Future challenges for addiction research

How do addiction paradigms influence our interventions?

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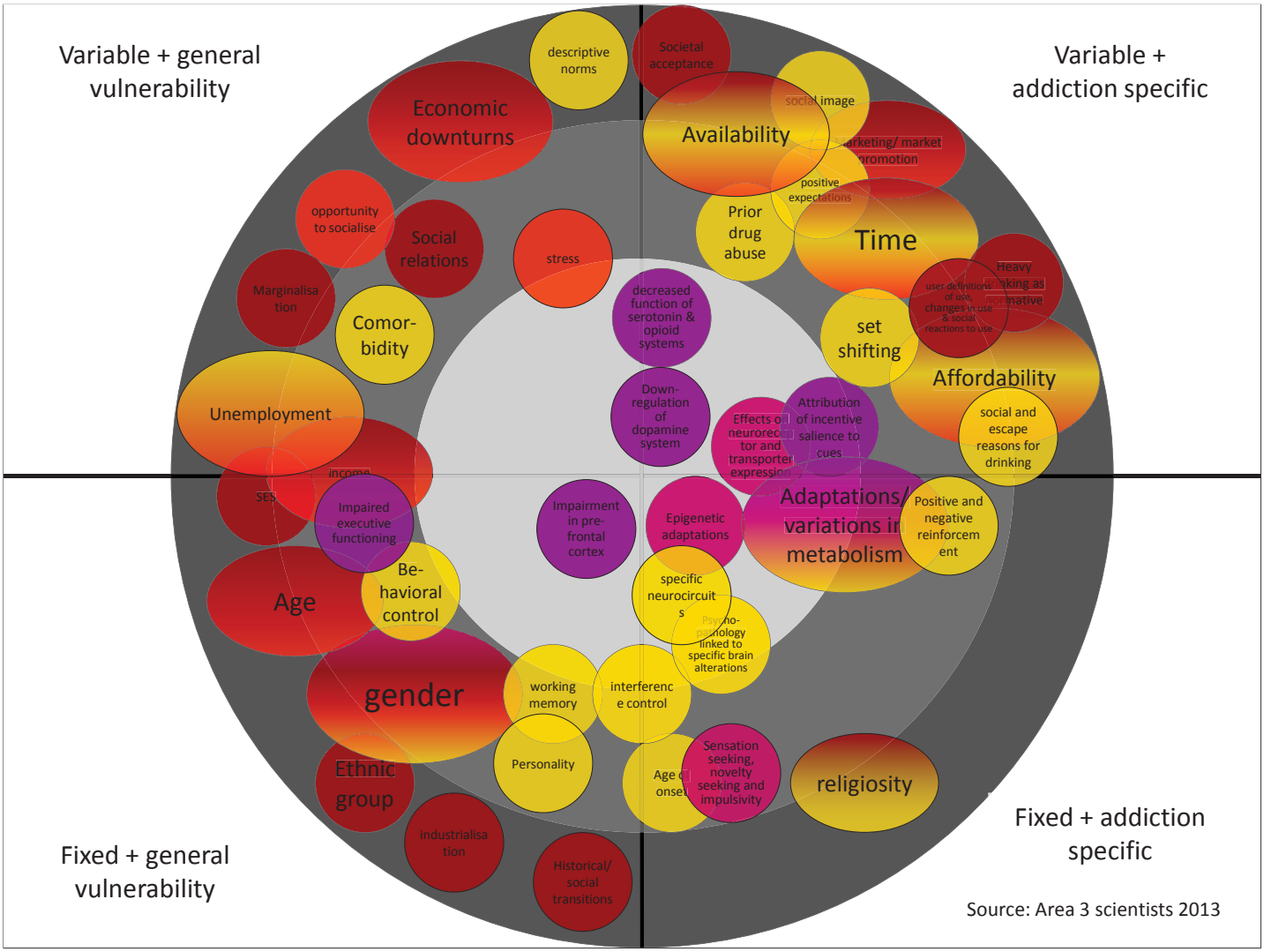
Some determinants of addictive behaviour - implications for action

ALICE RAP:

- Is a five year €10 million endeavour co-financed by the Social Sciences and Humanities division of FP7 within the European Commission.
- Is a transdisciplinary project, involving the community of policy makers in its conception and implementation.
- Is a multidisciplinary project with over 100 scientists in disciplines ranging from anthropology to toxicology.
- Studies the place of addictions and lifestyles in contemporary Europe and aims to inform how we can better redesign their governance.



Out of these, I will discuss 3 frames that we are using to understand addictions in ALICE RAP:

At the levels of the:

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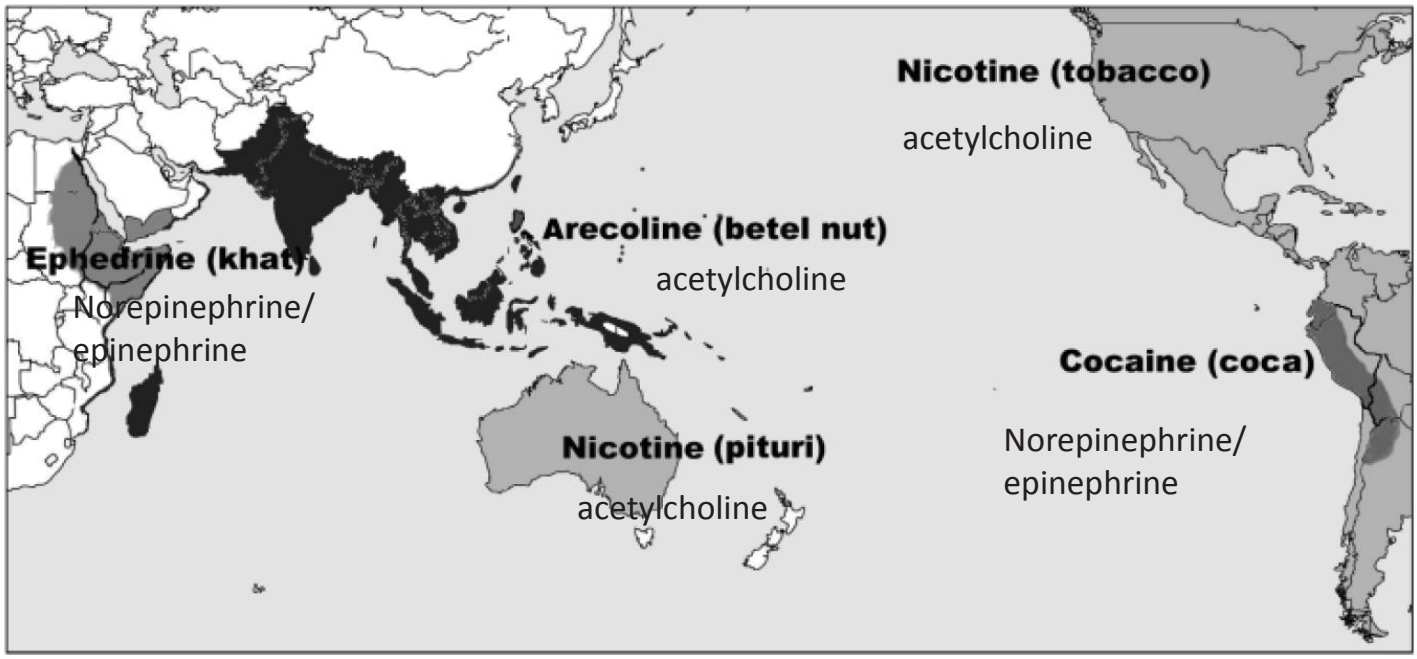
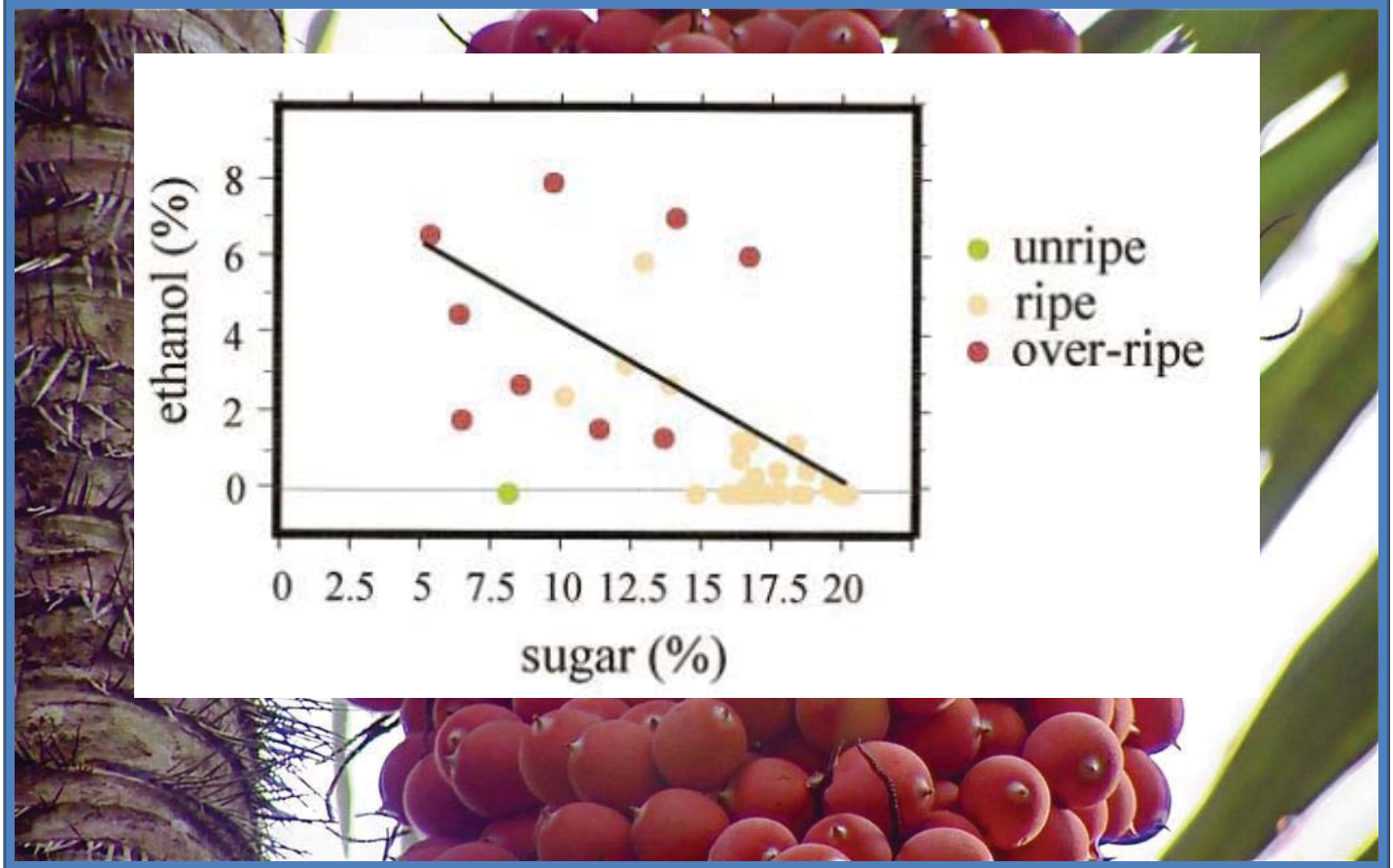
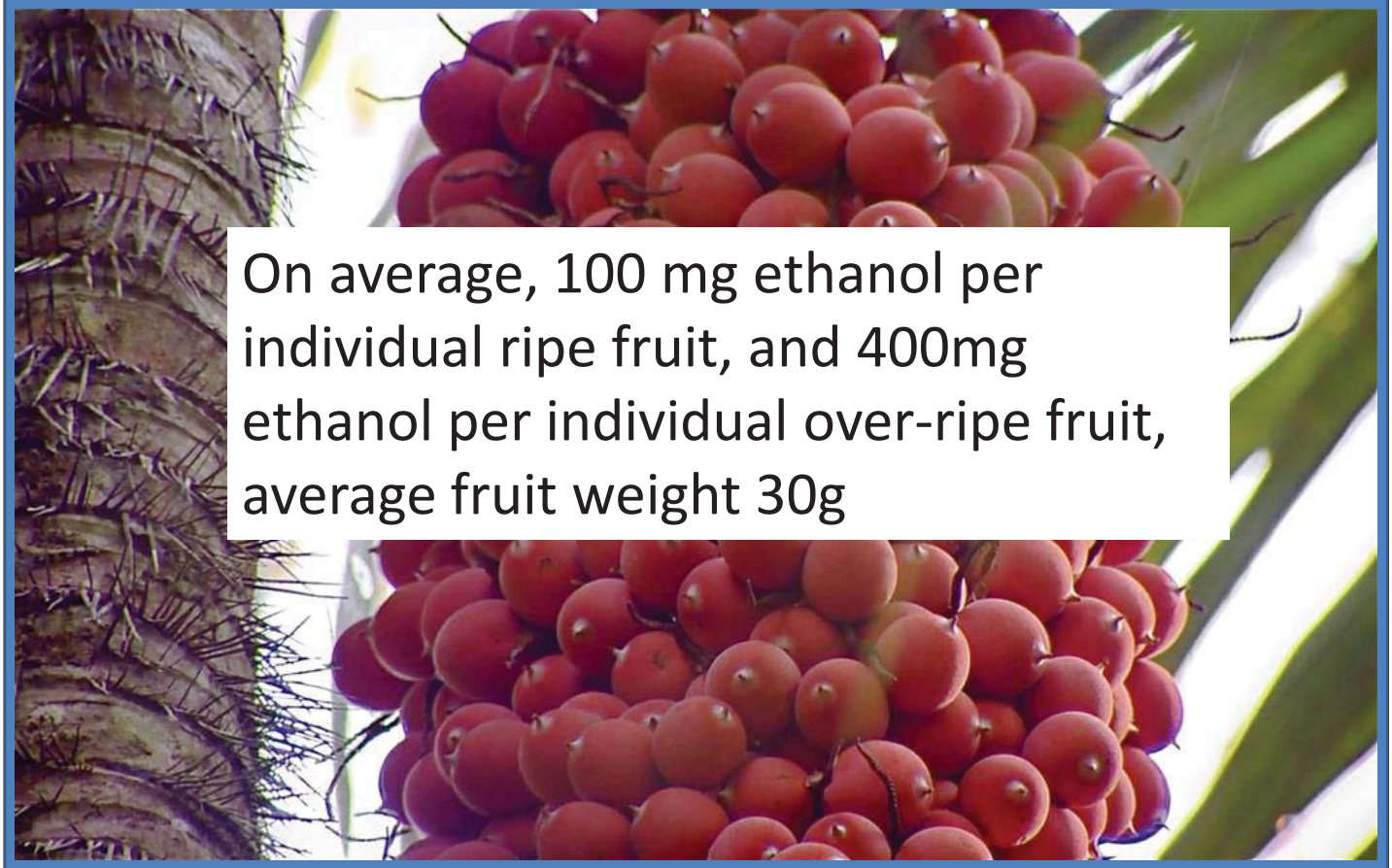
Examples of exploited allelo-chemicals in the indigenous world



Source: Sullivan & Hagen 2002



Source: Dudley 2004



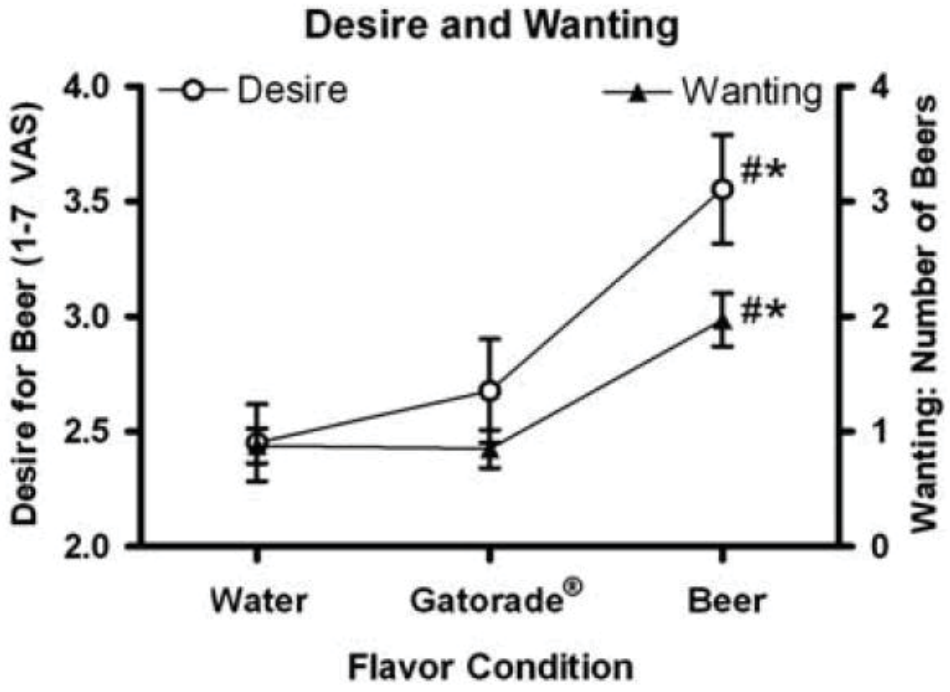
Source: Dudley 2004

- The presence of ethanol within ripe fruit suggests low-level but chronic dietary exposure for all fruit-eating animals.
- Volatilized alcohols from fruit potentially serve in olfactory localization of transient nutritional resources, whereas ethanol consumed during the course of frugivory may act as an appetitive stimulant .
- As a consequence, natural selection may have acted on all frugivorous animals, including human ancestors, to associate ethanol consumption with nutritional reward.

Source: Dudley 2004

- The evolution of the behaviours of ancestral alcohol dehydrogenases has been studied.
- While the enzymes from our most ancient primate ancestors were largely *inactive* against ethanol, they could metabolize *other* alcohols, including "terpene" alcohols abundant in the leaves of plants.
- Primate ancestors living 16-21 million years ago could not effectively metabolize consumed ethanol.
- However, by 6-12 million years before present, human's last common ancestor with gorillas and chimpanzees had evolved a digestion fully able to metabolize consumed ethanol, at levels found in fermenting fruits.

Source: Benner 2013



The taste or consumption of 0.4-0.5g ethanol as beer induced striatal dopamine release in male drinkers (average 25g/day) as well as wanting and desire for beer

Source: Oberllin et al 2013

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There is a co-evolutionary relationship between plant drugs and humans - exposure was at very low levels; in many present day societies, it tends to be at very high levels - health and social gain would accrue with less exposure.

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Heavy use over time is:

1. Responsible for changes in the brain and other physiological characteristics of substance use disorders
2. Responsible for intoxication and for the withdrawal and tolerance phenomena regarded as central to current definitions of addiction or dependence
3. Responsible for main social consequences of substance use disorders, such as problems in fulfilling social roles
4. Responsible for majority of the substance-attributable burden of disease and mortality

Source: Rehm et al 2013

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As a definition heavy use over time fits the empirical data better and may diminish stigmatization and avoid pointing attention away from highest-risk categories

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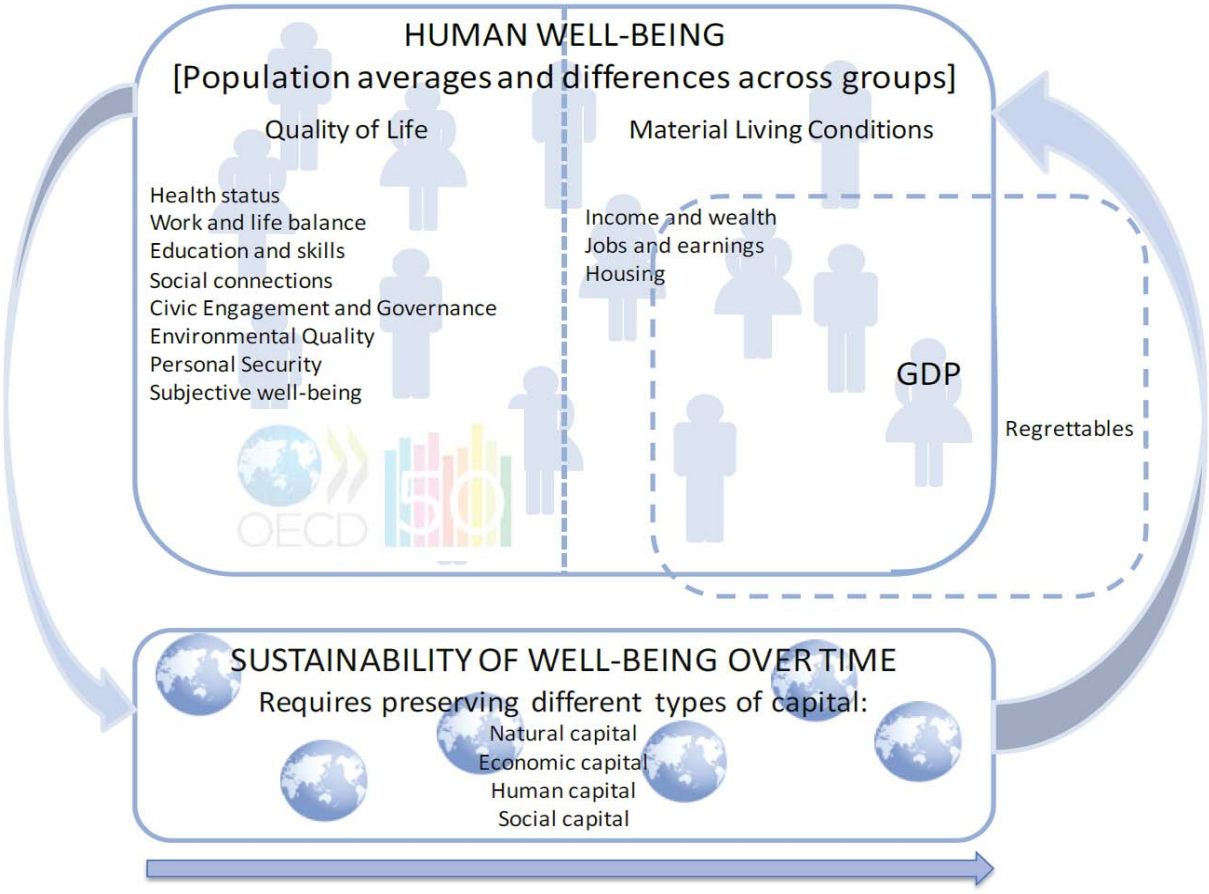
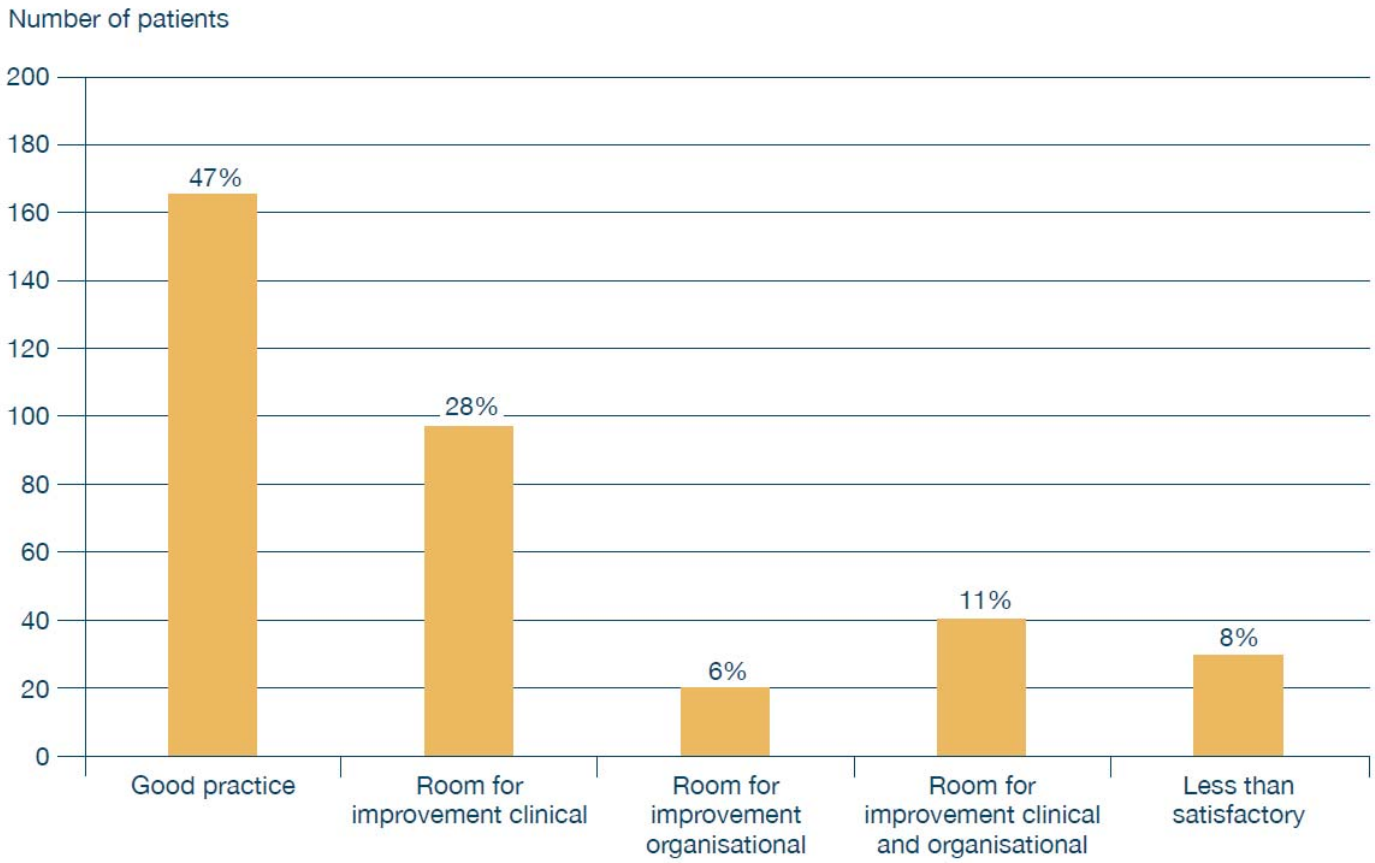


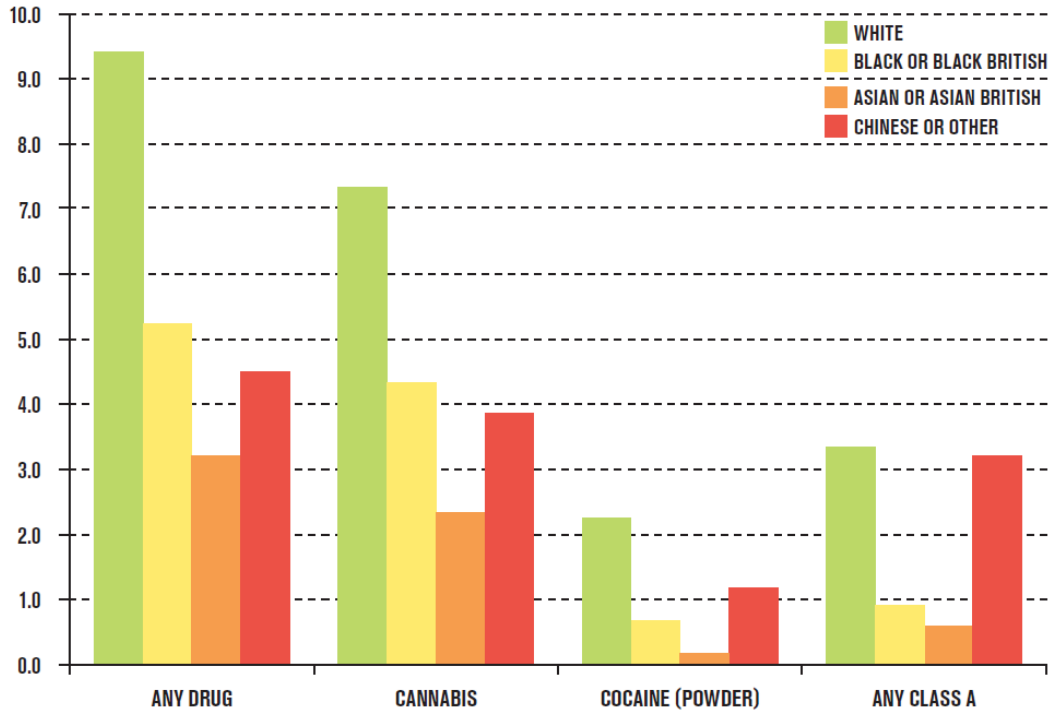
Review of clinical care of 385 deaths from alcoholic liver disease in England, undertaken by the National Confidential Enquiry into Patient Outcome and Death (2013)



"I fear that there is more than a hint of dismissive attitudes in many of these cases according to the advisors. The illness may be self-inflicted, like so many of the lifestyle diseases that bring patients to their doctors in modern society, and the prospects of a cure for many of these people may not have been propitious for some years".

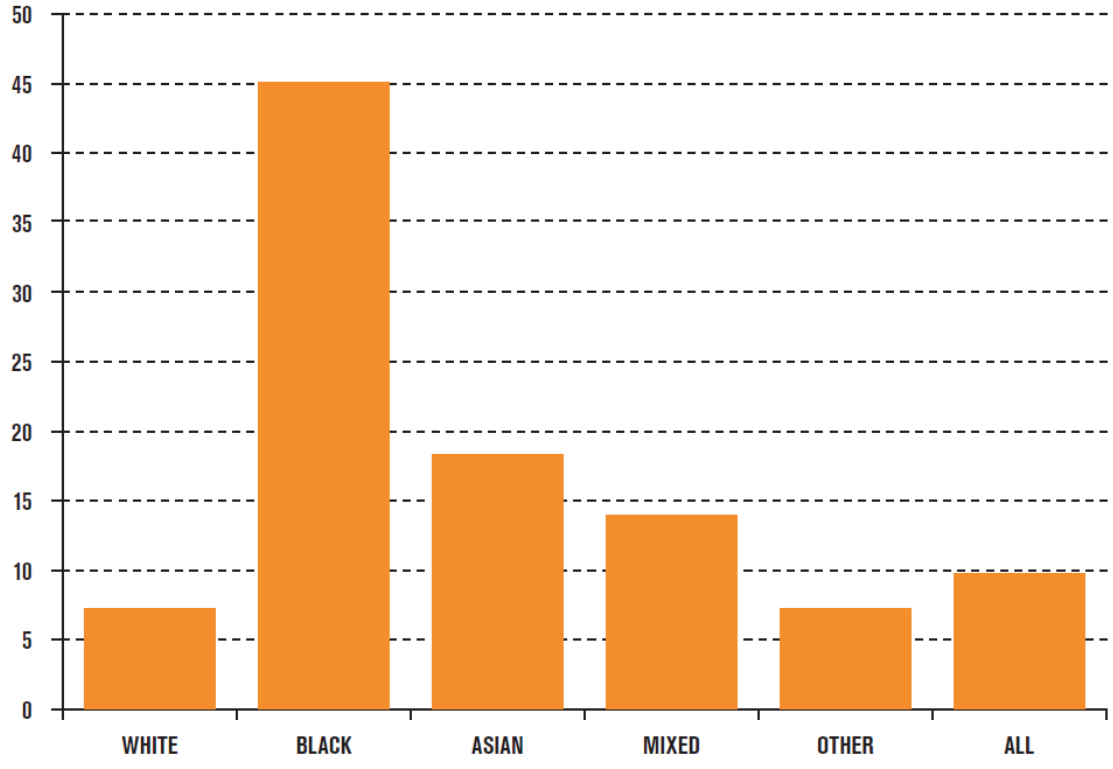
Bertie Leigh
NCEPOD Chair

Percentage of 16 to 59 year olds reporting use of illicit drugs in the last year by ethnicity, 2011/12 Crime Survey for England and Wales



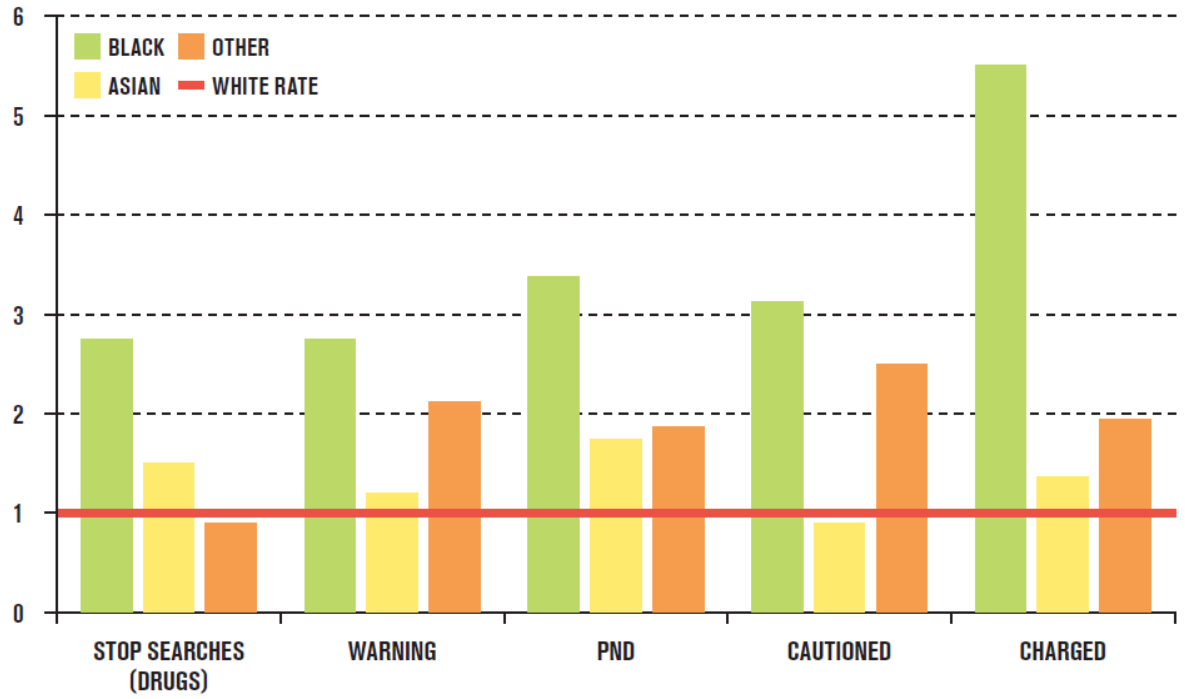
Source: Release 2013

Stop and search for drugs by self-identified ethnicity (rates per 1,000 population) 2009/10



Source: Release 2013

Stop & Search, Cannabis Warnings, PNDs, Cautions & Charges, disproportionality as compared to the white population, Metropolitan Police Force 2009/10



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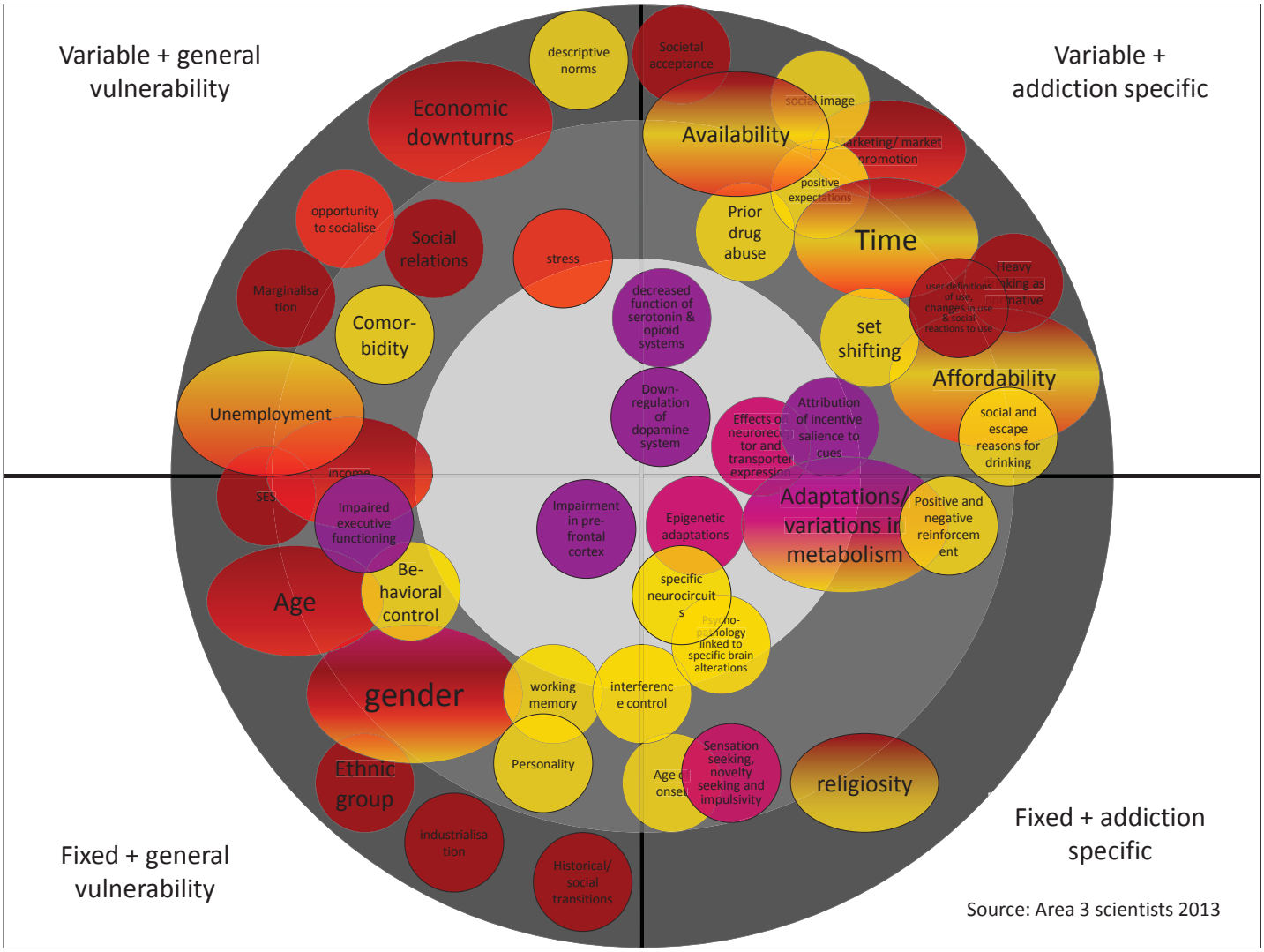
A societal well-being frame may enable broader discussions of addictions, including stigma, social exclusion, and a shift from a crime based to a health based approach.



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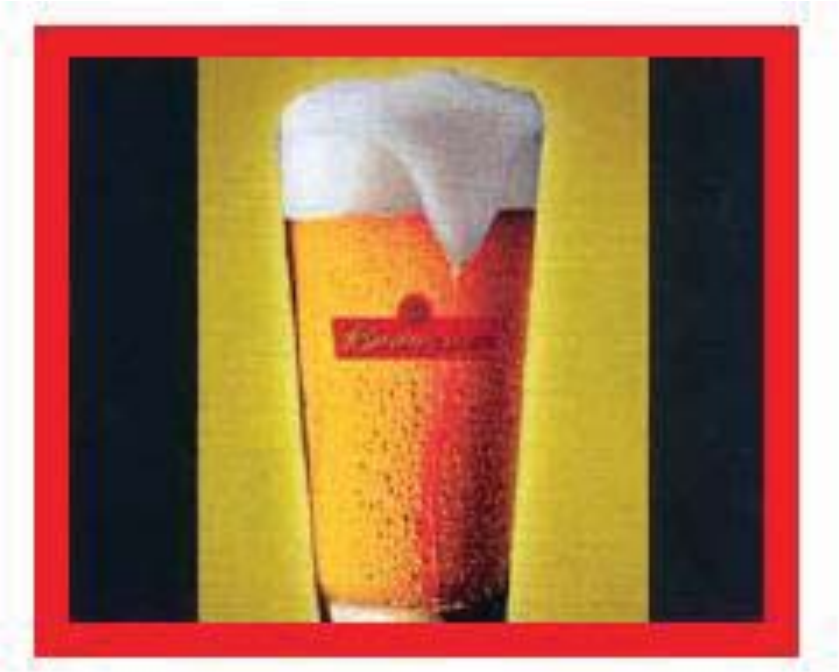
Thirty 14-17 year olds, fifteen consuming 50 drinks per month, and fifteen consuming <1 drink/month underwent fMRI scanning of brain reward centres

Source: Tapert et al 2003



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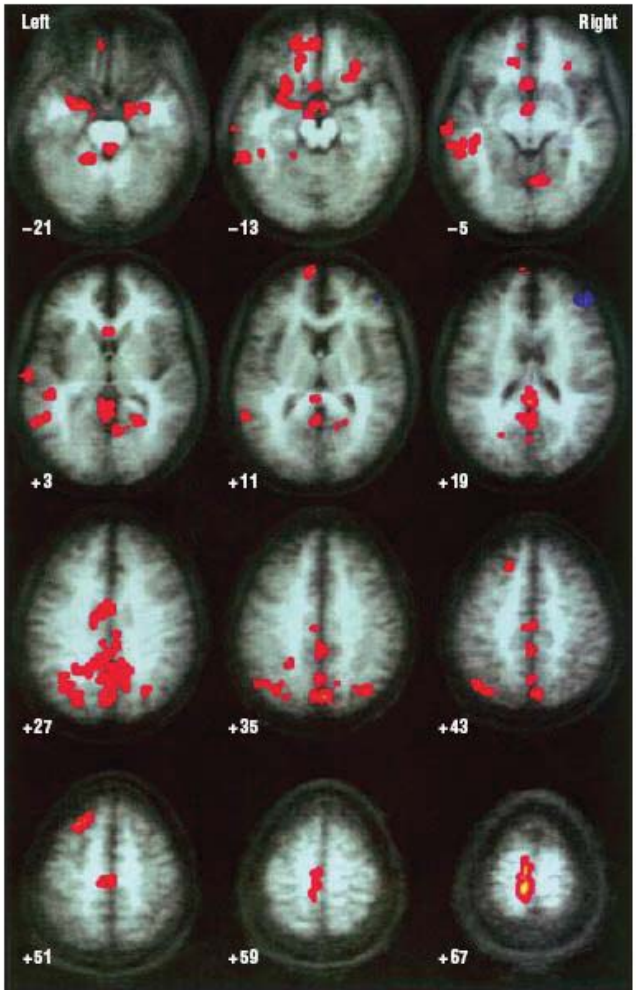
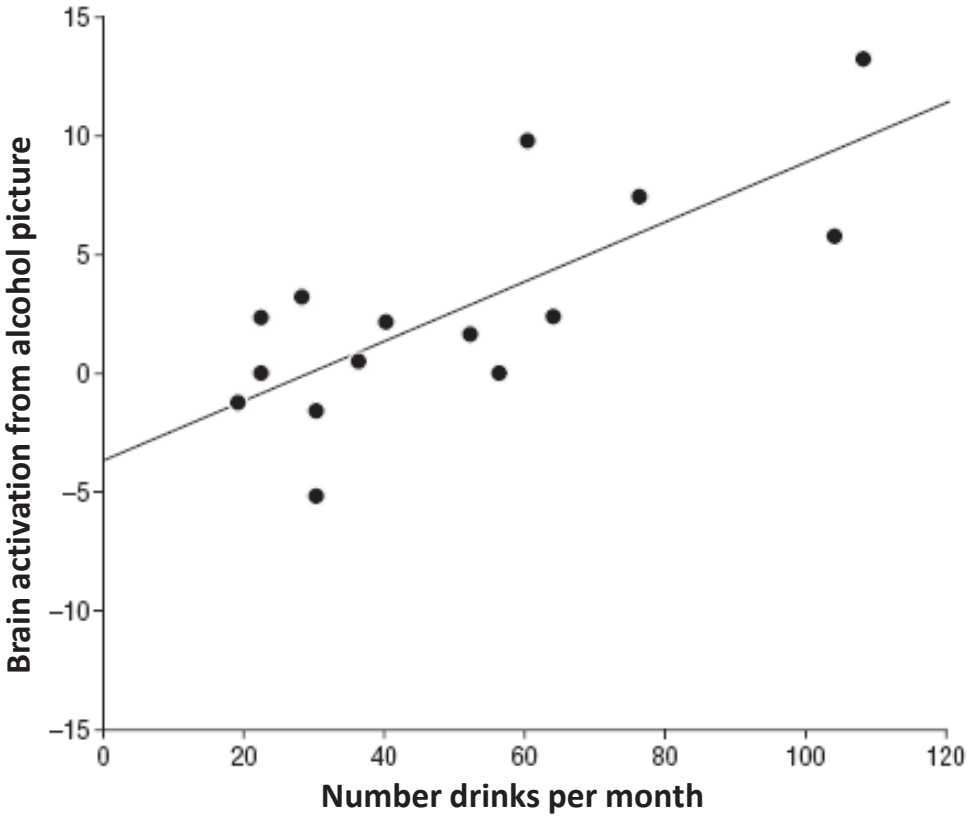
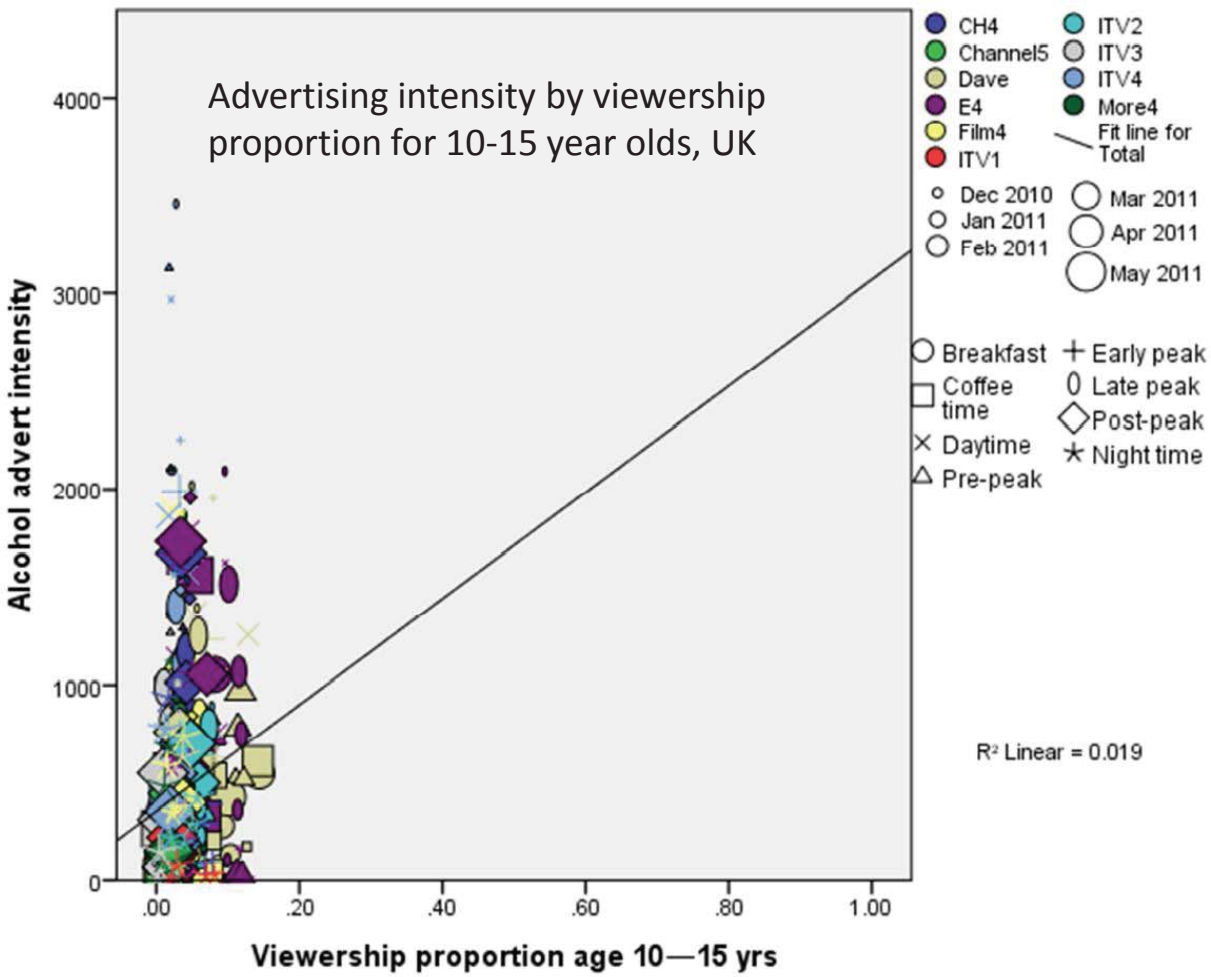


Heavy drinkers showed greater activation to alcohol picture in left anterior, limbic and visual system areas than controls

Source: Tapert et al 2003

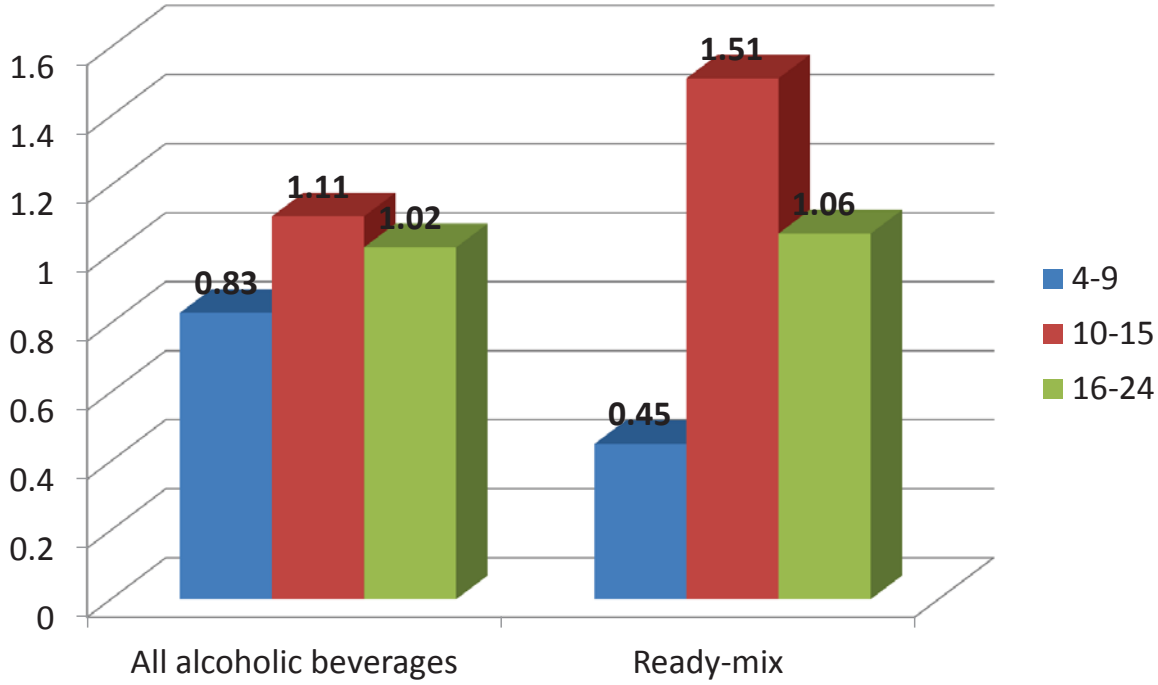


Source: Tapert et al 2003



Source: Winpenny et al 2012

Incidence rate ratios for being exposed to alcohol adverts compared with ages 25+ by age group. UK



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Tapping into biological reward systems, advertising has an unfair competitive advantage. The only way to reduce youth exposure and deal with the problem of self-regulation is a ban on advertising, like tobacco.

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A tool for climate change management

A carbon footprint is a measure of green house gas emissions, [specifically carbon dioxide and methane, calibrated for $C0_2$ equivalent], produced by actions of an entity.

A tool for climate change management

The central reason for undertaking a carbon footprint measurement at any level, be it national, organizational or local, is to reduce the risk of climate change through enabling targeted and effective reductions of greenhouse gas emissions.

A tool for climate change management

- Carbon footprints of nations, regions and cities
- Carbon footprints of sectors and organizations
- Carbon footprints of products and services
- Personal carbon footprints

A tool for addictions governance

An addictions footprint is proposed as a measure of addictive substance related disability adjusted life years (DALYs) produced by actions of an entity.

An alcohol-caused DALY footprint:

- Promotes accountability
- Is an advocacy tool
- Monitors change

An alcohol-caused DALY footprint:

- Footprints of nations, regions and cities
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A foot print apportions responsibility and enables monitoring of change - beer producers could propose how they would reduce their alcohol-attributable DALY footprint.

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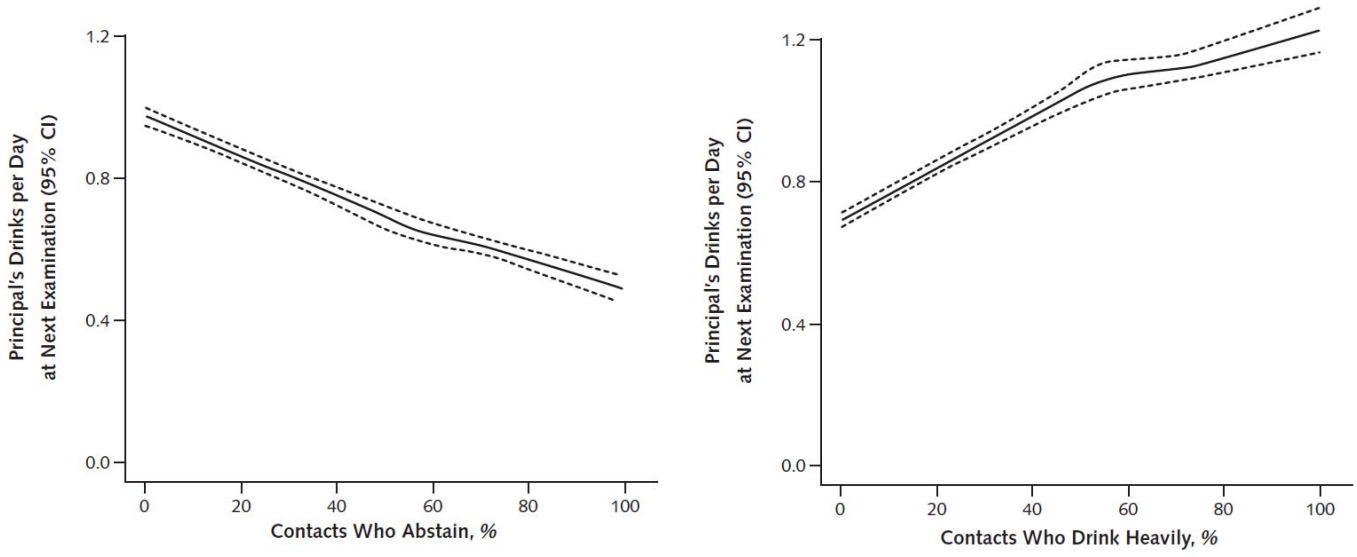

Framingham Heart Study: Impact of fraction of friends/family who abstained or drank heavily at one examination on drinks/day at next examination.

Source: Rosenquist et al 2010

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We could all help each other by saying we are going to drink less and by drinking less.

In conclusion, I have mentioned 3 frames for our understanding of addictions, with their policy implications:

1. Biology: evolutionary relationship with drugs
2. Individual: dependence is heavy use over time
3. Society: societal well-being

And, I have introduced 3 areas for action, with their policy implications:

1. Biology: supportive environment
2. Individual: footprint of harm
3. Society: shifting networks