POLICY RESEARCH WORKING PAPER 9252

Remote-learning, Time-Use, and Mental Health of Ecuadorian High-School Students during the COVID-19 Quarantine

Igor Asanov
Francisco Flores
David McKenzie
Mona Mensmann
Mathis Schulte

Abstract

The COVID-19 pandemic has closed schools around the world, forcing school systems and students to quickly attempt remote learning. A rapid response phone survey of over 1,500 high school students aged 14 to 18 in Ecuador was conducted to learn how students spend their time during the period of quarantine, examine their access to remote learning, and measure their mental health status. The data show that 59 percent of students have both an internet connection at home and a computer or tablet, 74 percent are engaging in some online or telelearning, and 86 percent have done some schoolwork on the last weekday. Detailed time-use data show most students have established similar daily routines around education, although gender and wealth differences emerge in time spent working and on household tasks. Closure of schools and social isolation are the two main problems students say they face, and while the majority are mostly happy, 16 percent have mental health scores that indicate depression.

Remote-learning, Time-Use, and Mental Health of Ecuadorian High-School Students during the COVID-19 Quarantine[#]

Igor Asanov[a], Francisco Flores[a], David McKenzie[b], Mona Mensmann[c], Mathis Schulte[d]

1. Introduction

More than 1.6 billion students have had their schools close temporarily because of the COVID-19 pandemic, over 91% of total enrolled learners (UNESCO, 2020). This has led school systems around the world to attempt to rapidly transition to remote learning. However, it is unclear how prepared students are to respond to this challenge, and whether a lack of availability of electronic devices and internet connections prevents many students from engaging in remote learning. Even when students do have access, there is little available evidence on how much of their time they will devote to learning. Newspaper reports from U.S. schools report high absence rates for low-income students, with fewer than half of students regularly participating (Goldstein et al, 2020). The concern is that these problems of low access to remote learning technologies and limited attendance may be even greater in developing countries, resulting in limited schooling taking place during school shutdowns.

We examine remote learning of high school students in Ecuador, a country which has suffered one of the worst outbreaks of Coronavirus in the world (Cabrera and Kurmanaev, 2020). Schools in Ecuador were closed on March 13, 2020, and a national lockdown and quarantine period imposed. We began a rapid response phone survey on March 31, 2020 of over 1,500 students who are part of an ongoing evaluation in high schools in the Zone 2 administrative region of the country. Over the month of April we were able to interview 64 percent of our baseline sample, asking them questions about their access and use of remote learning technologies, detailed time-use questions, and questions on their mental health and the main stressors they face because of COVID-19. We then examine heterogeneity in these responses by gender, school grade, wealth quartile, mother's education, ethnicity, province, and internet access.

We find that most students are engaging in remote learning. Access to remote learning technologies are reasonably high, with 74 percent having internet access at home, and 59 percent also having a computer or tablet. Three-quarters of students have done some form of online or tele-educative learning in past week, and 86 percent have done some form of schoolwork. The median student spends 4 hours on schoolwork per day. Gender differences in remote learning are small, with females doing slightly more schoolwork. Female students also do more household tasks than males, while male students are more likely to be working than females. Final year (Grade 12) students spend more time on schooling than younger grades. Students from more disadvantaged

groups – the lowest wealth quartile, indigenous students, students whose mothers have secondary education or lower, and students without internet access - have less access to remote learning technologies, and are less likely to be doing schoolwork. For example, 22 percent of students without internet access did no schoolwork in the past day, compared to 9 percent of those with internet and a computer or tablet. Nevertheless, while these differences exist, the majority of students in the lowest wealth quartile and of those with no internet access are still engaging in remote learning.

In addition to detailed information on remote learning and time use, our surveys directly ask students questions on mental health status, and on how the COVID-19 pandemic is most affecting them. Most students had spent zero hours outside their house in the past day. The majority identify disruptions in schooling as the biggest issue they face because of COVID-19, with feelings of social isolation the next biggest concern. Despite this, more than two-thirds say they were happy most or all of the time during the past month. While the majority appear to be coping, 16 percent have mental health scores that lie below a threshold indicative of major depression. This suggest scope for psychosocial support to supplement remote learning efforts.

The information provided here is, to date, unique in providing detailed time use information and reports directly from students during the COVID-19 pandemic. Less detailed information in other developing countries is being collected from parents or other household adults as part of rapid response household surveys. An early example is provided by Le Nestour et al. (2020) for Senegal, who provide a more pessimistic view of remote learning there: most students were either doing no educational activities, studying alone, or doing exercises given by parents; with fewer than 5 percent doing exercises given by teachers and less than one percent doing online courses. Ecuador therefore provides an example of much more engaged remote learning.

The remainder of the paper is structured as follows: Section 2 provides details of the context and survey methodology; Section 3 summarizes access to and use of remote learning technologies; Section 4 examines time-use; Section 5 mental health; and Section 6 concludes.

2. Context and Sample

The first case of COVID-19 was confirmed in Ecuador on February 29, 2020 (El Comercio, 2020), with the first death occurring March 13 (Reuters, 2020). On this date (March 13), the government

suspended classes at every level of schooling in the country, and stay-at-home orders were issued March 16. This interrupted classes partway through the school year, which was to end in June. Cases continued to rise, and on Monday April 6, the Ministry of Education announced that students would not return to school during the current school year. As of May 4, confirmed COVID-19 cases had reached over 31,000, with 1,564 deaths (Ministerio de Salud Pública, 2020), although these numbers are acknowledged to be undercounts due to a lack of testing (Cabrera and Kurmanaev, 2020).

In partnership with the Ministry of Education of Ecuador, Zone 2 (MINEDUC, Zona 2), we have an ongoing project that aims to teach high school students, in grades 10, 11 and 12, skills relevant for careers in entrepreneurship and science, using an online course called *Showing Life Opportunities* (DOV for the Spanish acronym) that was taught during class time using computers in schools. To be eligible for our project, schools had to have a reliable internet connection and a computer center with enough computers for one class to study. We cover 126 high schools in Zona 2, and more than 80% of students in the targeted grades. Region 2 of Ecuador covers three provinces: Pichincha, a relatively urban province that includes the capital city of Quito, which has the second-highest number of COVID-19 cases in the country (1,732 as of May 4); and two provinces Orellana (39 cases) and Napo (42 cases) that cover the jungle region and have been less directly affected. We randomly selected a sample of 2,412 students from 88 schools to attempt to contact for our phone survey.[1] We used phone contact information that the students had provided for themselves and their parents in our baseline survey, along with additional contact assistance from teachers and the Ministry of Education. Students are 14 to 18 in age, with an average age of 15.9 years.

The phone survey averaged 20 minutes in length, and a team of 9 enumerators carried out an average of 60 surveys a day, commencing on March 31, with a two-day break over Easter (April 12/13). Students were randomly ordered, and our protocol was for an enumerator to make at least three attempts to reach a student, and if unsuccessful, a second enumerator would also make at least three attempts, and if still unsuccessful, the same would be done by a third enumerator. The

---

[1] Our ongoing experiment randomized schools to receive either online entrepreneurial training or online placebo classes in Spanish and English. Our sampling frame for the phone survey consisted of 4,163 students in 177 classes in 88 schools. We stratified sampling by treatment status and class, to sample an equal number of students from both treatment arms and include students from all classes.

survey took place throughout the month of April, interviewing students in weeks 3, 4, 5 and 6 after schools had closed, with final attempts ending May 3. We successfully interviewed 1,552 students for an overall survey response rate of 64.3%. Only 10 students (0.4%) refused the survey, while the rest had phone numbers that were not answered (11.0%), were non-existent (5.4%), or went straight to voicemail (16.8%). Appendix Table 1 compares the characteristics of students who respond to the survey to those who did not. While response rates are lower for those from the bottom wealth quartile, students with less-educated mothers, indigenous students, and students in the two more remote provinces, we still have good coverage of students from all these groups. Nevertheless, we caveat that to the extent that students who do not respond have less technology and are more isolated, we may overstate the share of students who are engaging in remote learning. We see few differences in the characteristics of those students we reach on first attempt, versus those who it took multiple attempts to interview.

3. Access to and Use of Remote Learning Technologies

Table 1 summarizes the remote learning technologies that students have in their homes. Two-thirds of students have a computer or tablet in their home, 74 percent have internet, and 59 percent have both internet and a computer or tablet. An alternative to online learning is educational programs broadcast by television or radio: 92 percent of students have television in their homes, and 59 percent radio. Access varies with socioeconomic level. We measure wealth quartiles on the basis of household assets measured in our baseline survey.[2] Only 57 percent of students in the bottom wealth quartile have internet in their homes, compared to 87 percent of students in the top wealth quartile. Likewise, access is lower for students whose mothers have at most high school education, for students of indigenous ethnicity, and for students from the more remote Napo and Orellana regions.

Table 2 then examines usage of different forms of remote learning. We first asked whether students have used any form of online or tele-educative content in the past seven days, and if so, which platforms they had used. As a check against students giving what they think to be socially desirable answers, we included the name of a made-up platform "*Leer Ahora*" (Read Now). Only 4.7 percent

---

[2] We take quartiles of an asset index formed as the first principal component of the following seven assets measured in our baseline survey: washing machine; air conditioning/dryer; flat screen television; family car; domestic employees; number of bathrooms; number of bedrooms.

of students claim to have used this platform, suggesting a low degree of social desirability bias. To be conservative, we code these students as not using any of the other platforms. We then see that 74 percent of students have used online or tele-educative learning in the past week. Usage of the Ministry of Education's *Educa* platform, which is available online, by television, and by radio, is very low, at only 8 percent. One possibility is that because some of this content is also available on YouTube, some students report this as accessing YouTube and not Educa. Nevertheless, it does at least suggest low brand recognition for the *Educa* content.

The program *Showing Life Opportunities* (DOV for its Spanish acronym) that we had developed for online use in schools was used by 11 percent of students. This usage is relatively organic, since the program itself did not push students to use this content during April. Another online platform, *EdModo* is used by 19 percent. The most common forms of online learning are via YouTube (48 percent) and Google Classroom and Zoom activities carried out by teachers (41 percent).

In addition to asking about this usage in the last seven days, we also asked students whether their teachers had held online classes, sent materials to them, or set homework activities since school had closed. 37 percent of students report online classes, 83 percent have received materials, and 94 percent have been given homework to do.

Gender differences in usage are small, although female students are 5 percentage points more likely to have done some online or telelearning. Students in the final year of school (Grade 12) have received more content from teachers, and are more likely to be doing online learning. This may reflect both a desire from teachers to help them learn as much as possible since they will not be back for another year, as well as pressure on the students to prepare for final year examinations (should they be held).

Disadvantaged groups are less likely to be using remote learning: 64 percent of the lowest wealth quartile have done any online or telelearning, compared to 81 percent in the top quartile. However, one notable feature is that even many students who lack good access have found ways to do some remote learning. For example, 61 percent of students without internet in their homes have done online or telelearning. One way that students have been able to do this is through the use of paid time on smartphones: by paying for some minutes on the phone, some basic social media including one or two hours of YouTube usage are often available for free. Another approach is for teachers

to send homework by email, students to pay for some minutes to download this, and then work remotely and send back an email with this work.

We collected detailed time-use information (described in the next section), which enables us to determine not just whether students are doing any schoolwork, but also how much. Figure 1 provides histograms to show the distribution of time spent on schooling (on weekdays) for students with computers and internet access, compared to those without internet access. For students with technology, the mean (median) time spent on schooling on the past day is 4.4 (4) hours, compared to 3.6 (3.5) hours for those without internet access. However, we note substantial dispersion, with 23 percent of those without internet access doing no schooling, compared to only 9 percent of those with computer and internet access.

Table 3 examines the breakdown of time spent on schooling by different student characteristics. Overall, 14 percent of students did no schoolwork on the past weekday, 42 percent did 0.5 to 4 hours, and 44 percent did more than 4 hours. In addition to formal schooling, students could be pursuing other educational activities, such as reading for fun. However, the last column shows that only 4 percent of students did any reading that was not part of formal schoolwork in the past day. We see Grade 12 students spend more time on schooling than younger grades, and wealthier students spend more time on schooling on average than students from the lowest wealth quartile. However, the amount of time spent on schooling does not differ that much by ethnicity, region, or mother's schooling level – grade, wealth, and technology access appear to be the main correlates of how much schooling students are doing.

4. **Time-Use**

Our surveys took place during a period when schools were closed, and a nationwide shutdown (with exceptions for certain types of workers and businesses) was in place. When asked, 82 percent of students said they had not left their house in the past day. To examine how they spend their time during the shutdown, we used a detailed 24-hour time use questionnaire based on the American Time Use Survey (Bureau of Labor Statistics, 2019). Our module asked the students to recall their activities from 4 a.m. the previous day to 4 a.m. on the interview day. This is recorded in half hour increments, using 24 pre-coded activities developed during pre-testing, plus a code for other activities.

We then examine five main activities: sleeping, working (which includes working in a household business, working in another job for pay, and looking for work), household tasks (meal preparation, cleaning, laundry, grocery shopping and looking after younger siblings), educational activities (reading books and magazines, viewing educational content, learning college options, and doing homework and teacher exercises), and leisure activities (watching tv, playing musical instruments, practicing a hobby or sport, hanging out with friends in person or online, and surfing the internet).

We then plot time-use in these aggregated categories by hour of day, examining how this differs by wealth quartile (Figure 2), gender (Figure 3), and internet access (Figure 4). The y-axis shows the proportion of students engaging in this activity at that time of day, with the range shown differing across activity. For example, 98 percent of students are asleep at 5 a.m, 74 percent at 7:00 a.m, 14 percent at 9:00 a.m, and 1.2 percent at 11:30am; whereas a maximum of 10 percent of students in the lowest wealth quartile are working at 10:30am.

We see that the overall routines in terms of when students do different activities are strikingly similar across wealth, gender, and internet access groups. In particular, the timing of when students do educational activities is similar across these groups. The only slight difference in the timing of activities is that students with internet access and from wealthier quartiles tend to wake up later and go to bed later than those with no internet access and from the lowest wealth quartile, with less time spent on leisure late at night for those in the latter group. For example, 70 percent of students in the lowest wealth quartile are asleep at 10 p.m and 25 percent doing leisure activities, compared to 48 percent asleep and 43 percent doing leisure activities in the top wealth quartile.

We see more differences arise in terms of how large a proportion of students are engaging in education, work, household tasks, and leisure at different times. Time spent on education peaks at 11 or 11:30 a.m for all groups, with a second peak after lunch at around 3 p.m. However, at this peak time, fewer lower wealth students are engaging in schooling than wealthier students, with more working or doing household tasks instead. A similar pattern is seen by access to the internet. One clear gender difference in time usage occurs between work and household tasks – males are more likely to engage in work, and females in household tasks. Males and females are equally likely to be pursuing education in the morning, but in the late afternoon relatively more female students continue schooling as males engage in relatively more leisure activities. In combination

with the gender difference in time spent on household tasks, this may indicate a higher risk of fatigue resulting from home schooling for female students.

A potential concern is that students may start off attempting to carry out educational activities, but that their enthusiasm and usage may wane over time, especially once it becomes clear that they will not be heading back into classrooms this school year. Since we randomly ordered students, the groups of students called in each week are similar, and so we can compare time-use of students interviewed in different weeks. Figure 5 shows that this fear does not appear to have been realized during April (covering weeks 3, 4, 5 and 6 since schools closed). Exactly the same proportions of students are engaged in education at each hour in the morning for each of the four weeks of April, and although there is more variation in the afternoon, it is not the case that the proportion doing schooling falls as the month progresses.

5. Mental Health

The COVID-19 pandemic is likely to both directly cause anxiety to students as they worry about the potential health consequences of its spread, as well as indirectly affect their mental well-being through concerns about family finances, their ability to continue their education, and through social isolation. Giannini (2020) reports that a survey conducted by the United Nations in Thailand found more than 7 in 10 children and young people said the pandemic is causing stress, worry, and anxiety.

Our phone surveys measured mental well-being using the 5-item MHI-5 index of Veit and Ware (1983). This asks students to answer on a five-point scale how often in the past month they have been happy, felt calm and peaceful, been very nervous, felt downhearted and blue, and felt so down in the dumps that nothing could cheer them up. Scores range from 5 to 25, where higher scores indicate better mental health. We follow several studies (Urban Institute, 1999; Yamazaki et al. 2005) in using a cutoff of 17 as an indicator of major depression. We also use the first question from this scale to code a binary indicator of happiness, which takes value one for students who say they were happy all of the time or most of the time.

Table 4 summarizes the levels of indicative depression and happiness overall, and by different student characteristics. We see that 16 percent of students have mental health scores that indicate

major depression, while 68 percent are happy. Although we do not have pre-COVID-19 measures for these same students, this level of depression is substantially higher than the 6.2 percent rate reported by Torres et al. (2017) for first-year university students in Ecuador, suggesting depression rates have increased.[3] There is not a strong wealth difference in depression rates, nor does it vary much with region or internet access. We do see higher levels of depression for females, and for indigenous students. Happiness does have a statistically significant wealth gradient, with students from wealthier households, with internet access, and more educated mothers being more likely to be happy. Mental well-being does not appear to worsen over the month of April as the shutdown persists – Figure 6 shows day-to-day fluctuations, but no strong trends in the proportion of students who are depressed or happy.

In addition to assessing mental health status, we also asked students what they saw as the most major problem of the COVID-19 crisis for them personally. The last three columns of Table 4 show the three of the most common responses: schooling, which half of students see as the main issue, social isolation, which 21 percent list, and concerns around household finances, which 9 percent list. We see school closures are more of a concern for final year (Grade 12) students, but does not otherwise vary a lot in importance with student characteristics. We see socioeconomic variation in the relative importance of household finances (viewed as more of a concern by less wealthy students, and those without internet) compared to social isolation (seen as more of a concern by students with remote learning technology access and with more educated mothers).

6. Conclusions

The majority of Ecuadorian students in our sample have both access to remote learning technologies, and have engaged in remote learning during the COVID-19 school shutdown period. Students and teachers have proved to be adaptive, with even the majority of students without internet access at home managing to take part in some remote learning. However, we do find a minority of students not engaged in any schooling, with this being more prevalent among students from poorer backgrounds. While we do not have data on school attendance in regular times to compare this to, it does raise concerns about widening inequality. In addition, we find about one-sixth of all students to be potentially suffering from depression, suggesting a need for providing

---

[3] We acknowledge that a difference in diagnostic scales and sample populations means that such a comparison should be made with caution, and we include this as suggestive evidence of the base rate only.

psychosocial support services. Finally, a limitation of our phone surveys is that we measure time spent on learning activities, but not how much learning has taken place. Continuing to monitor these students over time to measure learning effects is therefore needed.

References

Bureau of Labor Statistics (2019) *American Time Use Survey Questionnaire 2011-18* https://www.bls.gov/tus/tuquestionnaire.pdf [accessed 30 April, 2020]

Cabrera, José María León and Anatoly Kurmanaev (2020) "Ecuador's Death Toll During Outbreak Is Among the Worst in the World", *New York Times*, April 23, https://www.nytimes.com/2020/04/23/world/americas/ecuador-deaths-coronavirus.html [accessed 28 April, 2020].

El Comercio (2020) "Ministerio de Salud confirma primer caso de coronavirus en Ecuador", https://www.elcomercio.com/actualidad/salud-confirma-primer-caso-coronavirus.html [accessed 29 April, 2020]

Giannini, Stefania (2020) "Prioritize health and well-being now and when schools reopen", UNESCO, April 30, https://en.unesco.org/news/prioritize-health-and-well-being-now-and-when-schools-reopen [accessed 30 April, 2020].

Goldstein, Dana, Adam Popescu and Nikole Hannah-Jones (2020) "As School Moves Online, Many Student Stay Logged Out", *New York Times* April 6, https://www.nytimes.com/2020/04/06/us/coronavirus-schools-attendance-absent.html [accessed 28 April, 2020]

Le Nestour, Alexis, Samba Mbaye, Justin Sandefur, and Laura Moscoviz (2020), "Phone survey on the Covid crisis in Senegal", April 23, "report_ENG_v1.pdf", https://doi.org/10.7910/DVN/9XE95F/95RW9C, Harvard Dataverse, V3.

Ministerio de Salud Pública (2020) "Actualización de casos de coronavirus en Ecuador", https://www.salud.gob.ec/actualizacion-de-casos-de-coronavirus-en-ecuador/ [accessed May 4, 2020]

Reuters (2020) "Ecuador confirma primera muerte por coronavirus", March 13, https://www.infobae.com/america/agencias/2020/03/13/ecuador-confirma-primera-muerte-por-coronavirus/ [accessed 29 April, 2020]

Torres, Claudia, Patricia Otero, Byron Bustamante, Vanessa Blanco, Olga Diaz and Fernando Vázquez (2017) "Mental Health Problems and Related Factors in Ecuadorian College Students", *International Journal of Environmental Research and Public Health* 14(5): 530.

UNESCO (2020) "COVID-19 Educational Disruption and Response", https://en.unesco.org/covid19/educationresponse [Data from April 4, 2020].

Urban Institute (1999) *Snapshots of America's Families: Appendix*, http://www.urban.org/url.cfm?ID=900875 [accessed April 30, 2020]

Veit, Clairice and John Ware (1983) "The structure of psychological distress and wellbeing in general populations", *Journal of Consulting and Clinical Psychology* 51, 730–742.

Yamazaki, Shin, Shunichi Fukuhara, and Joseph Green (2005) "Usefulness of five-item and three-item Mental Health Inventories to screen for depressive symptoms in the general Population of Japan", *Health and Quality of Life Outcomes*, 3/1/48

Figure 1: Heterogeneity in Amount of Time Spent Doing Schoolwork in Past Day by Technology Access
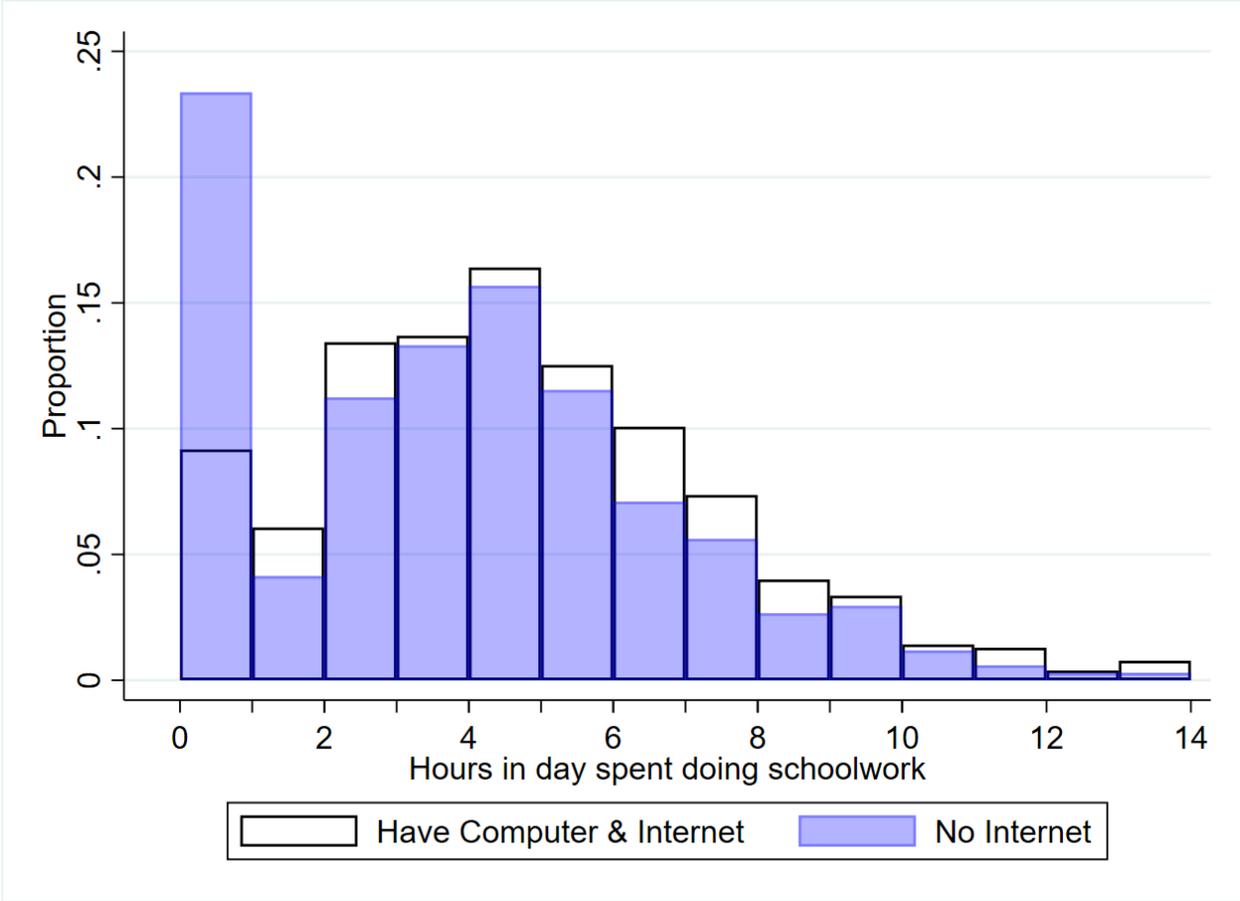
Note: excludes weekends.

Figure 2: Time-Use by Socioeconomic Status and Time of Day
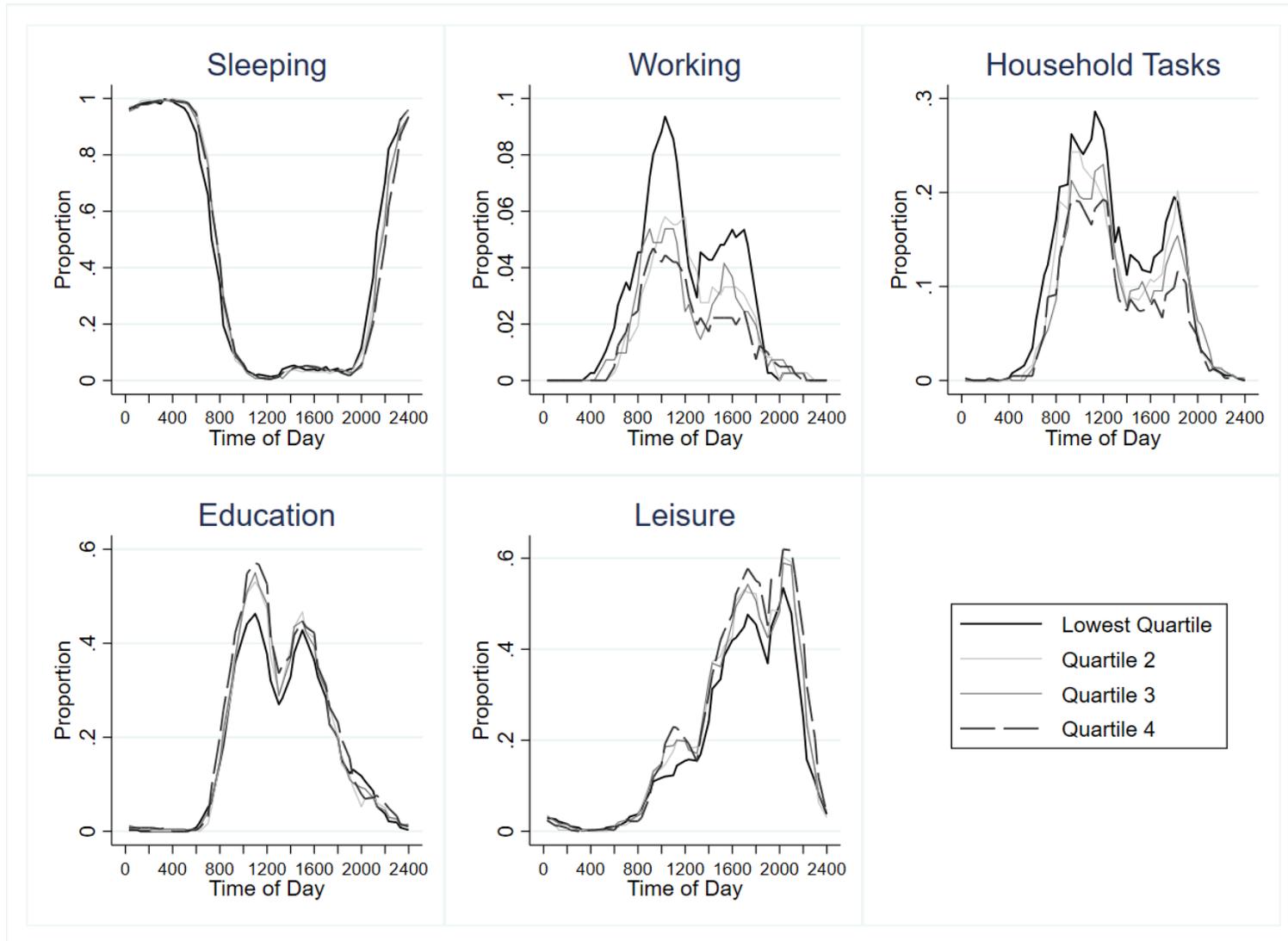
Note: includes weekends

Figure 3: Time-Use by Gender and Time of Day
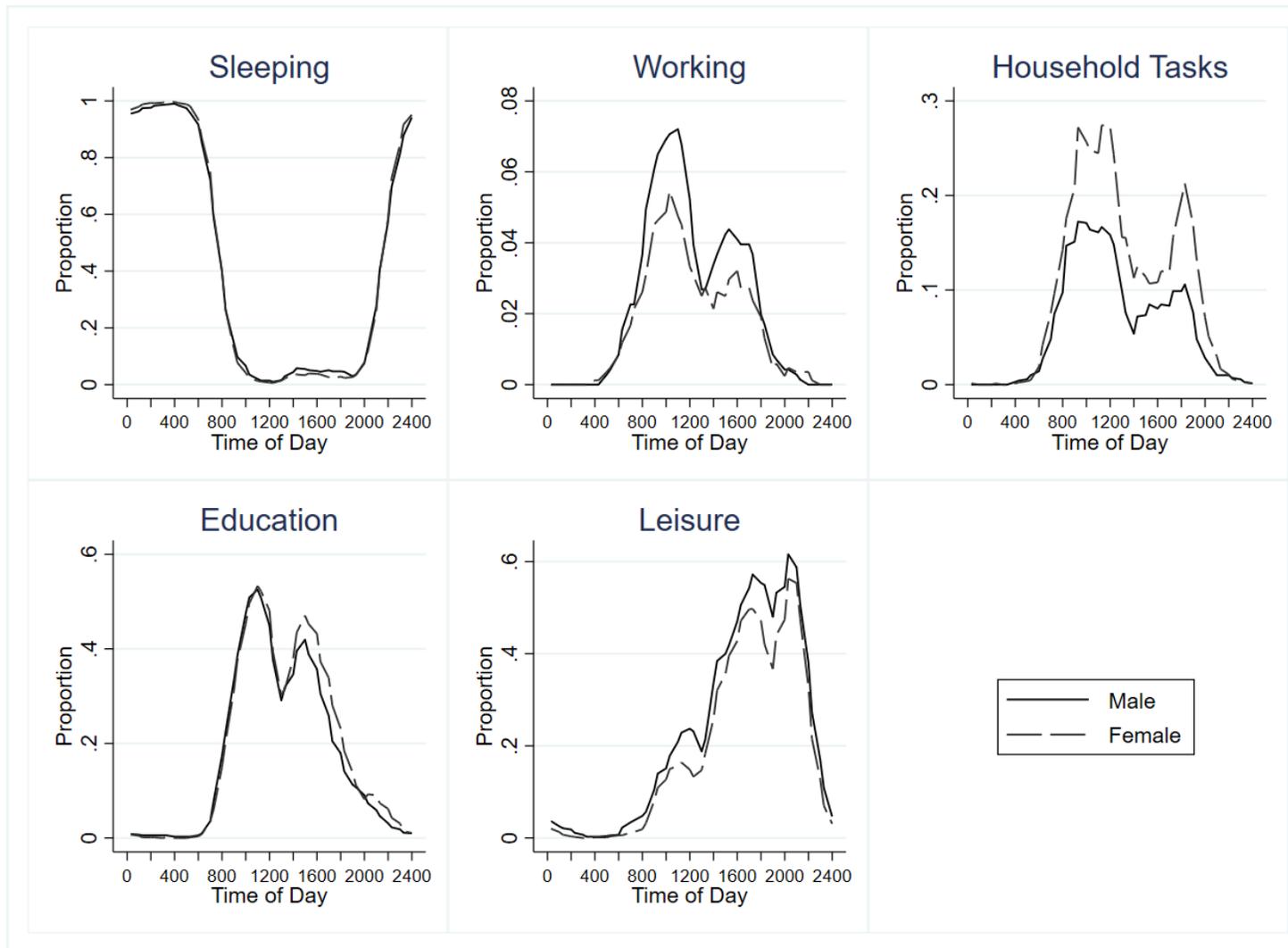
Note: includes weekends.

Figure 4: Time-Use by Internet Access and Time of Day
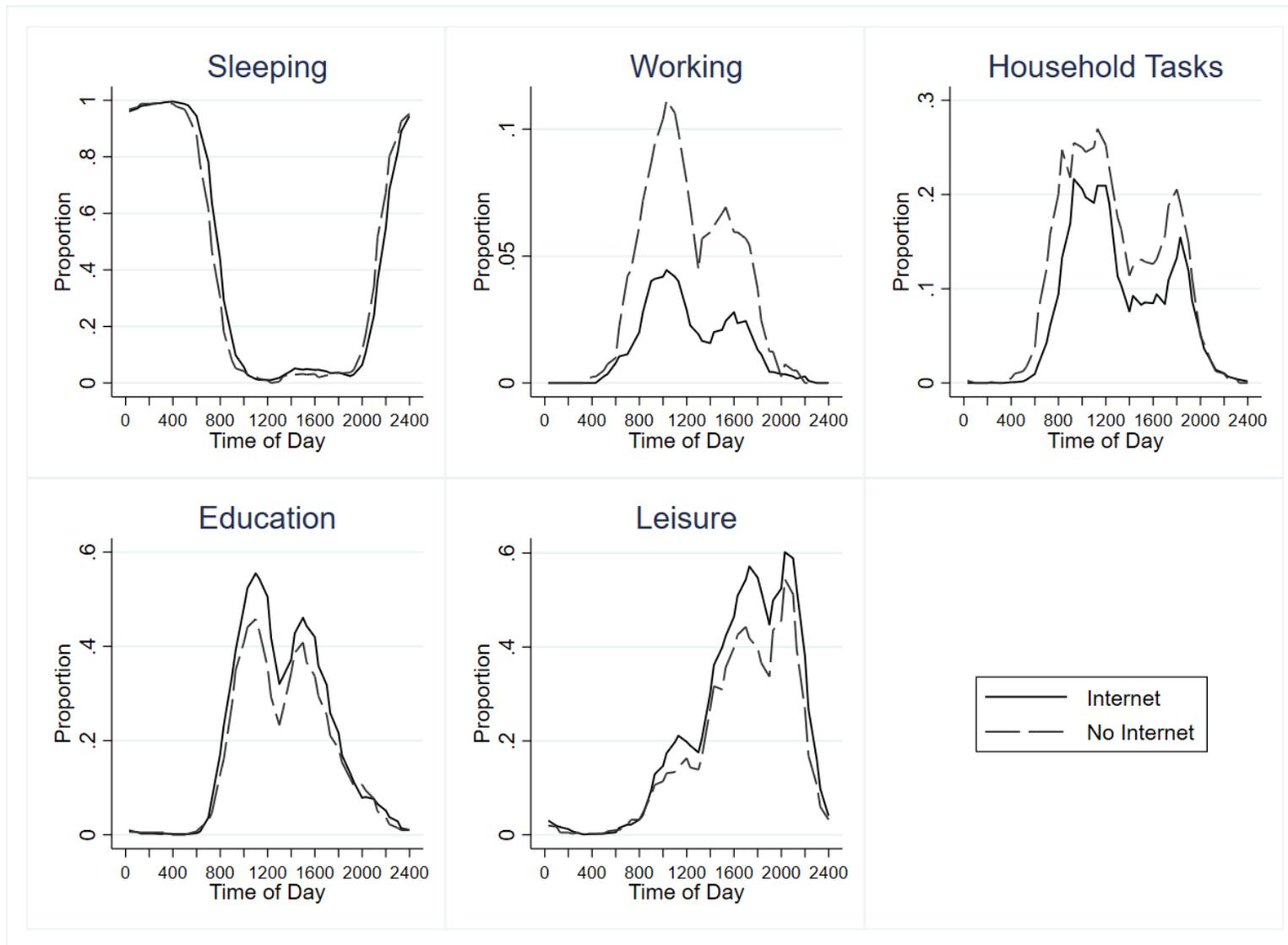
Note: includes weekends

Figure 5: Time-use on education does not fall off dramatically over time
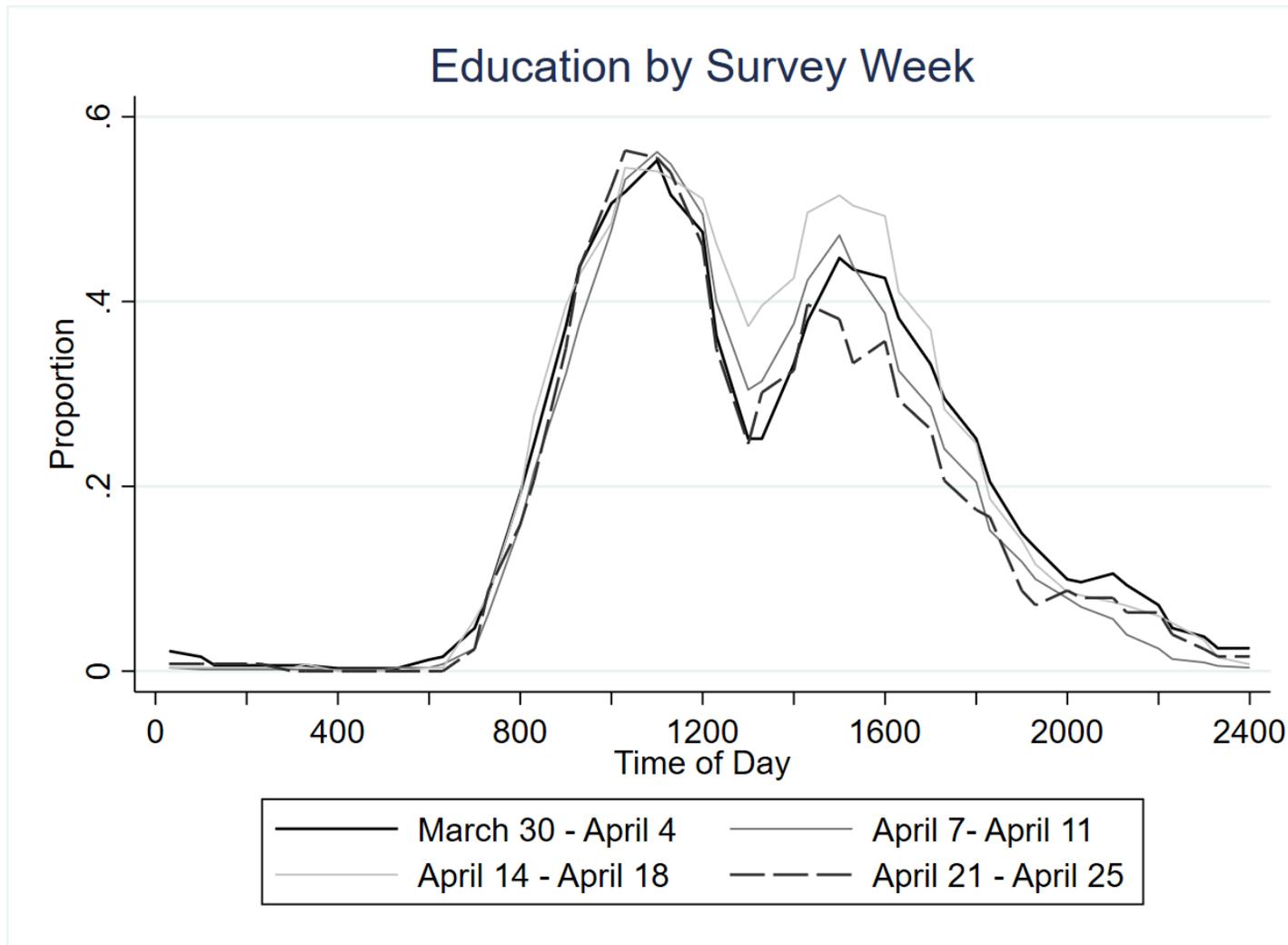
Note: time-use on weekdays only. Students were interviewed in random order, although last week (April 21-April 25) includes fewer students and some students who it took more effort to reach.

Figure 6: Mental health of students does not change much over the month of April
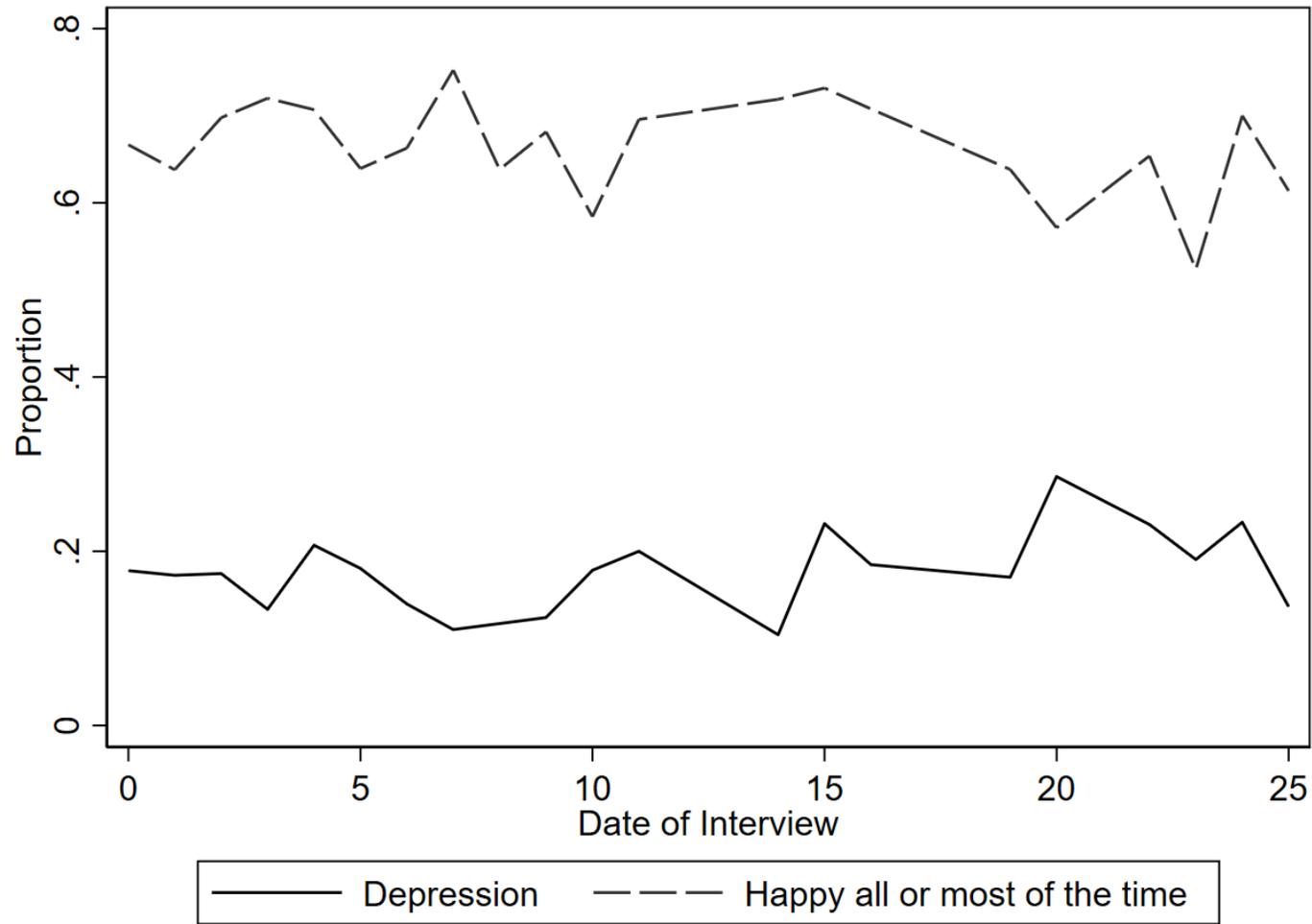
Note: Depression denotes MHI-5 mental health index below 17; Happy all or most of the time denotes the student reporting they had been happy most or all of the time in the last month.

Table 1: Access to Remote Learning Technologies by Student Characteristics

	Sample Size	Computer or Tablet	Internet	TV	Radio	Computer & Internet	p-value
Full Sample	1552	**0.65**	**0.74**	**0.92**	**0.59**	**0.59**	
Males	710	0.65	0.75	0.93	0.62	0.60	0.568
Females	842	0.65	0.73	0.91	0.56	0.58	0.568
Grade 10	545	0.66	0.77	0.93	0.61	0.62	0.072
Grade 11	595	0.60	0.70	0.91	0.56	0.54	0.002
Grade 12	412	0.71	0.77	0.92	0.60	0.62	0.127
Lowest Wealth Quartile	375	0.49	0.57	0.85	0.50	0.39	0.000
Highest Wealth Quartile	405	0.78	0.87	0.97	0.69	0.75	0.000
Mother's Education:high school or less	693	0.53	0.63	0.90	0.57	0.47	0.000
Mother's education:beyond high school	859	0.75	0.82	0.94	0.60	0.69	0.000
Mestizo or White	1306	0.67	0.76	0.93	0.60	0.62	0.000
Indigneous or Other	246	0.52	0.61	0.85	0.53	0.44	0.000
Pichincha	1066	0.71	0.79	0.95	0.67	0.66	0.000
Napo or Orellana	486	0.51	0.62	0.86	0.41	0.44	0.000

Notes:

Columns 2-6 show the proportion of students in this category who have the respective remote learning technology.

Column 7 shows the p-value for testing computer & internet access is equal for this group compared to everyone not in this group.

Table 2: Use of Remote Learning Opportunities by Student Characteristics

	Sample Size	Last Seven Days						Since School Closed Teachers:		
		Any Online or Telelearning	Educa	DOV	YouTube	Google Class/Zoom	EdModo	Held Online Class	Sent Materials	Set Homework
Full Sample	**1552**	**0.74**	**0.08**	**0.11**	**0.48**	**0.41**	**0.19**	**0.37**	**0.83**	**0.94**
Males	710	0.72	0.05	0.10	0.47	0.40	0.17	0.35	0.81	0.93
Females	842	0.77	0.10	0.12	0.48	0.42	0.20	0.39	0.85	0.94
test of gender equality		0.034	0.001	0.197	0.648	0.570	0.088	0.086	0.018	0.273
Grade 10	545	0.72	0.07	0.11	0.44	0.42	0.17	0.36	0.79	0.90
Grade 11	595	0.72	0.08	0.10	0.46	0.35	0.15	0.31	0.84	0.95
Grade 12	412	0.82	0.09	0.12	0.55	0.50	0.26	0.47	0.88	0.96
test of grade equality		0.000	0.473	0.613	0.002	0.000	0.000	0.000	0.001	0.000
Lowest Wealth Quartile	375	0.64	0.07	0.09	0.33	0.29	0.15	0.26	0.77	0.91
Highest Wealth Quartile	405	0.81	0.07	0.12	0.58	0.52	0.21	0.50	0.88	0.97
test of wealth equality		0.000	0.694	0.210	0.000	0.000	0.042	0.000	0.000	0.001
Mother's Education:high school or less	693	0.71	0.07	0.10	0.43	0.34	0.17	0.27	0.80	0.93
Mother's Education:beyond high school	859	0.77	0.08	0.11	0.52	0.47	0.20	0.45	0.86	0.95
test of educational background equality		0.009	0.811	0.727	0.001	0.000	0.247	0.000	0.001	0.128
Mestizo or White	1306	0.75	0.08	0.11	0.50	0.44	0.20	0.39	0.84	0.94
Indingeous or Other	246	0.68	0.05	0.09	0.34	0.28	0.14	0.25	0.76	0.92
test of ethnicity equality		0.022	0.153	0.480	0.000	0.000	0.035	0.000	0.002	0.306
Pichincha	1066	0.76	0.08	0.10	0.52	0.48	0.23	0.42	0.85	0.92
Napo or Orellana	486	0.71	0.07	0.13	0.38	0.27	0.09	0.26	0.79	0.97
test of provincial equality		0.049	0.464	0.048	0.000	0.000	0.000	0.000	0.007	0.000
Have Computer & Internet	914	0.82	0.09	0.13	0.59	0.52	0.23	0.48	0.89	0.96
No Internet	404	0.61	0.05	0.07	0.28	0.22	0.11	0.17	0.73	0.91
test of access equality		0.000	0.014	0.001	0.000	0.000	0.000	0.000	0.000	0.000

Notes:

Educa online and by radio is the platform of the Ministry of Education; **DOV** is Showing Life Opportunities, a platform provided by the authors.

YouTube refers only to educational use of this platform; **Google Class/Zoom** is use of Google Classroom or Zoom; **EdModo** is an online educational platform.

Table 3: Which Students are doing schoolwork?

	Sample Size	No Schoolwork	0.5 to 4 hours	More than 4 hours	Reads
Full Sample	**1320**	**0.14**	**0.42**	**0.44**	**0.04**
Males	611	0.14	0.44	0.42	0.03
Females	709	0.13	0.40	0.46	0.04
test of gender equality		0.659	0.241	0.141	0.491
Grade 10	473	0.18	0.42	0.40	0.05
Grade 11	498	0.13	0.46	0.41	0.02
Grade 12	349	0.09	0.36	0.56	0.03
test of grade equality		0.000	0.016	0.000	0.164
Lowest Wealth Quartile	311	0.19	0.41	0.40	0.05
Highest Wealth Quartile	351	0.09	0.47	0.45	0.04
test of wealth equality		0.000	0.128	0.239	0.605
Mother's Education:high school or less	582	0.16	0.41	0.43	0.04
Mother's education:beyond high school	738	0.12	0.42	0.46	0.03
test of educational equality		0.059	0.789	0.296	0.412
Mestizo or White	1110	0.13	0.42	0.45	0.04
Indigneous or Other	210	0.19	0.41	0.40	0.03
test of ethnicity equality		0.028	0.901	0.162	0.896
Pichincha	915	0.13	0.40	0.47	0.03
Napo or Orellana	405	0.16	0.45	0.39	0.04
test of provincial equality		0.158	0.077	0.006	0.348
Have Computer and Internet	775	0.09	0.42	0.49	0.03
No Internet	340	0.22	0.40	0.38	0.05
test of technology access equality	.	0.000	0.609	0.000	0.126

Note: excludes weekend time-use

Table 4: Mental Well-Being and Main Stressor from COVID-19

	Sample Size	Depression	Happy	School	Finances	Social
Full Sample	**1550**	**0.16**	**0.68**	**0.50**	**0.09**	**0.21**
Males	708	0.13	0.70	0.47	0.09	0.22
Females	842	0.19	0.66	0.52	0.09	0.21
test of gender equality		0.005	0.106	0.053	0.794	0.840
Grade 10	545	0.15	0.71	0.47	0.09	0.22
Grade 11	593	0.17	0.68	0.48	0.10	0.22
Grade 12	412	0.18	0.64	0.57	0.08	0.19
test of grade equality		0.326	0.072	0.002	0.581	0.380
Lowest Wealth Quartile	374	0.18	0.63	0.50	0.12	0.19
Highest Wealth Quartile	405	0.15	0.70	0.47	0.07	0.24
test of wealth equality		0.284	0.054	0.426	0.028	0.153
Mother's Education:high school or less	692	0.18	0.64	0.52	0.10	0.19
Mother's education:beyond high school	858	0.15	0.70	0.48	0.08	0.23
test of educational equality		0.240	0.011	0.092	0.108	0.019
Mestizo or White	1306	0.16	0.69	0.50	0.09	0.22
Indingneous or Other	244	0.21	0.61	0.50	0.09	0.18
test of ethnicity equality		0.051	0.016	0.921	0.788	0.245
Pichincha	1066	0.15	0.69	0.50	0.08	0.22
Napo or Orellana	484	0.18	0.65	0.50	0.10	0.19
test of provincial equality		0.167	0.141	0.904	0.278	0.156
Have Computer and Internet	914	0.16	0.70	0.49	0.07	0.23
No Internet	404	0.18	0.61	0.52	0.14	0.17
test of technology access equality		0.321	0.002	0.308	0.000	0.015

Notes:

Depression denotes MHI-5 score below 17; **Happy** denotes happy most or all of the time; **School, Finances** and **Social** denote student names this as the main problem they personally face from COVID-19.

Appendix Table 1: Baseline Characteristics by Survey Response Status

	Answer Survey	Don't Answer	p-value	First Response	Multiple Attempts	p-value
Male	0.46	0.49	0.131	0.46	0.46	0.786
Female	0.54	0.51	0.131	0.55	0.54	0.786
Age	15.9	15.9	0.757	15.9	15.9	0.247
Lowest Wealth Quartile	0.24	0.32	0.000	0.23	0.27	0.058
Second Wealth Quartile	0.23	0.23	0.867	0.24	0.21	0.175
Third Wealth Quartile	0.26	0.23	0.042	0.27	0.24	0.215
Top Wealth Quartile	0.26	0.23	0.063	0.26	0.27	0.480
Mother's education: high school or less	0.45	0.51	0.005	0.45	0.45	0.963
Mother's education: beyond high school	0.55	0.49	0.005	0.55	0.55	0.963
Mestizo or White ethnicity	0.84	0.74	0.000	0.85	0.83	0.247
Indigenous/Afro-Ecuadorian/Montubio/Mulatto/Other	0.16	0.26	0.000	0.15	0.18	0.247
Pichincha Province	0.69	0.56	0.000	0.71	0.64	0.012
Napo Province	0.1	0.16	0.000	0.09	0.12	0.166
Orellana Province	0.21	0.28	0.000	0.20	0.24	0.066
Student has phone number in baseline	0.78	0.78	0.600	0.79	0.77	0.223
Father has phone number in baseline	0.14	0.17	0.187	0.14	0.15	0.874
Mother has phone number in baseline	0.18	0.15	0.108	0.18	0.19	0.732
Grade 10	0.35	0.43	0.000	0.36	0.34	0.669
Grade 11	0.38	0.36	0.266	0.38	0.38	0.927
Grade 12	0.27	0.21	0.002	0.26	0.28	0.574
Only speaks native language	0.06	0.05	0.313	0.06	0.05	0.196
Sample Size	**1552**	**860**		**1083**	**469**	