# Premature mortality due to tobacco: Counting the dead and saving lives

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I wish to thank the Canadian Population Society for inviting me to give this keynote address. It is a great honour and privilege for me. I was a founding member of the CPS and I have been a member as long as there as been a CPS. It is true, I have not been a very active member or even a very good member – but a loyal member nonetheless. And there is a reason for that. While my training was in demography, very early on – in 1974 to be precise – my career path very early veered off from full-time demography to what some would call public health. Others, such as those present, might call it applied demography. And since 1981, I have worked full-time on tobacco control – first at Health Canada, then at the World Health Organization, and since 2000, at Physicians for a Smoke-Free Canada.

And today I want to talk about how one part of demographic science – mortality estimation and prediction – has been so fundamental to progress in tobacco control in Canada and internationally. That is my first important theme – how to do a good job at counting the dead.

It is one thing to do a good job at counting the dead – it is quite another to actually prevent the deaths so counted from occurring – to save lives. It is this latter activity that has been most of my life's work, and that leads me to the second theme of my talk today – just how tobacco control as it has developed since the early 1970s, is actually now beginning to save lives. It is an enterprise which would benefit from more interest from more demographers.

Why? Because they – you – are so smart. Smart in ways that other people are not. I work with doctors, nurses, other health professionals, politicians, bureaucrats and lawyers. In all of these professions, people think they have profound understanding of human health, disease and behaviour. And they do. Their understanding is profound at the level of individual analysis but very limited at the level of population and social forces. Demographers, on the other hand, live and breathe population analysis. They know what the force of mortality is; they know about net migration, and it bothers them not at all that they have never met a net migrant. It is that kind of thinking that is needed to understand the tobacco epidemic and it is that kind of thinking that is needed to help bring it to an end. Demographers do not have a monopoly on understanding of social forces and collective behaviour, but 100% of demographers have such understanding, something that cannot be said of very many other professions.

The actions we have taken to control tobacco are just now beginning to show success in that tobacco-related mortality is in decline for men, although not yet for women. But what has worked up until now will not work so well in the future. We need new and stronger measures in the future. And that brings me to my third theme – just what we are going to do in the future to phase out tobacco.

So let's get started.

In the early 1980s, when I started working on tobacco control in Health Canada, I was dismayed to discover that we had no good estimates of mortality attributable to tobacco use. So a first step was to make such estimates. We estimated mortality from tobacco to be about 27,500 deaths in 1979[1], 33,000 in 1983 and 35,000 in 1985,[2] and published the estimates in 1984 and 1988 in a journal that most people don't read – the Canadian Journal of Public Health.

Except Gar Mahood and David Sweanor at the Non-Smokers' Rights Association read them and published a two-page ad in MacLeans Magazine in 1986 – a publication that most people DO read – with a headline that screamed "Thirty thousand die while feds sit on hands." [Show Slide 2] The text of the ad invited readers to write to the Minister of Health and demand action. They did so. By the hundreds. Of course it fell to me to prepare letters of reply for the Minister's signature. It was an early lesson for me in how to translate demographic analysis into political action. That advertisement was an opening salvo in what became a concerted political action campaign that culminated in the adoption by Parliament of the Tobacco Products Control Act in 1988.

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Part of establishing credibility for estimates of tobacco mortality is who does the estimates, and how well the information is communicated. And, like it or not, demographers who fail to widely communicate their important results are often ignored. Consider the

fate of the work of Raymond Pearl. In 1938, he published a life table and survivorship curves showing the death rates and survivorship rates for non-smokers, moderate smokers and heavy smokers.[3] **[Show Slides 3 & 4].** Now that looks to me like compelling evidence of an epidemic of tobacco-caused premature mortality. Despite the fact that his work was published in *Science,* it was mostly ignored. In fact, the very existence of the tobacco epidemic and its fatal consequences was largely unknown until it was "discovered" by physician-epidemiologists in 1950. Raymond Pearl did ground-breaking and innovative demography for his time. Had his results been effectively communicated, the world might have understood better the implications of his research results and perhaps millions of premature deaths would have been avoided.

In 1991, I moved to Geneva and joined the Tobacco or Health Programme of the World Health Organization. Once again, I was dismayed to discover that WHO, despite the high esteem in which it is held, had produced until that time only methodologically indefensible estimates of tobacco-related mortality. So I knew that if we were to make progress, we needed sound, credible estimates of global mortality attributable to tobacco. Fortunately, my epidemiologist colleagues Alan Lopez, who worked with me at WHO and Richard Peto of the Imperial Cancer Research Fund at Oxford were on the case.

Now the challenge of estimating global tobacco-attributable mortality was much bigger than doing similar estimates for Canada. In

Canada, we are blessed with reams of reliable data on mortality by cause and smoking prevalence and relative risk – all the information needed to prepare reasonably reliable estimates of smoking-related mortality. When the whole world is your unit of analysis, reliable data can be found only in your dreams. Reliable mortality data by cause exist for only about 45 developed countries, smoking prevalence data are few and far between and almost no epidemiological studies have been done in developing countries that would generate relative risk data.

But necessity is the mother of invention. For developed countries, Peto and Lopez developed a reliable tobacco-attributable estimation method that required only age and sex specific lung cancer rates. For developing countries, they developed an estimation method that required more assumptions and was therefore less reliable but nevertheless gave a good indication of smoking-related mortality for broad regional groupings. The method involved matching cigarette consumption in developed countries to developing countries some decades earlier, and then using the past mortality experience of developed countries to estimate the current mortality experience of developing countries. For 1995, we estimated there were 3 million deaths due to tobacco use – 2 million in developed countries and 1 million in developing countries.[4] **[Show slide 5]** Because the tobacco epidemic is slow moving and very predictable we can estimate what mortality was in the past and what it will be in the future. The numbers are sobering. Currently, tobacco kills about 5 million persons per year (9% of all death), but by the 2020s, that

number will double to 10 million per year (17% of all deaths), with 7 million of those deaths in developing countries. About 500 million currently alive will be killed by tobacco. Tobacco killed about 100 million people in the 20th century. It will kill about one billion people in the 21st century. Only dramatic policy interventions to cause millions to quit smoking and millions more never to start will prevent these predicted deaths from occurring.

So we could count the dead. To this day, WHO continues to use estimates of tobacco-related mortality with the methods developed by Peto and Lopez, only with updated data. So far, our estimates of future mortality are coming true, as predicted.

But it was not enough to count the dead. We had to count the living too – the number of smokers in the world. Once again reliable data were few and far between. Estimation was required and estimation techniques had to be devised. We did so. We had survey estimates of smoking prevalence from 87 countries representing 85% of the world's population. From this information we were able to produce reasonably reliable estimates of smoking prevalence by age, sex and WHO region. Only the African data were inadequate to the task. For Africa, we had data on only 7 of 46 countries, representing only 33% of the population. We estimated that there were 300 million smokers in developed countries and 800 million in developing countries in the early 1990s, with regional and percentage distributions as shown on the slide **[Show slide 6].**[4] Now, in the 21st century, the number of smokers has grown to 1.2 billion.

But even that was not enough we also had to deal with counter-speech from the tobacco industry. Since the 1960s, the tobacco industry propaganda machine and its platoons of paid pseudo-scientists have been casting public doubt on the scientific information about tobacco. A favourite trick, one that was used successfully in Canada in the 1970s and is still used to this day in many parts of the world is to point out that in certain populations like Japanese men, Chinese men and Spanish women, smoking rates were high and smoking-attributable mortality was low. It would then be asserted by tobacco industry apologists that this proved that smoking did not cause disease and death – it must be something else. Repeated often enough in major media and to politicians, this dissembly created doubt and confusion (as intended) and slowed progress in public health protection. Of course, the smart people here (everybody) will have already figured out what is wrong with this reasoning. It fails to account for the 25-45 year lag between uptake of smoking and resultant mortality. Current smoking is almost completely unrelated to current mortality. We needed an easy way to show people how this lagged effect worked. So we devised a model of the cigarette epidemic, based largely on actual experience in the UK with the first 100 years of the cigarette epidemic.[5] This model is shown on the slide **[Show slide 7].**

So we counted the dead; we counted the living and we countered the tobacco industry propaganda. Now it was time to do something about the tobacco epidemic. First we got our messages into

respectable scientific publications (The ones nobody reads) and then we took the show on the road. We criss-crossed the globe telling all who would listen – scientists, educators, health official, politicians, the media and others – about the size and scope and future evolution of the tobacco epidemic. People did get the message and around the world people now understand that the tobacco epidemic is serious and getting worse. We succeeded where Raymond Pearl had failed. We did successfully communicate that tobacco killed people in large numbers. The only trouble was it was sixty years later and 100 million had already died and hundreds of millions more will die before the epidemic is brought to an end.

And that brings me to my second theme. What was done and what is being done to bring the epidemic to an end – to save lives? Early on, it had been established that a comprehensive approach is needed to control tobacco. Legislation to control tobacco advertising and labelling, high prices, second-hand smoke control, smoking cessation and health education are all needed to discourage tobacco use. At WHO in the 1990s we developed and implemented a demonstration project to improve tobacco control policies in the direction of comprehensive tobacco control in all 27 countries of Central and Eastern Europe. At the end of 3 years, tobacco control had improved at least somewhat in all 27 countries. Some now have model tobacco control policies. **[Show slides 8 & 9].**

Another major achievement was to advance the Framework Convention on Tobacco Control. In 1994, it was just a wild and crazy

idea, intensely disliked by WHO lawyers, who did there their best to kill it. Now it is the first and only public health treaty in the world. It has been ratified by 147 countries and stands as a major achievement in tobacco control and public health **[Show Slide 10]**. And it has created lots of jobs for more lawyers in WHO. The FCTC has 38 articles. It ten key provisions are shown on the next slide **[Show slide 11].**

With all this success, what remains to be done? EVERYTHING! Despite apparent success in tobacco control, world tobacco production has remained unchanged since 2001, hovering around 5.7 million kilograms per year. Declines in consumption in developed countries are being negated by increases in consumption in developing countries, especially in Asia. The global number of smokers is not decreasing and global mortality from tobacco continues to increase. (It will continue to do so for some time, even if the number of smokers decreases, because of the long lag time between peaks in smoking prevalence and peaks in smoking mortality.)

For all the apparent success of the FCTC, it is to date mostly a paper tiger. True, 147 countries have ratified the convention, but relatively few have actually implemented its provisions. Even if implementing legislation has been adopted, as is the case in India, the law is not necessarily being effectively applied, as is also the case in India.

Fully implemented, the FCTC holds much promise. Just some of the things it could do are shown on the next slide **[Show slide 12]**. Despite the fact that the FCTC has a 14 year history, its past is prologue. The international policy tools are now in place, but their energy needs to be converted from potential to kinetic. The real benefits of the FCTC are yet to be realized.

Canadians in general and Canadian demographers in particular can help bring the tobacco epidemic to an end.

Canada has long prided itself as a leader in global tobacco control. And it is. Canada was a leader in pushing for development of the FCTC and Canada has implemented most of its provisions. And consumption of tobacco has fallen dramatically in Canada. Smoking prevalence in 2005 stood at just 20% in Canada, down from 50% in 1965.

**[Show slide 13]** Yet Canada could and should be doing much, much more. A popular word in the FCTC is cooperate and its derivatives. Cooperate, cooperation and cooperative appear 26 times in the treaty, and small wonder. Tobacco control does not succeed without cooperation. Local tobacco control requires cooperation; provincial tobacco control requires cooperation; national tobacco control requires cooperation. And especially, international tobacco control requires cooperation.

In the case of Canada, cooperation will mean more giving than receiving. Canadians are not only hewers of wood and drawers of water; we are world leaders in tobacco control, and I hope that we all be ready and willing to becoming leading exporters of something we do well – tobacco control.

Canada needs to be contributing both technical and financial assistance to assist and encourage developing countries and newly independent states to strengthen their tobacco control policies. Demographers, with their valuable knowledge and experience in development and use of vital and health statistics, would be valuable members of technical assistance teams to help improve mortality, morbidity and survey data so as to better monitor progress in control of the tobacco epidemic. They could also contribute as eloquent advocates for greater tobacco control. With their profound understanding of social and demographic forces, they could explain in ways that everyone could understand just how serious and dangerous the tobacco epidemic is, and prompt the policy changes necessary to bring the epidemic to an end.

Regrettably, the Canadian government has yet to create the framework by which significant amounts of Canadian money and expertise could be put to work in helping strengthen tobacco control around the world. What would such a framework look like? Well, we have a plan **[Show slide 14]**. How much would such a plan cost? With as little as $2 million a year we could provide assistance to about thirty countries. With $10 million a year, and willing helpers

from the ranks of Canadian demography and other professions, we could be helping most or even all developing countries.

But even if we did that, and we were successful, we still would not be done. In essence, the FCTC calls on the world to implement the tobacco control policies that Canada already has. So, even if successful, the world would only be as good as Canada is now. And Canada's success is only relatively good; it is not absolutely good. Five million smokers and 37,000 deaths a year is not what I would call an absolute success. If we are really going to phase out tobacco use, we have to get really serious.

And that brings me to my third theme – breaking new ground in tobacco control. Canada is a world leader in tobacco control, having pioneered many of the policies that the rest of the world is now adopting. But I am pessimistic that we could actually phase out tobacco in Canada or anywhere else with just the current policy mix. More will be needed to get rid of tobacco. And I hope Canada will assert its leadership on global tobacco control by adopting effective and achievable plans to phase out tobacco in two decades. I believe it can be done.

To understand where we might go in the future, we have to understand where we have been in the past. Most public health campaigns fight viruses and bacteria. Public health workers have had very little experience in fighting dissembly from global corporations. Yet that is the main reason the tobacco epidemic has

gone on so long. As difficult as global control of AIDS and HIV infection is, imagine how much more difficult it would be if there were hawkers on every street corner peddling handy shirt-pocket sized dispensers of the HIV virus. Yet that is exactly the problem we have faced since the 1950s in trying to control tobacco. To keep peddling their tobacco, tobacco companies must first peddle doubt. As a matter of policy they have been lying about the health consequences of tobacco since the 1950s. Here are just a few examples. Here is what Imperial Tobacco's own scientists concluded (but did not make public) in 1969. **[Show Slide 15]** Here is what their President told parliamentarians in the very same year. **[Show Slide 16]**. Here is an even stronger statement from a senior British-American Tobacco company scientist made in a 1976 internal document. BAT is the parent company of Canada's Imperial Tobacco. **[Show Slide 17]**. Yet the public dissembly continued. Here is what Imperial Tobacco's president said to Parliament in 1987. **[Show Slide 18]**.

In addition to practising dissembly, tobacco companies do not adopt public health measures imposed on them. Rather they adapt to them. **[Show Slide 19].** These two advertisements for Player's cigarettes are about 10 years apart. The one on the left from the late 1980s and the one on the right from the late 1990s. The one on the left was from the unregulated days of tobacco advertising and the one on the right under a legal regime in which tobacco advertisements had supposedly been banned. Evidently, the tobacco industry adapted very well to the so-called ban on tobacco advertising.

So we got to thinking – why do they do that? Why do they dissemble? Why do adapt when they are supposed to adopt? Are they evil? Are they psychopaths? **[Show slide 20].**[6]

Well, no they are not immoral. Amoral, yes, but not immoral. They do what they do, because they have to. They are obliged to sell more cigarettes to make more profits *by law.* **[Show Slide 21].**

Tobacco companies are machines – corporate machines built for the sole purpose of making money. They are no more capable of making a moral decision than a lawnmower or a chainsaw – or a mosquito. **[Show Slide 22].**

Until now we have been asking for measures that will change the way tobacco companies **behaved.** But we have yet to ask governments to force tobacco companies to change the way **they thought**.
We have tried to change the business practices of tobacco companies. But we have never tried to change the core business principles under which they operate. Nor have we tried to change the economic principles of the tobacco market. We figured out that tobacco companies were the vector of smoking-related disease
But we never figured out how to change the direction of that vector or to **reverse its course**: We never stopped to talk about the lessons of the comparison between tobacco companies and those other blood-sucking parasites, the anopheles mosquito.

**[Show Slide 23]**

The anopheles mosquito and the tobacco industry both cause millions of deaths. But public health workers waste no time castigating the mosquito for its blood-thirsty ways, or condemn it as a 'rogue insect.' We don't expect it to stop biting. Nor do governments consult the mosquito as a stakeholder in malarial control. We know that mosquitoes are not capable of behaving any differently because their genetic programming compels them to draw blood. Mosquitoes have no other choice. Nor do they have qualms about the fact that their survival condemns millions to death. Mosquitoes, after all, are not human. And this, perhaps, is where the comparison with tobacco corporations is particularly helpful. Because tobacco corporations are not human either. Just like mosquitoes, they have no capacity for moral decision-making. Just like mosquitoes, they are programmed to act in predictable ways, even though doing so results in the deaths of millions. If we accept the reality of the mosquito, why can't we accept the reality of the tobacco corporation?

**[Show Slide 24]**

Corporations are social instruments built for the sole purpose of facilitating trade, and programmed to do one thing exclusively – to maximize profits. Corporations are required under law to act in the "best interests of the shareholder," which has come to have the unequivocal meaning of maximizing profits. They are rule-driven systems and their behaviour is programmed and predictable.
In striving to sell more cigarettes and recruit new smokers, they are doing exactly what they were created to do -- sell cigarettes -- and

what they are required to do by law - maximize the value of the corporation for its owners by making cigarettes as profitably as possible. The visible hand of corporate law and the invisible hand of the marketplace both compel tobacco corporations to try to increase tobacco use. Even if a given tobacco corporation were to remove itself or be removed from the tobacco market, other companies would replace it as long as it was in their shareholders' interest to do so**.**

What if our past attempts at tobacco control had not been sidetracked by industry dissembly and adaptation? **[Show Slide 25].** If we had been as successful in 1963 as we were in 2005, smoking would have disappeared by 1993; we would have reached 20% smoking prevalence by 1981 not 2000, and lung cancer would not now be the leading cause of cancer death for women.

Can we expect smoking prevalence to keep going down? A straight-line extrapolation of current trends tells us that at the current rate of decline, tobacco use would disappear in less than two decades. **[Show Slide 26].** Will this actually happen? Well, not if we do nothing, and not if we just keep doing the same things and pursuing the same policies. New and bolder measures will be need because the tobacco industry is still dissembling and still adapting. Only now they have grown more sophisticated. They are no longer content just to fool smokers and politicians. Now they have new target – regulators and reputable scientists. The tobacco industry is already busily adapting to WHO and the FCTC. In 2001, at an internal meeting BAT reported that Philip Morris scientists "have engaged and

seek to continually engage with regulators and public health committee including the WHO's SAC." In another internal meeting the year before, BAT was already sizing up WHO and figuring out how to adapt, as shown in the next three black slides which are from an internal BAT Power Point presentation made to all the BAT General Managers from around the world. **[Show Slide 27, 28]** Note carefully that they are zealously seeking "engagement" and "endorsement" for "lower risk products" from the scientific and regulatory community. But according to BAT, what is a "lower risk product?" **[Show Slide 29].** Well, it seems that none of them are "safe." There are however some that "MIGHT" offer lower risks or "MIGHT" be regarded as safer that is regarded by others (NOT US!) as safer. "Might" offer lower risk is not science. It is flim-flam. Tobacco companies have been selling flim-flam for 100 years. And they still are. Only now they are selling it to scientists and regulators, as well as smokers. **[Show Slide 30]**. In a 2002 planning document, BAT asserted its desire to seek "external scientific engagement." Once likely marks were found, BAT has other projects all ready to go to provide such external experts with "background" and "expert steer." We will keep getting dissembly and flim-flam from tobacco companies – and prolongation of the tobacco epidemic – until we change the corporate structure that causes it. **[Show Slide 31].** In the long term we need to address the central problem which is that the legal obligation that tobacco corporations have to earn profits from selling tobacco. That obligation and their compulsion to fulfil it will keep driving them to keep mitigating and thwarting public health objectives.

We need a new corporate objective for tobacco suppliers. We need to replace making money from selling the stuff with phasing out tobacco use as the objective of tobacco supply. **[Show Slide 32].** This does not necessarily mean that tobacco supply has to become a government operation. There are many different models of how a tobacco supply agency could be structured. We have proposed three as shown on the bottom of this slide, but many others could be imagined too. Tobacco could even continue to be supplied by the current companies with most of their current personnel.

The key thing is that earning profits needs to be replaced by phasing out tobacco as a corporate objective.

It is also worth noting that the same logic applies to government-owned corporations or monopolies (like Japan Tobacco Industries or the Chinese National Tobacco Corporation). They would also need some attitude adjustment to shift them from pursuing the objective of selling more cigarettes to make more money for the state to the more socially useful objective of phasing out tobacco. We need to transfer the business of tobacco supply to public interest agencies that would have as their objective phasing out tobacco. That would accelerate reductions in tobacco use. **[Show Slide 33]**. Despite all the advantages shown on this slide, transferring tobacco supply from private for-profit corporations to corporations or agencies working in the public interest is not an idea that has much political traction right now. So what can we do now to prepare the ground for complete transformation of the tobacco industry? What can we do to move the

unthinkable to thinkable and doable? If we can't have revolution, can we have evolution? **[Show Slide 34]** If Canadians weren't ready for the revolutionary action of buying the tobacco companies on the open market (They could be had for two years of tobacco taxes or less) and transforming them into corporations working in the public interest to phase out tobacco, Canadians might still be willing to support innovative evolutionary steps that would still move us in the direction of phasing out tobacco. Here are some evolutionary steps we could take. **[Show Slide 35].** Vague talk about increasing smoking cessation and preventing smoking uptake and possibly making cigarettes less hazardous and protecting some non-smokers some of the time just won't cut it any more. We need governments to set targets for tobacco use reduction that will see tobacco phased out. In Canada, if we just kept achieving the reductions we have had in the last six years of one percentage point of smoking prevalence per year, as we have seen, tobacco use would virtually disappear in two decades.

We need governments to set bold but achievable targets, like reducing tobacco use prevalence by one percentage point per year for twenty years, and then we need them to stick to the plan. So we need plans with teeth in them that governments are obliged to follow. One way of doing this would be to enshrine the plan in legislation. In order to stick to the plan, governments will need more than just FCTC-type demand control measures. Supply control measures need to be added to the current armamentarium of mostly demand control measures.

**[Show Slide 36]** Tobacco retailing presents opportunities for better tobacco supply management in the interests of public health improvement. The ban on retail displays ("power walls"), pioneered by Saskatchewan, is already a reality in some provinces and territories (Nunavut, NWT, Saskatchewan, Manitoba) and soon will be reality in other provinces (PEI, Ontario, Quebec). This in turn will dampen tobacco company enthusiasm for paying retailers $80 million per year for shelf space.

**[Show Slide 37]** In Saskatchewan and other provinces we have already moved from power wall (left) to blank walls (right), as our electronically added young friend is observing. **[Show Slide 38]** With good will, cooperation with retailers, the right incentives and a little imagination, those blank walls could be transformed into powerful health promotion message boards. **[Show Slide 39]** But transformation need not just be limited to transformation of prime retail space. Those neighbourhood convenience stores on every street corner could become vital centres for public health improvement and social and community development. Just some of the examples of what is possible are shown on this slide.

We have already had a few encouraging meetings with the captains of the convenience store industry in Canada. We hope there will be more. There is at least qualified enthusiasm on both sides for going further to transform convenience stores to places where less tobacco is sold are more and higher public purposes are achieved.

**[Show Slide 40]** Another industry-transforming step, short of complete transformation of the corporate structure of the industry, would be to oblige the tobacco industry to do much more than we do now. We would require them to actually achieve public health goals by requiring them by legislation to achieve annual targets of reduced sales. The penalty for failing to achieve the targets would be very severe – suspension of licences to manufacture, import and sell tobacco products. We could, for example, require them reduce consumption (both supply and demand) by 2 billion cigarettes per year until 2017 and one billion cigarettes per year thereafter with proportionate reductions in other tobacco products too.

This is the sort of thing the tobacco industry would resist mightily and then seek to weaken or overturn should it ever be adopted.

Such tobacco industry resistance, however, might motivate governments to take the even stronger measure of transforming the entire industry into a non-profit agency working in the public interest towards achievement of the targets shown here.

**[Show Slide 41]**

Tobacco companies won't change their behaviour in ways that reduce tobacco use, because they can't change their behaviour in this way. They will go on to maximize share values, profit and tobacco sales in the future. We know this.

**Click slide**

We are the **only** ones who can change tobacco industry behaviour. Corporations can't and won't change. Their directors and managers

can’t and won’t change it. **Only** we can. To do so, we have to change the programming of tobacco suppliers from for-profit corporations to public interest agencies. Perhaps we could do it all at once in a revolutionary way. It is far more likely, however, that we would succeed in this enterprise in a stepwise, evolutionary way.

**Click slide**

We now understand what motivates tobacco companies to behave so harmfully. We can use that understanding to select less harmful suppliers of tobacco. We can seek revolution now or revolution later. Or we can seek evolution, by creating first the least harmful forms of tobacco leaf supply and tobacco retailing, followed by a legislative challenge to the existing tobacco industry to achieve public health goals, and, then, if they fail to meet the challenge, moving to the final step of transforming the entire tobacco supply business into one that operates in the public interest. One way or another.

**Click slide**

We can change the world.

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