Does the Internet Accessibility Improve Student's Ability?

Pol De Santaló & Yumi Komai

December 2, 2016

Outline

Introduction

Figure 1

Research Question and Hypothesis

Reserch Question

- The aim of our research is to analyse if there is a significant impact on students ability made by the Internet accecibility.

Hypothesis

- The hypothesis of our research is that Internet accessibility is likely to have a substantial impact, both positive and negative, on the students ability.

Data Sources

World DataBank

- Collections of time series data on a variety of topics.

OECD(Programme for International Student Assessment (PISA))

- Triennial international survey which aims to evaluate education systems worldwide by testing the skills and knowledge of 15-year-old students.

Methodology

Dependent Variables

Variable Name	Description
math	Mathmatics mean score(2012)
reading	Readind mean score(2012)
ps	Prolem Solving mean score(2012)

Methodology

Indivendent Variables

Variable Name	Description
GDPperc	GDP per Capita (current US$)
expend	Government expenditure on education, total (% of GDP)
pop	Population, total
popd	Population density (people per sq. km of land area)
rteacher	Primary school pupil-teacher ratio
eyear	Compulsory education years in primary school
internet	Internet users (per 100 people).
mobile	Mobile cellular subscriptions (per 100 people)

Methodology

Descriptive Statistics

Table: Summary statistics of the variables

Statistic	N	Mean	St. Dev.	Min	Max
math	63	469.743	52.225	368.103	573.468
reading	63	471.675	45.780	384.151	544.600
ps	42	485.544	44.181	399.166	562.421
GDPperc	63	32,608.030	29,376.850	1,754.548	149,160.800
pop	63	36,014,700.000	60,090,250.000	36,791	314,102,623
popd	63	635.244	2,625.005	2.959	18,654.280
rteacher	51	15.061	4.335	7.444	28.016
eyear	62	10.226	1.750	6	14
expend	39	4.897	1.270	2.922	7.656
internet	63	66.580	18.362	14.520	96.210
mobile	63	128.770	33.182	79.568	289.782

Analysis

Regression Result

Table:Detarminants of Student's Ability

	Dependent variable:					
	math		reading		ps	
	(1)	(2)	(3)	(4)	(5)	(6)
log(GDPperc)	22.703**	-7.883	20.996**	-2.677	29.944***	16.218*
	(9.524)	(10.680)	(7.897)	(9.208)	(7.404)	(8.606)
log(pop)	7.587	11.018**	7.920	10.655**	10.372**	8.667*
	(6.643)	(5.264)	(5.508)	(4.538)	(4.617)	(4.288)
popd	0.005	0.003	0.003	0.002	0.003	0.003
	(0.003)	(0.004)	(0.002)	(0.003)	(0.002)	(0.002)
rteacher	-4.035	-0.956	-2.788	-0.350	-3.424**	-1.065
	(2.616)	(2.173)	(2.169)	(1.873)	(1.530)	(1.667)
eyear	-8.544	-7.042	-7.206	-5.995	-16.169***	-11.386**
	(5.699)	(4.473)	(4.725)	(3.857)	(4.192)	(4.211)
expend	11.785	-2.215	13.659**	2.736	4.506	-2.768
	(7.097)	(6.412)	(5.884)	(5.528)	(5.686)	(5.851)
internet		2.522***		1.960***		1.561**
		(0.602)		(0.519)		(0.625)
mobile		0.452		0.383		0.125
		(0.319)		(0.275)		(0.223)
(intercept)	216.904	240.336	187.641	198.843	214.289*	201.180*
	(156.559)	(143.650)	(129.802)	(123.845)	(101.400)	(104.076)
Observations	34	34	34	34	23	23
R^2	0.451	0.690	0.463	0.673	0.760	0.834
Adjusted R^2	0.328	0.591	0.343	0.568	0.670	0.740
Residual Std. Error	45.818 (df = 27)	35.750 (df = 25)	37.987 (df = 27)	30.822 (df = 25)	24.438 (df = 16)	21.703 (df = 14)
F Statistic	3.689*** (df = 6; 27)	6.963*** (df = 8; 25)	3.877*** (df = 6; 27)	6.419*** (df = 8; 25)	8.445*** (df = 6; 16)	8.817*** (df = 8; 14)
Note:						*p<0.1; **p<0.05; ***p<0.01

Analysis

Variance Inflation Factors

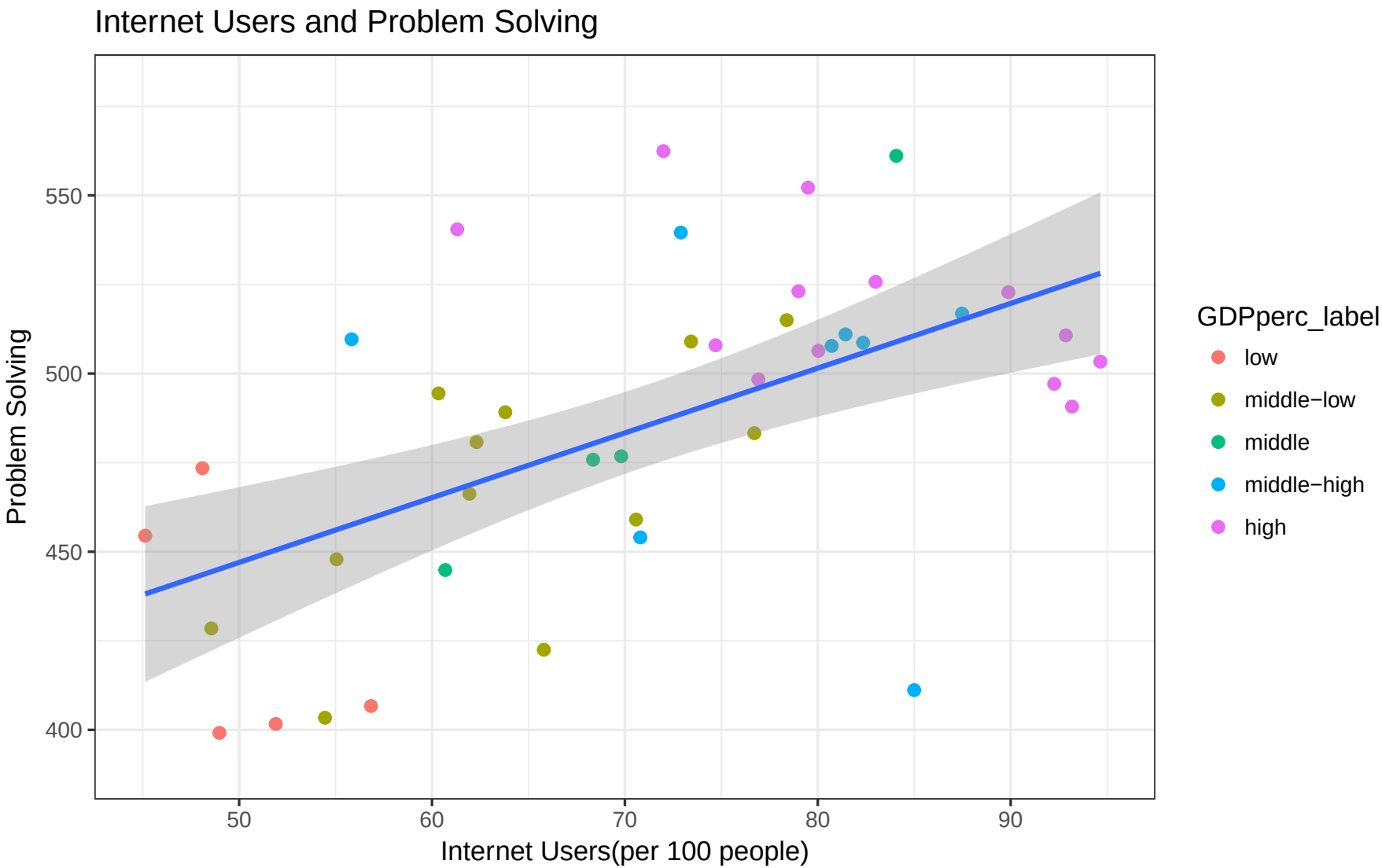
Math,Reading, and Problem Solving

	log(GDPperc)	log(pop)	popd	rteacher	eyear	expend	internet	mobile
math.....:	4.999	1.7291	4.7178	1.9115	1.1131	1.3631	4.8869	4.0276

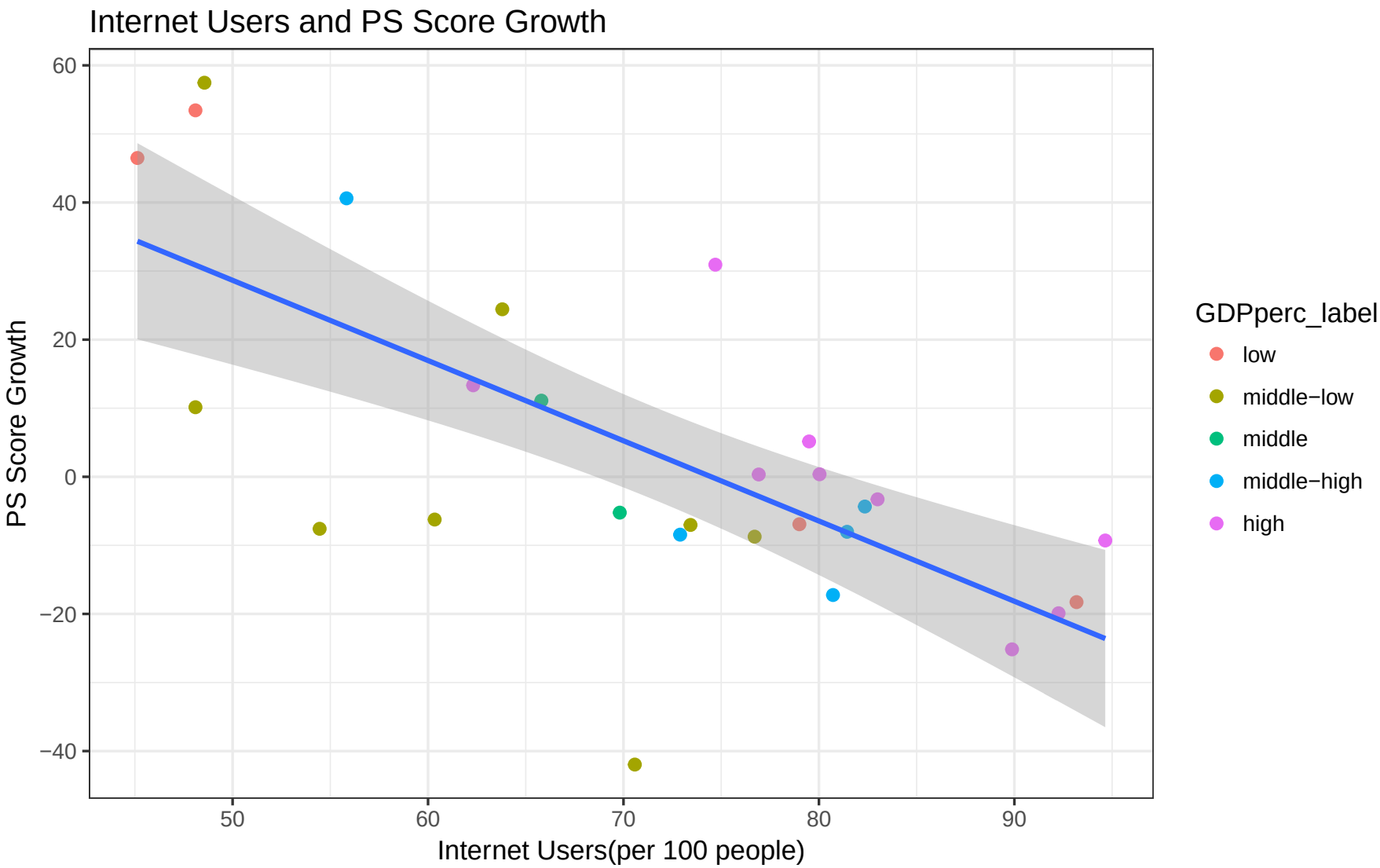
	log(GDPperc)	log(pop)	popd	rteacher	eyear	expend	internet	mobile
reading.....:	4.999	1.7291	4.7178	1.9115	1.1131	1.3631	4.8869	4.0276

	log(GDPperc)	log(pop)	popd	rteacher	eyear	expend	internet	mobile
problem solving:	7.5227	2.2216	8.105	1.9379	1.5365	2.043	6.6167	4.6245

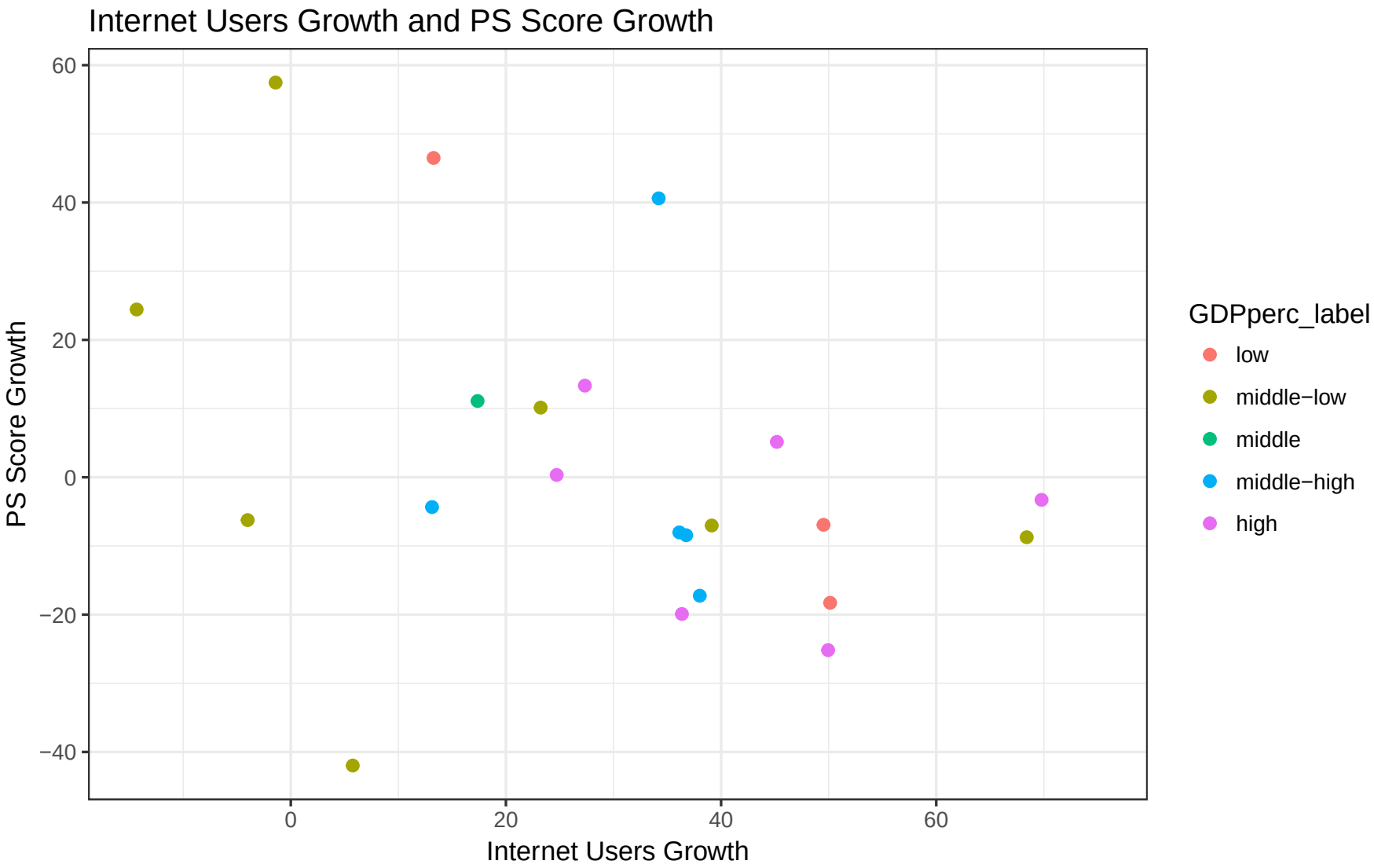
Analysis of Problem Solving



Analysis of Score Growth



Analysis of Score Growth



Findings and Limitations

Findings

- Internet accessiblity could have a strong impact on student's ability.
- However, the impact could be weaker on problem solving ability than academic ability.

Limitations

- Small sample size
- Available data limitation

Questions?