Can THC and CBD inform standard cannabis units?

Tom Freeman

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Overview

- THC

- CBD

- Standard Units

- Conclusion

THC

- **THC (delta-9-tetrahydrocannabinol)**

Intoxicating

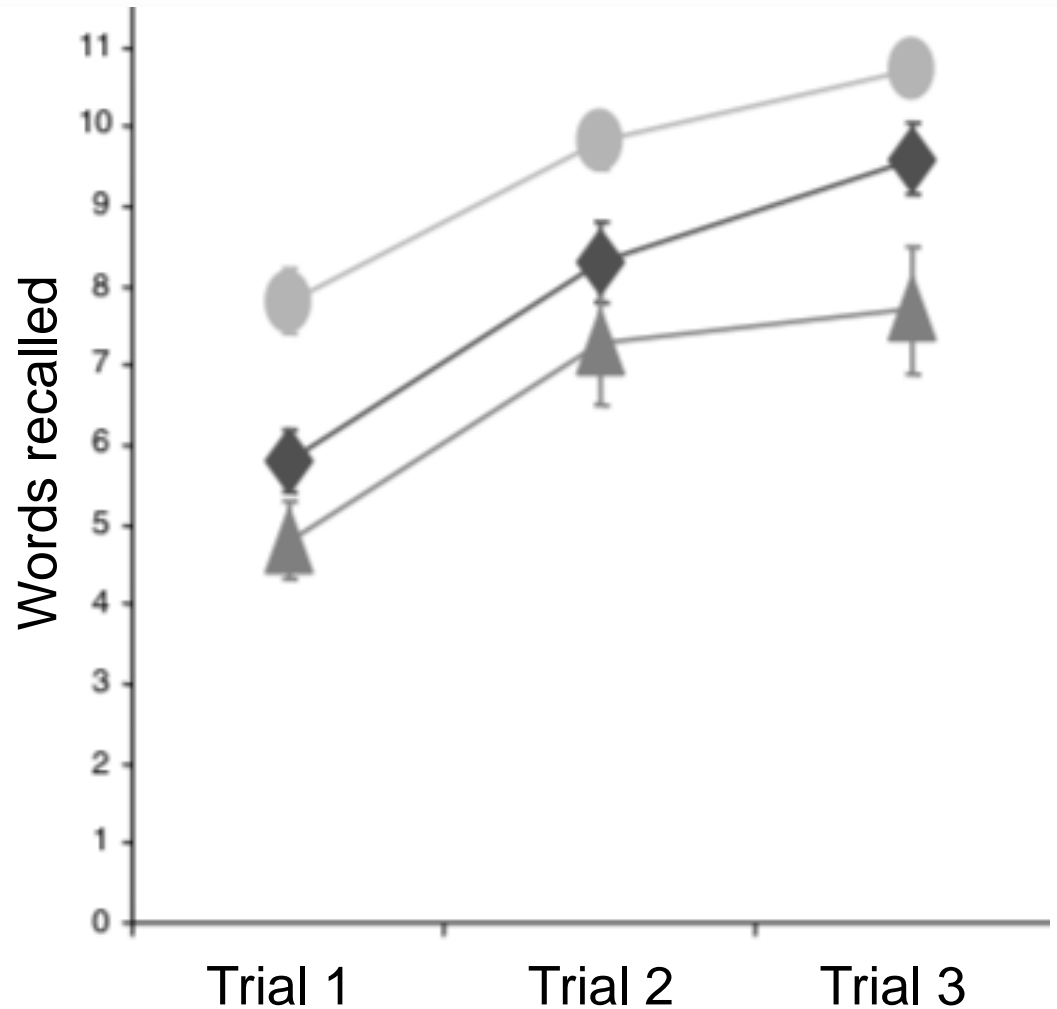↑Anxiety, psychotic-like symptoms

↑Memory impairment

↑Addiction

THC

Harms:
dose-dependent

Verbal memory
recall poorer with
higher doses

Placebo (Vehicle) — 2.5 mg THC — 5 mg THC

Words recalled

Trial 1   Trial 2   Trial 3

D'Souza et al. (2004) *Neuropsychopharmacology*

THC

Cannabis potency in Europe

THC in herbal cannabis

Linear trend: z=11.5, p<0.001

THC in cannabis resin

Quadratic trend: z=4.0, p<0.001
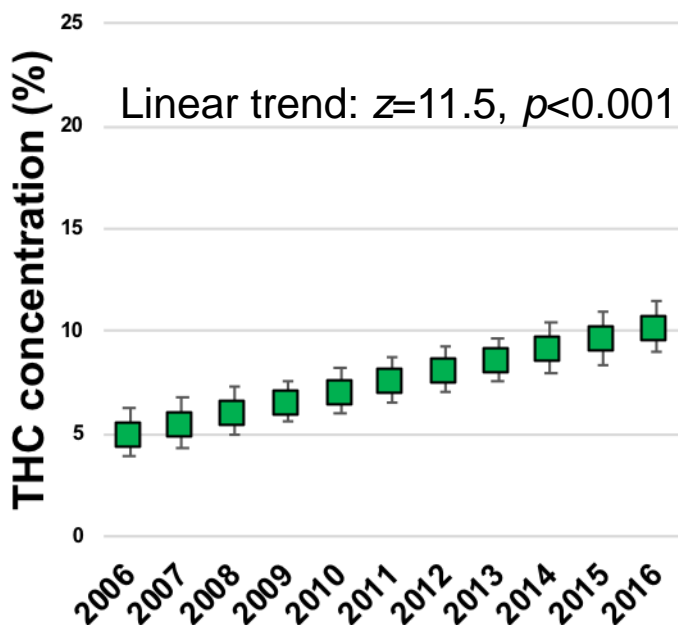
Freeman et al. (resubmitted) *Addiction*
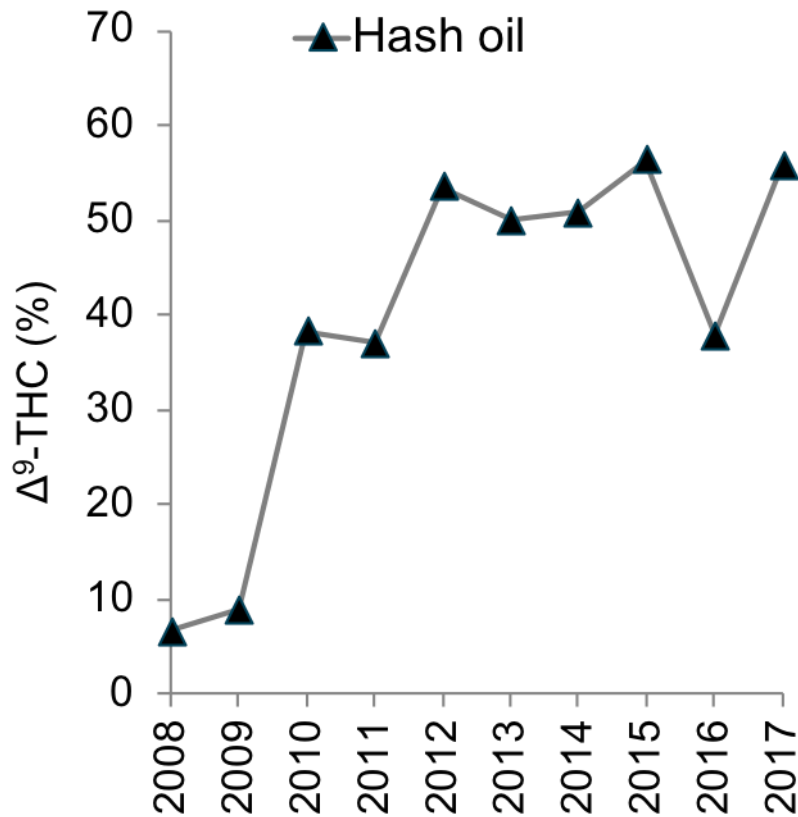
THC
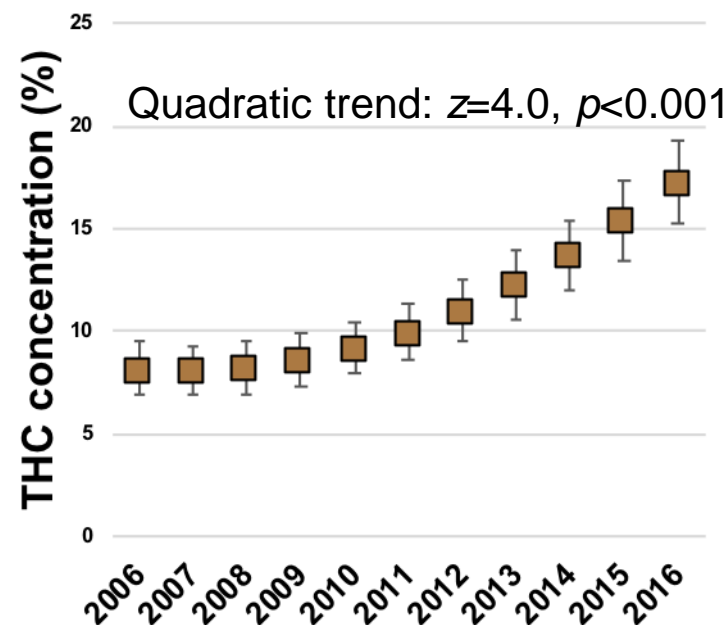
Cannabis potency in USA

Chandra et al. (under review)

'Concentrates'

>20% sales in legal markets

New routes of administration

Overview

- THC

- CBD

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- Conclusion

CBD

- **THC (delta-9-tetrahydrocannabinol)**

Intoxicating

↑Anxiety, psychotic-like symptoms

↑Memory impairment

↑Addiction

- **CBD (cannabidiol)**
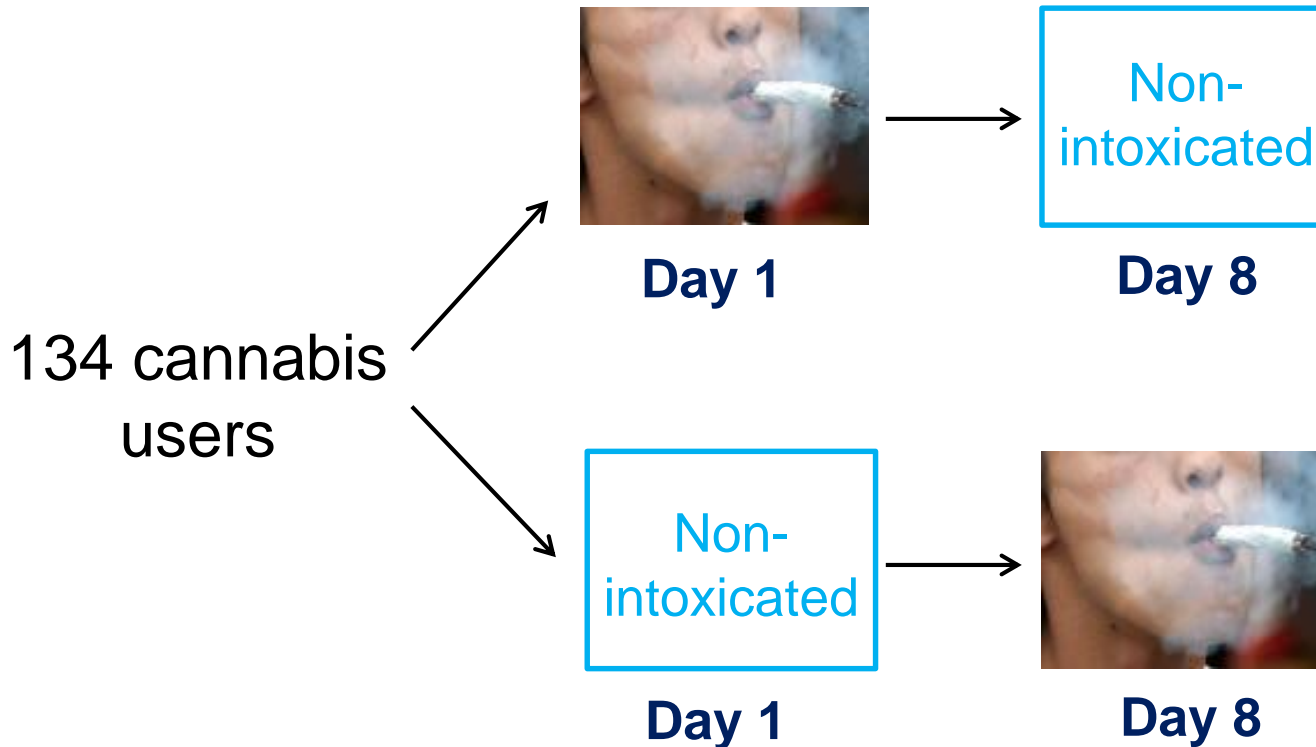
 Non-intoxicating

↓Anxiety, psychotic-like symptoms

↓ Memory impairment

↓Addiction

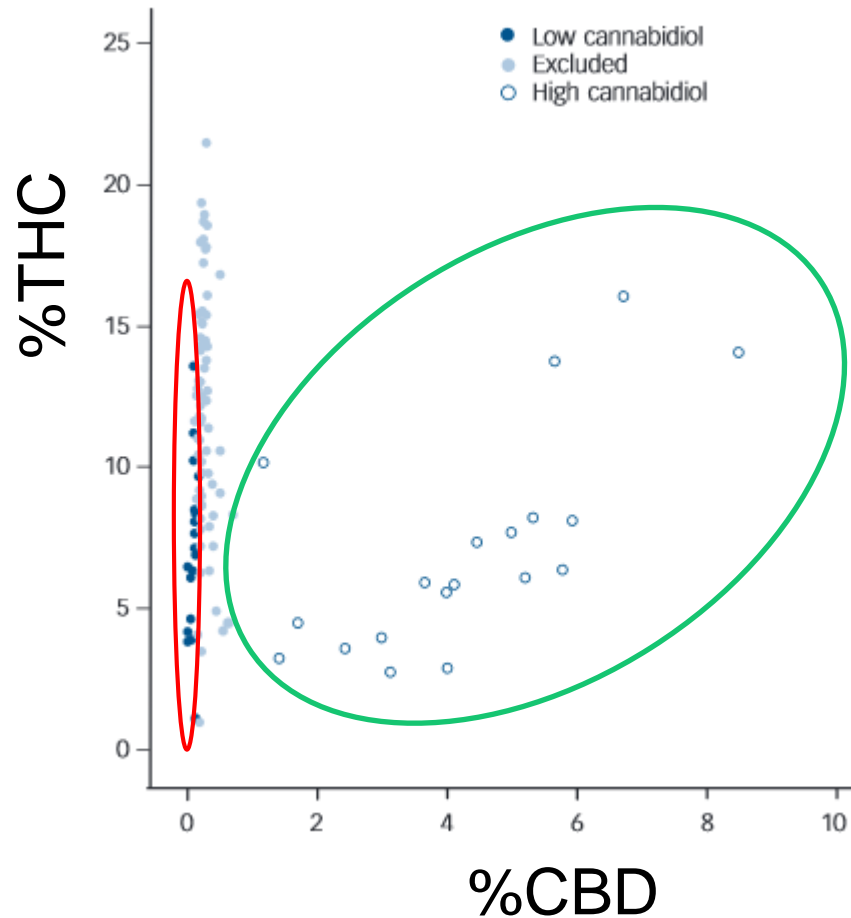# Does CBD protect against THC harms?

Study 1: Naturalistic

Does CBD protect against THC harms?

Low CBD cannabis N=22

High CBD cannabis (>0.75%) N=22

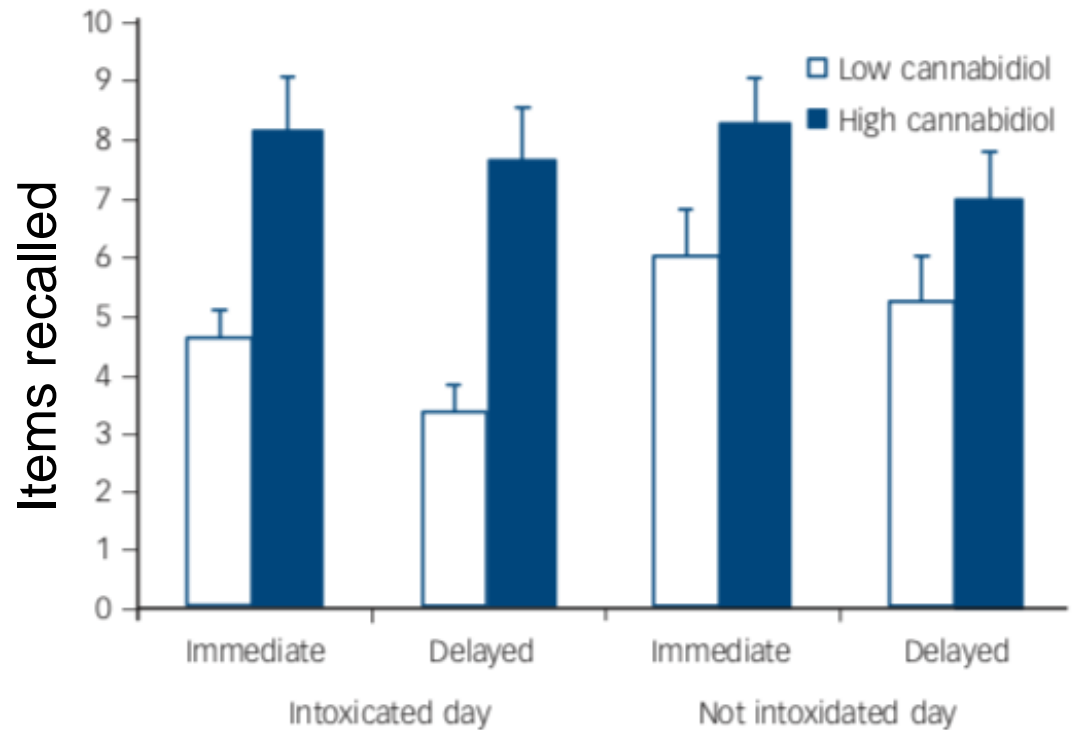Morgan et al. (2010) *British Journal of Psychiatry*

Does CBD protect against THC harms?

Study 1: Naturalistic

Verbal memory:
Listen to 30 second 'news bulletin'

Recall story
Immediate and delayed

Morgan et al. (2010) *British Journal of Psychiatry*

Does CBD protect against THC harms?

Study 2: experimental

Oral pre-treatment   **Intravenous THC**

48 volunteers → CBD → THC

48 volunteers → Placebo → THC

Delayed Recall following THC in the CBD vs placebo groups

(b)

Delayed Recall (%)

- Placebo group
- CBD group

Baseline   Post-Capsule   Post-THC

CONDITION

Englund et al. (2013) *Journal of Psychopharmacology*
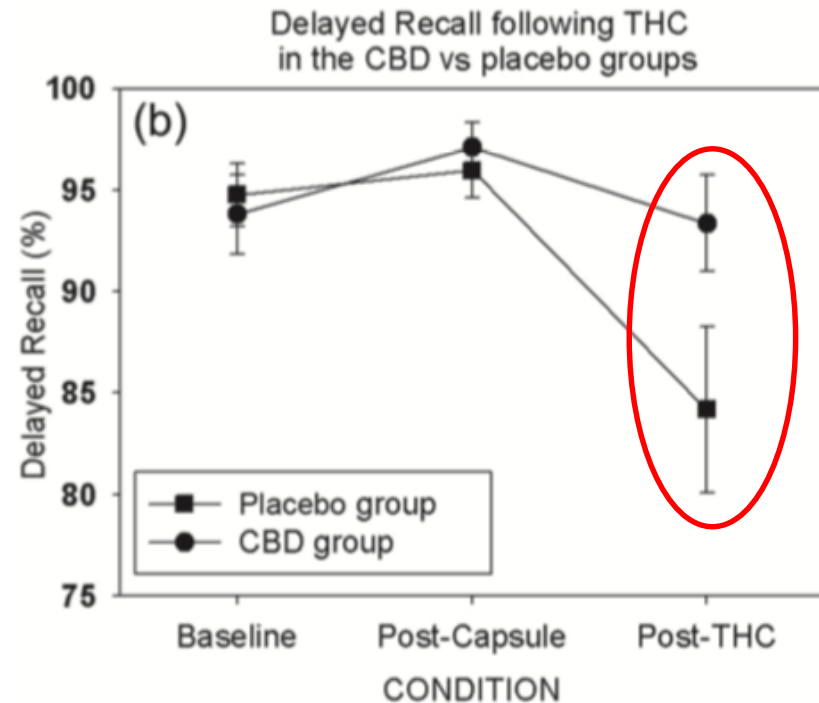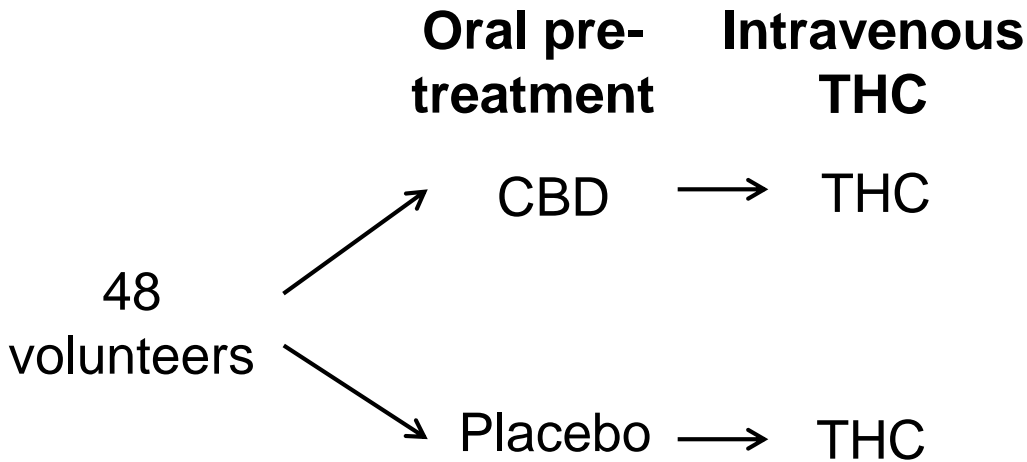
Does CBD protect against THC harms?

Study 3: experimental (ongoing)

Which level of CBD is most effective for reducing harm?

10 mg THC   10 mg THC   10 mg THC   10 mg THC
0 mg CBD   10 mg CBD   20 mg CBD   30 mg CBD
Ratio 1:0   Ratio 1:1   Ratio 1:2   Ratio 1:3

Amir Englund

Overview

- THC

- CBD

- Standard Units

- Conclusion

Standard units
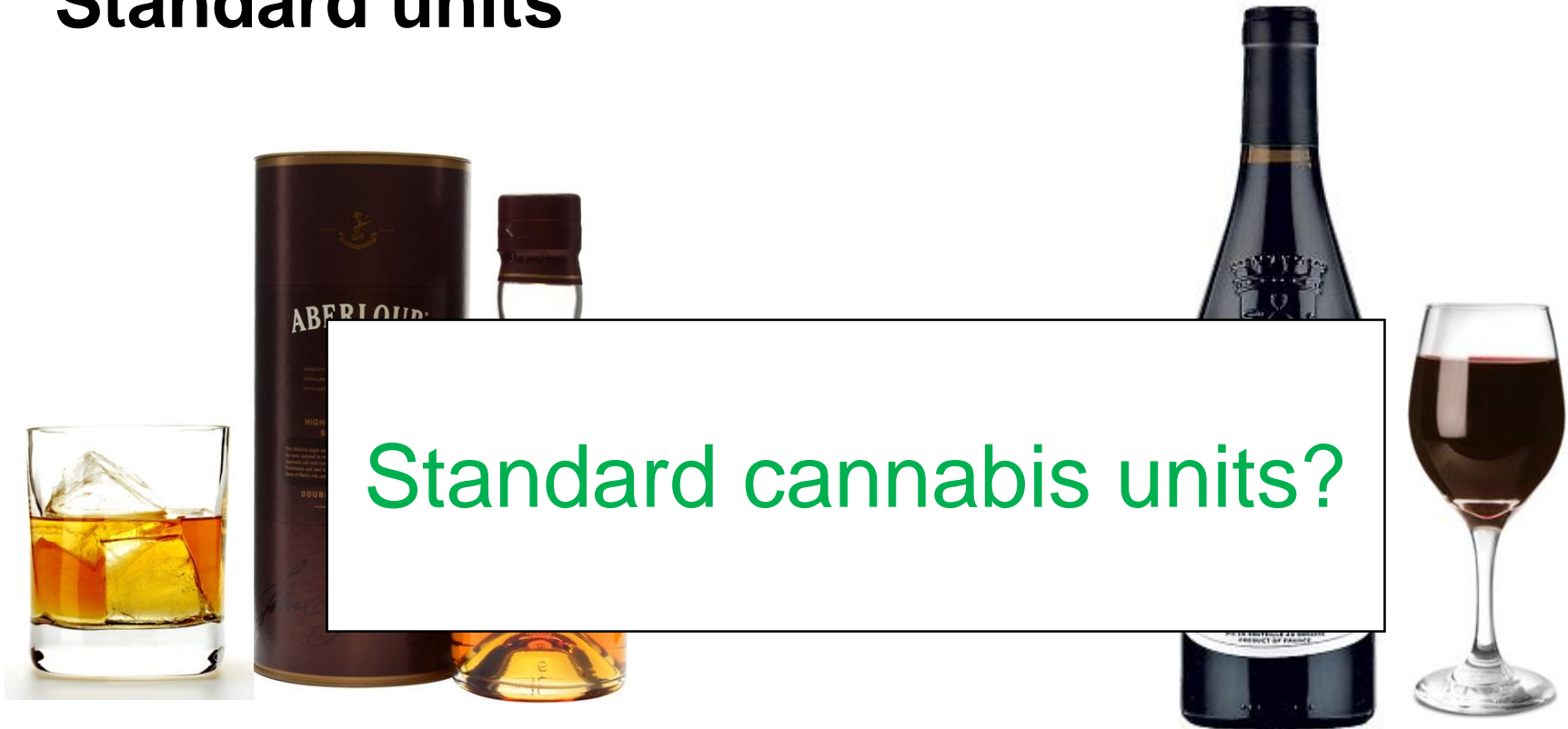
Standard cannabis units?

Whiskey:
40%; 50ml

Wine:
11.5%; 175ml

2 units
(2 x 8g Alcohol)

Standard units

Cannabis increasingly legal (or tolerated) worldwide

17/10/2018

How should consumers monitor consumption and minimise harm?

Cannabis use measures: frequency, but *not quantity*

Cannabis standard units

Grams of cannabis
Wetherill et al. (2016) *Cannabis and Cannabinoid Research*

David Potter

<u>230g</u>
3.7%; 8.5g THC

<u>15g</u>
58%; 8.7g THC

Cannabis standard units

Standard Joint Unit

1 Joint = 0.25g cannabis = 7mg THC

Kögel et al. (2017) *Drug & Alcohol Dependence*

1 Joint = 0.30g cannabis = 27mg THC

Freeman et al. (2014) *Addiction*

Different routes of administration
1 Joint = 0.58g cannabis
1 bowl = 0.25g cannabis
1 dab (concentrate) = 0.08g cannabis

Prince et al. (2018) *Psychology of Addictive Behaviors*

Cannabis standard units

Best common metric: mg of THC
Relevant to all products & routes of administration

Concentrate:
50% THC; 0.04g

Herbal:
15% THC; 0.13g

4 THC units
(4 x 5mg THC)

Freeman & Lorenzetti (commissioned for debate) *Addiction*

Standard units

Whiskey:
40%; 50ml

Wine:
11.5%; 175ml

2 units
(2 x 8g Alcohol)

Cannabis standard units

Best common metric: mg of THC
Listed at the point of sale

Monitor consumption, safety guidelines

1 gram cannabis
15% THC, <0.1% CBD
30 x 5mg 'THC units'

0 x 5mg 'CBD units'

Freeman & Lorenzetti (commissioned for debate) *Addiction*

Overview

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Can THC and CBD inform standard cannabis units?

- THC harms are dose-dependent

- CBD may reduce harm

- 'THC units' and 'CBD units' (mg) could help people monitor consumption for safer use

Thank you

KCL, UK

Michael Lynskey

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Suman Chandra

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Martin Wheeler

Ann McNeill

John Strang

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Teodora Groshkova

Paul Griffiths

Andrew Cunningham

Roumen Sedefov

ACU, Australia

Valentina Lorenzetti

THC

Safer use: adjust smoking behaviour (titration)

Addiction
RESEARCH REPORT   doi:10.1111/add.12634

Just say 'know': how do cannabinoid concentrations influence users' estimates of cannabis potency and the amount they roll in joints?

Tom P. Freeman[1], Celia J. A. Morgan[1,2], Chandni Hindocha[1], Gráinne Schafer[1], Ravi K. Das[1] & H. Valerie Curran[1]

Clinical Psychopharmacology Unit, University College London, London, UK[1] and Department of Psychology, College of Life and Environmental Sciences, University of Exeter, Exeter, UK[2]

<u>Partial titration:</u> as THC rises, less cannabis added to joints

Addiction
RESEARCH REPORT   doi:10.1111/add.12508

Cross-sectional and prospective relation of cannabis potency, dosing and smoking behaviour with cannabis dependence: an ecological study

Peggy van der Pol[1], Nienke Liebregts[2], Tibor Brunt[1], Jan van Amsterdam[3], Ron de Graaf[1], Dirk J. Korf[2], Wim van den Brink[4] & Margriet van Laar[1]

Trimbos Institute, Netherlands Institute of Mental Health and Addiction, Utrecht, the Netherlands,[1] Bonger Institute of Criminology, Law Faculty, University of Amsterdam, Amsterdam, the Netherlands,[2] Centre for Health Protection, National Institute for Public Health and the Environment (RIVM), Bilthoven, the Netherlands[3] and Department of Psychiatry, Academic Medical Centre, University of Amsterdam, Amsterdam, the Netherlands[4]

<u>Partial titration:</u> as THC rises, *more* cannabis added to joints but *less* smoke inhaled

Freeman et al. (2014) *Addiction*   van der Pol et al. (2014) *Addiction*

THC

Changes in THC associated with treatment entry

Changes in cannabis potency and first-time admissions to drug treatment: a 16-year study in the Netherlands

Tom P. Freeman[1,2], Peggy van der Pol[3], Wil Kuijpers[4], Jeroen Wisselink[4], Ravi K. Das[2], Sander Rigter[3], Margriet van Laar[3], Paul Griffiths[5], Wendy Swift[6], Raymond Niesink[3] and Michael T. Lynskey[1]

Trimbos instituut
Netherlands Institute of Mental Health and Addiction

IVZ zicht op zorg
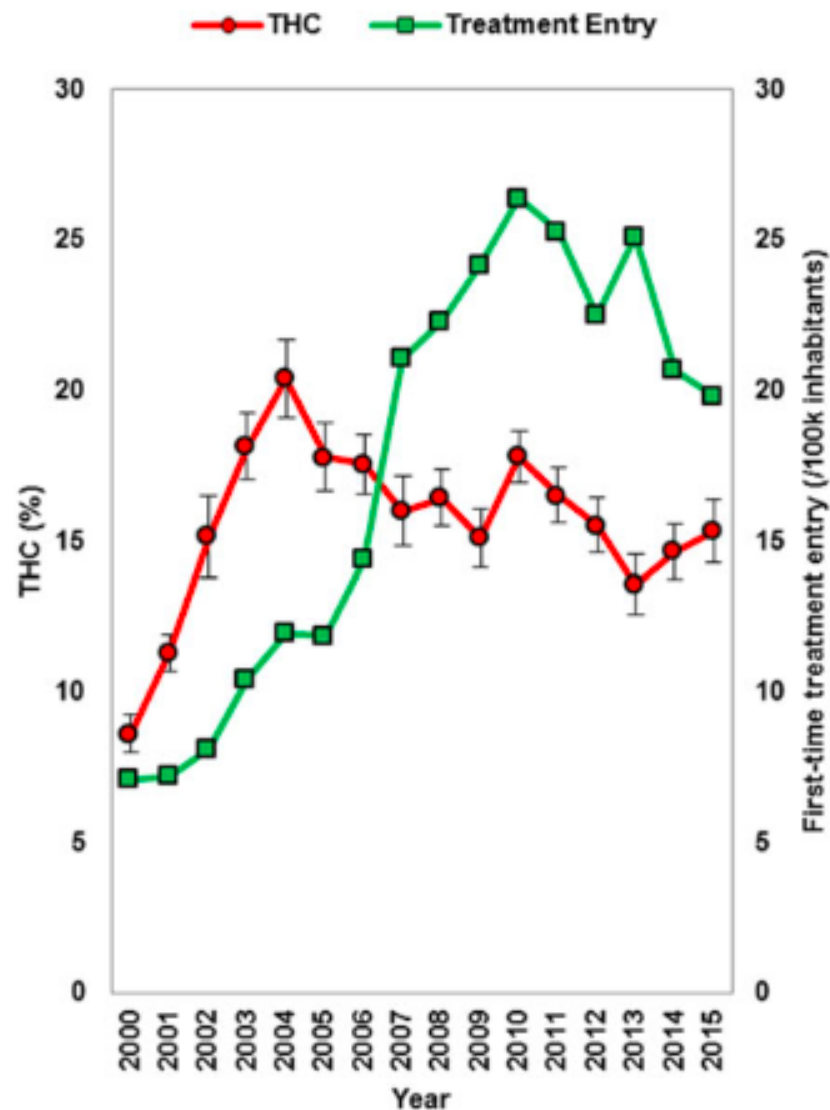
Freeman et al. (2018) *Psychological Medicine*

Does CBD protect against THC harms?

48 volunteers;
four visits:

Placebo
THC
THC+CBD
CBD

Morgan et al. (2018) *Translational Psychiatry*