

Bang and bust: almost everything you wanted to know about sex and the mining boom (but were afraid to ask)



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Introduction

Recent growth and expansion of the fly-in/fly-out (FIFO) model of mining in remote rural Australia has led to concerns about the health and well-being of those employed by the mines and those in the small rural communities where they are based. A particular concern has been the potential disruption to sexual norms in mining towns and increases in sexually transmitted infections (STIs) and HIV.

In May this year it was widely reported that AMA Queensland President, Dr Richard Kidd, had cited 'bored and cashed-up' workers to blame for increasing rates of STIs in mining communities. Kidd is not a lone voice, with the Queensland Health Minister, Lawrence Springborg, blaming sex workers operating in mining regions for rising rates of HIV in his state. That clients, whether the mine (as opposed to sex) workers or men in the community are not mentioned in these stories is interesting, but perhaps another story. The Australian Sex Workers Association responded strongly to these claims, arguing that sex work in Australia is well regulated and that unprotected sex is more likely to occur in non-commercial encounters. Sex industry advocates have claimed that FIFO sex workers can be enlisted via appropriate public health interventions to be part of the solution for decreasing rates of STIs and HIV, rather than being part of the problem. Janelle Fawkes of the Scarlet Alliance observed that 'sex workers ... have positive effects on local communities where we bring safe sex education and skills'. This paper contextualises the debate by providing an overview of the sex industry in rural and regional areas where mining booms are currently underway.

Mining, change and social disorder

When we think of the sex industry it is usually in the context of urban life. Rural and isolated communities tend not to be associated with sex work. In contrast to the often fragmented and impersonal relations of urban life, rural places are projected as embodying relations of stability and social cohesion with strong family and marital relationships. In recent times it has been argued that rural and isolated communities may possess what has been described as 'social capital', which has been defined in terms of density of civic participation. Social capital

'is the networks, norms and trust which constitute the resources required for individuals, workplaces, groups, organizations and communities to strive for sustainable futures in a changing socio-economic environment'. Low social capital can be linked with poor health outcomes and crime (Falk and Harrison 1998). Social capital is likely to exist in communities that exhibit stable population patterns and widespread and intimate personal bonds between both individuals and the community. It has been argued that strong social organisation is to be located predominantly in rural communities with small population size and restricted intimate and interpersonal networks (Jobes *et al.* 2004). Mining boom towns appear to possess features that would limit the development of social capital.

For social scientists, mining boom towns appear to have many features in common with cities. Traditionally, the social sciences have been concerned with social problems present in the public spaces of large cities. If rural and isolated communities have plenty of social capital, cities have been viewed as lacking it. Modern conceptions of crime and social disorder, such as sex work, are linked with the rise of cities, population growth and processes of urbanisation. While the link between high residential mobility and social disorder need not necessarily be disputed, there can be little doubt that the effects of migration and workforce mobility to and from rural areas have often been ignored in research. This is of special concern when considering the great demographic movements that have created rural Australia during the past 200 years and now, according to some, threaten it.

In contrast to agricultural centres, mining 'boomtown' dynamics have been linked with various forms of social disorder, such as crime, alcohol abuse and psychological isolation (Jobes *et al.* 2004). Mining towns, largely because of their itinerant and fluctuating populations have been considered as having less social capital than settled agricultural communities. The large numbers of relatively young men involved in mining also provide a link to crime and social disorder. A consistent feature of crime statistics, be they associated with property or violent crime, is that crime is overwhelmingly perpetuated by males. Males also continue to be the bulk of clientele of sex workers. The sex workers themselves are by and large female, although male sex workers also work in mining regions in very small numbers. The large part of the clientele for male sex workers is also men, although numbers of women seeking the services of male sex workers has been reported as increasing. This paper will primarily focus on female sex workers and their clients.

Research has however found that rapid growth cannot universally be associated with social disruption (Hunter *et al.* 2002) and that links between mining and social problems are more likely to be about fears brought about by rapid social change than actual disruptions. Here social change is linked with increased anxiety regarding crime victimisation (Freudenburg and Jones 1991). The research on fear of crime in rural and isolated communities suggests the threat of crime may be located in terms of internal and external sources of communal threat. Typically, external crime threats involve an urban stranger, while internal threats have been associated with groups such as youth and/or racial minorities. For example, O'Connor and Gray (1989) researched Walcha, a relatively culturally homogenous community with strong agricultural roots, and

noted that fears about crime were generally associated with outsiders. This strong externalisation of crime can be partly explained by Walcha's geographic isolation and strong social integration of the local community. The authors argued concern about crime may actually be concern about unwanted social change – a threat to 'how the place used to be'. FIFO miners and sex workers have recently become rallying points for concern about rapid change in some Australian communities.

Sex work and social disorder

In Australia, sex work laws vary between jurisdictions. Legislation and the way in which it is enforced determines the way in which sex work is structured and organised in different locations. Regulation determines where sex workers work and how they do their work. Although the act of sex work has never been illegal in Australia, the states have developed complicated legal frameworks that bring all activities associated with sex work under the regulation of criminal authorities. In all jurisdictions, sex work-related offences have tended to include the categories of soliciting, brothel keeping, and living off the earnings of sex work. Legislation has had a gender and class bias, having targeted the most disadvantaged of women who work in the sex industry. That is, those most visible due to age, ethnicity, attractiveness, or socio-economic circumstance. Notably here, legislation has been concerned with restricting visible displays of sex work. A desire to limit the visibility of sex work remains today: a FIFO sex worker recently won a discrimination case after a Queensland motel attempted to prevent her from working from their premises (Latimer 2012).

The association of sex work with urban areas has been supported by research in the social sciences, which has focused largely on public manifestations of sex work in inner city areas: what has been described as 'street prostitution'. Street workers have been transformed in popular culture into the archetypal sex worker, coming to represent much of what is considered to be socially problematic with commercial sex and, by association, urban life. Large cities are more likely to accommodate public displays of sex work and press coverage almost solely concentrates on this aspect of the sex industry (Committee on Population 2003). It is unusual to find street workers outside of larger metropolitan centres. The main trade in mining towns has been brothel and escort work. Sex industry research provides an unbalanced and distorted picture of sex work and the bulk of academic writing equates sex work with street work. The irony is that street work is the least prevalent type of sex work. Research suggests street work is likely to comprise no more than 10–20% of all sex work-related activities (Egger and Harcourt 1991). Also not captured here is the online pay for sex talk that is increasingly occurring, where escorts 'perform' their work via chat rooms, for example.

Despite the strong association of sex work with urban spaces, the historical existence of sex work beyond the city limits is regularly acknowledged. For example, sex work is a crucial element of frontier mythology in Australia, the United States and Canada. Yet, in historical references, sex work forms part of a rural community that has ceased to exist through the progressive taming of the frontier. During the late 19th century, various expressions of vice in frontier communities became increasingly restricted as communities developed stable agricultural economies that drew more women and families to the frontiers (Harvie and Jobses 2001). This was not so much an attempt at abolition, but an attempt by authorities to minimise

the 'public nuisance' aspects of sex work and its supposed negative effects on feminine morals. In Australia, legislation forced sex work from the main streets of towns and restricted it to the margins of rural communities.

Rural sex work has been found to be a common phenomenon in all non-western nations. In these contexts, sex work is a service industry and usually relies on a disposable cash economy, resulting in most of the recorded forms of rural sex work being largely restricted to major transportation routes (Dandona *et al.* 2006). This indicates the local rural economy is unlikely, on its own, to sustain a prominent sex industry and must rely on outside from major urban centres to support the sex industry in rural or remote areas.

In Australia sex work was increasingly subjected to a process of geographic decentralisation during the 20th century, there being a movement away from inner city zones into suburbia, aided by technologies such as the telephone and automobile (McKewon 2003). Decentralisation has encouraged the growth of more privatised forms of sex work, such as escorts or women working without pimps from home, as increasing numbers of women declined to work in brothels to avoid arrest or police harassment (Sullivan 1997).

During the late 1980s and 1990s, advertisements for sexual services increasingly became more commonplace in rural Australian print media. Analysis of rural media reveals advertisements for private workers, now a common feature in many rural and regional newspapers, first appeared during the early 1990s, coinciding with the expanding market for mobile telephones (Scott *et al.* 2006). As with urban settings, decentralisation resulted in a marked increase in escort services, and a smaller increase in women working from private homes. One distinct aspect of rural escort services' expansion is motel work, whereby women advertise in rural media by providing a mobile phone contact. Mobiles overcame geographic restrictions of rural sex work, offering enhanced mobility and confidentiality. Increasingly sex workers were able to provide services at varied times and in multiple townships. No longer did rural sex workers need to reside in the town where they work. These changes are important when considering the phenomenon of FIFO sex workers associated with the recent mining boom.

Social disorder and FIFO

Tensions between non-resident workers and permanent workers in mining towns have been well-documented, there being a general understanding that FIFO operations provide less social and economic benefits to rural and regional areas than other forms of mining (Pick *et al.* 2008; Storey 2001). Resentment and conflict also occur because unskilled and semi-skilled miners, in such regions, often earn more money and occupy better and cheaper housing than professional workers (Petkova-Timmer *et al.* 2009). Contempt for FIFO is no better captured than by the inversion of FIFO by some locals to the slogan 'fit-in or f--k-off'.

The literature suggests that FIFO operations, especially the long hours of shiftwork, place physical strains on workers, which places them and others at risk to safety, both inside and outside of work (Lockie *et al.* 2009). FIFO has also been accused of dislocating workers from community and family life, thus causing social and economic isolation. Research has found that

miners and their partners suffered higher rates of psychological stress than other rural people due to social isolation from family, boredom, climate, sexual need, transient nature of community life and alcohol abuse (Lockie *et al.* 2009). One perception is that shift work and commuting patterns place excessive strain on family relationships. There is also the perception that mining is a patriarchal culture that encourages the expression of male power over women (Nancarrow *et al.* 2009). In contrast, research has also noted benefits of FIFO for workers, such as opportunities to earn high incomes, to have flexibility in where they live, and to use extended periods of leave to pursue recreational interest for additional income (Houghton 1993).

A recent study (Scott *et al.* 2012) of FIFO and fear of crime found that FIFO workers pose an externalised threat to traditional norms and values associated with rural and outback life. Traditional signs of Aboriginal social disorder in rural communities, such as alcohol and drug use, overcrowded dwellings, noise pollution, promiscuity, sexual assault and violence have been transferred by locals to FIFO populations. For example, some participants in the study associated littering, a sign of social disorder, with Aboriginal and FIFO cultures. FIFO culture was depicted as in conflict with traditional aspects of rural towns. FIFOs were thought to spend money in a reckless and wanton way, showing lack of control and foresight in purchases of luxury goods, while locals were presented as investing in the family home and community life, a well-spring of social capital. If offensive behaviour or crime had not increased, concern and fear had.

Like mine workers, FIFO sex workers also present as an outsider group. While violence has been readily associated with male FIFO populations, the archetypal form of female deviance is sex work. In this respect, it is not difficult to see why female sex workers have become emblematic of social problems associated with changes in the social and moral order.

FIFO and health

As noted at the outset of this paper, there has been speculation that the conditions associated with FIFO mineworkers in Australia might have the potential for an increase in STIs. The popular media has focused on concerns about increased STIs and HIV associated with FIFO mining operations. Stories such as 'AIDS worry from fly-in, fly-out miners' 'risky sex' from *The Australian* and 'Fears as sex workers cash in on the new mining boom' from the Queensland *Sunday Mail* highlight concerns about the potential for increased STI transmission. To date, however, the published literature on such changes to STI epidemiology is limited.

There have certainly been reports of increased rates of common STIs in Queensland and Western Australia, but increases have also been noted in the Northern Territory and Victoria (Australian Bureau of Statistics 2012). A review of syphilis epidemiology in Western Australia between 1991 and 2009 has shown an increase up until 2008. The majority of infections remain among indigenous people; however, the greatest increase has been among older non-indigenous men in WA metropolitan areas. Most report infection through same sex casual partners. Increases seen to 2008 have not been maintained and there was a subsequent decline during 2009 (Kwan *et al.* 2012).

Published data on FIFO and health has focussed specifically on mental health issues for workers and their families (Gent 2004;

Kaczmarek and Sibbel 2008; Taylor and Simmonds 2009; Torkington *et al.* 2011; McLean 2012). Other research has focused more on occupational risks such as fatigue and hydration (Carter and Muller 2007; Muller *et al.* 2008). While there is currently little published evidence of a link between FIFO mining and increased STIs/HIV, an association has been established between FIFO and social behaviours frequently associated with increased risky sexual behavior. Lozeva and Marinova note that 'mining contributes to increasing social and health problems with the decline of traditional mechanisms for social control, influx of transient male workforce and lack of formal employment opportunities for women. Increased alcohol consumption, domestic violence, sexually-transmitted diseases and sex work are some examples' (Joyce *et al.* 2012; Lozeva and Marinova). Research from other countries with large-scale migrant mining have examined a relationship between masculinity, risk behaviours and work settings involving separation from family and increased risk of STIs/HIV transmission (Campbell 1997; Kis 2010; Van Tuan 2010). A recent special edition of *The Australian Community Psychologist* focused on FIFO work has made no mention of STIs/HIV or of the potential for an increase in sex work in rural mining communities, focussing rather on family issues as a result of FIFO mine employment.

Increased risk of STI/HIV infection associated with FIFO is generally assumed to be due to two factors:

1. Increased sexual relationships between FIFO miners and local indigenous women
2. An increase in the number of sex workers in rural communities where FIFO operations are located and FIFO miners' use of international sex workers during their time off.

In general, STI prevalence is significantly higher among Indigenous populations than among non-indigenous in Australia. Some rural communities have been identified as having rates as high as 1 in 4 women infected with STIs (Panaretto *et al.* 2006), and prevalence of diseases such as syphilis tends to increase with remoteness (Kwan *et al.* 2012). There is currently no evidence to support the link between FIFO and high prevalence of STIs in local rural communities, nor has the link been made between increased STI prevalence among urban-based partners of FIFO mineworkers.

The above noted, there is no hard evidence to show that sex workers are any more responsible for the transmission of disease than any other group in the community. Indeed, there has not been a documented case of a sex worker in Australia receiving or transmitting HIV infection during sexual intercourse with a client. Sex workers living with HIV tend to have intravenous drug use as a possible mode of transmission. Research also argues that female sex workers are more likely to engage in 'unprotected sex' during non-commercial encounters with 'private partners', an observation that questions the association of commercial sex with disease (Donovan *et al.* 2012). Australian sex workers have the lowest rates of STI infection for any population in the community, and among sex work populations in the world. Given that fears about STI and HIV transmission from Australian sex workers appear to be unlikely, blame has also increasingly been focussed on international sex workers. For example, in an interview on ABC Radio National's *Bush Telegraph*, 31 May 2012, AMA Queensland President specifically linked sex tourism and foreign sex workers to the increases in STIs and HIV across Queensland. He argued that it is not 'our own Australian sex workers' who are responsible for

rising rates of STIs, but sex workers ‘flying on from other countries’, especially Asia. He also blamed ‘local people’ or what is referred to in the interview as ‘opportunistic sex workers’.

Improving sexual health outcomes

While sex workers may have lower rates of STIs and HIV, this does not help to explain current increasing rates of both in some parts of Australia. What we do know is that these increases often pre-date the current mining boom and are not restricted to regions with mining growth. There is much research, which has indicated that safe sex compliance among both gay and heterosexual populations began to decline in the past decade. The growth of the internet saw an explosion of subgroups seeking partners to intentionally engage in unsafe sex, a practice referred to as ‘bare-backing’. Increases in this practice have been attributed to: ‘AIDS optimism’ and ‘condom fatigue’. In this context, it is difficult to restrict increases in STIs and HIV in Australia to sex work populations. If nothing else, contracting a disease is bad for business for sex workers. While the internet can be used to promote sex workers, it is also increasingly being used by clients to elate the quality of sex services and identify sex workers deemed to offer a poor quality or dangerous service.

One of the few studies (Scott *et al.* 2008) on sex work in rural and remote areas in Australia examined the health of a small sample of rural female sex workers. It found that sex work in rural areas was similar in vital aspects to the escort and brothel work in urban contexts. A wide variety of services were offered in rural settings, including same-sex and fantasy services. Participants reported that bookings in rural areas were relatively longer than those they had encountered in urban settings. Rural clients were more likely to seek more intimate and less overtly sexual services, such as massage. Not unlike escorts and call girls in urban settings, there appears a high expectation that rural sex workers engage in emotional work, requiring them to counsel, befriend and support clients. This could partly explain the demand for sex workers among FIFO workers.

Confidentiality was a significant issue for sex workers in rural communities. It is notable here that in the context of an occupation such as sex work, maintaining a degree of anonymity is important in terms of safety and security. Close-knit communities may present as intimidating or dangerous places for sex workers. In particular, the more traditional moralities of such may operate to amplify the stigma associated with sex work. Because the client base was a lot smaller, it was more likely workers would come into contact with clients outside of their working lives. For these reasons, it seems surprising that sex workers in mining regions would be disrupting amenity, as has been reported. To work successfully, sex work needs to be discrete. Even visiting a local general practitioner could be an ordeal in smaller communities, with workers wanting to protect their anonymity and not disclose their association with sex work.

Notably, all workers used condoms with clients for intercourse and oral sex. High levels of condom usage are consistent with other research carried out with non-street working populations. At the same time, workers were aware of other rural workers who did not use condoms during intercourse. The reason for not using a condom with clients was primarily thought to be financial; although it was considered that some workers were

more susceptible to manipulation by clients or management, lacking assertive skills.

It was thought that sex workers in rural areas would benefit from access to the same services provided to sex workers in urban settings. Rural communities lacked specialist services. Sexual health clinics were limited to larger regional centres and access to general medical services could be restricted in rural settings because of high demand and limited hours of operation. For example, an absence of 24-h medical or chemist services in rural communities meant condoms could be difficult to access outside of regular business hours. Moreover, there was the problem of affordability of services in rural areas, services being more costly than in metropolitan centres, where services could often be accessed free of charge. These concerns should not be restricted to sex workers, but must be considered as impacting on the wider community.

Concerns about access to health care for sex workers are echoed for FIFO miners. Given the alarm over potential links between FIFO and STIs, there are concerns that FIFO lifestyles militate against men being able to access health care rapidly should they find themselves infected. Working time is focussed on production with little time for accessing health care services beyond emergencies and men are unlikely to spend their ‘down time’ attending medical appointments. Lack of health practitioners in regional areas and employees being afraid to log many sick days also might contribute to a lack of appropriate treatment in FIFO workers (McEwan 2011).

Some final observations

While space and geography have been historically important with regard to structuring and regulating the sex industry, research has ignored rural manifestations of sex work. There are unique issues facing sex industry workers in regional and rural areas, associated with isolation, occupational discrimination and confidentiality. As such it is important that we avoid stigmatising sex workers in such locations. Stigmatising sex workers may result in them being further isolated from resources and support services. These locations present a number of specific difficulties in that they are unlikely to provide the same levels of health service and care encountered in urban settings.

When trying to understand why Australian sex workers have relatively low rates of STI and HIV it is important to move away from the stereotypical imagery of sex workers as exploited and drug-addicted opportunists working the streets. For those entering into sex work on a full-time or long-term basis, contracting a STI or HIV is bad for business. Discretion is also important to success, especially in smaller regional communities. Sex workers in Australia also experience relatively good sexual health because of the legal status of the industry. States such as NSW and Victoria have decriminalised or legalised the sex industry and this has resulted in better health outcomes for sex workers and their clients who have not been forced underground, with sexual health regarded as an occupational health and safety issue. At present, concerns about the role of FIFO mining and associated FIFO sex work on STI and HIV rates appear to constitute a ‘moral panic’ more than an evidence-based concern. However, there does appear to be a space to develop a better understanding of the social and health dynamics of changing rural environments with the increase in FIFO operations.

References

- Australian Bureau of Statistics, 2012, Australian social trends. Available at <http://www.abs.gov.au/AUSSTATS/abs@.nsf/mf/4102.0> (accessed 3 September 2012).
- Campbell, C., 1997, Migrancy, masculine identities and AIDS: The psychosocial context of HIV transmission on the South African gold mines. *Social Science & Medicine* **45**(2), 273–281.
- Carter, A., and Muller, R., 2007, Hydration knowledge, behaviours and status of staff at the residential camp of a fly-in/fly-out minerals extraction and processing operation in tropical North-Eastern Australia. *Industrial Health* **45**(4), 579–589.
- Committee on Population, 2003, Mortality and morbidity: is city life good for your health, in M. R. Montgomery, R. Stren, B. Cohen, and H. Reed, eds, *Cities Transformed: Demographic Change and its Implications*: National Academic Press, Washington, 259–299.
- Dandona, R., Dandona, L., Kumar, G. A., Gutierrez, J. P., McPherson, S., Samuels, F., Bertozzi, S. M., and the ASCI FPP Study Team, 2006, Demography and sex work characteristics of female sex workers in India. *BMC International Health and Human Rights* **6**(5), 1–10.
- Donovan, B., Harcourt, C., Egger, S., Watchirs Smith, I., Schneider, K., Kaldor, J.M., Chen, M.Y., Fairley, C.K., Tabrizi, S., 2012, *The Sex Industry in New South Wales: A Report to the NSW Ministry of Health*: Kirby Institute, University of New South Wales, Sydney.
- Egger, S., and Harcourt, C., 1991, Prostitution in NSW: the impact of deregulation, in P. Eastaer and S. McKillop eds, *Women and the Law: Proceedings of a Conference*: held 24–26 September 1991 (AIC Conference Proceedings; no. 16), Australian Institute of Criminology, Canberra.
- Falk, I., and Harrison, L., 1998, Indicators of social capital: social capital as the product of local interactive learning processes. Centre for Research and Learning in Tasmania, UTAS, Launceston.
- Freudenburg, W., and Jones, R., 1991, Criminal behavior and rapid community growth: Examining the evidence. *Rural Sociology* **56**, 619–645.
- Gent, V., 2004, The impact of fly in/fly out work on well being and work-life satisfaction. *School of Psychology*. Honours.
- Harvie, R., and Jobes, P. C., 2001, Social control of vice in post-frontier Montana. *Journal of Rural Studies* **17**, 235–246.
- Houghton, D., 1993, Long-distance commuting: A new approach to mining in Australia. *The Geographical Journal* **159**(3), 281–290.
- Hunter, L., Krannish, R., and Smith, M., 2002, Rural migration, rapid growth and fear of crime. *Rural Sociology* **67**(1), 79–89.
- Jobes, P.C., Donnermeyer, J.F., Barclay, E.M., Weinand, H., 2004, A structural analysis of social disorganisation and crime in rural communities in Australia. *The Australia and New Zealand Journal of Criminology* **37**(1), 114–140.
- Joyce, S.J., Tomlin, S.M., Somerford, P.J., and Weeramanthri, T.S., 2012, Health behaviours and outcomes associated with fly-in fly-out and shift workers in Western Australia. *Internal Medicine Journal* (in press).
- Kaczmarek, E., and Sibbel, A., 2008, The psychosocial well-being of children from Australian military and fly-in/fly-out (FIFO) mining families. *Community, Work and Family* **11**(3), 297–312.
- Kis, D., 2010, ABC for AIDS prevention in Guinea: Migrant gold mining communities address their risk. *AIDS Care* **22**(4), 520–525.
- Kwan, K. S. H., Giele, C. M., Greville, H. S., Reeve, C. A., Lyttle, P. H., and Mak, D. B., 2012, Syphilis epidemiology and public health interventions in Western Australia from 1991 to 2009. *Sexual Health* **9**, 272–279.
- Latimer, C., 2012, FIFO sex workers win motel battle, *Australian Mining*, 8 August 2012.
- Lockie, S., Franettovich, M., Petkova-Timmer, V., Rolfe, J., and Ivanova, G., 2009, Coal mining and resource community cycle: A longitudinal assessment of the impacts of the Copabella coal mine. *Environmental Impact Assessment Review* **29**, 330–339.
- Lozeva, S., and Marinova D., Gender aspects of mining: Western Australian experience. Curtin University, Sustainability Policy Institute, Perth.
- McEwan, S., 2011, FIFOs: The forgotten minority group. *Medicus* **51**(7), 34–35.
- McKewon, E., 2003, The historical geography of prostitution in Perth, Western Australia. *Australian Geographer* **34**(3), 297–310.
- McLean, K., 2012, Mental health and well-being in resident mine workers: Out of the fly-in fly-out box. *The Australian Journal of Rural Health* **20**, 126–130.
- Muller, R., Carter, A., and Williamson, A., 2008, Epidemiological diagnosis of occupational fatigue in a fly-in fly-out operation of the mineral industry. *Annals of Occupational Hygiene* **52**(1), 63–72.
- Nancarrow, H., Lockie, S., and Sharma, S., 2009, Intimate partner abuse in a central Queensland mining region, in *Trends and Issues in Crime and Criminal Justice*. No.378. Australian Institute of Criminology, Canberra.
- O'Connor, M., and Gray, D., 1989, *Crime in a Rural Community*, The Federation Press, Sydney.
- Panaretto, K. S., Lee, H. M., Mitchell, M. R., Larkins, S. L., Manassis, V., Buettner, P. G., and Watson, D. 2006, Prevalence of sexually transmitted infections in pregnant urban Aboriginal and Torres Strait Islander women in northern Australia. *Australian and New Zealand Journal of Obstetrics and Gynaecology* **46**(3), 217–224.
- Petkova-Timmer, V., Lockie, S., Rolfe, J., and And Ivanova, G., 2009, Mining developments and social impacts on communities: Bowen Basin case studies. *Rural Society* **19**(3), 211–228.
- Pick, D., Dayaram, K., and Butler, B., 2008, Neo-liberalism, risk and regional development in Western Australia. *The International Journal of Sociology and Social Policy* **28**(11), 516–527.
- Scott, J., Hunter, J. T., Hunter, V. H., and Ragusa, A. T., 2006, Sex outside the city: Sex work in rural and regional NSW. *Rural Society* **16**(2), 151–168.
- Scott, J., Ragusa, A., Hunter, J., and Hunter, V., 2008, Sex work and health in a rural context. Results of a qualitative study undertaken in NSW. in *Re-imagining Sociology*; the Annual Conference of TASA, 12–15 December. The University of Melbourne, Melbourne.
- Scott, J., Carrington, K., and McIntosh, A., 2012, Established-outsider relations and fear of crime in mining towns. *Sociologia Ruralis* **52**(2), 147–169.
- Storey, K., 2001, Fly-in/fly-out and fly-over: Mining and regional development in Western Australia. *The Australian Geographer* **32**(2), 133–148.
- Sullivan, B., 1997, *The Politics of Sex: Prostitution and Pornography in Australia Since 1945*.
- Taylor, J., and Simmonds, J., 2009, Family stress and coping in the fly-in fly-out workforce. *The Australian Community Psychologist* **21**(2), 23–36.

- Torkington, A., Larkins, S., and Gupta, T. S., 2011, The psychosocial impacts of fly-in fly-out and drive-in drive-out mining on mining employees: A qualitative study. *The Australian Journal of Rural Health* **19**, 135–141.
- Van Tuan, T., 2010, Meanings of sex, concepts of risk and sexual practices among migrant coal miners in Quang Ninh, Vietnam. *Culture, Health & Sexuality* **12**(Suppl 1), S31–S40.



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