Investing to kill: return on investment of tobacco companies compared to high-mortality and neutral industries

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ABSTRACT
Terrorists have worked directly with tobacco companies and used tobacco sales to fund traditional terrorist activities. This familiarity with tobacco, coupled with the high mortality rate of tobacco indicates terrorists may use tobacco investing as a means of covert legal killings (CLK), which refers to the terrorist intention of mass killing in a targeted group using legal means. To provide insight into tobacco investors’ motives this study 1) quantifies annual death rate for leading mortality-causing industries in America; 2) identifies eight companies responsible for the highest CLK; 3) compares investment returns for eight high-mortality companies to the S&P 500 from 2009 to 2019 to determine if tobacco is the most likely target for terrorist-based CLK. The top three highest mortality rate companies and thus best CLK investments from a terrorist perspective were tobacco companies: Altria Group Inc., Reynolds America Inc., and Imperial Brands. Together, these tobacco companies are responsible for >436,800 American premature deaths/year, yet tobacco investments performed worse than the S&P500 over the last decade. It is clear that for CLK investors, tobacco is the most efficient means of investing to kill Americans. Questionable tobacco investor intentionality, combined with the recent advancement in CLK theory makes it reasonable to assume that some tobacco investors are terrorists using their wealth to specifically target and kill Americans. To determine how widespread this practice is, future work is needed to evaluate CLK tobacco investors against the Terrorist Screening Database.

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Introduction
Several academic reports from U.S. law enforcement (Billingslea, 2004) and the Federal Bureau of Investigation (FBI; Olson, 2007) as well as the U.S. federal government (United States, 2003) have shown that terrorists use the sale of tobacco to fund traditional terrorist activities. There is also limited evidence from Europe that at least part of the tobacco industry works with terrorist organisations to simultaneously maximise profits and evade taxes (Tracey & Basler, 2004). After a detailed analysis of the interaction between the tobacco industry and financing terrorism, Basler concluded that disrupting large-scale tobacco-related economic activity would enable law enforcement to make large strides in cutting off terrorist financing (Tracey & Basler, 2004): ‘Cigarette smuggling is an easy source of funding for terrorists, and it should be relatively easy for tobacco companies working with law enforcement to contain. Eliminating an easy source of funds for terrorists and organised crime in turn would eradicate the ability of the smuggler to obtain resources and would force the use of illegal products that would be harder to conceal’ (Tracey & Basler, 2004). The tobacco industry, however, kills far more people directly than international terrorists are able to do using conventional terrorism (i.e. ~5,700X the mortality burden; Thomson & Wilson, 2005). This is of particular concern in the context of a recent legal study that expanded the definition of terrorism to include covert legal killings (CLK), which refers to the terrorist intention of mass killing in a targeted group by any means where current law does not provide guidance because legal means are used (Pearce, 2020).

CLK theory was needed because of a new terrorist intention recently becoming more common with the rise of extremist groups whose stated goals are ‘destroying the Western civilisation from within’ (Akram, 1991). Thus, there is a fourth possible terrorist intention: mass killing a targeted group or nation by any means. Here, the focus will be on terrorists who intend to kill as many Americans as possible, but it should be pointed out such techniques could be used by extremists against any nation or other group of people. What makes this form of terrorism different from older types is that widespread exposure can compromise its effectiveness.

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Normally, a terrorist group claims credit for killing and thus spreads fear and exposure enhances their goals. For CLK-based terrorism, however, mass media attention would directly counter terrorist goals. Thus, terrorists motivated by the fourth intention of killing as many people in a target group as possible are not necessarily overt. For example, if terrorists bent on the destruction of America were slowly poisoning water, food, or medical supplies (McKay & Elizabeth, 2015) sequentially starting in New York, then moving to Washington, Los Angeles, Chicago, Houston, etc. by descending population size, claiming responsibility and sharing the methods that they used with the mass media would make poisoning the next city more difficult. Thus, this type of terrorism is called covert terrorism, which is not new. Gambill categorises two types of covert terrorism: (1) anonymous terrorism, where responsibility for the act remains unclaimed completely, and (2) surrogate terrorism, where responsibility is claimed by a surrogate (Gambill, 1998). In both types of conventional covert terrorism, Gambill points out that demands are made for policy changes within the target government (Gambill, 1998). Simplistic conventional terrorism, even when covert, is illegal and existing laws and the judicial system have known methods to deal with it. In addition to the potentially secretive nature of covert terrorism, however, the means of causing death in a target group do not have to be illegal. There are, of course, many legal ways to kill people – from accidents to selling products that cause mortality. When a terrorist organisation uses a legal means of killing people, it falls out of the scope of the standard definition of terrorism, which ‘involve acts dangerous to human life that are a violation of the criminal laws of the United States or of any State’. This is remarkable because it is theoretically possible to have a terrorist intention (the fourth terrorist intention), but acting on it does not necessarily involve breaking current laws.5

As it is well established that conventional overt terrorists are already using the tobacco industry it will be used here (Billinge, 2004; Olson, 2007; Tracey & Basler, 2004; United States, 2003)4. As an example case study, consider that the Financial Action Task Force (FATF)5 reported that the Irish Republican Army (IRA) flooded Ireland with contraband cigarettes and imported counterfeit versions of popular American brands to the point that tobacco smuggling had become a top funding source. It was estimated that the IRA made an estimated USD $100 million in tobacco revenue smuggling over a five-year period (Guidance, FATF, 2012). Thus, while tobacco use has such a large mortality rate (Barendregt et al., 1997; Centers for Disease Control and Prevention (CDC), 2020; Koronaiov & Delipalla, 2019), tobacco appears to be a likely target industry for CLK investing. This is further supported by the facts that the United States Centers for Disease Control and Prevention (CDC) report that tobacco use is the leading preventable cause of death as cigarette smoking is responsible for more than 480,000 deaths/year in the United States, including an estimated 41,000 deaths resulting from second-hand smoke exposure (Centers for Disease Control and Prevention (CDC), 2020). Remarkably, the tobacco industry is responsible for roughly four times more premature deaths per year in the U.S. than the number of people that the tobacco industry employs (Pearce, 2019). This may indicate that terrorists could be investing in the tobacco industry for the express purpose of killing people and burdening the medical system. Tobacco investors, however, may not be terrorists and are simply aiming to earn a high return on investment (ROI) in an industry that sells an addictive substance. To provide some insight into the motives of tobacco investors this study: 1) quantifies the annual death rate for the four leading mortality-causing industries in the U.S.; 2) uses market share as a proxy for the approximate company-caused deaths for a given high mortality industry the eight companies responsible for the highest CLK are identified and compared across industries; 3) finally, the ROI for these eight high-mortality companies are compared against the S&P from 2009 to 2019 to determine if tobacco is indeed the most prominent and likely targets for terrorist-based CLK.

Methods

Using CDC data (Center for Disease Control and Prevention (CDC), 2020), U.S. mortality that can be directly linked to externalities from industry are observed for the following industries: 1) tobacco (~480,000/year), 2) alcohol (~88,000/year), 3) coal (~52,000/year), and 4) firearms manufacturing (39,773/year). Deaths attributed to a company per year, \(D_c\), is approximated by:

\[
D_c = M_c \times D_t
\]

where \(M_c\) is the market share for the company and \(D_t\) is the annual industry-related deaths in the U.S. The highest market share companies in each of the four industries above (CSIMarket, ; Jan, 2020; Team, 2015) are compared, and the top eight companies in terms of equation (1) are identified. The investment value for each of these companies is then plotted as a function of time assuming $1 million investments in 2009 in the company’s common stock to 2019. The CLK mutual fund is made up of the top three (1/3 each) CLK
investments and is compared to the S&P 500, which is a stock market index, which measures the stock performance of the 500 largest companies listed on stock exchanges in the U.S. and is often used as representative of the overall U.S. stock market. Here, it is used as a benchmark neutral financial investment and is expected to present the average externality-related mortality of the U.S. economy.

**Results**

The results of the analysis found that three out the top eight highest mortality rate companies were tobacco companies: Altria Group Inc. (MO), Reynolds America Inc. (RAI) and Imperial Brands (IMBBY) ranked 1, 2 and 3 from a CLK perspective, respectively. (Note that in June 2015 Reynolds American merged with Lorillard and took them as a subsidiary. This made the U.S. tobacco market even more consolidated with the top three companies controlling 91% of the market. Altria maintained the largest share and was not harmed by the greater competition due to overall increases in the market (Team, 2015)). Altria Group Inc. (MO) with a 47% market share in the tobacco industry is responsible for about 225,600 premature deaths per year using CLK metrics. Together these three tobacco companies are responsible for over 436,800 American premature deaths each year. Two of the companies making the top eight are representatives from the alcohol industry: Anheuser-Busch InBev (BUD) and Heineken (HEINY), which ranked 4th and 5th, respectively. These two alcohol industry companies are responsible for more than 37,000 American deaths per year. The 6th rank is Peabody Energy Corp. (BTU), which is a coal company with a 14.75% market share responsible for about 7,670 American deaths/year when only considering the coal-related air pollution mortality. With 18% of the market in the firearms

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**Figure 1.** a. The performance of the eight CLK stocks responsible for the highest mortality rates from externalities in the U.S. from 2009 to 2019 assuming a $1 m investment in each; b. A CLK mutual fund of the deadliest three stocks (tobacco stocks marked with * in (a)) made up of tobacco companies compared to the S&P 500.
industry, Sturm, Ruger & Co (RGR) is ranked 7th with about 7,200 premature deaths/year. Finally, Exxon Mobil (XOM) is ranked 8th, with 4,942 deaths primarily caused by air pollution. The investment performance of these eight companies is compared, and a CLK-based mutual fund is made of the top 3 CLK stocks made up of the three tobacco companies and is compared against the S&P 500 from 2009 to 2019 in Figure 1.

As can be seen in Figure 1(a) all of the CLK stocks saw growth over the last decade with the exception of the fossil fuel stocks, with coal performing particularly poorly. On the contrary, RGR stock (guns) showed enormous growth compared to the more representative CLK investment performances of alcohol and tobacco stocks. Most interestingly when comparing the three most deadly CLK investments as shown in Figure 1(b) that are together responsible for 436,800 American deaths per year, an investor would see a comparable return on investment from 2009 to 2019 by simply investing in the S&P 500. There does not appear, therefore to be an economic motive for investing in high death rate industries compared to the S&P500.

Discussion

The death rate from tobacco of nearly half a million Americans per year is worse than the number of American deaths from the COVID-19 pandemic in 2020 at only 345,323 premature dead Americans (Ahmad & Anderson, 2021). The WHO reports that tobacco use worsens the impact of COVID-19 (WHO EMRO, 2021), indicating that many COVID-19 deaths are actually caused by underlying tobacco use. Worse yet, Forbes reports that tobacco use increased during the pandemic (Sarkis 2020). Many Americans think the tobacco problem is already solved, making it even more deadly; however, in the U.S. tobacco is still accountable for about 1 in 5 deaths (Armendares et al., 2006). It is clear that for CLK investors tobacco is the most efficient means of investing to kill Americans because of the concentration of the tobacco market in three tobacco companies. As can be seen in Figure 1, from mid-2017 there has been a decline in the value of tobacco stocks. This decline has reduced the ROI for investments over the last decade to sometimes below the S&P 500. This means that over the last decade investors will earn about the same in addictive tobacco products than merely investing in an exchange traded fund (ETF) or index fund without an outcome so devastating to human life. Given this fact, the intentions of current tobacco investors towards the American public have come into question. It is also clear that tobacco smuggling and use is becoming an increasingly large problem in the developing world and that the limited case study of the U.S. done here should be expanded in future work to the rest of the world.

Conclusions

The question of intentionality, combined with the recent advancement in CLK theory makes it reasonable to assume that some tobacco investors are indeed covert terrorists using their wealth to specifically target and kill Americans. To determine how widespread this practice is, future work is needed to evaluate CLK tobacco investors against the Terrorist Screening Database (TSDB).

Notes

1. Here, the strict definition of a terrorist from the Federal Bureau of Investigation (https://www.fbi.gov/investigate/terrorism), which includes both international and domestic types, is expanded to include covert legal killing. The base definition of international terrorism is violent, criminal acts committed by individuals and/or groups who are inspired by, or associated with designated foreign terrorist organisations, or nations (state-sponsored). Similarly, domestic terrorism is defined as violent, criminal acts committed by individuals and/or groups to further ideological goals stemming from domestic influences, such as those of a political, religious, social, racial, or environmental nature.
2. See 18 U.S.C. § 2331 (2018).
3. Most striking, perhaps, is whether terrorists used methods in legally changing laws to kill more people in the target population or to encourage a fundamental trait that most Americans believe in, like freedom. To understand this two cases are provided. First, a potential law change. According to the National Highway Traffic Safety Administration, removing seat belt laws in the United States would kill up to 15,000 Americans a year (NHTSA, 2021). This is roughly 5 times, the death toll in the 9/11 terrorist attack in the U.S. and thus might be regarded as a major terrorist victory if a terrorist group was successful in lobbying for the removal of seat belt laws in the U.S. because they could quiet claim responsibility for the deaths of up to 15,000 Americans a year. It should be pointed out that they would need to quiet claim the victory may be short lived if the American population discovered the source of the law change.
4. The COVID-19 pandemic perhaps provides the second example, where Americans could fall prey to supporting one of their founding attributes, like freedom. COVID-19 vaccines are universally regarded by the medical and scientific community as effective (Evans & Jewell, 2021; Grannis et al., 2021; Nasreen et al., 2021; Thompson et al., 2021). For example, in the United States, the use of vaccines has prevented an estimated 279,000 deaths and up to 1.25 million hospitalisations have been averted as of the end of June 2021 (Galvani
et al., 2021). Despite the data, there is a strong antivaxxer sentiment in the U.S. largely based around concepts of freedom where 2/3rds of the content comes from only 12 individuals (Galvani et al., 2021; Mabrey, 2021; Watch, C. for C. D. H. A.-V., 2021).

Pan has argued that antivaxxer actions that reduce the vaccination rate and thus increase the American death rate should be considered acts of domestic terrorism (Pan 2021). Would the more than 30% of the American population (Mayo Clinic, U.S, 2021), perhaps reconsider getting vaccinated if it was discovered that the 12 most-prominent antivaxxers listed in the report were found to be funded by known terrorist groups? It is obvious that the effectiveness of this type of terrorism is likely to be compromised by simple exposure and mass media attention would directly counter the terrorist goals of killing as many Americans as possible. Thus, although most Americans use seat belts (Kidd et al., 2013) and get vaccinated (Mayo Clinic, U.S, 2021) and some do both seat belts and vaccinations irritating, few Americans would argue against seat belt laws and the majority want vaccinations. It is clear, however, that virtually no one would back a change in the seat belt law if it was exposed as a plot by terrorists trying to kill them. Similarly, the credibility of anti-vaxxers would immediately be degraded if they were tied to conventional terrorist organisations. For these cases and examples, a new term was needed and developed in (Pearce, 2020) for people or groups with terrorist intentions that do not break the law: CLK. CLK uses legal activities meant to kill as many people as possible in a target group or nation. To be clear, CLK acts themselves are not currently illegal in the United States, regardless of intent.

4. For example, in June 2002, a federal criminal jury convicted two Lebanese terrorists of smuggling low-tax cigarettes from North Carolina to high-tax Michigan and using the proceeds to fund the Iranian/Syrian-backed terrorist group Hezbollah.

5. The FATF is an independent inter-governmental body that develops and promotes policies to protect the global financial system against money laundering, terrorist financing and the financing of proliferation of weapons of mass destruction.

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Authors’ contributions
Both authors contributed to the analysis and writing of the manuscript.

References
Ahmad, F.B., & Anderson, R.N. (2021). The leading causes of death in the US for 2020. JAMA, 325(18), 1829–1830. https://doi.org/10.1001/jama.2021.5469

Akram, M. (1991). An explanatory memorandum on the general strategic goal for the group in North America: Investigative Project, 16–17.

Armenares, P.E., Shigematsu, L.M.R., Hernández-Prado, B., & Hernández-Girón, C. (2006). Expansion of the tobacco industry and smuggling: Challenges for public health in developing countries. Salud publica de Mexico, 48(S1), 183–189. https://doi.org/10.1590/S0036-36342006000300002

Barendregt, J.J., Bonneux, L., & van der Maas, P.J. (1997). The health care costs of smoking. New England Journal of Medicine, 337(15), 1052–1057. https://doi.org/10.1056/NEJM199710093371506

Billingslea, W. (2004). Illicit cigarette trafficking and the funding of terrorism. Police Chief, 71(2), 49–56 https://www.policechiefmagazine.org/Illicit-cigarette-trafficking-the-funding-of-terrorism/.

Center for Countering Digital Hate Anti-Vax Watch, (2021). https://www.prnewswire.com/news-releases/disinformation-dozen-two-thirds-of-online-anti-vaccine-content-originate-from-top-12-anti-vax-leaders-301255060.html

Center for Disease Control and Prevention (CDC). (2020). National Center for Health Statistics, FastStat. Retrieved August 8, 2020 from https://www.cdc.gov/nchs/fastats/default.htm

Centers for Disease Control and Prevention (CDC), (2020). Smoking & tobacco use, fast facts. Retrieved August 7, 2020 from http://www.cdc.gov/tobacco/data_statistics/fact_sheets/fast_facts

The Centre for Countering Digital Hate: The Disinformation Dozen, https://f4d9b9d3-3d32-43a-aaf6-498b0f5279a.usr.files.com/ugd/f4d9b9_166cc9a25a04455a69dcd0298f530d.pdf

CSI Market. CSI Market - Company, sector, industry and market analysis. Retrieved August 7, 2020 from https://csimarket.com/stocks/competition

Evans, S.J., & Jewell, N.P. (2021). Vaccine effectiveness studies in the field New England Journal of Medicine, 385, 650–651 https://www.nejm.org/doi/full/10.1056/NEJMe2110605

Galvani, A., Moghadas, S.M., & Schneider, E.C.(2021). Deaths and hospitalizations averted by rapid U.S. vaccination rollout. The Commonwealth Fund, Issue Briefs, Retrieved July 7, 2021 from https://www.commonwealthfund.org/publications/issue-briefs/2021/jul/deaths-and-hospitalizations-averted-rapid-us-vaccination-rollout.

Gambill, G.C. (1998). The balance of terror: War by other means in the contemporary Middle East. J. of Palestine Stud, 51(28), 55 doi:https://doi.org/10.2307/2538055

Grannis, S.J., Rowley, E.A., Ong, T.C., Stenehjem, E., Klein, N. P., DeSilva, M.B., Naylor, A.L., Natarajan, K., & Thompson, M.G., & Network, V.I.S.I.O.N. (2021). Interim
estimates of covid-19 vaccine effectiveness against covid-19–associated emergency department or urgent care clinic encounters and hospitalizations among adults during SARS-CoV-2 B. 1.617. 2 (delta) variant predominance—nine states, June–August 2021. Morbidity and Mortality Weekly Report, 70(37), 1291. https://doi.org/10.15585/mmwr.mm7037e2

Guidance, FATF. Illicit Tobacco Trade. (2012). https://www.fatf-gafi.org/media/fatf/documents/reports/Illicit%20Tobacco%20Trade.pdf

Jan, C. (2020). Global beer industry market share. Statista. Retrieved August 8, 2020 https://www.statista.com/statistics/257677/global-market-share-of-the-leading-beer-companies-based-on-sales

Kidd, D.G., McCartt, A.T., & Oesch, N.J. (2013). Attitudes toward seat belt use and in-vehicle technologies for encouraging belt Use. Traffic Injury Prevention, 15(1), 10. https://doi.org/10.1080/15389588.2013.792111

Koronaou, K., & Delipalla, S. (2019). The economic cost of tobacco smoking and secondhand smoke in Greece: Musculoskeletal disorders the leading contributor to smoking-related morbidity. Tobacco Prevention & Cessation, 5(September). https://doi.org/10.18332/tpc/113091

Mabrey, B.E. (2021). The disinformation dozen and media misinformation on science and vaccinations.

Mayo Clinic. U.S. (2021). COVID-19 vaccine tracker, https://www.mayoclinic.org/coronavirus-covid-19/vaccine-tracker

McKay, C., & Elizabeth, J.S. (2015). Intentional and inadvertent chemical contamination of food, water, and medication. Emergency Medicine Clinics of North America, 33(1), 153. https://doi.org/10.1016/j.emc.2014.09.011

Nasreen, S., He, S., Chung, H., Brown, K.A., Gubbay, J.B., Buchan, S.A., Wilson, S.E., Sundaram, M.E., Fell, D.B., Chen, B., & Calzavara, A. (2021). Effectiveness of COVID-19 vaccines against variants of concern. Medrxiv.

NHTSA 2021 . Seat belts save lives, Nat’l highway traffic safety admin. https://www.nhtsa.gov/seat-belts/seat-belts-save-lives

Olson, D.T. (2007). Financing Terror. FBI Law Enforcement Bulletin, 76(2), 1. https://doi.org/10.1037/e601072007-001

Pan, R. (2021). : Washington Post https://www.washington post.com/opinions/anti-vaccine-extremism-is-akin-to-domestic-terrorism/2021/02/26/736eae22-787e-11eb-8115-9ad3e9c02117_story.html

Pearce, J. (2019). Towards quantifiable metrics warranting industry-wide corporate death penalties. Social Sciences, 8 (2), 67. https://doi.org/10.3390/socsci8020062 62

Pearce, J.M. (2020). Detecting covert legal killing to stop a new approach to terrorist intention. Suffolk University Transnational Law Review, 43, 291–309 https://heinonline.org/HOL/LandingPage?handle=hein.journals/sujtnlr43&div=15&id=&page=

Sarkis, S. Smoking has increased during the pandemic. Forbes, Health A on S and. Tobacco control in the United States: Failure to protect the right to health. Tob Prev Cessation. 2020:6(June). https://www.forbes.com/sites/stephaniesarkis/2021/03/19/smoking-has-increased-during-the-pandemic

Team, T. (2015). Altria in the post-merger world. Forbes. Retrieved August 8, 2020 from https://www.forbes.com/sites/greatspeculations/2015/12/01/altria-in-the-post-merger-world

Thompson, M.G., Burgess, J.L., Naleway, A.L., Tyner, H.L., Yoon, S.K., Meece, J., Olsho, L.E., Caban-Martinez, A.J., Fowlkes, A., Lutrick, K., Kuntz, J.L., Dunnigan, K., Odean, M.J., Hegmann, K.T., Stefanski, E., Edwards, L.J., Schaefer-Solle, N., Grant, L., Ellingson, K., ... Gagliani, M. (2021). Interim estimates of vaccine effectiveness of BNT162b2 and mRNA-1273 COVID-19 vaccines in preventing SARS-CoV-2 infection among health care personnel, first responders, and other essential and frontline workers—eight US locations, December 2020–March 2021. Morbidity and Mortality Weekly Report, 70 (13), 495. https://doi.org/10.15585/mmwr.mm7013e3

Thomson, G., & Wilson, N. (2005). Policy lessons from comparing mortality from two global forces: International terrorism and tobacco. Globalization and Health, 1(1), 18. https://doi.org/10.1186/1744-8603-1-18

Tracey, A., & Basler, T.A. (2004). Cigarettes, smuggling, and terror: The European community v. RJ Reynolds. Chi.-Kent J. Int’l & Comp. L. 4, 1 https://scholarship.kentlaw.iit.edu/cgi/viewcontent.cgi?article=1090&context=ckjcl .

United States. General Accounting Office, United States. Congress. Senate. Committee on Governmental Affairs. Subcommittee on Governmental Management, the Federal Workforce, the District of Columbia, & United States. Congress. Senate. Caucus on International Narcotics Control. (2003). Terrorist Financing: US Agencies Should Systematically Assess Terrorists’ Use of Alternative Financing Mechanisms: Report to Congressional Requesters. US General Accounting Office.

Watch, C. for C. D. H. A.-V. (2021). Disinformation Dozen: Two-Thirds of online anti-vaccine content originates from top 12 anti-vax leaders. Retrieved November -1, 2021. https://www.prnewswire.com/news-releases/disinformation-dozen-two-thirds-of-online-anti-vaccine-content-originate-from-top-12-anti-vax-leaders-301255060.html

WHO EMRO. (2021). Tobacco and waterpipe use increases the risk of COVID-19 | Know the truth | TFI. Retrieved November 1, 2021. http://www.emro.who.int/TFI/know-the-truth/tobacco-and-waterpipe-users-are-at-increased-risk-of-covid-19-infection.html