

India Subnational Extended Cost-Effectiveness Analysis: Methods and lessons

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Monitoring process

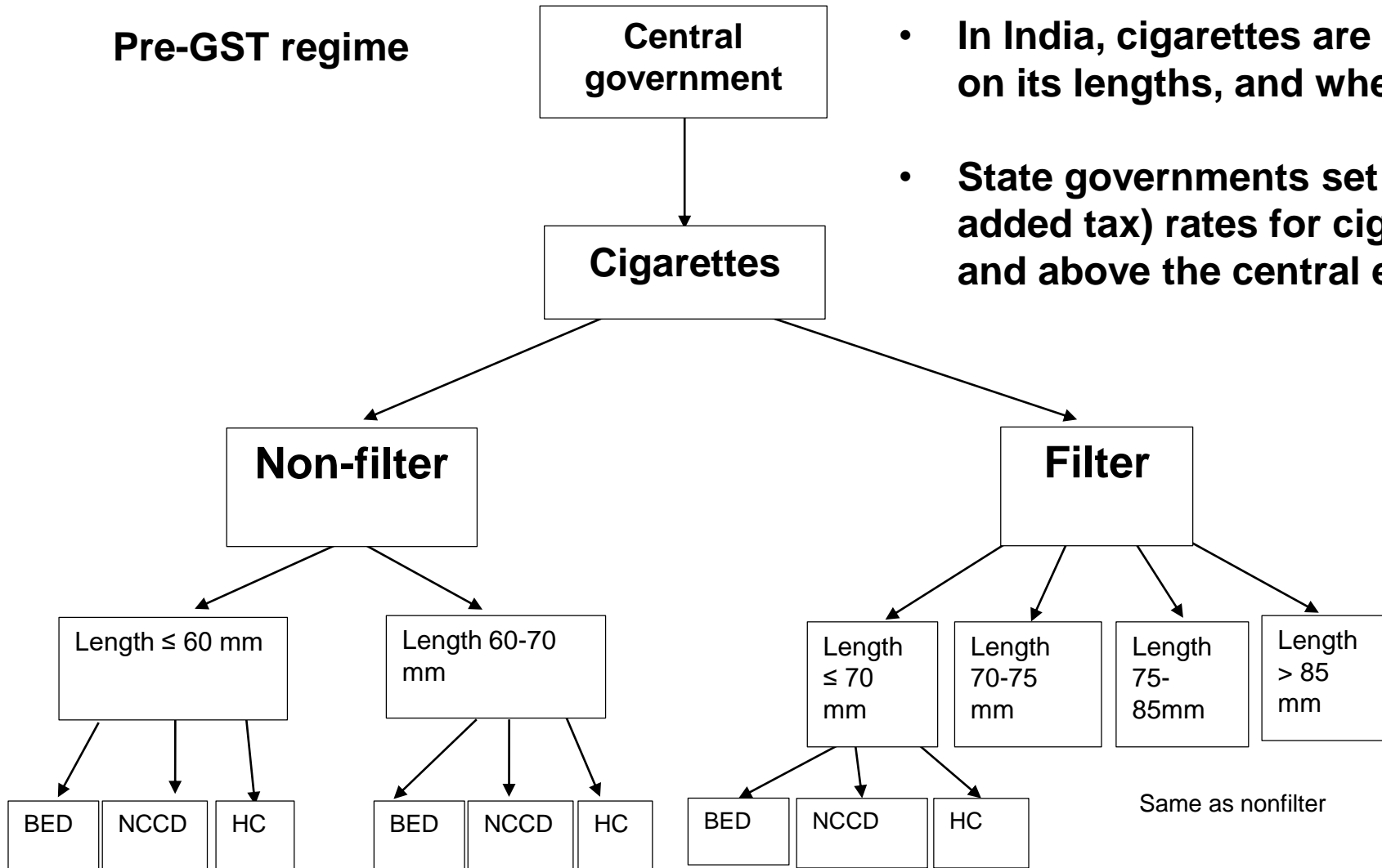
- Challenges and possible solutions

Key lessons

Next steps

Tobacco taxation policy in India

Pre-GST regime

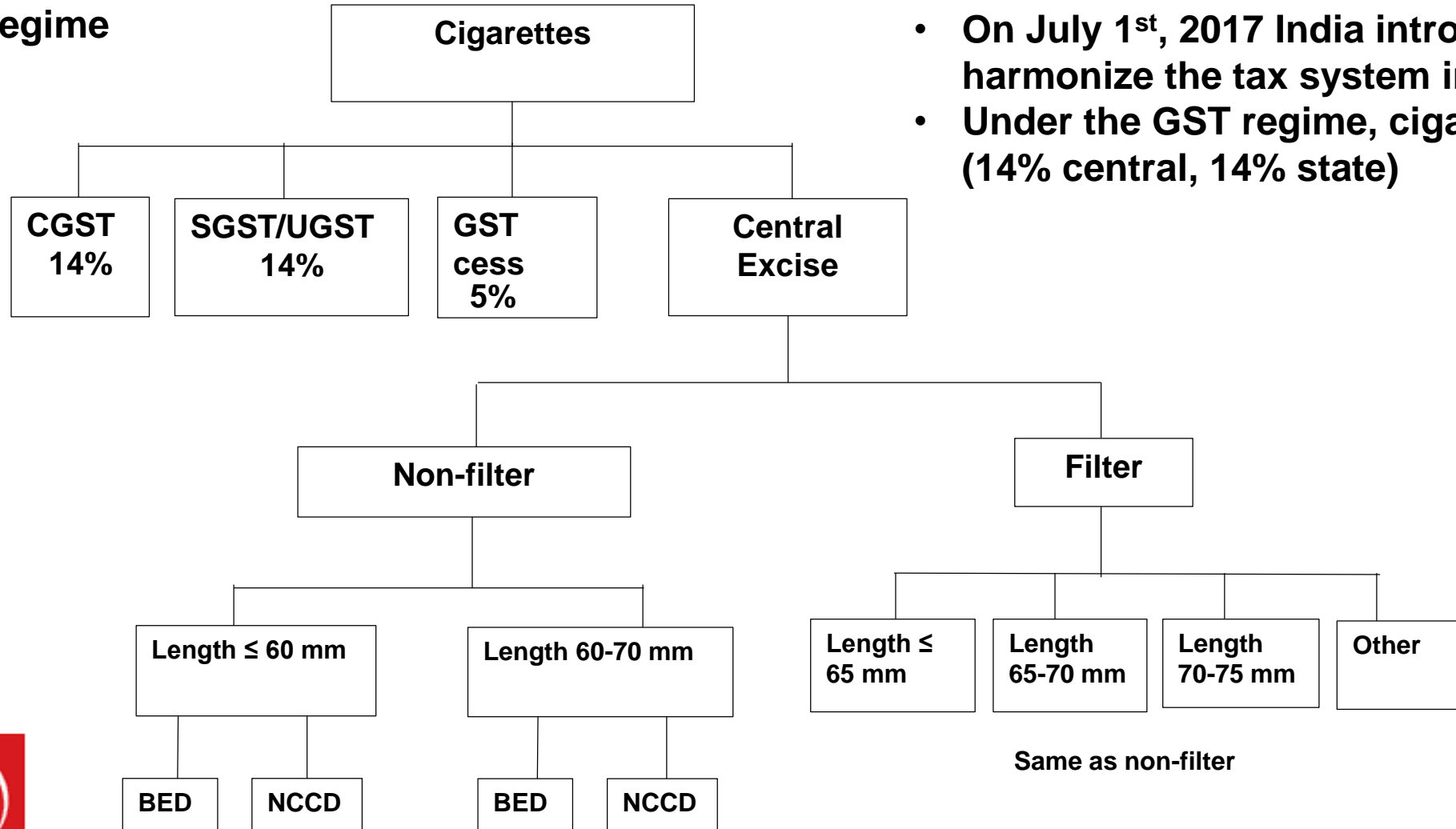


- In India, cigarettes are taxed differently based on its lengths, and whether it is filtered or not.
- State governments set their own VAT (value added tax) rates for cigarettes, which is over and above the central excise

Tobacco taxation policy in India

- On July 1st, 2017 India introduced GST to harmonize the tax system in India
- Under the GST regime, cigarette tax rate is 28% (14% central, 14% state)

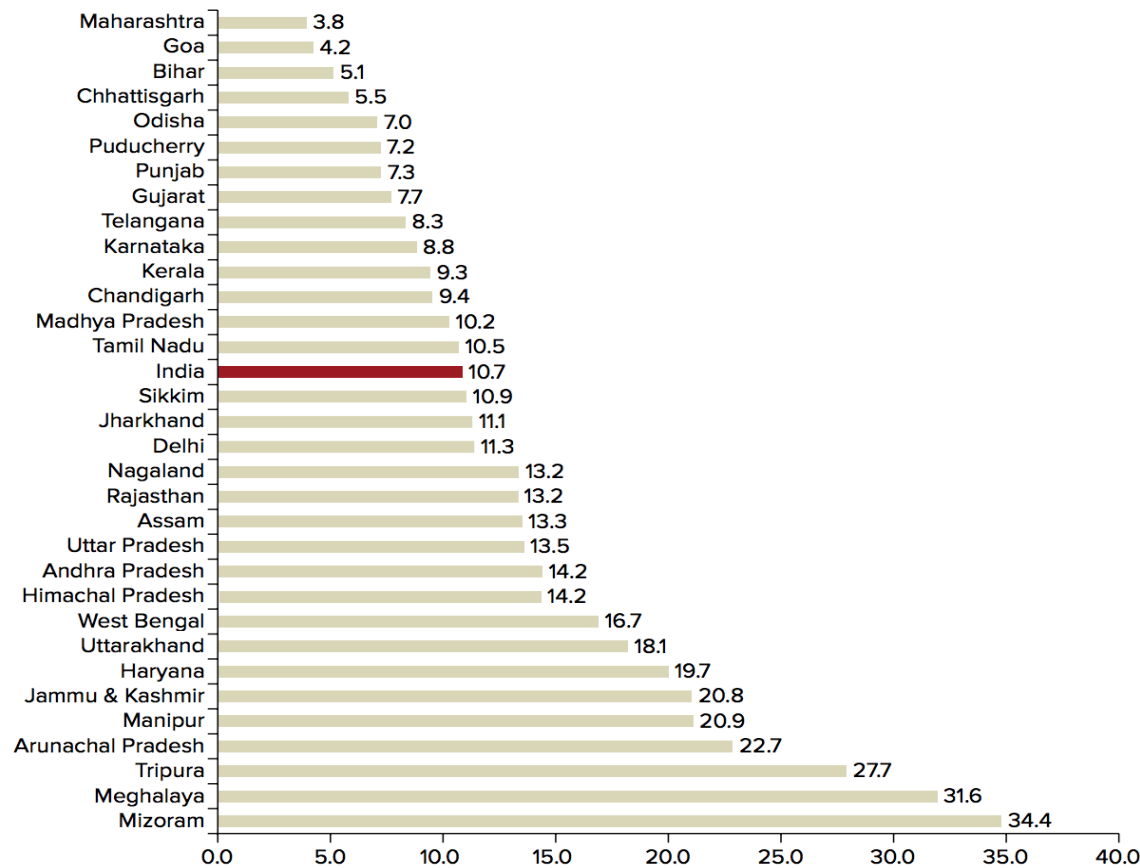
GST Regime



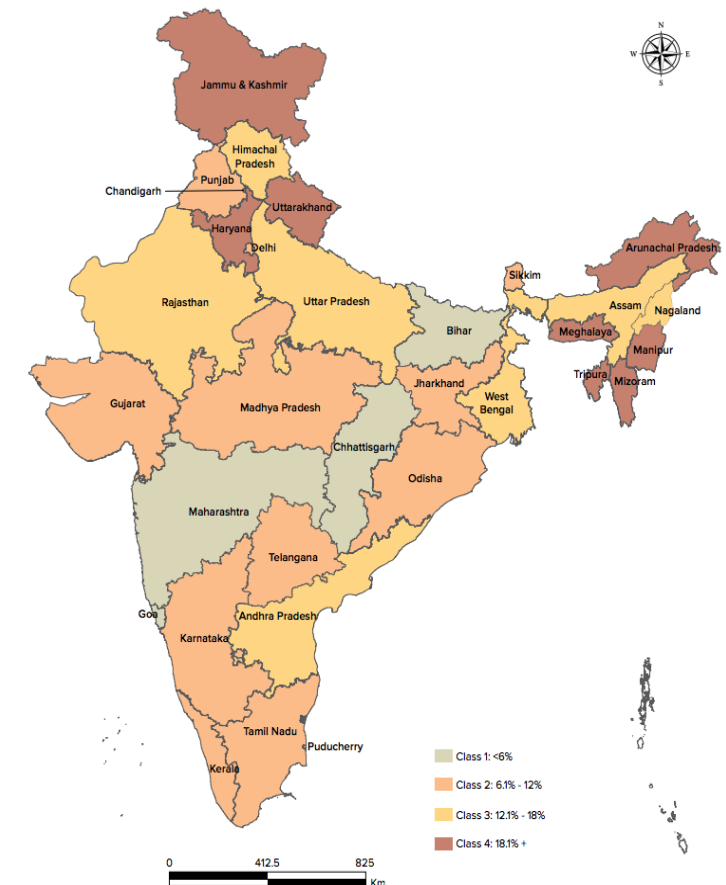
Tobacco smoking across India states

- In India, 19% of men smoke compared to 2% among women
- State differential in tobacco use

Figure 4.5: Percentage of current tobacco smokers by states/UT, GATS 2 India, 2016-17

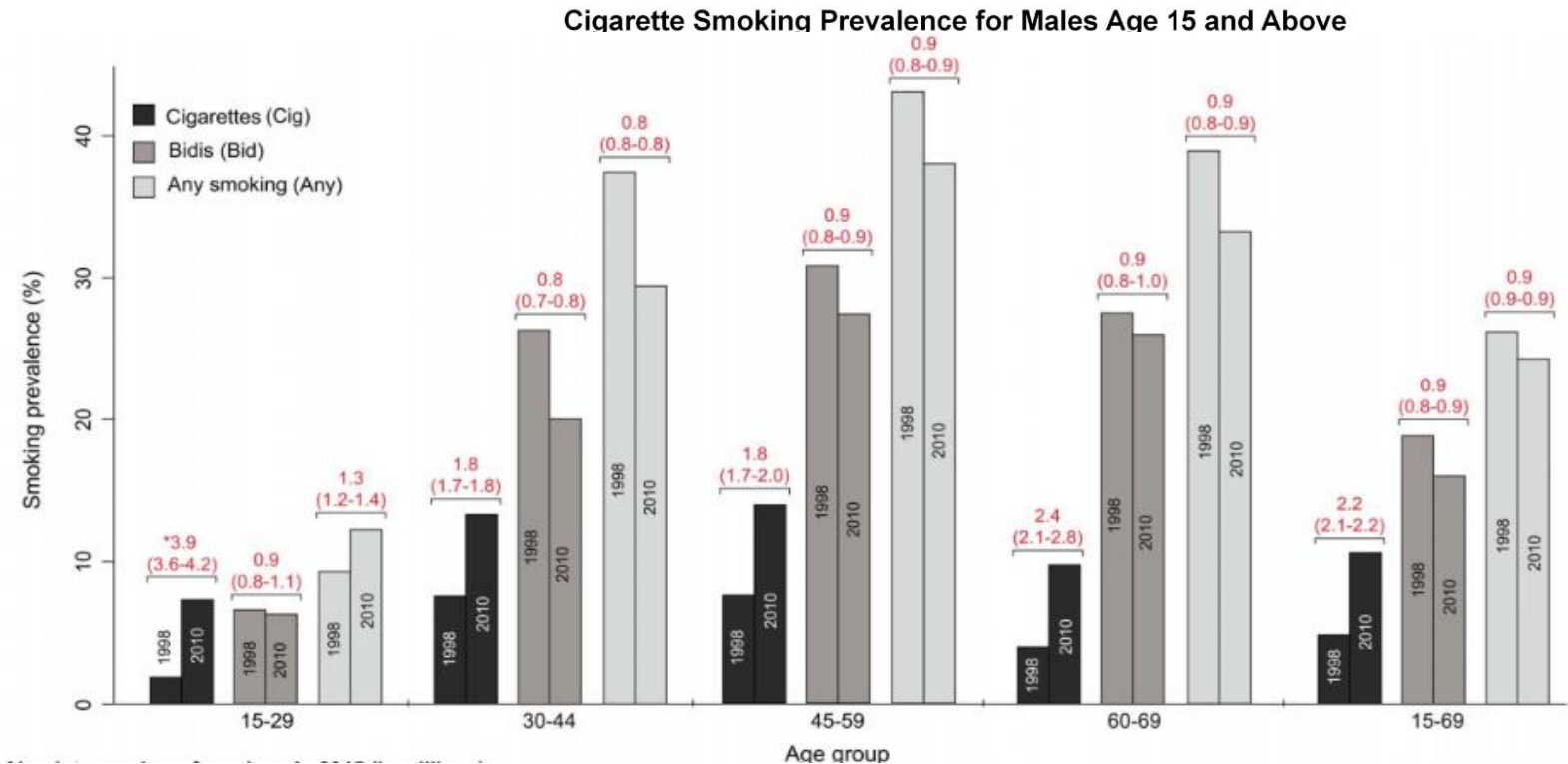


Prevalence of tobacco smoking by states/UTs, GATS 2 India, 2016-17



Cigarette consumption by states and age groups

- Increasing uptake of cigarette smoking among men age 15-69 years old, especially among young adults (age 15-29)

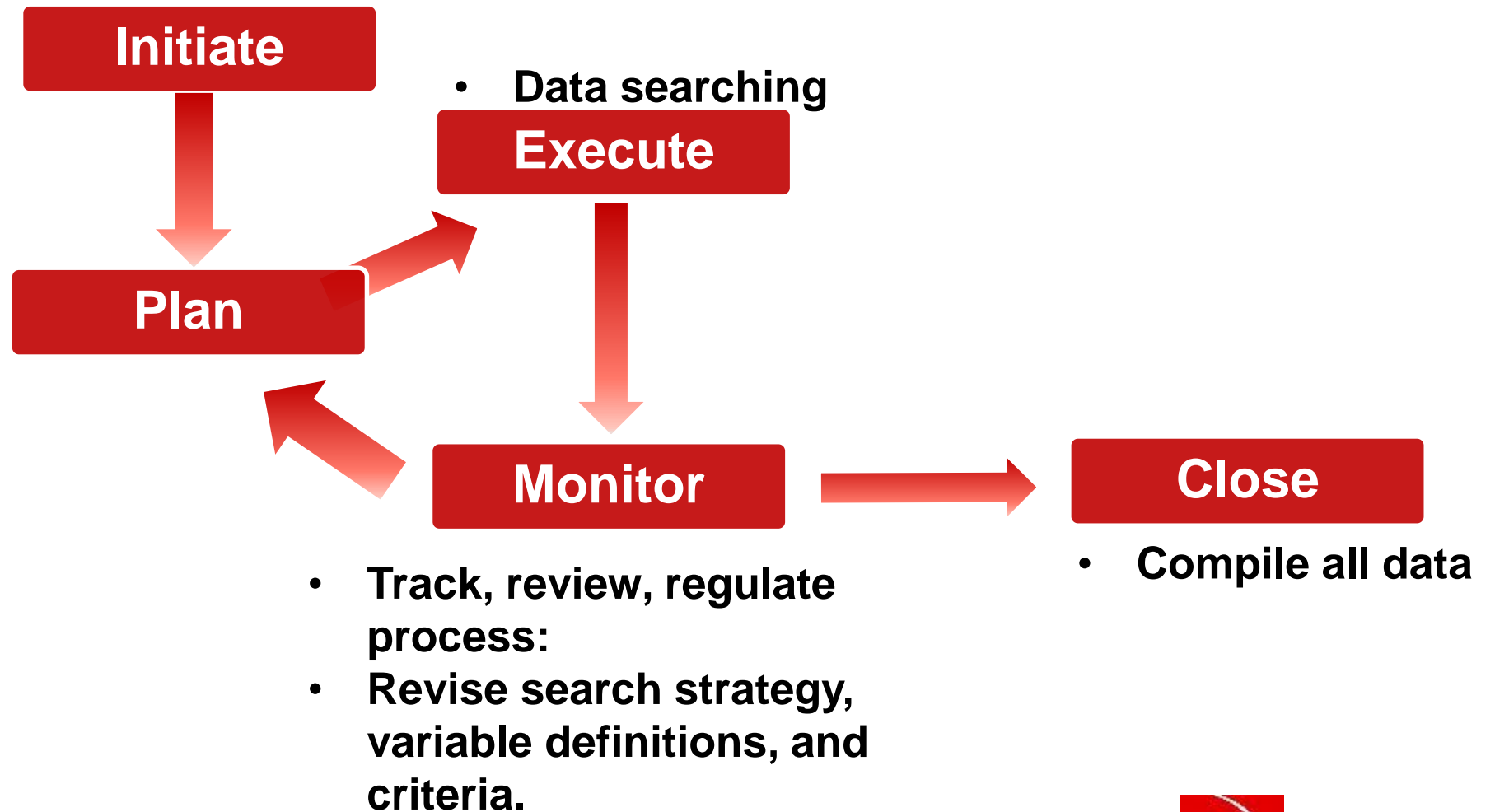


Age-standardised rate (ASR) of smoking among men by age group, product between 1998 to 2010 and number of smokers in 2015 (in millions). ASRR, age-standardised rate ratios between the Global Adult Tobacco Survey and the Special Fertility and Mortality Survey.

Mishra S, Joshep RA, Gupta PC, et al. Trends in bidi and cigarette smoking in India from 1998 to 2015, by age, gender and education. *BMJ Global Health* 2016;1:e000005.

Project management

- Variable definitions
- A priori search strategy
- Data logs



Planning stage

Defining variables

- Consult experts and review the literature for appropriate definitions/calculations

Terminology	Definition, calculation, criteria
Current smoker	Includes those who smoke manufactured cigarettes either daily or at least once per week
Average number of cigarettes smoked per day	Among daily cigarette smokers -Ideally: manufactured cigarettes only
Insurance coverage (%)	-Percent of population who report having any health insurance schemes -OR % of households with at least one member having government health insurance schemes
Financial support	Fraction of healthcare cost that are not borne to individual -Calculated as: $1 - (\text{OOPE as \% of Total health expenditure})$ –indicates the extent of financial protection available for households towards healthcare payments OOPE: out-of-pocket expenditure is the direct burden of medical costs that households bear at the time of availing healthcare service (MoHFW) <ul style="list-style-type: none">• Inpatient + outpatient Total healthcare expenditure: includes health expenditure by all gov't agencies, all household health expenditures, all expenditures by Enterprises, Not-for-profit Institution Serving Household (NPISH/NGO) and external donors. Alternative: State public health expenditure + OOPE

Planning state: Data log

- State
- Smoking prevalence
 - By age, by income quintile
- Share of total deaths (disease-specific)
- Probability of seeking care (conditional on the disease)
- Health utilization (by income quintile)
- Insurance coverage (%)
- Etc.

Planning

State	Prevalence of smoking by age	Input Indicators (Jammu and Kashmir)	Value	Insurance coverage	Financial support
Jammu and Kashmir	-GATS 2009 -NFHS4 (2015)	Size of male population in India	680 million	-NSSO 71 st round survey (2014) -NFHS4 (2015)	NSSO 71 st survey (2014) -National Health Accounts Estimate report 2015 (MoHFW)
		Smoking Prevalence % (15 year and above for male)			
		0-4 year olds :			
		5-9 year olds :			
		15-29 year olds:	13%		
		30-45 year olds:	30%		
		45-59 year olds:	35%		
		60-70 year olds:	14%		
		70+ year olds:	7%		
		Relative smoking prevalence per income quintile			
		Income quintile 1 (poorest)	17.3%		
		Income quintile 2	29.0%		
		Income quintile 3	26.7%		
		Income quintile 4	20.2%		
		Income quintile 5	13.7%		
Cigarette consumption (cigarettes per day) per income quintile					
Income quintile 1 (poorest)	7.17				
Income quintile 2	4.97				
Income quintile 3	5.82				
Income quintile 4	8.95				
Income quintile 5	9.12				



Planning state: a priori search strategy

1. National survey questionnaire data sources



2. Literature search

- **WHO, World Bank**
- **Government publications**
 - Ministry of Health and Family Welfare at central and state level
 - Ministry of Statistics and Programme Implementation at central and state level
- **Google**
- **Non-governmental agencies**
 - E.g. Public Health Foundation of India Agency
- **Peer-reviewed :**
 - **MEDLINE**
 - **PUBMED**

Criteria:

1. **Alignment between questionnaire or readily-produced estimates and pre-determined parameters**
2. **Most recent (based on time of sampling)**
3. **Microdata availability**

Execute: Data searching

Example: Health utilization by income quintile

World Health Organization :

- **Keywords used:** Health utilization India or health use India or hospitalization rate India or health service utilization India
- Publications in WHO-India country office website

World Bank:

- **Keywords:** “Health India” or “Health India states”

Government websites:

- Keyword used: “Health” or “healthcare” or “health visits” or “health utilization” or “health use”

Similar search terms were used to obtain relevant non-government agencies’ reports

Google:

- Keywords used: “Health” or “healthcare” or “hospitalization” or “health utilization” or “health use” in combination with “India states” or “[insert a state name]”

Top 20 results or 2 pages were reviewed

Execute: Data searching

Example: Health utilization by income quintile

Peer reviewed literature search

- PUBMED & MEDLINE
- Keywords and MESH terms applied
- No restriction on date of publication and language.
- Studies' abstracts and titles were screened for eligible papers

# ▲	Searches	Results
1	*india/ or *sikkim/	6
2	((Jammu and Kashmir) or Himachal Pradesh or Punjab or Chandigarh or Uttarkhand or Uttaranchal or Haryana or Delhi or Rajasthan or Uttar Pradesh or Bihar or Sikkim or Arunachal Pradesh or Nagaland or Manipur or Mizoram or Tripura or Meghalaya or Assam or West Bengal or Jharkhand or Orissa or Odisha or Chhattisgarh or Madhya Pradesh or Gujarat).ti,ab.	21024
3	((Daman and Diu) or (Dadra and Nagar Haveli) or Maharashtra or Andhra pradesh or Karnataka or Goa or Lakshadweep or Kerala or Tamil Nadu or Puducherry or Pondicherry or (Andaman and Nicobar Island*).ti,ab.	9656
4	(india adj3 state*).ti,ab.	3153
5	1 or 2 or 3 or 4	30882
6	"healthcare utilization".ti,ab.	2834
7	(health adj2 (utilization or seek* or usage)).ti,ab.	16904
8	"health service* utilization".ti,ab.	2494
9	probability of seeking care.mp.	8
10	(probability adj3 care).ti,ab.	240
11	"health care utilization".ti,ab.	5796
12	*Health Services Accessibility/ec, sn, td, ut [Economics, Statistics & Numerical Data, Trends, Utilization]	9592
13	*Health Equity/ec, sn, td [Economics, Statistics & Numerical Data, Trends]	56
14	6 or 7 or 8 or 9 or 10 or 11 or 12 or 13	28846
15	5 and 14	278

Execute: Data searching

Peer reviewed literature search

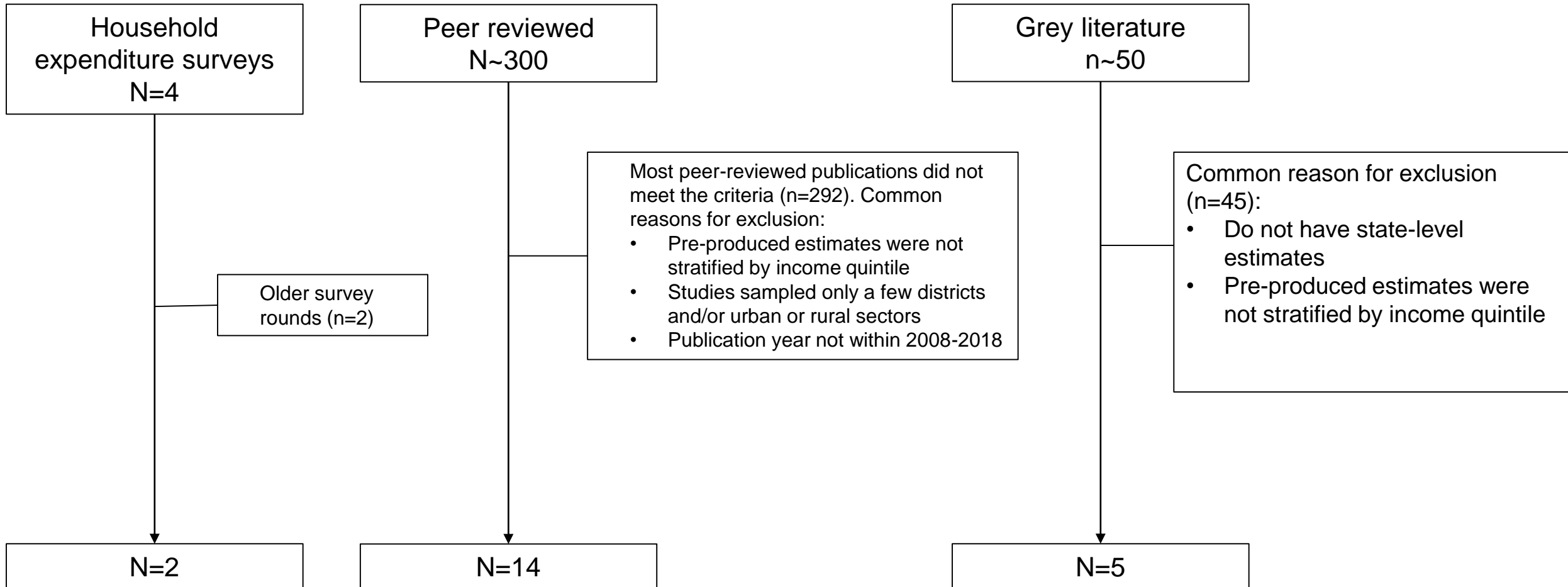
Inclusion criteria

- To be eligible, the study or report must include state-level estimates of health services utilization using a representative sampling method
- Ideally, utilization must include all types of healthcare services. If not possible, studies must include hospitalizations since most government health insurance schemes cover only tertiary care
- Minimum sample size: 1000
- Year of publication: 2008-2018
- No restriction on languages

Exclusion criteria:

- Sampled only subpopulation(s) (e.g. women, low-income households)
- Only sample urban or rural areas or a few districts within a state;
- Studies focused only on a certain condition(s) (e.g. TB, malaria)

Flow diagram



Monitoring process: challenges and possible solutions

- Having alternative definitions to accommodate for different survey questionnaires and/or papers' definitions
 - E.g. health utilization, hospitalization rate was added as an alternative estimate for health service utilization
- Difficulty in finding pre-produced estimates stratified by age, sex, and income quintile at subnational level:
 - Microdata > pre-produced estimates
- Most research studies were done at district and community level:
 - Loosen the inclusion criteria: document studies done at district-level, as well as urban and rural sector
- Too few observations for several estimates for several states
 - Combine states together

Key lessons

- Having accurate and flexible definitions for each study parameters
- Ensure availability of microdata
 - most pre-produced estimates are not presented the way we want them to be
- Ensure constant communication with the team members
 - Discussion within and between core teams
 - Value for having technical working group that include analysts working on subnational analysis for each country to share learning and workshop challenges
 - Opportunities to learn from each country

Next steps

- Compile and validate data
- State selection
- Conduct analyses
- Document steps taken in this project for use as a guide in the other sub-national analyses planned
- Manuscript/policy brief preparation

Discussion

- Data for treatment cost for cancer, heart disease, COPD and stroke at subnational level
- Sample size

Acknowledgement

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Thank you for listening!

Questions?

Supplement Materials



Supplement: GST compensation cess rates

		Compensation cess	
Cigarettes		June 28th-July 17th, 2017	As of July 18th, 2017,
Non-filter	Not exceeding 65 mm	5% + Rs.1591 per thousand	5% + Rs.2076 per thousand
	Exceeding 65 mm but not 70 mm	5% + Rs.2876 per thousand	5% + Rs.3668 per thousand
Filter			
	Not exceeding 65 mm	5% + Rs.1591 per thousand	5% + Rs.2076 per thousand
	Exceeding 65 mm but not 70 mm	5% + Rs.2126 per thousand	5% + Rs.2747 per thousand
	Exceeding 70 mm but not 75 mm	5% + Rs.2876 per thousand	5% + Rs.3668 per thousand
	Other cigarettes containing tobacco	5% + Rs.4170 per thousand	36% + Rs.4170 per thousand

Supplement: Number of smokers across India states

State and Region	Number of smokers studied		Number of smokers (000)	
	1998/2010	1998	2015	
Men 15-69 Years				
Himachal Pradesh	10,998/360	674	839	
Punjab	4095/160	560	1700	
Chandigarh	2175/204	64	84	
Haryana	24,254/364	2291	3231	
Delhi	4815/328	612	2851	
Rajasthan	34,952/370	5286	8035	
Uttar Pradesh & Uttaranchal	54,445/821	14,523	18,014	
Bihar & Jharkhand	38,646/381	7413	7855	
Assam	28,840/713	3044	2340	
West Bengal	67,614/652	11,058	13,582	
Odisha	15,667/230	1878	3488	
Madhya Pradesh & Chhattisgarh	31,865/479	6168	9165	
Gujarat	20,659/258	3443	4242	
Maharashtra	12,906/326	3441	5707	
Andhra Pradesh	30,599/416	7323	9605	
Karnataka	27,452/217	3863	5333	
Goa	3924/84	76	33	
Kerala	21,462/230	2270	3534	
Tamil Nadu	20,636/268	3575	5315	
Northeast	44,693/2379	1386	2796	
Rural Men	41,2042/6449	60,957	76,718	
Urban Men	96,965/3321	18,746	31407	
INDIA TOTAL	509,007/9770	79,428	108,125	
Total 70+	21,864/478	4128	5896	
Total 15+	530,871/10248	83,437	114,021	

Search Strategy: Tobacco Consumption

Tobacco use: to ensure that our estimates related to tobacco use are representative of the general population, search for national surveys that contain indicators on tobacco consumption.

- **World Health Organization:**

- The Global Information System on Tobacco Control (GISTOC) database houses a collection of global and regional data sources pertaining to tobacco. In particular, the Global Tobacco Surveillance System (GTSS) under the Tobacco Free Initiative program conduct surveillance on global tobacco use via national household surveys. These include the **Global Adult Tobacco Survey (GATS)** and **Global Youth Tobacco Survey**. Other World Health Organization's surveys, which also collect information on tobacco use and exposure, include the **Global School Health Survey** and **WHO STEPwise approach to Surveillance (WHO STEPS)**.
- Website: http://www.who.int/tobacco/global_data/en/

- **World Bank:**

- <http://www1.worldbank.org/tobacco/>

- **Government report/publications:**

- Ministry of Statistics and Program Implementation (i.e. the National Bureau of Statistics of India): **The National Sample Survey (NSS)**
 - Website: <http://www.mospi.gov.in/>
 - Keyword: national survey(s)
- Ministry of Health and Family Welfare
 - the **National Family Health Survey (NFHS)**
 - Website: <https://mohfw.nic.in/>
 - Keyword: national survey(s)
- OR use Government of India search engine (search.nic.in/)
 - Keywords: national surveys, tobacco, tobacco use



Nationally representative surveys: Sample design

- National sample survey 71st round (Jan 2014-Jun 2014):
 - Nationally representative survey conducted by the National Sample Survey Office, Government of India

Save lives by raising cigarette taxes



www.cghr.org/smoking