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# Are High Wage Jobs Hazardous to Your Health? The Myth That Attracting Higher Paying Extractive Industry Jobs Is a Desirable Community Economic Development Strategy

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## Current Economic Development Strategies

A well known objective of local economic development specialists is to increase the number of high paying jobs in a community (Power 1988). High wage jobs are often viewed as a cure for whatever is economically ailing a community (Power 1996). High wage jobs are believed to improve the well being of the higher paid employees and their families, and ergo, the community is better off. While often this premise is simply taken on faith, some economic development specialists ground this recommendation in economic base models (Power 1988). In the rural West these high paying jobs are often in forestry, construction and mining. U.S. Bureau of Labor Statistics (BLS) data confirm that mining and construction pay well, averaging $20 an hour.

Thus, mining company officials and even federal land management agencies such as the Bureau of Land Management (BLM) often tout the higher paying jobs associated with mining as a regional economic development benefit to the communities and counties. A recent BLM supplemental environmental impact statement noted that natural gas development would "contribute to rising wage levels" in three Wyoming counties because expected earnings per job in energy development exceeds current average earnings per job (BLM 2006).

Conversely, many economic development specialists often downplay service sector jobs relative to mining and forestry jobs. Few development specialists would trade low paying tourism jobs, which depend upon preservation of natural resources and amenities, for the associated "lost" mining or forestry jobs. Indeed, BLS data confirm that workers in the "Leisure and Hospitality" industry make just $10 an hour, half what workers make in mining and construction. Thus economic development specialists may view agro-tourism primarily as a way to supplement income from production agriculture or help diversify a local economy.

So are workers in mining and construction really twice as well off as workers in the leisure and hospitality industry? Given voluntary employment contracts, worker mobility, roughly equivalent educational requirements, and a reasonably competitive job market, economic principles would suggest no such disparity in worker well being or utility. In fact, given the labor market conditions described above, at the margin, the well being or utility of workers in all employment opportunities in a community, whether mining, hospitality or value-added forestry industries are probably equal, otherwise there would be an incentive for employees to switch.

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## Linking Wage Hedonic Analysis to Economic Development Strategies

A major factor in the wage disparity is that the risk of fatality in mining is more than ten times that in the hospitality and leisure industry. In particular, BLS data for 1992-1995 (Viscusi and Aldy 2003) and 2005 (BLS 2006) documents 25 deaths per 100,000 workers in mining. By comparison, deaths per 100,000 workers in the leisure and hospitality industry during 2005 was 1.8 (BLS 2006). The recent acceleration of oil and gas mining has brought increasing attention to deaths, as highlighted in a recent article entitled "Disposable Workers of the Oil and Gas Fields" (Ring 2007).

Moreover, the risk of nonfatal occupational injury is higher in extractive industries. In Montana, for example, a miner is more than 2.5 times more likely to suffer a nonfatal injury as a worker in the leisure and hospitality industry (Catlett 2007).

Many economic development specialists are apparently not aware of the economic principles underlying the "hedonic wage methodology" which has extensively analyzed the effect of workplace risk on wages. This methodology has demonstrated that in order to recruit and retain workers into high risk jobs, employers must pay these workers more. The wage hedonic method regresses the wage rate against risk of death, risk of injury as well as several control variables such as human capital (e.g., education levels), and worker characteristics (e.g., age). In addition other non-risk characteristics of the job (e.g., supervisory duties, flex time, etc.) are included as explanatory control variables as well. The regression slope coefficients on risk of death and risk of injury provide the "implicit wage compensation" or compensating wage differential for each of these risks. The wage differential is largely compensation for the added risk of death (Viscusi and Aldy 2003; Taylor 2003).

These wage differentials amounted to over $140 billion in 1990, nearly 5 percent of total wages paid (Viscusi 2007). In high wage industries the percentage of wage premium is likely much higher. It is from comparing how much additional wages must be paid to compensate for risk that the value of a statistical life is calculated (Viscusi and Aldy 2003). This value is routinely used by federal agencies to quantify the benefits of reducing not only workplace risk, but also other safety regulations.

Even some economists in their explanations of wage disparities between the tourism sector versus extractive industry have overlooked the job risk element and the explicit link with hedonic wage theory. For example, Power (1996) provides several reasons why tourism jobs report lower wages, including the frequent understatement of tip income, more flexible work hours, etc. While these are certainly part of the explanation for the wage disparity, so are differences in risk of death.

The hedonic wage theory also provides insights into other aspects of this disparity. As noted by Power (1996) flexible work hours enjoyed by many waiters and waitresses, and enjoyable work (e.g., fishing and rafting guides, ski patrollers, etc.) or work environment (e.g., ski lift operators and outdoor science school instructors) provide sufficiently high utility so employers do not need to pay a wage premium to attract job seekers. Risk of death and injury is also quite low in the leisure industry on a par with retail trade and information services (BLS 2006 and Catlett 2007).

Higher wages in mining could also be compensating workers for another type of occupational risk inherent in extractive industries, namely the risk of layoffs during bust periods. In that sense, a related hedonic rationale for high extractive industry wages could be that such workers face recurring jobless periods due to these industries' cyclical nature (e.g., Neumann and Topel

1991). In such a scenario, companies pay high wages to offset the "risk" of unemployment spells, justifying this wage premium with the assurance of longer-term local pools of labor that can be tapped for high-profit boom periods. Such a wage premium translates into high-income flows for the local economy as well.

Yet this "unemployment risk" rationale could not explain wage or jobless patterns in Appalachia, one of the most extractive-dependent and highest unemployment areas of the nation (Weiler 2000; Weiler 2001). Analyses of detailed local data in West Virginia found that unemployment risk was not systematically related to either wage patterns or jobless queues, suggesting that other factors - - such as occupational hazards - - were responsible for the noted wage premiums.

While some tourism jobs can also be cyclical, they are more **predictably** cyclical. That is, workers at ski areas or hotels know ahead of time what their periods of employment will be as compared to the unpredictability faced by miners. In fact, the seasonality of the employment is to some workers a positive attribute of the job, allowing them to pursue their own leisure activities during the "off season". For others, the closing of winter recreation season brings new seasonal jobs (e.g., river guides, mountain bike rentals) or allows for following other recreation visitors to their new recreation locations (e.g., summer park ranger).

## Community Economic Development Strategies Revisited

Given hedonic wage theory, it would seem appropriate for economic development specialists and community leaders that employ them (mayors, city councils) to rethink the single minded pursuit of high wage jobs. While high wage jobs, holding everything else constant, are preferred to low wage jobs, hedonic wage models suggest that everything else will not be constant. Certainly high wage jobs that represent returns to skills and education (e.g., medical and health care field, professional and business services) would be attractive. Maintaining an attractive natural environmental and high environmental quality has been found to attract retirees (Power 1996), and therefore medical and health professionals that tend to them.

But frequently, public lands planning in the West involves trade-offs of opening new areas for mining versus preserving them for recreation, wildlife, and open-space. The increasing density of oil and gas drill rigs per unit of land leads to energy extraction becoming the sole "multiple use", as other uses and users (e.g., hikers, mountain bikers, hunters, wildlife viewers) are displaced. This displacement will likely result in direct reductions in tourism jobs and longer term reductions in other service industry jobs, as potential migrants choose locations where natural amenities have been preserved. As noted above, conventional economic development specialists might view the gain of $20 an hour mining jobs at the expense of $10 an hour tourism jobs as a net gain for community well being. However, hedonic wage methodology would suggest there has likely been no change in overall well being, as each wage is an "equilibrium wage", the amount just necessary to induce a worker into the respective occupations. For example, even if wage premiums were offered for the heightened risk of unemployment in cyclical extractive industries, firms would only pay enough of a premium to just offset the latter risk to workers to make potential workers equally well-off and willing to work at the mining job as at the local bicycle repair store. Such a situation would again leave better-paid extractive workers with the same level of well-being as lower-paid service workers, alongside the additional private and public capital planning problems inherent in local economies beset by boom/bust cycles. These high-variance economies tend to discourage longer-term investment,

entrenching their narrow dependence on extractive industries and perpetuating a shallow economy based on transient labor, capital, and extractive viability (Graves, Weiler, and Bonner).

Economic development specialists and community officials concerned about the well being of workers in the community and the overall community's well being should not focus on simplistic indicators like average wages. Instead, they might give more attention to other attributes of the jobs, such as whether the worker and his/her family will reside in the community, and spend money in the community, or simply send the higher wages out of the community to their home base (Power 1996).

Of course, a town's retailers may be more concerned about their revenues rather than citizen's utility, and initially think they would prefer having a town filled with higher paid workers. However, even in this case there are a couple of drawbacks to high wage jobs. First, in isolated rural labor markets, high paying mining jobs might compete away some less risk averse workers from their current retail employment. Retailers would then have to raise wages to retain existing workers or to draw other people into the work force. These higher wages then reduce firms' profits. Second, as noted by Power (1996) not all these high wage workers reside in the community or spend their money in the community. For example, BLM asserts that 60 percent of Wyoming gas field workers are not local residents (BLM 2006). Further, as has been repeatedly reported, significant amounts of the money received in these high wage mining jobs goes into illegal drugs such as methamphetamine, at a cost of $200-$300 a day (Farrell 2005; Fuller 2007). An unofficial motto among oil and gas workers appears to be "You're wired or you're fired" (Farrell 2005). Not only does this drug money not go into legal retail outlets, but the associated assaults and crime increase a town's law enforcement costs, and drain local government budgets for expensive jail expansion, drug treatment programs, etc. County planners and federal agencies need to consider the external pecuniary costs to the community of high risk jobs. Fatal and nonfatal injuries also impact the contributions workers are able to make to their families and communities (Fuller 2007) and some of the risks in extractive industries are passed on to other sectors, especially through uninsured workers compensation funds and private medical insurance.

In conclusion, community economic development strategies need to focus on the economic well being of its citizens and residents, not solely on blind pursuit of higher wage jobs. Giving up tourism jobs for mining jobs is unlikely to improve the well being or utility of the workers. The data confirm that higher wages, if they are in mining, can be hazardous to worker health.

## References

Bureau of Labor Statistics. 2006. National Census of Fatal Occupational Injuries in 2005. USDL-06-1364. U.S. Department of Labor, Washington DC.

Bureau of Labor Statistics. 2006. Workplace Injuries and Illnesses in 2005, USDL 06-1816, U.S. Department of Labor, Washington, DC.

Bureau of Labor Statistics. 2007. B-11, Average Hourly and Weekly Earnings of Production and Nonsupervisory Workers on Private Nonfarm Payrolls by Major Industry Sector and Selected Industry Detail. ftp.bls.gov/pub/suppl/empsit.ceseeb11.txt. Accessed April 20, 2007.

Bureau of Land Management. 2006. Draft Supplemental Environmental Impact Statement Pinedale Anticline Oil and Gas Exploration and Development Project Sublette County, Wyoming, Volume 1 of 2, December, Pinedale, WY.

Catlett, C. 2007. *The Dollars and Sense of Safety*. Main Street Montana. Spring, MT.

Farrell, Patrick. 2005. Methamphetamine Fuels the West's oil and gas boom. *High Country News*, Paonia, Colorado. October 3.

Fuller, A. 2007. Boomtown Blues: How Natural Gas Changed the Way of Life in Sublette County. *The New Yorker*, February 7 38:44.

Graves, P., S. Weiler, and E. Bonner. (No Date). The Economics of Ghost Towns: Explaining the Booms and Busts of Past and Present Rural Communities. Conditionally accepted for publication in *Journal of Regional Analysis and Policy*.

Neumann, G.R. and R.H. Topel. 1991. Employment Risk, Diversification, and Unemployment. *Quarterly Journal of Economics* 106:4.

Power, T. 1988. *The Economic Pursuit of Quality*. M.E. Sharpe Inc, Armonk, NY.

Power, T. 1996. *Lost Landscapes and Failed Economies*. Island Press, Washington DC.

Ring, R. 2007. Disposable Workers of the Oil and Gas Fields. *High Country News* 39(6): 7-21.

Taylor, L. 2003. *The Hedonic Method. In A Primer on Nonmarket Valuation*. P. Champ, K. Boyle and T. Brown, Eds. Kluwer Academic Publishers, Boston, MA.

Viscusi, K. 2007. Job Safety. The Concise Encyclopedia of Economics. Available at http://www.econlib.org/Library/Enc/JobSaftey. htm.

Viscusi, K. and J. Aldy. 2003. The Value of a Statistical Life: A Critical Review of Market Estimates throughout the World. *The Journal of Risk and Uncertainty* 27(1): 5-76.

Weiler, S. 2000. Industrial Structure and Unemployment in Regional Labor Markets. *Industrial Relations* 39(2): 336-359.

Weiler, S. 2001. Unemployment in Regional Labor Markets: Using Structural Theories to Understand Local Jobless Rates in West Virginia. *Industrial and Labor Relations Review* 54(3): 573-592.