



**HKU
Med**

LKS Faculty of Medicine
School of Public Health
香港大學公共衛生學院

The effect of alcohol pricing policies on public health: a modelling study

Project No.: 03170067

Dr Jianchao Quan BM BCh MA MEcon MPH MD FHKCCM FHKAM

Clinical Assistant Professor

School of Public Health

The University of Hong Kong



Health Research Symposium, 26 November 2024, Hong Kong SAR



**HKU
Med**

LKS Faculty of Medicine
School of Public Health
香港大學公共衛生學院

Background

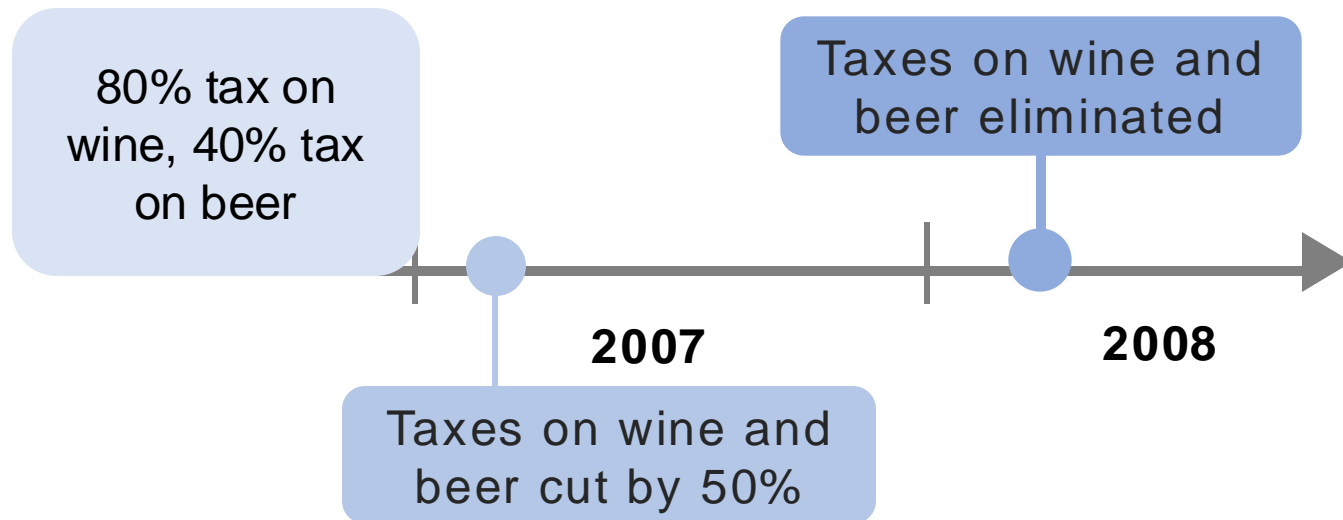
In 2007, Hong Kong started taking steps to establish itself as a global wine hub.

Despite the WHO 'best buy' policies, Hong Kong:

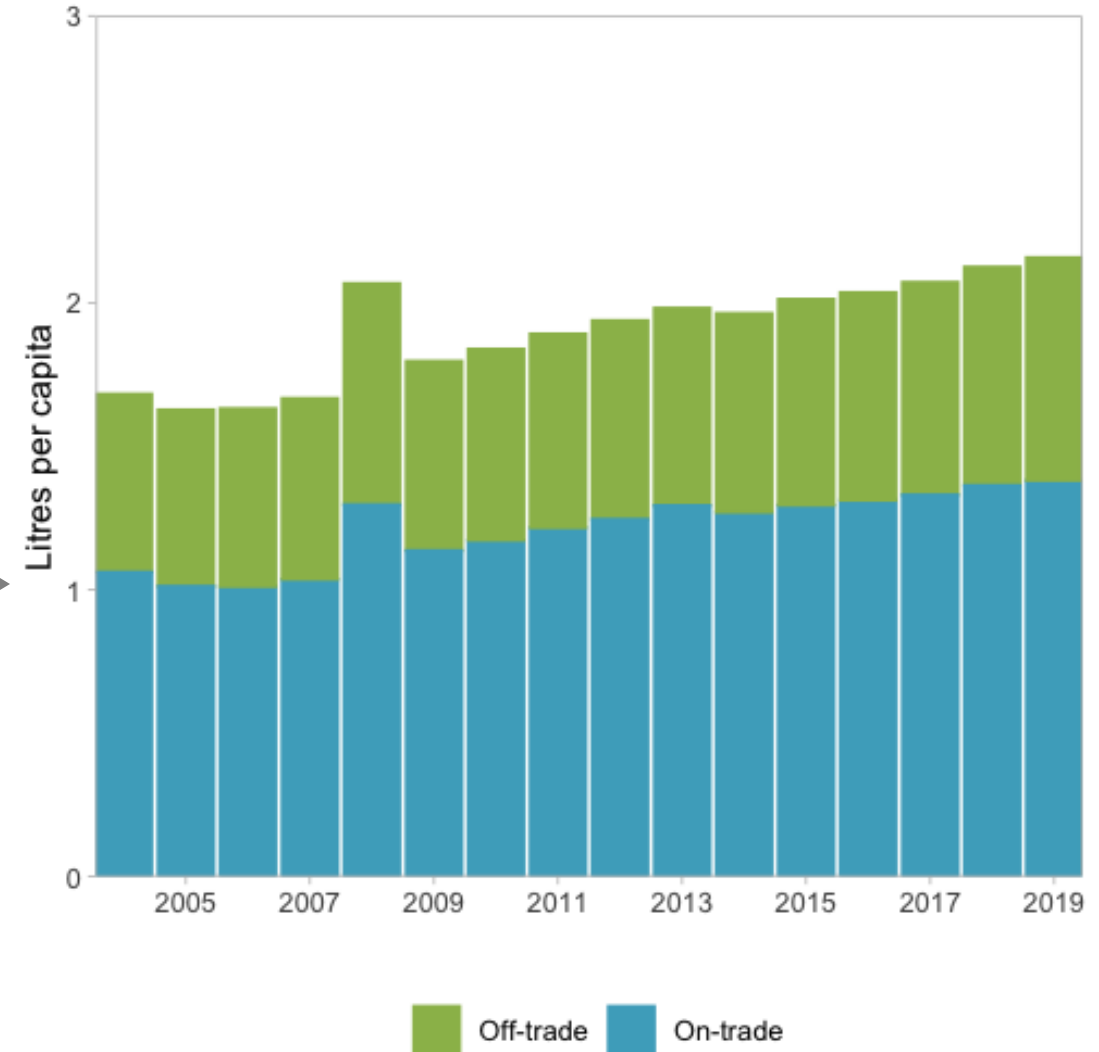
- Reduced and elimination of taxes on alcohol, albeit having no value-added tax or general sales tax
- Training and tourism to increase growth in the wine-related businesses



Background

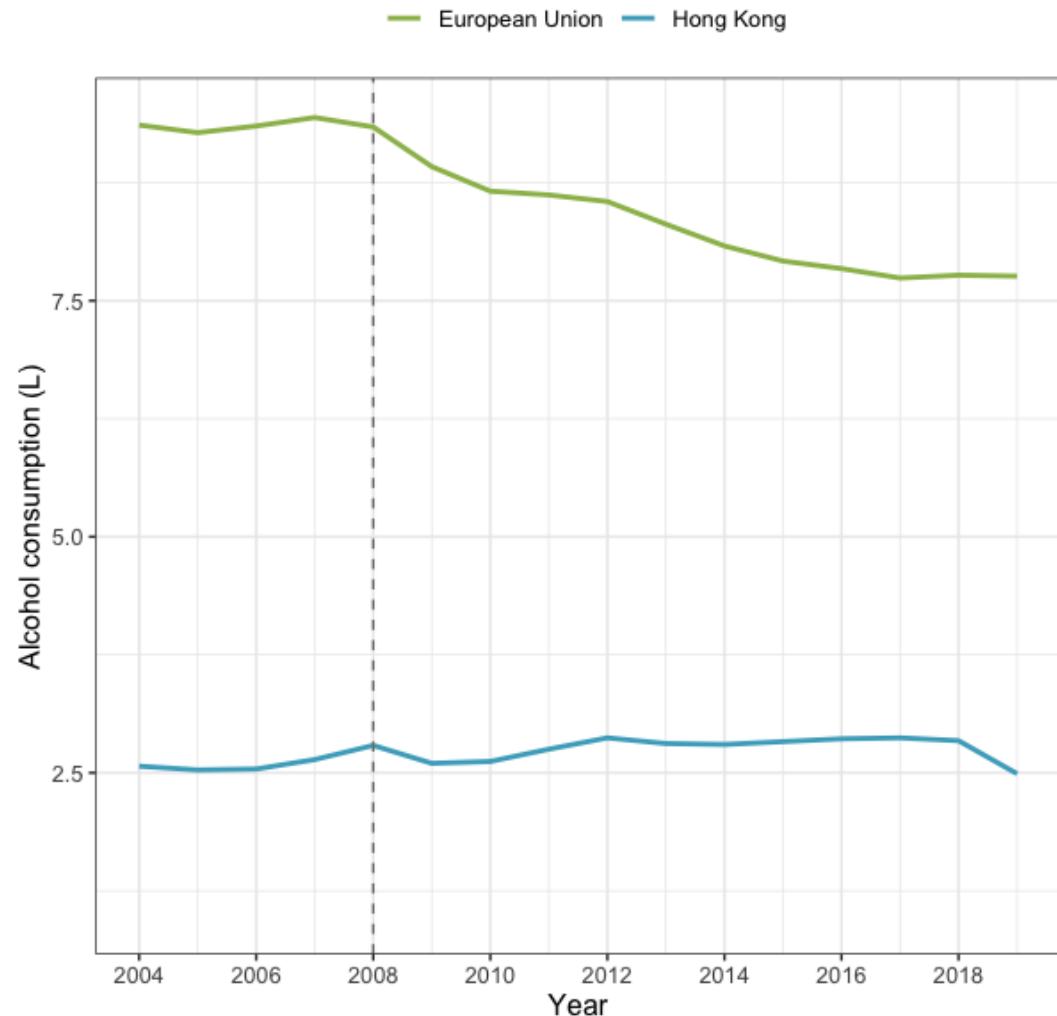


Sales of alcohol in Hong Kong, 2004 - 2019



Alcohol use in Hong Kong compared to EU, 2004-2021

- Hong Kong, a special administrative region of China, has relatively low alcohol consumption compared to other high-income societies and by European standards.



Objective

To examine the effect of reversing alcohol taxation on alcohol-related health harms and direct healthcare costs in Hong Kong.

Training



The University Of Sheffield.



Advanced Simulation Methods



This is to certify that

Jianchao Quan

has attended the above 3 day SchARR short course from Tuesday, 1st – Thursday, 3rd October 2019

Suzy Paisley
Director, Short Course Unit (IKT)

Date: 3rd October 2019



Stanford University

Asia Health Policy Program
Shorenstein APARC

Stanford University

Stanford | Freeman Spogli Institute for International Studies



Education People

< All FSI Events

Healthy Aging in Asia: Assessing the Net Value of Chronic Disease Management

Seminar

Speaker(s)

Jianchao Quan, Hong Kong University
Karen Eggleston, Stanford University and NBER

Toshiaki Iizuka, University of Tokyo

Date and Time

January 17, 2019 12:00 PM - 1:30 PM

RSVP

Availability

Open to the public.

RSVP required by 5PM January 16.



HKU Med LKS Faculty of Medicine
School of Public Health
香港大學公共衛生學院

Methods: Data sources

- Sales and price of alcohol using 2004-2018 Euromonitor market data.

Price



- Prevalence and consumption estimates were calculated from two population wide surveys, Behavioural Risk Factor Survey of individual health behaviours and household-based FAMILY cohort survey.

Consumption



- Morbidity data in 2018 from Hospital Authority (HA) electronic health records and HA Cancer Registry.
- Cause-specific death data was obtained from the Department of Health.

Harm



Methods

- Linear approximation of the Almost Ideal Demand System (AIDS) econometric model to estimate the price elasticity of demand for alcohol.

Price



- International Model of Alcohol Harms and Policies (InterMAHP) using Hong Kong specific consumption and disease incidence by applying relative risks from 2018 WHO Global Status Report on Alcohol and Health.

Consumption



- Elasticities of demand with InterMAHP model to estimate the morbidity and mortality after reintroducing pre-2008 tax policies on Hong Kong adults aged 15 years or over.

Harm

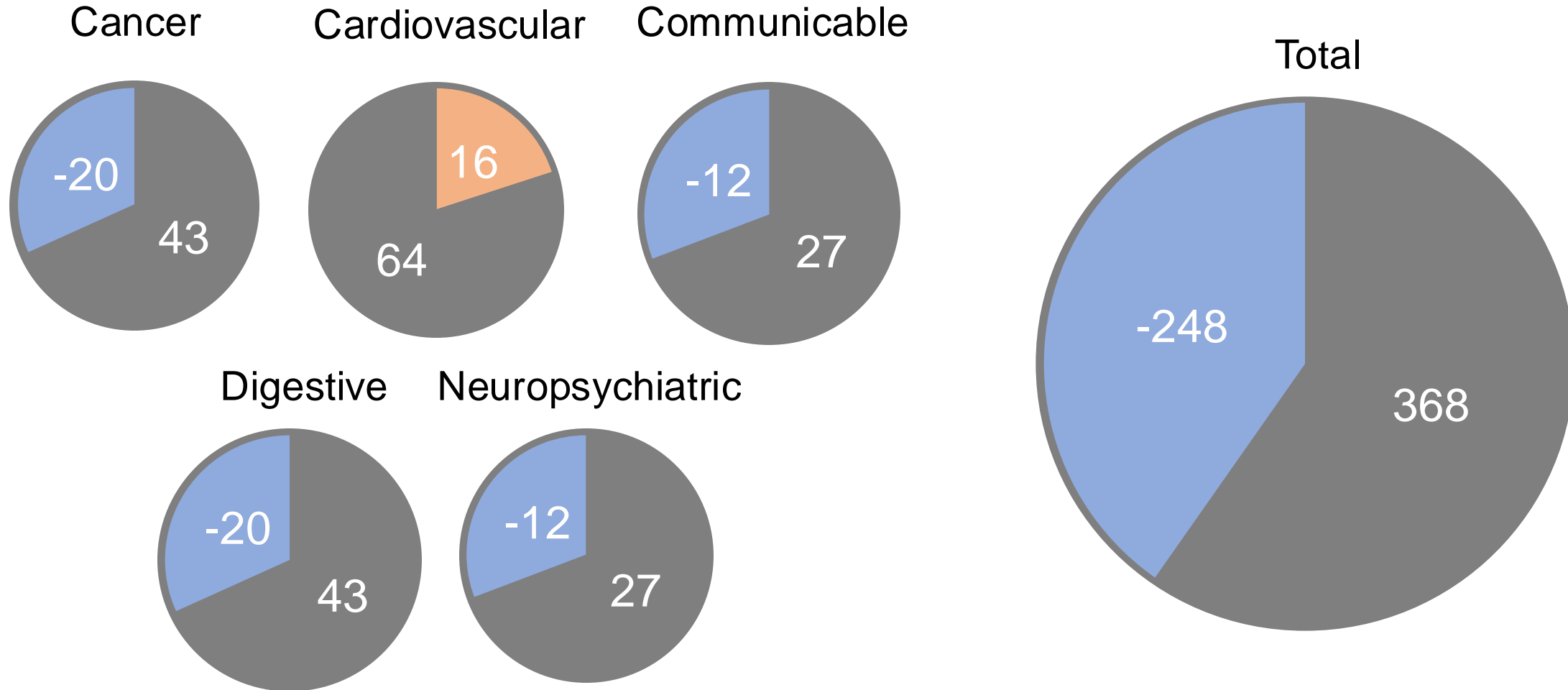


Results

Raising taxes to pre-2008 levels is estimated to reduce consumption of pure alcohol by 31.1%

Alcohol type	Volume of pure alcohol, million L (%)	Change in volume of pure alcohol, million L (percentage change)
Beer	9.15 (57.8%)	-6.84 (-74.7%)
Wine	4.58 (28.9%)	1.72 (37.5%)
Spirits	2.06 (13.0%)	-0.15 (-7.3%)
Cider/Perry	0.03 (0.2%)	-0.01 (-49.4%)
RTDs	0.02 (0.1%)	-0.01 (-64.6%)
Total	15.83 (100%)	-4.93 (-31.1%)

Attributable deaths



Results

Largest absolute number of new alcohol-attributable cases in 2018 were:

- hypertension (1,274 men and 11 women) 31.3% change
- alcohol dependence (934 men and 251 women) 34.2% change
- alcohol abuse (513 men and 103 women) 34.3% change

Overall, health burden attributable to alcohol would decrease if taxes were reverted to pre-2008 levels

Results

- Tax policies are effective at averting the alcohol-attributable portion of population health burden from alcohol-related conditions
- Annual direct healthcare savings of HK\$ 30.3-31.7 million from treating alcohol-attributable conditions
- Baseline alcohol-attributable health burden and absolute reductions in health harms and cost savings are far greater in males



Limitations

- Retailers not obligated to pass on the full tax increase to consumer prices; retailers may choose to absorb tax rises within their profits
- Abstinance due to price increase is not considered; estimates are conservative
- Unable to account for more detailed changes at the population level

Conclusion

- Reversing the 2008 alcohol tax reductions is effective at averting wholly alcohol-attributable conditions and cancers.
- Our estimates are conservative as the high prevalence of the inactive aldehyde dehydrogenase-2 (ALDH2*2) genotype among East Asian populations, associated with increased alcohol toxicity, were not accounted for in the uniform alcohol-dose risk estimates adopted by the WHO.
- Reintroduction of taxes on alcohol can mitigate against avoidable harms of alcohol-related conditions.



Publications

THE LANCET *Regional Health
Western Pacific*



[https://doi.org/10.1016/j.lanwpc.
2022.100510](https://doi.org/10.1016/j.lanwpc.2022.100510)

The impact of alcohol pricing policies on public health in Hong Kong, China: A modelling study

Carmen S. Ng,^a Minnie Au,^a Robyn Ma,^a June Y.Y. Leung,^b and Jianchao Quan^{a*}

^aSchool of Public Health, LKS Faculty of Medicine, The University of Hong Kong, Hong Kong SAR, China

^bSHORE & Whariki Research Centre, College of Health, Massey University, New Zealand

Summary

Background Contrary to most developed economies, Hong Kong has reduced and eliminated taxes on beer and wine over the last 15 years and observed increasing alcohol consumption.

Methods We applied econometric epidemiological modelling to assess the impact of reverting ad valorem taxation to pre-2008 levels (20% on wine and 40% on beer) on consumption and health outcomes. We used 15 years of industry sales and pricing data (2004-2018) to derive 25 own-price and cross-price elasticity estimates. We applied risk functions from the World Health Organization 2018 Global Status Report to assess the impact on 25 alcohol-attributable conditions.

Findings An estimated 616 deaths (91.3% in men) were attributable to alcohol in 2018. Raising taxes to pre-2008 levels is estimated to reduce consumption of pure alcohol consumption by 8.0%, 15.9%, and 31.1%; and reduce alcohol-attributable deaths by 11.6%, 21.8%, and 40.2% assuming 25%, 50% and 100% pass through rates of taxes to consumers. The largest projected decreases in alcohol-attributable mortality in absolute numbers are alcohol abuse, alcohol dependence, and alcoholic psychoses (wholly alcohol-attributable disorders). The largest absolute number of new alcohol-attributable cases in 2018 were hypertension, alcohol dependence and alcohol abuse; which are estimated to be reduced by 31.3%, 34.2%, and 34.3% respectively by raising taxes to pre-2008 levels. The alcohol-attributable health burden and absolute reductions in health harms are far greater in men.

Interpretation Reversing the 2008 alcohol tax reductions is potentially effective in averting the alcohol-attributable health burden and thus mitigate against the avoidable harms of alcohol-related disease.



HKU
Med

LKS Faculty of Medicine
School of Public Health
香港大學公共衛生學院

Other publications

1. Ng CS, Au M, Tian LW, Quan J. Impact of alcohol taxes on violence in Hong Kong: a population-based interrupted time series analysis. *Journal of Epidemiology and Community Health*. 2023 Jun 1. <https://doi.org/10.1136/jech-2022-219996>
2. Ng CS, Au M, Leung JYY, Leung GM, Tian L, Quan J. The impact of road safety policies in a deregulated alcohol tax environment in Hong Kong: a 15-year time series analysis. *Addiction*. 2022 Mar 8. <https://doi.org/10.1111/add.15866>
3. Ng CS, Au M, Kwok HHY, Lau YH, Ong XJ, Quan J. ALDH2 polymorphism, alcohol intake and the attributable burden of cancer in East Asia: systematic review, meta-analysis, and modeling study. *Annals of Epidemiology*. 2023 Sep 25. <https://doi.org/10.1016/j.annepidem.2023.05.013>

Acknowledgement to funder and collaborators



Health Bureau

The Government of the
Hong Kong Special Administrative Region
of the People's Republic of China



Financial Services and the Treasury Bureau

The Government of the Hong Kong Special Administrative Region
of the People's Republic of China



Census and Statistics Department

The Government of the Hong Kong Special Administrative Region



醫院管理局

HOSPITAL
AUTHORITY



衛生署控煙酒辦公室

Tobacco and Alcohol Control Office
Department of Health



HKU
Med

LKS Faculty of Medicine
School of Public Health
香港大學公共衛生學院