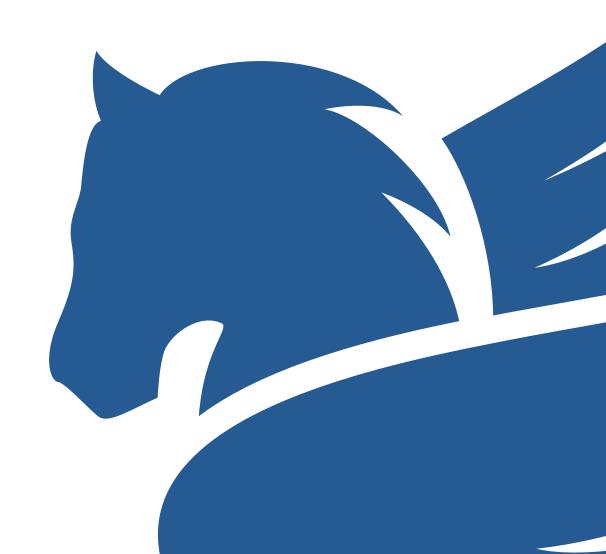
PEGASUS INSTITUTE

A TOBACCO TAX PROPOSAL FOR KENTUCKY





A Tobacco Tax Proposal for Kentucky

Brad Rodu, DDS Nantaporn Plurphanswat, PhD

Executive Summary

For many years Kentucky has had the highest smoking rates and the highest percentage of smoking-attributable deaths in the U.S. However, in one respect Kentucky has been a leader. In 2005, the Kentucky General Assembly passed and Governor Ernie Fletcher signed into law a bill recognizing that "taxing tobacco products according to relative risk is a rational tax policy and may well serve the public health goal of reducing smoking-related mortality and morbidity and lowering health care costs associated with tobacco-related disease."

This proposal extends the 2005 legislation by proposing to:

- 1. Increase the cigarette excise tax from \$0.60 to \$1.10 per pack.
- 2. Maintain the current excise tax on chewing tobacco at \$0.14 per 3-ounce package (\$0.0.0475 per ounce) and on moist snuff at \$0.15 per 1.2-ounce package (\$0.1425 per ounce). These taxes (per package) are 13-14% of the proposed excise tax on a pack of cigarettes. A plethora of scientific and medical research has established that the health risks of ST use are 1-2% of the risks of cigarette smoking.
- 3. Maintain the current 6% sales tax on e-cigarette products. According to the British Royal College of Physicians, the hazards of e-cigarette use are unlikely to exceed 5% of the hazards of cigarette smoking.



Implementation of this tax plan will:

- 1. Encourage and incentivize smokers to quit or switch to less expensive and vastly safer smoke-free tobacco products.
- 2. Prospectively lower health care costs attributable to smoking and reduce smoking-related morbidity and mortality. Lowering health care costs is especially relevant to Commonwealth expenditures for Medicaid. Kentucky had 1.27 million adults enrolled in Medicaid in 2016, and over 638,000 (50.1%) were current smokers. Federal and state spending for Medicaid in Kentucky for fiscal year 2016 was \$9.66 billion; smoking is responsible for \$1.47 billion. The only way for the Commonwealth to lower these high costs is to provide every option

- for smoking cessation, including vastly safer cigarette substitutes.
- 3. Substantially increase tobacco excise tax revenue for the Commonwealth.
- 4. Correct cross-border discrepancies in cigarette excise taxes affecting large populations across the Ohio and Indiana borders, and avoid creating other significant cross-border discrepancies.

.....

Introduction

The Commonwealth of Kentucky has had the highest smoking rates, and the highest rates of smoking-attributable deaths in the U.S., a lamentable record that continues today¹. The prevalence of smoking among Kentucky adults was 26% in 2015, nearly 50% higher than the national rate of 17.5%². That same year saw 3,538 Kentuckians succumb to lung cancer, the sentinel disease of smoking. But the death toll does not end there. Adding other cancers, heart diseases, strokes and emphysema, we estimate that smoking killed 11,707 men and women in the Commonwealth age 35+ years³.

Lung Cancer Mortality In Kentucky and the U.S., 1979-2015

Kentucky

U.S.

100

1980
1985
1990
1995
2000
2005
2010
2015

The U.S. Centers for Disease Control and Prevention recommends that Kentucky

spend at least \$56.4 million each year on tobacco control. Kentucky actually spends only about 4.4% of that amount (\$2.5 million)⁴.

In spite of the tragic death toll and lack of tobacco control spending, Kentucky has an almost unique precedent. In 2005, the Kentucky General Assembly passed and Governor Ernie Fletcher signed into law a bill recognizing the value of tobacco harm reduction in formulating excise tax policy⁵:

"...increasing taxes on tobacco products should reduce consumption, and therefore result in healthier lifestyles for

> Kentuckians. The relative taxes on tobacco products proposed in this section reflect the growing data from scientific studies suggesting that although smokeless tobacco poses some risks, those health risks are significantly less than the risks posed by other forms of tobacco products. Moreover, the General Assembly acknowledges that some in the public health community recognize that tobacco harm reduction should be a complementary public health strategy regarding

tobacco products. Taxing tobacco products according to relative risk is a

rational tax policy and may well serve the public health goal of reducing smoking-related mortality and morbidity and lowering health care costs associated with tobacco-related disease."

According to the British Royal College of Physicians, one of the world's oldest and most prestigious medical societies, "Harm reduction is a fundamental component of many aspects of medicine and, indeed, everyday life, yet for some reason effective harm reduction principles have not been applied to tobacco smoking."

The Royal College also concluded "...that smokers smoke predominantly for nicotine, that nicotine itself is not

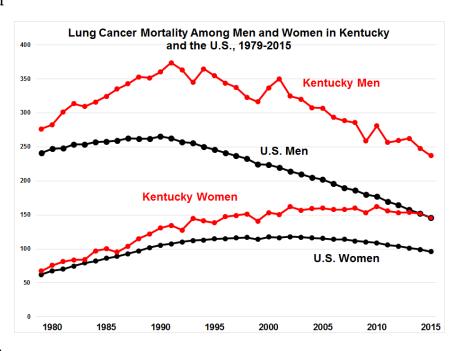
especially hazardous, and that if nicotine could be provided in a form that is acceptable and effective as a cigarette substitute, millions of lives could be saved."

A tobacco tax policy based on tobacco harm reduction has also been endorsed by tobacco research and policy experts. In 2015 Frank J. Chaloupka (University of Illinois Chicago), David Sweanor (University of Ottawa) and Kenneth E. Warner (University of Michigan)

authored a commentary in the *New England Journal of Medicine* challenging "national, state, and local policymakers" to "expedite the move away from cigarette smoking" by basing tobacco excise taxes on health risks ⁷. They recommended high taxes on high-risk

combustible products and lower taxes on low-risk smoke-free products like smokeless tobacco and e-cigarettes, they acknowledged that "the science supporting a difference in risk between combustible and noncombustible tobacco products is well established," and they concluded that "sizable public health benefits could derive from current cigarette smokers' switching to [e-cigarettes] and other noncombustible products."

Tobacco harm reduction has also received an endorsement from Dr. Scott Gottlieb, the commissioner of the U.S. Food and Drug Administration. In a speech on July 28, 2017, he recognized tobacco harm reduction as a viable policy solution for



the devastating effects of cigarette smoking ⁸. He announced a policy shift at the FDA: "...we need to envision a world where cigarettes lose their addictive potential through reduced nicotine levels. And a world where less harmful alternative forms,

efficiently delivering satisfying levels of nicotine, are available for those adults who need or want them...I also hope that we can all see the potential benefits to addicted cigarette smokers, in a properly regulated marketplace, of products capable of delivering nicotine without having to set tobacco on fire. The prospective benefit may be even greater for the subset of current cigarette smokers who find themselves unable or unwilling to quit." (emphasis added)

By implementing a rational tobacco excise tax policy based on relative risk, the Kentucky General Assembly can potentially save many lives in the Commonwealth.

Proposal Part 1. Increase the cigarette excise tax from \$0.60 to \$1.10 per pack.

The current excise tax on cigarettes is \$0.60 per pack, which generated net revenue in 2015 of \$222.750 million⁹. However, this represents a 22% decline from its peak in 2010 (\$285.117 million), which resulted from a doubling of the cigarette excise tax in 2009. Cigarette sales in 2015 also generated \$108.162 million from the general sales tax (averaging \$0.29 per pack) and \$61.884 million from the 1998 Master Settlement Agreement. Total revenue in 2015 from cigarette sales in Kentucky was \$392.796 million⁹.

Cigarette excise taxes produce only a small percentage of total revenues for state governments. Their main justification is based on welfare economics. Smoking is unhealthy and results in costs both to the smoker (internal) and to society (external). Excise taxes play a dual role: they discourage consumption and they recover external costs¹⁰. In 2013 the optimal cigarette excise tax was estimated to be \$1.36¹⁰, indicating that Kentucky's current tax of \$0.60 provides insufficient recovery of external costs.

However, state governments are not at liberty to increase excise taxes without consideration of the adverse effects of tax avoidance via smuggling and cross-border purchases. Economists have documented that large differences in cigarette excise taxes between neighboring jurisdictions provide opportunities for avoidance by affected consumers¹¹. Instead of quitting, smokers can avoid high taxes by buying cheaper contraband cigarettes smuggled from low-tax locations and/or by direct cross-border purchasing.

We propose an increase in the Kentucky cigarette excise tax from \$0.60 to \$1.10 per pack. Although this appears to be a large increase, it represents less than a 10% increase in the average retail price of cigarettes in the Commonwealth, which was \$5.21 per pack (excluding generic brands) in 2015⁹. In addition, this would remain below the national average of \$1.62⁹.

The primary objectives of our excise tax proposal are to encourage and incentivize smokers to quit or switch to less expensive and vastly safer smoke-free tobacco products (Proposal Part 2), which in turn will lower health care costs attributable to smoking and reduce smoking-related morbidity and mortality, and to substantially increase tobacco

excise tax revenue for the Commonwealth.

Our proposal will also bring Kentucky in line with external cost estimates for smoking while addressing excise tax discrepancies that now favor cross-border purchasing. The Commonwealth has a border with seven other states. Missouri and Virginia currently have cigarette excise taxes that are much lower than Kentucky (\$0.17 and \$0.30 respectively); West Virginia and Tennessee have similar taxes (\$0.55 and \$0.62); Indiana, Ohio and Illinois have much higher taxes (\$0.995, \$1.60 and \$1.98)9.

Our increase in the cigarette excise tax from \$0.60 to \$1.10 will minimize tax discrepancies between Kentucky and Ohio/Indiana, which contain large populations in the border regions of Ohio (Cincinnati metropolitan area) and Indiana (Louisville and Evansville metropolitan areas). We also recognize that a \$1.10 tax will be higher than that of the other five border states. those states either have minimal borders with Kentucky (Missouri, Illinois and Virginia) or borders that are rural and low population density (Tennessee or West Virginia), factors that minimize the impact of a higher Kentucky tax.

For smokers, our excise tax increase represents less than a 10% increase in the average retail price of cigarettes in Kentucky, which was \$5.21 per pack in 2015. A number of economic studies have reported that a 10% increase in cigarette price leads to a 1-7% reduction of smoking prevalence and a 1-3% reduction in cigarette consumption¹²⁻¹⁵. In 2015 the net revenue from the current excise tax was \$222.750 million. Our

proposed tax, which represents a 10% increase in the current retail price, may reduce cigarette consumption by 4 to 6%^{14,15}. This would result in a revenue range of \$384-392 million. In addition, the \$1.10 tax would eliminate KY-OH and KY-IN cross-border purchases. However, as we explain in Parts 2 and 3, our proposal attempts to align the state's financial needs with its public health goals.

Proposal Part 2. Maintain the current excise tax on smokeless tobacco products at \$0.14 to \$0.15 per package

The current excise tax on chewing tobacco is \$0.14 per 3-ounce package (\$0.0.0475 per ounce), and the tax on moist snuff at \$0.15 per 1.2-ounce package (\$0.1425 per ounce)¹⁶, which is 13-14% of the tax on cigarettes. Because the risks of smokeless tobacco use are 2% or less of the risks of smoking, the current smokeless tax should be maintained until the tax on cigarettes exceeds \$2.80 (i.e. becomes greater than 95% higher than the tax on smokeless products).

A cigarette tax increase of the magnitude that we propose could present a severe financial challenge to Kentucky smokers, many of whom have only limited resources. Although some smokers may quit, others will persist despite the detriment to their health and to their finances. An important component of our tax proposal is to provide a third option, which is consistent with the 2005 harm reduction legislation⁵: switch to smokefree tobacco products, which are vastly safer than cigarettes. Maintaining the excise tax on smokeless tobacco at \$0.15

provides an economic incentive to make the switch, and economic studies provide evidence that an increase in the cigarette tax leads smokers to substitute other tobacco products that are taxed at lower rates^{17,18}.

Smoke-free tobacco products are satisfying cigarette substitutes because they deliver similar doses of nicotine, which is addictive but poses little or no health hazard. It does not cause emphysema or cancer^{19,20}, and there is no evidence that it plays a direct role in the development of heart or circulatory diseases^{20,21}. A report from a meeting at the United Nations Focal Point on Tobacco or Health concluded that "long-term nicotine use is not of demonstrated harm, with the possible exception of use during pregnancy"²².

Decades of epidemiologic studies have documented that the health risks of smokeless tobacco use are, at most, 2% those of smoking²³⁻²⁵. Unlike cigarettes, smokeless tobacco does not cause lung cancer, heart and circulatory diseases or emphysema. In 2002 the Royal College of Physicians concluded: "As a way of using nicotine, the consumption of noncombustible [smokeless] tobacco is on the order of 10–1,000 times less hazardous than smoking, depending on the product."²⁶

In 2009 epidemiologists Peter Lee and Jan Hamling published a comprehensive analysis of smokeless tobacco use and cancer. They assessed how smokeless tobacco use might have changed cancer deaths among American men²⁷. In 2005, 142,205 men in the U.S. died from seven cancers associated with smoking. If no American men had ever smoked, there would have been only 37,468 deaths from

these cancers, so 104,737 were directly attributable to smoking. Lee and Hamling then calculated the number of cancer deaths that would have occurred if all smokers had instead used smokeless tobacco. The number attributable to smokeless tobacco would have been 1,102, which is only 1.1% of the deaths attributable to smoking.

Lee and Hamling calculated another extraordinary statistic, a sort of worst-case scenario in which every man in the U.S. used smokeless tobacco (to counter tobacco harm reduction critics who claim that releasing accurate information about the risks of smokeless tobacco would cause everyone to use it). In that case, according to Lee and Hamling, there would be 2,081 deaths attributed to smokeless use – a mere 2% of the deaths currently attributable to smoking.

The low risks from smokeless tobacco use extend to mouth cancer. A 2002 review documented that men in the U.S. who use moist snuff and chewing tobacco have minimal to no risk for mouth cancer²⁸. A recent federal study found no deaths from mouth cancer among American men who use moist snuff or chewing tobacco²⁹.

Many smokers will be are unable or unwilling to become abstinent when cigarette excise taxes are increased. We believe that maintaining the smokeless tobacco excise tax at \$0.15 will provide an economic incentive for those smokers to switch. As an example of the potential public health effect, we provide the following example.

According to the Behavioral Risk Factor Surveillance Study³⁰, the prevalence of smokeless tobacco use among adult men in Kentucky is 13.4%, or about 226,000.

However, data from another national survey suggest that the smoking rate among smokeless tobacco users is as high as 40%. This means that there are 90,000 men in the Commonwealth who are dual users of both cigarettes and smokeless tobacco. Our tax proposal sends a message to them that smokeless use is a better option, and it provides an economic incentive to make the switch.

Proposal Part 3. Maintain the current 6% sales tax on e-cigarette products.

Although e-cigarettes have only been on the market for several years, some tobacco research experts agree that these products have about the same risk profile as smokeless tobacco. There is growing evidence that e-cigarettes have become the most common aid used by Americans to quit smoking^{31,32}. Therefore, we believe that an excise tax on e-cigarettes would be a severe economic disincentive for smokers who want to quit by switching to these vastly safer products.

Our low-tax rationale is based on risk estimates from a report published last year by the British Royal College of Physicians³³. This prestigious medical society concluded that "...the hazard to health arising from long-term vapour inhalation from the e-cigarettes available today is unlikely to exceed 5% of the harm from smoking tobacco."

The RCP reached other conclusions that provide a strong endorsement of ecigarettes:

 "E-cigarettes are marketed as consumer products and are proving much more popular than [nicotine replacement therapy, NRT] as a substitute and competitor for tobacco cigarettes.

- "E-cigarettes appear to be effective when used by smokers as an aid to quitting smoking.
- "There are concerns that ecigarettes will increase tobacco smoking by renormalising the act of smoking, acting as a gateway to smoking in young people, and being used for temporary, not permanent, abstinence from smoking. To date, there is no evidence that any of these processes is occurring to any significant degree in the UK. Rather, the available evidence to date indicates that e-cigarettes are being used almost exclusively as safer alternatives to smoked tobacco, by confirmed smokers who are trying to reduce harm to themselves o r others from smoking, or to quit smoking completely.
- "...in the interests of public health it is important to promote the use of e-cigarettes, NRT and other non-tobacco nicotine products as widely as possible as a substitute for smoking..."

In July 2016 the United Kingdom's Department of Health issued a position statement fully endorsing the substitution of safer smoke-free tobacco products by smokers³⁴. Entitled "Towards a Smoke-free Generation," the report set forth the facts about e-cigarettes' relative safety:

 "... the evidence is increasingly clear that e-cigarettes are significantly less harmful to health than smoking tobacco."

The UK government promised to help smokers make the switch:

• "The government will seek to support consumers in stopping smoking and adopting the use of less harmful nicotine products. Public Health England has produced guidance for employers and organisations looking to introduce policies around ecigarettes and vaping in public and recommend such policies to be evidence-based."

The report dismissed the unfounded claim that second-hand vapor is a health threat:

 "Public Health England recommends that e-cigarette use is not covered by smokefree legislation and should not routinely be included in the requirements of an organisation's smokefree policy."

Concluding, the UK government made this pledge:

 "Public Health England will continue to provide smokers and the public with clear, evidence based and accurate information on the relative harm of nicotine, ecigarettes, other nicotine delivery systems and smoked tobacco, to enable informed decision-making."

By maintaining the current 6% sales tax on e-cigarette products, the Kentucky state government is helping smokers make informed decisions about vastly safer cigarette substitutes.

Summary and Conclusions

The Kentucky General Assembly has the opportunity to translate its 2005 legislation endorsing tobacco harm reduction into a tax policy that aligns fiscal responsibility with public health goals. Just as using seat belts, airbags and anti-lock brakes reduce risks for automobile users, switching to vastly safer smoke-free tobacco products can help Kentucky smokers avoid lifethreatening diseases.

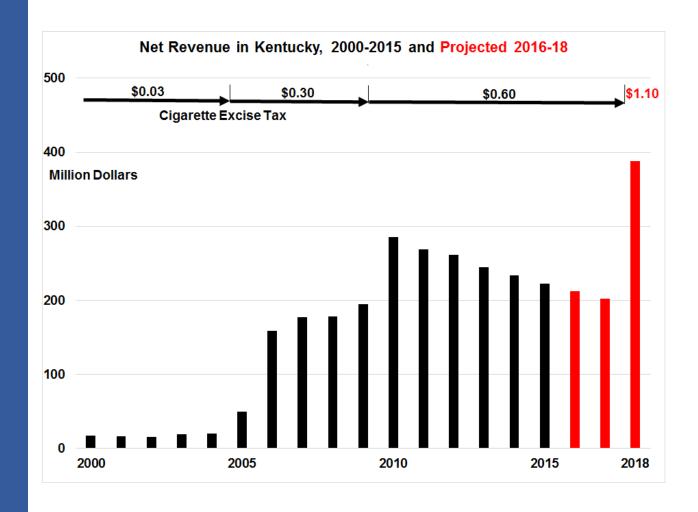
Increasing the excise tax on cigarettes to \$1.10 per pack, maintaining smokeless tobacco excise taxes at their current level and maintaining the 6% sales tax on ecigarettes will encourage smokers to quit or switch to vastly safer smoke-free products. It will also "serve the [General Assembly's] public health goal of reducing smoking-related mortality and morbidity and lowering health care costs associated with tobacco-related disease."5

Lowering health care costs is especially relevant to Commonwealth expenditures for Medicaid. According to the Centers for Disease Control and Prevention, Kentucky had 1.27 million adults enrolled in Medicaid in 2016, and over 638,000 (50.1%) were current smokers³⁵. Kentucky Medicaid program now provides financial coverage for all seven FDA-approved medications (nicotine patches, gum, lozenges, nasal spray and inhalers; bupropion and varenicline). Our tax proposal would incentivize smokers to consider switching to smokeless tobacco or e-cigarettes, at no additional cost to the state.

According to one estimate³⁶, federal and state spending for Medicaid in Kentucky for fiscal year 2016 was \$9.66 billion, and the CDC recently estimated that 15.2% of Medicaid spending nationally is attributable to cigarette smoking³⁷. This means that smoking is responsible for \$1.47 billion in the Commonwealth. The only way for the Commonwealth to lower these high costs is to provide every option for smoking cessation, including vastly

safer cigarette substitutes.

In summary, cigarettes confer high health risks and should be taxed at high rates, while smoke-free tobacco products have minimal health risks and justify far lower taxes. This rational tax policy allows lawmakers to meet their fiscal responsibility while fulfilling their moral obligation to help inveterate smokers lead longer and healthier lives.



The following have expressed their support for this proposal:

Kenneth E. Warner, PhD

Avedis Donabedian Distinguished University Professor of Public Health Emeritus

Dean Emeritus, School of Public Health University of Michigan

David Sweanor, JD

Adjunct Professor of Law Centre for Health Law, Policy and Ethics University of Ottawa

David T. Levy, PhD

Professor of Oncology Georgetown Lombardi Comprehensive Cancer Center

Riaan van Zyl, PhD

Professor and Director School of Social Work College of Behavioral and Community Sciences University of South Florida

Sally Satel, MD

Resident Scholar American Enterprise Institute Lecturer Yale University School of Medicine

Barry Goodwin, PhD

William Neal Reynolds Distinguished Professor of Agricultural and Resource Economics Graduate Alumni Distinguished Professor of Economics

Donald Kenkel, PhD

North Carolina State University

Joan K. and Irwin M. Jacobs Professor College of Human Ecology Cornell University

Stan A. Veuger, PhD

Resident Scholar, Economic Policy Studies

American Enterprise Institute

Robert Ekelund, Jr., PhD

Professor Emeritus of Economics Auburn University

John D. Jackson, PhD

Professor Emeritus of Economics Auburn University

Audrey D. Kline, PhD

Associate Professor Department of Economics College of Business University of Louisville

Mark A.R. Kleiman, PhD

Professor of Public Policy Marron Institute of Urban Management New York University

Philip Cole, MD, DrPH

Professor Emeritus of Epidemiology University of Alabama at Birmingham

Stephan F. Gohmann, PhD

BB&T Distinguished Professor of Free Enterprise and Professor of Economics College of Business University of Louisville

Raymond Niaura, PhD

Professor of Social and Behavioral Sciences College of Global and Public Health New York University

Joshua C. Pinkston, PhD

Associate Professor Department of Economics College of Business University of Louisville The following provided valuable comments and suggestions to improve the quality of this proposal:

Robert Kaestner, PhD

Professor Institute of Government and Public Affairs, University of Illinois Department of Economics, University of Illinois at Chicago

Kenneth E. Warner, PhD

Avedis Donabedian Distinguished University Professor of Public Health Professor, Health Management & Policy University of Michigan

David Sweanor, JD

Adjunct Professor of Law Centre for Health Law, Policy and Ethics University of Ottawa

Jose Fernandez, PhD

Associate Professor Department of Economics College of Business University of Louisville

About the Authors

Brad Rodu is a Professor of Medicine at the University of Louisville, where he holds an endowed chair in tobacco harm reduction research and is a member of the James Graham Brown Cancer Center. Since 1994, Dr. Rodu has conducted and published research on tobacco harm reduction, which involves permanent nicotine maintenance with safer tobacco products by smokers who are unable or unwilling to achieve abstinence. Dr. Rodu earned his dental degree from the Ohio State University and completed an oral pathology residency at Emory University. He subsequently was awarded fellowships by the American Cancer Society and the National Cancer Institute at the University of Alabama at Birmingham. He was a member of the UAB faculty from 1981 to 2005, with appointments in the Schools of Medicine, Public Health and Dentistry.

Nantaporn Plurphanswat is a research economist at the University of Louisville James Graham Brown Cancer Center. Her research has focused on health economics, tobacco and substance use. Dr. Plurphanswat obtained her Ph.D. in Economics from the University of Illinois at Chicago, and she was a Postdoctoral Teaching Fellow at Tulane University. While in graduate school, she was awarded a Pre-doctoral Fellowship from the Chicago Center of Excellence in Health Promotion Economics and received the Provost's Award for Graduate Research from the Graduate College at UIC.

Drs. Rodu and Plurphanswat are supported by unrestricted grants from tobacco manufacturers to the University of Louisville, and by the Kentucky Research Challenge Trust Fund. The terms of the grants assure that sponsors have no influence or input with respect to design, analysis, interpretation or reporting of their research. The authors have no financial or other personal relationship with the sponsors.

References and Notes

- 1. Lortet-Tieulent J, Sauer AG, Siegel RL, Miller KD, Islami F, Fedewa SA, Jacobs EJ, Jemal A. State-level cancer mortality attributable to cigarette smoking in the United States. *JAMA Internal Medicine* 2016; 176(12):1792-1798. doi:10.1001/jamainternmed. 2016.6530
- Published online October 24, 2016. http://jamanetwork.com/journals/jamainternalmedicine/fullarticle/2571615?resultClick=1
- 2. Kentucky Area Development District (ADD) Profiles: Behavioral Risk Factor Surveillance System (BRFSS) Data Source: Kentucky Behavior Risk Factor Survey 2015. Available at: http://chfs.ky.gov/NR/rdonlyres/F5454B47-C3F6-4E37-B028-9F9F1A690C43/0/2016KentuckyAreaDevelopmentalDistrictProfiles.pdf
- 3. Estimates calculated from the percentage of lung cancer deaths attributable to smoking in the U.S.: Men 91%, Women 86%; and from lung cancer deaths as a percentage of all smoking-attributable deaths in the U.S.: Men 30.5%, Women 23.0%. From Peto R, Lopez AD, Boreham J, Thun M. Mortality from smoking in developed countries, 1950-2000. 2nd edition, revised June 2006. United States. Available at: http://www.deathsfromsmoking.net/download%20files/Country%20presentations/USA/USA%20data.pdf
- 4. Campaign for Tobacco Free Kids. Broken Promises to Our Children: A State-by-State Look at the 1998 State Tobacco Settlement 17 Years Later. Available at: http://www.tobaccofreekids.org/microsites/statereport2016/kentucky.html
- 5. Available at Kentucky Legislature, Revised Statutes: http://www.lrc.ky.gov/Statutes/statute.aspx?id=45414
- 6. Royal College of Physicians: Harm reduction in nicotine addiction: helping people who can't quit. A report by the Tobacco Advisory Group of the Royal College of Physicians. London, United Kingdom; 2007. Available at http://www.rcplondon.ac.uk/publications/harm-reduction-nicotine-addiction.
- 7. Chaloupka FJ, Sweanor D, Warner K. Differential taxes for differential risks toward reduced harm from nicotine-yielding products. *New England Journal of Medicine* 2015; 373;7: 594-597. Available at: http://www.nejm.org/doi/pdf/10.1056/NEJMp1505710
- 8. Protecting American Families: Comprehensive Approach to Nicotine and Tobacco. Remarks by Scott Gottlieb, M.D., Commissioner of Food and Drug Administration. July 28, 2017
 White Oak, MD. Available at: https://www.fda.gov/NewsEvents/Speeches/

UCM569024.htm

9. Orzechowski W., Walker R. The Tax Burden on Tobacco: Historical Compilation, vol.

- 50. Arlington, VA: Tobacco Institute; 2015.
- 10. DeCicca P, Kenkel D, Liu F. Excise tax avoidance: the case of state cigarette taxes. *Journal of Health Economics* 2013; 32(6). doi:10.1016/j.jhealeco.2013.08.005.
- 11. Merriman D. The micro-geography of tax avoidance: evidence from littered cigarette packs in Chicago. American Economic Journal: Economic Policy, Vol. 2, No. 2 (May 2010), pp. 61-84.
- 12. Gallet CA, List JA. Cigarette demand: A meta-analysis of elasticities. *Health Economics* 2003; 12.10: 821-835.
- 13. DeCicca P, McLeod L. Cigarette taxes and older adult smoking: evidence from recent large tax increases. *Journal of Health Economics* 2008; 27.4: 918-929.
- 14. Callison K, Kaestner R. Do higher tobacco taxes reduce adult smoking? New evidence of the effect of recent cigarette tax increases on adult smoking. National Bureau of Economic Research NBER Working Paper# 18326, 2012.
- 15. Chaloupka FJ, Fong GT, Yürekli AA. U.S. National Cancer Institute and World Health Organization. The Economics of Tobacco and Tobacco Control. National Cancer Institute Tobacco Control Monograph 21. NIH Publication No. 16-CA-8029A. Bethesda, MD: U.S. Department of Health and Human Services, National Institutes of Health, National Cancer Institute; and Geneva, CH: World Health Organization; 2016.
- 16. Centers for Disease Control and Prevention. U.S. Department of Health and Human Services. STATE System Excise Tax Fact Sheet, March 31, 2017. Available at: https://chronicdata.cdc.gov/download/tsmn-nssw/application/pdf
- 17. Ohsfeldt RL, Boyle RG, Capilouto E. Effects of tobacco excise taxes on the use of smokeless tobacco products in the United States. *Health Economics* 1997; 6: 525-531.
- 18. Ohsfeldt RL, Boyle RG, Capilouto E. Tobacco taxes, smoking restrictions and tobacco use. In Chaloupka et al (eds), The Economic Analysis of Substance Use and Abuse: An Integration of Econometrics and Behavioral Economic Research, University of Chicago Press; Chicago, IL, 1999.
- 19. Benowitz NL. Pharmacologic aspects of cigarette smoking and nicotine addiction. *New England Journal of Medicine* 1988; 319:318-330.
- 20. Benowitz NL, (ed): Nicotine Safety and Toxicity. Oxford University Press, New York, NY; 1998.
- 21. Wald NJ, Idle M, Boreham J, Bailey A: Serum nicotine levels in pipe smokers: evidence against nicotine as a cause of coronary heart disease. *Lancet* 1981; 2:775-777.

- 22. United Nations Focal Point on Tobacco or Health: Social and economic aspects of reduction of tobacco smoking by use of alternative nicotine delivery systems (ANDS). September
- 22-24, 1997 (ISBN 1898970726).
- 23. Rodu B, Godshall WT. Tobacco harm reduction: an alternative cessation strategy for inveterate smokers. *Harm Reduction Journal* 2006; 3: 37. Open Access, available at http://www.harmreductionjournal.com/content/pdf/1477-7517-3-37.pdf
- 24. Rodu B. The scientific foundation for tobacco harm reduction, 2006-2011. *Harm Reduction Journal* 2011; 8:19. Open Access, available at: http://www.harmreductionjournal.com/content/8/1/19/abstract
- 25. Fisher M, Tan-Torres S, Sarkar M. Health risks associated with the use of smokeless tobacco products: analysis of two nationally representative linked mortality data. Society for Research on Nicotine and Tobacco, 23rd Annual Meeting, March 8-11, 2017, Florence, Italy. Available at: http://www.altria.com/ALCS-Science/ConferenceDocumentLibrary/Fisher-2017%20SRNT-Final-20170209.pdf
- 26. Royal College of Physicians of London: Protecting Smokers, Saving Lives: The case for a Tobacco and Nicotine Authority, London, 2002.
- 27. Lee PN, Hamling J: Systematic review of the relation between smokeless tobacco and cancer in Europe and North America. *BMC Medicine* 2009, 7:36. Open Access, available at
- https://bmcmedicine.biomedcentral.com/articles/10.1186/1741-7015-7-36
- 28. Rodu B, Cole P: Smokeless tobacco use and cancer of the upper respiratory tract. *Oral Surgery, Oral Medicine, Oral Pathology* 2002; 93:511-515.
- 29. Wyss AB, Hashibe M, Lee Y-CA et al. Smokeless tobacco use and the risk of head and neck cancer: pooled analysis of US studies in the INHANCE consortium. *American Journal of Epidemiology* 2016 Oct 15. [Epub ahead of print] PMID: 27744388.
- 30. Centers for Disease Control and Prevention. The Behavioral Risk Factor Surveillance System (BRFSS). Prevalence and Trends Data. Available at: https://www.cdc.gov/brfss/brfssprevalence/index.html
- 31. Caraballo RS, Shafer PR, Patel D, Davis KC, McAfee TA. Quit methods used by US adult cigarette smokers, 2014–2016. Preventing Chronic Disease 2017; 14:160600. DOI: https://doi.org/10.5888/pcd14.160600.
- 32. Zhu S-H, Zhuang Y-L, Wong S, Cummins SE, Tedeschi GJ. E-cigarette use and associated changes in population smoking cessation: evidence from US current population surveys. *BMJ* 2017; 358:j3262. http://dx.doi.org/10.1136/bmj.j3262.

- 33. Nicotine without smoke: tobacco harm reduction. Royal College of Physicians, London, UK, 28 April 2016. Available at: https://www.rcplondon.ac.uk/projects/outputs/nicotine-without-smoke-tobacco-harm-reduction-o
- 34. United Kingdom Department of Health. Towards a smoke-free generation: tobacco control plan for England. 18 July 2017. Available at: https://www.gov.uk/government/publications/towards-a-smoke-free-generation-tobacco-control-plan-for-england
- 35. DiGiulio A, Haddix M, Jump Z, et al. State Medicaid Expansion Tobacco Cessation Coverage and Number of Adult Smokers Enrolled in Expansion Coverage United States, 2016. *Morbidity Mortalality Weekly Report* 2016; 65:1364–1369. DOI: http://dx.doi.org/10.15585/mmwr.mm6548a2
- 36. Medicaid spending in Kentucky. Ballotpedia, the Encyclopedia of American Politics. Available at: https://ballotpedia.org/Medicaid spending in Kentucky
- 37. Xu X, Bishop EE, Kennedy SM, Simpson SA, Pechacek TF. Annual healthcare spending attributable to cigarette smoking: an update. *American Journal of Preventive Medicine* 2015; 48: 326-333.