What are acceptable thresholds for alcohol consumption?

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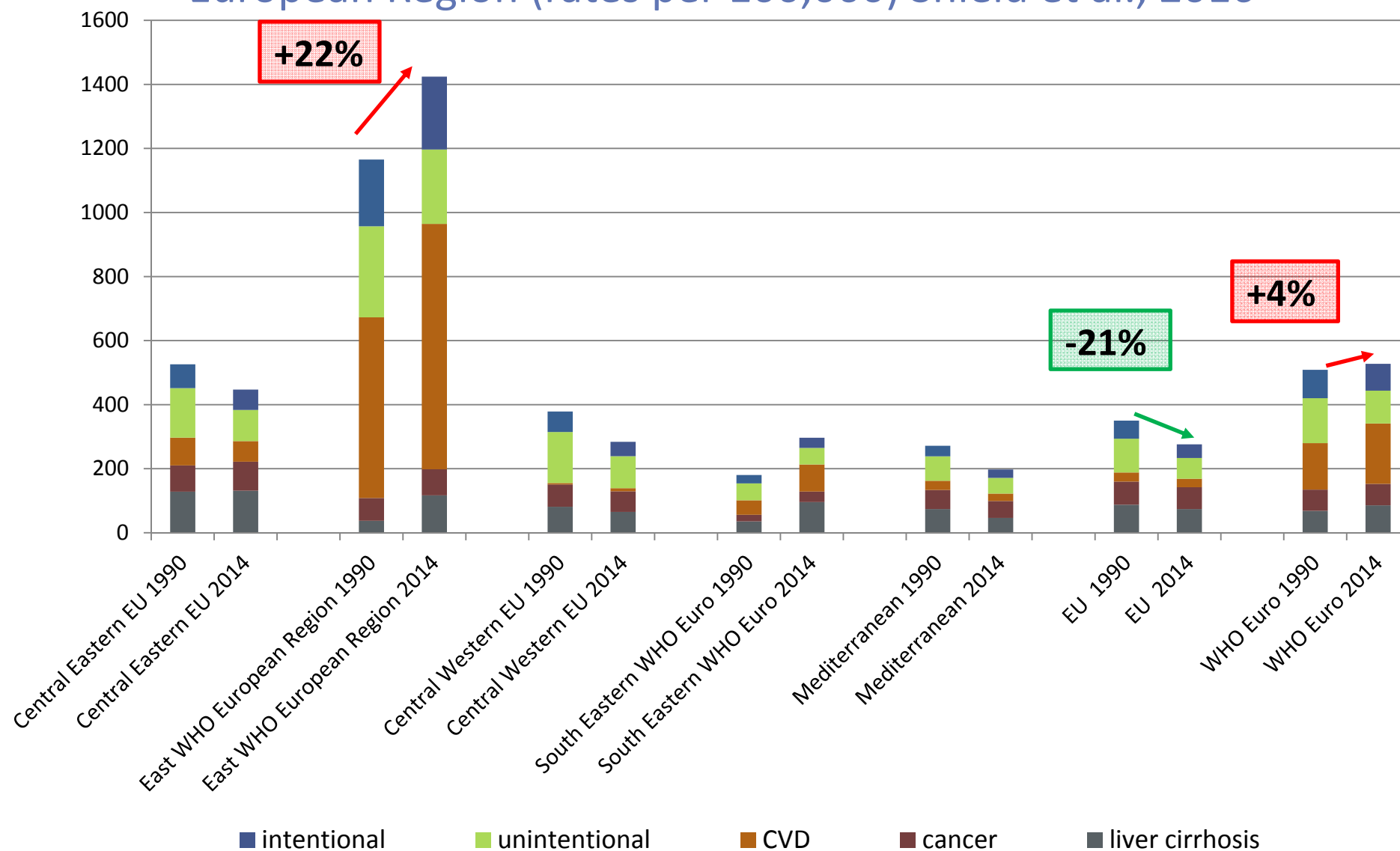
Thank you!

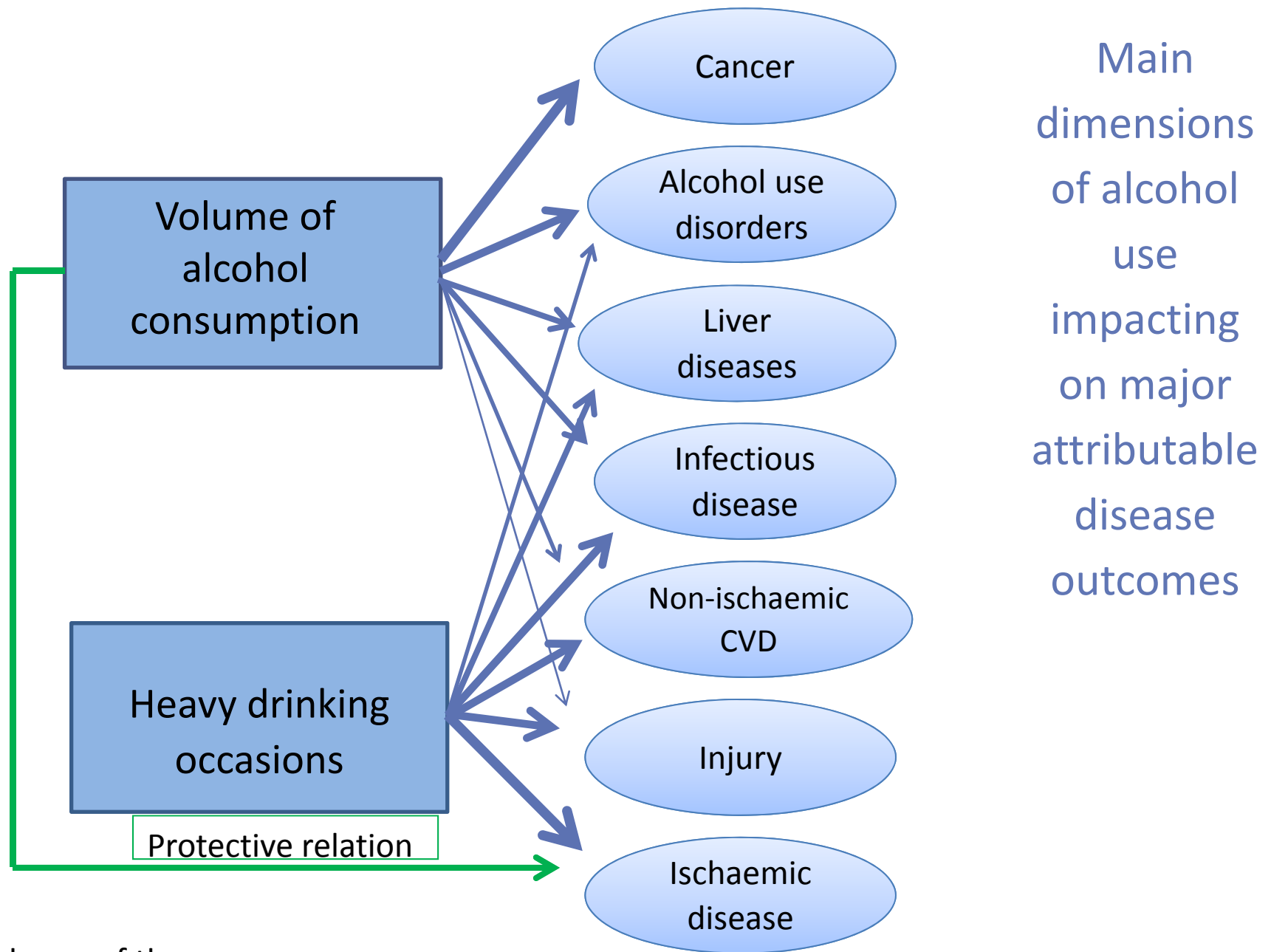This work would not have been possible:

… without my co-authors Gerrit Gmel, Charlotte Probst and Kevin D. Shield (
Shield, K.D., Gmel, G., Gmel, G. Sr., Mäkelä, P., Probst, C., Room, R., & Rehm, J. (2017). Lifetime risk of mortality due to different levels of alcohol consumption in seven European countries: implications for low-risk drinking guidelines. Addiction. doi: 10.1111/add.13827. [Epub ahead of print Mar 20])

… without the financial support of the **National Institute for Health and Welfare, Finland, in the framework of Joint Action on Reducing Alcohol Related Harm (RARHA)** for the underlying report

… Without the work for the Global Burden of Disease Comparative Risk Assessment for alcohol and the Global Status Report on Alcohol and Health (more than 500 contributors);

… Without the criticisms of Ulrich Frick, Dirk Lachenmeier, Pia Mäkelä, Marjatta Montonen, Esa Österberg, Michael Roerecke, Robin Room, ;

… Without some of the preparatory work of ALICE RAP

Alcohol continues to impact on public health in Europe

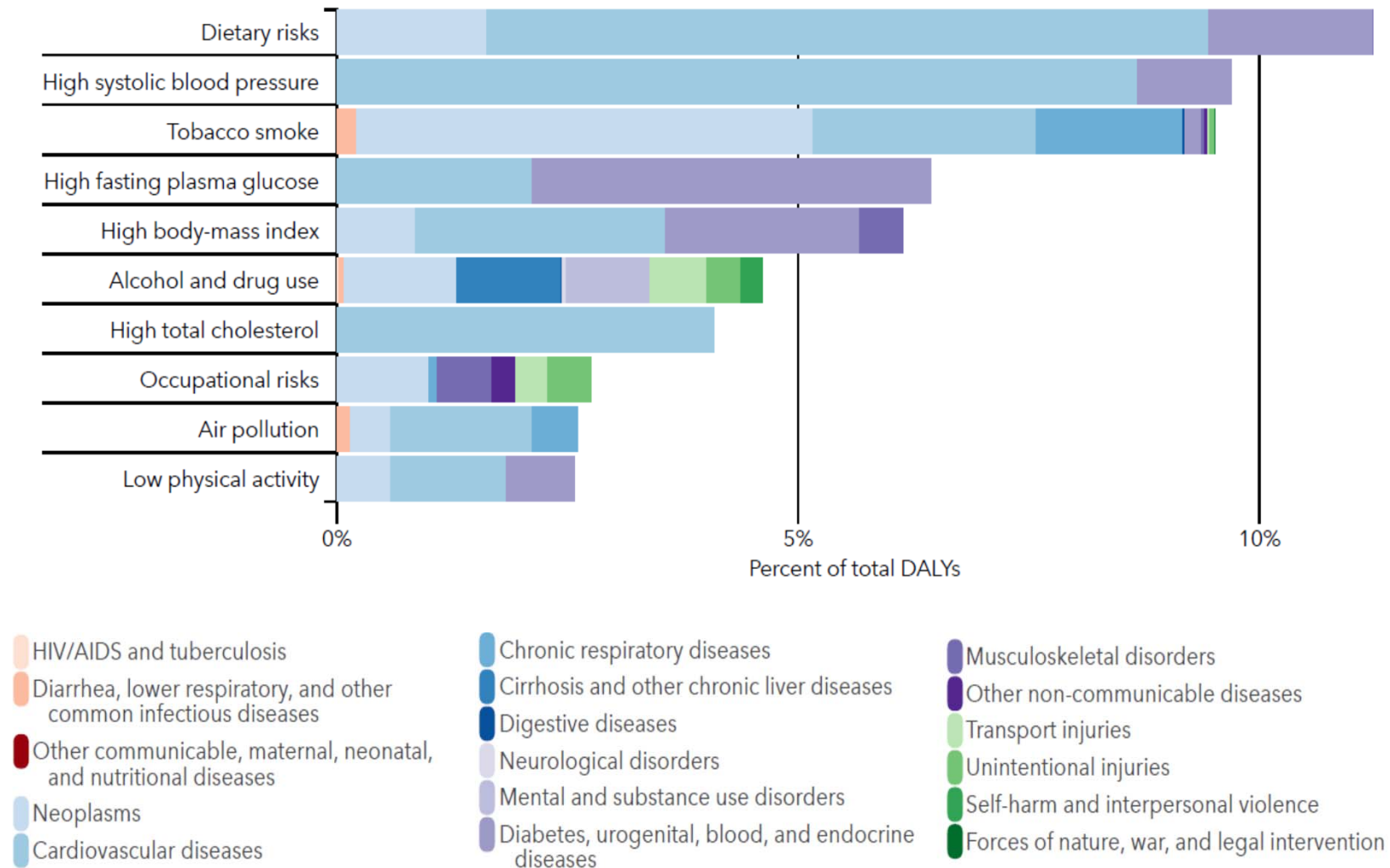# ALCOHOL AND PUBLIC HEALTH IN EUROPE 2015

Comparisons of standardized alcohol-attributable mortality for major causes of death, 1990 vs. 2014, in different parts of the WHO European Region (rates per 100,000) Shield et al., 2016

+22%

-21%

+4%

■ intentional　■ unintentional　■ CVD　■ cancer　■ liver cirrhosis

Central Eastern EU 1990
Central Eastern EU 2014
East WHO European Region 1990
East WHO European Region 2014
Central Western EU 1990
Central Western EU 2014
South Eastern WHO Euro 1990
South Eastern WHO Euro 2014
Mediterranean 1990
Mediterranean 2014
EU 1990
EU 2014
WHO Euro 1990
WHO Euro 2014

Main dimensions of alcohol use impacting on major attributable disease outcomes

Volume of alcohol consumption

Heavy drinking occasions

Protective relation

Cancer

Alcohol use disorders

Liver diseases

Infectious disease

Non-ischaemic CVD

Injury

Ischaemic disease

The thickness of the arrows indicate strength of relationship

Risk profile of Italy 2015

Top 10 causes of DALYs with key risk factors, 2015

Italy and the world

- Italy has high life expectancy, but increases have levelled off

- Compared to similar countries, Italy has still favorable profile for coronary heart deaths, but unfavorable profile for injury and diabetes

- Some signs that alcohol decreases are levelling off and drinking patterns worsen, especially in lower SES

What should be avoided!

- Would the world not look the same with or without alcohol policies?
- Shock for US: in the first decade of the 21st century, the life expectancy of middle-age white Non-Hispanic adults decreased, mainly in lower SES!
- **Now, the overall life expectancy decreases in the US and other countries.**
- Why? Since 1900 a decrease in life expectancy in the US for Whites only happened in World Wars (WW) I and II and the 1918-19 Influenza Pandemic (which killed more people than WW I).
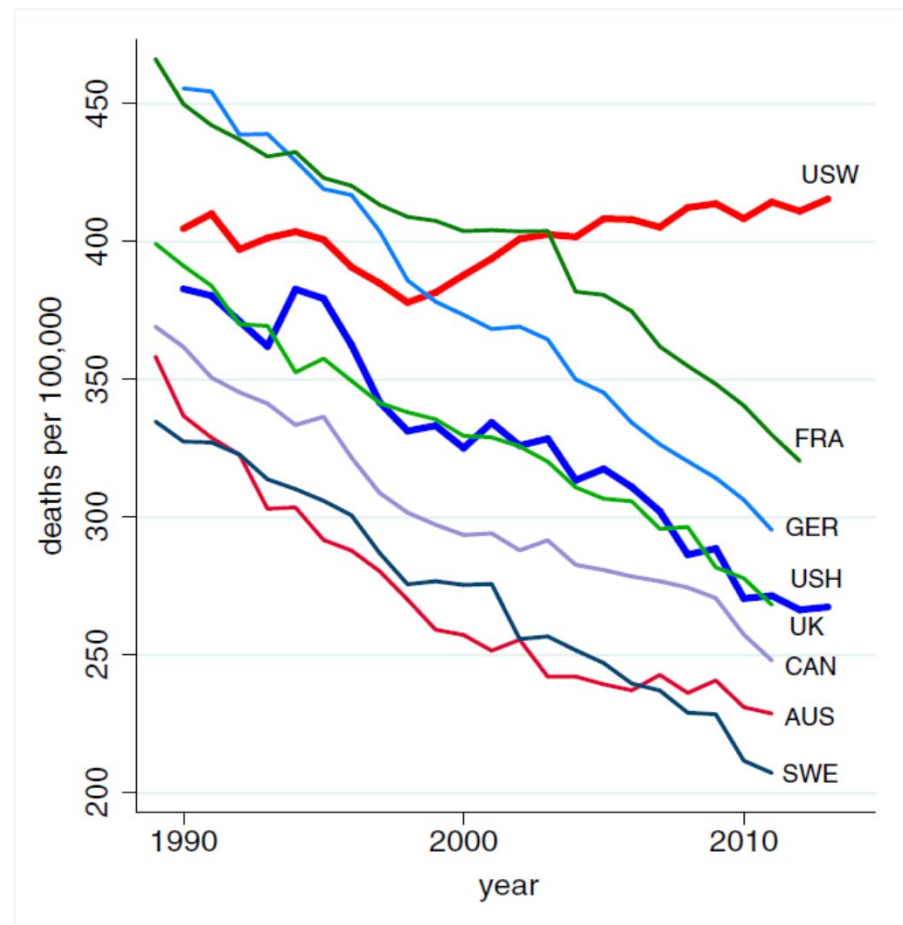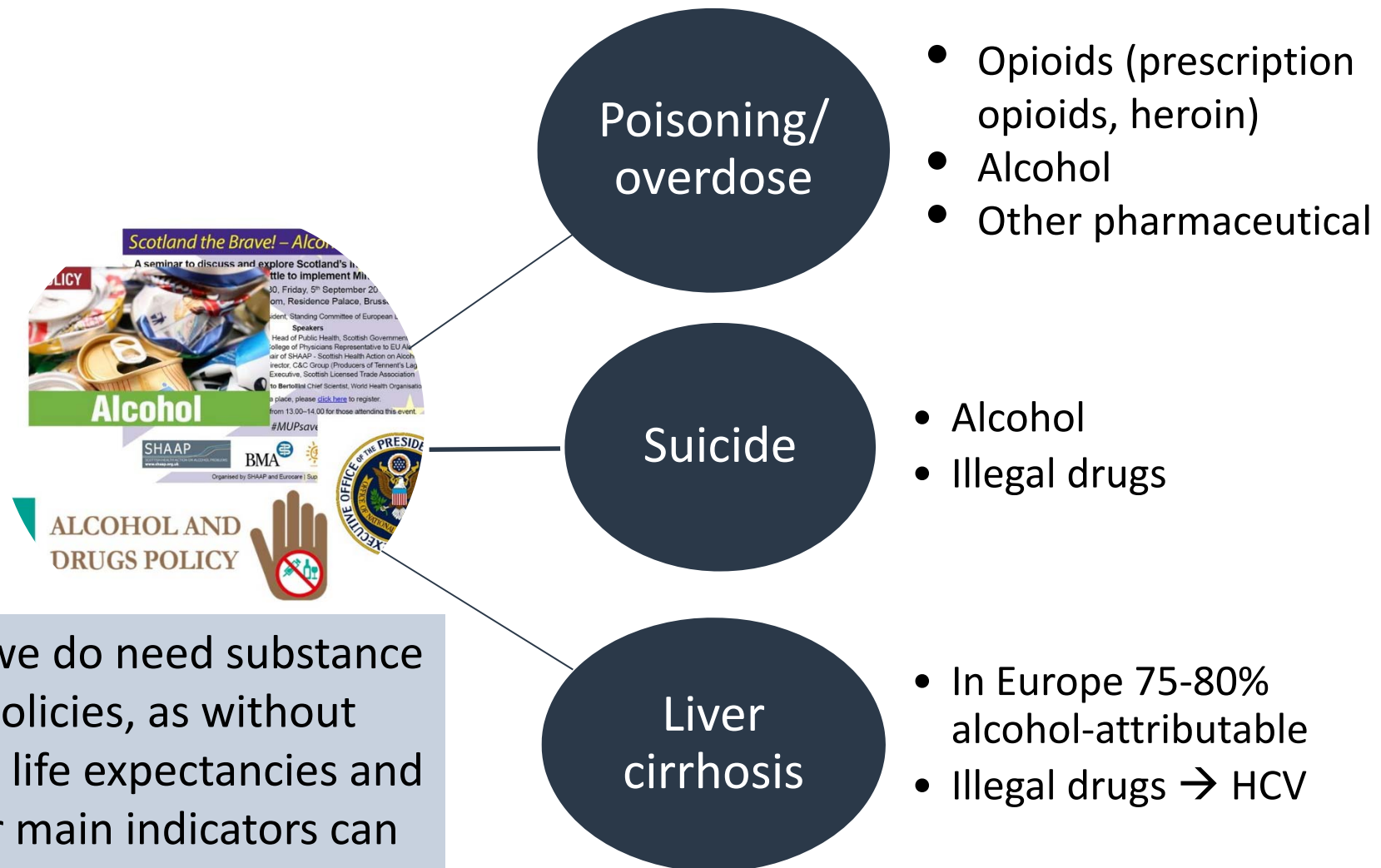
Case & Deaton, 2015 (including Figure 1); Rehm et al., 2016

Fig. 1. All-cause mortality, ages 45–54 for US White non-Hispanics (USW), US Hispanics (USH), and six comparison countries: France (FRA), Germany (GER), the United Kingdom (UK), Canada (CAN), Australia (AUS), and Sweden (SWE).

Causes of death responsible in the US

Poisoning/overdose
- Opioids (prescription opioids, heroin)
- Alcohol
- Other pharmaceutical

Suicide
- Alcohol
- Illegal drugs

Liver cirrhosis
- In Europe 75-80% alcohol-attributable
- Illegal drugs → HCV

Yes, we do need substance use policies, as without them life expectancies and other main indicators can easily go wrong!!

Not that all people adhere to guidelines... But they can shift long term

WHAT CAN BE DONE? ONE MAIN TOOL ARE GUIDELINES -> LOW RISK DRINKING GUIDELINES

RAZIONI PER GESTANTI E NUTRICI FRA 20-39 ANNI DI ETA'

ALIMENTI	GESTANTE Quantità al netto g	NUTRICE
Latte	450	750
Carne - Pesce - Uova	150	150
(Formaggi)	(65)	(65)
Paste alimentari - Pane	300	300
Patate - Ortaggi	450	500
Frutta fresca - Agrumi	280	300
Grassi da condimento	30	35
Zucchero		
Vino	300	300

RAZIONI PER ETA' OLTRE I 65 ANNI

ALIMENTI	UOMINI Quantità al netto g	DONNE
Latte	200	170
Carne - Pesce - Uova	145	135
(Formaggi)	(60)	(60)
Paste alimentari - Pane	280	200
Patate - Ortaggi	270	230
Frutta fresca - Agrumi	200	190
Grassi da condimento	35	25
Zucchero	30	20
Vino	220	180

RAZIONI PER GRUPPI DI ETA' FRA 40-49 ANNI

ALIMENTI	UOMINI Quantità al netto g	DONNE
Latte	200	190
Carne - Pesce - Uova	155	140
(Formaggi)	(65)	(60)
Paste alimentari - Pane	400	260
Patate - Ortaggi	410	300
Frutta fresca - Agrumi	220	200
Grassi da condimento	45	35
Zucchero	30	30
Vino	400	300

RAZIONI PER GRUPPI DI ETA' FRA 50-59 ANNI

ALIMENTI	UOMINI Quantità al netto g	DONNE
Latte	200	170
Carne - Pesce - Uova	145	135
(Formaggi)	(60)	(55)
Paste alimentari - Pane	350	280
Patate - Ortaggi	370	270
Frutta fresca - Agrumi	220	200
Grassi da condimento	45	35
Zucchero	30	30
Vino	350	220

Modern approaches

- Most modern high income societies have clear standards for maximal lifetime mortality risks:
  - 1 in 1,000,000 for involuntary risks (water, soil, air) and 1 in 1,000 for voluntary risks based on behaviour (such as smoking, skiing, etc.).
- If the risk exceeds the threshold which applies for a certain behaviour, society takes steps to lower the risks!
- **This standard could be taken for alcohol consumption as well.**

Starr C.(1969) Social benefit versus technological risk. *Science*,165(3899):1232-8.
Rehm J, Lachenmeier DW, Room R.(2014) Why does society accept a higher risk for alcohol than for other voluntary or involuntary risks? *BMC Medicine*, 12:189.

Calculations to be done!

- Assuming a certain drinking level, what is the risk for alcohol-attributable death over a lifetime (Rehm et al., 2015; Shield et al., 2017)
- Depends on the distribution of causes of death in country, and on sex
- Then compare these risks with what society accepts as tolerable risks
- These calculations have been done for Italy (Shield et al., 2017)

# For Italy and their distribution of causes of death

(F) Italy
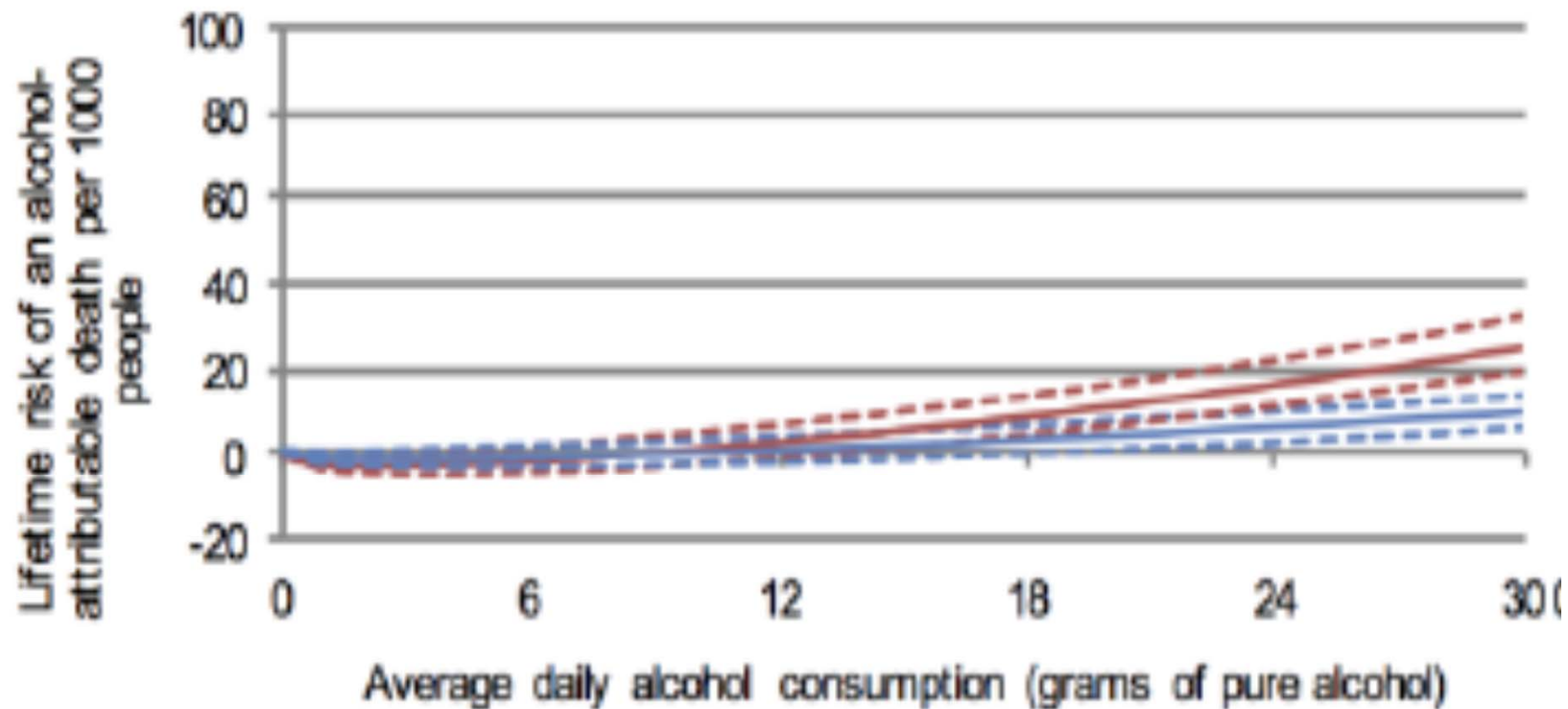
Result

- For a risk of 1:1,000 for men to die from alcohol, the guidelines should be fixed at 13 grams pure alcohol for men (1 drink on average).
- For a risk of 1:1,000 for men to die from alcohol, the guidelines should be fixed at 9 grams for women (less than 1 drink).
- For a risk 1:100, the threshold would be 31 g and 18 g, for men and women, respectively.
- Italians still drink too much from a point of view of health.
- Italians should know the consequences of drinking to make informed decisions

A different approach: toxicology

A margin of exposure (MOE) of 100 means that one is consuming 1/100th of the toxic benchmark dose (commonly the lowest dose which is 95% certain to cause no more than a 10% incidence of a negative health outcome in animals or humans).

A MOE of 1 means that one is consuming the toxic benchmark dose.

Source: Lachenmeier et al. 2015
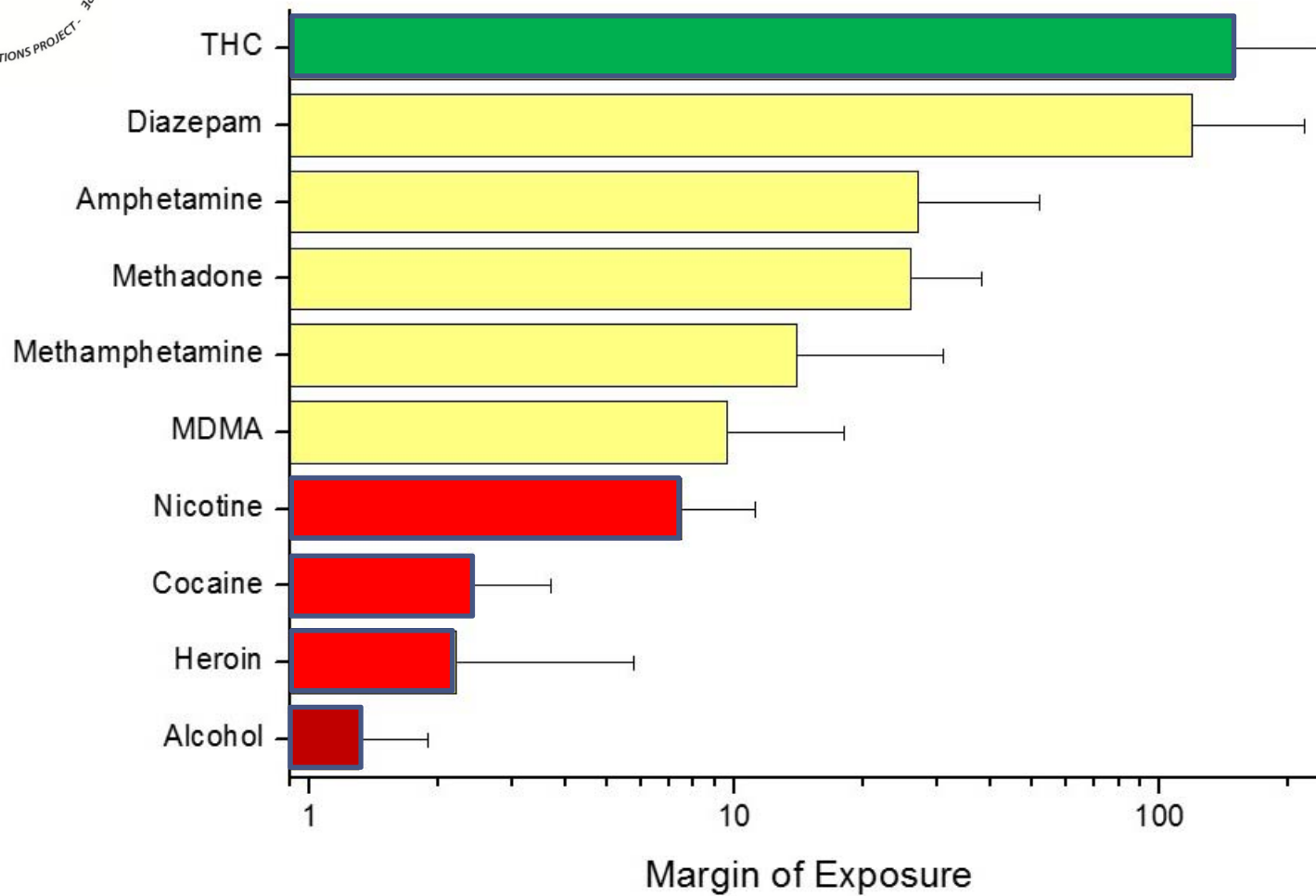
Conclusions

- Modern science allows to base guidelines on evidence, and societies need to chose their level of risk.

- Consumers should be aware of the potential consequences of drinking.

- These calculations stipulate that based on usual standards of acceptable risk for voluntary behaviours in our societies, guidelines should be set to between 10g and 20g of pure alcohol for both sexes (i.e., limit daily drinking one standard drink in most European countries).