

GLOBAL TOBACCO USE AND CANCER: FINDINGS AND SOLUTIONS FROM *THE TOBACCO ATLAS*



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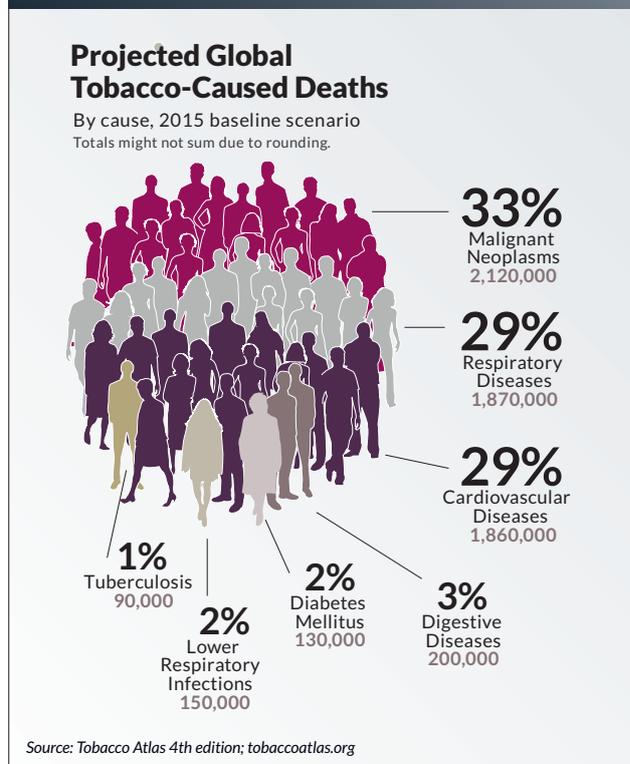
Tobacco use harms nearly every organ of the body and results in 6 million deaths annually. One in five cancer deaths is caused by smoking and the death and harm from smoking is preventable. While the relationship between tobacco and cancer is clear, it is further explained using statistics and findings from *The Tobacco Atlas*, a tobacco control tool and global reference for monitoring tobacco use prevalence, trends and statistics.

The harm caused by tobacco has been established for decades, yet still one in five adults in the world currently smokes cigarettes. Globally, tobacco use kills nearly 6 million people a year, including approximately 600,000 deaths resulting from secondhand smoke exposure.¹ If current trends continue, it is estimated that tobacco will cause approximately 8 million deaths per year by 2030, and 1 billion total deaths in the twenty-first century, the majority of which will occur in low- and middle-income countries.² While tobacco use results in numerous adverse health outcomes, it is estimated that one in five cancer deaths worldwide is caused by smoking.³ By 2015, it is projected that 33% of all tobacco-related deaths worldwide will be from cancer (Figure 1). Tobacco use is the only risk factor shared by the four major non-communicable diseases (Figure 2), and tobacco use must be addressed globally in order to curb cancer deaths.

About *The Tobacco Atlas*

The Fourth Edition of *The Tobacco Atlas* was published in 2012 by the American Cancer Society and the World Lung Foundation, and released at the 15th World Conference on Tobacco or Health in Singapore. The first edition of *The Tobacco Atlas* was published in 2002 by the World Health Organization. The original *Atlas* preceded the WHO Framework Convention on Tobacco Control (WHO FCTC),

Figure 1: Projected global tobacco-caused deaths



MPOWER, the United Nations (UN) 2011 High Level Meeting on Non-communicable Diseases, and considerable global funding for tobacco control. *The Tobacco Atlas* monitors changes in global tobacco control and illustrates the global progress in tobacco control over the past decade, which has

arguably been the most productive period in tobacco control history. The *Atlas* provides statistics on the history of tobacco use, international prevalence and trends data, statistics on deaths and harm from smoking, personal and societal costs of tobacco use, and discusses tobacco industry behaviour and current and proposed solutions for global tobacco control. *The Tobacco Atlas*, and the accompanying interactive website found at www.tobaccoatlas.org, is a comprehensive and user-friendly tool for investigating and monitoring global tobacco issues. The following sections highlight key findings from *The Atlas*, their implications for cancer control worldwide and global tobacco control interventions and practices.

Tobacco and cancer findings from *The Tobacco Atlas*
Harm and cancer resulting from tobacco use

Tobacco use harms nearly every part of the body, inducing cancers in many different organs. While much research has focused on the impact of cigarette smoking on health outcomes, links have also been established between smokeless tobacco and oral cancers, and between other adverse outcomes and the use of cigars, pipes, water pipes, *kreteks* and *bidis*. Cigarette smoking, or the inhalation of burned tobacco leaves, is the single largest contributor to cancer deaths in the world. Worldwide, roughly 80% of male lung cancer deaths and 50% of female lung cancer deaths are caused by smoking. The International Agency for Research on Cancer (IARC) has estimated that annually there are 1.1 million lung cancer deaths globally and of these, 83%

Figure 2: Risk factors

| | Tobacco Use | Unhealthy Diets | Lack of Physical Activity | Harmful Use of Alcohol |
|---------------------|-------------|-----------------|---------------------------|------------------------|
| CARDIOVASCULAR | ✓ | ✓ | ✓ | ✓ |
| DIABETES | ✓ | ✓ | ✓ | ✓ |
| CANCER | ✓ | ✓ | ✓ | ✓ |
| CHRONIC RESPIRATORY | ✓ | | | |

Risk Factors
 Tobacco is the only risk factor shared by all of the four leading noncommunicable diseases.

(935,000 a year) are caused by smoking.⁴ The dangers of cigarette smoke extend to non-smokers who are exposed to secondhand cigarette smoke, also called forced smoking. In countries with a high male to female smoker ratio, women are often victims of secondhand smoke exposure, illness, and death. In fact, three-quarters of secondhand smoke deaths occur among women and children (Figure 3).

Cigarette consumption and prevalence

Cigarette smoking is a twentieth century phenomenon (Figure 4) that has followed a pattern of smoking initiation and the broad adoption of the habit, trailed by an increase in smoking-related illness and death and eventually a decline in smoking prevalence.⁵ This pattern has been observed in many high-income countries, resulting in a devastating tobacco epidemic of significant economic and health proportions.

This same pattern is now emerging in low- and middle-income countries. Comparing areas in which cigarette consumption is roughly equivalent, there is a disturbing trend towards an increase in cigarette prevalence and consumption in low- and middle-income countries, even as consumption decreases in high-income countries. For example, consumption in Western Europe dropped by 26% between 1990 and 2009 while simultaneously increasing in the Middle East and Africa by 57%. The pattern is such that, as the population in low-income countries increases, the net result will be a global increase in cigarette consumption. In high-income countries, where cigarette smoking has been widespread for the better part of a century, at least 30% of all cancer deaths are caused by tobacco use, particularly deaths from lung and upper aerodigestive system cancer.⁶ This mortality pattern, which has occurred over decades, is now decreasing as a result of fewer smokers in the developed world. The same mortality pattern is beginning to emerge in low- and middle-income countries, where extensive tobacco use

Figure 3: Number of global deaths caused by secondhand smoke in non-smokers



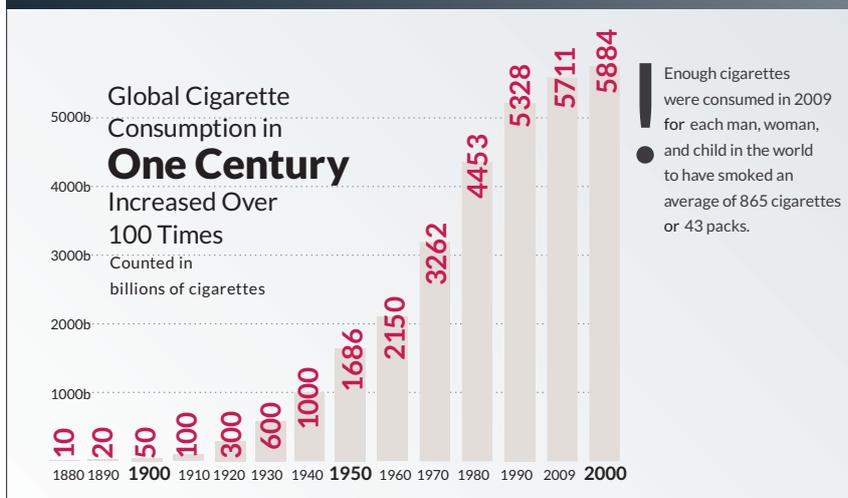
is a more recent phenomenon and the pattern has the potential to continue in countries where tobacco use is only beginning. In 2011 alone, nearly 80% of the 6 million tobacco-related deaths occurred in low- and middle-income countries. In some parts of Asia and Eastern Europe, tobacco is responsible for between one-quarter and one-third of all male deaths (Figure 5).

The fact that these cancer deaths are entirely preventable is paradoxically frustrating and encouraging. Despite the near universal knowledge of the harm caused by tobacco use, smoking continues to be widespread, with over 1 billion tobacco users in the world today, and approximately half of all lifetime smokers will eventually die of a related cause. At the same time, evidence-based interventions are well established and millions of lives could be saved if countries put into practice what is known to be effective.

Gender differences in tobacco use

Globally, male smokers outnumber female smokers by

Figure 4: Cigarette smoking as a twentieth century phenomenon



approximately 4:1, though this is likely to change as female smokers in low- and middle-income countries begin to smoke at higher rates, often the result of economic and social changes in the country, coupled with tobacco industry marketing and exposure. While smoking prevalence among men is higher than among women, on average, there is generally much less difference between the smoking prevalence of teenage boys and girls. The implication is that smoking rates among women are likely to rise even more as

Figure 5: Male deaths

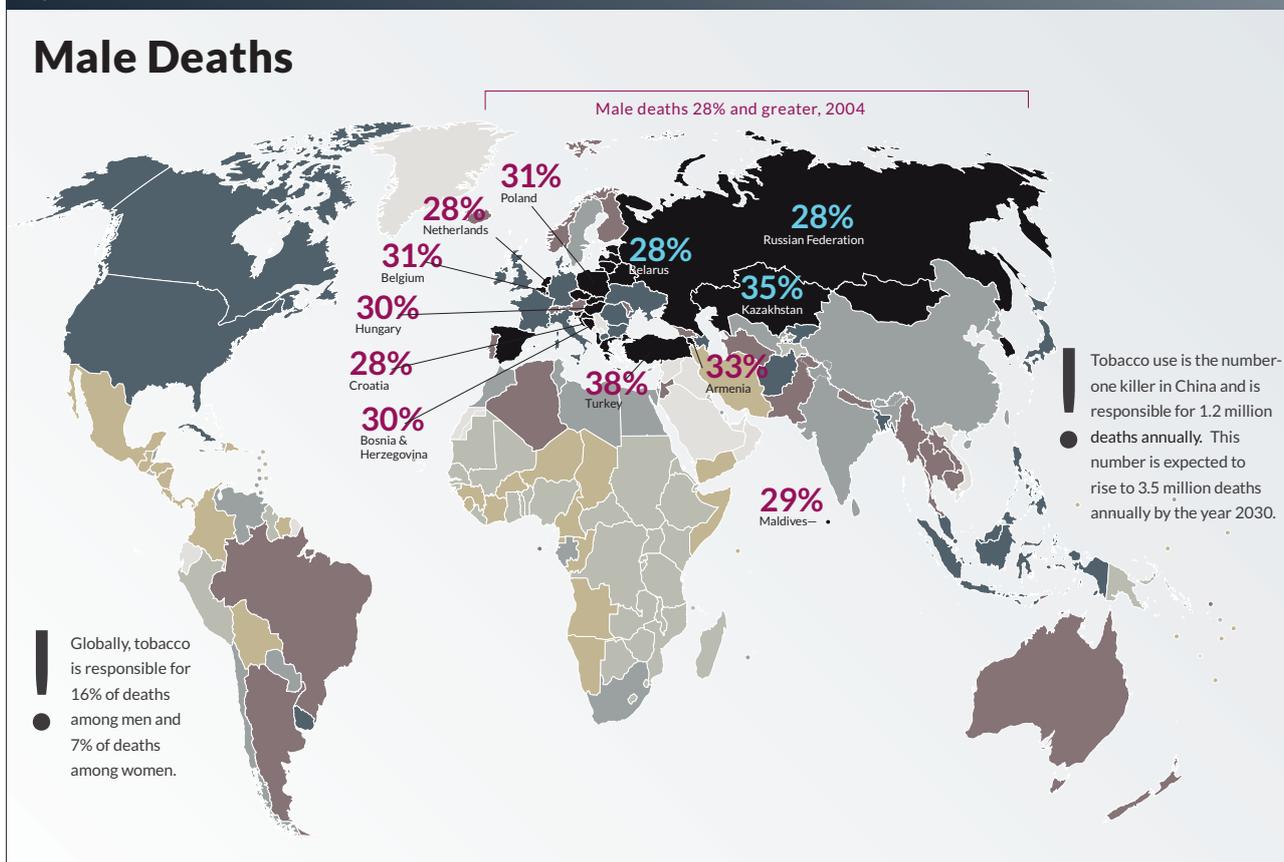
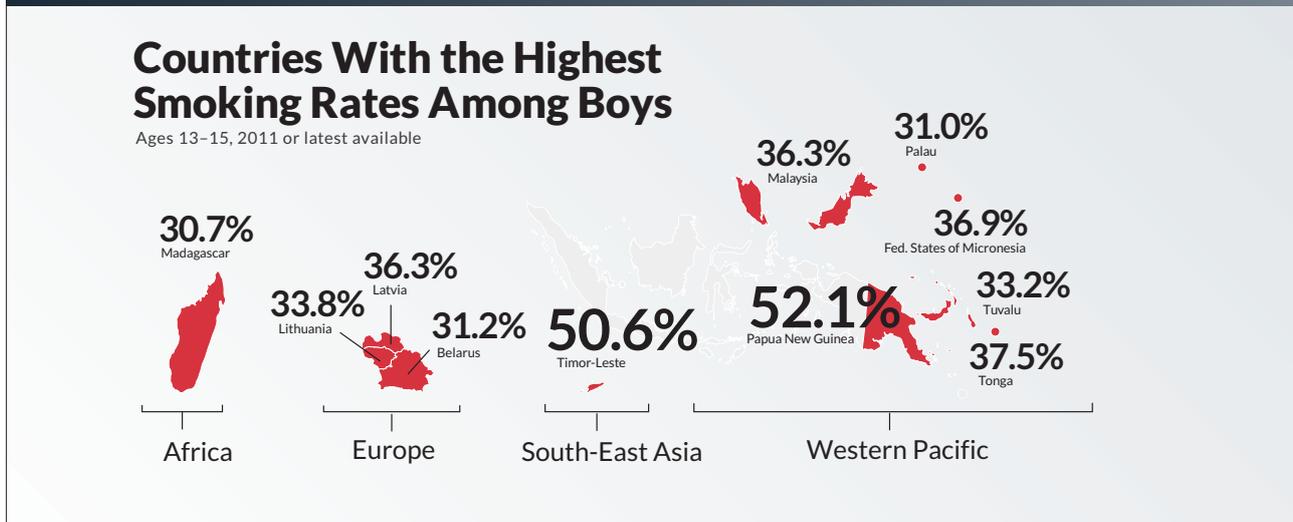


Figure 6: Countries with the highest smoking rates among boys



teenage female smokers continue their addiction as adults. In fact, securing youth smokers in this way is a survival strategy of the tobacco industry, as most adult smokers begin their addiction before the age of 18. Of significant concern are low- and middle-income countries in which the smoking rates of teenage boys are alarmingly high; in some countries, virtually half of all boys aged 13–15 are smokers (Figure 6).

The tobacco industry

The global tobacco industry represents big business. Tobacco is grown in at least 124 countries in the world and is grown on more than 3.8 million hectares of agricultural land. Tobacco is grown with little benefit to farmers, who are often trapped in a cycle of poverty and are victims of farming-related illness from exposure to tobacco leaves and nicotine. Additionally, tobacco is grown on land that could be used for other food products, and in 2009, six of the world's top 10 tobacco-producing countries had undernourishment rates between 5% and 27%. Tobacco companies and manufacturers are the winners of tobacco production. In 2010, the six leading tobacco companies in the world had combined revenues of more than US\$ 346 billion and combined profits over US\$ 35 billion. These companies profit greatly from the addiction of others and work diligently to keep customers as lifetime addicts.

Tobacco marketing is one avenue of attracting and maintaining tobacco users, and tobacco companies market their products heavily. In 2008 in the United States, tobacco companies spent more than US\$ 9.9 billion on cigarette marketing and an additional US\$ 548 million on smokeless tobacco marketing, equating to US\$ 34 being spent on tobacco marketing for every man, woman and child in the United States. Marketing restrictions have increased in high-

income countries, but many low- and middle-income countries do not have tobacco marketing bans or restrictions and adults and children are exposed daily to pro-tobacco propaganda and messages (Figure 7).

Tobacco-related costs and affordability of cigarettes

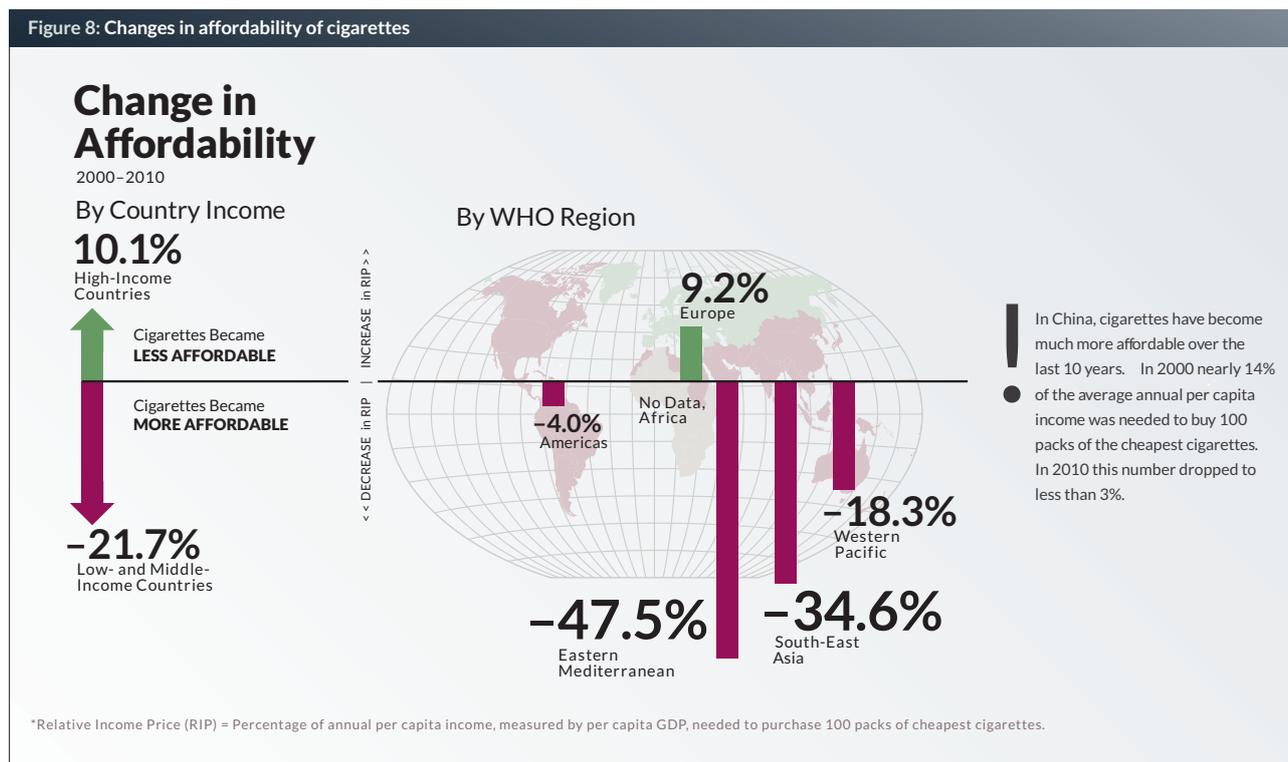
The results of the tobacco epidemic are costly and include both direct and indirect costs to society. Direct medical costs are incurred to treat tobacco-related illness and indirect costs include the loss of labour productivity, pollution and other environmental harm, and fire damage, not to mention the costs of human suffering that victims and their families face. In some countries, such as Egypt and Mexico, tobacco-related health care costs exceed 10% of total health care expenditures.

Cigarette smokers in developing countries face personal opportunity costs that can involve the sacrifice of basic needs like food and education to satisfy their addictions. Cigarette prices vary widely from country to country with a tendency toward more affordability in low- and middle-income countries (Figure 8), with “affordability” expressed as a percentage of income or duration of work time it takes to purchase a product. The fact that cigarettes may be more affordable compounds the problem, as low costs make it easier for smokers to justify the purchase of cigarettes over basic necessities. Essentially, increases in cigarette affordability confound tobacco control efforts.

Figure 7: Pro-tobacco propaganda



Figure 8: Changes in affordability of cigarettes



Importance of tobacco control and future challenges

The World Health Organization Framework Convention on Tobacco Control (WHO FCTC) is a global public health treaty adopted by the World Health Assembly in 2003. At the time of the first printing of *The Tobacco Atlas*, the FCTC was a year away from adoption. As of September 2013, 177 parties have joined⁷, making the FCTC one of the most quickly ratified treaties in history. Towards the goal of assisting countries with implementing tobacco control policies, a set of broad measures was introduced under the name MPOWER (Monitor tobacco use and prevention policies, Protect people from tobacco smoke, Offer help to quit tobacco use, Warn about the dangers of tobacco, Enforce bans on tobacco advertising, promotion and sponsorship, and Raise taxes on tobacco).⁸

With these goals in mind, *The Tobacco Atlas* suggests fourteen specific policy actions and strategies that contribute to the goal of reducing global tobacco use and will in turn significantly impact on global cancer rates:

- ▶ All countries that have not done so should sign and ratify the WHO FCTC ensuring a structured support system for local and national tobacco control efforts.
- ▶ The next round of Millennium Development Goals to be established by the UN in 2015 should include tobacco control measures.
- ▶ Tobacco issues should be incorporated into national policies regarding non-communicable diseases.
- ▶ Increased government funding for research and surveillance is needed, ideally derived from a tax on tobacco products. This is most crucial in developing countries where tobacco use is high and/or increasing.
- ▶ Tobacco industry regulations should be more stringent, particularly in the case of licensing nicotine as an addictive drug.
- ▶ Excise taxes on tobacco should be at least 70% of the retail price, as high taxes have been proven a deterrent to tobacco use. “Duty-free” tobacco should be prohibited.
- ▶ Health care professionals have a responsibility to model tobacco-free behaviour. Such behaviour, along with the smoke-free policies and curricula of health-education institutions, can work to reduce societal tobacco use.
- ▶ Strengthened support for the difficult act of quitting smoking is required and the inclusion of monetary incentives and lower health-insurance rates is recommended.
- ▶ Anti-tobacco messages and campaigns that have proven effective in some areas should be replicated in other parts of the world.
- ▶ Continued research and monitoring on novel tobacco and nicotine products is needed in order to ensure the public is well-informed about the relative health risks, both those inherent to these products as well as in comparison to established products.
- ▶ Where tobacco farming is widespread, assistance should

be provided to farmers in diversifying crops as well as establishing other uses for the tobacco that is grown.

- ▶ Parts of the world most in need of further tobacco control action, or “tobacco hot spots”, should be given special media attention and assistance, especially in cases where litigation is involved.
- ▶ The tobacco industry should not be involved in tobacco control at any level, as they may challenge national legislation and try to disguise their actions as “socially responsible”.
- ▶ Political will is necessary to help enforce tobacco control policies and protect the public from self-serving tobacco industry interests.

Summary

Tobacco use continues to be widespread and is the single largest cause of cancer worldwide. Its use accounts for at least 30% of all cancer deaths in developed countries with the potential to impact the rest of the world in a similar manner. The epidemiology of smoking in high-income nations has shown lung cancer progressing from a rare disease to the most common cause of cancer death, surpassing the number of cancer deaths from the next four leading causes of cancer combined. There are currently more than 1 million lung cancer deaths a year globally, 85% of which are caused by smoking.

The tobacco epidemic that has unfolded in many high-income countries could potentially be curbed or prevented in low- and middle-income countries that have not yet seen the dramatic increase in smoking prevalence rates and thus the resulting illness and death caused by tobacco use and

exposure. *The Tobacco Atlas* is a comprehensive tobacco control collection of global statistics and trend information designed to track and describe the global tobacco epidemic. It includes data on prevalence, harm from smoking, personal and societal costs of use, and industry behaviour, while illuminating solutions to this global problem. By arming the public with information about the crisis and suggesting guidelines to aid tobacco control, *The Tobacco Atlas* provides valuable tools to aid the tobacco control movement in its goal to prevent further global harm, in turn preventing avoidable cancer morbidity and mortality. ●

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Carrie Whitney, MPH provided research assistance and support to *The Tobacco Atlas, Fourth Edition*, and manages various tobacco control projects at GSU.

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