

Internet Access and Youth's Mental Health and Well-being: Evidence from Ethiopia

Pulse of Progress: Harnessing High-Frequency Survey Data for Development Research in the Polycrisis Era 2024

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Ensure healthy lives and promote well-being for all at all ages



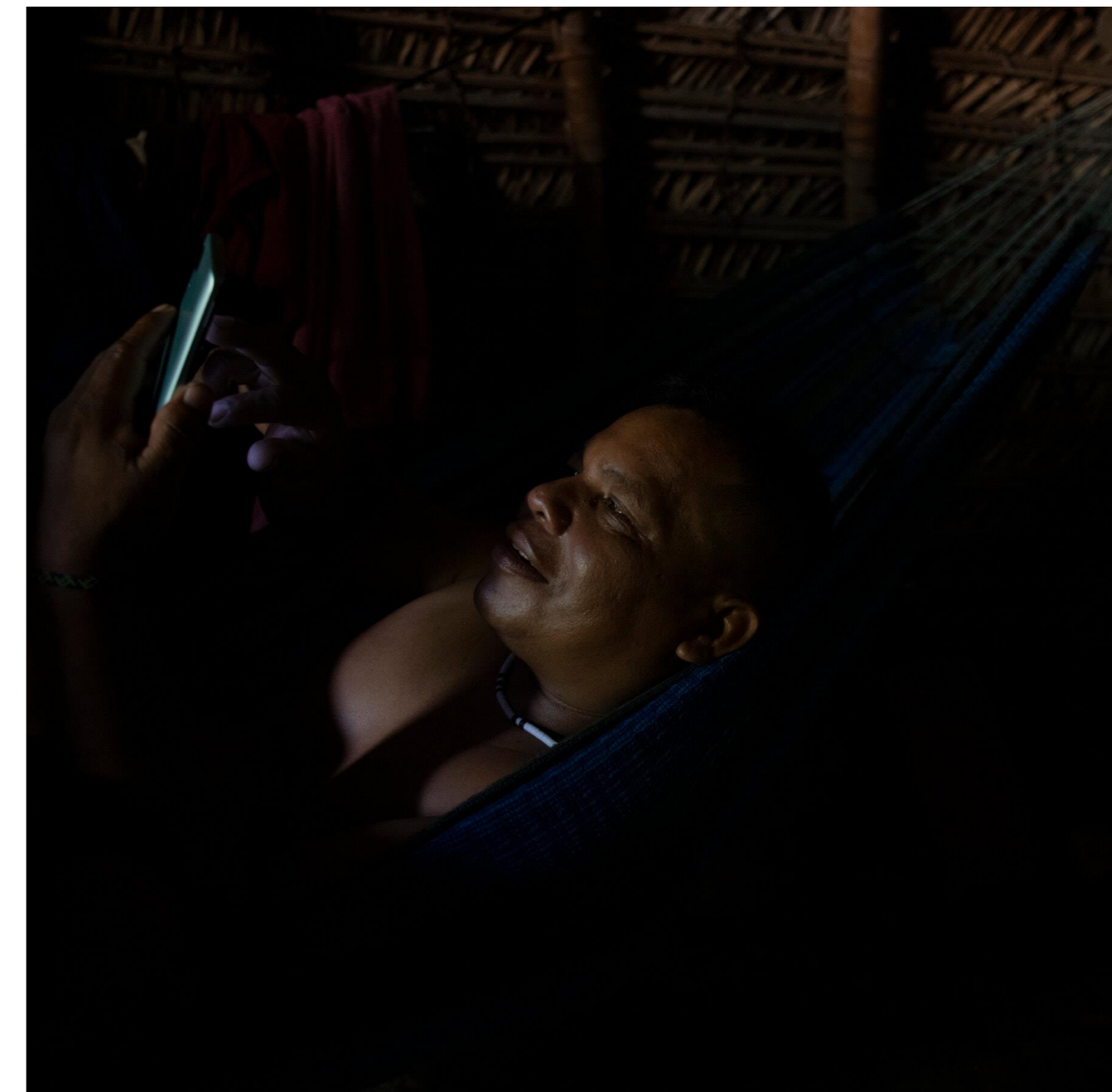
Reduce inequality within and among countries

Structure



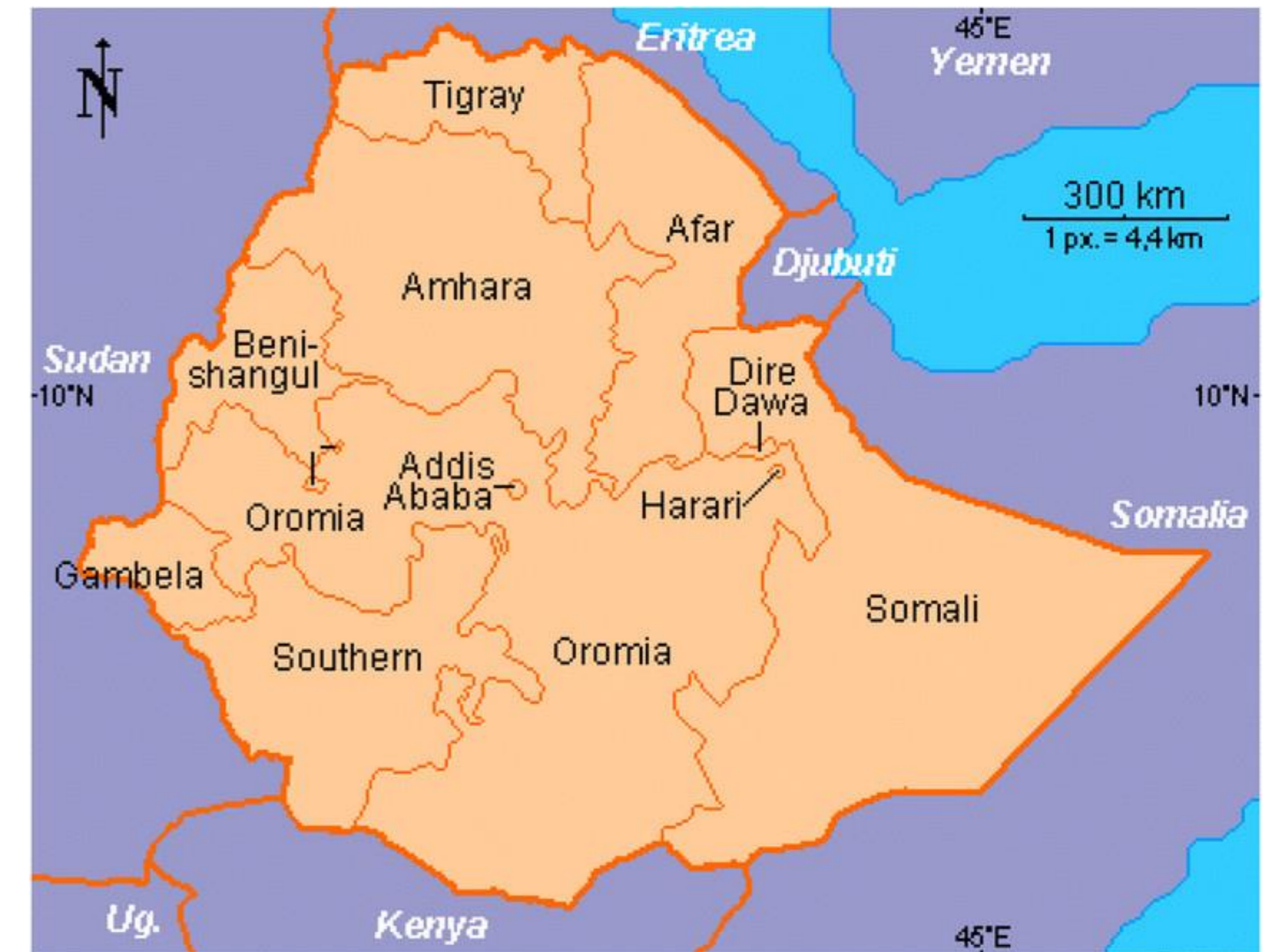
Case

- Global universal connectivity, closing digital divides.
- Apparently one-sided positive evidence (Goggin & McLelland, 2017).
 - Growth (Bertschek et al. 2015).
 - Employment, labor mobility, political participation.
- Lack of comprehensive studies on the negative effects.
 - Social capital, political, conflicts.
 - Mainly in developed countries.
 - Data issues (Galperin & Viacens, 2017).



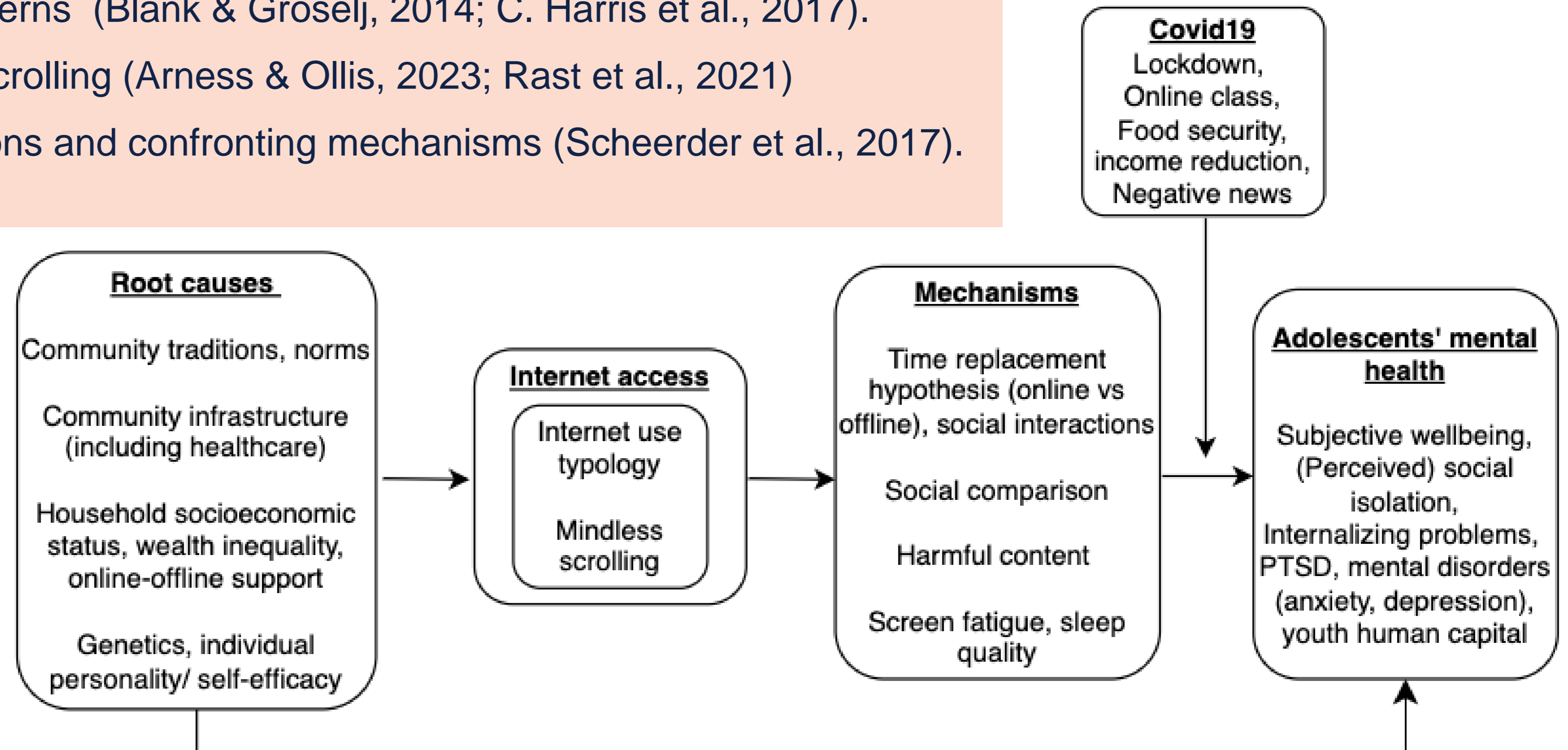
Context: Ethiopia

- Low-income countries.
- Mobile internet diffusion since 2018.
- Most use for social media, entertainment, and news (Adam et al., 2024).
- For social media, top use motivations (Adam et al., 2024; Haile, 2024):
 - Escapism (using digital media to fill spare time),
 - Exchanging ideas with friends,
 - Knowing about other people,
 - Besides acquiring information.



Literature: technology and development

- **Youth's internet use and mental health problems:** rising trend.
 - Tech-savvy and vulnerability.
 - Constrain human development beyond adolescence (UN, 2023; UNDP, 2022).
- **The influence of relative poverty and inequality.**
 - SES and internet use patterns (Blank & Groselj, 2014; C. Harris et al., 2017).
 - Passive use – mindless scrolling (Arness & Ollis, 2023; Rast et al., 2021)
 - Reinforced by offline options and confronting mechanisms (Scheerder et al., 2017).



Data & Methodology

- **Oxford Young Lives (YL):** longitudinal since 2002.
- Round 6 between **2020 and 2021:**
 - Phone survey.
 - Call 2 and Call 5.
- Subjective well-being (SWB).
- Symptoms of
 - Anxiety - Generalized Anxiety Disorder-7 (GAD-7)
 - Depression - Patient Health Questionnaire depression scale-8 (PHQ-8).
- Household internet access.
- Wealth index.

FE - IV

$$Y_{it} = \beta_0 + \beta_1 \text{Internet}_{it} + X_{it} + \mu_i + \phi_t + \epsilon_{it}$$

- **IV: regional or local average internet access** (Hartje & Hubler, 2017; Ma & Sheng, 2023; Rotondi et al., 2017).
 - Network effect arguments
 - Reasonably exogenous, conditional on individual, household, and community controls

$$\text{Internet}_{it} = \delta_0 + \delta_1 \text{Community}_{jt} + X_{it} + \eta_i + \theta_t + \nu_{it}$$

Findings

Table 2: Internet and adolescents' mental health problems and subjective well-being

	Subjective well-being			GAD-7		PHQ-8	
	(1) FE	(2) FE-IV		(3) FE	(4) FE-IV	(5) FE	(6) FE-IV
Internet	0.109 (0.104)	-1.723*** (0.557)		0.719*** (0.267)	9.310*** (1.603)	0.668*** (0.254)	8.338*** (1.486)
<i>1st-stage Community internet</i>			0.941*** (0.132)				
(Believed) infected	0.176 (0.263)	0.474** (0.234)	0.341* (0.204)	2.731 (1.972)	3.200 (3.188)	0.108 (0.651)	-1.528 (1.604)
Income decreases	-0.057 (0.0905)	-0.0818 (0.116)	-0.006 (0.0245)	0.518*** (0.176)	0.937*** (0.290)	0.370** (0.167)	0.744*** (0.272)
Run out of food	0.302** (0.149)	0.211 (0.189)	0.0470 (0.039)	0.110 (0.186)	0.740** (0.373)	0.339 (0.209)	0.780** (0.377)
Constant	4.463*** (0.0713)			1.113*** (0.160)			1.129*** (0.153)
Observations	2272	1846	1846	2262	1836	2266	1840
Individual FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Call FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
R^2	0.643			0.589		0.613	
Adjusted R^2	0.284			0.175		0.223	
F-statistic		50.59	50.59		50.16		50.60

Findings

Table 3: Broader impacts on other human capital-related variables

	(1) (Perceived) study time	(2) Want to go back to education
Internet	-0.205*** (0.0750)	-0.225** (0.0927)
(Believed) infected	0.287* (0.166)	0.272*** (0.0506)
Income decreases	-0.0554** (0.0258)	-0.109*** (0.0256)
Run out of food	-0.0298 (0.0289)	-0.188*** (0.0397)
Observations	1370	1162
Control	Yes	Yes
F-statistic	184.21	121.15

Robustness tests

- **DiD-PSM.**
- **Regional 3G cell towers counts** (OpenCellID data) **as IV**, cross-sectional analysis.
- **Time-variant community controls.**
 - Community wealth.
 - Rates of Covid-19 impacts.
- **Lag dependent variable.**

Heterogeneity

Table 4: Heterogeneity of effects of internet on mental health by SES

	SWB		GAD-7		PHQ-8	
	(1) Lower	(2) Higher	(3) Lower	(4) Higher	(5) Lower	(6) Higher
Wealth index						
Internet	-1.583 (1.058)	-1.589*** (0.584)	14.070*** (4.203)	6.608*** (1.316)	12.860*** (3.818)	5.579*** (1.195)
(Believed) infected	0.360*** (0.119)	0.543 (0.374)	6.737*** (1.189)	0.845 (3.836)	-0.197 (1.185)	-1.658 (1.424)
Income decreases	-0.005 (0.163)	-0.173 (0.167)	1.100** (0.554)	0.876** (0.369)	0.882* (0.507)	0.721** (0.345)
Run out of food	0.497* (0.293)	0.028 (0.246)	0.522 (0.699)	0.917* (0.477)	0.377 (0.681)	1.000** (0.466)
Observations	902	868	898	862	902	868
Individual, Call FEs	Yes	Yes	Yes	Yes	Yes	Yes
Kleibergen-Paap Wald F-statistic	15.19	38.24	16.38	37.77	15.19	38.24

Notes: Effects of internet access by wealth groups. FE-IV estimates with individual, community, and call fixed effects. The instrument is the proportion of households in a community getting access to the internet. Each column reports estimated effects of internet access on mental health problem indicators: GAD-7: Generalized Anxiety Disorder-7; PHQ-8: Patient Health Questionnaire-8. Well-being is subjective well-being, with a range between 1 (low well-being) and 9 (high well-being). The critical value of the Stock-Yogo test with 10% tolerance is 16.38. Robust standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Mechanisms

Table 5: Internet access and suggestive mechanisms

	Time doing nothing			Meeting friends			Time HH chores		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Wealth	All	Low	High	All	Low	High	All	Low	High
Internet	0.148* (0.0777)	0.329** (0.142)	0.147 (0.151)	-0.482*** (0.0951)	-0.566** (0.265)	-0.602** (0.251)	-0.0178 (0.0823)	-0.0392 (0.210)	0.0783 (0.189)
Observations	1418	454	435	1354	431	421	1419	454	435
Controls	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
F stat.	179.55	38.79	41.58	186.38	40.34	34.74	179.55	38.79	41.58

Notes: Samples include children in Call 2 due to data availability. IV estimates, the instrument is the proportion of households in a community getting access to the internet. Each column reports estimated effects of internet access on the likelihood having spent more time on doing nothing. Covariates: perceived wealth levels, household size, gender, (believed to be) infected by COVID-19, negative income shocks, run out of food, urban. F-statistic is the Kleibergen-Paap rk Wald F-statistic. The critical value of the Stock-Yogo test with 10% tolerance is 16.38. Robust standard errors in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Conclusions & Implications

- Among the earliest evidence for low-income country context.
- Unequal effects.
 - The dark side of internet.
 - The worsening inequality trend beyond access to use quality and outcomes

=> the reinforcement of existing social inequalities.
- Internet use pattern mechanisms.

- A global epidemic of mental disorders of the younger generations (Østergaard, 2017) if no interventions are made.
- Campaigns to increase awareness of the harms and dangers of the digital space
 - Even before internet's reach (Hosman, 2024).
- To implement coping strategies (Scheerder et al., 2017).
- Break the vicious cycle between mental illnesses and inequality
 - Mobile digital health care: outreach and affordability.
 - Education, resources.
- Explicitly mechanisms.

Thank you!

Selected literature

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