

Appendices
2010 Global Health Case Competition
Emory University
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* Available at <http://www.indiamike.com/photopost/data/500/6175Paan-Dabba.jpg>

Appendix I: Public Health Consequences of Tobacco Use

Health consequences related to tobacco exposure	
Heart and blood vessel diseases	<ul style="list-style-type: none"> - Atherosclerosis, coronary heart disease - Cerebrovascular diseases - Abdominal aortic aneurysm - Peripheral vascular disease (may cause gangrene in the legs) - Erectile dysfunction or impotence (atherosclerosis and endothelial dysfunction of the internal pudendal and penile arteries)
Cancers	<ul style="list-style-type: none"> - Cancers of the bladder, cervix, esophagus, kidney, larynx, lung, oral cavity and pharynx, pancreas, stomach and leukemia - Precancerous lesions, leucoplakia, erythroplakia of the oral cavity
Respiratory diseases	<ul style="list-style-type: none"> - Chronic obstructive pulmonary disease, chronic bronchitis - Acute respiratory illnesses: pneumonia, bronchitis, and other respiratory infections - Respiratory effects mediated <i>in utero</i>, reduced respiratory function in infants - Respiratory effects in childhood and adolescence: decreased physical fitness, potential retardation in the rate of lung growth, and the level of maximum lung function among children and adolescents - Respiratory effects in adulthood: acceleration of age-related decline in lung function among adults - Other respiratory effects: increased cough, phlegm production, wheezing, respiratory infections, and dyspnea
Reproductive effects	<ul style="list-style-type: none"> - Fetal death and stillbirth: sudden infant death syndrome (SIDS) - Fertility: delayed conception (primary and secondary infertility) - Low birth weight: fetal growth restriction and preterm delivery - Pregnancy complications: premature rupture of membranes, abruption placentae, and placenta previa
Other effects	<ul style="list-style-type: none"> - Cataract - Adverse surgical outcomes related to wound healing and respiratory complications - Low bone density among postmenopausal women and risk of hip fractures - Peptic ulcer disease and periodontitis

See WHO, Report on Tobacco Control in India.

Appendix II: Costs Resulting From Tobacco Use in India

Estimates of the cost of three major tobacco-related diseases for the year 2001-2002	
Population in 2001-2002	1037 million
Number of coronary artery disease (CAD) cases	4.45 million
Number of tobacco-related cancer cases	163,500
Number of chronic obstructive pulmonary disease (COPD) cases	39.2 million
Cost structure (per case; in Rupees)* in 1999-2000	
CAD	
- Direct costs	16,559
- Indirect costs	12,441
COPD	
- Direct costs	18,896
- Indirect costs	23,300
Cancers	
- Direct costs	49,980
- Indirect costs	300,020
1. Direct costs increased by 11% (based on the increase in WPI index number (base 1993-1994) in 2001-2002 over 1999-2000) (<i>Source: Economic Survey, 2002-2003, Ministry of Finance, Government of India</i>)	
2. Indirect costs increased by 19.2% (based on the increase in nominal Net National Product (NNP) index numbers with 1950-1951 base) (<i>Source: Economic Survey, 2002-2003, Ministry of Finance, Government of India</i>)	
3. Using 10% discount rate, the additional direct and indirect costs for the year 2001-2002 have been reduced by 10%	
Total cost of CAD	4.61 million x Rs. 30,310 = Rs. 139.7 billion
Total cost of COPD	40.65 million x Rs. 25,478 = Rs. 103.57 billion
Total cost of cancers	0.17 million x Rs. 382,600 = Rs. 65.04 billion
Total cost of the three major tobacco-related diseases (2001-2002)	Rs. 308.33 billion

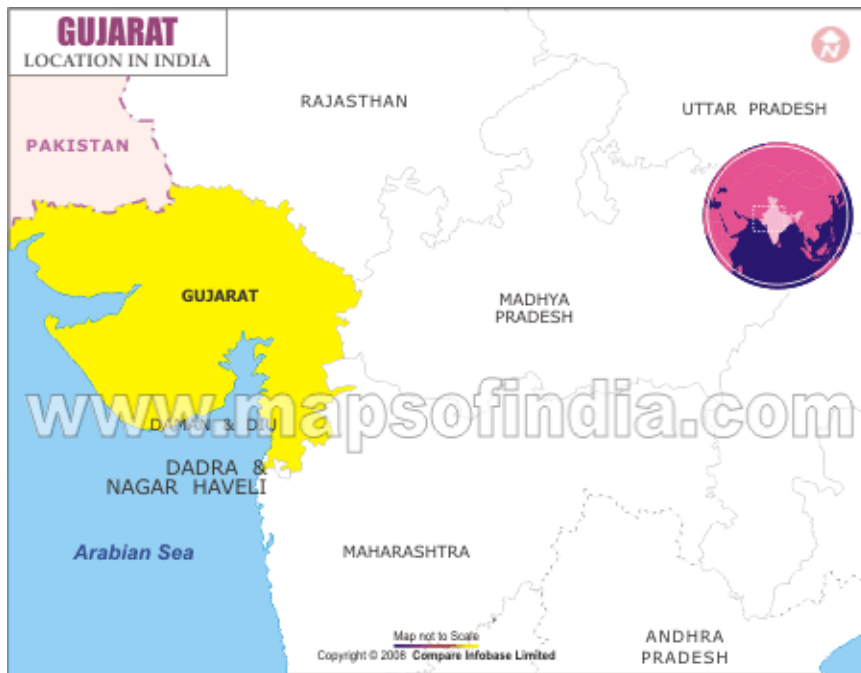
See Reddy K., Gupta P., eds. (2004). Report on Tobacco Control in India. New Delhi: Ministry of Health and Family Welfare, Government of India.

* Costs derived from data from the All India Institute of Medical Sciences in Delhi, a government-funded hospital

Appendix III: Geography of Gujarat, India



Available at <http://www.mohfw.nic.in/NRHM/State%20Files/gujarat.htm>



Available at www.mapsofindia.com/maps/gujarat/location-map.gif

Appendix IV: Selected Demographic Data on Tobacco Use in Gujarat

	Variable	Smoking (%)	Chewing (%)	Snuffing (%)	> One Form (%)
Age Groups	< 25	59.51	33.19	5.80	1.43
	26-35	71.56	17.80	9.49	0.96
	36-45	73.30	12.68	12.74	0.91
	46-55	74.58	10.31	13.47	1.17
	56-65	71.23	9.70	16.56	1.57
	> 65	64.73	10.68	20.36	1.90
Education	Illiterate	68.44	9.94	19.28	0.77
	Literate	75.69	15.62	5.31	2.17
	Primary	79.74	13.94	4.05	1.27
	Secondary	64.99	29.43	1.89	1.61
	Higher Secondary	54.85	43.71	2.11	2.40
	Graduation (Plus)	38.81	65.39	2.45	2.68
Occupation	Household	25.56	22.18	51.59	0.93
	Unemployed	53.43	33.70	9.45	2.88
	Agriculture	78.67	11.66	7.91	0.97
	Labor	79.14	11.18	8.20	1.05
	Business	65.66	22.81	3.48	1.61
	Service	63.48	33.36	1.62	1.71

See Reddy K., Gupta P., eds. (2004). *Report on Tobacco Control in India*. New Delhi: Ministry of Health and Family Welfare, Government of India.

Appendix V: Tobacco Production in India

ANNUAL TOBACCO TRADE AND AGRICULTURE STATISTICS						
	<i>Unit of Measurement</i>	1970	1980	1990	1995	2000
Cigarette imports	Sticks in millions	5	8	68	169	44
Cigarette exports	Sticks in millions	27	2187	6363	1220	3655
Tobacco leaf imports	Metric tons	32	88	38	409	1423
Tobacco leaf exports (% of total exports)	Metric tons (%)	47,905 (2.09%)	71,146 (2.01%)	69,965 (0.61%)	77,678 (0.37%)	97,363 (0.33%)
Cigarette production	Sticks in millions	62,930	77,375	61,162	69,589	75,085
Tobacco leaf production	Metric tons	337,100	438,500	551,600	566,700	609,000
Land devoted to tobacco growing (% of agricultural land)	Hectares (%)	437,900 (0.25%)	425,400 (0.24%)	413,100 (0.23%)	381,000 (0.21%)	433,400 (0.24%)
Employment in tobacco manufacturing	People	121,000	358,000	431,452	471,657	--

See, e.g., The Tobacco Atlas, 3rd Edition, Table B: The Business of Tobacco, available at http://www.cancer.org/downloads/AA/TobaccoAtlas3Revised/TA3_TABLE_B.pdf.

Indian Tobacco Company (ITC) Data for April 2008-March 2009 (Rs. in crores)

- Gross Income: 23678.46
- Gross Sales: 23143.53
- Profit before taxation: 4825.74
- Provision for taxation: 1562.15
- Profit after taxation: 3263.59

Available at <http://www.itcportal.com/itc-annual-reports-2009/pdfs/Profit-and-Loss-account.pdf>,
<http://www.itcportal.com/itc-annual-reports-2009/pdfs/Financials-Ten-Years.pdf>,
http://www.itcportal.com/sets/cigarette_frameset.htm.

Appendix VI: Selected Economic and Tax Data for India

REVENUE FROM UNION EXCISE DUTY ON TOBACCO PRODUCTS (RS. IN BILLION)						
Year	Cigarettes, etc.	Beedis	Chewing tobacco, etc.	Others	Cess on Beedis	Total
1994-95	27.38	2.07	1.48	0.51	0.11	31.577
1995-96	34.24	1.66	2.11	1.68	0.15	39.877
1996-97	39.83	2.21	2.60	1.66	0.20	46.529
1997-98	44.34	2.71	2.76	1.34	0.20	51.376
1998-99	48.28	2.87	3.35	1.11	0.32	55.954
1999-2000	47.90	2.69	3.48	1.04	0.52	55.66
2000-01	51.39	2.51	4.31	1.41	0.75	60.382

Rijo M John. Price Elasticity Estimates for Tobacco Products in India. *Health Policy and Planning*. 2008, Volume 23, pgs 200-209.

EXCISE DUTY RATES ON CIGARETTES (RS. PER 1,000 CIGARETTES, IN CURRENT RUPEES)						
Year	Non-filter (≤60 mm)	Non-filter (60-70mm)	Filter (≤70mm)	Filter (70-75mm)	Filter (75-85mm)	Filter (>85mm)
1993-94	120	250	330	630	850	**
1994-95	60	280	370	710	950	1,350
1995-96	60	300	400	750	1,000	1,350
1996-97	75	315	430	800	1,070	1,350
1997-98	90	350	500	820	1,100	1,350
1998-99	100	370	550	900	1,200	1,470
1999-2000	110	370	550	900	1,200	1,470
2000-01	115	390	580	945	1,260	1,545
2001-02	135	450	670	1,090	1,450	1,780
2002-03	135	450	670	1,090	1,450	1,780
2003-04	135	450	670	1,090	1,450	1,780
2004-05	135	450	670	1,090	1,450	1,780
2005-06	150	495	740	1,200	1,595	1,960
2006-07	160	520	780	1,260	1,675	2,060
2007-08	168	546	819	1,323	1,759	2,163

**Rs. 600 or 300%+Rs. 20, whichever was higher

See, e.g., Sunley, Emil M., India: The Tax Treatment of Beedis, available at <http://www.tobaccofreeunion.org/files/44.pdf>; Department of Revenue, Ministry of Finance.

Appendix VII: Selected Health Systems Data for Gujarat

HEALTH INFRASTRUCTURE OF GUJARAT			
Particulars	Required	In position	Shortfall
Sub-center	7263	7274	--
Primary health center	1172	1073	99
Community health center	293	273	20
Multipurpose worker (female)/ANM at sub-centers & PHCs	8347	7060	1287
Health worker (male) MPW(M) at sub-centers	7274	4456	2818
Health assistant (female)/LHV at PHCs	1073	267	806
Health assistant (male) at PHCs	1073	2421	--
Doctor at PHCs	1073	1019	54
Obstetricians and gynecologists at CHCs	273	6	267
Physicians at CHCs	273	0	273
Pediatricians at CHCs	273	6	267
Total specialists at CHCs	1092	81	1011
Radiographers	273	124	149
Pharmacists	1346	781	565
Laboratory technicians	1346	897	449
Nurses/midwives	2984	1585	1399

RHS Bulletin, Ministry of Health and Family Welfare, Government of India (March 2008).

OTHER HEALTH INSTITUTIONS IN THE STATE	
Health Institution	Number
Medical college	13
District hospitals	23
Referral hospitals	409
City family welfare center	106
Rural dispensaries	8347
Ayurvedic hospitals	48
Ayurvedic dispensaries	493
Unani hospitals	--
Unani dispensaries	--
Homeopathic hospitals	14
Homeopathic dispensaries	216

RHS Bulletin, Ministry of Health and Family Welfare, Government of India (March 2008).