The Challenge of the Last-Mile: Evidence from a Scale-Up Experiment in the Dominican Republic*

Patrick Agte
Princeton

Daniel Morales
PUCMM

Christopher Neilson
Yale and NBER

Sebastián Otero
University of California, Berkeley

September 15, 2022

Abstract

The slow adoption of successful policies that are supported by rigorous scientific evidence is a challenge across developing countries. We conduct a field experiment with the universe of secondary school principals in the Dominican Republic to investigate whether sharing evaluation results via emails and calls improves the nationwide scale-up of an education information campaign. We find that the evidence treatment has no effect on adoption but that increasing the number follow-up calls increases take-up by 30%. Low overall take-up rates contrast with initial pilot results. We conclude that simply providing information on existing research findings through light-touch interventions might not be enough to increase policy adoption.

*This project would have not been possible without the support of Julio Valeirón and the research team at IDEICE. We would like to thank Ministerio de Educación (MINERD) of the Dominican Republic and IDEICE for facilitating joint work between government agencies that produced the data from the Dominican Republic used in this study. All remaining errors are our own. This project was pre-registered under AEA registry ID AEARCTR-0003621.

1 Introduction

A wide range of studies document the challenges when trying to scale up successful interventions (see Banerjee et al. (2017) for examples). Overworked government officials, missing incentives, lack of resources, and information frictions are frequently cited as potential explanations for the persistence of policy-evidence gaps (Cairney and Kwiatkowski, 2017; Elliott and Popay, 2000; Finan et al., 2017). As researchers are increasingly involved in all stages of the policy process, it becomes important to understand whether light-touch interventions have the potential to improve the adoption of successful policies.

Recent research suggest that one potential avenue of increasing the take up of effective policies is by communicating results from successful interventions in the program evaluation literature. In a field experiment with the mayors of 2,150 municipalities in Brazil, Hjort et al. (2019) show that policy makers value this type of information and that informing policy makers about effective research increases the probability of policy take-up. Since their field experiment relies on intensive in-person workshops to convey this information, it remains an open question of whether policy makers also react to this information when informed by standard government communication channels. Due to budget and technology constraints, governments are likely to rely on emails and calls to convey this information, even more so during the current Covid-19 pandemic. However, such scalable communication channels are also less likely to get the attention of policy makers, potentially reducing the efficacy of such interventions.

In this paper, we cooperate with the Ministry of Education of the Dominican Republic to implement a randomized controlled trial with the universe of secondary schools in the country to explore whether sharing research findings through standard communication approaches can improve the scale-up of a education information campaign. The education information campaign, the so-called 'Aprendiendo el Valor de la Educación' (AVE) program, consists of multiple videos that present accurate and clear information on the potential benefits and costs of schooling to 7th through 12th-grade students. The idea was to implement a scalable intervention in the vein of the Jensen (2010) experiment that does not rely on face-to-face interactions with the students. Berry et al. (2019) used a field experiment to evaluate a pilot version of the AVE program over two waves in which almost 1,600 secondary schools were

part of the treatment group. Two-day in-person workshops were organized for the treatment group to ensure high take-up rates. 97% of schools in treatment group implemented the AVE program in the pilot experiment. The pilot evaluations find that the program increased test scores by 0.05 standard deviations and reduced drop-out rates by XX (Berry et al., 2019). Encouraged by the pilot results, the Ministry of Education decided to scale-up the program nationwide. While the pilot program relied on extensive in-person workshops with researchers and school officials, the scale-up was implemented by sharing detailed instructions with each principal via email and a follow-up call.

In partnership with the government, we conducted a scale-up experiment with three treatment arms to evaluate the best approaches for achieving high adoption rates. In the evidence treatment arm, we added information on the evaluation results of the pilot experiments to the emails and follow-up calls of the government. In the incentive treatment arm, principals received a financial incentive in the form of a lottery for implementing the program. In the intensity treatment arm, principals received two additional follow-up calls to remind them of the implementation of the program. To measure program adoption, principals were asked to send the Ministry of Education a form and a photo with the students watching the videos to prove that the school implemented the AVE program. We further collect information on program adoption through student self-reports. Email and call implementations were also closely monitored through our research team. We managed to reach almost everyone in our sample: 98% of principals received the initial email and 95% of principals received the first phone call.

We document low program adoption overall. Only 58% of principals either submitted a form or a photo to the government. We find that only the intensity treatment increases program adoption. Receiving two additional follow-up calls increases take-up by 30%. Sharing research findings and financial incentives did not affect take-up rates. We exploit variation in school and principal characteristics to discuss various mechanisms. We rule out that unbiased beliefs, a lack of statistical knowledge, and missing enforcement drive our results.

Together with the high take-up rates in the pilot experiment, we interpret these findings as suggestive evidence that information provided through standard communications tools that are usually used by governments might not be enough to actively engage with policy officials like school principals. The results show that scaling up interventions is a complex

process in which some the effects of nudges may fade away. Information about evidence might be useful when policy makers are directly exposed to the intervention. In this paper, we find that providing information does not increase the take-up of new policies when the provision of this information is constrained by the technology of the government. Researchers might thus need to take more active steps, e.g. through the organization of dissemination workshops, to encourage the take-up of new policies.

Our results contribute to the literature on the scale-up of successfull policies (Banerjee et al., 2016; Bold et al., 2012) and the adoption of new technologies in firms (Bloom et al., 2012; Atkin et al., 2017). Our findings are closely linked to studies that investigate how policy professional react to scientific evidence and new data (Hjort et al., 2019; Banuri et al., 2019; Rogger and Somani, 2018; Vivalt and Coville, 2020). We further contribute on the literature that finds that information provision is often not sufficient and that active support is necessary to change the behavior of individuals and firms (Oreopoulos and Ford, 2016; Bloom et al., 2012).

2 Background information

2.1 Setting

The focus of this study are the universe of secondary schools in the Dominican Republic. The education system consists of six years of primary education and six years of secondary education.[1] We focus on secondary schools because the local authorities did not consider that the information provided by the AVE campaign was relevant for younger students. There are a total of 4,351 schools that offer at least one secondary grade. A representative school had XX students in 2018.

Dropout is extremely prevalent in the Dominican Republic: of the students who take the 8th grade exit exam, approximately 34 percent will not complete high school.[2] In 2018, the average drop-out in secondary grades was of 6%. In addition to student drop-out, the educational system has faced serious challenges in improving student learning. Education

[1]Before the 2016 school year, the system was structured in eight years of primary education and four years of secondary education.

[2]We define completing high school as taking the high school exit exam within eight years after eighth grade.

outcomes lagged behind other countries, as reflected by the Dominican Republic claiming last place in student skills among all participating countries in the international TERCE in 2013 and PISA test in 2015 (UNESCO, 2015; OECD, 2016).

The educational system has historically used high stakes testing to measure student learning and promote national standards for education. Before 2016 school year, students in eighth grade were required to pass a national standardized exit exams called Pruebas Nacionales (PN) in order to continue on to secondary education. Students who continue on to secondary school will take another set of exit exams in 12 grade. The 12 grade examination persists until today. The results of these exams are used in two different ways. First, students who pass the exam receive a high school diploma and can continue on to tertiary education. Second, the government uses the average score by schools as measure of quality. These results are organized and distributed every year to parents as a way of holding schools accountable and to push them to increase their quality.

2.2 The AVE Experiment

In 2010, Robert Jensen documented that students in the Dominican Republic perceived returns to secondary school to be extremely low, despite high measured returns (Jensen, 2010). Additionally, he experimentally tested the impact of providing accurate information about the returns to education. His results showed that this simple and cheap intervention had the potential to correct this information gap, and also led to substantial lower drop-out rates among 8th grade male students.

Motivated by these results, the Ministry of Education partnered up with academics to design and develop a scalable version of this intervention with the potential of being implemented in every school in the country. The main challenge was that this information could not be passed face-to-face as in Jensen's experiment. The ideal product was one such that could correct student's misperception while being scalable. Most importantly, this means both that marginal cost of informing students should be low, and delivery of the information should not rely heavily on the ability or motivations of those implementing.

To these ends, the government designed a series of high-quality and entertaining videos as the main vehicle for the information campaign.[3] The national implementation of these

[3] A first goal in designing the intervention was to provide accurate, credible, understandable and important

videos was called the AVE program (Spanish acronym for "Learning the Value of Education") and consisted of four approximately 15-minute videos that presented accurate and clear information on the potential monetary and non-monetary benefits of education to 7th through 12th-grade students. The videos are watched by classes altogether and are followed a discussion its content and implications with the head teacher.

A pilot of the program was evaluated in a randomized field experiment in 2015 and 2016 by Berry et al. (2019). In a first pilot in 2015, the Ministry of Education asked 398 treatment schools to implement the program for 7th and 8th grade students. A logistical challenge was to get the videos into the schools, and to implement the information campaign in an effective and standardized way. With that aim, school officials from all treated institutions were mandated to attend a two-day workshop in Santo Domingo, where they received physical copies of the videos and precise implementation instructions. After the workshop, schools were constantly followed-up over phone calls. Berry et al. (2019) show that around 97% of treatment group implemented the AVE program.

In a second pilot in 2016, the program increased its scope to include students from all secondary grades (from 7th to 12th grade). This time the policy was implemented in more than 1,600 schools. Due to the increased sample size, the program was implemented in a decentralized fashion. First the material was delivered from the Ministry to each of the different 120 educational districts. Then districts coordinated a workshop and the delivery of the material with the local schools. This year the take-up rate was of 80% (Berry et al., 2019).

The results from these evaluations show that the program had positive increases test scores by 0.05 standard deviations and a XX reduction in drop-out rates of participating schools (Berry et al., 2019).

information. To lend credibility and as much accuracy as possible, most of the quantitative information came from nationally representative surveys done by the central bank. The numbers were often described in intuitive ways: For example, wages were often discussed by showing the distribution of wages for 100 representative adults from the population for a given level of schooling. The videos further described how heterogeneity in outcomes can be a result of many factors such as luck, and how you are doing in school. goal in designing the study was to provide accurate, credible, understandable, important information.

3 Experimental Design

Our study was based on the national rollout of the AVE program. The Ministry of Education (MINERD) decided to scale up the AVE program in the 2018-19 academic year to every student enrolled in 7th grade or above. The idea was to introduce the program as part of the school's regular activities. As such the Ministry of Education instituted the AVE week, and included it in the official school calendar during the week of September 24-28.

The scaled-up version was similar to the pilot, but its delivery to schools changed. While the school principals in the pilot were personally trained and incentivized to implement the program, the scale-up relied on principals downloading the videos from an online platform. To facilitate and homogenize the implementation of the program across schools, MINERD designed a series of clear instructions and protocols that principals should follow to successfully complete the task. The instructions on how to download the videos and implementation protocols where directly delivered to principals by phone and emails. Together with MINERD, we designed and embedded a randomize controlled trial to investigate whether providing information on the effectiveness of this program on student test-scores and drop-out rates could increase the take-up. We combined this information intervention with other competing mechanisms that MINERD had used in the past to improve the completion of tasks by principals.

3.1 The Selection of Schools for the Field Experiment

Our sample consists of the universe of secondary school principals in the Dominican Republic. This sample consists of 4,351 schools and comprise grades 7 to 12. We excluded schools that had no secondary school students in the academic year 2017-2018 or had less than five students enrolled across all secondary school grades in the academic year 2016-17.[4] We further restricted the sample to the 3,881 schools that either took the 8th grade National Exam in 2016 or the 12th National Exam in 2018 to exclude informal schools.

Because the unit of analysis are schools, but the intervention is at the principal level, we restricted the sample to one school per principal. In other words, if principals supervised more than one school that meets our sample criteria, one of his schools was chosen randomly

[4]Since the final enrollment data for 2017-18 was not be available by the start of the survey, we relied on the data from the previous year.

and the other one was dropped from the sample. From these set of 3,762 schools, we dropped schools for which we did not have a valid phone number and email for the principal by the beginning of the intervention. We also dropped principals that we could not reach in our baseline survey, and also those used in the pilot survey. Our final sample consists of 2,724 schools and principals. Table A.1 in Appendix A shows how many schools are dropped with each step. Although our sample represents 63% of the total number of schools, it represents a XX% of the total enrollment in secondary schools.

3.2 Baseline Intervention

All principals in our sample received a set of three emails and one call before the AVE week. To gain credibility we used MINERD's official email accounts and phone numbers. The first email was sent to everyone in the sample on August 10th email, and it included: i) a link to the AVE platform where principals could download the video and the implementation protocol, ii) a brochure informing about the AVE campaign, and iii) precise instructions to help principals download the material from the AVE platform. The second email was sent a week later reminding principals about the campaign and with the same information as in the first email. In between these two emails we called every principal in the sample. In addition to confirming that they had received the email, our enumerators provided them with the same information included in the email. Principals who did not receive the email could ask to have the email forwarded to the same or a new address. We sent another email on September 24th, the first day of the AVE week. This email contained the same information summarized in charts and figures making it more visually appealing and easy to digest. We refer to this as the first "redesigned email".

As part of the instructions in the email and the implementation protocols, the Ministry of Education also asked the principals to send them a form and a photo with the students watching the videos to prove that the school implemented the AVE program. The deadline for these submissions was October 3. Since initial take-up was low (only 41% of principals had uploaded a photo two weeks after the end of the AVE week), we further sent a second email to all principals with the same information on October 11. We refer to this email as the second "redesigned email". This email was followed up with another call to all principals. We describe each of these interventions in Figure 1. While this second round of emails and

calls seem to have increased the overall take-up, we do not find different treatment effects for the first and second round. Thus, we restrict our analysis to the final take-up of the AVE program after both emails were sent out.

3.3 Treatment Arms

We evaluate the performance of three interventions on top of the baseline intervention described above in an attempt to increase the principals taking-up the program.

Evidence Treatment. In a first treatment arm, principals received information about the results of the AVE pilot.[5] Specifically, the email and phone calls script included the following paragraph:

> *It is important to note that a research study, carried out between 2014 and 2016 in 2,500 schools in the Dominican Republic, showed that implementing this campaign significantly improves scores on national tests and decreases dropout rates. The schools that showed the videos increased national test scores by 0.6 points in total. This study shows that if all the schools in the country showed these videos to their students, the number of dropouts in secondary schools would decrease by 6,500 students per year."*

This information was also conveyed through easy to read figures in the brochure included in the first two emails. Figure E.2 shows these brochures. In the redesigned emails, we included these figures in the body of the email.

Incentive Treatment. In a second treatment arm, principals received a financial incentive in the form of a lottery. The first two emails and the call scripts included this extra paragraph:

> Please note that you have been randomly selected to be one of the directors who can participate in the draw for a Samsung tablet to help you run the school. You will enter this sweepstakes only if you implement the AVE-RD campaign at your school as outlined in the instructions below in this email. One out of 10 people who enter the drawing will win a tablet

The expected value of the tablets was equal to 30% of the average monthly salary of a school

[5] To measure spillover effects for this treatment, districts were evenly divided into high share-districts (67%) and low share-districts (33%).

principal. This treatment was expected to serve as a monetary benchmark to anchor the effectiveness of other treatment arms.

Intensity Treatment. In a third treatment arm, principals received two additional calls from MINERD. The first call was between October 18th and 21st, right after the first confirmation call received by every school in the sample. This group received a second extra call during the AVE week.

Randomization occurred at the school level and was conducted by computer. We cross-randomized the three treatments with the exception that the intensity group never received the financial incentive.[6] We followed this procedure since we expected that the intensity and the incentive treatments would already lead to high take-up rates. In total we had 6 different treatment arms. We present the sample size and treatment arms in Figure C.1.

4 Data & Empirical Strategy

We use a combination of administrative and survey data to evaluate the different interventions. We have access to the school registry, enrollment data, and test scores from the national exams in 8th grade and 12th grade. We initially obtained contact details for all schools from the school registry. We then set-up a call center to update the contact details of each school principal. After that, we conducted a baseline phone survey in which we collected information on baseline beliefs and school characteristics.

We used an email marketing platform to send the emails with the instructions to each principal on behalf of the MINERD. The platform allows us to observe whether a principal received and opened the email, and if they had download the brochure attached to it. The email contained links to an online platform in which the principal had to register to download the campaign material. We use this registration information to monitor the implementation of the policy in real time. We also recorded and kept track of all phone calls performed by the enumerators. We refer to the email and call data as the implementation outcomes.

After showing the AVE videos to their students, principals were instructed to submit a

[6]The original design included a fourth treatment arm, principals received information on the assistance that the Ministry of Education provides to help schools to implement the program. This includes the telephone number to a helpline and a link to a website with further information. Since we do not find that principals made use of the helpline, we do not report the results of the assistance treatment in this paper. We still include an assistance treatment dummy in each regression.

photo via WhatsApp and submit a form with the implementation details via email. We use these outcomes as indicator variables of task completion. We supplement these outcomes with questions on the 12th-grade national exam in 2019 in which we ask students whether their school participated in the AVE campaign in the 2018-2019 academic year. We construct a dummy for task completion if more than 5 students in the school report having seen these videos in the student questionnaire.

The primary treatment effects of interest are estimated by calculating the intent-to-treat (ITT) estimate of take-up via OLS:

$$Y_i = \beta_{ITT} T_i + \gamma X_i + \alpha_i + \epsilon_i \tag{1}$$

where Y denotes the outcome for principal i, T is an indicator for the treatment assignment, X is a set of baseline covariates selected via the double lasso approach by Belloni et al. (2014), α are stratification dummies, and ϵ is an individual error term.

4.1 Balance Checks

Table B.2 shows summary statistics and balance across treatment arms. In Panel A we report characteristics for schools and school principals.

Most schools had the necessary infrastructure, an internet connection, electricity, and a projector, to easily implement the AVE campaign. If a school did not have an internet connection, a principal could have downloaded the campaign material in a cybercafe. 13% of schools share the same building with another sample school. Due to limited infrastructure, some schools operate in a shift system in which one school is using the building in the morning and another school is using the building in the afternoon. Both schools would have separate principals and student bodies. 31% of the sample was part of the treatment group in the previous pilot study of the AVE program. 83% of principals believe that providing additional information on the returns to schooling would have an effect on students' test scores [check exact wording of the question again]. 56% of principals think that students undervalue education. We treat these outcomes with caution since they might suffer from reporting bias. Even so, the results suggest that incorrect beliefs might prevent some principals from adopting the AVE campaign. The treatment and control groups are largely balanced across

school and principal characteristics.

5 Results

5.1 Implementation

We report treatment effects for various take-up outcomes in Table 2. We first show that we managed to reach almost all the principals in our sample. 98% of principals received our email according to the data from the email marketing platform. As we would expect, there were no significant differences across treatment groups. The second column reports whether a principal opened the email. The high opening rate of 87% reassures us that we managed to reach a large share of the principals. This outcome is already endogeneous since we also varied the script and frequency of the follow-up calls. This explains why we observe an increase by around 4.6 p.p. in the intensity group. The intensity treatment had an even larger effect for our second interim outcome of whether a principal downloaded the program material from the AVE website.

5.2 Program Adoption

The last three columns report the regression results for our primary measures of program adoption. Specifically, we report whether the principal submitted a photo of students participating in the AVE program via WhatsApp (column 4), whether the principal submitted the mandatory form via email (column 5), and the share of students who report in the 12th-grade national exam that their school participated in the AVE program in the 2018-2019 academic year. The last outcome is only available for approximately half of our sample since not all secondary schools offer the 12th-grade national exam.

Across all of these outcomes, we observe no significant treatment effects for the evidence group. A potential explanation for this null result is that we did not get the attention of the principals even if they opened the email. However, we also find that the interaction term between the intensity and the evidence treatments is insignificant. This implies that even after reaching out to the principals and explaining the research findings several times, the principals did not react to this information. Surprisingly, we also find no effects for the incentive treatment. If at all, it seems that the incentive treatment actually decreased the

take-up of the program. While we do not have a perfect explanation for this result, we think that the existence of the lottery might have given the impression that the implementation of the program was only voluntary.

Next, we investigate whether the treatments affected the timing of the take-up. For this, we examine the date the photo was submitted, our preferred measure of take-up. Since the different measures are highly correlated, the same pattern also holds for the other outcomes. Figure 2 shows that the overall take-up was very low. Only around 30% of principals had uploaded a photo by the end of the initial deadline. Program adoption continued to increase after that until it started to flatten out in November, around one month after the initial deadline. Besides the differences in levels that we discussed earlier, we do not observe a large difference in the timing of program adoption.

6 Discussion

We exploit the heterogeneity in principal and school characteristics to understand why the evidence treatment did not have a larger effect. We start by investigating whether principals already had correct beliefs about the value of the AVE program at baseline. If principals valued the benefits of the AVE program, we would expect that sharing information on the research findings would not lead to an increase in the take-up rate. Columns 1 and 2 in Table 3 show that a large share of principals indeed think that students underestimate the value of education and that an implementation of an information campaign similar to the AVE program would have an effect on test scores. However, we do not find that these beliefs are correlated with program adoption and the interaction terms are also insignificant. In a similar vein, it also might be the case that schools that were part of the treatment group in the AVE pilot program did not have to be convinced of the benefits of the program. Again, we do not find any variation with respect to this attribute.

6.1 Differences in take-up

- Discuss differences in take-up between experimental and scaled-up AVE

An alternative explanation is that principals need a certain level of knowledge to value the research findings. We thus investigate whether we find treatment effects for principals with a post-graduate degree. While we see that this subgroup is more likely to adopt the

program in general, we do not find that that they are more likely to be affected by the evidence treatment. Finally, we examine whether the evidence treatment had no effect because the implementation of the program was mandatory for public schools. However, we also do not find significant effects for private schools or whether principals believe that a penalty for non-compliance is not very likely.

Given that the take-up rate for principals was very high in the treatment group in the pilot study, we argue instead that the channel of communication matters. The pilot study and the XX study relied on in-person workshops to encourage principals and policymakers to adopt a new program. A concern with this approach is that these workshops are often expensive to implement and difficult to scale. Our study allows us to examine whether simply sharing research findings by email and calls is sufficient to increase take-up rates. We expect that this would be similar to an approach that many governments would take when scaling up a new program. However, our results suggest that this might not be enough to overcome information frictions. Instead, more engaging methods might be necessary to get the attention of policy officials.

- Misalignment of principal incentives
- Work overload

7 Conclusion

For research to translate into policy impact, researchers and government officials need to find effective approaches to scale-up successful policies. These approaches should not only focus on policymakers but also government officials that are in charge of implementing the new programs. Our study shows that simply convincing the policymakers at the Ministry of Education about the benefits of the AVE program was not enough to implement the campaign nationwide. Only around half of the sample had implemented the program at the end of our research study. Creative approaches might thus be necessary to increase take-up rates. We find that a promising approach, sharing researching findings with the school principals via email, might not be sufficient to increase policy adoption. Researchers might thus need to think of more creative ways to communicate their research results instead. Finally, our results show that a government call center might be a cost-effective tool to

monitor and nudge public officials to implement new policies. Similar call centers have also been used by several governments during the COVID-19 pandemic.

References

Atkin, D., A. Chaudhry, S. Chaudry, A. K. Khandelwal, and E. Verhoogen (2017). Organizational Barriers to Technology Adoption: Evidence from Soccer-Ball Producers in Pakistan. *The Quarterly Journal of Economics 132*(3), 1101–1164.

Banerjee, A., R. Banerji, J. Berry, E. Duflo, H. Kannan, S. Mukerji, M. Shotland, and M. Walton (2017). From proof of concept to scalable policies: Challenges and solutions, with an application. *Journal of Economic Perspectives 31*(4), 73–102.

Banerjee, A., R. Banerji, J. Berry, E. Duflo, H. Kannan, S. Mukherji, M. Shotland, and M. Walton (2016, October). Mainstreaming an effective intervention: Evidence from randomized evaluations of "teaching at the right level" in india. Working Paper 22746, National Bureau of Economic Research.

Banuri, S., S. Dercon, and V. Gauri (2019). Biased policy professionals. *The World Bank Economic Review 33*(2), 310–327.

Belloni, A., V. Chernozhukov, and C. Hansen (2014). Inference on Treatment Effects after Selection among High-Dimensional Controls. *The Review of Economic Studies 81*(2), 608–650.

Berry, J., L. Coffman, D. M. Morales, and N. Christopher (2019). Informing students about schooling: A large-scale field experiment in the dominican republic. Working paper, Princeton University.

Bloom, N., B. Eifert, A. Mahajan, D. McKenzie, and J. Roberts (2012, 11). Does Management Matter? Evidence from India *. *The Quarterly Journal of Economics 128*(1), 1–51.

Bold, T., M. Kimenyi, G. Mwabu, A. Ng'ang'a, and J. Sandefur (2012). Interventions & institutions experimental evidence on scaling up education reforms in kenya. *Preliminary draft. Available at http://www. iies. su. se/polopoly_fs/1.101632 13481*, 37980.

Cairney, P. and R. Kwiatkowski (2017). How to Communicate Effectively with Policymakers:

Combine Insights from Psychology and Policy Studies. *Palgrave Communications 3*(1), 37.

Elliott, H. and J. Popay (2000). How Are Policy Makers Using Evidence? Models of Research Utilisation and Local NHS Policy Making. *Journal of Epidemiology & Community Health 54*(6), 461–468.

Finan, F., B. Olken, and R. Pande (2017). Chapter 6 - The Personnel Economics of the Developing State. In A. V. Banerjee and E. Duflo (Eds.), *Handbook of Economic Field Experiments*, Volume 2 of *Handbook of Economic Field Experiments*, pp. 467 – 514. North-Holland.

Hjort, J., D. Moreira, G. Rao, and J. F. Santini (2019). How research affects policy: Experimental evidence from 2,150 brazilian municipalities. Working paper, Harvard University.

Jensen, R. (2010). The (Perceived) Returns to Education and the Demand for Schooling. *The Quarterly Journal of Economics 125*(2), 515–548.

OECD (2016). Pisa 2015 assessment and analytical framework. *PISA*.

Oreopoulos, P. and R. Ford (2016, June). Keeping college options open: A field experiment to help all high school seniors through the college application process. Working Paper 22320, National Bureau of Economic Research.

Rogger, D. and R. Somani (2018). *Hierarchy and information*. The World Bank.

UNESCO (2015). Terce 2013: Tercer estudio regional comparativo y explicativo. *TERCE*.

Vivalt, E. and A. Coville (2020). How do policymakers update? *Unpublished manuscript, Berkeley, CA: University of California, Berkeley*.

8 Tables

Table 1: Panel A: Implementation Outcomes: Calls

	1st Call (1)	2nd Call (2)	3rd Call (3)	4th Call (4)	5th Call (5)
Evidence	-0.016*	0.003	-0.011*	-0.022**	-0.043*
	[0.009]	[0.005]	[0.007]	[0.010]	[0.023]
Incentive	-0.015	0.001	0.002	-0.023*	0.057**
	[0.012]	[0.001]	[0.002]	[0.013]	[0.027]
Intensity	0.003	0.942***	0.878***	-0.034***	-0.162***
	[0.010]	[0.009]	[0.012]	[0.013]	[0.027]
Controls	Yes	Yes	Yes	Yes	Yes
Sample	Full	Intensity	Intensity	Non-Adopters	Non-Adopters
Mean of Control Group	0.955	0.000	0.000	0.952	0.626
Observations	2724	2724	2724	2021	2021

Panel B: Implementation Outcomes: Emails

	1st Email		2nd Email		1st Redesigned Email		2nd Redesigned Email	
	Sent (1)	Opened (2)	Sent (3)	Opened (4)	Sent (5)	Opened (6)	Sent (7)	Opened (8)
Evidence	-0.001	0.024	-0.001	0.032*	-0.003	0.027	-0.006	0.002
	[0.006]	[0.016]	[0.006]	[0.018]	[0.006]	[0.018]	[0.007]	[0.022]
Incentive	-0.007	-0.016	-0.007	0.003	-0.008	-0.044*	-0.008	-0.037
	[0.008]	[0.021]	[0.008]	[0.023]	[0.008]	[0.023]	[0.010]	[0.028]
Intensity	-0.016**	0.007	-0.016**	0.060***	-0.001	0.006	-0.006	0.035
	[0.007]	[0.018]	[0.007]	[0.019]	[0.006]	[0.020]	[0.008]	[0.025]
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample	Full	Full	Full	Full	Full	Full	Non-Adopters	Non-Adopters
Mean of Control Group	0.982	0.750	0.982	0.687	0.982	0.692	0.976	0.616
Observations	2724	2724	2724	2724	2724	2724	2021	2021

Table 2: Take-Up by Treatment

	Before Follow-Up Calls			After Follow-Up Calls			
	Downloaded Material	Submitted Photo	Submitted Form	Downloaded Material	Submitted Photo	Submitted Form	Student Reports
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Evidence	-0.014	-0.012	-0.031*	-0.016	0.005	-0.014	0.018
	[0.019]	[0.019]	[0.018]	[0.018]	[0.019]	[0.019]	[0.011]
Incentive	-0.041*	0.009	0.049**	-0.062**	-0.035	-0.006	-0.019
	[0.024]	[0.024]	[0.023]	[0.024]	[0.025]	[0.024]	[0.014]
Intensity	0.139***	0.205***	0.134***	0.102***	0.165***	0.119***	0.030**
	[0.020]	[0.022]	[0.021]	[0.020]	[0.021]	[0.022]	[0.012]
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample	Full	Full	Full	Full	Full	Full	Full
Mean of Control Group	0.608	0.374	0.271	0.661	0.553	0.450	0.488
Observations	2724	2724	2724	2724	2724	2724	1310

Table 3: Heterogeneity Analysis

	Outcome: Uploaded Photo					
Heterogeneity Var.:	Info Would Have Effect	Students Undervalue Edu.	Treat. Group in AVE Pilot	Post-Graduate Degree	Public School	Penalty is Very Likely
	(1)	(2)	(3)	(4)	(5)	(6)
Evidence	-0.035	-0.009	-0.001	0.029	0.002	-0.014
	[0.053]	[0.028]	[0.024]	[0.030]	[0.041]	[0.029]
Incentive	0.031	0.010	-0.046	-0.079**	-0.096*	-0.033
	[0.067]	[0.038]	[0.031]	[0.040]	[0.054]	[0.039]
Intensity	0.087	0.206***	0.136***	0.131***	0.145***	0.184***
	[0.064]	[0.032]	[0.027]	[0.035]	[0.048]	[0.033]
Evidence × Heterogeneity Var.	0.046	0.024	0.023	-0.035	0.003	0.035
	[0.056]	[0.039]	[0.040]	[0.039]	[0.046]	[0.038]
Incentive × Heterogeneity Var.	-0.079	-0.088*	0.026	0.080	0.075	-0.008
	[0.073]	[0.052]	[0.054]	[0.053]	[0.061]	[0.052]
Intensity × Heterogeneity Var.	0.089	-0.072	0.083*	0.067	0.022	-0.038
	[0.068]	[0.045]	[0.046]	[0.046]	[0.055]	[0.044]
Heterogeneity Var.	-0.036	0.002	0.007	0.083**	0.053	0.032
	[0.052]	[0.038]	[0.040]	[0.039]	[0.046]	[0.037]
Controls	No	No	No	No	No	No
Mean of Control Group	0.553	0.553	0.553	0.545	0.553	0.553
Mean of Heterogeneity Var.	0.862	0.513	0.323	0.558	0.766	0.553
Observations	2724	2630	2724	2568	2724	2723

9 Figures

Figure 1: Implementation Timeline

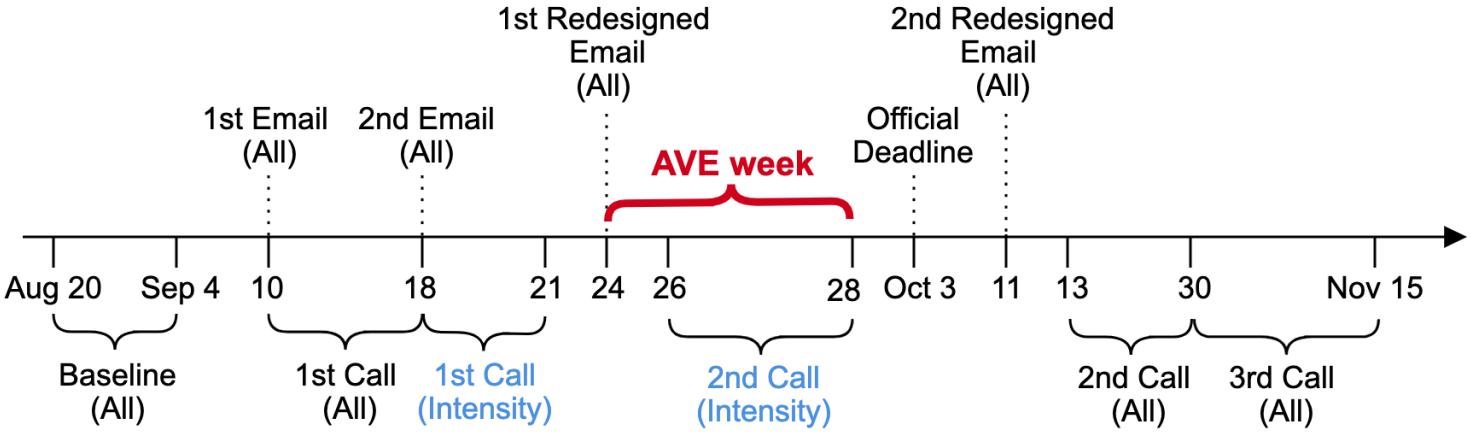
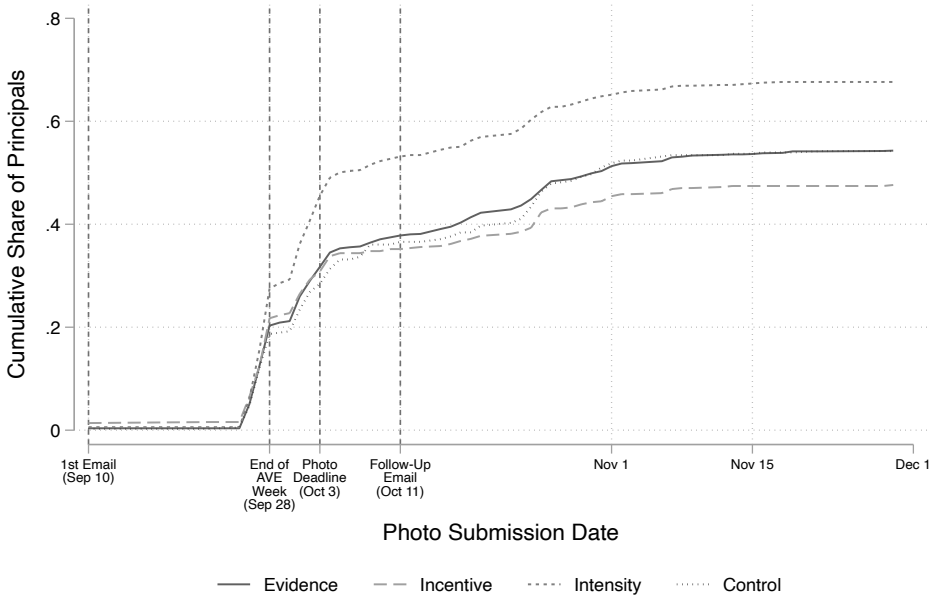


Figure 2: Take-Up Rate Over Time by Treatment



Appendices

A Sample Selection

In this appendix we describe the sample selection.

Table A.1: Sample Selection

Sample	Description
7,341	Has no students in grades 7-12 in 2018 ($n = 2,990$)
4,351	Has less than five students in grades 7-12 in 2017 ($n = 162$)
4,189	Did not participated in at least one standardized exam between 2016 and 2018 ($n = 301$)
3,888	No contact details ($n = 7$)
3,881	Randomly select one school to drop if principal supervises more than one ($n = 119$)
3,762	Not reached at baseline ($n = 626$)
3,136	Principal has no access to email ($n = 343$)
2,793	Randomly select one school to drop if principals share the same email address ($n = 16$)
2,777	Did not meet criteria 1-3 in the updated administrative data ($n = 9$)
2,768	Part of pilot survey ($n = 44$)
2,724	Final sample

B Balance Check

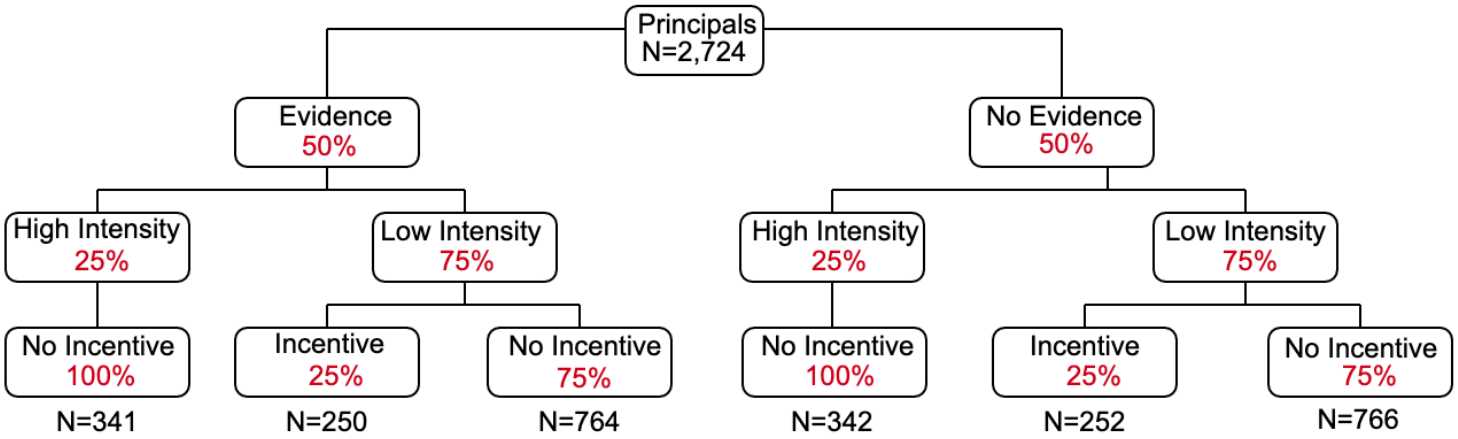
Table B.2: Balance Check

	Control		Evidence		Incentive		Intensity		
	Mean (1)	St. Dev. (2)	Coeff. (3)	St. Err. (4)	Coeff. (5)	St. Err. (6)	Coeff. (7)	St. Err. (8)	N (9)
Panel A: School Characteristics									
Has Internet Connection	0.732	0.444	-0.005	0.017	-0.014	0.017	-0.027	0.017	2717
Has Projector	0.758	0.429	-0.001	0.017	0.003	0.017	0.008	0.017	2719
Has Computer Lab	0.567	0.496	-0.003	0.019	-0.010	0.019	0.023	0.019	2717
Has Electricity	0.989	0.102	0.000	0.005	0.001	0.005	0.005	0.005	2719
Students in 7-12th Grade, 2018	233.03	242.09	-14.090	8.853	-1.540	8.853	-1.882	8.853	2724
Total PN Score 12th Grade, 2018	72.580	7.211	0.038	0.419	-0.600	0.419	-0.881*	0.419	1323
Total PN Score 8th Grade, 2016	68.491	7.046	0.089	0.325	-0.532	0.325	-0.098	0.325	1925
Shares Building with Another Sample School	0.129	0.336	-0.002	0.012	0.016	0.012	-0.001	0.012	2724
Offers Extended School Day	0.497	0.501	-0.023	0.018	0.015	0.018	-0.007	0.018	2724
Located in Urban Area	0.742	0.438	-0.020	0.017	0.003	0.017	-0.025	0.017	2358
School Is Public	0.800	0.401	-0.001	0.016	0.012	0.016	0.019	0.016	2724
Treatment Group in AVE Pilot	0.313	0.464	0.008	0.019	0.013	0.019	0.011	0.019	2724
Panel B: Director Characteristics									
Experience of Principal	19.668	7.523	-0.632*	0.350	0.847*	0.350	0.201	0.350	2111
Principal Has Post-Graduate Degree	0.595	0.492	0.005	0.020	-0.000	0.020	-0.031	0.020	2568
Principal Supervises Multiple Schools	0.093	0.290	0.013	0.012	-0.012	0.012	0.011	0.012	2710
Principal Checks Emails Daily	0.597	0.491	0.008	0.020	-0.042*	0.020	-0.049**	0.020	2630
Belief: Penalty after Non-Compliance is Very Likely	0.537	0.499	-0.002	0.020	0.032	0.020	0.009	0.020	2723
Belief: Motivation is Professional Success	0.455	0.499	-0.001	0.020	-0.032	0.020	0.024	0.020	2723
Belief: Extra Info Would Have An Effect	0.826	0.379	-0.014	0.014	-0.017	0.014	0.017	0.014	2724
Belief: Students Undervalue Education	0.551	0.498	0.001	0.021	0.037	0.021	0.032	0.021	2630
Number of Valid Emails	1.387	0.634	0.026	0.026	-0.038	0.026	-0.013	0.026	2724

Notes: * p≤ 0.10, ** p≤ 0.05, *** p≤ 0.01. All regressions include stratification fixed effects. Column (1) gives the mean among the control group, column (3) gives regression coefficients. Robust standard errors are reported in column (4).

C Experimental Design

Figure C.1: Experimental Design



D Regression Results with Interaction Terms

Table D.3: Intermediate Outcomes

	Initial Email			Reminder Email			Redesigned Email			Follow-Up Email			
	Sent (1)	Opened (2)	1st Call (3)	Sent (4)	Opened (5)	2nd Call (6)	Sent (7)	Opened (8)	3rd Call (9)	Sent (10)	Opened (11)	4th Call (12)	5th Call (13)
Evidence	0.001	0.035*	-0.025**	0.001	0.028	0.002	0.001	0.036*	-0.002	-0.004	0.007	-0.009	-0.028
	[0.006]	[0.019]	[0.010]	[0.006]	[0.021]	[0.002]	[0.006]	[0.021]	[0.003]	[0.008]	[0.025]	[0.011]	[0.025]
Incentive	-0.007	-0.017	-0.015	-0.007	0.003	0.001	-0.008	-0.044*	0.002	-0.008	-0.037	-0.023*	0.056**
	[0.008]	[0.021]	[0.012]	[0.008]	[0.023]	[0.001]	[0.008]	[0.023]	[0.002]	[0.010]	[0.028]	[0.013]	[0.027]
Intensity	-0.020	0.052*	-0.007	-0.020	0.034	0.936***	-0.001	0.007	0.892***	-0.005	0.077*	0.032*	-0.159***
	[0.013]	[0.029]	[0.017]	[0.013]	[0.033]	[0.015]	[0.011]	[0.036]	[0.021]	[0.015]	[0.042]	[0.018]	[0.046]
Intensity × Evidence	-0.009	-0.041	0.036*	-0.009	0.015	0.005	-0.016	-0.033	-0.035	-0.009	-0.025	-0.063**	-0.063
	[0.015]	[0.035]	[0.020]	[0.015]	[0.037]	[0.017]	[0.012]	[0.039]	[0.024]	[0.016]	[0.049]	[0.025]	[0.052]
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample	Full	Full	Full	Full	Full	Full	Full	Full	Full	Non-Adopters	Non-Adopters	Non-Adopters	Non-Adopters
Mean of Control Group	0.982	0.750	0.955	0.982	0.687	0.000	0.982	0.692	0.000	0.976	0.616	0.952	0.626
Observations	2724	2724	2724	2724	2724	2724	2724	2724	2724	2021	2021	2021	2021

Table D.4: Take-Up by Treatment

	Before Follow-Up Calls			After Follow-Up Calls			
	Downloaded Material (1)	Submitted Photo (2)	Submitted Form (3)	Downloaded Material (4)	Submitted Photo (5)	Submitted Form (6)	Student Reports (7)
Evidence	-0.021	-0.026	-0.033	-0.018	0.001	-0.019	0.018
	[0.022]	[0.022]	[0.020]	[0.021]	[0.022]	[0.022]	[0.013]
Incentive	-0.041*	0.009	0.049**	-0.062**	-0.035	-0.006	-0.019
	[0.024]	[0.024]	[0.023]	[0.024]	[0.025]	[0.024]	[0.014]
Intensity	0.157***	0.175***	0.134***	0.129***	0.167***	0.126***	0.021
	[0.033]	[0.037]	[0.036]	[0.032]	[0.035]	[0.037]	[0.022]
Intensity × Evidence	0.027	0.054	0.008	0.007	0.017	0.020	0.002
	[0.039]	[0.042]	[0.041]	[0.038]	[0.040]	[0.042]	[0.023]
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Sample	Full	Full	Full	Full	Full	Full	Full
Mean of Control Group	0.608	0.374	0.271	0.661	0.553	0.450	0.488
Observations	2724	2724	2724	2724	2724	2724	1310

E Email Design

Figure E.2: Intervention Brochures

(a) Baseline Brochure

Aprendiendo el Valor de la Educación en la República Dominicana

es una *campaña informativa* sobre los beneficios de la educación, dirigida a estudiantes de secundaria de las escuelas de todo el país.

La campaña consiste en:

4 videos en formato telenovela de 1 hora en total

Temática 1
Beneficios económicos de la educación: mejores trabajos y salarios recibidos en el futuro.

Temática 2
Beneficios sociales y personales de la educación.

Temática 3
Información sobre la educación superior, carreras, instituciones y oportunidades de acceso.

Beneficios comprobados:

Un **estudio realizado en 2.500 escuelas del país** demostró que los centros educativos que implementan los videos mejoran significativamente los puntajes en las pruebas nacionales y disminuyen las tasas de abandono escolar.

Beneficio 1
Mostrar los videos incrementa los puntajes en pruebas nacionales en 0.6 puntos en total (suma de los puntajes de las cuatro asignaturas).

Beneficio 2
Si todas las escuelas del país mostrase estos videos, el número de estudiantes que completan el año escolar aumentaría en 6,500.

¡Sé parte de la próxima campaña!

La campaña debe implementarse entre el **25 y 28 de Septiembre**.
Puedes descargar ya los videos junto al manual de implementación en:

http://observatorioideice.ministeriodeeducacion.gob.do/averd/

MINERD

ideice

(b) Evidence Brochure