

Working Paper Questionnaire No. 7

Name of Paper: Valuation of Urban Air Pollution: A Case Study of Kanpur City in India, by Usha Gupta, SANDEE Working Paper No. 17-06

Abstract:

This study estimates the monetary benefits to individuals from health damages avoided as a result on reductions in air pollution in the urban industrial city of Kanpur in India. A notable feature of this study is that it uses data from weekly health-diaries collected for three seasons. For measuring monetary benefits, the study considers two major components of health cost — the loss in wages due to workdays lost and the expenditure incurred on mitigating activities. The study estimates that a representative individual from Kanpur would gain Rs 165 per year if air pollution was reduced to a safe level. The extrapolated annual benefits for the entire population in the city are Rs 213 million.

Key words: Air Pollution, Health Damages, Mitigating Activities, Health-diary, Panel Data, Health Production Function

Date of Survey: (dd/m/yr –dd/m/yr)

January 2004 to September 2004. (18 weeks' health diary). Winter: 5.1.04-15.2.04; Summer: 10.5.'04-20.6.04; Monsoon: 19.7.04-29.8.04.

Place of Survey: (District, Name of the Village)

Urban City of Kanpur, State of Uttar Pradesh, India

Type of Survey: Rural/Urban Household

Urban Households around four air pollution monitoring stations

Number of Respondents: 605

Appendix C: Questionnaire for the household survey

Section 1: Survey Information

S. No. _____ Date of Entry: _____ Air Pollution Monitoring station:

FG
DKP
VN
KN

Enumerator' Name: _____

Respondent's

Name: Mr./ Mrs./ Miss _____

Address: _____

Pin code:

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C) Telephone No.

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D) Mobile No.

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Section2: Socio-economic characteristics:

2.1 Household

a) Accommodation: Number of Rooms

b) Religion: Hindu

1

Non-Hindu

2

c) Family background: Rural

0

Urban

1

Enumerator: Please note that household size consists of those members who share the same kitchen and are dependent on family income/ pool income.

2.2 Details of Household Members

S.No.	Name	Sex (M/F)	Relatio nship with Head	Age (years)	Years of educati on (adults only)	Marri ed (Y/N)	Hours Daily Spent		Smoki ng (Y/N)	Drinking (Y/N)	Exercis e (Y/N)	Morning/ Evening walk (Y/N)
							At home	In local ity				
1												
2												
3												
4												

2.3. Work Place: (Adults)

Name	Med insurance	Loss of Income/d	No. of Hrs./d	No. of Paid Sick Leaves	Out door Job Y/N	Indoor Job AC Y/N	Affected by Factory Fumes, Road dust etc. Y/N

2.4 School/ College/ Other place

Name	Place(S/C/O)	No. of Hrs. spend daily in s/c/o	Out door Y/N	Indoor A/C	Affected by Factory fumes, Road dust Etc.

Section 3: Health Production Model

3.1 General Awareness of the Households

i) Are you aware that air pollution causes illness? Yes - 1 No - 2

ii) Kindly mark the diseases you attribute to air pollution in the list of diseases given below:

Enumerator: Please explain to the respondents that diseases mentioned below are clinically proven to be caused / aggravated by air pollution.

- 1) Eye/nose/throat irritation
- 2) Runny nose/Cold
- 3) Flu/Fever
- 4) Skin infection/Rash
- 5) Asthma attacks
- 6) Shortness of breath
- 7) Respiration allergy to dust & pollen
- 8) Dry scratchy throat
- 9) Chest pain
- 10) Cough with phlegm
- 11) Dry cough
- 12) Bronchitis
- 13) Drowsiness
- 14) Pneumonia
- 15) Heart Disease
- 16) Cancer
- 17) Headache

3.2 General Health

3.2.1 Chronic Disease

Name	Disease Code

Chronic Disease Code: 1) Asthma 2) BP 3) Diabetes 4) TB 5) Cancer 6) Heart Disease 7) Eye Disease (Cataract, Glaucoma) 8) Any Other Specify

Enumerator: Please enter the right code.

S.No.	Name	Daily distance traveled (kms)	Daily extra km. Travel to avoid pollution	No. of days stayed indoors in last three months	Other measures to avoid pollution (mask etc.)	Mode of transport code	
						Own conveyance*	Public transport**

3.2.2 Drinking water quality

Filtered 1

Otherwise 0

3.3 Indoor pollution

- a) Use of AC in summer ----Yes/ No
- b) Use of chimney/ exhaust fan-----Yes / No
- c) Use of heater in winter----- Yes/ No
- d) LPG used-----Yes/ No
- e) Affected by main road dust ----- Yes/ No
- f) Dampness-----Yes/No
- g) Mosquito repellent----- Yes/No
- h) Furry pet-----Yes/No
- i) Carpet-----Yes/No
- j) Indoor plants-----Yes /No
- k) Incense burning-----Yes/No
- l) Coal, kerosene, wood, cow dung etc.-----Yes/No

Averting Activities:

* a) AC Car

b) Non-AC car

c) Two wheeler

** a) Taxi

b) Three wheeler

c) Tempo / bus d) Cycle

Section 4: Household Income

4.1 Consumer durable

- a) Washing machine
- b) Micro-oven
- c) Fridge
- d) Music system
- e) TV
- f) Heater
- g) Geyser
- h) Computer
- i) Telephone
- j) Vehicle (specify)
- k) D V D player

- l) Any other specifies

4.2. Annual Expenditure incurred by the household on the following categories (in Rs.)

- a) Education
- b) Household living *
- c) Recreation **
- d) Travel
- d) Rented house / owned house****

* Includes kitchen, toiletry, electricity, clothing, medicines, servants, annual functions / festivals, gas etc.

** Includes eating out, holidaying out of station ----travel /stay / food etc. , movies picnic

*** Includes house tax, repair cost, rent, society's charges etc. incurred by household.

4.3. Total Annual Earning of the Household Rs.-----

(If you could not tell the exact income, in which of the following category your household income falls?)

- a) Up to Rs.50, 000
- b) 50,000 - 1,00,000
- c) 1,00,000 - 2,00,000
- d) 2,00,000 - 4,00,000
- e) 4,00,000 - 8,00,000
- f) Above 8,00,000

Appendix D
Green Diary
For Health Records

SL. No.

Respondent's Name:

Address:

Monitoring Station:

List of Diseases attributed to Air Pollution:

It has been proved clinically that the following illnesses are caused and aggravated by air pollution. If you and your family members suffer from these illnesses you are requested to keep a record of the illness and medical expense incurred by you on your family members and yourself every week by mentioning the date of medication during that week. If the diseases mentioned below do not match with the ones that you usually suffer from, please write the names of the diseases relevant for you and your family.

- 1) Headache
- 2) Eye/nose/throat irritation
- 3) Runny nose/Cold
- 4) Flu/Fever
- 5) Skin infection/Rash
- 6) Asthma attacks
- 7) Shortness of breath
- 8) Respiration allergy to dust & pollen
- 9) Dry scratchy throat
- 10) Chest pain
- 11) Cough with phlegm
- 12) Dry Cough
- 13) Bronchitis
- 14) Drowsiness

15) Pneumonia

16) Heart Disease

17) Cancer

Instructions for filling up the Health Diary :

Filling the diary will take only 5 minutes from your schedule for a week..

You are requested to enter all medical expenses for you and each of your family members separately with date on the day you incur such expenses. **Medical expense should include cost of medicines bought with or without consulting a doctor, doctor's fee, cost of homeopathic, ayurvedic medicines, etc.**

Mitigating Activities

Name	Name of disease/symptom code (as mentioned in 3.1)	No of sick days in last week	Medical expenditure							
			Travel Cost to Doc.'s Clinic	Total Time (waiting & Travel)	Accompanying Person (y/n)	Doctor's Fees	Cost of medicine	No. of days medicine taken	Absence from work	Total Cost

Hospitalization:

Week	Name	Disease	Days of Hospitalization	Govt/Private	Attendant paid/Family member	Total Cost