Workshop 1: Using Modelling to Inform Cannabis Policy

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Drug Policy Modelling Program

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Outline

- Models
  - —What are they?
  - —Why use them?

- Group exercise

- Two models in more detail
  - —Policy options for cannabis
  - —Cannabis diversion model

What is a model?

- *"representation of something, …which is usually smaller than the real object, or a simple description of the object which might be used in calculations"*

- A simplified depiction or abstraction of a complex system or process

- A model can be

  —Complex or simple

    · A mental summary
    · Computer simulation

Some types of models

- Epidemic modelling – HIV, Hep C, H1N1
- Systems dynamic models i.e. Markov
  - Stocks and flows
  - Feedback loops
  - Decision analytics
- Soft systems modelling
- Agent based modelling
- Economic models
  - Cost effectiveness analysis
  - Cost benefit analysis
  - Macro economic models

Examples from DPMP

- SimDrug & SimDrug Policing

- Pharmacotherapy Model

- Hepatitis C Model

- Cannabis Diversion Model

- Economic consequences of cannabis policy options

Why Modelling? A model may:

— Build knowledge (in the process)

— Be a summary of the complexities and dynamics

— Be used to evaluate programs or policies in the absence of other methods (anti-smoking programs)

— Combine / sythesize existing knowledge

— Generate new knowledge and insights

Why Modelling? A model may:

—Be used in the face of different values (*treatment versus law enforcement)*

—Be a constructive mechanism to generate debate

—Be used when we do not understand the process/system well enough already

—Identify the unintended consequences of modifying existing policy

—Be used to explore a wide range of scenarios

Key Advantages

- Can evaluate policy options that cannot be trialled e.g. cannabis legislation

- Evaluate long term and multiple outcomes

- Helpful tool – used to explore unintended/deleterious outcomes

- Opportunity to explore uncertainty

- Integration

Do models work?

Yes but....what is the model being used for?

- —Develop new understandings

- —Understand policy options

- —Facilitate dialogue and debate

- —Test new policy options

- —Create better public policy

- —Inform decision making

- —Prediction

- Levels of evidence

- Generalisablity

Limitations

- Abstraction may mask issues

- Type of model being used

- Data

  — Availability
  — Levels of evidence
  — Biases in the data
  — Confounding factors

- Lack of transparency

How to build models

- Many different approaches
- Iterative process

Steps in model building with Qld Gov

- 1. Decide on questions to be investigated
- 2. Establish project lead & advisory group
- 3. Organise and hold focus group
- 4. Sign off on "rules of model design"
- 5. Build structure of model
- 6. Gather and input data
- 7. Test model
- 8. Run scenarios
- 9. Deliver model

System mapping

- Useful starting point for modelling is often to build a **systems map**:

  —Identifies key components of system

  —Identifies inter-relationships between key components

THE SYSTEM

International Supply & Distribution
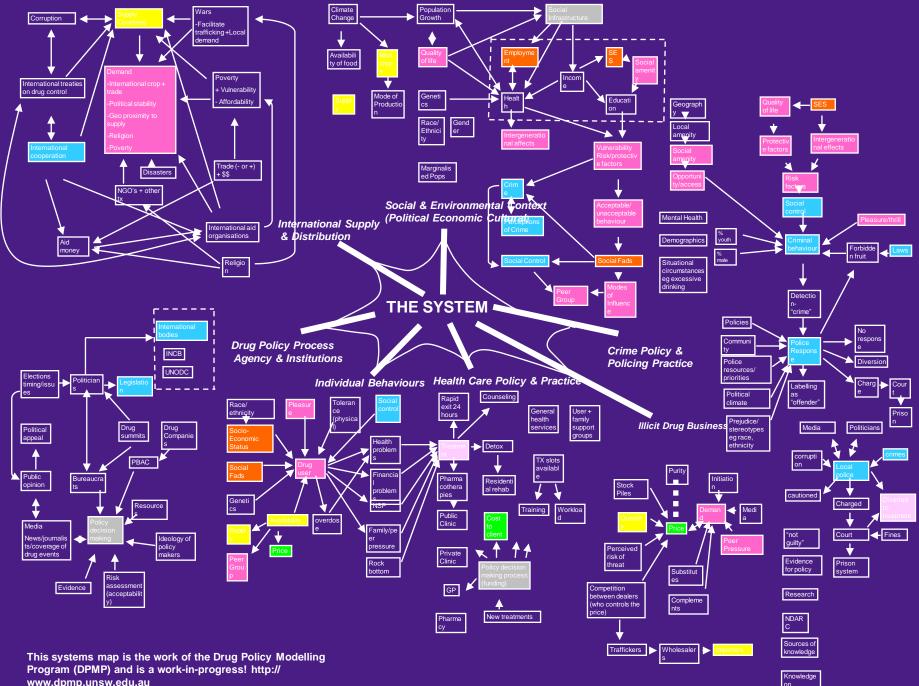
- Corruption
- Supply Countries
- Wars -Facilitate trafficking +Local demand
- International treaties on drug control
- Demand -International crop + trade -Political stability -Geo proximity to supply -Religion -Poverty
- Poverty + Vulnerability - Affordability
- International cooperation
- Disasters
- Trade (- or +) + $$
- NGO's + other tx
- International aid organisations
- Aid money
- Religion

Social & Environmental Context (Political Economic Cultural)

- Climate Change
- Population Growth
- Social Infrastructure
- Availability of food
- Illicit crops
- Quality of life
- Employment
- SES
- Social amenity
- Supply
- Mode of Production
- Genetics
- Income
- Health
- Education
- Race/Ethnicty
- Gender
- Intergenerational affects
- Vulnerability Risk/protective factors
- Marginalised Pops
- Crime
- Acceptable/unacceptable behaviour
- Definitions of Crime
- Social Control
- Social Fads
- Peer Group
- Modes of Influence
- Geography
- Local amenity
- Social amenity
- Opportunity/access
- Mental Health
- Demographics
- Situational circumstances eg excessive drinking
- % youth
- % male

Crime Policy & Policing Practice

- Quality of life
- SES
- Protective factors
- Intergenerational effects
- Risk factors
- Social control
- Criminal behaviour
- Pleasure/thrill
- Forbidden fruit
- Laws
- Detection- "crime"
- Policies
- Community
- Police resources/priorities
- Political climate
- Prejudice/stereotypes eg race, ethnicity
- Police Response
- No response
- Diversion
- Charge
- Court
- Prison
- Labelling as "offender"
- Media
- Politicians
- corruption
- crimes
- cautioned
- Local police
- Charged
- Diverted to treatment
- "not guilty"
- Court
- Fines
- Evidence for policy
- Prison system
- Research
- NDARC
- Sources of knowledge
- Knowledge on situations

Drug Policy Process Agency & Institutions

- International bodies
- INCB
- UNODC
- Elections timing/issues
- Politicians
- Legislation
- Political appeal
- Drug summits
- Drug Companies
- Public opinion
- Bureaucrats
- PBAC
- Media News/journalists/coverage of drug events
- Resources
- Policy decision making
- Ideology of policy makers
- Evidence
- Risk assessment (acceptability)

Individual Behaviours

- Race/ethnicity
- Pleasure
- Tolerance (physical)
- Social control
- Socio-Economic Status
- Social Fads
- Drug user
- Health problems
- Financial problems
- NSP
- Genetics
- Supply
- Availability
- overdose
- Family/peer pressure
- Rock bottom
- Price
- Peer Group

Health Care Policy & Practice

- Rapid exit 24 hours
- Counseling
- General health services
- User + family support groups
- Treatment
- Detox
- Pharmacotherapies
- Residential rehab
- TX slots available
- Public Clinic
- Cost to client
- Training
- Workload
- Private Clinic
- Policy decision making process (funding)
- GP
- New treatments
- Pharmacy

Illicit Drug Business

- Purity
- Stock Piles
- Initiation
- Quantity
- Price
- Demand
- Media
- Perceived risk of threat
- Peer Pressure
- Substitutes
- Competition between dealers (who controls the price)
- Complements
- Traffickers
- Wholesalers
- Importers

This systems map is the work of the Drug Policy Modelling Program (DPMP) and is a work-in-progress! http://www.dpmp.unsw.edu.au

Group exercise

- Problem: Government wants to decrease cannabis use in 14-24 year olds

- First step: Build a system map of cannabis use

- In 3 groups (8-10 people):

  —Identify factors that can affect cannabis use
  —Identify direction of impact (positive or negative) on cannabis use
  —Select the 3 factors your group believes to be the most important

Reflections

- Do we have consensus?

  —Generally

  —On the 3 most important factors

- Based on your systems maps:

  —Which if any of the important factors are *actionable* by government?

  —What is the fit between where activity is *currently* directed and where activity *should* be directed?

  —Are there areas you need more detailed understanding of the likely consequences of intervention and/or which interventions would be most effective?

What could be modelled?

- Likely impacts of 3 scenarios:
  - —Provision of new media campaigns
  - —Expansion of cannabis treatment
  - —Increased use of sniffer dogs to increase detection of cannabis use

System map to modelling

Building a system map:

- Can help ensure all possible influences have been identified

- Illuminates differences in understanding

- Permits focus on factors of most importance and factors which are actionable by government

- Helps set boundaries

- Facilitates model building and analyses

Modelling the economic consequences of cannabis policy options

- The project

- The method

- The issues

Why?

Advocates of legalisation argue that criminal status:

- · encourages criminal activity,
- · increases contact with illicit drug sellers,
- · leads to criminal records/penalties
- · results in taxation losses, and
- · increases the costs of enforcement

Advocates of total prohibition argue that it:

- · leads to lower consumption of cannabis,
- · results in better health status,
- · decreases illegal activities r/t cannabis and
- · improves productivity of society

Others

- · recognise the limitations of existing data

Context

Cannabis is the most commonly used illicit drug but:

— Policies vary across jurisdictions
— Arguments for legalisation
— Arguments for stricter enforcement of laws

Arguments based on:
— Number of users
— Health outcomes
— Crime
— Emotive arguments
— Loss of taxation

Need for a systematic assessment of harms and benefits of potential policies

How?

- Static model

- Cost benefit analysis

- Comparing three legislative frameworks

What is a CBA?

- Form of economic evaluation

- Measure inputs and outcomes in dollars

- Systematic approach

- Societal perspective (CJS, health, individual, education, productivity….)

- Addresses the question of whether the program/ policy is of value to society

Three policies

1. NSW policy (2006/07)

— Cannabis illegal with cannabis cautioning

- Court, police and corrections data
- Magistrates Early Referral into Treatment (MERIT)
- Treatment for dependency
- Mental health and physical health – psychosis, low birth weight, accidents
- Prevention programs
- Use of cannabis

2. NSW with civil penalties

Three Policies

- 3. Legalised regulated framework
  - Rates of use from NDSHS
    - Q: "if cannabis were legal to use, would you …." analysed by current use pattern, and age
  - Rates of dependence f(rates of use)
  - Costs of enforcing laws: intoxication, proof of residency, restrictions on locations of use, driving restrictions
  - Impact on CJS - ⬆ (MERIT, other offences) ⬇(cannabis use offences)

Three Policies

- 3. Legalised regulated framework

    —<u>Market restrictions</u>: quality, potency, price, hours, monopoly retailer, licensed growers, quantity sold per occasion, training for sellers, no advertising or promotion, hours of operation

- Education / prevention programs

- Additional treatment

Issues

- Estimating costs for the regulated model

- Estimating the benefits
  - What are they and how do you value them
  - Negative impact of a criminal record
  - Sense of wellbeing from using cannabis

The Cannabis Diversion Model

- System dynamics model

- Aimed to stimulate and support policy debate around plausible policy options for improving cannabis diversion

- Devised firstly as a national prototype

- Now being adapted with Qld Health and Police to increase understanding of system and explore policy scenarios of interest
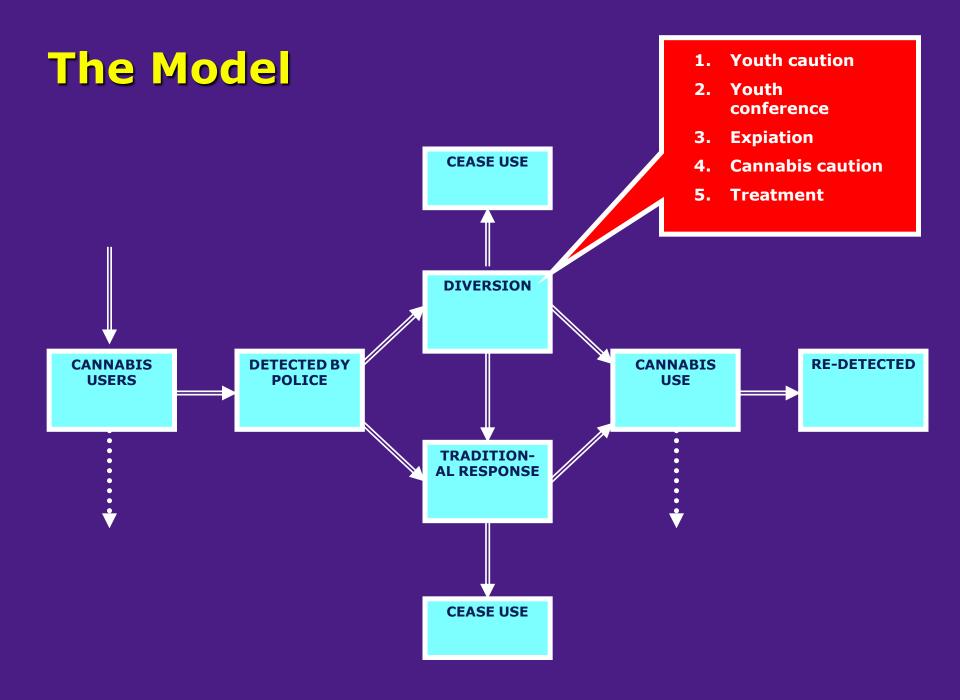
Context

- Expansion of diversion programs for drug offenders

- Evidence that 'diversion' can have productive and counter-productive impacts, particularly for cannabis users

- Issue: how to improve the design of drug diversion systems and facilitate best possible outcomes?

The Model

CEASE USE

1. Youth caution
2. Youth conference
3. Expiation
4. Cannabis caution
5. Treatment

DIVERSION

CANNABIS USERS

DETECTED BY POLICE

CANNABIS USE

RE-DETECTED

TRADITION-AL RESPONSE

CEASE USE

Features of the model

- National system
- Youth and adult system

Outputs:

- Number and type interventions
- Number of repeat offenders
- Number of "successes"
- Cost to system

Scenarios

- Scenario 1: ↑ effectiveness of diversion

- Scenario 2: Diverting all 1st time offenders

- Scenario 3: Diverting all 1st time offenders + ↓ effectiveness of diversion

- Scenario 4: Widening net

- Scenario 5: Widening net plus ↑ diversion

- Scenario 6: No diversion

Scenario 1, 2 and 3: Model Outputs

	↑ Effect	↑ Diversion	↑ Diversion plus ↓ Effect
No. interventions	- 1,473	-1,327	+ 888
Multiple detections	- 6,415	- 1,808	+ 2,611
Successes	+ 7,273	+ 6,475	- 4,397
Cost (million)	- $1.13	- $4.59	- $2.87

Scenario 4, 5 + 6: Model outputs

	Widen net	Widen plus ↑ diversion	No diversion
No. interventions	+ 28,117	+ 25,583	+ 2,481
Multiple detections	+ 16,482	+ 12,991	+ 6,302
Successes	+ 77,325	+ 89,740	- 12,243
Cost (million)	+ $18.63	+ $10.02	+ $8.62

Policy implications

- Model suggests:

    —ought to *continue* diversion

    —could improve outcomes and reduce costs through ↑ diversion of first timers

    —should avoid net widening at all costs

Modelling implications

- Cannabis Diversion Model showed:

  —It is possible to model the cannabis diversion system

  —Modelling can provide a tool to test scenarios

- But also showed need to *tailor* model to *context*

- Stage 2: Building Model of Queensland Cannabis Diversion System with Qld Health and Police

Conclusion

- Modelling can be a useful tool for informing cannabis policy to:

  — Facilitate communication

  — Combine existing knowledge

  — Explore scenarios

- Multiple approaches – optimum approach dependent upon:

  — Aims/question of interest

  — Data availability

  — How much time you are willing to invest

  — Skills of researchers/modellers