

Tobacco Harm Reduction Saves Lives

Population Based Evidence

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TOBACCO SMOKING

1951

Doll R & Hill A. “Smoking and Carcinoma of the lung: Preliminary report”
Wynder E. & Graham E. “Tobacco smoking as a possible etiologic factor in bronchogenic carcinoma”

1954

Doll R. & Hill E. “The mortality of doctors in relation to their smoking habit”

Hammond E. “Smoking in relation to lung cancer: a follow up study”.

1962

The of Royale College of Physicians – reported on the causal association between smoking and cancer of the lung, bronchitis and ischemic heart disease

1964

The Report of Surgeon General - hazards of smoking were recognized and documented

1984, 2004, 2009

International Agency for Research on Cancer

Prospective study: **Smoking**

59,829 healthy (non-ill) adults

14-year follow-up for cause-specific mortality at 34-54 and 55-74

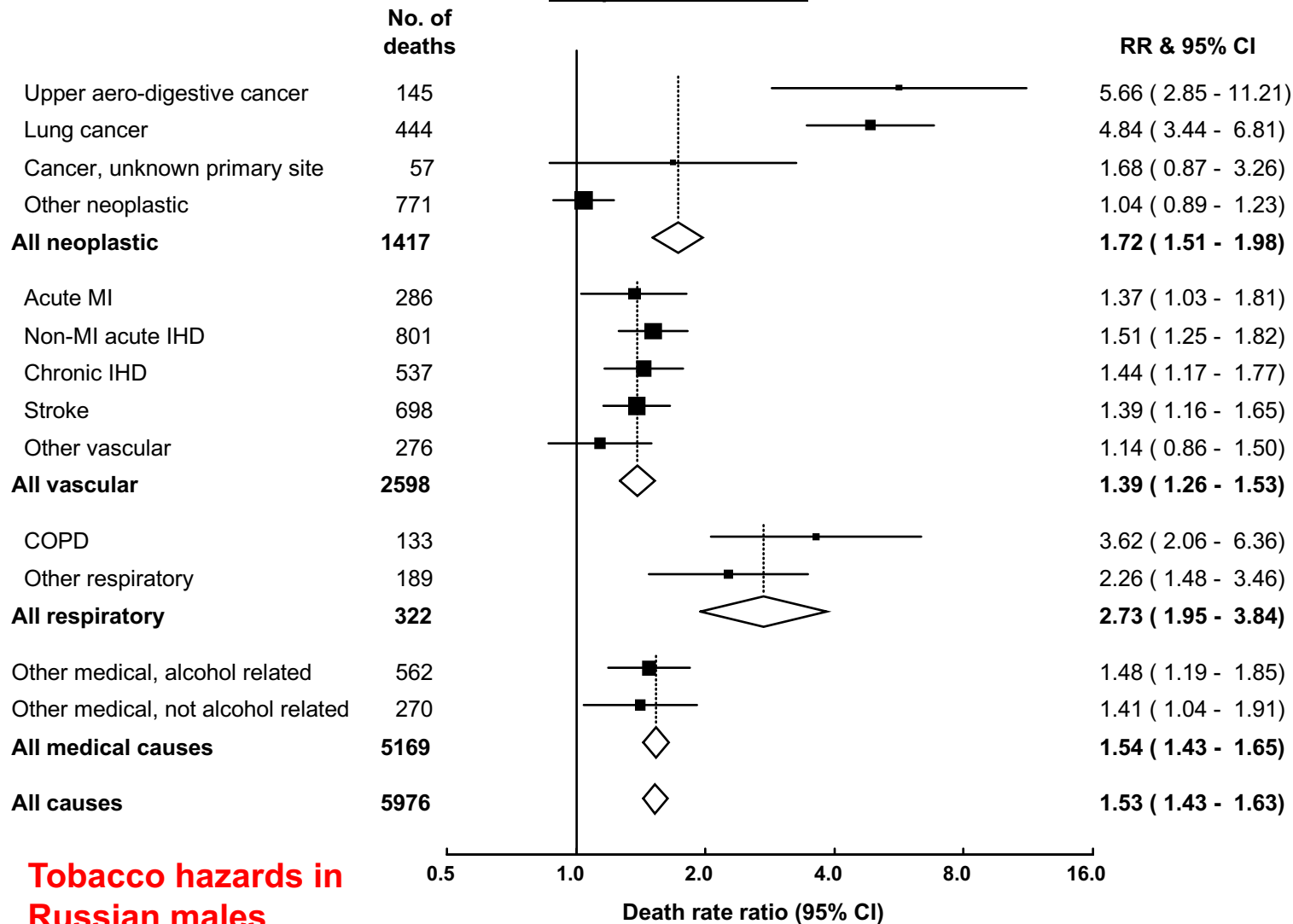
Excluding:

- people with prior diseases (self – reported cancer, myocardial infarction, angina, heart failure, rheumatic heart disease, stroke, diabetes, tuberculosis, cirrhosis or chronic hepatitis)
- for the analyses of the association between smoking and cancer only people with prior self-reported cancer were excluded.
- people who gave up drinking and smoking because of ill-health
- people too old or young to have any follow-up at ages 35-74 years

The same categories of smoking and drinking as in retrospective study

Cause-specific death rate ratios, current or recent smoker vs never smoker

Analyses are of age-standardised mortality at ages 35-79 years among 60 000 men who, at baseline, had no prior disease and drank <1 bottle of vodka/week



IARC, 1984

Cigarette smoking is carcinogenic to humans.

Cigarette smoking causes cancers of *the lung, oral cavity, pharynx, larynx, oesophagus (squamous cell carcinoma), pancreas, urinary bladder, renal pelvis*

IARC, 2004

There is now sufficient evidence for causal association between cigarette smoking and cancers of *the nasal cavity and nasal sinuses, oesophagus (adenocarcinoma), stomach, liver, kidney (renal-cell carcinoma), uterine cervix and myeloid leukaemia*.

There is evidence that involuntary smoking (exposure to second hand or environmental' tobacco smoke) causes lung cancer in humans

IARC, 2012

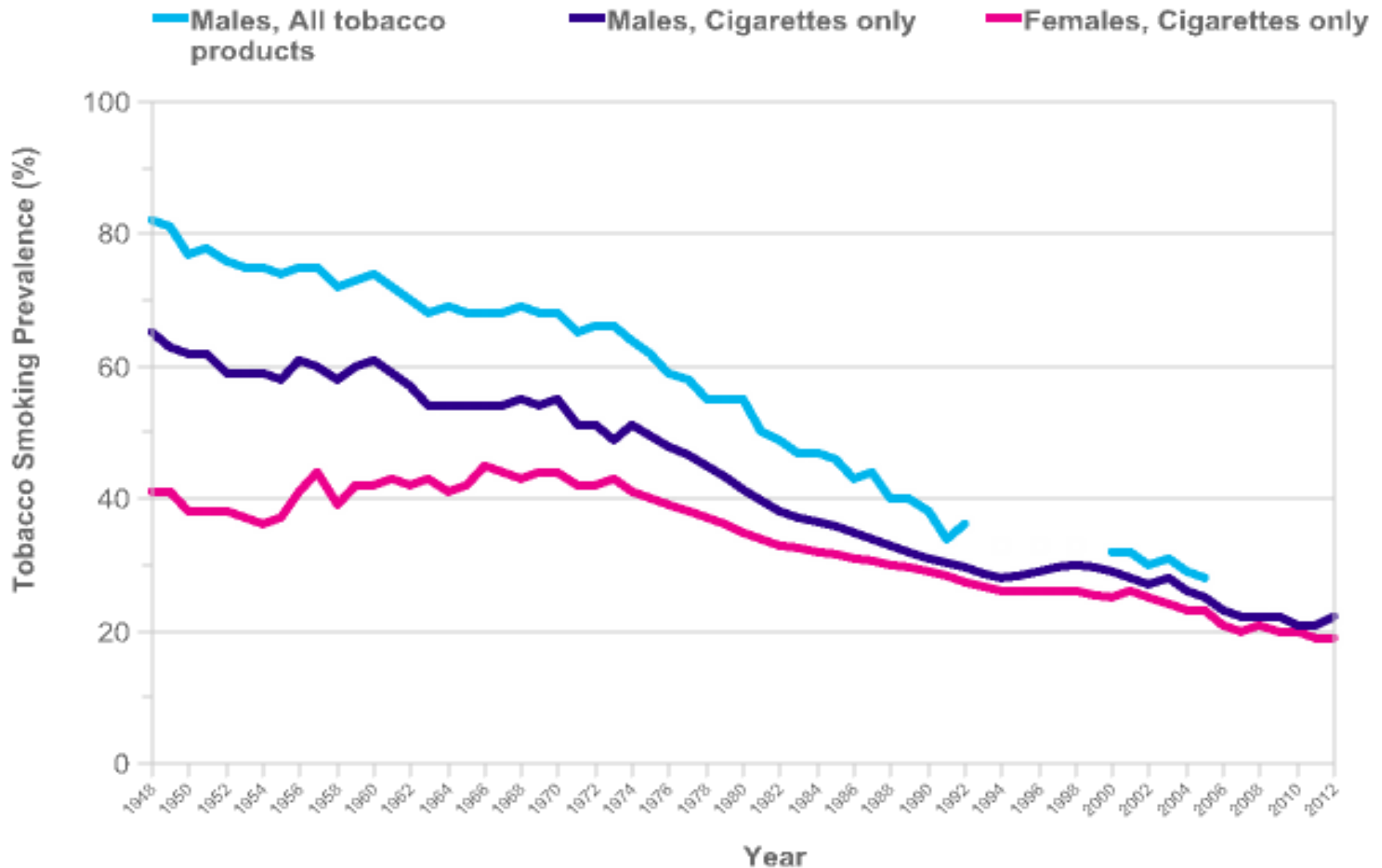
To the cancers causally associated with smoking three additional cancers were added: *cancer of the colo-rectum, ovary and urethra*.

The scientific evidence of the carcinogenicity of smoking, supplemented and reinforced by the new results from epidemiological studies evolved substantially during past 50-60 years.

Translation of the acquired scientific knowledge on the carcinogenicity of tobacco to humans into public health resulted in the decrease in mortality from causes associated with smoking.

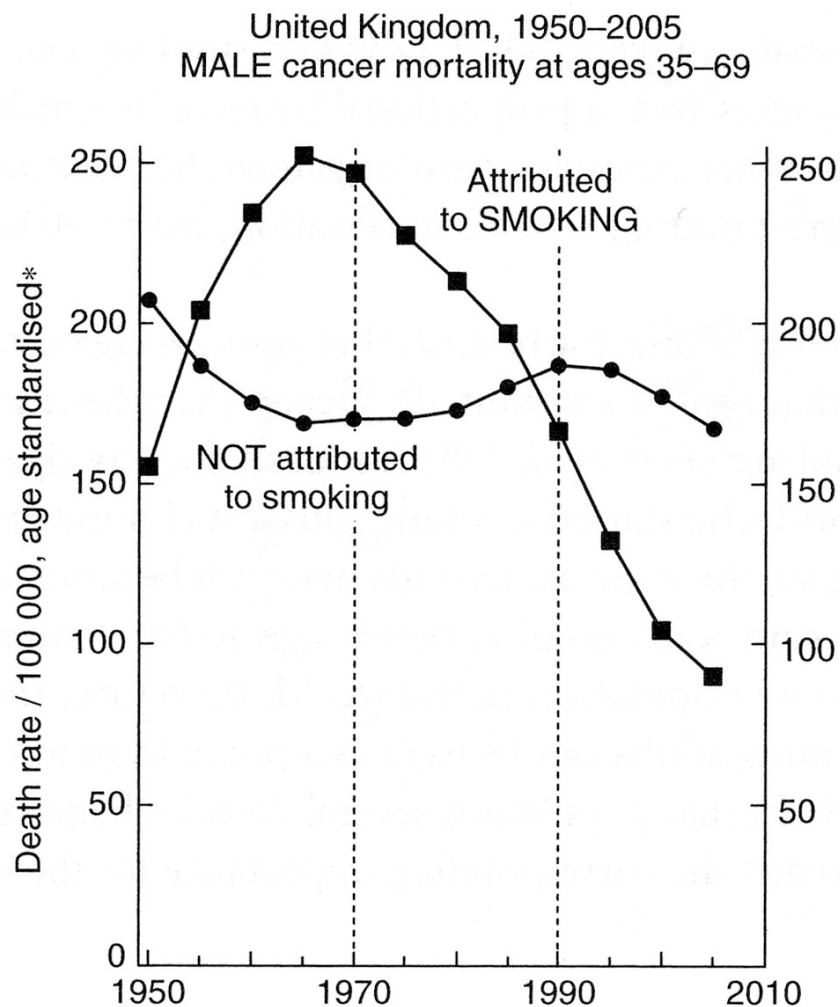
The decrease in mortality from these causes saved many hundreds of thousands of lives.

Long term time trends in tobacco smoking in the UK



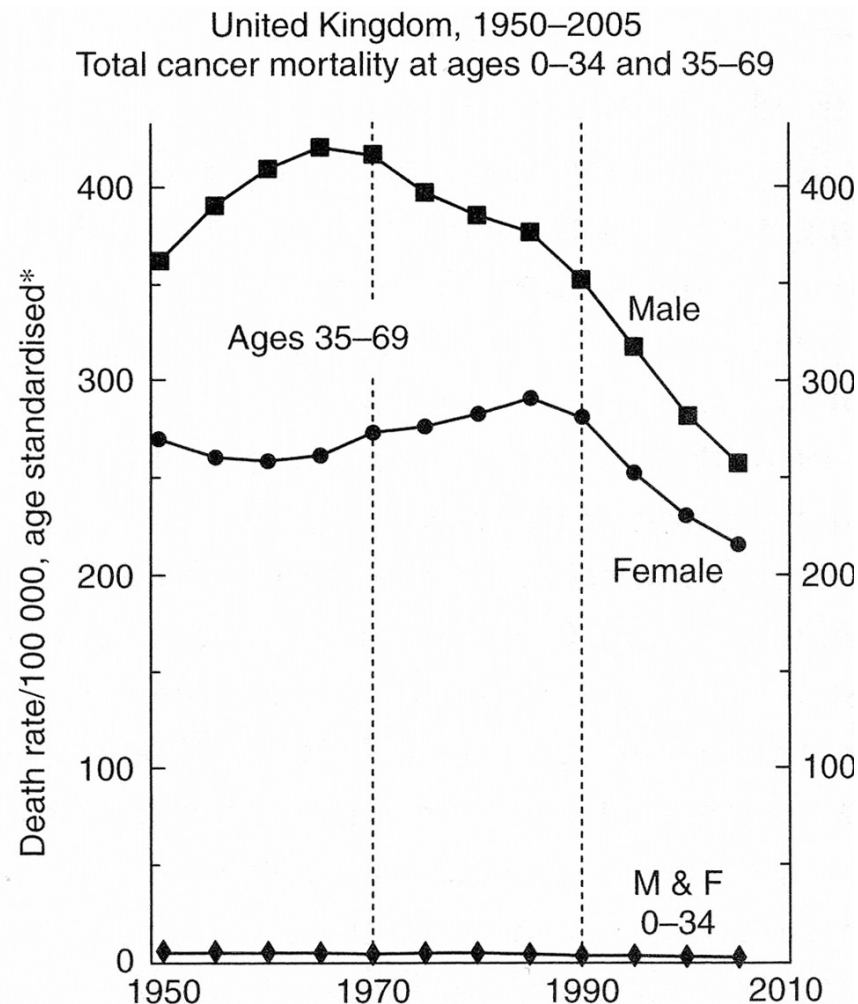
Trends in mortality from all causes and the causes of death associated with tobacco smoking in UK

"Tobacco: Science, Policy and Health" P.Boyle, N.Gray, J. Hennisfield, J.Sefrin, W.Zatonski (editors), 2011



*Mean of annual rates in the seven component 5-year age groups

Source: WHO mortality & UN population estimates



*Mean of annual rates per 100 000 in component 5-year age groups

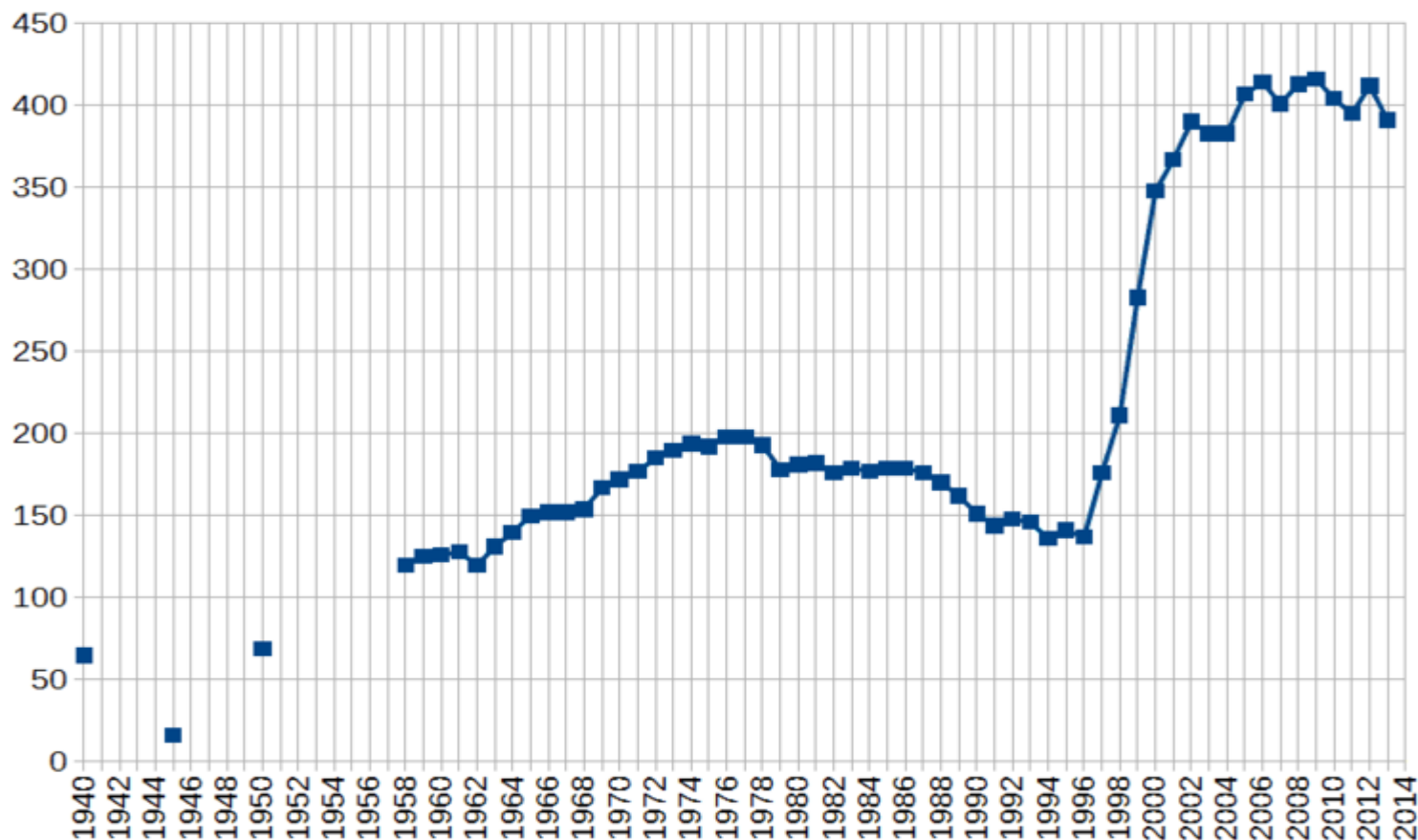
Source: WHO mortality & UN population estimates

Trends in cigarette production in Russia

In billion sticks

Производство сигарет и папирос в России, млрд. штук

Источники: сборники «Народное хозяйство РСФСР» ЦСУ СССР за 1960–1990-е гг., istmat.info;
«Российский статистический ежегодник» 1998–2014 гг (Госкомстат России, Росстат, www.gks.ru).

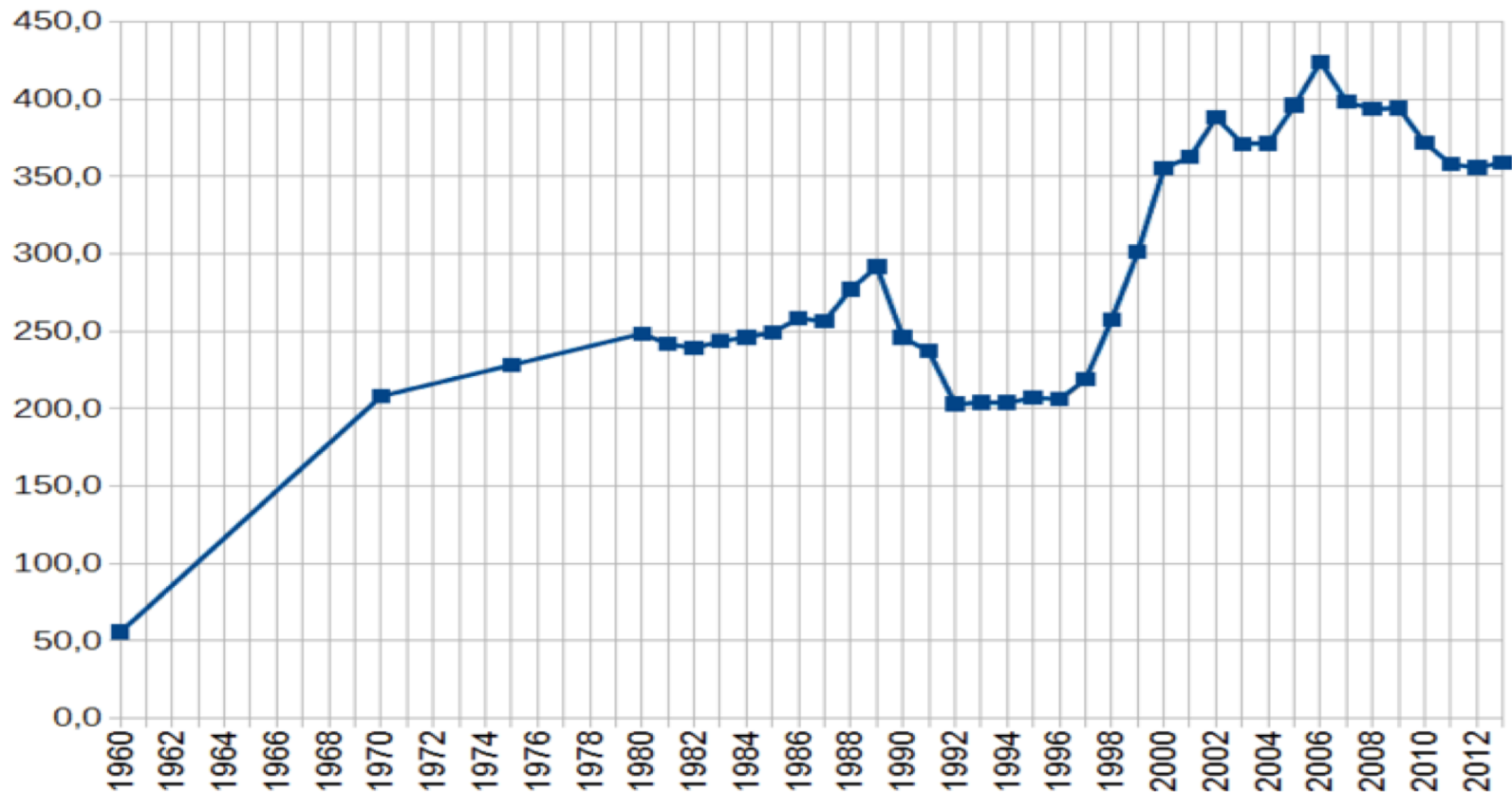


Trends in cigarette sales in Russia

In billion sticks

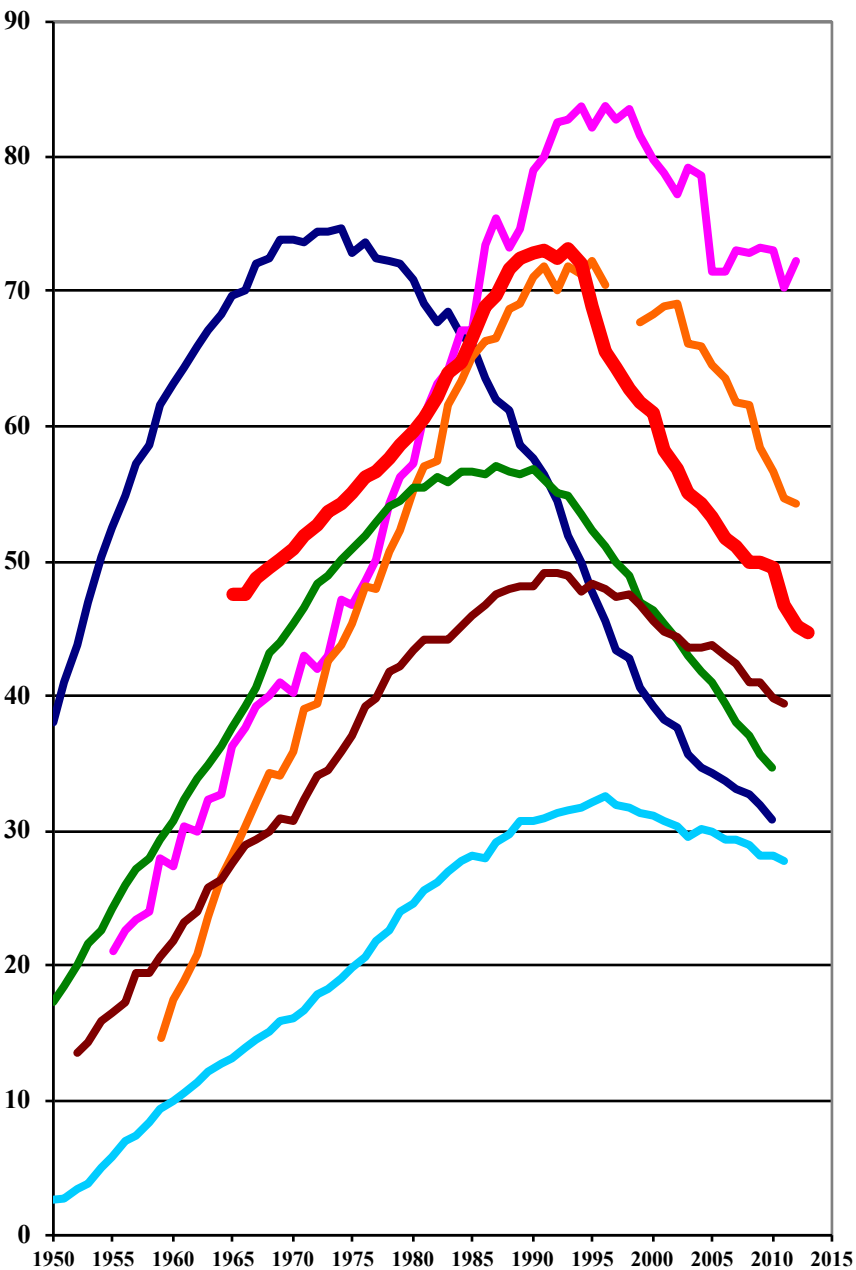
Россия: продажа населению сигарет и папирос, млрд. штук

Источник: Госкомстат/Росстат (www.gks.ru), сборники «Народное хозяйство РСФСР», «Российский статистический ежегодник», «Торговля в России».

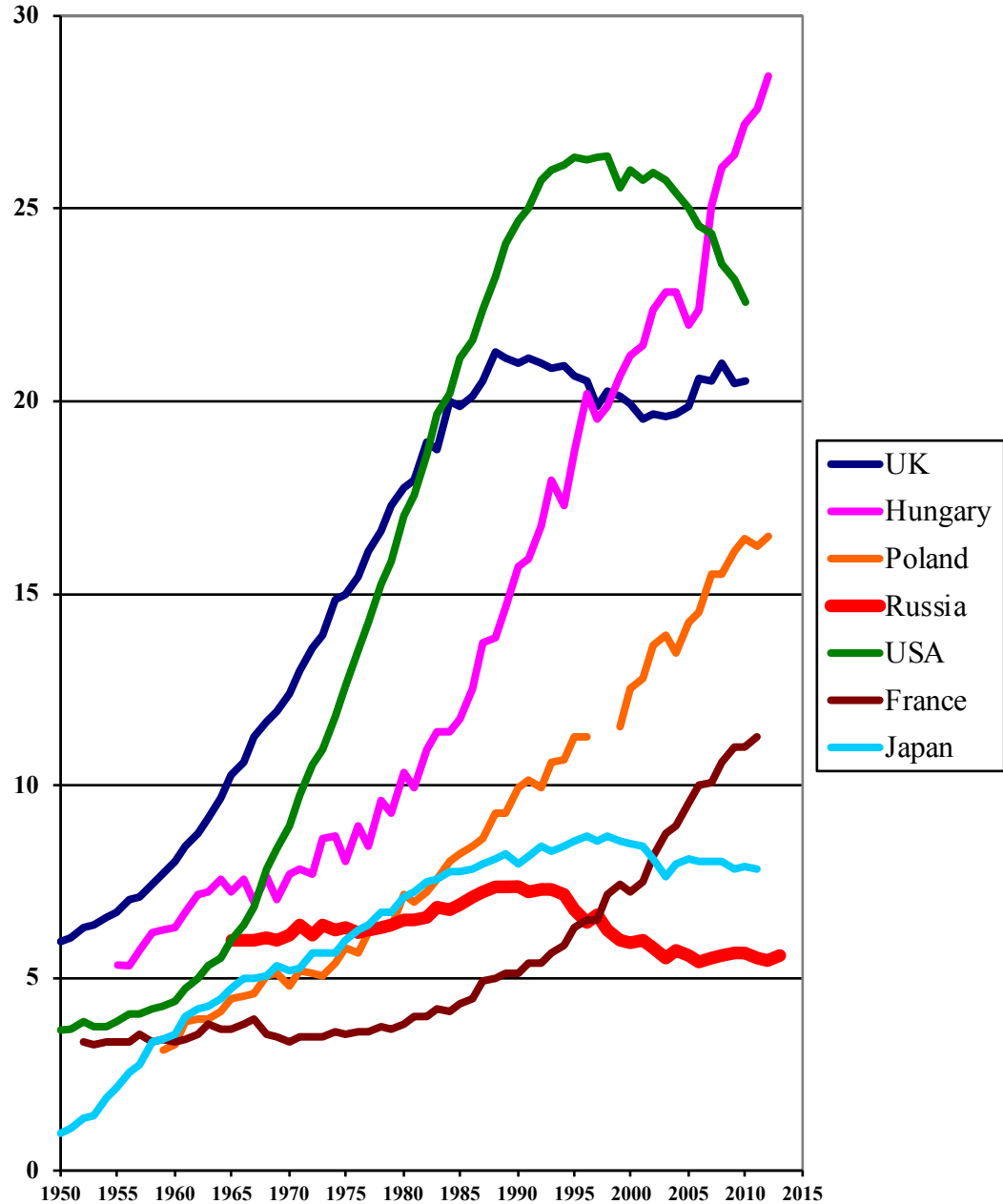


Trends in lung cancer mortality (1965-2013)

Men

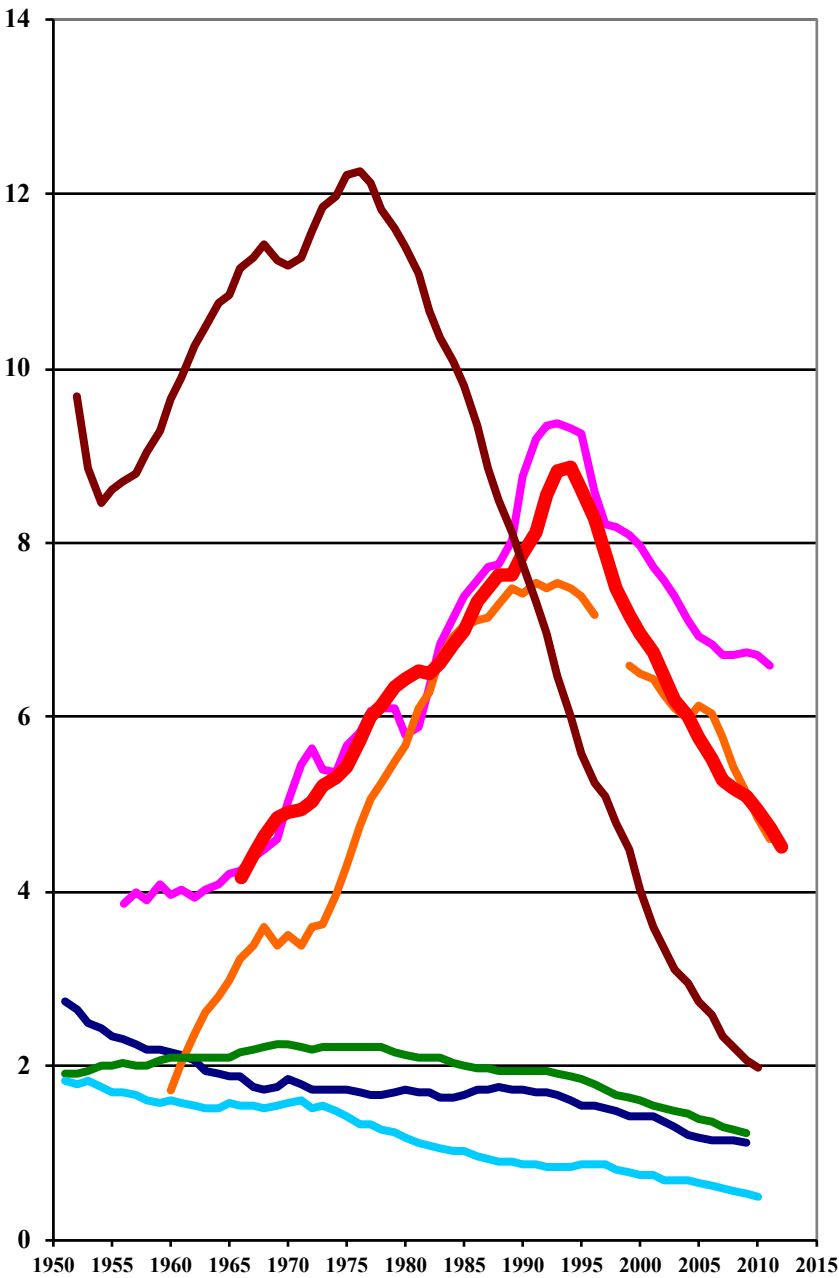


Women

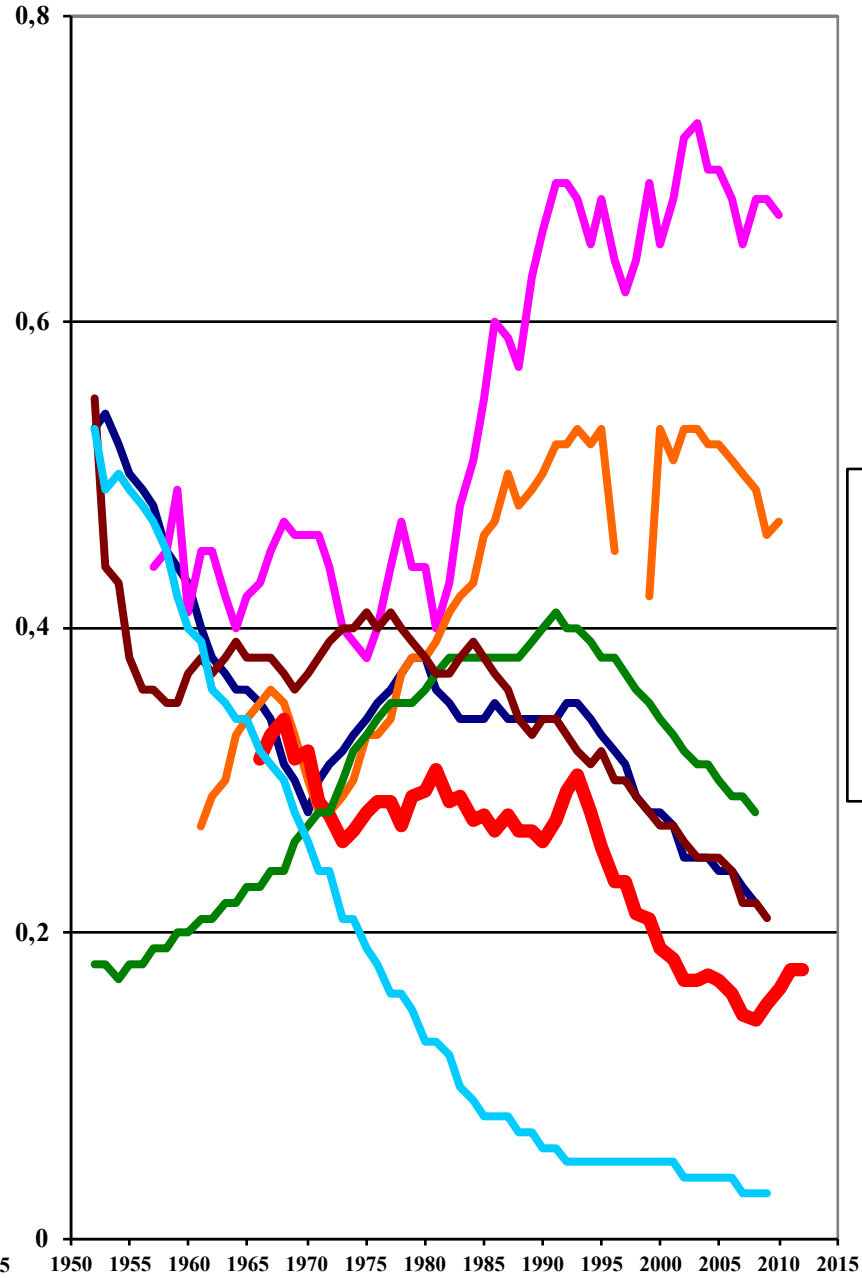


Trends in mortality from cancer of the larynx (1965-2013)

Men

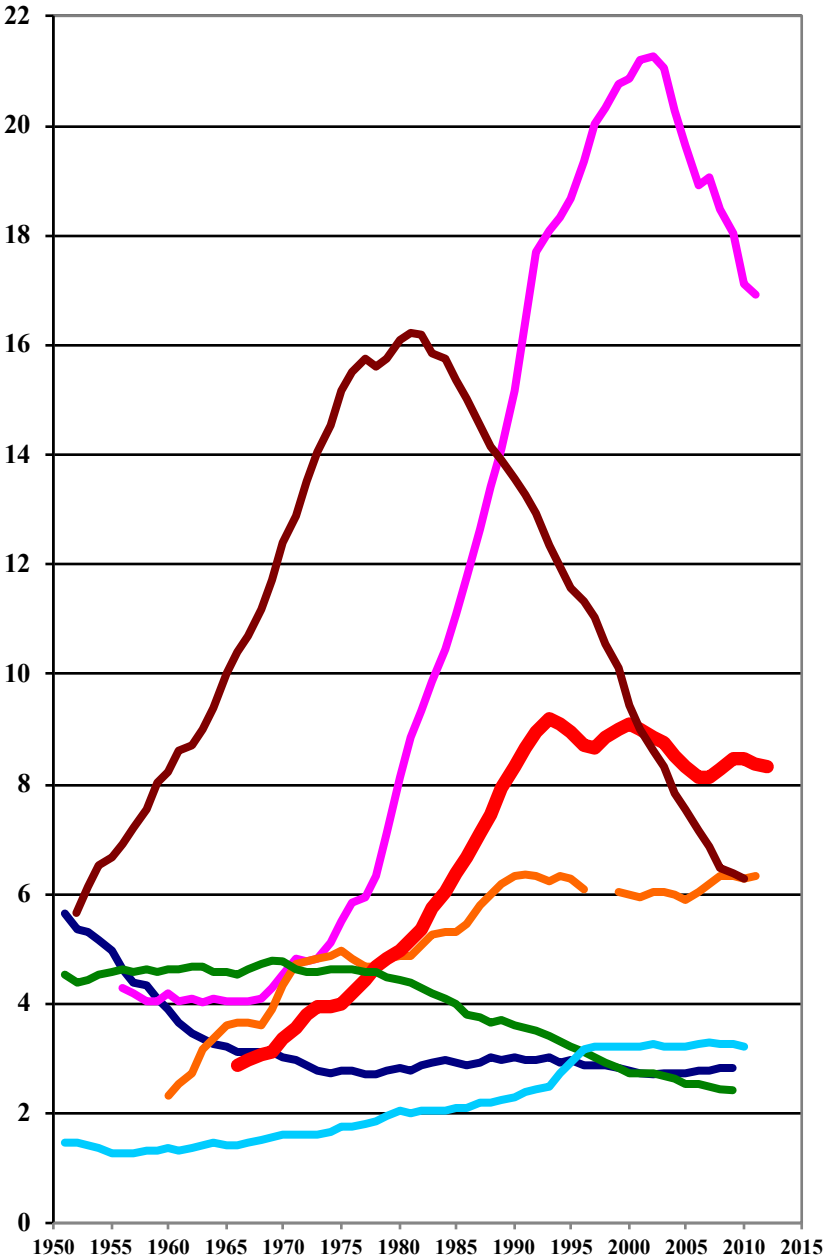


Women

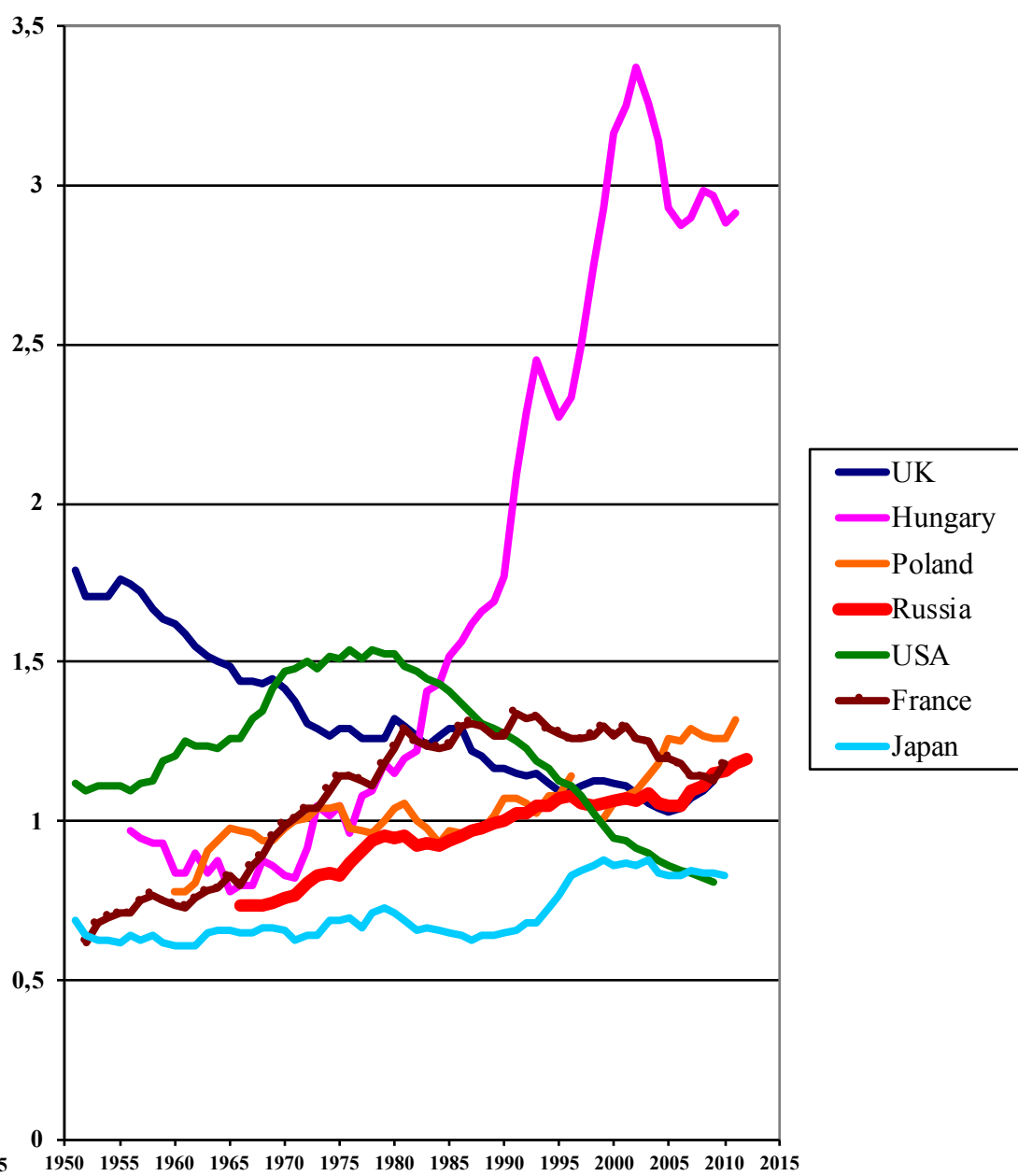


Trends in mortality from cancers of lip, oral cavity and pharynx (1965-2013)

Men

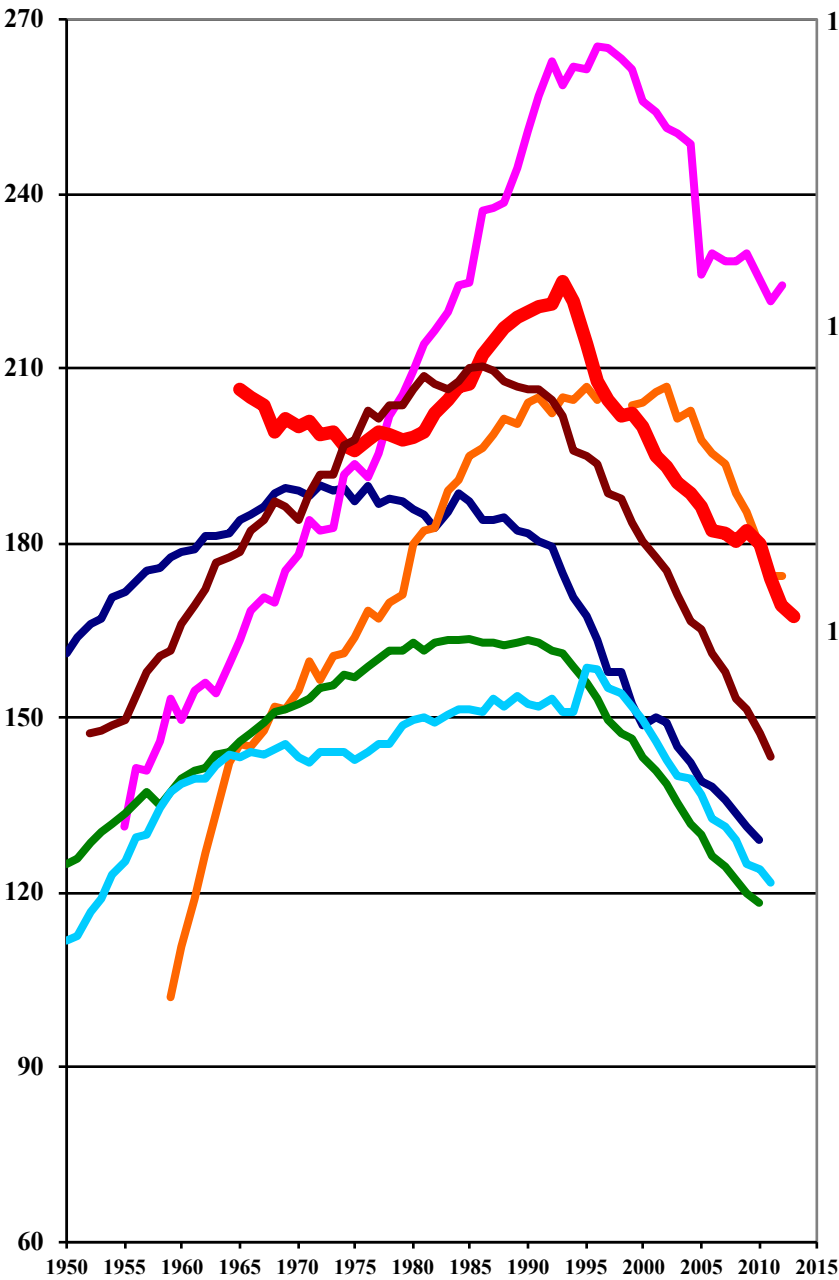


Women

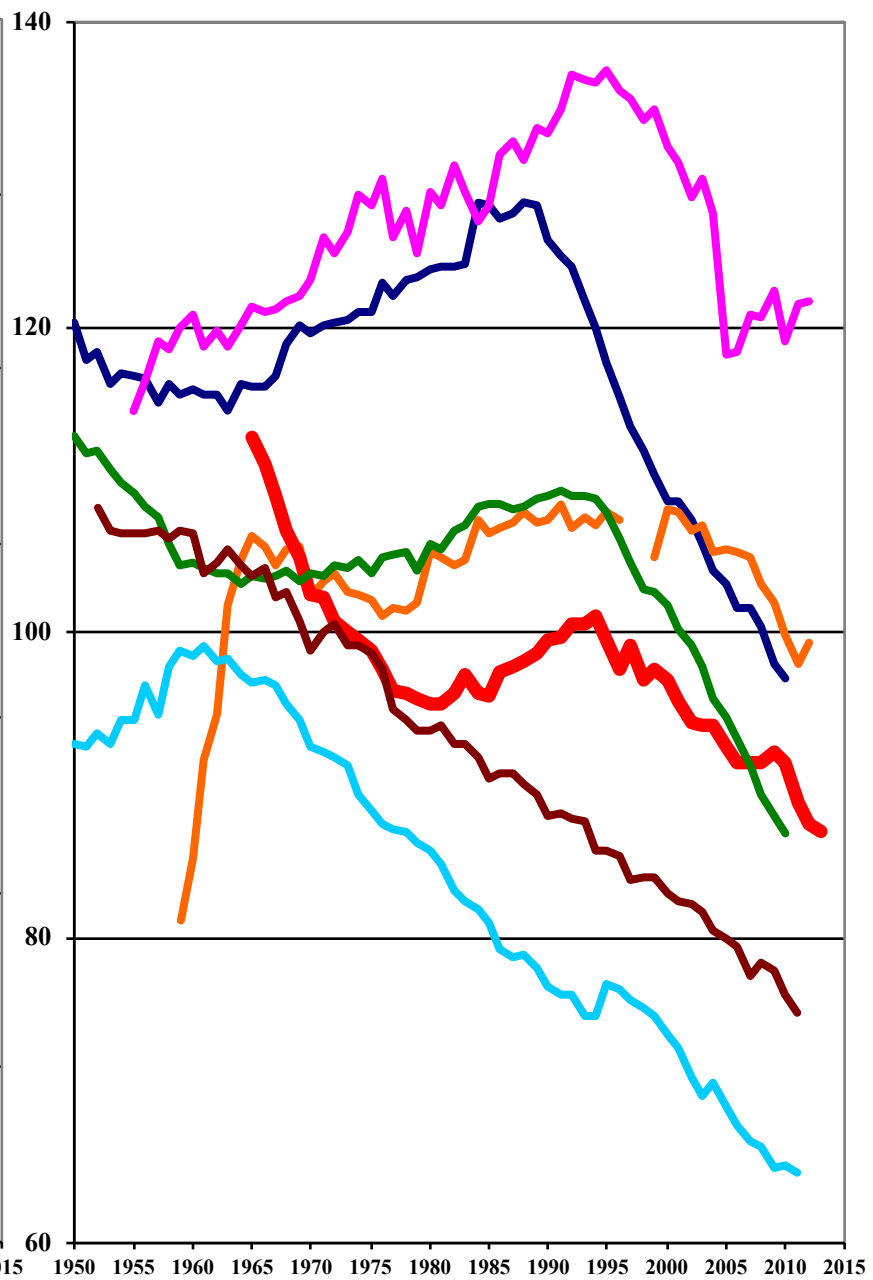


Trends in mortality from all malignant neoplasms

Men

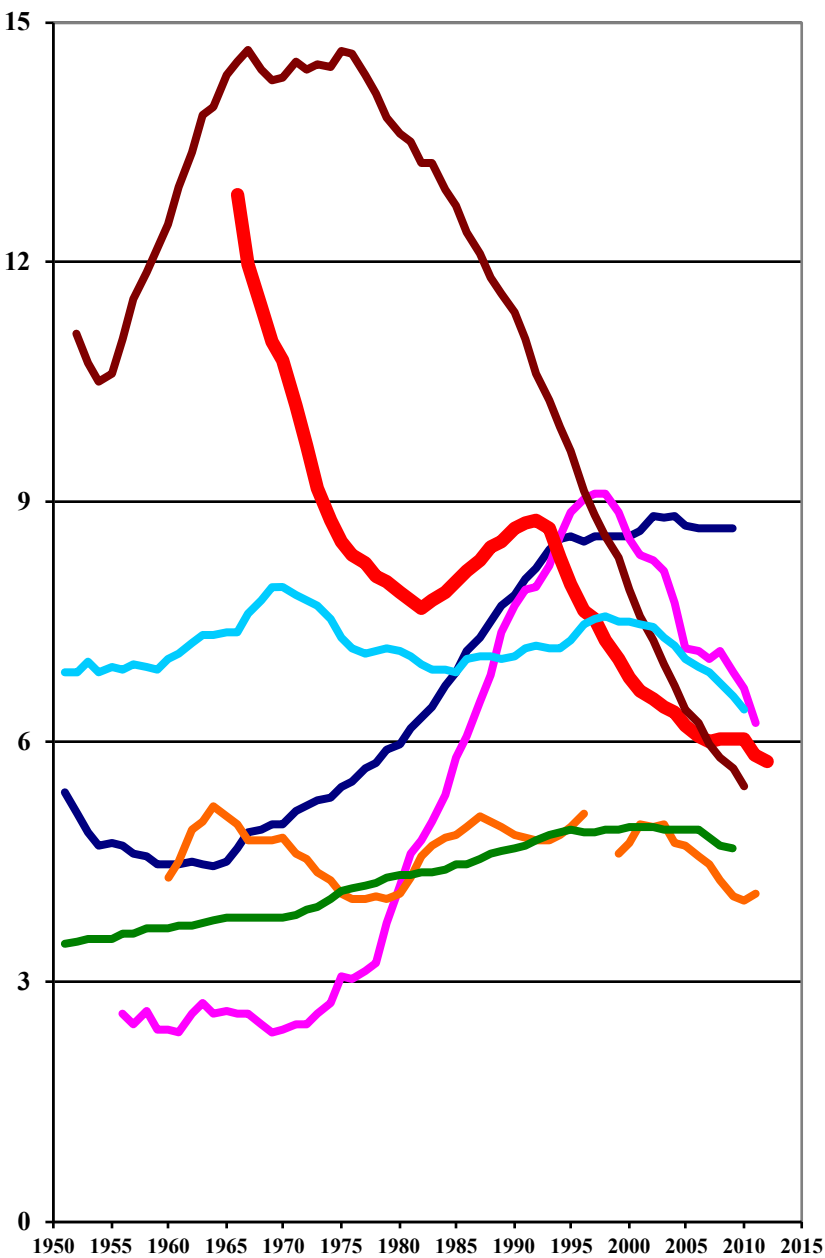


Women

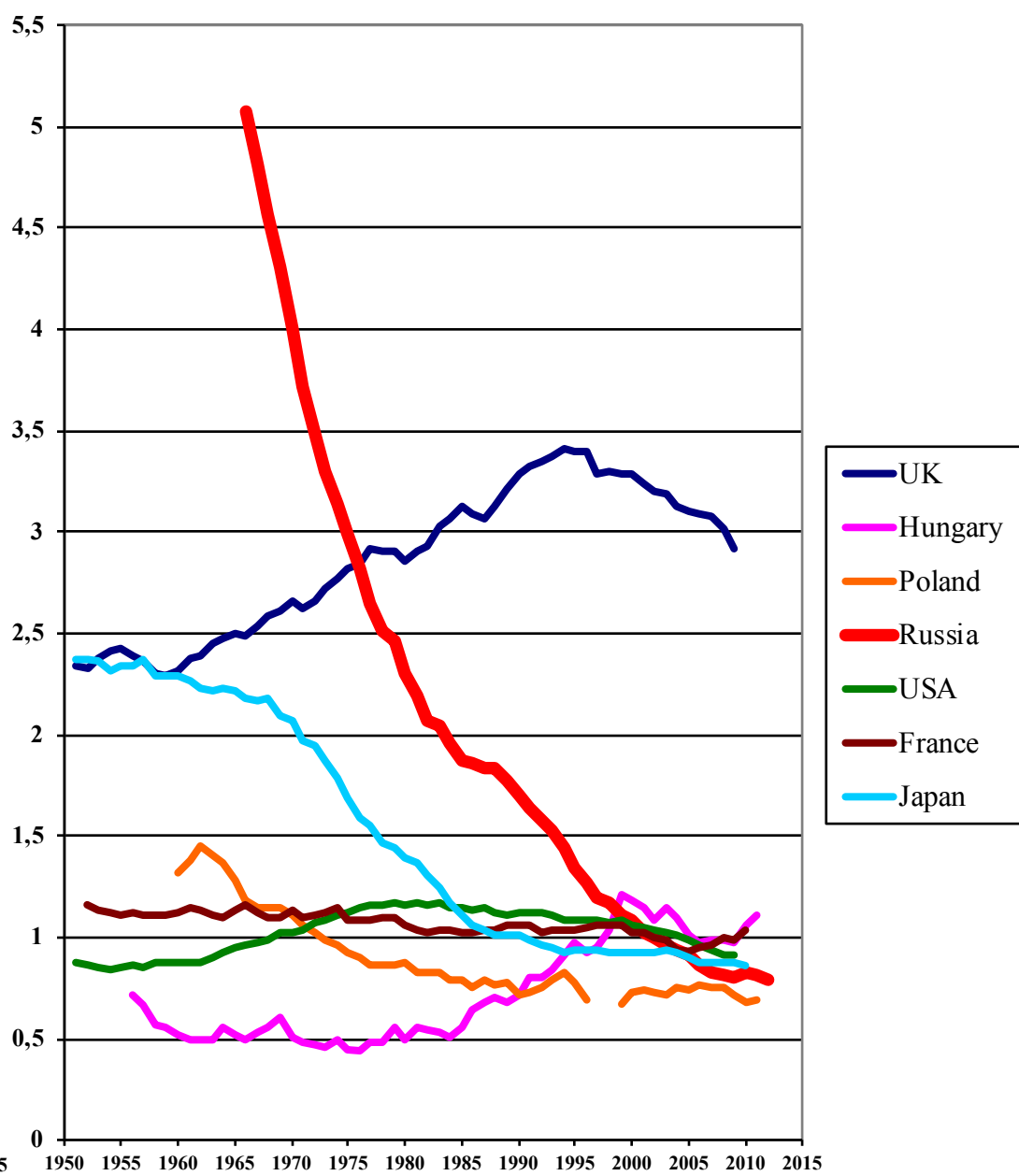


Trends in mortality from cancer of the esophagus (1965-2013)

Men



Women



Cigarette production and sales in Russia were increasing between 1992-2008

From **200 billion sticks** in **1992** to
To **420 billion sticks** in **2008**

Smoking rate have reached in 2009 its historical maximum

60% in men

22% in women

Yet, lung cancer and other smoking associated cancer incidence and mortality rates decreased

Mortality from lung cancer in men decreased by

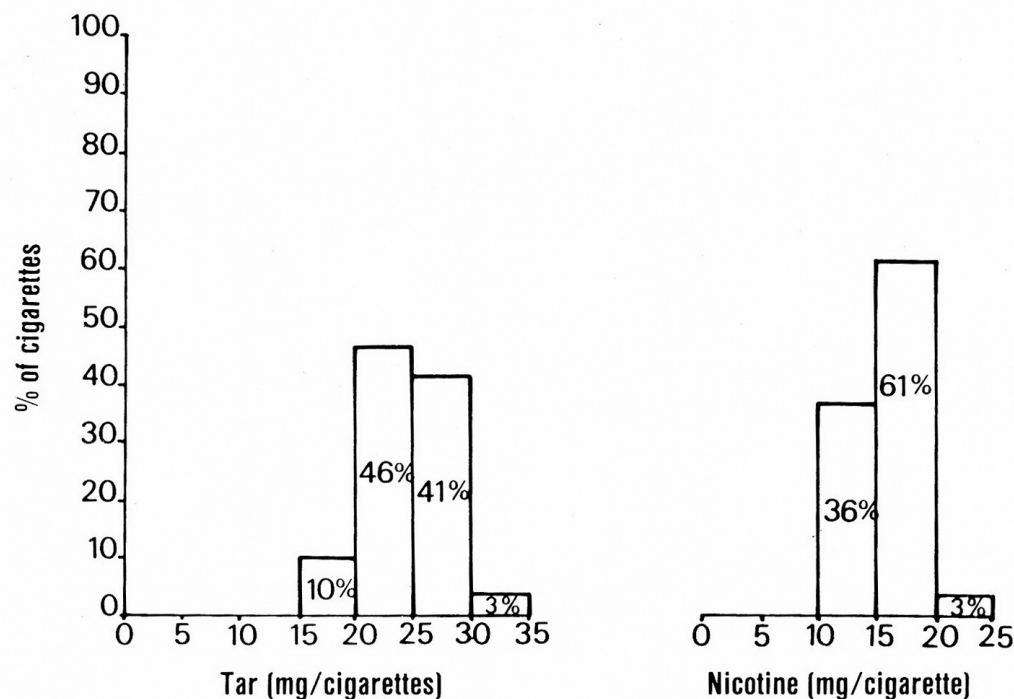
40%

From **73/100 000** in 1993

To **43/100 000** in 2016

WHY?

Fig. 1. Tar and nicotine yields in 45 popular brands of cigarettes in the USSR and Bulgaria



An analysis of tobacco smoke of a sample of 41 brands of cigarettes and *papyrossi* produced in Moscow, Leningrad, Tbilisi, Tallin and Kaunas and four brands of Bulgarian cigarettes was carried out³. The sample included two brands of *papyrossi*, and 11 brands of nonfilter and 32 brands of filter cigarettes. Following the classification of tar yields adopted in Volume 38 of the *IARC Monographs* series (IARC, 1986), tar yields in the above sample

³ Chemical analysis of smoke was undertaken by Dr Kobljakov at the Laboratory of the Austrian Tobacco Industry, Vienna, Austria, at the Laboratory of the Government Chemist, Department of Industry, London, UK, and at the Naylor Dana Institute, American Health Foundation, Valhalla, N.Y., USA.

- **Tar** is the common name for the resinous, partially combusted particulate matter made by the burning (pyrolysis) of tobacco in the act of smoking.
- Tar includes the majority of mutagenic and carcinogenic agents in tobacco smoke. Polycyclic aromatic hydrocarbons (PAH), for example, are genotoxic via epoxidation.

1985

An important event in international public health was an **International meeting on “Tobacco: A Major International Health Hazard”** , Moscow

chaired by D.Zaridze & R. Peto
Honorary president Professor Richard Doll

At this meeting the hazards of smoking were described for the first time in Eastern Europe, and there was for the first time a consensus on limiting the tar content of cigarettes, which was very high in Soviet Union and Eastern Europe (tar >30mg/cig).

The recommendation of the meeting gave the start to the tobacco control policy in the USSR and later in Russia (*Tobacco: A Major International Health Hazard, Zaridze D, Peto R, editors, IARC, 1986, Lyon*).

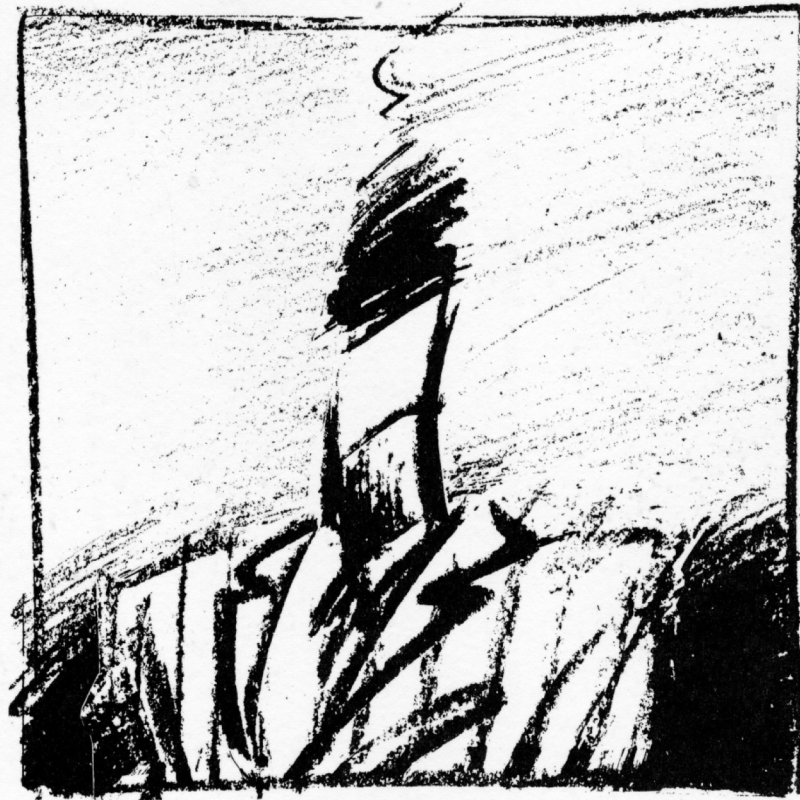
WORLD HEALTH ORGANIZATION



INTERNATIONAL AGENCY FOR RESEARCH ON CANCER

TOBACCO

A MAJOR INTERNATIONAL HEALTH HAZARD



Proceedings of an International Meeting organized by the All-Union Cancer Research Centre, Moscow and IARC, held in Moscow, 4-6 June 1985.

EDITORS D. ZARIDZE & R. PETO

IARC SCIENTIFIC PUBLICATIONS

N° 74

LYON 1986

IMPLICATIONS AND RECOMMENDATIONS

RECOMMENDATIONS

The meeting RECOMMENDS that:

- *in all countries specific measures should be taken to discourage continuation of the habit among smokers and adoption of the habit among nonsmokers.*
- *responsibility be taken for ensuring that the majority of cigarette smokers be led to understand the approximate size of the excess risk of disability and death associated with the habit, and of the benefits of cessation of the smoking habit.*
- *some permanent mechanism be established in each country where there are appreciable numbers of tobacco smokers to ensure that the control of tobacco-related diseases continues, over a long period, to receive an appropriate degree of attention.*

IMPLICATIONS AND RECOMMENDATIONS

RECOMMENDATIONS

A complementary approach to the elimination of tobacco consumption could be changes in cigarette design. It would be necessary to analyse cigarette composition, especially for nicotine and tar delivery. If tar deliveries are relatively high, they should be lowered, since there is evidence that the risk of lung cancer associated with high-tar cigarettes is greater than that for low-tar cigarettes.

The meeting therefore **RECOMMENDS** that, although elimination of tobacco consumption should be the final goal, an upper limit, such as, perhaps, 15 mg, on cigarette tar deliveries be introduced as quickly as possible.

1988

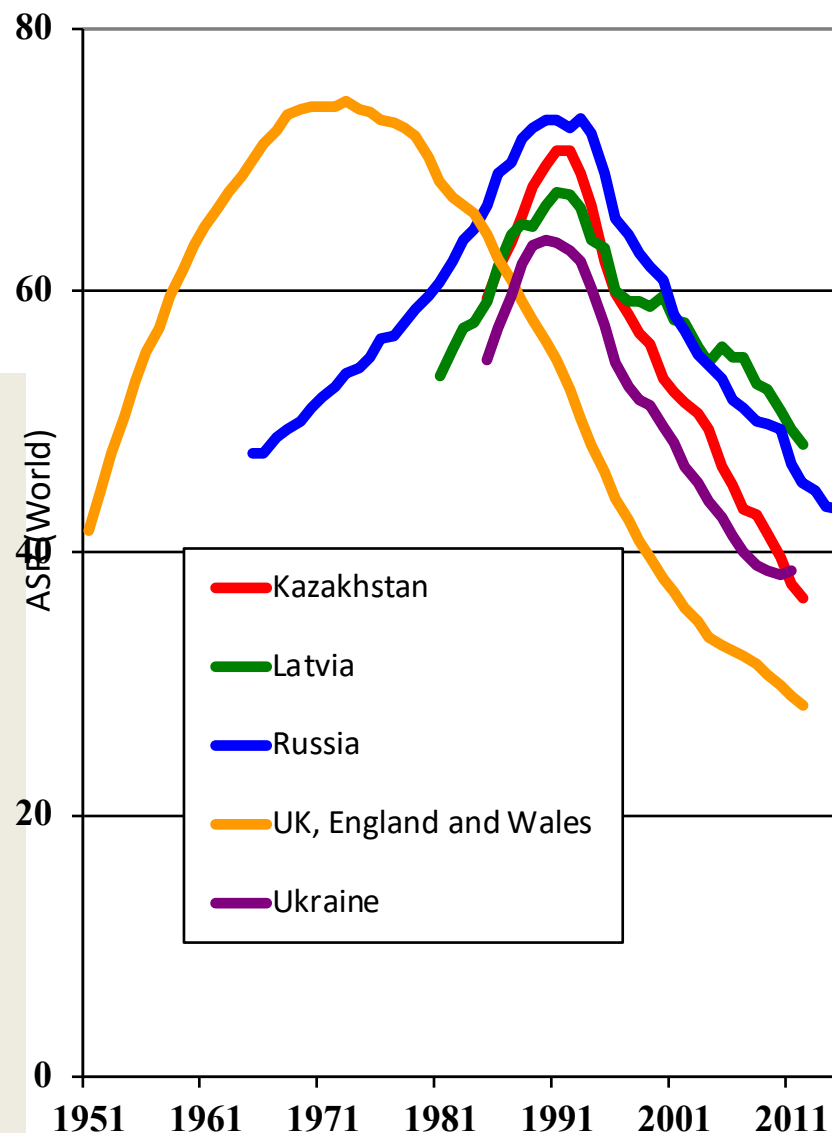
The recommendation to reduce tar and nicotine concentrations in tobacco smoke were translated in 1988 in the legislation on limiting tar (15mg/cig) concentrations in cigarettes produced in the Soviet Union and Russia or imported to the country.

The regulation of tar delivery in Soviet and later Russian cigarettes resulted in decrease in their **tar content from >30mg/cig to 15 mg/cig and later to 12 mg/cig.**

This is the only explanation of the reversal (decrease) in lung cancer incidence and mortality in Russia and other former Soviet republics

This decrease in mortality from lung cancer since 1993 **saved only in Russia lives of some 200,000 men and women** who otherwise would have died from lung cancer

Trends in mortality from lung cancer, Men.



Number of death from lung cancer in Russia in 1993-2014, Men.

(Expected numbers are calculated using crude rate in 1993)

Year	Observed number	Population	Crude death rate	Expected number	Expected-observed (saved lives)
1993	56657	68914500	0.000822		
1994	56043	68894967	0.000813	56641	598
1995	54195	68975381	0.000786	56707	2512
1996	52128	68759001	0.000758	56529	4401
1997	52133	68560043	0.000760	56366	4233
1998	51254	68357341	0.000750	56199	4945
1999	50655	68051432	0.000744	55947	5292
2000	50087	67677984	0.000740	55640	5553
2001	48227	67256436	0.000717	55294	7067
2002	47620	66957296	0.000711	55048	7428
2003	45943	66719991	0.000689	54853	8910
2004	45300	66813322	0.000678	54930	9630
2005	44432	66383146	0.000669	54576	10144
2006	43579	66006266	0.000660	54266	10687
2007	43460	65783032	0.000661	54083	10623
2008	42748	65679355	0.000651	53997	11249
2009	42706	65640507	0.000651	53965	11259
2010	42583	65639380	0.000649	53964	11381
2011	41767	66113278	0.000632	54354	12587
2012	41066	66264905	0.000620	54479	13413
2013	41123	66450208	0.000619	54631	13508
2014	40602	66631418	0.000609	54780	14178
				Saved lives	179 598

Number of death from lung cancer in Russia in 1993-2014, Women.

(Expected numbers are calculated using crude death rate in 1993)

Year	Observed number	Population	Crude death rate	Expected number	Expected-observed (saved lives)
1993	9998	77938256	0.000128		
1994	9872	77840659	0.000127	9985	113
1995	9389	77917983	0.000120	9995	606
1996	9051	77751370	0.000116	9974	923
1997	9231	76705787	0.000120	9840	609
1998	8947	77389682	0.000116	9928	981
1999	8646	77117780	0.000112	9893	1247
2000	8785	76822479	0.000114	9855	1070
2001	8791	76513293	0.000115	9815	1024
2002	8625	76900976	0.000112	9865	1240
2003	8238	76732548	0.000107	9843	1605
2004	8469	77007893	0.000110	9879	1410
2005	8355	76730730	0.000109	9843	1488
2006	8323	76480993	0.000109	9811	1488
2007	8452	76331872	0.000111	9792	1340
2008	8616	76277054	0.000113	9785	1169
2009	8727	76268737	0.000114	9784	1057
2010	8739	76275129	0.000115	9785	1046
2011	8673	76847631	0.000113	9858	1185
2012	8842	76936816	0.000115	9870	1028
2013	8945	77056788	0.000116	9885	940
2014	9128	77188248	0.000118	9902	774
				Saved lives	22 342

Decline in smoking prevalence in Russia started since 2009

- In 2009 smoked
60,2% men & 21,7% women
- In 2016:
49,8 % men & 14% women
- In 2017:
45% men & 15% women

The regulation of tar and nicotine concentration in Russian cigarettes and as a result a steep decrease in their tar delivery and respectively quantity of carcinogens present in tar, such as PAH and others human carcinogens (benzene, acrylamide, acrylonitrile etc) is the only explanation of the decrease in incidence and mortality from malignant neoplasms caused by smoking of tobacco: cancer of the lung, larynx, oropharynx, esophagus.

Presented population based evidence is a proof that tobacco harm reductions saves life's.

Presented evidence suggests that

- switching from traditional cigarette smoking
- to electronic nicotine delivery systems

which deliver significantly lower concentrations of toxic and carcinogenic substances than traditional cigarette

**MAY RESULT IN THE DECREASE OF INCIDENCE AND
MORTALITY FROM CANCER & OTHER DISEASES CAUSED BY
CIGARETTE SMOKING.**

Thank you