

Licensed Premises Lighting Project

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Problem

- Observed that dark licensed premises in Brisbane / Fortitude Valley appeared to more regularly be the site of assaults
- In Queensland lighting is regulated by Workplace Health & Safety Qld
 - Work Health and Safety Regulation 2011 (s.40)
 - Australian Standards AS/NZS:1680



AS / NZS 1680 Guide to Minimum Lighting Levels

Class of task		Recommended maintained illuminance lx	Characteristics of the activity/interior	Representative activities/interiors
Movement and orientation*		40	Interiors rarely visited with visual tasks limited to movement and orientation	Corridors; cable tunnels; indoor storage tanks; walkways.
Rough intermittent*		80	Interiors requiring intermittent use with visual tasks limited to movement, orientation and coarse detail.	Staff change rooms; live storage of bulky materials; dead storage of materials needing care; locker rooms; loading bays.
Normal range of tasks and work places	Simple	160	Any continuously occupied interior where there are no tasks requiring perception of other than coarse detail. Occasional reading of clearly printed documents for short periods.	Waiting rooms; staff canteens; rough checking of stock; rough bench and machine work; entrance halls; general fabrication of structural steel; casting concrete; automated process monitoring; turbine halls.
	Ordinary or moderately easy	240	Continuously occupied interiors with moderately easy visual tasks with high contrasts or large detail (>10 min arc).	School chalkboards and charts; medium woodworking; food preparation; counters for transactions.
	Moderately difficult	320	Areas where visual tasks are moderately difficult with moderate detail (5-10 min arc or tolerances to 125µm) or with low contrasts.	Routine office tasks, e.g. reading, writing, typing, enquiry desks.
		400		Inspection of medium work; fine woodwork; car assembly.
	Difficult	600	Areas where visual tasks are difficult with small detail (3-5 min arc or tolerances to 25µm) or with low contrast.	Drawing boards; most inspection tasks; proofreading; fine machine work; fine painting and finishing; colour matching.
Very difficult	800	Areas where visual tasks are very difficult with very small detail (2-3 min arc) or with very low contrast.	Fine inspection; paint retouching; fine manufacture; grading of dark materials; colour matching of dyes.	
Extremely difficult		1200	Areas where visual tasks are extremely difficult with extremely small detail (1-2 min arc or tolerances below 25µm) or of low contrast. Visual aids may assist.	Graphic arts inspection; hand tailoring; fine die sinking; inspection of dark goods; extra-fine bench work.
Exceptionally difficult		1600	Areas where visual tasks are exceptionally difficult with exceptionally small detail (<1 min arc) or with very low contrasts. Visual aids will be of advantage.	Finished fabric inspection; assembly of minute mechanisms, jewellery and watchmaking.



Problem

- Research literature has identified a range of factors associated with increased intoxication and violence in licensed premises, including:
 - Location and density of bars (Green & Plant, 2007; Livingston et al, 2008; Donnelly et al, 2014)
 - Premises layout (Green & Plant, 2007; Homel et al 2004)
 - Poor amenity (e.g. cleanliness) (Hughes et al, 2012)
 - Poor ventilation (Homel et al 2004; Hughes et al 2012)
 - Patron characteristics (Quigley et al 2003)
 - **Lighting** (Doherty & Roche, 2003; Green & Plant 2007; Quigley et all 2003; Hughes et al, 2012; Hughes et al 2010)





Research Questions

- RQ1: Are lighting levels in licensed premises associated with violence and crime in the premises?
- RQ2: Is it possible to ascertain a lighting level which would decrease the likelihood of violence/crime in licensed premises?



Methodology

- The research was undertaken in two stages
 - Stage 1: Examined lighting levels and crime in the Top 20 high risk venues in Queensland, a matched comparison group (N= 22) from across the State and a group of randomly selected hotels and nightclubs in Fortitude Valley (N = 18)
 - Premises were visited and lighting readings taken
 - Offence data for offences associated with the licensed premises analysed
 - Established a clear association between lighting levels and violent crime on licensed premises



Methodology

- Stage 2: A follow-up study designed to address the sample bias in Stage 1
 - stratified random sample of 10 premises randomly selected from all commercial hotels and nightclubs at 9 locations within Queensland (Cairns; Townsville; Rockhampton; Mackay; Bundaberg; Toowoomba; Gold Coast; Sunshine Coast and Brisbane)
 - Also examined a range of other factors which have been identified to be associated with violence on licensed premises:
 - Noise: levels; genre and performance medium
 - Patron demographics
 - Venue construction and usage



Sample Characteristics (Stage 2)

- Venue capacity: 140 to 1,975 patrons
- Between 3 and 10 subsites within each venue
- At their fullest, venue staff estimated numbers of patrons from 60 to 1,500
- 73% of venues were in an SNP area
- Commercial Hotels made up 88% of venues, while 70% were either primarily used as a bar or bar/nightclub combined
- Venue licences had been held for an average of 7.86 years (SD=6.64), and management teams had been in control for 3.91 years on average (SD=3.13).
- Typically venues were clean and in good repair (73%), with clear fire exits (64%), staff not monitoring intoxication (53%) and security interacting with patrons (58%)



Sample Characteristics

- Patron gender in venues: mixed = 69%; male dominant = 22%
- Patron age: 43% of venues <25 years
- Excessive intoxication: 21% of venues
- ID checked at bars: 39% of venues
- Staff monitoring intoxication: 47% of venues



Analysis

- Dependent Variable
 - Violent Crime: counted arrests between 10pm and 5pm across the time period 1 July 2017 to 30 June 2018 that included an element of violence in at least one of the charges recorded by police for that arrest and were unlikely to be classed as police detected
 - » This meant that all public nuisance offences were not included, nor was assault on police or police use of force incidents
 - Created a variable indicating whether there had been any violent incidents at each premises (61% had none associated with them)
 - Drug Crime: calculated in the same way as violent crime, using charges that included a drug offence



Analysis

- Control Variables

- Patronage: the number of incidents is likely to depend heavily upon the size of the venue, we need to take that into account. Controlled for the maximum number of patrons ever on the premises (using the components method)
 - » Max number of patrons average is 311 (SD=178), ranging from 60 to 1500
- Clustering / Safe Night Precinct: relationship between clusters of licensed premises and violence has been established in the literature (see Grubestic & Pridemore, 2011).
 - » By creating an indicator for whether a premises was situated within a Safe Night Precinct (SNP), where venues are clustered together under different operating procedures from those outside the precincts, we controlled for the difference in operating procedure and the clustering of venues.



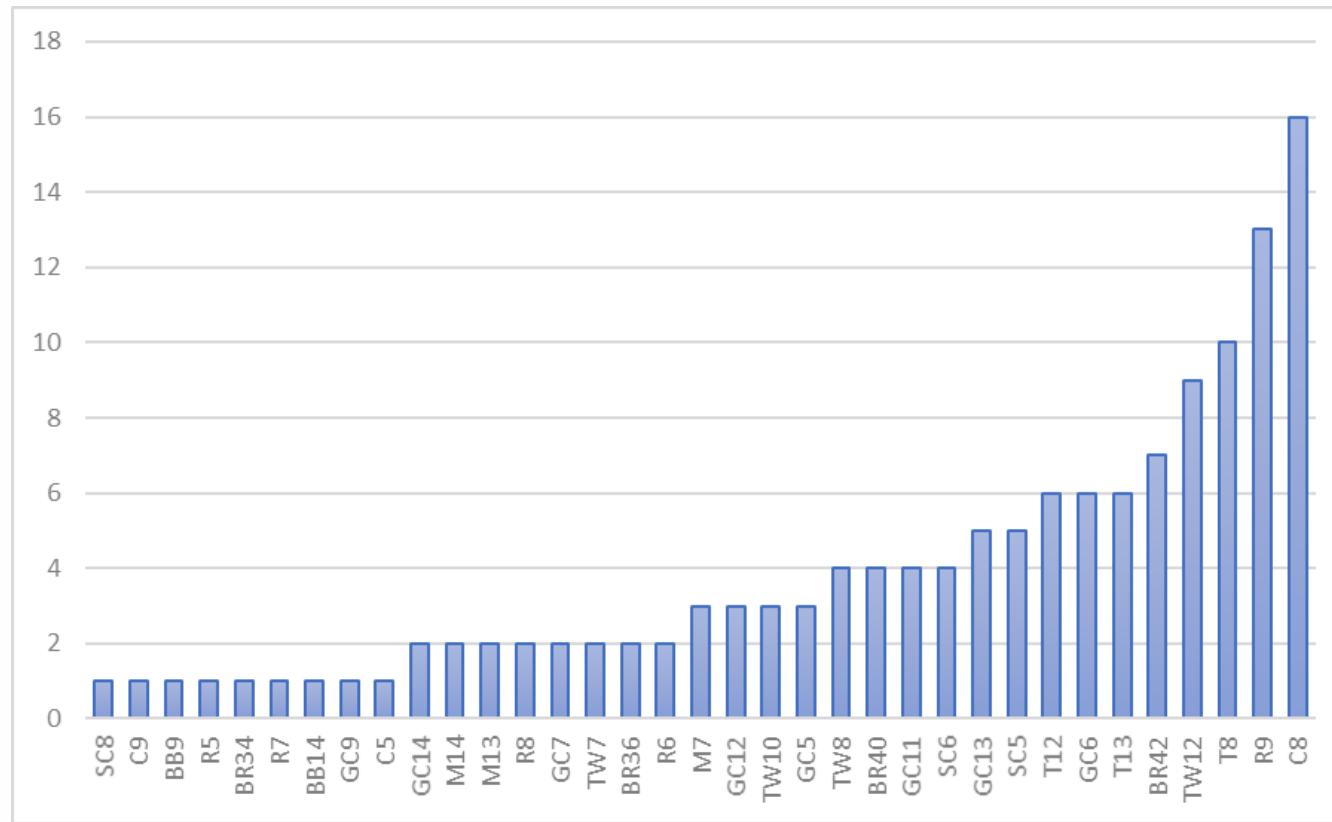
Findings

- Average number of violent incidents occurring between 10pm and 5am was 1.51 (SD=2.90), ranging from 0 to 16.
- The average number of drugs incidents for all venues was 0.44 (SD=1.06) with a minimum of zero and maximum of 6.
- 61% the venues had no violent incidents, while 81% had no drugs incidents



Findings

Number of Violent Offences by Venue (N = 90)



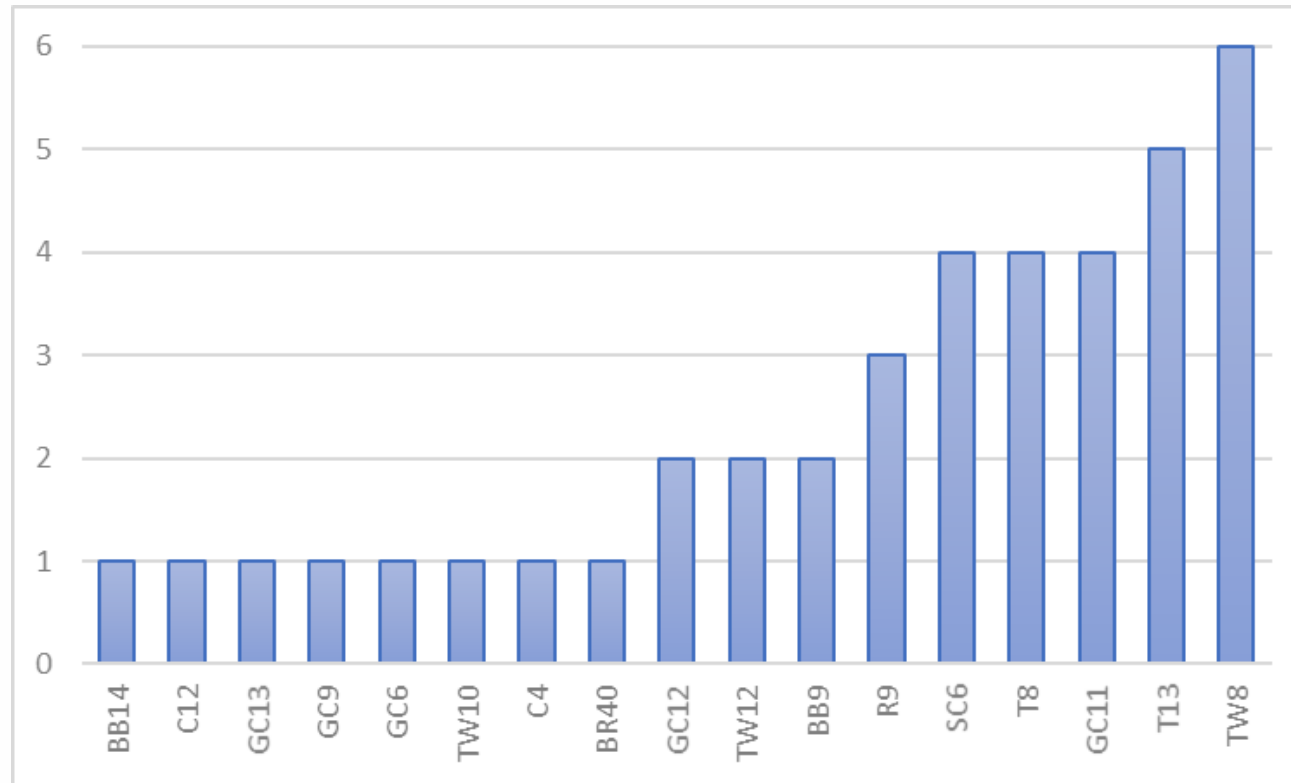
* 55 venues had no recorded violent incidents

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Findings

Number of Drug Offences by Venue (N = 90)



* 73 venues had no recorded drug incidents

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Findings

Measured Lighting Levels

Average lux measure	Average	SD	Minimum	Maximum
Median lux	15.33	7.65	1.00	36.50

NB: The minimum (recommended maintained illuminance) lux level in AS/NZS:1680 is 40 lux



Findings

RQ1: Are lighting levels in licensed premises associated with violence and crime in the premises?

	Average median lux level with	Average median lux level without	Difference (p-value)	Effect size
Violence	8.33	19.78	11.45 (p<.001)	54%
Drugs	9.26	16.74	7.48 (p<.001)	15%



Findings

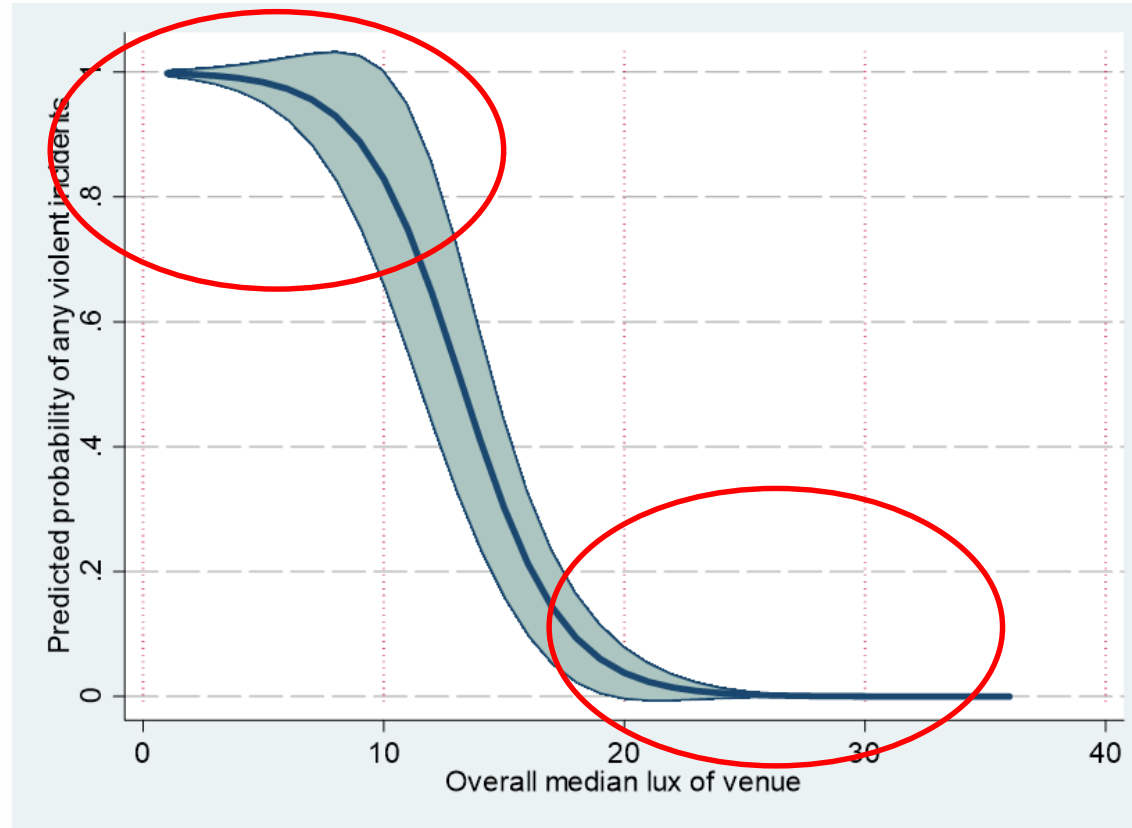
RQ2: Is it possible to ascertain a lighting level which would decrease the likelihood of violence/crime in licensed premises?



Findings

Predicted probability of violent offences per median lux level, controlling for maximum number of patrons and placement in an SNP area

Less than 10 lux = 80% probability of at least one violent incident

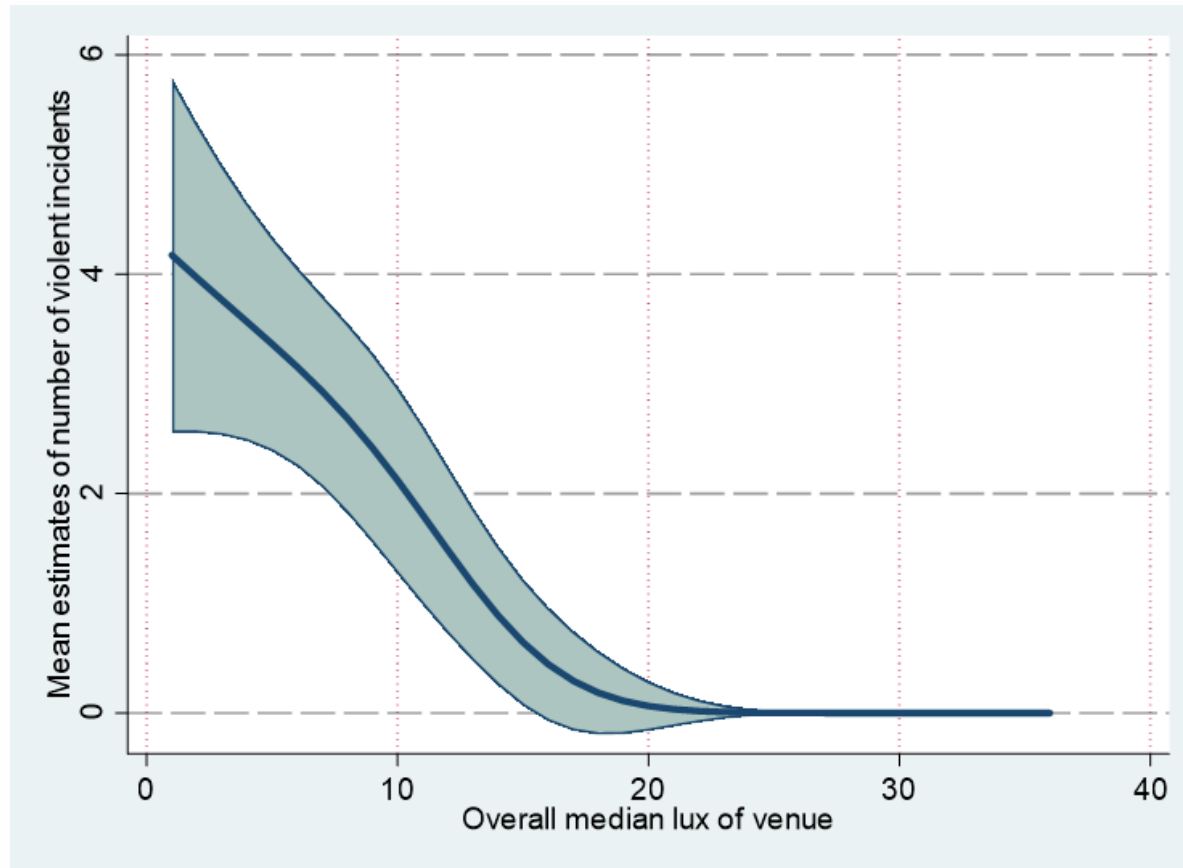


Greater than 20 lux = no predicted violent incidents



Findings

Predicted number of violent offences per median lux level, controlling for maximum number of patrons and placement in an SNP area

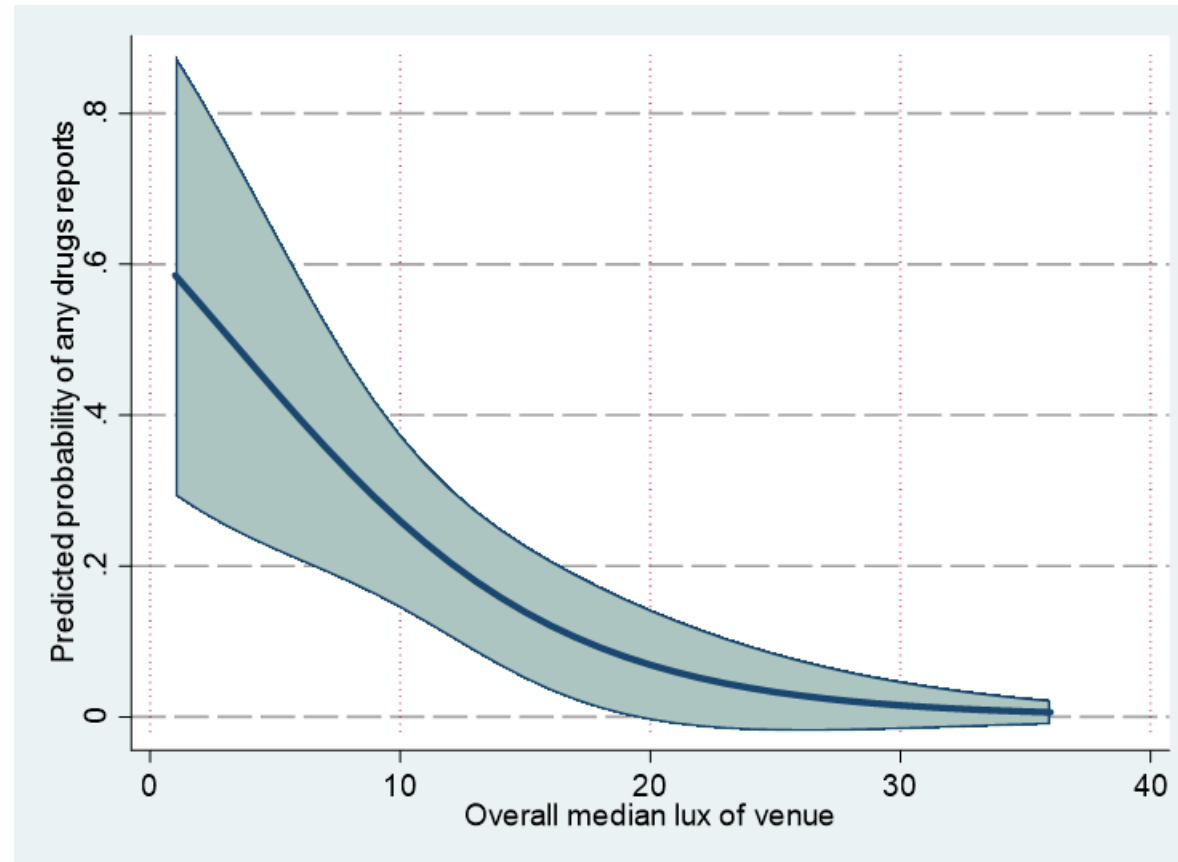


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Findings

Predicted probability of drugs offences per median lux level, controlling for maximum number of patrons and placement in an SNP area



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Implications

- Licensed premises lighting levels matter
- Focusing police resources on darker licensed premises may lead to an overall reduction in violent crime in an area
- The research has established an evidence base linking low lighting in licensed premises to violence (and to a less extent drug crime)
 - opportunity to engage with liquor licensing authorities and workplace health and safety regulators to strengthen regulation



A soon to be famous quote from a
soon to be famous person

*“The simplest method of reducing
crime may be right before our eyes, we
need only turn the lights up to see it”*

Circa 2019



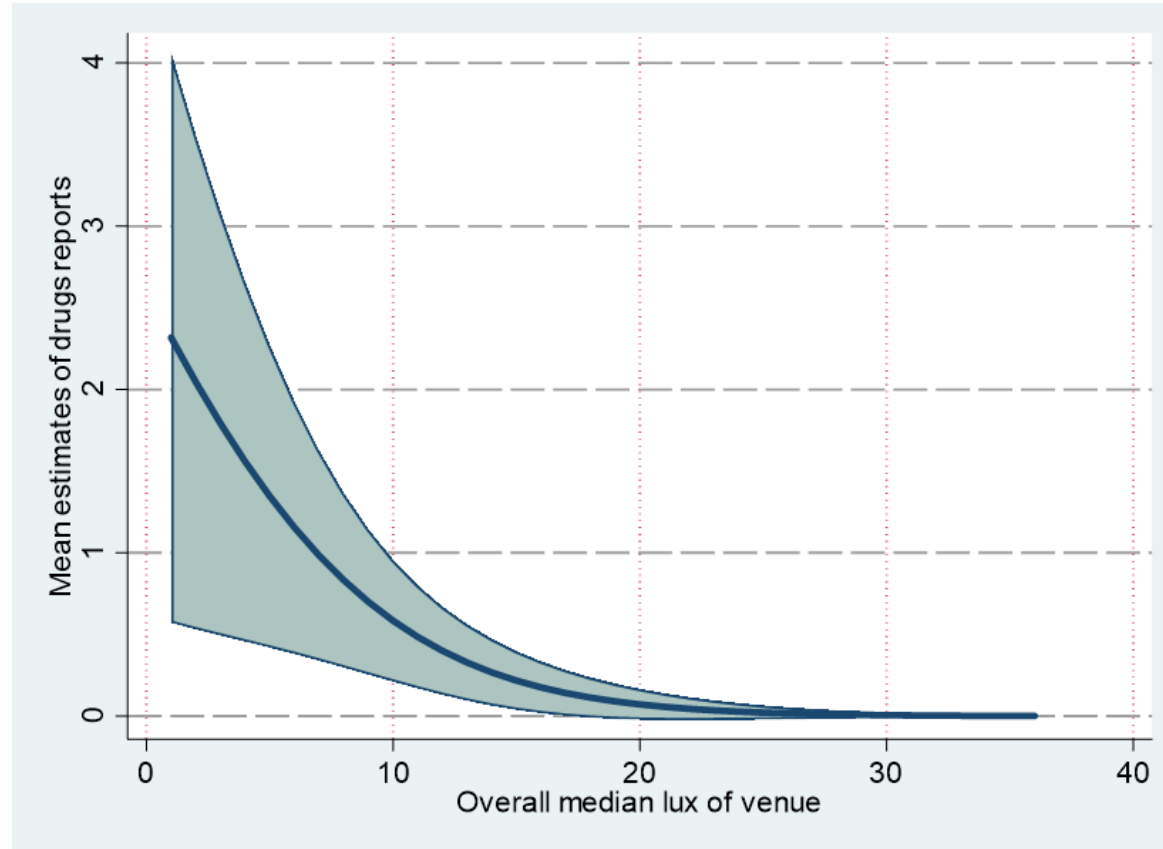
Offences

Violence	Drugs
Assault occasioning bodily harm Assault with intent to commit rape Assault, Common Assault, minor (not elsewhere classified) Grievous Bodily Harm Indecent assaults on adults Rape Rape - Attempted Sexual Assault (Other) Wounding Robbery, armed and unarmed (in company).	Possess and/or use dangerous drugs Possess things for use, or used in the administration, consumption, smoking of a dangerous drug Produce dangerous drugs Receive/possess property obtained from trafficking or supplying dangerous drugs Supply dangerous drugs Trafficking in dangerous drugs Drugs offences (other)



Findings

Predicted number of drug incidents per median lux level, controlling for maximum number of patrons and placement in an SNP area



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Findings

Stage 1 and Stage 2 result comparison

Median lux measure	Average	SD	Minimum	Maximum	Effect size of association with rate of violent incidents per 500 patrons
Stage 1	10.13	10.27	1.00	50.00	16.90%
Stage 2	15.33	7.65	1.00	36.50	39.85%

