mean Var	0.042	0.007	0.195	0.007
Influence area (6km)	-0.019	-0.001	-0.021	0.014
Standard Error	(0.019)	(0.012)	(0.038)	(0.016)
Observations	10138	10138	10138	10138
Mean Var	0.063	0.007	0.273	0.012
Influence area (All)	-0.014	-0.030*	-0.020	0.027*
Standard Error	(0.013)	(0.016)	(0.023)	(0.016)
Observations	24216	24216	23478	23478
Mean Var	0.047	0.006	0.224	0.008

Note: The dependent variable is indicated in the header of each column. The present model includes control variables such as poverty, number of household members, head's household sex, head's household age, an average of years of education from household members, the average age of household members, logarithm of municipality's spending, the proportion of budget executed, and number of platforms near in a radius of 6km. Standard errors are clustered at the platform level. Fixed effects per year and natural region are included. The significance levels are: * p<0.10 ** p<0.05 *** p<0.01

Annex N° 7 showed the robustness test results using the missing values in the control group. The study finds a negative effect on trust in our six outcomes of interest. Although, about the Regional Government found a positive and significant effect in the radius of 4km. Nevertheless, this extra analysis permits us to affirm that the results of the main model are robust. Finally, it is essential to mention that assumption 3 of the present methodology is fulfilled. In this sense, MIDIS does not

publicize the location list for the following platforms. Thus, the treated unit cannot anticipate the treatment. Hence, the robustness of our results is assured.

8. Conclusions and Policy Recommendations

Trust in institutions is an important topic for the development of a country, the reduction of inequalities, and the happiness of its population (Putman, 1993; Uslaner, 2002; Woolcock, 1998; Knack & Keefer, 1997; Economic and Social Counsel, 2018; Heliwell, 2002). As far as our knowledge goes, there is a gap in the literature to measure how access to a social program can affect trust. In this sense, the present research tries to contribute to this topic by generating evidence for the case of a developing country such as Peru. Also, the study applied a very new methodology, the Staggered Diff-in-Diff proposed by Callaway and Sant'Anna (2021), using ENAHO that has inference to a national level for a period of 11 years. In addition, the study estimates a heterogeneous effect due to previous research finding a higher effect on trust in females (Cozzubo et al., 2021; Malone, 2010).

To understand the research findings better, it is important to mention that Peru suffers from corruption at different levels of government. In this line, three factors could affect the trust in public institutions: (i) corruption of regional and local governments, (ii) the "Lava Jato" case, and (iii) the "Cuellos Blancos" case (Morel, 2022). For example, the discovery of a network of corruption in the regional government in the Ancash region. Also, the principal practice of corruption are tithes in tenders, corruption where the bribing actor is a national or international company, and illegal economy networks (drug trafficking, illegal mining, etc.) (Mujica et al., 2017). The "Lava Jato" case was discovered in 2016 about how the bribery network works. Principally, regional governments were involved in tenders with "Odebrecht" and other Brazilian companies. The "Cuellos Blancos" case involved corruption in the elections of public prosecutors (Morel, 2022). Due to this, the population in Peru has been exposed to more information about public institutions' behavior, which causes a detriment to the institutions' confidence, as seen in the Table N° 4.

The study finds a reduction in the trust in the National Registry of Identification and Civil Status. This effect could be explained due to women's heads of the household having less trust in this institution. Because when the study assessed the average of household members that have an ID card when a woman is the head of the household, it found a negative effect on the ID card. Thus, the negative effect is a lack of access to an ID card. Also, we find a reduction in trust, in general, in all the government levels available in the survey (District and Provincial Municipality and Regional Government). Unfortunately, we do not have an intermediate outcome of explaining how to clearly explain this effect. However, it is plausible to suppose that the services provided on the platform will not be considered essential for the population. In addition, it is common knowledge that there are acts of corruption at the different levels of government, which can accentuate the effects on trust. In the descriptive statistics, the reduction in trust in recent years for these three public institutions has suffered a considerable drop. In this line, we also find a negative and significant impact on trust in the Ministry of Education and Ombudsman. In general, the effects found in trust in public institutions in Peru could be explained by the effect of corruption in countries where a higher level of corruption suffers from the lowest institutional trust (Van der Meer, 2017; Wang, 2015). Besides, the possibility of the quality of the services that the population receives for the different sectors can affect the level of trust (UN, 2021; Self, 2000).

Regarding the heterogenous effect, men tend to trust more RENIEC than women. However, the reduction in trust in Municipalities and Regional governments is almost the same for both genders. Nevertheless, it is possible to observe that in the radius of 4km for men, we find a positive and significant effect on trust in District Municipality and Regional governments. It is important to note that in the descriptive statistics, we find that in the nearest area to the platform, the level of education of the household is lower than in areas far away. It could be possible that people who are more educated can expect a better quality of service, and for that reason, we find the strongest effect despite the distance. In the case of the Ministry of Education, we find a negative impact on both genders. The quality of service or the kind of intervention the Ministry gave could be the key to this reduction in its trust. While in the case of the Ombudsman, we find a positive effect on trust for women but a negative effect on men. The possible answer to explain why in the case of the Ombudsman, we find different effects could be given by how the person was treated when they requested some help or tried to request its support. In this sense, women may perceive better support from the Ombudsman office than men.

Because we do not have as an option the Ministry of Development and Social Inclusion, which oversees the TAMBOS's program, in the survey, we used a proxy to try inferring how the trust will be in this institution. Our results suggest that considering all the sample positively and significantly impacts the probability that the household receives a social program for this institution. Nevertheless, the effect in the radius of 4km is negative and significant, and this result is maintained when analyzed by the gender variable. Hence, it is possible to think that in a specific radius, the trust in this institution will suffer a reduction in comparison if we take all the sample for the analysis. Concerning participation in a social organization, we find a negative effect for all the sample. However, separating the effect by gender, we do not find any significant results for men. Higher participation in social organization in finding women whose lives are near the platform.

In contrast, the effect is negative when we consider all the sample. The effect on social participation will be related to horizontal trust (Eek and Rothstein, 2005). This is an interesting result and suggests the possible effect of vertical trust over horizontal trust and vice versa.

Analyzing the robustness of our findings suggests a robust model. In this sense, employing the doubly robust method, we find the same results that our main model follows the IPW approach. Employing the falsification test proposed by Lee and Lemieux (2010), we find that almost in all the pseudo-outcomes, we do not find any effect of the intervention. Additionally, the event study suggests a robust result for the radius of 4km and 6km. In this sense, we can ensure that we correctly estimate the intervention's causal effect.

Several policy recommendations come out of this study. First, the program needs to define a basic basket of interventions to give to the target population. This would require a higher level of coordination between all the government sectors using the platform. However, at least one basic service per year must be generated to ensure an effect on a list of principal indicators. Hence, it requires the design of a thorough theory of change of the program that is clear on the principal outcomes that the program wants to have an impact on and the process to obtain the expected results. Second, a more concerted effort should be made in creating a good dataset by recollecting the information of the services. For example, training the personnel at different levels of government in charge of completing the information using the software should be considered a priority. By doing this, it could

be possible to design an impact evaluation in the nearest future. Our results suggest that people that live within a radius of 4km have less probability of participating in a social program from the Ministry of Development and Social Inclusion. This could be very useful for the ministry to close some gaps. Third, the National Institute of Statistics and Informatics needs to consider agreeing on the survey the question about trust in two key institutions: the Ministry of Development and Social Inclusion and the Ministry of Health, due to all the interventions usually given to the population. Finally, in the field of evaluation, there has been an increasing discussion over the designing of mixed evaluation that combines the qualitative and quantitative approaches. Hence, it is recommended to complement the present research with a qualitative study that can give us more information about the treatment received by the program beneficiaries. With the responses derived from this study, new adjustments could be made to the intervention, in a way that better improves the quality of life of the target population.

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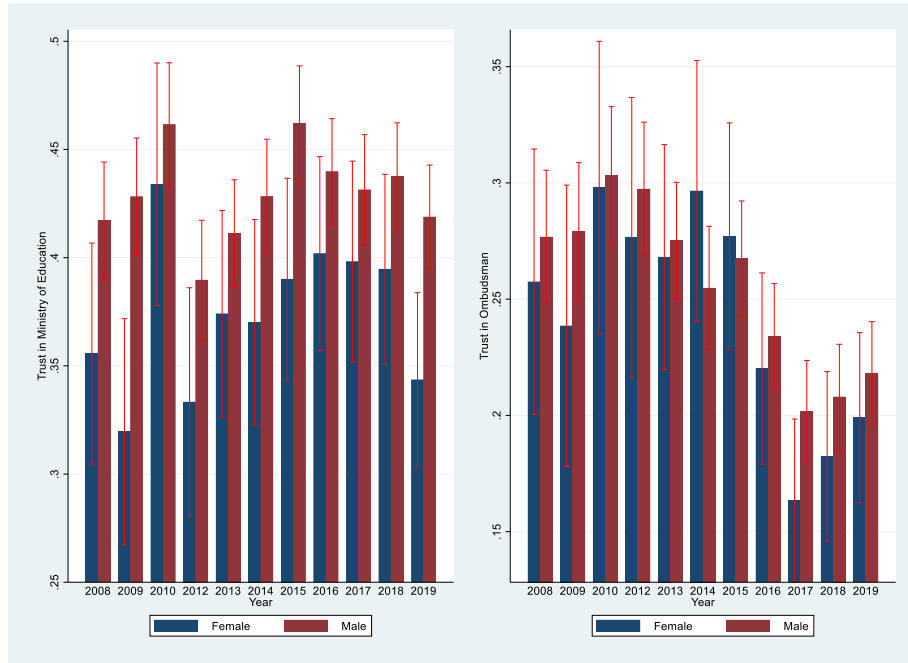
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Appendix

Annex N° 1: Trust in Ministry of Education and Ombudsman Office for the period 2008-2019 by sex of the head household (Male=1)



Source: ENAHO
Own Elaboration

Annex N° 2: Mean test pretreated period (2008-2010)- 6km

Variable	08 vs 09-10			08-09 vs 10		
	Mean Control	Mean Treated	P-value	Mean Control	Mean Treated	P-value
Trust in RENIEC	0.53	0.55	0.23	0.55	0.53	0.41
Trust in Provincial Municipality	0.17	0.18	0.38	0.17	0.17	0.73
Trust in District Municipality	0.20	0.23	0.13	0.21	0.21	0.87
Trust in Regional Government	0.13	0.12	0.41	0.14	0.12	0.18
Trust in Ministry of Education	0.43	0.38	0.02	0.47	0.39	0.00
Trust in Ombudsman Office	0.33	0.30	0.18	0.37	0.3	0.00
Poor household (1=poor)	0.44	0.53	0.00	0.43	0.49	0.00
Number of household members	3.82	3.83	0.92	3.86	3.8	0.45
Head of household sex	0.77	0.76	0.36	0.78	0.76	0.21
Head of household age	50.80	49.25	0.02	50.9	49.96	0.15
Average years of education in the household	6.54	6.51	0.86	6.42	6.58	0.31
Average age of household members	35.90	34.03	0.01	36.04	34.88	0.10
Logarithm of expenditure executed by the district municipality	0.77	0.77	0.44	0.81	0.75	0.00
Proportion of executed expenditure of the total amount received by the municipality	16.25	16.05	0.00	16.22	16.16	0.20

Source: ENAHO

Own Elaboration

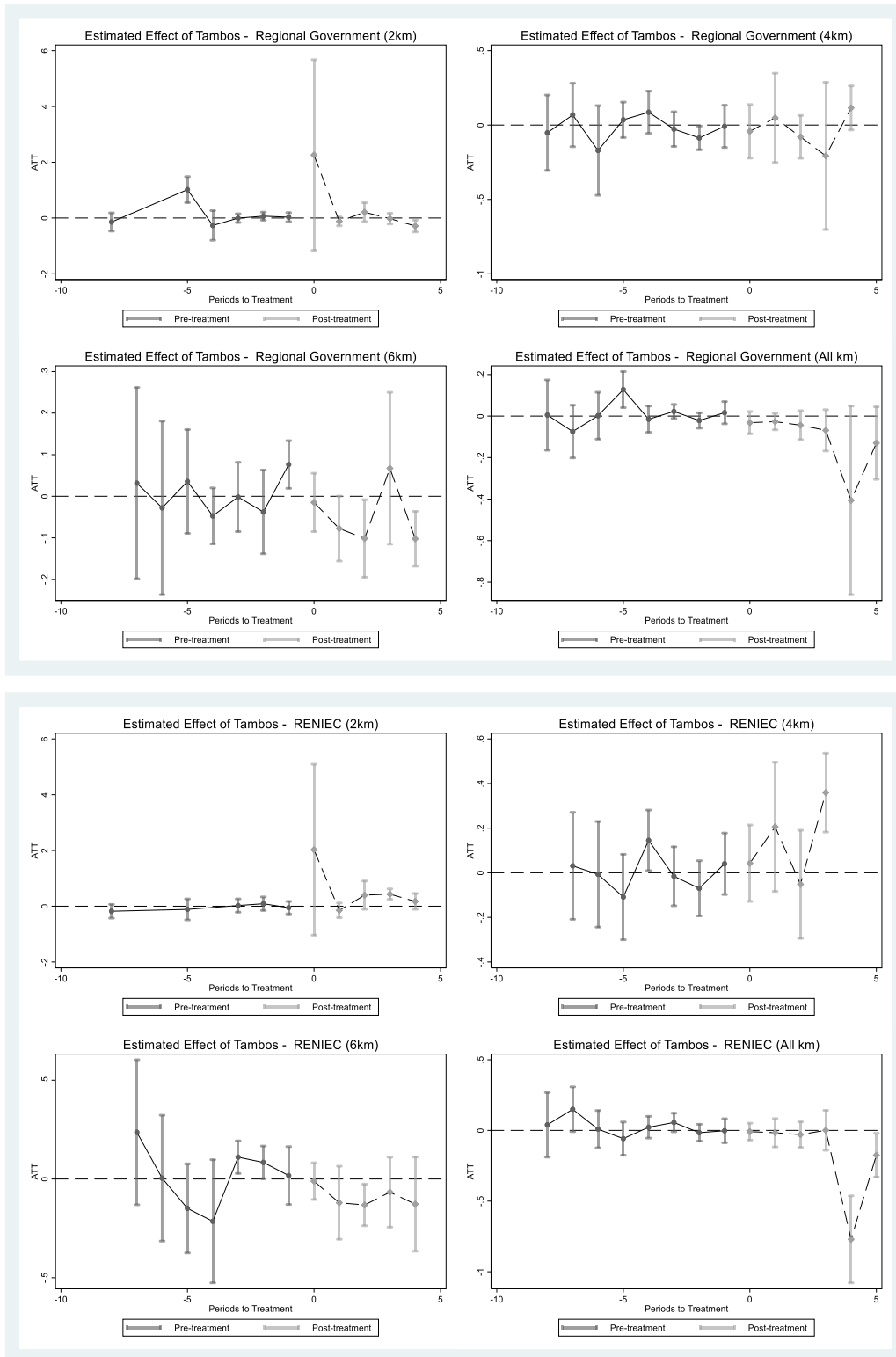
Annex N° 3: Mean test pretreated period (2008-2010)- All km

Variable	08 vs 09-10			08-09 vs 10		
	Mean Control	Mean Treated	P-value	Mean Control	Mean Treated	P-value
Trust in RENIEC	0.52	0.51	0.62	0.52	0.51	0.62
Trust in Provincial Municipality	0.18	0.19	0.13	0.17	0.19	0.11
Trust in District Municipality	0.21	0.24	0.01	0.22	0.23	0.27
Trust in Regional Government	0.13	0.13	0.48	0.14	0.13	0.09
Trust in Ministry of Education	0.47	0.42	0.00	0.49	0.43	0.00
Trust in Ombudsman Office	0.31	0.29	0.22	0.33	0.28	0.00
Poor household (1=poor)	0.55	0.60	0.00	0.52	0.59	0.00
Number of household members	3.87	3.84	0.65	3.87	3.85	0.84
Head of household sex	0.78	0.77	0.44	0.78	0.78	0.97
Head of household age	50.82	50.01	0.05	51.41	50.13	0.00
Average years of education in the household	5.77	5.74	0.70	5.71	5.79	0.42
Average age of household members	36.05	35.19	0.07	36.57	35.37	0.01
Logarithm of expenditure executed by the district municipality	0.76	0.74	0.00	0.8	0.73	0.00
Proportion of executed expenditure of the total amount received by the municipality	15.88	15.69	0.00	15.87	15.8	0.01

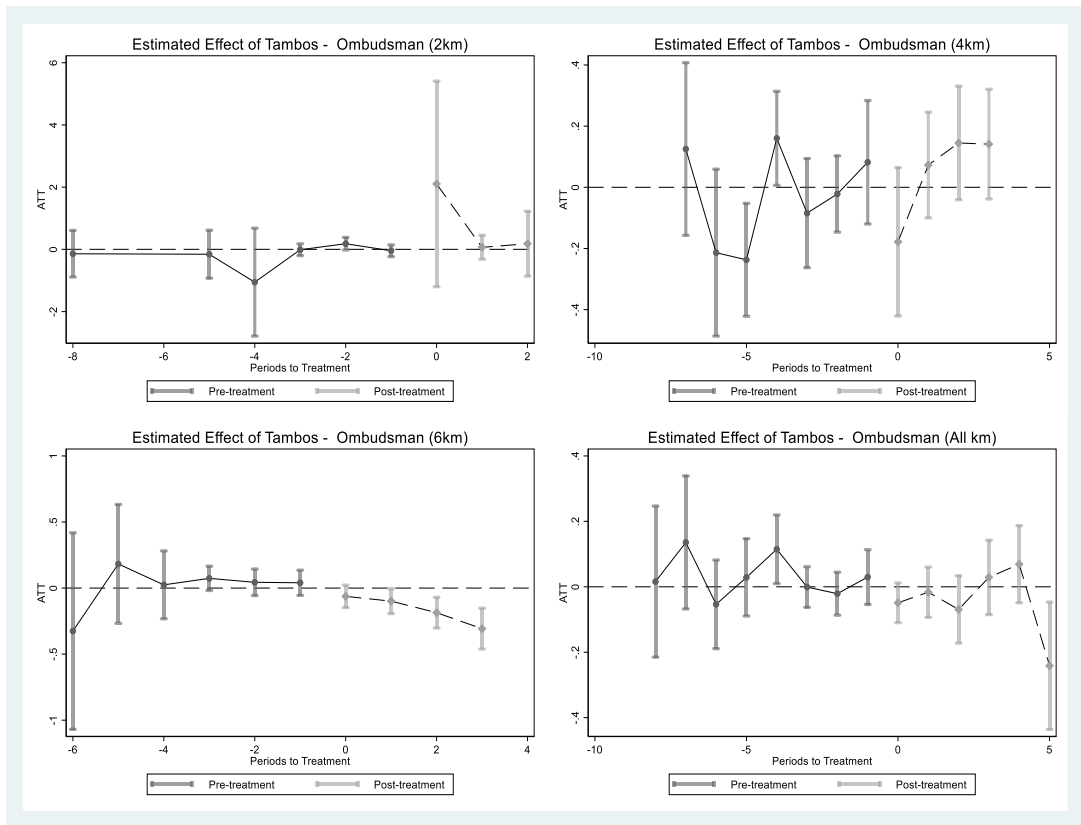
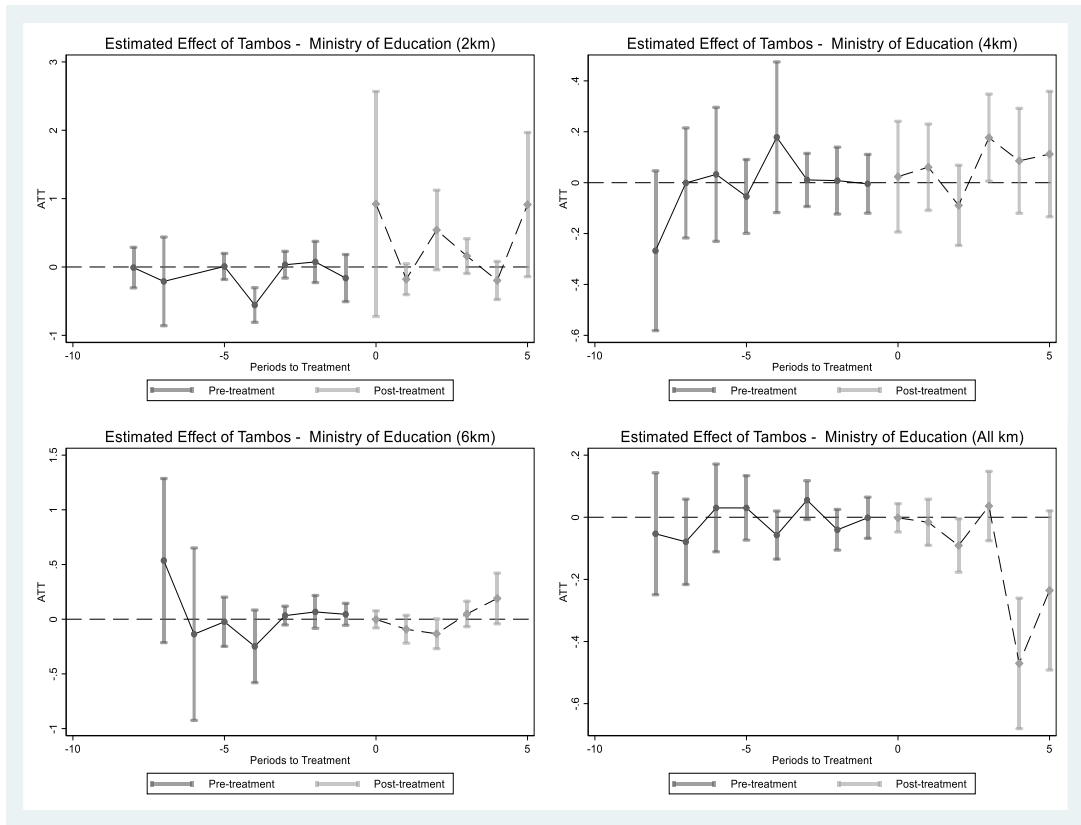
Source: ENAHO

Own Elaboration

Annex N° 4: Event Study for Regional Government and RENIEC IPW



Annex N° 5: Event Study for Ministry of Education and Ombudsman Office IPW



Annex N° 6: Effects of TAMBOS on trust in Public Institutions – Unconditional Parallel trend DR

	RENIEC	Provincial Municipality	District Municipality	Regional Government	Ministry of Education	Ombudsman Office
Influence area (2km)	0.044	-0.076	-0.000	-0.070	0.051	-0.038
Standard Error	(0.072)	(0.047)	(0.049)	(0.050)	(0.071)	(0.049)
Observations	3933	3628	3959	3285	3773	2938
Mean Var	0.496	0.178	0.230	0.125	0.482	0.260
Influence area (4km)	0.035	0.014	0.027	0.054	0.002	0.052
Standard Error	(0.048)	(0.033)	(0.033)	(0.035)	(0.051)	(0.043)
Observations	6725	7405	6986	6540	7990	5734
Mean Var	0.497	0.201	0.236	0.141	0.478	0.292
Influence area (6km)	0.008	0.002	0.018	0.025	0.043	-0.072
Standard Error	(0.038)	(0.027)	(0.031)	(0.038)	(0.040)	(0.047)
Observations	9392	9499	9606	8953	9925	7868
Mean Var	0.536	0.171	0.209	0.126	0.414	0.323
Influence area (All)	0.007	-0.009	0.012	0.000	0.009	-0.037
Standard Error	(0.028)	(0.020)	(0.020)	(0.019)	(0.030)	(0.027)
Observations	21367	21682	21416	19297	23148	17478
Mean Var	0.513	0.183	0.223	0.131	0.453	0.298

Note: The dependent variable is indicated in the header of each column. The present model does not include control variables. Standard errors are clustered at the platform level. Fixed effects per year and natural region are included. The significance levels are: * p<0.10 ** p<0.05 *** p<0.01

Annex N° 7: Robustness test using missing values

	RENIEC	Provincial Municipality	District Municipality	Regional Government	Ministry of Education	Ombudsman
Influence area (2km)	0.576	0.667	0.630	0.449	0.159	0.448
Standard Error	(0.404)	(0.646)	(0.535)	(0.412)	(0.136)	(0.379)
Observations	3640	3640	3640	3640	3640	3640
Mean Var	0.321	0.119	0.163	0.073	0.342	0.125
Influence area (4km)	0.083	0.032	0.061*	0.077**	0.031	0.058
Standard Error	(0.051)	(0.029)	(0.032)	(0.032)	(0.054)	(0.095)
Observations	7698	7698	7698	7698	7698	7698
Mean Var	0.312	0.129	0.162	0.076	0.325	0.128
Influence area (6km)	-0.089*	-0.049**	-0.062***	-0.043*	-0.053	-0.044
Standard Error	(0.050)	(0.020)	(0.019)	(0.024)	(0.041)	(0.030)
Observations	10153	10153	10153	10153	10153	10153
Mean Var	0.367	0.118	0.149	0.079	0.296	0.179
Influence area (All)	0.015	-0.078***	-0.024	-0.025	-0.099***	-0.070***
Standard Error	(0.030)	(0.028)	(0.021)	(0.020)	(0.028)	(0.026)
Observations	23507	23507	23507	23507	23507	23507
Mean Var	0.336	0.123	0.157	0.076	0.318	0.147

Note: The dependent variable is indicated in the header of each column. The present model includes control variables such as poverty, number of household members, head's household sex, head's household age, an average of years of education from household members, the average age of household members, logarithm of municipality's spending, the proportion of budget executed, and number of platforms near in a radius of 6km. Standard errors are clustered at the platform level. Fixed effects per year and natural region are included. The significance levels are: * p<0.10 ** p<0.05 *** p<0.01

Ethical Review

The National Household Survey (ENAHO) is an annual unnamed secondary dataset. Its objective is to generate indicators that allow knowing the evolution of poverty, well-being, and living conditions of households and measure the scope of food and non-food social programs in improving the population's living conditions. The survey is carried out at the national level, in urban and rural areas, in the 24 departments of the country, and the Constitutional Province of Callao. For the study, we used information from the survey's modules: (i) characteristics of the home and household, (ii) education, (iii) characteristics of household members, (iv) social programs, (v) citizen participation, and (vi) governance, democracy, and transparency. Additionally, the ENAHO contains information about the longitude and latitude of each cluster. In this sense, households in different conglomerates are assigned the georeferencing of the conglomerate to which households belong.

The period of study is from 2008-2019. The sample size is 444,545 households over this period, as we can see in detail in Table N° E1.

Table N° E1: ENAHO sample size period 2008-2019

Year	N household	Percent	Cum
2008	26,010	5.85	5.85
2009	26,598	5.98	11.83
2010	27,176	6.11	17.95
2011	32,519	7.32	25.26
2012	32,546	7.32	32.58
2013	39,676	8.93	41.51
2014	40,125	9.03	50.53
2015	39,863	8.97	59.5
2016	44,919	10.1	69.61
2017	43,545	9.8	79.4
2018	47,700	10.73	90.13
2019	43,868	9.87	100
Total	444,545	100	

Source: ENAHO

Own Elaboration

In addition, we use the program dataset containing the georeferenced information of 459 platforms from 2012-2019. The dataset can be requested using the portal: <https://pais.gob.pe/mesadepartes/web/login>. Finally, we use the information on the municipality budget from the website “Datos abiertos”: <https://www.datos.gov.co/>. This website contains public data.

Because the identification strategy exploited the georeferenced information from the platform and household, in this sense, using the STATA command called “geodist” we calculated the distance in kilometers of each household to each platform. Doing this procedure, we generate a total of 204,046,155 observations with a specific value in kilometers about the distance to each platform. It is important to mention that the procedure takes a long-time to generate the distance variable. Because

we defined our intervention area as a distance between 0km-6km, we deleted the rest of the observations. Then, we create a variable that gives us information about how many platforms are near each household to reduce the sample to a unique observation. After this procedure, we have the number of observations that we can see in Table N° 3 in the main document. We can note that one year of the sample, 2011, was deleted because any conglomerate was in a radius of 6km. Finally, for each regression, we use the sample weight of the survey to have higher external validity.