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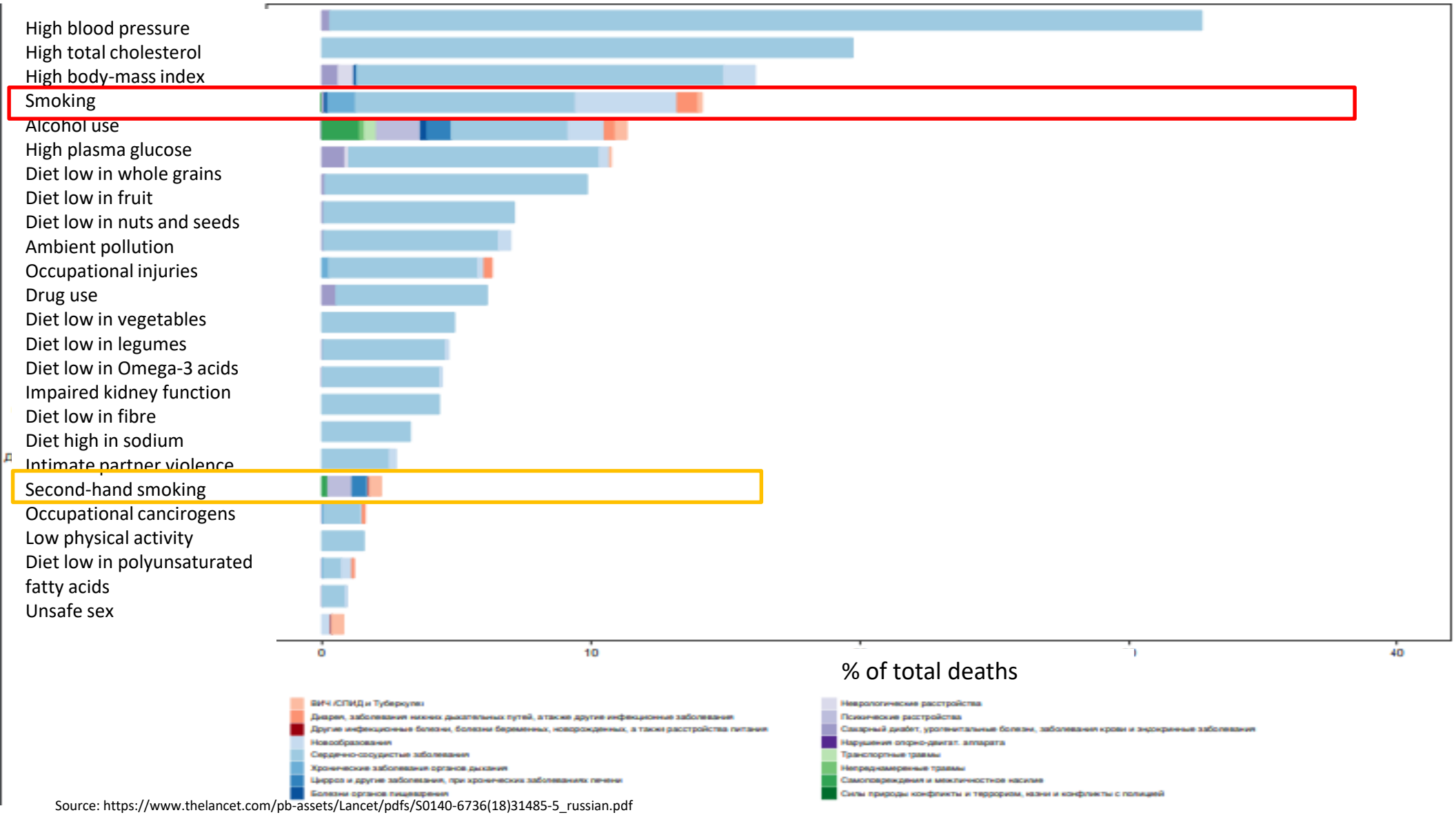
Impact of smoking on the economy and public health in the Russian Federation: ways to address the problem

Smoking is the fourth most dangerous risk factor for population of Russian Federation – causing 15,1% of deaths

Death risks related to different factors for all population in Russia



Source: https://www.thelancet.com/pb-assets/Lancet/pdfs/S0140-6736(18)31485-5_russian.pdf

22% of newly diagnosed disease cases in Russian Federation are caused by smoking

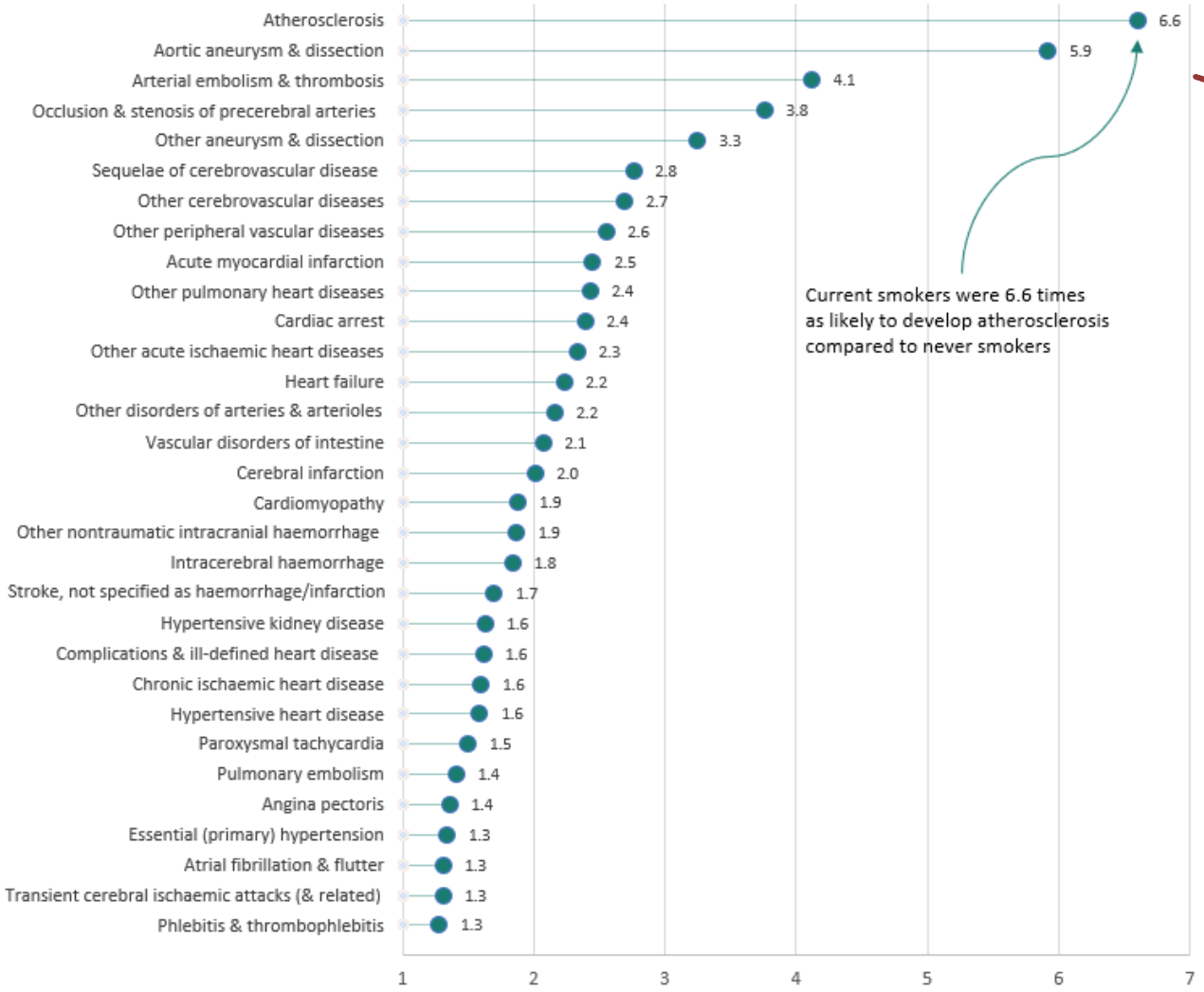
	Never Smoked		Current Smoker		Never Smoked		Current Smoker	
	no. of deaths	*relative risk*	*no. of deaths*	*relative risk (95% CI)*	*no. of deaths*	*relative risk*	*no. of deaths*	*relative risk (95% CI)*
All causes	31,786	1.0	8150	2.8 (2.7–2.9)	24,863	1.0	8325	2.8 (2.8–2.9)
Diseases established as caused by smoking†								
Lip and oral cavity cancer, C00–C14	57	1.0	42	5.6 (3.7–8.6)	82	1.0	64	5.7 (4.1–8.1)
Esophageal cancer, C15	81	1.0	50	5.1 (3.5–7.4)	178	1.0	104	3.9 (3.0–5.0)
Stomach cancer, C16	184	1.0	34	1.7 (1.2–2.5)	154	1.0	45	1.9 (1.4–2.7)
Colorectal cancer, C18–C20	1,016	1.0	174	1.6 (1.4–1.9)	753	1.0	160	1.4 (1.2–1.7)
Liver cancer, C22	228	1.0	40	1.8 (1.3–2.5)	228	1.0	74	2.3 (1.8–3.0)
Pancreatic cancer, C25	948	1.0	184	1.9 (1.6–2.2)	747	1.0	153	1.6 (1.4–1.9)
Laryngeal cancer, C32	2	1.0	27	103.8 (24.2–445.5)	23	1.0	50	13.9 (8.3–23.3)
Lung cancer, C33–C34	735	1.0	1872	22.9 (21.0–25.0)	480	1.0	1754	25.3 (22.8–28.1)
Urinary bladder cancer, C67	123	1.0	48	3.9 (2.8–5.5)	201	1.0	84	3.9 (3.0–5.1)
Kidney and renal pelvis cancer, C64–C66	256	1.0	32	1.2 (0.9–1.8)	237	1.0	62	1.8 (1.4–2.4)
Acute myeloid leukemia, C92.0	180	1.0	22	1.1 (0.7–1.7)	210	1.0	48	1.9 (1.4–2.7)
Diabetes, E10–E14	743	1.0	110	1.5 (1.3–1.9)	729	1.0	142	1.6 (1.3–1.9)
Ischemic heart disease, I20–I25	4,119	1.0	1014	3.0 (2.8–3.2)	4,947	1.0	1522	2.6 (2.4–2.7)
Other heart disease, I00–I09 and I26–I51	2,329	1.0	340	1.9 (1.7–2.1)	1,736	1.0	364	2.0 (1.8–2.2)
Total stroke, I60–I69	2,435	1.0	385	2.1 (1.8–2.3)	1,399	1.0	279	1.9 (1.7–2.2)
Atherosclerosis, I70	76	1.0	12	2.1 (1.1–4.0)	57	1.0	32	5.0 (3.2–7.9)
Aortic aneurysm, I71	99	1.0	91	10.1 (7.4–13.6)	126	1.0	116	7.5 (5.8–9.7)
Other arterial diseases, I72–I78	81	1.0	47	5.6 (3.9–8.2)	57	1.0	36	5.3 (3.4–8.2)
Pneumonia, influenza, and tuberculosis, J10–J18 and A16–A19	723	1.0	100	1.9 (1.6–2.4)	487	1.0	87	2.0 (1.6–2.6)
COPD, J40–J44	410	1.0	941	25.0 (21.2–28.1)	259	1.0	825	27.8 (24.1–32.0)
Additional diseases associated with smoking‡								
All infections, A00–B99§	598	1.0	137	2.5 (2.1–3.0)	475	1.0	125	2.2 (1.8–2.7)
Breast cancer, C50	1,748	1.0	274	1.3 (1.2–1.5)	—	—	—	—
Prostate cancer, C61	—	—	—	—	1,101	1.0	166	1.4 (1.2–1.7)
Rare cancers¶	1,233	1.0	143	1.1 (0.9–1.3)	402	1.0	84	1.6 (1.2–2.0)
Cancers of unknown site	866	1.0	237	2.7 (2.3–3.2)	665	1.0	268	3.2 (2.8–3.7)

Smoking increases risk of practically all diseases

Disease type	% of disease cases caused by smoking
Cancers	45%
Respiratory diseases	33%
Digestive system disorders	26%

https://www.ncbi.nlm.nih.gov/books/NBK179276/pdf/Bookshelf_NBK179276.pdf

Relative risks of heart diseases are on average **2.2 times** higher among smokers. Atherosclerosis risk is **6.6 times** higher among smokers



5-12 years of smoking cessation are required to bring risk to normal.

Source: https://www.tobaccoinaustralia.org.au/chapter-3-health-effects/3-1-smoking-and-heart-disease

Multiple research has proven harmful effects of smoking on male and female fertility

Fertility risks of men and women associated with smoking

Menopause starts **earlier by 1-4 years**

Successful IVF (In vitro fertilization) chance **decrease by 30%** for fertile females

Sperm quality decreases in 28-44% of actively smoking males

Erectile disfunction chances **are 1,4-3,1 times higher** than in non-smoking males

Limited animal tests of e-cigarettes demonstrate:

- Decreased female fertility
- Decreased offspring weight gain during first year
- Increased chance of complications

- Effects of smoking on fertility are **dose-dependent.**
- Reduction of smoking or switching to lighter cigarettes and **ENDS may decrease negative effects**

Источник: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4485976/, https://www.reproductivefacts.org

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Burden of diseases attributable to smoking accounts for 5 797 219 years of quality life lost, accounting for 9,2% of total yearly DALY. For COPD and some cancers over 70% of DALY is caused by smoking

Smoking DALY attribution rates for different diseases

Disease	Smoking DALY attribution rate	Disease	Smoking DALY attribution rate	Disease	Smoking DALY attribution rate
COPD	72,4%	Rheumatoid arthritis	4,7%	Chronic lymphocytic leukaemia (CLL)	13,4%
Lung cancer	77,7%	Breast cancer	6%	Cervical cancer	9,2%
Coronary heart disease	13,9%	Dementia	2,3%	Gastroduodenal disorders	9,4%
Stroke	10,8%	Atrial fibrillation and flutter	8,4%	Other leukaemias	11%
Oesophageal cancer	52,2%	Laryngeal cancer	75,5%	Age-related macular degeneration	4,4%
Asthma	9,1%	Kidney cancer	16,9%	Chronic myeloid leukaemia (CML)	10,8%
Pancreatic cancer	22%	Stomach cancer	13,3%	Acute lymphoblastic leukaemia (ALL)	3,4%
Back pain and problems	4,3%	Prostate cancer	5,2%	Cataract	3,8%
Bowel cancer	7,4%	Other respiratory disease	19,3%	Gallbladder and bile duct disease	1,8%
Liver cancer	19,4%	Acute myeloid leukaemia (AML)	9,9%	Influenza	0,%5
Other cardiovascular diseases	15,6%	Aortic aneurysm	12,3%	Otitis media	0,6%
Lower respiratory infections	16,8%	Hypertensive heart disease	11,2%		
Lip and oral cavity cancer	53,2%	Multiple sclerosis	7,9%		
Bladder cancer	32,9%	Nasopharyngeal cancer	44,9%		
Type 2 diabetes	4,4%	Peripheral vascular disease	8,9%		

Source: https://www.tobaccoinaustralia.org.au/chapter-3-health-effects/3-30-total-burden-of-death-and-disease-attributable-to-tobacco-by-disease-category

Economic loss of smoking for the Russian Federation is estimated as 2,4% of annual GDP, accounting for 2,48 trl RUR in 2018

Smoking associated losses
Direct productivity loss
Increased wearing of machinery and equipment
Loss of working time due to smoking breaks
Loss of working time due to increased sick leaves
Fire (not included in losses calculations due to uncertainness)

Smoking is associated with **loss of $1,066 per smoker yearly**

Smoking associated GDP losses in Russia, 2018

- **2,4% of annual GDP**
- **2,48 trl RUR**

Источник: https://wp.hse.ru/data/2011/11/11/1271947483/WP15_2011_01_fff.pdf, расчеты СКОЛКОВО

Direct cost of smokers for healthcare system is over 1,3 trl RUR yearly. Expenses on smokers are by 28,8% more than on non-smokers

Healthcare expenses	RUR per year
Direct **healthcare system expenses per capita**	**26,924**
Direct **healthcare system expenses on non-smoker**	**25,329**

Estimated healthcare expenses	RUR per year
Estimation of **direct healthcare system expenses on smoker**	**31,900 – 32,100**
Estimation of **direct healthcare system expenses on vaper**	**26,000 – 27,000**
Estimation of direct healthcare system expenses **on standard nicotine therapy** per user	**30,000 – 30,500**

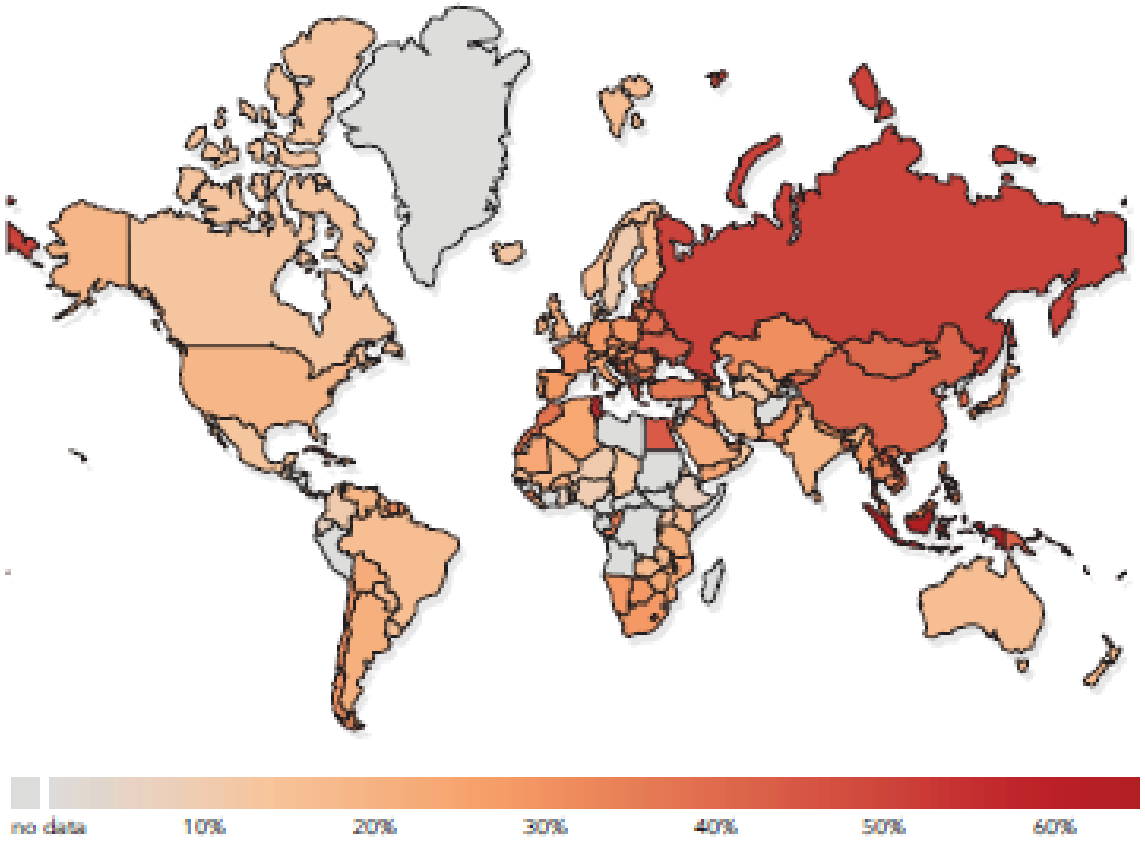
Quitting smoking by every user could reduce government healthcare expenses by **7,9% p.a.**

Transferring to vape of every smoker can reduce government healthcare spending by **6,4% p.a.**

Source: https://wp.hse.ru/data/2011/11/11/1271947483/WP15_2011_01_fff.pdf, расчеты СКОЛКОВО

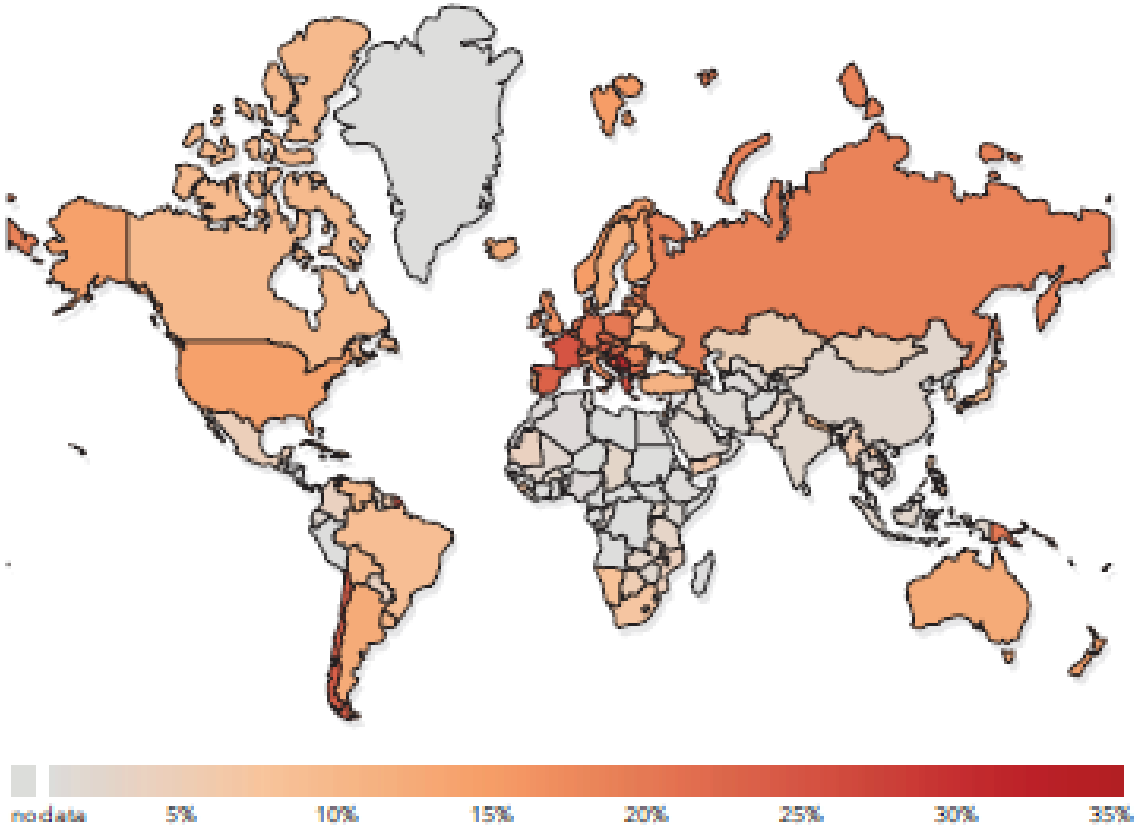
Tobacco smoking in Russia significantly exceeds other countries that requested adequate regulatory measures to decrease this addiction

WHO estimate of daily (tobacco) smoking prevalence age 15+ male



Source: WHO report on the global tobacco epidemic, 2017, Country profiles http://www.who.int/tobacco/surveillance/policy/country_profile/en/

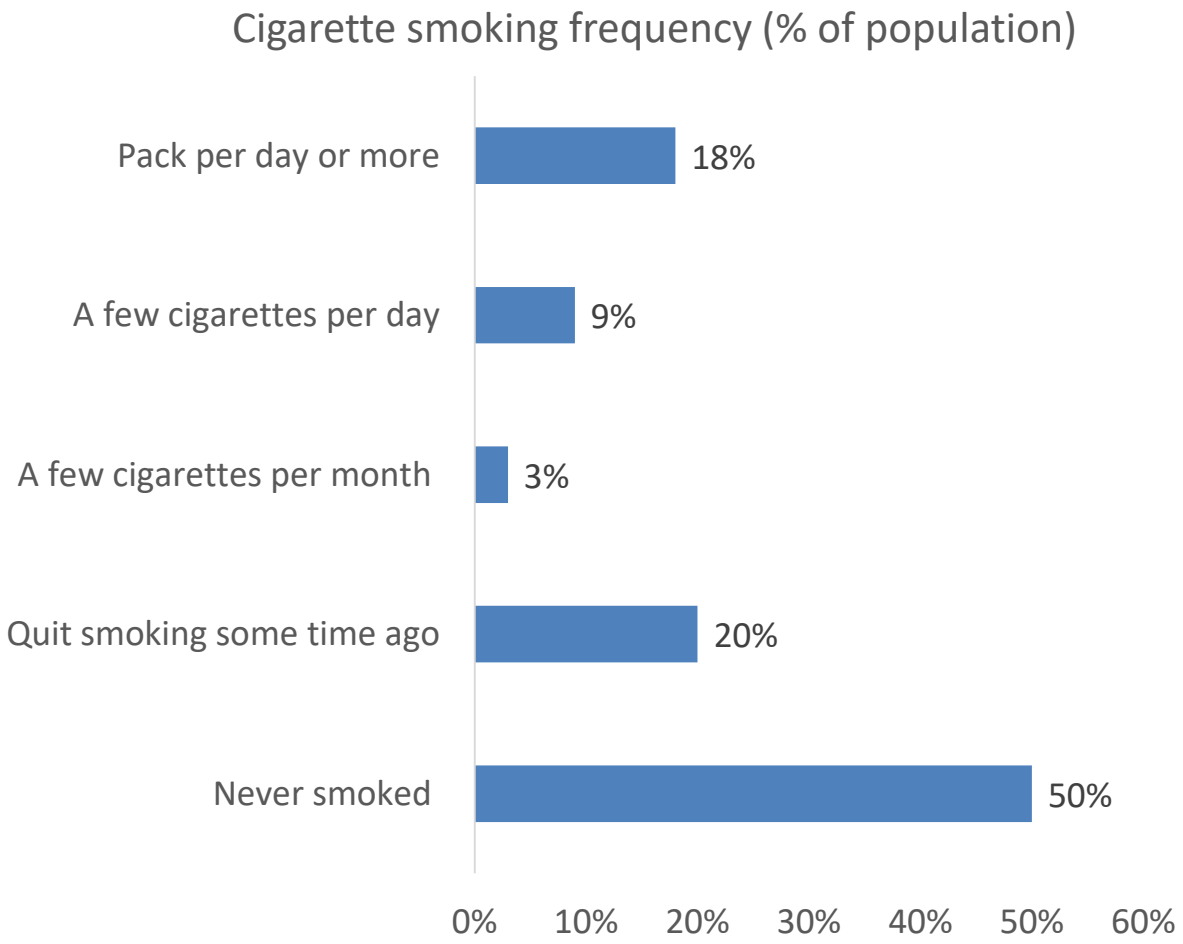
WHO estimate of daily (tobacco) smoking prevalence age 15+ female

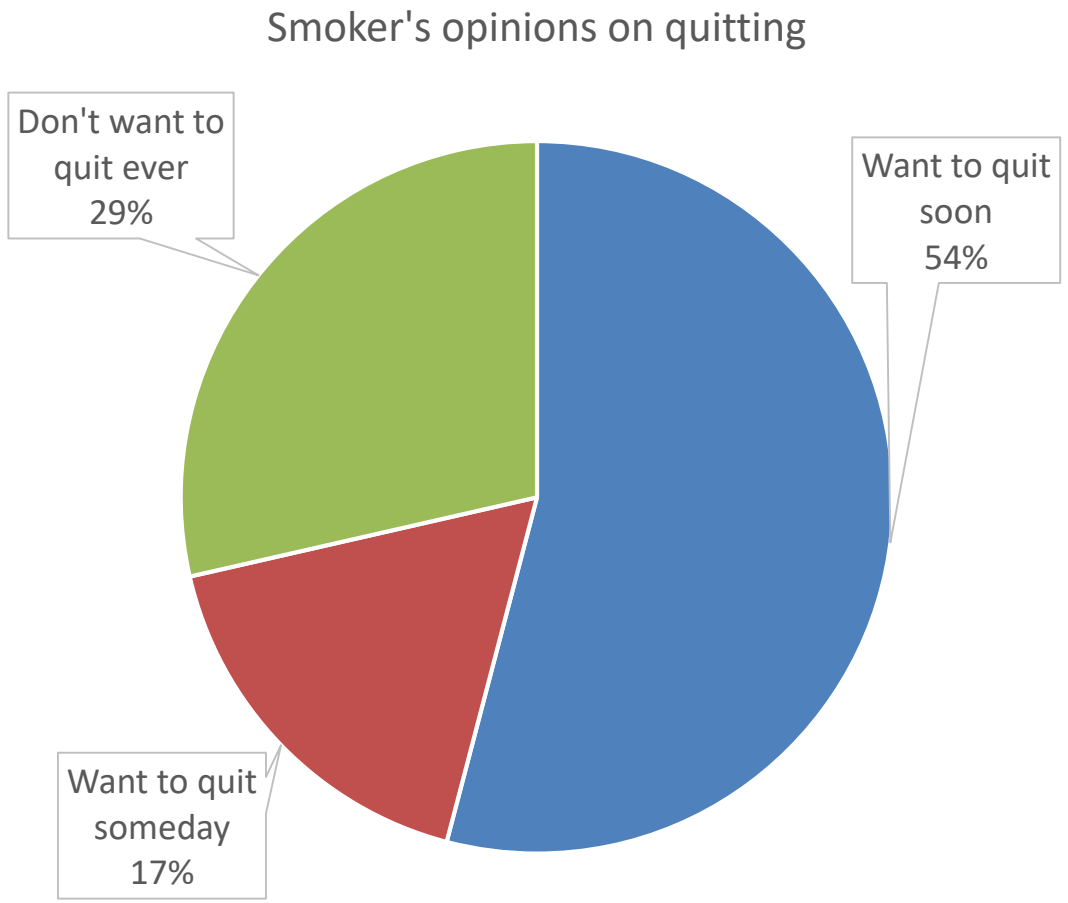


Source: WHO report on the global tobacco epidemic, 2017, Country profiles http://www.who.int/tobacco/surveillance/policy/country_profile/en/

Source: GSTHR, 2018

Over 18% of Russian citizens consume more than a pack daily. 54% of smokers are interested in quitting or reducing smoking, 29% don't intent to quit



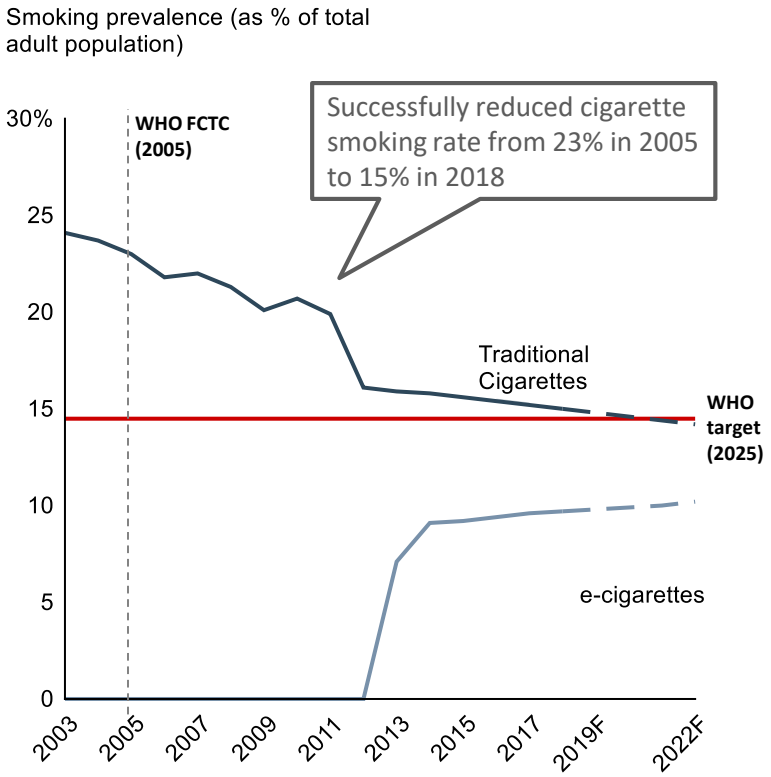


Источник: wciom.ru

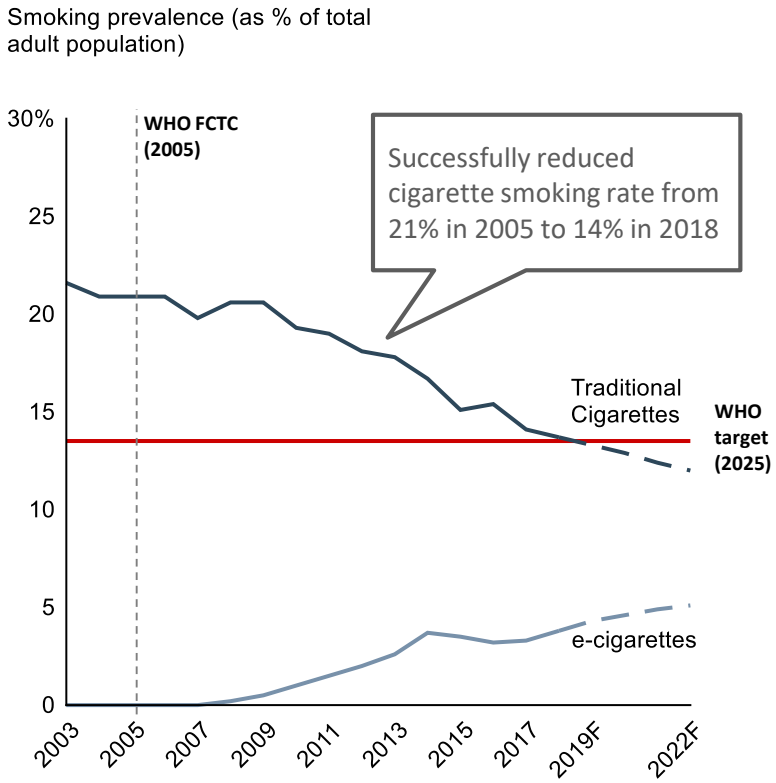
Countries with scale vape markets have been successful in reducing cigarette smoking (in addition to taxation and consumer awareness schemes)

Smoking prevalence: success stories

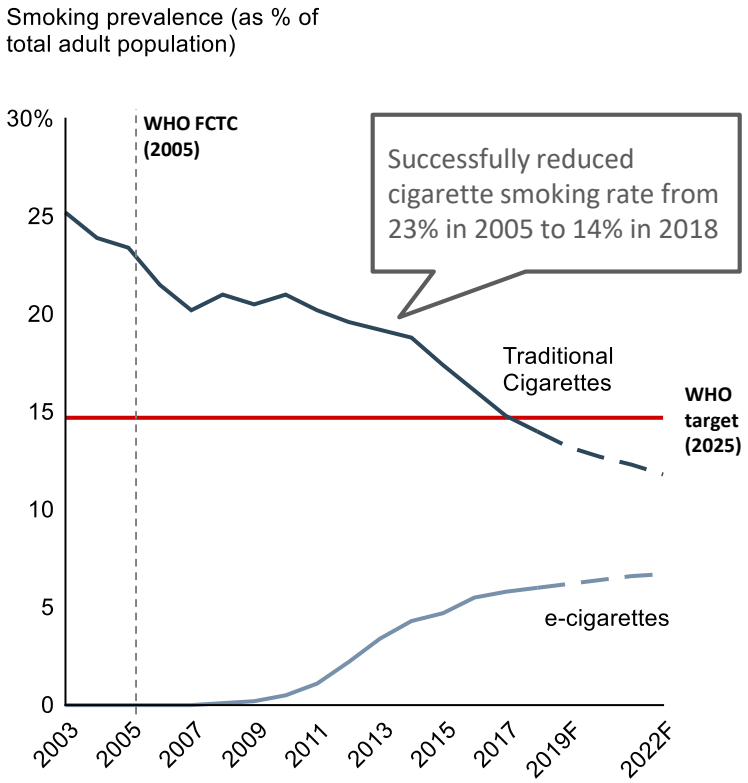
Canada



USA



UK



Note: Adult population refers to population above the legal smoking age; WHO targets estimated using 30% lower smoking rate from 2010 baseline; Heated tobacco products in Canada account for <5% of e-cigarette market, and ~1% in the UK
Source: Euromonitor

Vaping impact to health is softer than those of smoking

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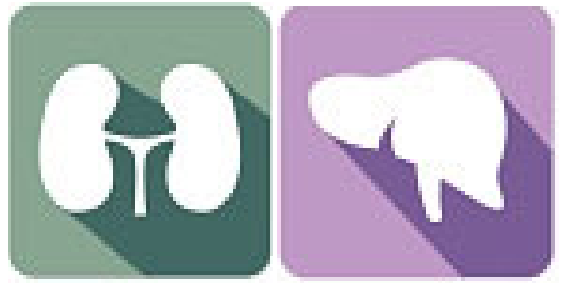

Respiratory system

- Increased airway resistance, decrease in specific airway conductance, increase in impedance and overall peripheral airway resistance
- lung function: – non-significant decrease in lung function, approximately half of effect of smoking
- significant airway obstruction
- same particle dose received in airways as with smoking
- significant inhibition of reflex sensitivity
- reduction in exhaled nitric oxide

Cardiovascular system

Conflicting results on haemodynamic effect:

- In some patients - increased heart rate, elevation in diastolic blood pressure, decrease in oxygen saturation
- In some patients - no increase in heart rate or in blood pressure but an increase in oxygen saturation
- no negative effect on elasticity and stiffness of ascending aorta
- • no effect on cardiac function

Toxicity

Toxicants and carcinogen metabolites found in urine of vapers:

- concentrations:
  - ✓ significantly lower than in smokers
  - ✓ high concentration of NNAL (carcinogenic) found in some vapers
- – high, acetaldehyde, acrolein only in dry puff conditions
- High formaldehyde level in some e-cigarettes
- vapers' exhaled breath: benzene, toluene and 2,5-dimethylfuran (harmful substances) identified
- smokers had much higher burden of VOCs than vapers

Green – significantly better than smoking
Yellow – partially similar to smoking or inconclusive
Red – similar to smoking

Источник: https://www.who.int/tobacco/industry/product_regulation/BackgroundPapersENDS3_4November-.pdf

Vaping improved general condition and quality of life of ex-smokers, but vapers' health is worse in comparison with non-smokers.

Impact of vaping to general conditions and quality of life of ex-smokers and non-smokers versus smokers

Quality of life (ex-smokers comparison)

- reduced smoker's cough
- improved stamina
- reduced bad breath
- reduced or no teeth pigmentation

Quality of life (non-smokers comparison)

- reduced tonus
- reduced stress
- reduced stamina
- dry skin and eyes
- dizziness and itchiness
- increased airway resistance and cough
- increased blood pressure and heart rate
- vomiting and nausea

Adverse effects (share of users experiencing and reporting adverse effects)

Smokers AEs	15,1%
Dual users AEs	17,6%
Vapers AEs	11,8%

Green – significantly better than smoking
Yellow – partially similar to smoking or inconclusive
Red – similar to smoking

Источник: https://vapingdaily.com/what-is-vaping/vaping-side-effects/
https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-019-6629-0

Content of harmful substances in the majority of vapes is significantly lower than in cigarette smoke

Content of harmful substances in different cigarettes versus vapes

Substance	3R4F	Rothmans Demi	Winston Blue Compact	Bond Street Blue Compact	LD Blue	Bond Street Blue	IQOS	Glo	LUXLITE	Von Erl My	iKuu i200
Carbon oxide	100.0%	64.5%	64.7%	66.5%	83.1%	67.9%	2.5%	0.9%	0.3%	1.1%	629%
Benzopyrene	100.0%	85.6%	88.7%	92.0%	100.0%	72.3%	5.7%	8.4%	0.0%	0.0%	0.0%
1,3-Butadiene	100.0%	77.4%	76.5%	75.0%	86.8%	100.5%	0.4%	0.0%	0.0%	0.0%	0.0%
Benzol	100.0%	69.4%	62.8%	60.1%	66.5%	70.9%	0.5%	0.1%	0.0%	0.0%	0.0%
Formaldehyde	100.0%	84.9%	95.1%	53.3%	98.6%	100.4%	6.2%	15.8%	19.1%	16.0%	5440%
Acetaldehyde	100.0%	61.0%	58.6%	58.8%	75.5%	52.4%	9.8%	8.0%	0.1%	0.5%	0.0%
Acrolein	100.0%	66.9%	68.5%	65.7%	78.8%	57.4%	6.7%	2.6%	0.4%	1.6%	298%
NNN	100.0%	29.9%	77.6%	49.8%	85.2%	45.3%	4.3%	7.0%	0.0%	0.0%	0.0%
NNK	100.0%	18.8%	83.2%	41.9%	83.9%	23.5%	4.3%	3.2%	0.0%	0.0%	0.0%

Source: «Проведение исследований рынка новых видов никотиносодержащей продукции, международной практики правового регулирования обращения такой продукции и разработка предложений по установлению в рамках Евразийского экономического союза обязательных требований к новым видам никотиносодержащей продукции и рекомендаций по механизмам их реализации» ВНИИТТИ 2018

These key stakeholders represent governmental authorities and research institutions, some of them will be invited to become the members of the Expert Council on smoking fighting at SKOLKOVO

Key stakeholders – members of the Expert Council

- State Duma
- Council of Federation
- Ministry of Healthcare of the Russian Federation

- Carcinogenesis Research Institute of the N.N.Blokhin Russian Scientific Oncology Center
- National Institute of Public Health at the Russian Academy of Sciences
- Central Research Institute of Healthcare Organization and Informatization
- Department of Biology of Moscow State University n.a. M.V.Lomonosov

- World Healthcare Organization

- Association of Experts in Narcology of Russia

- Research Institute on Pulmonology
- Research Practical Clinical Center on Radial and Instrumental Diagnostics
- Institute on Prophylactic Medicine

Acad.Khabriev supports ENDS as an approach for switching heavy smokers to less harmful products and offers action plan on how to implement it

Outcomes of interview

- Typical **start of smoking at the age of 14-15 y.o.**
- **Total share of smoking people is not changed,** only internal segmentation is changed
- The biggest mistake is an assumption that demonstration of smoking in films or on TV is a trigger for young people to start smoking. In fact, for only 2-4% of people it is a trigger. **The main reason of start smoking is behavior in family and friends' habits**
- There is **no relevant statistics** on % of Physicians who smoke, no scientific work among Physicians is conducted
- Physicians do not know how to switch heavy smokers to ENDS, there are **no guidelines**
- There is **no relevant information on ENDS composition** and how is it changed under heating

Proposals and action plan

It is needed to **differentiate approach for regulation of cigarettes and ENDS**

a. **For cigarettes**: to continue restrictions to smoke in public places, to advertise etc
b. **For ENDS**: the key focus on switching heavy smoker:
   - ✓ **informational policy** - how to motivate people to switch, how to compete ENDS vs cigarettes, what are the benefits of ENDS, what are the risks
   - ✓ **Strat working with Physicians:** development of guidelines on switching to ENDS, education of Physicians, motivation of smoking Physicians to switch to ENDS. Physicians have to become key opinion leaders to provide recommendations for smokers. All specialties of Physicians have to be involved, first of all, that ones related to reproductive spheres

Interdisciplinary and inter-ministerial coordination is must

Institute on Public Health will perform State Order on coordination of its work with genetic medical centers monitoring 10-11 key risks factors (ecological, genetic, lifestyle etc). It could be a good platform for R&D on ENDS

To introduce **mandatory certification of liquids components for ENDS** (for open system it is impossible, so, information on risks has to be distributed)

Financing of such projects should be for the expenses of **paid excise duties for tobacco containing products. Also, sponsorship of producers** could be used with no obligations to adjust results for the benefits of producers**, objective R&D results is must**

E-platform of the results would be very helpful for such projects**. National Supervisory Board has to control compliance**

Many stakeholders emphasized the positive and negative features of ENDS, which are the basis for different regulation of ENDS and cigarette smoking.

Positive impact of ENDS	Negative impact of ENDS
1. **ESDNs contain 90% less harmful components compared to cigarettes**, which means less negative impact on the health of smokers. 2. **Electronic cigarettes and other ENDSs are more effective in quitting than nicotine-containing pharmaceutical products** (such as patches, etc.). This is confirmed by studies published in 2019. 3. **Some countries (France, Great Britain, New Zealand, Canada) have adopted different approaches to ENDS regulation and cigarette smoking.** 4. **Heating at 200-400 degrees in ENDS does not produce as many harmful substances** as cigarettes at 900 degrees.	1. There are cases when **teenagers of 14-16** y.o. who never smoked before, **start smoking ENDS ,** however this risk is overestimated **(only 2-3%** of young people among all smokers use ENDS) 2. **Growing concerns of regulatory authorities**, e.g., FDA top manager said: "I do not like to see the next generation of the Americans who are ENDS addicts". FDA and CDC published information on non-specific pulmonary diseases related to vaping of Cannabioids 3. **There are no evidence based data of R&D related to ENDS**. It will take about 20 years to collect these data that would allow to make retrospective analysis like it was done for cigarettes smoking 4. There is a **black market** of not certificated components 5. **Alpha-tocopherol (vitamin E acetate), part of mixtures for e-cigarettes with cannabioids, leads to damage to the lung epithelium.** The FDA and the CDC have published information on non-specific lung diseases related to the use of cannabioids available on the black market.

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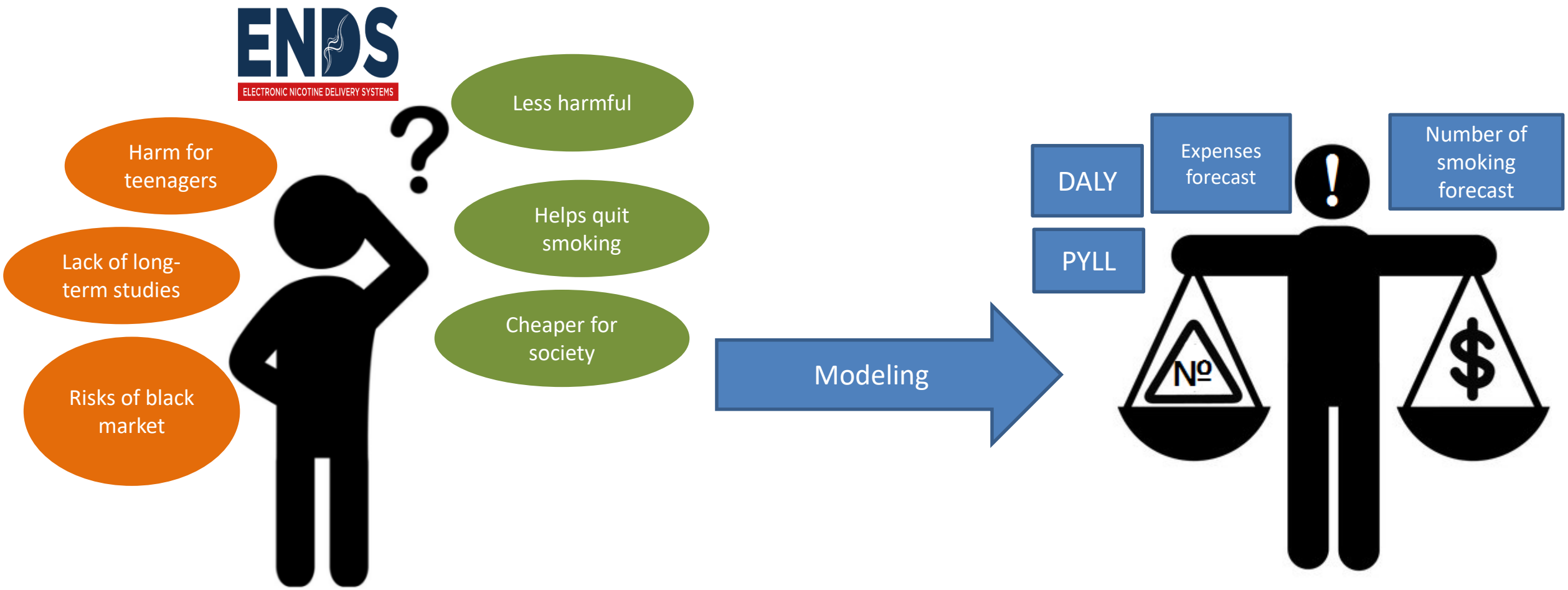
Due to the lack of consensus among the scientific and professional community on the impact and role of ENDS in reducing smoking prevalence and promoting public health, it was decided to simulate 3 different scenarios of ENDS regulation.



Modeling process is based on data on current demography and data on smoking and vaping in Russia and aims to forecast key indicators by 2025 and 2035 in accordance with scenario assumptions.

Base year key data

Year	2018
Smoking prevalence among adults	30%
Number of new cases	113 387 000
% of disease cases caused by smoking	22%
Number of smokers	35 165 400
Number of vapers	2 400 000

Demography assumptions

	2018	2025	2035
Total population	146 780 000	147 150 000	146 100 000
Adult population	117 218 000	117 720 000	117 218 000

Modeling criteria

- Long-term health effects of vaping are yet unknown. For this reason, any positive scenario, while aiming at decreasing smoking incidence as fast as possible, should be wary of leading to an increase of total number of nicotine users.
- Therefore, the modeling criteria used in this study aim at finding an optimal balance of:
  - Decreasing smoking related disease and its social and economic (public healthcare) costs
  - Decreasing total number of nicotine users

Scenario assumptions

- MOH smoking and vaping policy:
  Scenario 1 – implementation of MOH Concept foreseeing severely restricted vaping market
- Scenario 2 – treating vaping as a primary method of smoking reduction (lack of vape regulation)
- Scenario 3 – implementation of MOH Concept with a reasonable vape regulation

Vaping assumptions

- Estimations on current number of vapers (2018) vary from 800 000 to 3 000 000. **2 400 000** was chosen as an assumption of number of ENDS and heated tobacco users, based on available data.
- Vaping health risks are conservatively considered **80%** less than smoking health risks

Source : ВЦИОМ май 2019 г. ; Отчет PMI для инвесторов 2 кв. 2019 г. (VTTsIOM May 2019; PMI Investor Report Q2 2019)

MOH Concept which foresees equalizing vape regulation with that of tobacco regulation

Scenario 1: Implementation of MOH Concept foreseeing a severely restricted vaping market

Year	2018	2025	2035
Smoking prevalence among adults	30%	22%	16%
Number of new cases	113 387 000	110 673 887	104 934 460
% of disease cases caused by smoking	22%	17%	13%
Number of smokers	35 165 400	25 551 377	18 632 492
Number of vapers	2 400 000	3 601 753	5 331 474

Scenario assumptions:

- Implementation of MOH Concept “as is”

Source : Skolkovo calculation

Treating vaping as a primary method of smoking reduction (lack of vape regulation) will lead to best results in reducing smoking associated disease, but will increase the total number of nicotine users, which may be harmful to public health in the long-run

Scenario 2: Lack of vape regulation

Year	2018	2025	2035
Smoking prevalence among adults	30%	22%	8%
Number of new cases	113 387 000	108 676 552	94 569 820
% of disease cases caused by smoking	22%	17%	7%
Number of smokers	35 165 400	25 981 025	9 335 398
Number of vapers	2 400 000	11 993 200	19 997 733

Scenario assumptions:

- Positioning of transition to vaping as a primary method of smoking reduction (similar to New Zealand)
- Lack of vape regulation
  - No legal sales age
  - No advertisement restrictions
  - No use restrictions

Largest total number of nicotine users.

Source : Skolkovo calculation

Reasonable vape regulation in combination with MOH Concept on smoking will lead to overall best results in decline of smoking associated disease cases and associated public healthcare costs, number of smokers and combined number of nicotine users

Scenario 3: Implementation of MOH Concept with a reasonable vape regulation

Year	2018	2025	2035
Smoking prevalence among adults	30%	22%	8%
Number of new cases	113 387 000	107 012 448	94 837 410
% of disease cases caused by smoking	22%	17%	8%
Number of smokers	35 165 400	21 654 853	9 907 953
Number of vapers	2 400 000	11 584 342	15 642 392

Scenario assumptions:

- Implementation of MOH Concept
- Adoption of a reasonable vape regulation
  - 18+
  - Product display at points of sale and advertisement of aimed at adult smokers in age controlled environments
  - Designated vaping areas at public places, separated from designated smoking areas

Scenario 3 is optimal as it offers the best combination of socio-economical benefits for population and public healthcare system

	By 2035			
	MOH Concept	Scenario 1	Scenario 2	Scenario 3
DALY caused by smoking (Disability Adjusted Life Years)	3 887 918	3 288 156	2 197 791	2 424 410
PYLL	2 332 751	1 972 893	1 098 895	1 212 205
Number of smokers	23 443 600	18 632 492	9 335 398	9 907 953
Number of vapers	-	5 331 474	19 997 733	15 642 392
Cost of smoking and vaping for Public Healthcare system (bln RUR/year)	158,7	135,1	96,6	93,2

Considering MOH's policy objectives, ENDS may be regarded as:

- Instrument of health damage mitigation for smokers not willing to quit
- Transition step for smokers willing to quit (Positive DALY, PYLL and cost reduction effect before quitting)
- Instrument of speeding up smoking cessation process on population level

Source : Skolkovo calculation https://gas.ctsu.ox.ac.uk/tobacco/C4272.pdf

Scenario 3 also provides largest demographic impact

	Smoker	Vaper	Ex-smoker	Never smoked
Average number of children per 1000 women per year	50,6	52,0	53,2	57,8

Fertility stay decreased for at least 7-10 years after quitting smoking

Model calculates number of children born by female smokers, ex-smokers and vapers.

	By 2035			
	MOH Concept	Scenario 1	Scenario 2	Scenario 3
Average yearly number of newborn	-	625 750	628 435	628 618

Key findings

Impact of smoking on public health and the economy

- **Prevalence of smoking in Russia is 29-31% of the adult population, much higher than in most countries.**
- **Smoking - #4 cause of death in the Russian Federation, cause of 15.1% of deaths**
- Smoking burden is **5,797,219 disability adjusted life years (DALY) or 9.2% of the total DALY score for all reasons**
- **Smoking causes 22% of all newly registered diseases cases**
- **Russia's annual spending on health care - 5.3% of GDP**
- **Annual losses of the Russian Federation from smoking are estimated at 2.48 trillion rubles, that equals - 2.4% of GDP**
- **Direct health care system costs for smokers - 1.1 trillion rubles per year, which is comparable to the annual turnover of the tobacco market**
- Costs for smokers are **28.8% higher than for non-smokers.**
- **Quitting smoking by each smoker** may reduce annual public health expenditures by **7.9%.**
- The content of harmful substances in ENDS is lower than in regular cigarettes, which explains the milder health impact on smokers
- The transition of smokers to ESDP may reduce annual public health expenditures by **6.4%.**

DALY - Disability Adjusted Life Years
COPD - chronic obstructive pulmonary disease

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Key findings

ENDS regulation: modelling of socio-economic and public health impacts

- Countries with less strict regulation of the ENDSs - USA, UK, France, Canada, New Zealand - **show a faster decline in smoking rates**
- **Skolkovo has developed 3 models of ENDS regulation in order to assess the best combination of socio-economic benefits for the population and public health system and to achieve the goals of the RF Ministry of Healthcare by 2035:**
  - **Strict ENDS regulation** (equal to tobacco) by 2035 will reduce the rate of smoking from 29% to 16%, reduce the risk of smoking-related diseases from 22% to 13%, resulting in a ratio of 18 million smokers to 5 million vapers.
  - **Complete absence of ENDS regulation** will significantly reduce smoking rate by 2035, from 29% to 8%, and will reduce the rate of smoking sickness from 22% to 7%, but the total number of nicotine users will be 29 million people, which in the long term could have a negative impact on the health of the population
  - **Reasonable regulation of ENDS (age restrictions on sales, the ability to inform adult smokers about products in an age-controlled environment and the establishment of separate from smoking areas for waking)** will have an optimal effect of reducing smoking by 2035 - **from 29% to 8%,** reducing disease rates from 22% to 8% and reducing total nicotine consumption to 10 million smokers and 15 million vapers.
- **Of the three scenarios, reasonable regulation of the NIS would also have the greatest demographic benefit in terms of annual population growth of more than 2,800 compared to the strict regulation option.**

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THANK YOU FOR YOUR ATTENTION!