Are You Current with the Current?

THE IMPACT OF EDUCATION ON WILLINGNESS TO PAY FOR A CLEAN RIVER

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Background

- Monetarily quantifying one's desire for clean water is difficult to accomplish but is often attempted through survey methods
- Examples of similar studies:
  - Calcutta, India – identify income as primary influencer
  - Haiti – income and education
  - Southern Cambodia – people thought their water was drinkable

River in Question: The Danda

- Important river that runs through the urban city of Siddharthanagar, Nepal
- The quality of the river has been decreasing over the past several years
  - Industrial/Agricultural runoff
  - Household sewage disposal
  - Unplanned waste management practices

Local Attitude and the Benefits of a Cleaner River

- Locally, the general consensus is that changes must be made to improve the river quality
  - Econ Club at the PNMHI, focusing on water quality and other aspects of the river system

- Improvements to the river system open the door to new possibilities
  - Recreational and commercial use of the river

Research Question & Hypothesis

- Research question:
  - Does education level affect one's willingness to pay for a clean river?
- Hypothesis:
  - As education increases, one's willingness to pay to improve the Danda river will also increase

Data Overview

- A survey was conducted by the Nepal Study Center during the summer of 2016
  - Danda Ecosystem
  - Pollution
  - Public Health

- Study Site
  - Siddarthanagar – Urban Area
  - Basantapur – Rural Area
  - Bagaha – Rural Area
- June 2016 – July 2016

*Source: Nepal Study Center, UNM, Summer 2016

- Total Sample
  - 748
  - Urban: 570
  - Rural: 178
- Sampling Procedure
  - Proportional sample based off of ward population size

Variables: Willingness to Pay

Variable	Definition	Mean	Standard Deviation
WTPWater	Monetary value, in rupees, respondents are willing to contribute to implement water clean-up program in	323.5735	558.5056
PaidWTP	WTPWater excluding those not willing to pay	366.7167	581.1513
lnWTP	Natural log WTPWater +1	5.334214	1.030407

Variables: Education

Variable	Definition	Mean	Standard Deviation
Education Level	Education categorized into: 10th grade or less completed and higher than 10th grade completed (higher education)	.3206442	.467063
Composite Knowledge Index	Knowledge index from 1-8 including scientific health knowledge and general health knowledge	5.473708	1.559583

Variables: Control and Other Factors

Variables	Definition	Mean	Standard Deviation
Urban	Respondents in the Siddharthanagar municipality	.762021	.4261243
Caste	Caste categorized into Brahman and other	.1457219	.3530633
Income Quintile	Index from 1-5 based on income and assets	2.997326	1.414211
Age	Age of respondents	40.78032	14.99444

Methodology & Empirical Model

- Methodology:
  - Ordinary Least Squares Regression
- Models

1. $lnWTP = \alpha_0 + \alpha_1 EducationLevel + \mu_1$
2. $lnWTP = \beta_0 + \beta_1 EducationLevel + \beta_2 IncomeQuintile + \mu_2$
3. $lnWTP = \Delta_0 + \Delta_1 EducationLevel + \Delta_2 IncomeQuintile + \Delta_3 Urban + \Delta_4 Caste + \Delta_5 Composite\ Knowledge\ Index + \Delta_6 Age + \mu_3$

OLS Estimates of Willingness to Pay Model

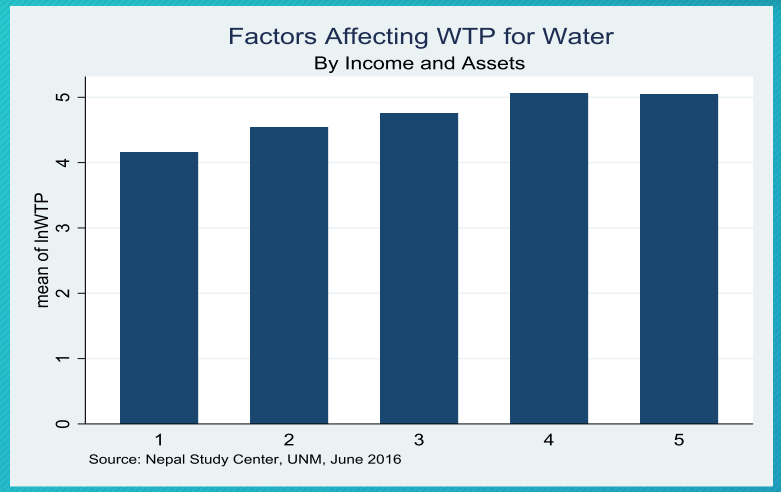
Factors affecting willingness to pay for water

VARIABLES	(1) Multivariate Model 1	(2) Multivariate Model 2	(3) Multivariate Model 3
Education Level	0.498***	0.369**	0.244
	(0.161)	(0.165)	(0.172)
IncomeQuintile		0.171***	0.169***
		(0.054)	(0.060)
CompositeKnowledgeIndex1			0.030
			(0.051)
Caste			-0.031
			(0.217)
Age			-0.012**
			(0.005)
Urban			0.181
			(0.183)
Constant	4.605***	4.121***	4.359***
	(0.091)	(0.179)	(0.356)
Observations	683	683	683
R-squared	0.014	0.028	0.037
R-Squared2	0.0139	0.0280	0.0373
Adjusted-R2	0.0124	0.0251	0.0288
F-Sat	9.593	9.791	4.371
n	683	683	683

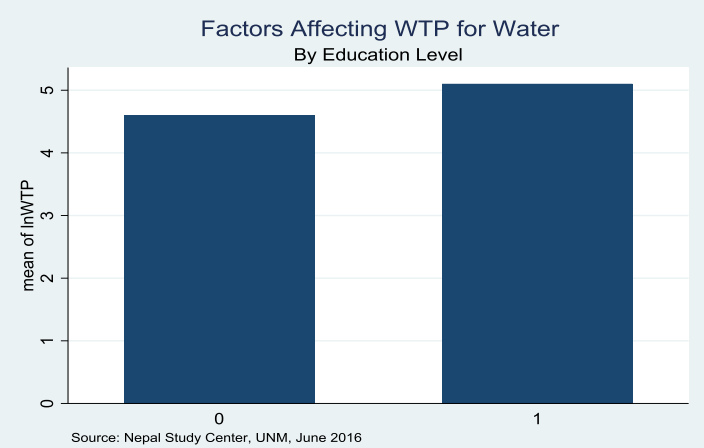
Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Willingness to Pay by Income and Assets



Willingness to Pay by Education Level



Conclusion

- When more variables are accounted for, Education is no longer significant
  - But, it does increase the amount of variation for which the models account
- A higher education level leads to a higher income thus increasing one's willingness to pay for a cleaner Danda River
  - Further research would need to be performed to conclude this

Future Recommendations

- Educate school children about the importance of clean water
- Inform children and students of the issues involving the Danda River
- Specifically target students in primary schools when they are more easily influenced in their ideals
  - Continue to reintroduce these ideas as they progress through school through spiral curriculums
- Field trips to PNMHI to get kids interested in the work of the Eco club

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