

EPIDEMIOLOGY of TOBACCO USE




“CIGARETTE SMOKING...

is the chief, single, avoidable
cause of death
in our society and the most
important public health
issue of our time.”

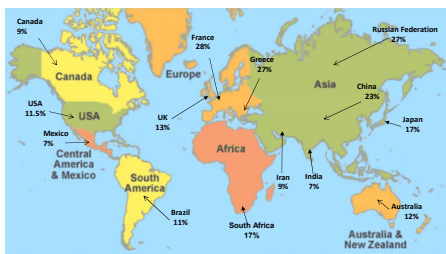


C. Everett Koop, M.D., former U.S. Surgeon General

All forms of tobacco are harmful.




WORLDWIDE PREVALENCE of ADULT TOBACCO USE

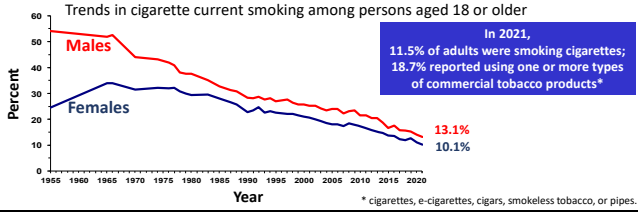


Region/Country	Prevalence (%)
Canada	9%
USA	11.5%
Mexico	7%
Central America & Mexico	7%
South America	11%
Brazil	11%
Europe	20%
France	20%
UK	12%
Africa	17%
South Africa	17%
Asia	27%
Greece	27%
Russian Federation	27%
China	23%
India	7%
Iran	9%
Australia & New Zealand	12%
Australia	12%
Japan	17%

World Lung Foundation. The Tobacco Atlas, Sixth Edition, 2018.
U.S. data from Centers for Disease Control and Prevention, 2023.



TRENDS in ADULT SMOKING, by SEX—United States, since 1955




Trends in cigarette current smoking among persons aged 18 or older

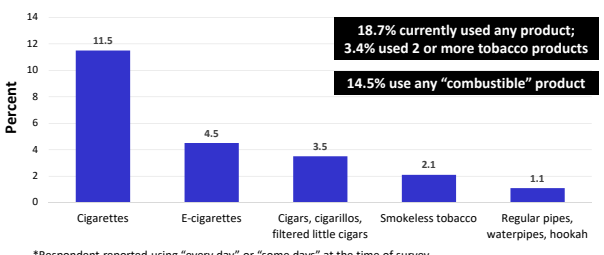
In 2021,
11.5% of adults were smoking cigarettes;
18.7% reported using one or more types
of commercial tobacco products*

68% want to quit
55% tried to quit in the past year

* cigarettes, e-cigarettes, cigars, smokeless tobacco, or pipes.
Graph provided by the Centers for Disease Control and Prevention. Estimates since 1992 include some-day smoking. CDC



CURRENT* ADULT USE of ANY FORM of TOBACCO or E-CIGARETTES, U.S., 2021




Product Type	Prevalence (%)
Cigarettes	11.5
E-cigarettes	4.5
Cigars, cigarillos, filtered little cigars	3.5
Smokeless tobacco	2.1
Regular pipes, waterpipes, hookah	1.1

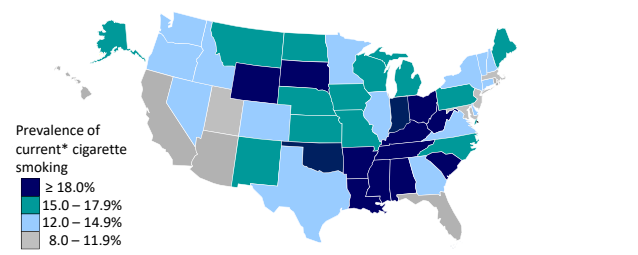
**18.7% currently used any product;
3.4% used 2 or more tobacco products**

14.5% use any “combustible” product

*Respondent reported using “every day” or “some days” at the time of survey.
Cornelius ME, et al. (2023). *MMWR* 72:475–483.



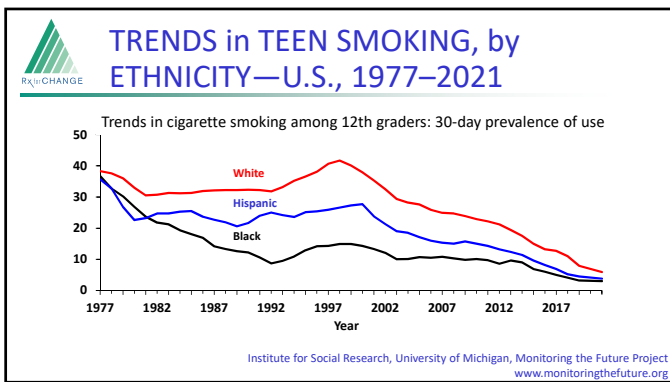
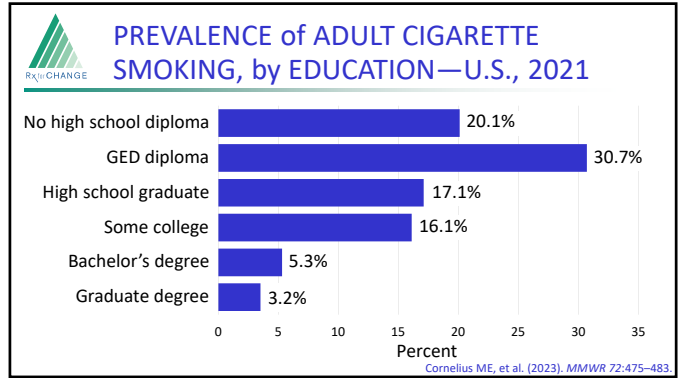
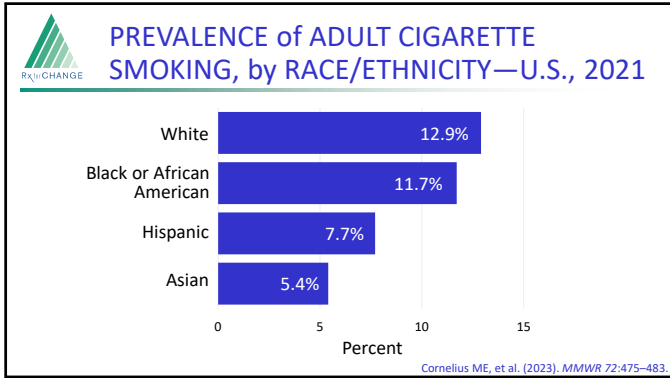
STATE-SPECIFIC PREVALENCE of SMOKING among ADULTS, 2014–2015



Prevalence of current* cigarette smoking

- ≥ 18.0%
- 15.0 – 17.9%
- 12.0 – 14.9%
- 8.0 – 11.9%

Centers for Disease Control and Prevention (CDC). (2018). *MMWR* 67:97–102.
* Has smoked ≥ 100 cigarettes during lifetime and currently smokes either every day or some days

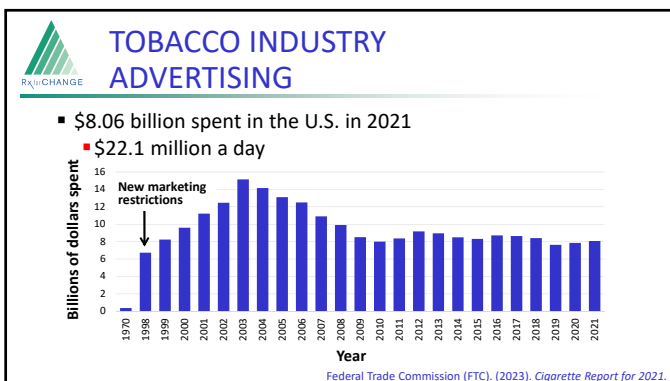


PUBLIC HEALTH versus “BIG TOBACCO”

The biggest opponent to tobacco control efforts is the tobacco industry itself.

Nationally, the tobacco industry is outspending our state tobacco control funding.

For every \$1 spent by the states, the tobacco industry spends \$12.50 to market its products.



The TOBACCO INDUSTRY

- For decades, the tobacco industry publicly denied the addictive nature of nicotine and the negative health effects of tobacco.
- **April 14, 1994:** Seven top executives of major tobacco companies state, under oath, that they believe nicotine is not addictive: <http://www.jeffreywigand.com/7ceos.php>
 - Tobacco industry documents indicate otherwise
 - Documents available at <http://legacy.library.ucsf.edu>
- The cigarette is a heavily engineered product.
 - Designed and marketed to maximize bioavailability of nicotine and addictive potential
 - **Profits over people**

RxCHANGE

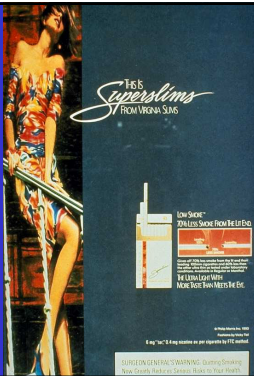
An EFFECTIVE MARKETING STRATEGY: "LIGHT" CIGARETTES

The difference between Marlboro and Marlboro Lights...



an extra row of ventilation holes

Image courtesy of Mayo Clinic Nicotine Dependence Center - Research Program / Dr. Richard D. Hurt
The Marlboro and Marlboro Lights logos are registered trademarks of Philip Morris USA.



The 1's Superlights
FROM VIRGINIA SLIMS

Low Tar
21 mg "tar" from FTC test
Low Nicotine
0.9 mg nicotine av. per cigarette by FTC method

SMOKE-RELATED WARNING: Smoking Causes Lung Cancer, Heart Disease, Emphysema, And May Complicate Pregnancy.

"You like them FRESH? So do I!"

It's Wise TO SMOKE EXTRA-MILD FATIMA

"I agree..."
says NURSE Shirley Gellman
Los Angeles, California



CAMELS
MADE FRESH - kept FRESH

MARKET RESEARCH DEPARTMENT
SEP. AUG 5 1950

"...sound as a bell"

More Doctors Smoke Camels than any other Cigarette

CAMELS *Castles Tobacco*

1936



CAMEL


SMOKE-RELATED WARNING: Smoking Causes Lung Cancer, Heart Disease, Emphysema, And May Complicate Pregnancy.

1990

RxCHANGE

SMOKING in MOVIES

- Cigarette smoking is pervasive in movies
 - Evident in at least 1/3 of box-office hits
 - Average, 10.9 smoking incidents per hour
Charlesworth and Glantz. (2005). *Pediatrics* 116:1516-1528.
- There is a dose-response, **causal relationship** between exposure to smoking in movies and youth smoking initiation
National Cancer Institute. (2008). *The Role of the Media in Promoting and Reducing Tobacco Use.*



Superman II (1980)

70% of adults support assigning an "R" rating to movies with smoking.
For more information on smoking in movies, go to <http://smokefreemovies.ucsf.edu>



FDA REGULATION of TOBACCO PRODUCTS

The FDA Center for Tobacco Control Products is responsible for regulation of:

- Cigarettes
- Cigarette tobacco
- Roll-your-own tobacco
- Smokeless tobacco
- E-cigarettes*

* Not a tobacco product.



COMPOUNDS in TOBACCO SMOKE

An estimated 8,700 compounds in tobacco smoke, including 72 proven or suspected human carcinogens

Gases

- Carbon monoxide
- Hydrogen cyanide
- Ammonia
- Benzene
- Formaldehyde



Particles

- Nicotine
- Nitrosamines
- Lead
- Cadmium
- Polonium-210

Nicotine is the addictive component of tobacco products, but it does NOT cause the ill health effects of tobacco use.



ANNUAL U.S. DEATHS ATTRIBUTABLE to SMOKING, 2005–2009

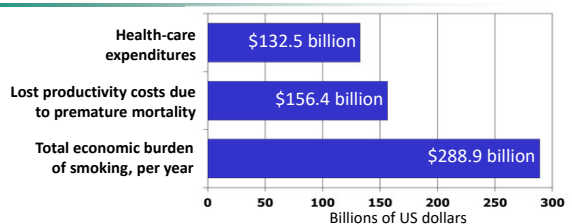
		Percent of all smoking-attributable deaths
Cardiovascular & metabolic diseases	160,600	33%
Lung cancer	130,659	27%
Pulmonary diseases	113,100	23%
Second-hand smoke	41,280	9%
Cancers other than lung	36,000	7%
Other	1,633	<1%

TOTAL: >480,000 deaths annually

U.S. Department of Health and Human Services (USDHHS). (2014). *The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General.*



ANNUAL SMOKING-ATTRIBUTABLE ECONOMIC COSTS



Societal costs: \$20.52 per pack of cigarettes smoked

U.S. Department of Health and Human Services (USDHHS). (2014). *The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General.*



2014 REPORT of the SURGEON GENERAL: HEALTH CONSEQUENCES OF SMOKING

MAJOR DISEASE-RELATED CONCLUSIONS:

- Cigarette smoking is causally linked to diseases of nearly all organs of the body, diminished health status, and harm to the fetus.
 - Additionally, many adverse effects on the body such as inflammation and impaired immune function.
- Exposure to secondhand smoke is causally linked to cancer, respiratory, and cardiovascular diseases, and to adverse effects on the health of infants and children.
- Disease risks from smoking by women have risen over the last 50 years and for many tobacco-related diseases are now equal to those for men.

U.S. Department of Health and Human Services (USDHHS). (2014). *The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General.*



HEALTH CONSEQUENCES of SMOKING

- **Cancers**
 - Bladder/kidney/ureter
 - Blood (acute myeloid leukemia)
 - Cervix
 - Colon/rectum
 - Esophagus/stomach
 - Liver
 - Lung
 - Oropharynx/larynx
 - Pancreatic
- **Cardiovascular diseases**
 - Aortic aneurysm
 - Coronary heart disease
 - Cerebrovascular disease
 - Peripheral vascular disease
- **Reproductive effects**
 - Reduced fertility in women
 - Poor pregnancy outcomes (e.g., congenital defects, low birth weight, preterm delivery)
 - Infant mortality
- **Pulmonary diseases**
 - Asthma
 - COPD
 - Pneumonia/tuberculosis
 - Chronic respiratory symptoms
- **Other:** cataract, diabetes (type 2), erectile dysfunction, impaired immune function, osteoporosis, periodontitis, postoperative complications, rheumatoid arthritis

U.S. Department of Health and Human Services (USDHHS). (2014). *The Health Consequences of Smoking—50 Years of Progress: A Report of the Surgeon General.*

HEALTH CONSEQUENCES of SMOKELESS TOBACCO USE


Periodontal effects

- Gingival recession
- Bone attachment loss
- Dental caries

Oral leukoplakia


Cancer

- Oral cancer
- Pharyngeal cancer



Oral Leukoplakia
Image courtesy of Dr. Sal Silverman - University of California San Francisco

HERMAN by Jim Unger



“Smoking or non-smoking?”

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2006 REPORT of the SURGEON GENERAL: INVOLUNTARY EXPOSURE to TOBACCO SMOKE

- Second-hand smoke causes premature death and disease in nonsmokers (children and adults)
- Children:
 - Increased risk for sudden infant death syndrome (SIDS), acute respiratory infections, ear problems, and more severe asthma
 - Respiratory symptoms and slowed lung growth if parents smoke
- Adults:
 - Immediate adverse effects on cardiovascular system
 - Increased risk for coronary heart disease and lung cancer
- Millions of Americans are exposed to smoke in their homes/workplaces
- Indoor spaces: eliminating smoking fully protects nonsmokers
 - Separating smoking areas, cleaning the air, and ventilation are ineffective

There is no safe level of second-hand smoke.

U.S. Department of Health and Human Services (USDHHS). (2006). *The Health Consequences of Involuntary Exposure to Tobacco Smoke: Report of the Surgeon General*.

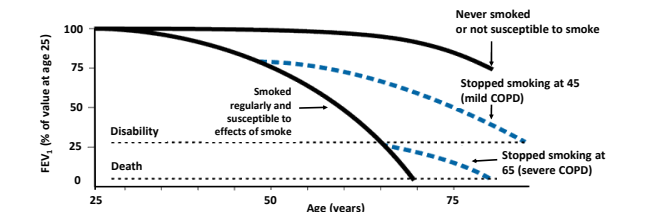
QUITTING: HEALTH BENEFITS

Time Since Quit Date

- 2 weeks to 3 months:** Circulation improves, walking becomes easier; Lung function increases
- 1 to 9 months:** Lung cilia regain normal function; Ability to clear lungs of mucus increases; Coughing, fatigue, shortness of breath decrease
- 1 year:** Excess risk of CHD decreases to half that of those who continue to smoke
- 5 years:** Risk of stroke is reduced to that of people who have never smoked
- 10 years:** Lung cancer death rate is similar to half that of those who continue to smoke; Risk of cancer of mouth, throat, esophagus, bladder, kidney, pancreas decrease
- after 15 years:** Risk of CHD is similar to that of people who have never smoked

BENEFICIAL EFFECTS of QUITTING: PULMONARY EFFECTS

AT ANY AGE, there are benefits of quitting.



FEV₁ (% of value at age 25)

Age (years)

Never smoked or not susceptible to smoke

Smoked regularly and susceptible to effects of smoke

Stopped smoking at 45 (mild COPD)

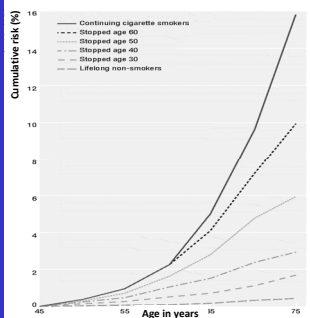
Stopped smoking at 65 (severe COPD)

Disability

Death

COPD = chronic obstructive pulmonary disease
Reprinted with permission. Fletcher & Peto. (1977). *BMJ* 1(6077):1645-1648.

Reduction in cumulative risk of death from lung cancer in men



Cumulative risk (%)

Age in years

Continuing cigarette smokers

Stopped age 60

Stopped age 50

Stopped age 40

Stopped age 30

Lifetime non-smokers

Reprinted with permission. Peto et al. (2000). *BMJ* 321(7257):323-329.



SMOKING CESSATION: REDUCED RISK of DEATH

- Prospective study of 34,439 male British doctors
- Mortality was monitored for 50 years (1951–2001)



On average, cigarette smokers die approximately 10 years younger than do nonsmokers.

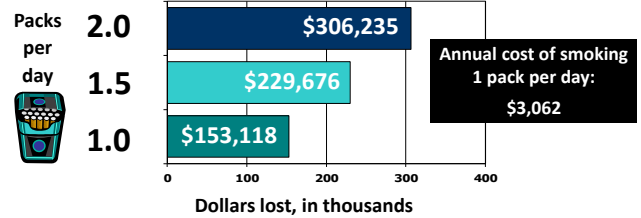
Among those who continue smoking, at least half will die due to a tobacco-related disease.

Doll et al. (2004). *BMJ* 328(7455):1519–1527.



FINANCIAL IMPACT of SMOKING

Buying cigarettes every day for 50 years at \$8.39 per pack*
(does not include interest)



* Average national cost, as of January 30, 2023. Campaign for Tobacco-Free Kids. (2023).



EPIDEMIOLOGY of TOBACCO USE: SUMMARY

- Fewer than one in five adults are current smokers; smoking prevalence varies by sociodemographic characteristics
- Nearly half a million U.S. deaths are attributable to smoking annually
- Smoking costs the U.S. an estimated \$288.9 billion annually
- For the individual, a smoking a pack-a-day costs \$3,062 annually, plus associated health-care costs
- At any age, there are benefits to quitting smoking
- The biggest opponent to tobacco control efforts is the tobacco industry