

A Study of the Disparity in Wages and
Benefits Between Men and Women in Wyoming

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EXECUTIVE SUMMARY

This research was conducted during late 2002 and early 2003, in response to the Legislature's request to study wage disparity between men and women in Wyoming.

Women earn less on average than men: globally, nationally, regionally, and in Wyoming. Wyoming's gap in wages between the genders is the highest in the region, in part because Wyoming men make more than the regional average and Wyoming women make less. It is, of course, illegal to pay men and women different wages for doing the same job under the same circumstances. Benefits for women working full time in Wyoming were found to be the same as for men working full time, but more women work part time than men, and the level of benefits is less for part time work than for full time.

National and international research has identified reasons why women typically earn less than men. The reasons are:

- Different occupations/jobs held by men and women
- Time spent at work
- Education differences
- Employment in different industries
- Other factors including children and discrimination

The impact on Wyoming of the disparity in wages was found to be large and to include: the larger than average need for women to hold multiple jobs, higher childcare costs, lost income for families, higher job turnover, increased human capital out-migration, etc. It is estimated that the costs to Wyoming's economy exceed benefits by \$65 million annually.

Census data from the 2000 Federal census was used in Study I to identify the specific variables in Wyoming that most affect the disparity in wages. The industries in which women work, lower participation in full time work, education, and experience (age) are the variables most associated statistically with the increased wage gap in Wyoming.

Study II – a telephone survey of a random sample of Wyoming households provides examples and first hand information from residents on the perceived reasons and impacts associated with wage disparity. The results track closely with what the statistical analysis of the census data found.

Possible solutions (tried elsewhere) are presented along with examples of “best practice” private firms that have implemented some of the solutions. The solutions also include possible government and individual approaches along with the private industry suggestions.

Further, a list of (unevaluated) ideas for dealing with wage disparity in Wyoming is presented, covering a wide spectrum. Three of these ideas, however, are subjected to cost/benefit analysis and their impact on Wyoming's wage disparity is calculated. The three are:

- What would happen to wage disparity if more women went into nontraditional (for women) occupations in Wyoming?
- What would happen to wage disparity if the wages in Wyoming were brought to the national average for two traditionally female jobs: teachers and nurses?
- What would happen to wage disparity if more women worked full time?

These three were selected because they provide benchmarks against which some of the other ideas could be compared. The conclusion attempts to put wage disparity in Wyoming in the context of what was discovered in the research.

A STUDY OF THE DISPARITY IN WAGES AND BENEFITS BETWEEN MEN AND WOMEN IN WYOMING

“I’ve been roaming all over Wyoming,
there’s plenty of work,
but there ain’t too much pay.”

Chris Ledoux

INTRODUCTION

The quote above was associated with Wyoming ranch work in the late 19th and early 20th centuries. But it is still true today for women in Wyoming, when their pay is compared to the pay of Wyoming men. It has been reported that women earn 66.8% of what men earn on average in the state. Numbers for comparison are about 77% nationally on average and 89.3% at the highest in Washington D.C. (Harris, 2001)

In the spring of 2002 the Wyoming State Legislature commissioned this study to answer the following questions for the state:

- Where do disparities exist?
- What are the major causes of wage and benefit disparities?
- What is the impact of wage and benefit disparities on Wyoming’s economy?
- What are possible solutions to reduce or eliminate wage and benefit disparities?
- What are the benefits and costs of eliminating or reducing wage and benefit disparities?

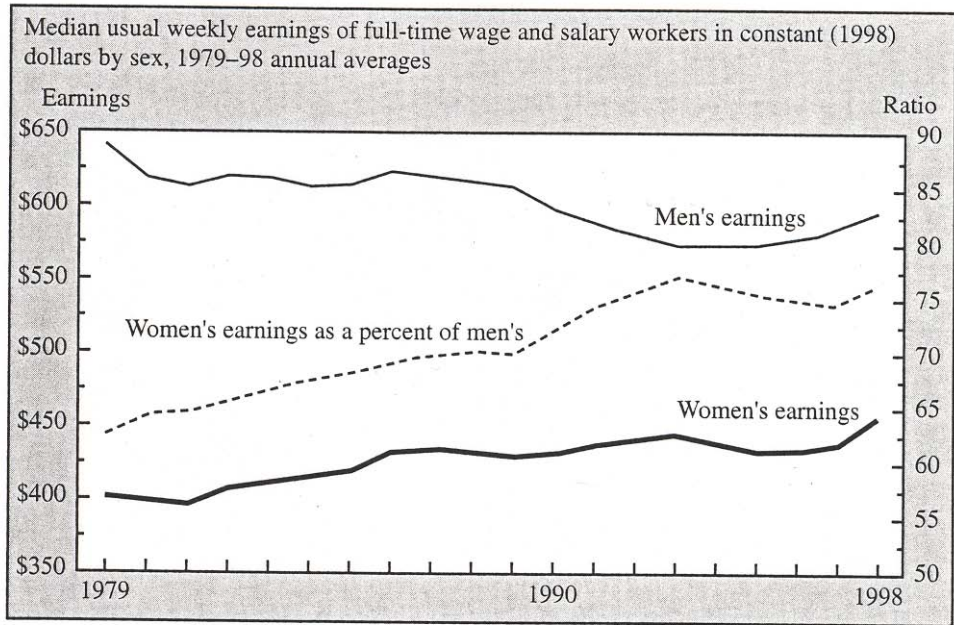
Definitions

The legislature asked that wage disparity issues be studied. For this research, “wage disparity” will mean an inequality or difference in the average wage earned by women and the average wage earned by men. “Wage gap or wage differential” are similar terms identifying a statistical indicator expressed as a percentage (e.g. in 2000 women in Wyoming earned 66.8% of what men earned.). A third term, “illegal wage discrimination,” will be used to identify situations in which a women receives less money than a man for the same job with none of the allowable legal distinctions present. The Federal Equal Pay Act makes it illegal to pay men and women working for the same employer different wages for substantially equal work.

The National Wage Disparity

Certainly wage disparity is not unique to Wyoming, it is simply greater here than in other states. Figure 1 shows Department of Labor data for the nation, indicating how the gap between men and women has progressed over time. After hovering around 60% in the mid-1950’s the difference is currently in the middle to upper 70%’s.

Figure 1
Men and Women's Earnings Over Time (USA)



Research on causes of wage disparity has proceeded for two decades or more. Some reasons for the wage differences have been clearly identified by that research: education, experience, occupation, full time/part time work, etc. Statistically adjusting for those differences has been used to explain parts of the wage gap. Exactly how much, depends on who has done the study. Some estimates find women make as much as 95 to 98 cents for each dollar earned by men when all adjustments are considered (Furchtgott-Roth and Stolba 1999). However, other researchers conclude that a larger portion of the gap is unexplained and likely has some elements of discrimination associated with it. Blau and Kahn estimate that as much as 12 percentage points of the wage gap could be the result of discrimination. Regardless of adjustments, women make less than men nationally (Blau and Kahn, 1997).

The national wage disparity narrowed further in 2002 to 77.5%, but the reduction occurred because women's average weekly wage went up 5% while men's only went up 1.3%. Women work disproportionately in government and health care, two of the few industries that have recently done well. Men dominate in economically hard hit industries like manufacturing and technology. Further, economists report more women are joining unions which may be helping some to close the gap (The Denver Post, 2003).

Disparity Studies in Wyoming

Studies on the wage disparity issue in Wyoming have been limited. In 1985 a Preliminary Pay Equity Study was done on state employees. It concluded that a 71.5% wage gap existed and that was precisely the same as the gap for state workers nationally. In the May 1993 issue of Wyoming Labor Force Trends, Gregg Detweiler described the upward trend in the number of women in the workforce in Wyoming, (Detweiler 1993) and predicted that women's pay would increasingly match that of men in the state. However, a second study showed that

“women’s jobs” were growing, but that more education was necessary for women to move into “men’s jobs” in great numbers. (Johnston, 1993).

1996 research concluded that the data used by the Department of Employment could not differentiate between full and part time employees – seriously limiting its use in making conclusions about the gender pay gap (Detweiler and Judd, 1996). A final study looked at the pay increases received by Wyoming men and women and concluded that women get proportionately higher pay raises than men receive (O’Loughlin 2001).

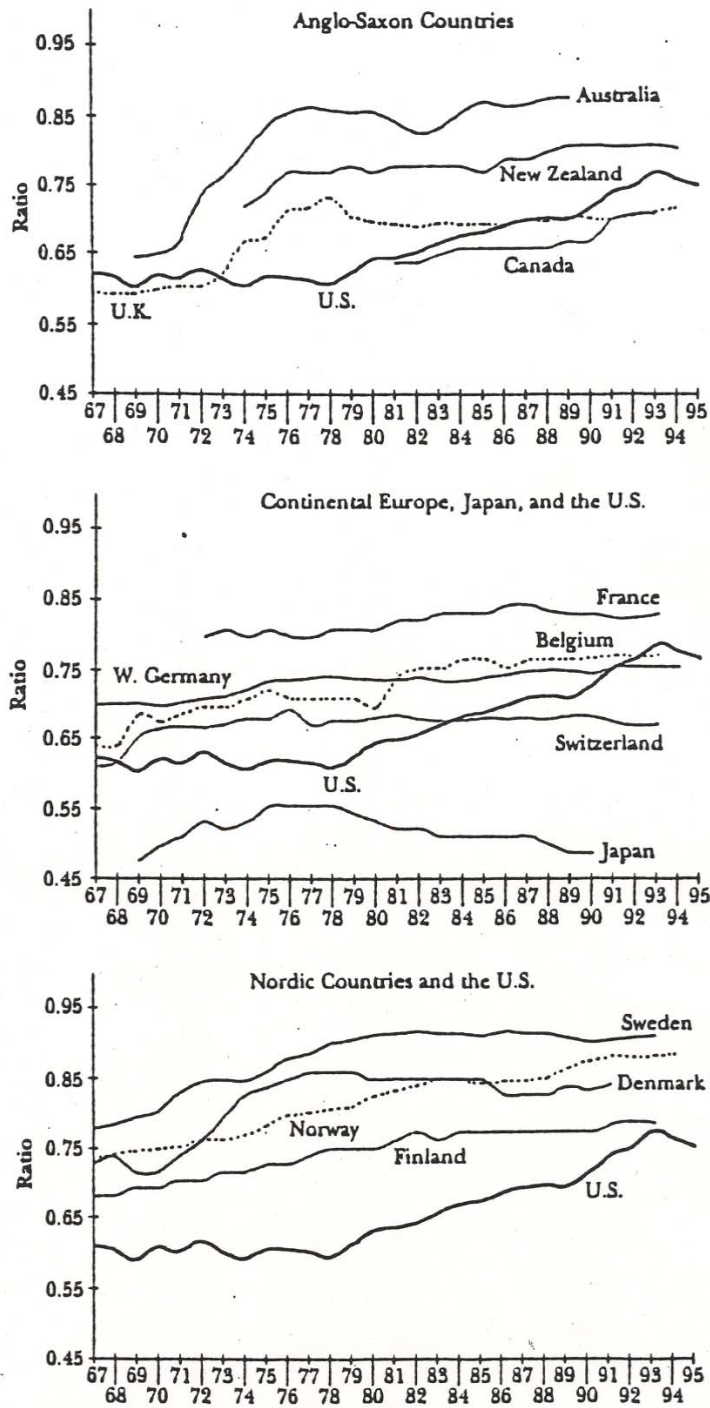
Competent, well meaning people can view the results of the national and state studies and come to very different conclusions. Wage issues tend to be difficult political issues (consider the current minimum wage, and “living” wage debates), and therefore are often approached with great passion on both sides.

Certainly not every occupation experiences wage disparity. A salary survey done by the Special Libraries Association shows that the gap in pay between male and female information professionals nationally has closed to the point the median salary is now higher for women. (American Libraries 1999)

The Pay Gap Globally

The wage gap between the sexes is fairly universal. However, in many countries it is smaller than in the United States. Figure 2 shows changes in the wage gap internationally. One analysis concludes that the decentralized nature of decision making on wages in the U.S., is different than in other countries where rates are negotiated by federations of employers and unions, and that might be the reason for the wage gap difference. Centralized wage decision making in essence narrows the pay gap by political fiat. (Blan and Kahn, 1999) (Heide, 1999)

Figure 2
Female-to-Male Hourly Earning Ratios in Selected Industrialized Countries, Non-Agricultural Workers, 1967-1995.



(Source: Waldfogel, 1998, p 139)

Wage Disparity in Surrounding States

States surrounding Wyoming show different wage disparity numbers. For example Figure 3 shows surrounding states wage gaps using 1999 figures.

Figure 3
Comparing Wage Disparity in the Region.

	Wage Gap	Female Weekly Wage	Male Weekly Wage
Montana	69.2%	\$368	\$532
North Dakota	70.9%	\$377	\$532
South Dakota	72.2%	\$392	\$543
Nebraska	72.2%	\$415	\$575
Colorado	76.6%	\$520	\$679
Utah	70.5%	\$432	\$613
Idaho	71.7%	\$404	\$563
Wyoming	62.6%	\$390	\$623

(Source: Henderson and Saulcy, 2001)

Wyoming and the states contiguous to Wyoming have a lower average male/female wage ratio (70.7%) than the national average. In all the surrounding states men made less money than Wyoming men, with the exception of Colorado. With Wyoming female wages lower than average, and male wages considerably higher than average, Wyoming's wage gap is the largest in the region. Obviously if Wyoming's male wages were lower, or female wages higher the gap would be less.

In Wyoming during the time represented in Figure 3 the 5 industries with the largest payroll were 1) government 2) services 3) mining 4) retail 5) transportation, communication and public utilities (TCPU). The higher paying industries (mining and TCPU have traditionally employed a higher proportion of males than females (Henderson and Saulcy, 2001). Appendix 1 shows Wyoming's largest employers by name.

A phone and web site survey of surrounding state legislative service offices done as part of this research, indicated no recent or on-going studies of the wage gap in the other contiguous states. Further, no innovative laws or human resource policies regarding equal pay or gender equity issues were found in the surrounding states as a result of that survey.

Disparity and the Law

The Equal Pay Act passed by Congress in 1963 was the first statute passed to eliminate discrimination in the job market. It prohibits wage differences based on gender when employees perform equal work on jobs in the same establishment requiring equal skill, effort, responsibility, and performed under similar working conditions. Gender pay differences among equal jobs can be justified when the differences are based on:

1. a seniority system
2. a merit system
3. measurement of quantity or quality of production

4. any factor other than sex

This last exception allows for the payment of a lower hourly wage to female part-time workers who are performing the same jobs as male full-time workers. Under the EPA, employers were not allowed to lower the wages of men to balance the wage gap. Women who feel they have been wronged under the EPA can file a complaint with the EEOC and/or sue their employer.

The US federal government has further addressed pay inequities since then with the establishment of the Equal Employment Opportunity Commission (EEOC), a federal administrative agency with oversight and enforcement obligations over this and other federal employment acts.

The Equal Pay Act resulted in eliminating some of the most blatant examples of sex discrimination. It also forced the evaluation of jobs in establishments where job titles dominated by men were paid more than job titles dominated by women but the jobs were virtually identical. One example is in hospitals where orderlies (typically men) and nurse's aides (typically women) performed the same job duties but orderlies were typically paid more.

The Civil Rights Act passed in 1964 similarly prohibits discriminatory treatment based on sex. The Office of Federal Contract Compliance Programs provides a guide to analyzing employer compensation practices that allows analysis of male/female compensation and a determination if there is illegal disparity in the pay system. That guide is available on the agency's website. (OFCCP)

<http://www.dol.gov/dol/esa/public/regs/compliance/ofccp/compdata.htm>

The Civil Rights Act includes Title VII, the provision that prohibits wage discrimination on the basis of race, color, sex, religion or national origin. Title VII has a larger scope than the Equal Pay Act and allows for legal causes of action when jobs are not identical. Under Title VII, an employer may not discriminate in hiring, promotion, and the terms and conditions of work based on sex. In 1986, the Supreme Court ruled that sexual harassment was also covered and forbidden by Title VII (*Meritor Savings Bank v. Vinson*, 1986). In 1991, Congress expanded Title VII to allow successful plaintiffs in suits against discriminatory employers to collect punitive damages, and generally allow for trial by jury.

Equal Pay/Comparable Worth, and the “Market Argument”

The Equal Pay Act legally defines pay discrimination based on the standard of equal pay for equal work. But many believe this definition does not go far enough. They believe that pay discrimination can exist even when men and women hold entirely different jobs. Should it be illegal to pay firemen (mostly male) and librarians (mostly female) different wages if the jobs are of “comparable worth” to the employer? In this case the definition of discrimination hinges on equal pay for comparable worth. Several states have passed laws that require a comparable worth standard for government employees. However, Ontario, Canada is the only jurisdiction that has extended such legislation to the private sector. The current term for this approach to dealing with wage disparity is “Pay Equity” rather than “Comparable Worth”. Many such reforms were made in the 1980's. Minnesota, Michigan and Washington are states that made notable efforts in this regard.

The biggest criticisms of comparable worth efforts center around two issues:

1. How do you determine what is equal or comparable?
2. How can an approach that ignores the market price for labor be successful?

Supporters of the comparable worth idea believe the disparity in wage rates between men and women are a reflection of discrimination in society, and that because some jobs are typed as “woman’s work” they are devalued by employees. On the other hand opponents of comparable worth believe wages are primarily determined by supply and demand and choices made by women and employers. According to this argument women choose jobs that have lower wages but that permit entering and leaving the work force easily, require less training, and are not onerous or dangerous. (Milkovich and Newman 3rd, 1990).

Benefits and Wages in Wyoming

The term “total compensation” includes both pay and benefits. Nationally, 28% of total compensation costs are benefits. In Wyoming 78.5% of total compensation is wages and 21.5% is benefits (COWAN, 2003). Employers offer some benefits to attract and retain employees, and some benefits because they are mandated by state or federal governments. Nationally about 24% of total benefits costs are legally required benefits (Milkovich and Newman 7th, 2002).

Studies of benefits in Wyoming have been done recently by the Research and Planning unit of the Department of Employment. The findings were that full time employees and government employees were more likely to have benefits than other groups of employees --- especially part time employees. When considering only full time employees, the difference in the availability of benefits between men and women in Wyoming is negligible. Among part-time employees females have greater exposure to benefits than males across all benefit types (Harris, 2001).

Figure 4 shows benefits by gender in Wyoming firms.

Figure 4
Full and Part Time Resident Attached Employees by Gender and Benefit Type in Sampled Wyoming Firms, 2000

Table 4: Full- and Part-Time Resident Attached Employees by Gender and Benefit Type in Sampled Wyoming Firms, 2000				
	Full-Time			Total
	Female	Male	Percentage Point Difference	
Total Employees	12,616	16,324	0.0	28,940
Column %	100.0%	100.0%		100.0%
Row %	43.6%	56.4%		100.0%
PAID LEAVE				
Paid Holidays	11,092	13,597		24,689
Column %	87.9%	83.3%	-4.6	85.3%
Sick Leave	9,526	9,627		19,153
Column %	75.5%	59.0%	-16.5	66.2%
Paid Vacation	11,538	14,885		26,423
Column %	91.5%	91.2%	-0.3	91.3%
Maternity Leave	2,138	2,795		4,933
Column %	16.9%	17.1%	0.2	17.0%
Paternity Leave	1,750	1,499		3,249
Column %	13.9%	9.2%	-4.7	11.2%
INSURANCE				
Health Insurance	11,699	15,187		26,886
Column %	92.7%	93.0%	0.3	92.9%
Dependent Health Insurance	11,211	14,549		25,760
Column %	88.9%	89.1%	0.3	89.0%
Dental Plan	10,910	13,386		24,296
Column %	86.5%	82.0%	-4.5	84.0%
Vision Plan	4,646	6,044		10,690
Column %	36.8%	37.0%	0.2	36.9%
Life Insurance	10,611	13,816		24,427
Column %	84.1%	84.6%	0.5	84.4%
Disability Insurance	6,673	9,183		15,856
Column %	52.9%	56.3%	3.4	54.8%
RETIREMENT				
Retirement Plan	10,867	13,918		24,785
Column %	86.1%	85.3%	0.9	85.6%
	Part-Time			
	Female	Male	Percentage	Total
Total Employees	3,610	2,131	0.0	5,741
Column %	100.0%	100.0%		100.0%
Row %	62.9%	37.1%		100.0%
PAID LEAVE				
Paid Holidays	943	477		1,420
Column %	26.1%	22.4%	-3.7	24.7%
Sick Leave	679	206		885
Column %	18.8%	9.7%	-9.1	15.4%
Paid Vacation	1,231	667		1,898
Column %	34.1%	31.3%	-2.8	33.1%
Maternity Leave	192	71		263
Column %	5.3%	3.3%	-2.0	4.6%
Paternity Leave	172	69		241
Column %	4.8%	3.2%	-1.5	4.2%
INSURANCE				
Health Insurance	1,022	449		1,471
Column %	28.3%	21.1%	-7.2	25.6%
Dependent Health Insurance	971	450		1,421
Column %	26.9%	21.1%	-5.8	24.8%
Dental Plan	779	349		1,128
Column %	21.6%	16.4%	-5.2	19.6%
Vision Plan	443	136		579
Column %	12.3%	6.4%	-5.9	10.1%
Life Insurance	999	362		1,361
Column %	27.7%	17.0%	-10.7	23.7%
Disability Insurance	481	198		679
Column %	13.3%	9.3%	-4.0	11.8%
RETIREMENT				
Retirement Plan	1,466	765		2,231
Column %	40.6%	35.9%	-4.7	38.9%
TOTAL EMPLOYEES	16,226	18,455		34,681
Percent Full-Time	77.8%	88.5%		83.4%
Percent Part-Time	22.2%	11.5%		16.6%

Source: Weighted Merged Benefits Data.

(Source: Wyoming Labor Force Trends, Feb. 2003, p.6)

Although there are fewer females working full-time than males in Wyoming, this survey did not support the assertion that there is a gender bias in the opportunity for benefits in Wyoming. Increasing benefit coverage for women in Wyoming would necessarily involve more women moving from part-time to full time work.

MAJOR CAUSES OF WAGE DISPARITY

What is known about why the wage gap exists nationally? The following are areas that have been researched extensively.

- ❑ Occupations / jobs held by women and men
- ❑ Time spent at work
- ❑ Education differences
- ❑ Industry and firms
- ❑ Other factors

The Council of Economic Advisors found that skill and experience differences accounted for 28% of the wage disparity in the United States. 32% is accounted for by differences between men and women in industry, occupation, and union membership, and 40% is “other factors” including an unknown amount of discrimination. (Council of Economic Advisors, 1998). A similar study of the wage gap in Canada found that industry explained (rounded) 20%, occupation 14%, part time employment 11%, experience 10%, and remaining factors 7%. Those total 61% and leave 39% unexplained. (Drolet, 2002). Clearly similar research methods have provided similar results in both countries. How each of those commonly researched factors contributes to the pay gap will be considered next.

Occupation

Men and women often hold different jobs. In the 1970’s 53% of women who were employed were in “administrative support” occupations which includes clerical jobs. Female professionals were most frequently employed in nursing, teaching, dietician or librarian jobs. Few women were found in the blue collar skilled crafts, or as engineers or scientists. Those “women’s jobs” were collectively referred to as the “Pink Collar Ghetto” because they paid less as a group than “men’s occupations”. Today, female numbers in administrative support are down to 41% and their numbers in management jobs are equal to men. In 1960 half of the female college graduates became teachers, while today it is only 10%. (Milkovich and Newman 7th, 2002). Occupational segregation is slowly changing.

The “crowding” theory suggests that when women (or anyone else) crowd into a limited number of occupations the result is that the supply of people in those jobs is higher than demand and wages are held down (Solberg and Laughlin 1995). It has been suggested that a significant part of the wage gap can be attributed to this segregation or “crowding” in occupations such as teaching and nursing. (Figart and Lapidus 1996).

Time Spent at Work

Amount of experience, seniority, full time versus part-time, continuous time in the work force, and overtime are all measures of how much time one spends in the workforce. Nationally, on average, male full-time workers put in 6 percent more hours per week than women full time workers. By the time men and women have been out of school for 6 years, women have worked on average 30% less than men. After 16 years away from school women average half as much work experience as men. (Milkovich and Newman 7th, 2002).

In Wyoming, women work more at part time jobs than men, as they do nationwide. In one study 22% of females in Wyoming worked part time versus 11.5% of men (Harris, 2003). Available statistics do not do a good job of distinguishing between full and part time wage differences, so it is difficult to judge how much of the wage disparity in Wyoming is due to discrimination , other factors, or simply a matter of part time employment. (Peters, 2000).

Education

Currently men and women graduate from college at very similar rates. However, they still tend to choose different majors and college major is the single strongest factor affecting income of college graduates (Gillard and Leigh, 2000).

In Wyoming one response to lower earnings for women has been increasingly to emphasize education and training (Henderson and Saulcy, 2001). The available data suggest that schooling after high school is indeed an advantage for women in Wyoming. Wages increase as education increases just as they do nationally. Women college graduates tend to move into government and services and away from retail trade. These industries pay more than retail trade. However, the advantage of going to college for men in Wyoming is not as great since many high paying mining jobs do not require a college degree (Jones, 2000). Moreover, current projections show only 9 of the 50 occupations estimated to make up the largest share of new jobs in Wyoming in the future require an associates degree or higher so education may not be as important given Wyoming’s current industry mix (Henderson and Saulcy, 2001).

Industry and Firms

Different industries pay different wages due to competition, profitability, unionization, history, danger, and many other factors. Further, the size of a firm in an industry is related to the amount of wages that a firm can pay. Female employment nationally is more heavily concentrated in small firms, and smaller firms tend to pay less. (Milkovich and Newman 7th, 2002). Different states show different industrial composition. For example, consider a comparison of the largest industries by payroll in Wyoming and Connecticut (one of the highest paying states) in Figure 5:

Figure 5
The Five Industries With The Largest Payroll Share

	Wyoming	Connecticut
1.	Government	Manufacturing
2.	Services	Finance, Insurance
3.	Mining	Government
4.	Retail Trade	Retail Trade
5.	Transportation (TCPU)	Wholesale Trade

(Source: Henderson and Saulcy, February, 2001 p. 6)

Higher paying industries in Wyoming such as mining and TCPU have higher proportions of male than female workers and retain their workers for longer than retail trade or services industries. In addition, it appears that males, as they age, transfer more easily their prior years of experience in construction, services or retail trades into more secure jobs in industries that are generally considered higher paying. The same is not true for women, as illustrated in Figure 6 below. The percentages show the percent of gender in that industry (males 28% working in retail trade).

Figure 6
Industries of Greatest Employment for Men and Women in Wyoming and Mean Earnings

Ages 20-24			
	Males		Females
Retail Trade	28% / \$6,363	Retail Trade	40% / \$4,866
Construction	20% / \$9,496	Services	32% / \$5,638
Services	19% / \$4,889	Government	13% / \$7,174
Average*:	\$6880		\$5509
* The average salary was determined by calculating a weighted mean based on the information given for the top three industries for males and females. The wage gap is 0.80 for these workers.			
Ages 45-54			
	Males		Females
Government	23% / \$33,475	Government	41% / \$22,333
Mining	16% / \$51,667	Services	25% / \$15,743
Services	13% / \$34,351	Retail Trade	16% / \$11,264
Average*:	\$39,291		\$18,162
* The average salary was determined by calculating a weighted mean based on the information given for the top three industries for males and females. The wage gap is 0.46 for these workers.			
(Source: Henderson and Saulcy, 2001 p. 9)			

These tables indicate that the wage gap between younger and older workers is significantly different – with a gap of 0.46 for older earners in the industries that employ the most workers, and 0.80 for entry level workers. Nationally it is similar with a gap of 91.5% for ages 20-24 and 73.6% for ages 45-54 (Bureau of Labor Statistics, 2002).

The wage gap in Wyoming is not consistent across counties and employment regions according to the census data reported in the Casper Star Tribune on September 2, 2002, and that probably represents the distribution of industries in different countries. Wyoming had 13,591 males employed in the mining industry in 1999, compared to 1,758 females. In construction males held 18,776 of the jobs, and females 2,105. The reverse is true when looking at the educational, health care and social service fields with women holding 38,513 jobs compared to 13,224 males. In some of the lowest paid jobs in the hotel and restaurant industries women outnumbered men by 11,426 to 7,495, and in retail jobs, 15,876 to 12,581, respectively.

Other Factors

Other explanations for the wage gap have been researched as well. This treatment is not all inclusive, but it is illustrative of some of the variables more frequently identified as affecting wage disparity.

Unions. Belonging to a union affects wages. Belonging to a union in the public sector seems to raise female wages more than it does male wages, but union membership raises all wages. Men are more likely to belong to a union than women and have been so traditionally. However, women are increasing their membership in unions. (Card, 2001) (Wunnava and Peled, 1999).

Family. Research suggests that men and women prioritize their work and family roles differently. Men are apparently more willing to sacrifice relationships for the sake of career early on in the career (Martins, Eddleson and Veiga, 2002). Further, women choose to leave the workforce more frequently and for longer periods to care for family than do men. In addition, the number of children a woman has is a good proxy for differences in work history and labor market attachment among women (Hill, vol. XIV).

Canadian research suggested that women who postponed having children until later in life earned at least 6% more than women who had their children early (The Daily, 2002). Another study estimated that if the average household had one less child, the male-female wage gap would decrease by 9.5%. (Millimet, 2000).

Pay Raises. One study estimated that about 34% of the unexplained gender pay gap is due to differences in performance based pay: bonuses, incentive pay, stock options, etc. Men get a greater part of their pay in these “at risk” forms of payments than do women (Chauvin and Ash, 1994).

Further, men may be more sensitive to the amount of their pay raises than women and therefore, say something about it. One study found that men are more likely than women to experience dissatisfaction and leave the organization for a higher paying job if the raise they receive is viewed as unsatisfactory (Balkin and Gomez – Mejia, 2002)

Illegal Discrimination. A certain amount of the wage disparity is certainly attributable to illegal discrimination. Estimates vary on how much of the unexplained portion of the gap is discrimination but the problems associated with identifying it exactly are immense. Discrimination exists and remains a problem (Weinberger 1998).

ECONOMIC IMPACTS OF THE GENDER WAGE GAP IN WYOMING

The impacts of the large female-male disparity in Wyoming, are costly for Wyoming’s economy. The focus here is on economic impacts resulting from wage disparity. Some of these impacts are obvious; others are more nuanced, but all carry a price both in terms of overall economic development and stagnation in the state.

Microeconomic impacts include the large and consistent concentration of females in low-wage occupations; the high numbers of women who engage in part-time work, along with the reduced benefits and lower pay associated with part-time work (both part-time seasonal and part-of-day work); the increased need for women to hold multiple jobs (evidenced later in this paper); higher childcare costs; and reduced economic opportunities and resultant lost wages for women and families. Macroeconomic costs include reduced productivity; high labor turnover in

occupations dominated by women and corresponding higher job training costs; reduced human capital investment; increased human capital out-migration; and reduced opportunities for industrial/business recruitment and reduced job creation potential. These lists are, of course, not exhaustive; however, they indicate some of the larger economic costs for the State and its citizens due to the magnitude of the wage disparity in Wyoming.

Microeconomic impacts

Occupations dominated by women have been traditionally lower-paid, as noted earlier, and although strides have been made to reduce this disparity, the phenomenon persists to this day. In Wyoming, sectors where this is most evident include nursing, primary and secondary education, retail and service-oriented industries.

Additionally, part-of-day part-time work is largely the realm of women. This is primarily due to factors such as the role of women as home- and child-care givers, thus leaving less time and/or energy for traditional out-of-home work. Seasonal part-time work dominated by males includes higher-wage jobs – for example, construction – than seasonal work predominantly taken by females. Women’s seasonal part-time employment is concentrated in low-wage service and sales occupations.

**Figure 7
Full Time Workforce in Wyoming**

<p><i>Full time work force, by gender</i> % men in full-time work force: 54.4% of full-time work force % women in full-time work force: 45.6% of full-time work force</p>
<p><i>Median wages for fulltime work force statewide, by gender</i> Median wages in WY, female: \$22,397 Median wages in WY, male: \$35,831</p>

(Source: US Census, 2000)

These two factors – occupational pay differences in both full-time and seasonal part-time work and part-of-day part-time work – lead to a number of deleterious impacts on women. First, both factors can lead to women requiring multiple jobs. According to the Bureau of Labor Statistics, more women hold multiple jobs than men on average (5.7% of the female workforce versus 5.5% for men). The difference between multiple-job holding in men and women is more pronounced when accounting for marital status. 6.6% of single women hold multiple jobs, compared to 5% of single men. 6.6% of divorced, widowed, and separated women hold multiple jobs, compared to 5.5% of this classification of men. Especially where low or no benefits are provided in “female dominated” part-time jobs, women must work more hours to provide the insurance, health care, and other benefits usually provided by full-time jobs. This phenomenon is obviously shared with men; it has been found that all workers in Wyoming tend to have a high incidence of multiple-job holding. As a result, women are likely to be less productive in all roles – in-the-home worker as well as out-of-home worker (Hersch and Stratton, 1994 and Hersch and Stratton, 2001).

With lower pay, multiple-job holding, and the lower probability of benefits with part time work, child-care costs for the woman (and her family) may be higher. The rationale for this should be obvious – more time spent away from home working to cover health care, insurance, etc. not provided by the employer means more time spent in day-care or other child-care facilities.

Macroeconomic impacts

A less obvious impact that wage disparity has on women is decreased economic opportunity and lost wages. This is a directly negative impact on women individually and on the economy as a whole. The primary manner through which this effect presents itself is easily seen in basic labor economics. Traditional economic labor market theory explains the labor supply decision in terms of “reservation wages.” A reservation wage is simply the lowest wage a worker is willing to accept to enter the labor market and accept a job. The reservation wage is influenced by so-called opportunity costs, (i.e. the value of the next best use of the worker’s time). Thus, included in a worker’s reservation wage is the cost of child-care while at work, commuting costs, the value to the worker of the other uses of their time which may include in-the-home work, and so on. Because of reservation wages, labor economists hypothesize that the labor supply curve is upward sloping (to a point), so that as the wage rises, more workers enter the market as their reservation wage is met. Lower wage offers to women, for whatever reason, thus reduces economic opportunities for women and for society at large because less human capital enters the market, creating a so-called “employment effect” from gender wage disparities.

For example, one study found that the employment effect of the gender wage gap in Australia during the period 1994-1995 caused job losses of 137,000 jobs and a direct wage loss to women of \$3 billion (Kidd and Ferko, 2001). Thus, the Australian economy had 137,000 fewer workers employed and lost \$3 billion as a result of women receiving lower offer wages which did not meet their reservation wages. Not only did women not participate in the labor market and lose wages, but the impacts were felt economy-wide via reduced spending, increased government aid to women and their families, and reduced utilization and development of human capital and ingenuity.

In Wyoming, this impact is obvious. Individuals trained by Wyoming schools (both K-12 and undergraduate) tend to leave the state in droves. Significantly, women are the leaders of the flight. Enrollments in Wyoming’s colleges, according to the Bureau of Labor Statistics, have women outnumbering men – roughly 17,000 women were enrolled in Wyoming colleges in 2000 versus 13,000 men. According to a study by the Research & Planning Section of the Wyoming Department of Employment (Department of Employment, 1995), approximately 45% of U.W. graduates moved into the Wyoming workforce after they graduated. A portion of the remaining 55% could be still in Wyoming but simply not working: however, there is no doubt that many of those graduates are no longer in the state. Full-time labor force participation rates show that 54.4% of the workforce is composed of men, while women comprise only 46.6% of the workforce. Thus, on net, Wyoming loses women at a faster rate than men in the state’s “brain drain.” Further, the entrepreneurship, innovation, and skills of these women educated in Wyoming become the assets of other states, or are not used at all.

The gender wage disparity has additional economic impacts. Each of these impacts is a result of negative effects felt by both workers and firms. For example, part-time work and lower-paid occupations where women are historically clustered also tend to have high labor turnover rates. This is no surprise – lower-paid jobs promote little employee loyalty. Lack of

wage parity can be a contributing factor to high turnover rates and thus increased search and training costs for firms, which are in part passed on to consumers. Women may be discouraged from pursuing work at all because their reservation wages are not met. Their knowledge, skill, creativity, experience, and other human capital assets are not used as resources. Even where women do participate in the workforce but cluster in lower-paid and part-time jobs, their human capital will not be fully utilized. All told, this has a negative impact on the potential productivity capability of the workforce.

The ripple effect of the wage gap is felt in terms of business/industrial recruitment policy as well as attempts to retain existing businesses. Consider the impact of the fact that women are paid over 30% less than men in Wyoming: a message is sent by that statistic. Certain types of firms may be deterred from locating in Wyoming due to the reputational effects of the wage gap. Female employees at those firms may be loathe to come to the state; spouses of male employees may also be against moving to a state where the signal is that women are much less valued as workers. In addition, potential relocators might underestimate the existing quality of the labor force in Wyoming because of the signal that the wage gap sends. According to studies of firm location decisions (Olson, 1996; Gerking and Morgan, 1998; Bartik, 1995; and Isserman, 1994) one of the most commonly cited reasons provided by firms as critical to their decision to stay in or relocate to a region is the quality and quantity of the available workforce. If workforce quality can be seen as low when women are paid substantially less than men, the impact could be a deterrent to locating in Wyoming. As such, the gender wage gap's effect on Wyoming's human capital will by extension negatively impact the recruitment and retention policies of the state. Female-owned businesses would be very likely deterred from coming to a state that ranks so low on the wage gap scale. If women are undervalued, the youth "brain drain" will cause both technically skilled and unskilled women to leave the region to seek opportunity elsewhere.

Whether or not the numbers are the result of differences in "market-based" explanatory variables – age, unionization rates, experience, education, training – the signal is still sent, loud and clear, to firms and women in general.

COSTS AND BENEFITS OF REDUCING THE WYOMING GENDER WAGE GAP

Identifying Potential Benefits

The benefits of reducing the gender wage gap can be numerous. Many of these benefits are the converse of the costs and economic impacts of allowing the gap to persist. Reduction of the gender wage gap would improve productivity of the existing workforce, as human capital resource utilization would be increased. Labor turnover rates would likely fall. This, in turn, would reduce lost wages, benefits, and training invested in employees and decrease employer search and training costs. The necessity of holding multiple jobs would also fall, and child-care costs would also possibly be reduced.

In addition, since dual-income families are the norm rather than the exception, working families across the spectrum would benefit from a reduction in the wage gap. Gender wage gap reduction could increase average family incomes statewide, reduce poverty rates, and ease economic stresses not only on women, but also on men in co-habiting households. An additional benefit to male workers in female-dominated occupations would also accrue. As has been pointed out, female-dominated occupations tend to be lower-paid. Many of those occupations require a great deal of education, training, and technical expertise, in particular nursing and

education. If the wage in “female occupations” was raised, men in those occupations would experience a direct wage benefit as well.

Of immediate interest to the state, direct fiscal benefits would also be realized by reduction of the gender wage gap. Job creation in existing firms in the state would rise, and economic recruitment and retention activities would become more effective. This could result not only in a larger, better workforce in the state, but in increased private spending. This would impact state tax coffers via sales and property tax collections. Savings to the state government would also ensue: fewer payouts to women and families in the form of welfare, Medicaid, and other forms of means-tested state support could be reduced as average household incomes rose.

In addition, some benefits of wage gap reduction would be indirect and longer term. As economic recruiting and retention efforts became more effective and economic activity increased, secondary and tertiary effects could also be realized. On the secondary level, businesses related up-stream (suppliers) or down-stream (distributors) from recruited firms would be impacted. Such firms could be recruited to Wyoming; alternatively, they may already exist here and could experience a rise in their business activities. On the tertiary level, other unrelated businesses will experience economic impacts due to the influx of new firms with new payrolls. Businesses such as housing providers, grocers, banks, and so on would be among those that would feel these impacts. In other words, “multiplier effects” of more effective recruiting would ripple across the state’s economy.

Identifying Challenges and Costs

Reduction of the gender wage gap would, of course, entail costs. Those costs and their magnitudes would be dependent on the methods used to reduce the disparity. Before discussing these specific costs, some challenges need to be recognized. These challenges represent efforts that must be addressed, no matter how the state decides to approach gender wage issues, in order to reduce the gap. Thus, they will not vary from method to method. They also require a commitment on the part of both private industry and the State in terms of effort, time, and money. Wyoming’s challenges in correcting the wage gap include (1) changing where women work and (2) changing the economic base of Wyoming.

A prime challenge of reducing the gender wage gap stems from the current industrial mix of Wyoming’s economy. To clarify, it is certainly not the “fault” of our extractive and mining, construction, or transportation industries that Wyoming has a large gender wage gap. However, the fact that Wyoming benefits to such a large extent from these industries does contribute heavily to the gap. Women are concentrated in service, office support, retail sales, and other low-paying occupations in the state. Men are concentrated in the higher-paying mining, transportation, and construction sectors. An effort to change *where* women work can reduce wage disparity. Where women work is, in large part, a cultural phenomenon and is not isolated to Wyoming. However, attracting women to occupations in high-paying sectors is necessary to begin to address the gender gap.

As noted women educated in Wyoming leave the state at an extraordinary rate. This is in part caused by the industrial mix of the state – fewer good paying jobs exist in Wyoming for women with college degrees or higher, so they relocate elsewhere. The women who do stay tend to migrate toward lower-paid, female-dominated occupations because that is where the jobs are located. With no change in the status quo the brain-drain will continue. Thus, a more nuanced but important implication of changing where women work means enhancing our economic base. So long as the state’s economy relies on services (female-dominated, low wage), extraction and

mining, transportation, and construction (male-dominated, high wage), the wage gap will persist unless more women work in the latter occupations.

Assuming these challenges (and their accompanying costs) could be met by Wyoming, there are some more common, less extraordinary costs that would be associated with any policy approach to reducing the wage gap. The magnitude and importance of these costs will vary by policies chosen. Here, they are classified by the primary cost-bearing parties, private industry and state government.

Private industry costs:

- Increased wage costs
- Increased benefits costs
- Increased employee-related tax payments (e.g. unemployment compensation, Social Security, etc.)

Government costs:

- Increased regulatory compliance enforcement
- Infrastructure investment costs necessary to support larger volume of economic activity, such as investment in communications, transportation, and educational infrastructure
- Infrastructure costs associated with shifting the economic base of the state and workforce education and training programs

Estimated Costs of Wage Disparity in Wyoming

Lost new economic activity:

To estimate the costs of lost new economic activity in Wyoming due to the wage gap, we will approximate the number of firms that may have been deterred from locating in Wyoming because of wage differentials here and then estimate what their potential economic impact would have been. There were 2,072 new firm births in Wyoming in 2001. It is estimated that these new firms created 9,452 jobs, an average of 4.6 jobs per new firm (9,452 jobs/2072 firms) and \$124 million in wages, or an average of \$59,845 in new wages per firm, (\$124 million/2072 firms) in 2001 for the state. (Wyoming Labor Force Trends, January 2003)

Obviously, the numbers generated in any effort to estimate the impact depend on the assumptions made. In all cases conservative assumptions will be made or a range given to show the impacts.

Suppose that 95% of the firms that were considering starting up in Wyoming did so, while 5% of them were deterred by the wage gap. This would imply that Wyoming would have gained a total of 2176 firms, but lost 104 new firms in 2001. Assuming the average jobs and wages created per firm given above would apply to these lost firms, this means Wyoming would have lost 478 new jobs and \$622,440 in new wages.

These new jobs and wages would have additional economic impacts in Wyoming. These employees would spend or save their income, adding to the income of those whose industries they spend on and increasing the investment dollars available via loans. This effect would ripple throughout Wyoming as the additional income and saving continued and those dollars reentered the economy and banking system. These secondary and tertiary effects are captured in the “multiplier effect.” The multiplier effect shows the ultimate impact of a dollar being respent and increasing income economy-wide. The magnitude of the multiplier effect varies with a number

of factors, including the size and health of the economy, the spending patterns of consumers, and the industries upon which the dollars are spent. In general state income multipliers run between a lower bound of 1.5 and an upper bound of 2.15. These numbers mean that each \$1 of additional income generates as little as \$1.50 economy-wide, and as much as \$2.15 in the upper limit.

From our example, then, if Wyoming lost \$6,223,938 in new wages, taking into account the multiplier effect, the combined costs to Wyoming economy total between \$9,335,970 and \$13,381,467. For example, increasing the direct income of teachers and nurses would not only impact those workers directly. These employees would spend or save their additional income, adding to the income of those whose industries they spent on and increasing the investment dollars available via loans. This effect would ripple throughout Wyoming as the additional income and saving continues and the money continues to reenter the economy and banking system.

Carrying this forward, suppose now that only 90% of all firms that had considered starting up in Wyoming did so and 10% were deterred by the wage gap. As such, 2279 new firms considered starting up in Wyoming, meaning the state lost 207 new firms that instead located elsewhere or never started up. Using averages from above, this implies that Wyoming lost 952 jobs and \$12,387,915 in new wages. Accounting for the multiplier effect, this accounts for \$18,571,872 - \$26,634,017 in total lost economic activity in Wyoming.

Lost productivity

Any number of factors can have indirect impacts on productivity – expectations, rewards, opportunities, even current events such as hunting season or wars affect productivity. These factors can lead to lost work hours and lost production, which translates into lost economic activity. The wage gap may have an impact on some women’s productivity across occupations and industries. Although calculating this impact is beyond the scope of this study, we should note that it is likely a significant consequence of the wage gap.

Lower wages for women could also have an impact on their productivity in the form of higher turnover rates for firms. According to the Research and Planning Division of the Wyoming Department of Employment, employee turnover in Wyoming was estimated to be roughly 9%. (Wyoming Labor Force Trends, January 2003) Conservatively assume that average female turnover rate is the same as the overall turnover rate. To estimate the effect of the wage gap on economic activity in Wyoming, assume that 2% of this turnover rate is due to the persistent wage gap, and the remaining 7% is due to other considerations. This is an intentionally conservative estimate, but can help estimate the economic costs in terms of productivity. The annual average female full-time wage in Wyoming in 1999 was \$22,397. According to the 2001 Wyoming Benefits Survey (Wyoming Department of Employment, 2001), roughly 22% of employer compensation to workers is in the form of benefits in Wyoming. Thus, the total cost of a female worker to an employer annually is \$27,324. There were 115,009 female full-time employees in Wyoming in 1999. If 2% of these women turned over in their jobs due to low pay as represented by the wage gap, 2300 women turned over because of the wage gap. This therefore cost employers \$63,845,200 in lost wages and benefits annually.

Suppose we use an even more conservative estimate of the amount of turnover caused by the gap. If 0.5% of women turned over due to lower wages, this translates into roughly 575 women. At the same wages and benefits as above, this much smaller number translates into employer losses of \$15,711,300 annually. This is not an insignificant loss.

We can also use estimates of gains from having more women work full time to highlight how much is lost because so much of the Wyoming female workforce stays out of full-time work, some of which is likely to be due to the wage gap. In other words, it's likely that some women remain part-time workers because the wage-gap discourages them from entering full-time work. It simply isn't worth it financially to some to work full-time.

Roughly 33% of women reported working part time (less than 35 hours per week) for at least part of the year in Wyoming in 1999. Roughly 12% were part-time workers for the entire year. Only about 3% of men classify themselves as "full time" part-time workers. It is obvious that Wyoming would gain economically if these women came into the workforce full-time – their absence means that their skills are not available to potential employers, and the available labor force is smaller than it could be. As noted availability of a large, quality workforce is one of the most-often cited reasons given by firms for their relocation decisions. Existing employers would also benefit from these part-timers coming on-line full-time, as their search costs for employees would decline.

According to Census 2000, 15,584 women in Wyoming worked 34 or fewer hours per week for 50-52 weeks of the year. Assume that half, or 7792, of these women came into the full-time workforce. Assume also that they enter the workforce at the female average full-time annual wage, \$22,397, or an average weekly wage (assuming 52 weeks worked) of approximately \$430 and \$12.30 per hour. If part time workers earned this same wage and worked 20 hours per week, they would currently have a median wage of roughly \$12,800. The difference between this wage and the full-time female wage is \$9597. The direct economic impact of their increased income would be \$74,799,824. Estimating the multiplier effect of this increased income on the state, the total economic impact could range between \$112,199,736 and \$160,819,622 annually.

Lost sales taxes

As a direct consequence of the reduced economic activity found above, the state and localities would also lose sales taxes. A rough estimate of those lost tax revenues can be found by using the fact that the state sales and use tax rate is 4%. Counties can add an optional sales and use tax of up to 2%, so assume that the sales tax rate will be 6%. As the wages that would have been spent could have multiplied throughout the economy, the estimate will suppose that those amounts would have been taxed at 6%. This yields an estimate of lost tax revenues to the state and counties of \$7,730,664 - \$13,639,707.

Total estimated costs of wage disparity

Figure 8 below shows the approximated lost wages, employer costs, government revenues, and economic activity from the state's wage disparity. It should be noted that these are only rough estimates based on many assumptions. However, they do give form to the concept of how much the state is losing because of the persistent wage differential.

Figure 8
Estimates of Lost Wages, Employer Costs, Lost Sales Tax Revenues, and Total Negative Economic Impacts of Wyoming Wage Disparity

	Lost Wages and Employer Costs, Annual	Total Negative Economic Impact, Annual
Reduced new economic activity	\$622,440 - \$1,238,895	\$933,360 - \$2,663,624
Reduced productivity		
Employee Turnover	\$15,711,300 - \$63,845,200	\$15,711,300 - \$63,845,200
Discouraged from Working Full-time	\$74,799,824	\$112,199,736 - \$160,819,622
Subtotal	\$91,133,564 - \$139,883,919	\$128,844,396 - \$227,328,446
Lost sales tax revenue		\$7,730,664 - \$13,639,707
Estimated Total Economic Losses	\$91,133,564 - \$139,883,919	\$136,575,060 - \$240,968,153

Estimated Benefits of Wage Disparity in Wyoming

Lower wage payments paid by employers to employees are the only easily monetized benefit in this category. To estimate this, we use the current wage differential between men and women of \$219 (men’s median weekly wages in the state is \$672 while women’s is \$452) and assume that on average all women workers must be paid this amount to eliminate the disparity. With 115,009 current full-time female workers (Census 2000), this would translate into an additional \$25,186,971. Using the assumption that benefits also would be paid on this amount, and that employers pay benefits of approximately 22% of wages, then the persistent differential saves employers \$5,541,134. Thus, total estimated benefits for allowing the wage disparity to exist is \$30,728,105. Figure 9 summarizes the cost/benefit analysis regarding the wage disparity in Wyoming.

Figure 9
Annual cost/benefit estimation for maintaining the current wage differential in Wyoming

Potential costs (lower bound)	\$96 million
Potential Benefits	<u>\$31 million</u>
Annual Net cost to Wyoming of wage disparity	\$65 million (est.)

Where Disparities Exist in Wyoming: Two Studies

In trying to understand and perhaps influence the sources of wage disparity between men and women in Wyoming it would be helpful to identify the factors associated with different wage levels for men and women in the state. To do so two studies were conducted: the first is a

regression analysis of income using census data, the second a telephone interview of a random sample of Wyoming residents.

Study I: Analysis of Census Data

The data used for the statistical analysis of gender income differences in Wyoming come from the 2000 census. This has the advantage of being current and is a comprehensive sample. However, in the interest of preserving confidentiality, census data at the individual level is not released. (While a sample of individual level data will be released, this was not available when this analysis was being done.) Consequently, this study relies on data at the census block level. This is the unit of analysis that the Census Bureau uses to organize their data collection. Census blocks are based on geographic size rather than population. The average number of employed people included in a Wyoming census block is 1913; however there is quite a range in size. The largest block accounts for 4,912 employed people, the smallest 28. There were 126 active census blocks in Wyoming for the 2000 census.

Using block level data shapes the way we have to look at the data. For example, as individuals are not identified, we can not pull out a sample of women working fulltime who have children at home and determine how much income they make. Instead we have to look at average income and see the extent to which the percent of women working full time in the census block and the percent of households with children are associated with different levels of income. Similarly, we cannot make a direct comparison between the earnings of men and women in the same job who have the same level of education. Instead we have to look at the factors (e.g., education, age, etc.) associated with higher or lower pay for men and women across the census blocks.

Explanation of Variables

The following variables were used in the analysis:

- Location expressed in census block, county, and region.
- Household income (average and median)
- Men's earnings (median)
- Women's earnings (median)
- Men's earnings for those employed full time (average)
- Women's earnings for those employed full time (average)
- Age (average) for those of working age (16 – 69) for men, women, and overall
- Educational attainment (average years of education) for men, women, and overall
- Households with children 18 or under (percent of households)
- Percent of men working full time (i.e., 35 or more hours for 40 or more weeks/year)
- Percent of men working part time (i.e., 15 - 34 or more hours for 40 or more weeks/year)
- Percent of men unemployed
- Percent of women working full time (i.e., 35 or more hours for 40 or more weeks/year)
- Percent of women working part time (i.e., 15 - 34 or more hours for 40 or more weeks/year)
- Percent of women unemployed
- Occupational Index (calculated for men, women, and overall)
- Industry Index (calculated for men, women, and overall)

We have used the terms “average” and “median”. The median is the middle number in a sequence. Average indicates the arithmetic mean. If we had a set of numbers 2,3,4,5, 10, the average would be 4.8 and the median would be 4. The median is often used when studying pay because it is less sensitive to a small number of exceptionally high or low numbers. The median has been taken directly from the census data. Averages have been taken from tabular data (e.g., so many people age 25 – 29 and so many 30 – 34), when the percent of people in that category is calculated, the percent is multiplied by the middle value of the interval (e.g., 27 and 32, and then products are summed, providing a weighted average).

Full time and part time work is based on the hours worked for 40 or more weeks a year. It turns out most people do work the number of hours they report for 40 or more weeks per year. We have used three levels of employment full time (35 or more hours per week), part time (15 to 34 hours), and unemployed (not working but seeking work). This leaves one group unaccounted, those who work for 1 to 14 hours. This group is relatively small, and as our analysis will use these variables in combination in a regression analysis, the redundancy created by the presence of all 4 indices would force one to drop out of the equation. By excluding the one we expect to be least important the analyses will be more comparable than if a different one were dropped in different analyses.

The indexes indicate the combined value in terms of household income of the occupations or industries in which people in the block are employed. The first step in developing these indices was to look at the relationship between participation in specific occupations or industries and income (which is reported in appendix 3). The relationship can be expressed as a weight (i.e., a percent increase in participation in the industry or occupation is associated with so many dollars more or less in income). That weight can be multiplied by the percent employed in the industry or occupation within the census block. By adding together the numbers for all industries and occupations one obtains an indicator of the relative value of the industries or occupations in which people are employed in the census block. If we had been working with a large enough set of data (several thousand census blocks), we would not have had to use the indices, we would have just looked at the percent of people working in each industry or occupation. Unfortunately, when taken together the number of industry and occupational categories approximates the number of census blocks, which would have made statistical analysis of the data unreliable as some cells in the matrix would be very small.

Descriptive statistics for most variables in Study I are provided in Figure 10 below. Some things are worthy of note. If one looks at the percent employed, only 83% of men and 72% of women are accounted for. The remainder either reported working 1 – 14 hours per week for 40 or more weeks during the year or indicated working some number of hours, but for fewer than 40 weeks during the year. This also calls attention to the fact that for almost half of the women in the labor pool, work is a part time activity, while this is so for about a quarter of men. For a description of minimum and maximum values see Appendix 2.

Figure 10
Descriptive Statistics from Study I

	Mean
Avg Household Inc (k)	\$ 44.24
Avg \$ Fulltime employed men & women combined	\$ 33,647
Avg Age (of those between 16 - 69)	40.15
Percent with children 18 or under	28.30%
ALL Occupational Index	26.73
Industry Index ALL	29.15
Median Earnings Male	\$ 27,286
Average male earnings	\$ 32,175
Avg \$ Fulltime employed men	\$ 38,445
Avg Age of Men (between 16 -69)	40.15
Avg Yrs of School Men	14.31
% men working full time (35+hrs/wk >40wks)	72.39%
% men working 15-34hr/wks >40wks	4.98%
% men unemployed/men in labor force	5.58%
Median Earnings Female	\$ 13,273
Average female earnings	\$ 16,934
Avg \$ Fulltime employed women	\$ 23,500
Avg Age of Women (between 16 -69)	40.18
Avg Yrs of School Women	13.23
% women working full time (35+hrs/wk >40wks)	52.45%
% women working 15-34hr/wks >40wks	14.17%
% women unemployed/men in labor force	4.99%
Average number employed in census block	1913

What is the best indicator of earnings?

There are a number of indicators of economic well being that could be used. The implication of each are different. Household income is probably the best indicator of financial well being, but it obscures how much men and women contribute to household income. Different living arrangements affect who the contributors are.

Average or median income by sex would certainly be the most inclusive numbers, as it includes income for all people working. As such it represents earnings for part time employment. In terms of average pay women earn 50% of what men do in this data. This number is influenced substantially by the fact that women are more likely to work part time and thus earn less, even if they were paid exactly the same amount per hour.

The number we will focus on primarily will be the average earnings for full time workers. While this will not consider the pay received for part time work, which is a disproportionate part of working women's experience, it provides a comparable point of comparison. Viewed in these

terms women make 61% of what men do in this data. While the rationale for using the measures is quite different, the measures are closely associated.

Where do men and women work in Wyoming (occupations and industries)?

The average percentage of men and women participating in each occupation in this data is presented in Figure 11. It is ordered by the percent of men in the occupation. The difference in percent is provided in the right hand column. Women are most likely to be found working in office/administrative support positions, sales, or education. The only single occupation in which men are represented in such high proportions (i.e., greater than 10%) is construction. These numbers represent all employed individuals.

Figure 11
Men/Women in All Occupations

	<u>Men</u>	<u>Women</u>	<u>(M – W)</u> <u>Difference</u>
% Construction trade workers	10.90%	0.60%	10.20%
% Installation, maintenance & repair	9.50%	0.50%	9.10%
% Sales & related occupations	8.40%	12.40%	-4.00%
% Management occupations not farming	7.90%	5.80%	2.20%
% Production occupations	7.80%	2.30%	5.40%
% Motor vehicle operators	6.20%	1.40%	4.80%
% Office & administrative support	4.40%	24.70%	-20.30%
% Farm managers	4.10%	1.20%	2.90%
% Food preparation & related services	3.70%	8.80%	-5.10%
% Building & grounds maint. & cleaning	3.70%	4.60%	-1.00%
% Material moving workers	3.60%	0.80%	2.70%
% Education, training & library occupations	3.30%	10.10%	-6.70%
% Farming, fishing & forestry occupations	2.70%	0.60%	2.10%
% Extraction workers	2.70%	0.20%	2.50%
% Supervisors of construction & extraction	2.60%	0.10%	2.60%
% Fire fighters & law enforcement	2.00%	0.30%	1.60%
% Rail, water & other transportation occupations	1.80%	0.30%	1.50%
% Architects, surveyors, & engineers	1.50%	0.20%	1.30%
% Life, physical & Social science. occupations	1.50%	0.80%	0.70%
* % Health diagnosis & treating, practitioners & techs	1.50%	4.10%	-2.60%
% Community & social service	1.20%	2.10%	-0.80%
% Art, entertainment & media	1.10%	1.70%	-0.50%
% Business operations specialists	1.00%	1.30%	-0.40%
% Financial specialists	1.00%	2.10%	-1.10%
% Computer & math. occupations	1.00%	0.70%	0.20%
% Personal care & service	1.00%	5.10%	-4.10%
% Drafters, engineering & Mapping technicians	0.90%	0.20%	0.70%
% Other protective service, includes supervisors	0.80%	0.60%	0.20%
% Legal occupations	0.70%	0.80%	-0.10%
* % Healthcare support services	0.70%	3.70%	-3.00%
% Supervisors of transport & moving workers	0.30%	0.10%	0.30%
* % Health technologists & technicians	0.20%	1.80%	-1.60%
% Aircraft & air traffic control	0.10%	0.00%	0.10%
	100.00%	100.00%	

* If the three health categories in the large table were combined into one, this new category would be included on the chart for women as it represents 9.6% of all occupations (while only 2.4% for men).

Figure 12 shows the 6 most common occupations for men and women in Wyoming for easy comparison.

Figure 12
Six Most Common Occupations for Wyoming Men and Women

OCCUPATION	%of Men Employed	OCCUPATION*	%Women Employed
Construction	10.9	Office/Admin Support	24.7
Instal/Maint/Rpr	9.5	Sales	12.4
Sales	8.4	Education	10.1
Management	7.9	Food prep.	8.8
Production	7.8	Management	5.8
MotorVehOp	6.2	Pers. Care	5.1

While occupation indicates what a person does, one could do it in a variety of different industries. For example, an administrative assistant might work for a mining company or for state government. Where one works is captured by industry. The percentage of men and women employed in each industry is noted below in Figure 13. Again, there are marked differences in the industry where women and men find employment as shown in the 2000 Census.

Figure 13
Percent of men and women working in each industry

	(M - F)		
	Men	Women	Difference
Construction	13.97%	1.96%	12.00%
Mining	10.46%	1.61%	8.85%
Retail	9.49%	14.47%	-4.97%
Transportation	7.45%	1.94%	5.51%
Agriculture	7.31%	2.58%	4.73%
Manufacturing	6.95%	2.95%	4.01%
Public Administration	6.78%	1.18%	5.61%
Education	6.49%	18.31%	-11.83%
Hospital	5.39%	6.42%	-1.03%
Services	4.76%	5.78%	-1.02%
Health Care	3.68%	1.75%	1.93%
Wholesale	3.13%	1.13%	2.00%
Prof,Scien,Tech Services	3.01%	3.99%	-0.98%
Utility	2.54%	0.56%	1.99%
Admin,support,waste management	2.18%	16.18%	-14.00%
Information	2.01%	2.36%	-0.35%
Arts	1.67%	10.31%	-8.64%
Finance and Insurance	1.51%	4.61%	-3.10%
Real Estate	1.22%	1.82%	-0.61%
Management	0.01%	2.23%	-2.22%

The differences in the industries employing men and women are reported in terms of the 6 most common industries for each gender in Figure 14.

Figure 14
Six Most Common Industries Each for Men and Women in Wyoming

	<u>Men</u>		<u>Women</u>
Construction	13.97%	Education	18.31%
Mining	10.46%	Admin.,support/waste management	16.18%
Retail	9.49%	Retail	14.47%
Transportation	7.45%	Arts	10.31%
Agriculture	7.31%	Hospital	6.42%
Manufacturing	6.95%	Services	5.78%

Statistical Analysis of Wyoming Data

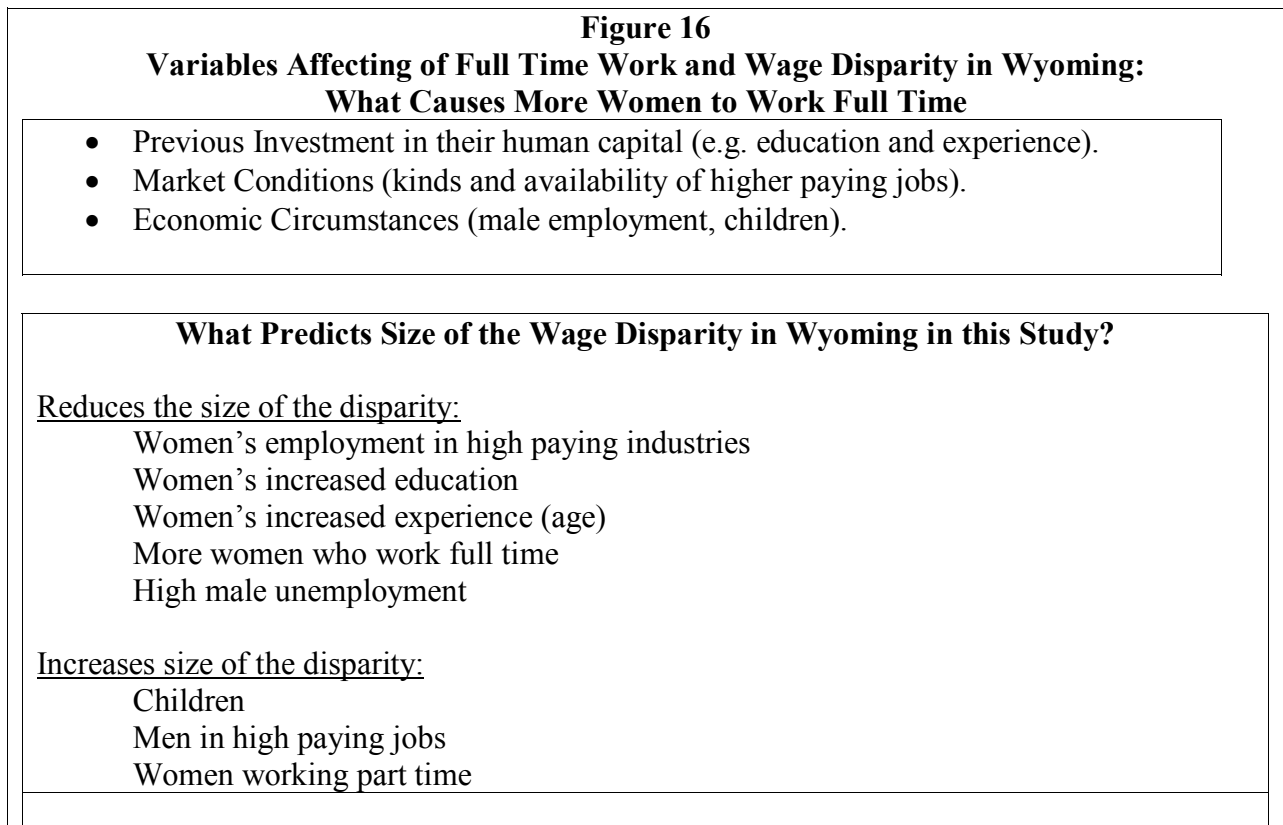
Statistical analyses point to three factors associated with variation in fulltime employed men's and women's average earnings in Wyoming: occupation, average years of schooling, and percent of men or women working fulltime. In addition for women the proportion of children 18 or under has a positive overall association with women's average earnings. The regression analysis is available in its entirety in Appendix 3.

Given the importance of occupation, the association between participation in each occupation and earnings was examined, see Figure 15. The occupations associated with higher earnings for men and women were not the same. For both men and women higher levels of participation in management occupations and lower levels of participation in health support were associated with higher earnings. For men, higher levels of participation in architecture/engineering and lower levels of participation in food preparation, farm management, office/administrative support, and sales were associated with higher earnings. For women higher earnings are associated with greater levels of participation in protective services (other than fire fighting and law enforcement) legal occupations, and lower levels of participation in production, farm/fishing/forestry, building and grounds maintenance, health technology, health services, and fire fighting and & law enforcement.

Figure 15
Variables that add to and reduce earning in Wyoming for men and for women

For Men	For Men	For Women	For Women
Adds to Earnings	Reduces Earnings	Adds to Earnings	Reduces Earnings
Management Job	Health Support Job	Management Job	Health Support Jobs
Architect, Engineering Job	Food Preparation Jobs	Protective Services Jobs	Production Jobs
Sales Jobs	Farm Management Jobs	Legal Occupation	Farm Jobs
Office/Admin Support Jobs			Maintenance Jobs
			Health Technology
			Health Services
			Fire Fighting & Law Enforcement Jobs

Full time employment for women is an important factor in their earnings. Whether women work full time may be a function of variables associated with women, men, or the environment in which they are seeking work. The most significant factor influencing women's full time participation in the workforce was the industries in which people (both men and women) worked. Figure 16 demonstrates the fact that more people in the area are doing managerial work increases the chances that someone else in the household is working in this higher paying field, therefore reducing financial pressures in the household and women's full time employment. The availability of work in accommodation/food service and administrative/support probably do not attract women with pay, but as a traditional source of employment. These industries provide easy entry for women who do want to work. A variety of push and pull factors can be seen in these industry numbers.



If we look at the association between women's participation in each industry and fulltime work in the regression in Appendix 3 a different picture emerges. There is a negative association between fulltime employment and the percentage of women working in support, manufacturing, healthcare, the arts, and agriculture. There is a positive association with finance, professional work, and 'other' services. These roughly track the compensation opportunities for women.

The wage gap or the ratio of women's earnings divided by men's earning can be used as an indicator. The higher this number the less the difference between men's and women's earnings. The ratio is higher where women participate in higher earning industries, have more education, are older (more work experience), and work fulltime, and where more men are unemployed. It is lower (e.g., women are paid less relative to men) when there are more children, men work in higher paid occupations, and more women work part time. Figure 16 also shows these factors that can change the size of the gap.

Taken together the statistics indicate that there is no single determinant of participation in full time work or higher paid work for women. The causes can be found jointly among human capital, family, and labor market forces. Economic need can push women to work full time and earn more money. Better opportunity can pull them to do so. Need can be a function of family needs (e.g., having children) or the job opportunities for one's spouse. Opportunities depend on preparation (e.g., education). So the variables themselves may likely interact to create the results. This is clearly a complex, multilevel interaction.

Comparing Wyoming Statistics to the National Averages

As part of the analysis of census data in study I, Wyoming variables were compared with the national averages. Figure 17 shows those variables where Wyoming differed the most from the National averages.

Figure 17
Wyoming Men and Women vs. the National Averages

<u>Full Time Wages</u>	<u>Wyoming</u>	<u>National</u>	<u>Wyoming Difference</u>
Men	36,163	36,529	-1%
Women	24,593	28,997	-15%
<u>Education</u>			
Men	13.0 yrs.	12.79 yrs.	+.21 yr.
Women	13.23 yrs.	13.77 yrs.	+.54 yr.
<u>Industries:</u>			
<u>Mining</u>			
Men	10%	1%	+9%
Women	2%	.1%	+1.9%
<u>Construction</u>			
Men	14%	11.8%	+2.2%
Women	2%	1.4%	+.6%
<u>Manufacturing</u>			
Men	7%	17.5%	-10.5%
Women	2%	8.9%	-6.9%
<u>Participation in Workforce (Full Time)</u>			
Men	78.6%	74.5%	+4.1%
Women	66.4%	70.7%	-4.3%
<u>Part-Time (1-34 hrs./week)</u>			
Men	7%	7%	0
Women	17%	16%	+1%
<u>Part-Time (Other Reduced)</u>			
Men	15%	13%	+2%
Women	25%	19%	+6%

Wyoming women make a significant amount less than women at the national level, (15 percent) while men are close to the national average. Wyoming workers are slightly more educated than average. More men and women work in mining and construction in the state than nationally, and fewer work in manufacturing. Wyoming men participate in the workforce to a greater extent than in the rest of the nation, but Wyoming women participate less. Part time patterns are very much the same as nation-wide with one big exception. Many more Wyoming women are classified as Part Time (other reduced) than the national average. This represents seasonal work including that associated with Wyoming's tourism industry.

STUDY II: SURVEY OF WYOMING HOUSEHOLDS

The statistics presented above give a broad view of the specific dimensions of Wyoming's wage gap, but to humanize the statistics and allow a different level of interpretation, this study surveyed Wyoming families directly about wages and work issues. Its qualitative analysis shows the personal side to the numbers, and the basis for some of the decisions made in households that affect the pay gap.

Members of a household often make decisions regarding labor force participation with the other members and for the benefit of the entire household rather than the individual. This study looks at the impact of typical household occurrences that affect labor and income. We questioned respondents how each of the following affected labor force participation for women: the birth and care of children, caretaking of others outside the household, educational or job training achievements, the availability of job benefits such as health insurance, and relocation. In addition, we were curious about "informal work force participation", that is, work that generates income (or a trade for goods or services) that is often not reported on official records. In particular, we wanted to compare the experiences of men versus women regarding each of these events or achievements.

In this study 63 Wyoming households were chosen randomly from phone directories, with approximately 3 households per county. Phone interviews were conducted with an adult member of the household, typically the person answering the phone. The respondent was asked to answer questions for all members of the household. The survey instrument consisted of approximately 30 open-ended questions. The interviews lasted between 15 minutes and 1 hour. The responses were recorded and coded. [The survey instrument is attached as appendix 4.]

Household Data

The 63 interviewees consisted of 43 women and 20 men, representing households that contained 177 individuals, including fifty-seven children (18 and below) who lived with their parents. Of the 120 adult individuals, 61 were women and 59 were men. Fourteen of the respondents (22%) were 60 years of age or older. Household size ranged from 1-10 people, with the average about 2.8. Our respondents were aged 23-86, with the average in the mid 40s. Ninety-three percent of our respondents indicated their race as White or Caucasian, with the remainder Hispanic/Native American or other. Figure 18 illustrates.

**Figure 18
Household Size**

<u>Number in Household</u>	<u>N</u>	<u>% of Total</u>
1 individual	10	15.9
2 individuals, both adults	22	34.9
Single parent households (one adult plus one or more children)	2	3.2
3 or more individuals, all adults	2	3.2
3 or more individuals, adults plus children	27	42.8
Total	63	100.0

Full-Time, Part-Time, and Informal Jobs Held by Respondents

Our respondents were asked about the types of jobs held by household members, both full-time and part-time, as well as “informal” and those retired. Figure 19 illustrates the responses:

**Figure 19
Job Types by Household Size**

Number in Household	Full Time	Part Time	Retired.	Informal.	Unknown
1 individual	5	0	3	2	1
2 ind., both adults	21	12	18	6	0
Single parent households (one adult plus one or more children)	2	0	0	0	0
3 or more ind, all adults	4	1	1	1	0
3 or more ind., adults plus children	40	23	0	20	0
Total	72	35	22	29	1

Figures 18 and 19 can be interpreted together as follows: Of the 10 households consisting of one person (Figure 18), five individuals worked full-time, three worked part-time and two held informal jobs. Three were retired and one individual refused to answer this question. Note, that the total number of jobs (and retirement) exceeds the number of individuals. This is due to several individuals working more than one job. Households with two adult individuals show that 21 individuals held full-time jobs, 12 part-time, 18 were retired, and 6 held informal jobs. Again, note that the number of jobs exceed the total number of individuals in these households due to individuals who work more than one job. The other lines on Figure 19 can be interpreted similarly.

Household Income

The respondents were asked about income that was generated by household members. Nineteen households representing 33 individuals would not divulge that information. [Note – though most individuals would indicate the types of jobs held by household members, for example full-time and part-time, many of our respondents would not discuss income and were therefore not included in this portion of the analysis].

Of the remaining 44 households representing 87 adults, fifty worked full-time, 23 part-time, 13 had retirement income, 6 did not work at all, and 5 worked informally only. Ten of our respondents “moonlighted,” i.e. worked more than one job for income. As expected the range of income varied from a low of \$10,000 (this negative figure was due to a bad year ranching) to a high of \$1,000,000. This individual indicated that he was a businessman with ranch, oil, and property interests. Average salaries for men in this sample was \$45,410 and for women, \$24,130. [For purposes of this calculation, the male respondent who earned \$1 million last year was excluded.] The wage gap between men and women in the sample was 0.53. Figure 20 shows wage categories by sex and full time/part time.

Figure 20
Gender and Full-Time/Part-Time

Full-Time Workers by Income Category and Gender				
	Males		Females	
	N	%	N	%
Under 9,999	2	6.7	3	15.0
10,000 – 19,999	2	6.7	6	30.0
20,000 - 29,999	3	10.0	4	20.0
30,000 – 39,999	4	13.3	2	10.0
40,000 – 49,999	5	16.7	4	20.0
50,000 – 59,999	3	10.0	0	0
60,000 – 69,999	7	23.3	1	5.0
70,000 - 79,999	1	3.3	0	0
80,000 – 89,999	1	3.3	0	0
90,000 – 99,999	0	0	0	0
100,000 +	2	6.7	0	0
Totals	30	100.0	20	100.0
Part-Time Workers by Income Category and Gender				
	Males		Females	
	N	%	N	%
Under 9,999	4	50.0	12	80.0
10,000 – 19,999	3	37.5	3	20.0
20,000 - 29,999	1	12.5	0	0
Totals	8	100.0	15	100.0

An analysis of the full-time tables indicates that men working full-time earn a much greater range of salaries than women. Whereas 65% of our female household members earned less than 30,000 per year, only 23.4 percent of men did. On the other end of the earnings scale, only one female respondent (5 percent) indicated a salary of \$60,000 or more, whereas 36.6 percent (N= 11) of our male respondents earned more than \$60K. In addition, and not reported on the tables is the mean income earned by these workers. Excluding the negative incomes and the respondent who earned 1 million dollars, the average male householder who worked full-time earned \$47,300, while the average female in this study earned \$25,500 indicating a gap of 0.539.

Analyzing the part-time table is a bit more problematic as we have no control for the number of hours worked. However, we can see that women in our survey were twice as likely to be employed part-time as men, and were significantly more likely to earn under \$10,000. The average male part-time earnings was \$9,300; the average female was \$7,400 for a gap of 0.796.

Thirteen of our respondents indicated that they had retirement income. Six male respondents averaged \$30,000 per year with their retirements, seven female respondents averaged \$15,600 for a retirement wage gap of 0.52.

We were also interested in whether males or females earned income outside of typical labor force participation. About half the respondents (N=30) indicated that at least one member of the household participated in the informal labor market. Female household members were slightly more likely to do informal work than male household members. Often the “pay” for this work was through trading goods and/or other services. The most typical informal work was childcare, second was farm or ranch work for neighbors, followed by the sale of arts and crafts. The most income reported for this informal work was approximately \$3600, and the least -- a lemonade stand that netted \$7.00.

Education

One of the major correlates to income is educational level and/or specific job training. Our respondents were asked to indicate the highest level of schooling or job training for the adult members of their household. Figure 21 indicates the relationship between education, income category and sex for full-time workers.

Figure 21
Education/Average Income by Gender

Educational level	Males		Females		Difference	
	#	Avg.Inc (\$000)	#	Avg.Inc (\$000)	(\$000) gap	
Less than high school	1	41	0	0	--	
High school diploma	6	32.6	4	21.25	11.35	(0.65)
Some college	8	46.0	5	29.6	16.4	(0.64)
Associate degree	0	0	0	0	--	
Technical School	1	60.0	1	19.5	40.5	(0.325)
Job Training	2	66.0	2	19.0	47.0	(0.288)
College Degree	8	40.6	1	27.9	12.7	(0.687)
Graduate Degree	2	60.0	1	45	15	(0.75)
Degree + Job Training	2	42.5	1	25	22.5	(0.526)
Total	30		20			

Of particular note, are comparisons between educational categories by sex. For example, the average income for a male high school graduate (\$32.6K) exceeds the average income for female college graduates (\$27.9K). Even though the numbers for comparison are low, the largest wage gaps are found between male and female workers who have had technical schooling or job training. In these categories, females earn only about one-third of males, most likely as a result of the type of training that each received.

Benefits

We asked respondents about whether they and their households received benefits from their employers, in particular health insurance and/or a pension. We also asked about the impact of these benefits on decisions regarding labor force participation of household members. Only five of our respondent households did not have benefits. Of potential concern however, is that these five households contain 18 children among them, indicating that over one-third of the children in our sample are not covered by health insurance.

Sixty percent of respondents indicated that benefits were an important consideration when asked about jobs. Several commented that when switching jobs, benefits were an important factor. One respondent indicated that her husband kept his job only because of the benefits, another indicated similarly for his wife. One retired respondent is looking for a job that would afford him benefits because health insurance is so expensive. Another respondent is looking to switch jobs to one with health insurance.

Care of Others

Respondents were asked if members of their households cared for others outside of the household, such as elderly parents or neighbors, and the impact of that care giving on their choice of jobs. Twenty-five of our respondents indicated some type of care giving. The most common was babysitting for relatives, including grandparents, parents, nieces and nephews, and

grandchildren, outside of the home. Overwhelmingly, this work was done by female members of the household but only two respondents indicated that this work impacted their paid labor force participation.

Children

Respondents were asked about the impact of children on household decision making regarding labor force participation. Fifty-seven (90.5 percent) of our respondents had children in their homes at some point during their lives. Thirty-five (61.4 percent) of these respondents indicated that someone in their household stayed home with children for some period of time greater than six months. One individual stayed home for more than six months but less than one year. Six individuals stayed home for 1-5 years, nine individuals stayed home for 5-10 years, and eight indicated that someone was home for 10 or more years. Eleven respondents were full-time homemakers. In each of these cases the caregiver was the children's mother (excluding one household in which the father stayed home while the mother worked; however when he found a job, his wife quit her job.)

Those respondents who left and then re-entered the workforce were asked about whether it was difficult to find new work, if the work was in the same field, and whether they modified their labor force participation based on the needs of their children. As expected, the responses to these questions were complicated. Many respondents prefaced their comments with a caveat, "Even if it did affect my income or job opportunity, that doesn't bother me." Or "It was of the utmost importance to raise my children at home, so any career sacrifices were well worth it." One respondent commented that leaving the workforce for both children and relocation meant that she always needed to start at the bottom and work her way up. Others responded that they needed to take what was available. In general, most of the respondents indicated that they had little trouble getting jobs when they re-entered the workforce.

The respondents also perceived that children in the home did not have much impact on the type of labor force participation once the primary caregiver had re-entered the labor market. Two respondents indicated that they worked more or took overtime in order to contribute as much income to the family as possible. Two indicated that they traveled less in order to be home with the children. Two indicated that they found employment with their local school districts in order to coordinate their work schedules with their children's schooling. Several others indicated working somewhat different schedules to accommodate family needs.

Relocation

Not surprisingly, about half of the respondents (N= 29, 46.0%) were born in Wyoming. A simple comparison of the income of the respondents who are full-time workers born in Wyoming versus those born elsewhere by sex is indicated in Figure 22.

Figure 22
Birthplace/Sex/Income Category (FT Workers Only)

	Males		Females	
	WyoBorn	Not	WyoBorn	Not
Under 9,999	2	0	3	0
10,000 – 19,999	1	1	3	3
20,000 - 29,999	2	1	3	1
30,000 – 39,999	3	1	2	0
40,000 – 49,999	1	4	1	3
50,000 – 59,999	2	1	0	0
60,000 – 69,999	3	4	0	1
70,000 - 79,999	0	1	0	0
80,000 – 89,999	0	1	0	0
90,000 – 99,999	0	0	0	0
100,000 +	0	2	0	0
Totals	14	16	12	8
Average Income*	\$38,900	\$54,700	\$21,300	\$33,100

***This figure was computed from income figures given by respondents.**

This table indicates that Wyoming born residents, both males and females, fare worse regarding wages than do those who move to the state. However, females born outside of Wyoming earn less than Wyoming born males.

The impact of relocation on household decision making regarding labor force participation was studied. As indicated above, individuals who move to Wyoming typically earn more than do Wyoming residents. 63.5 percent of our respondents have relocated at some point in their adult lives. The main reasons for relocation included jobs (60%) and family (15%). The remaining reasons included moves for military, school, etc. Of those who moved for jobs, four percent moved for a female member of the household, while 78 percent moved for a male, and 18 percent for both. For those who moved for family reasons, 33 percent moved for a female member of the household, while 50 percent moved for a male, and 16 percent for both.

Respondents who relocated were asked about the impact of the move on labor force decisions for the household. The responses were mixed; for some respondents the move was overwhelmingly positive: “It’s cheaper to live in Wyoming”; “Moving created more opportunity and financial stability for the family.” Others responded that there were lack of opportunities, typically for the female spouse: “It was difficult for her to find work in XYZ county because there is only one school district. This meant fewer years in the Wyoming retirement system, so she’ll never get full retirement benefits.”

Wage Gap

Our respondents were asked to comment on the wage gap in Wyoming. When asked about their perceptions regarding reasons for the gap, answers fell into four categories: those who saw the wage gap as a result of the Wyoming economy, those who believed the gap was the result of choices made by Wyoming women, those who believed that individual men were

responsible, and finally, those who believed that discrimination was to blame. Two respondents did not perceive the wage gap as an issue that needs to be addressed. For example, one of these respondents indicated that “the salary gap is not as bad as people think that it is (Male respondent, age 43).” Another stated: “Men are supposed to earn more because the Bible makes them the breadwinners and heads of their families (Female, age 77).”

Many respondents (N=20) indicated that they believed that the Wyoming economy and Wyoming employers were responsible for the gap:

- “Because most of the work is in oil and it’s mostly for men.”
(Male respondent, age 36)
- “Lots of well paying jobs are “male-jobs” – oil, mines, etc”
(Male, age 39)
- “We live in a rural environment without much female oriented work.”
(Female, age 42)
- “Men are promoted more.”
(Female, age 41)
- “Wyoming employers don’t see women as long-term employees.”
(Male, age 29)

Following from this last comment, several respondents (N=11) put the onus on women themselves for the wage gap, more than the economy:

- “Women choose lower paying jobs.”
(Male, age 44)
- “Women aren’t going into high paying fields.”
(Male, age 56)
- “Women won’t do a lot of jobs men do, for example, mining.”
(Female, age 59)
- “Women focus more on family than career.”
(Female, age 60)
- “Women are often not primary wage earners, so they’ll take jobs that don’t pay as well.”
(Female, age 57)
- “Women do different types of jobs than men.”
(Female, age 45)

Four respondents saw the gap dealing more particularly with male choices:

- “Men are in more management positions.”
(Male, age 50)
- “Males are chauvinists and believe that they need to support their families.”
(Female, age 48)
- “Men will work in more dangerous fields, so they get paid more.”
(Female, age 47)

The final category, with eight respondents, engendered the most passionate replies. While several of these respondents just responded simply that they believed that discrimination

was the reason for the wage gap, or that “Wyoming is behind the times,” several explained their views in detail:

“We live in a patriarchy; in Wyoming there’s still the mentality that men need to be the bread winners. Women’s education is still undervalued in the West and Midwest and that translates into poor pay and job opportunities for women... In Wyoming industry is set up and geared more toward men and it leaves women out of high paying jobs.”

(Female respondent, age 38)

“Wyoming is still a man’s world, most dollars are determined by men, therefore when men hire men, they are more likely to give them extra salary, whereas when women do the hiring, there is a higher likelihood for them to hire people on the pay scale. Also women are looked over for positions when men apply. Additionally, men get more career advancements.”

(Female respondent, age 40)

“Women don’t voice their needs enough. Wyoming doesn’t have a large population, so it’s easier for us to lose sight of the bigger picture. It’s not required that people are held accountable, not because it’s not important, but because there are other issues that people pay attention to. Women are also afraid to complain because they don’t want to complain too much and get fired. Women in this state NEED to work, and so they are willing to put up with a lot in order to stay employed. In larger areas, unskilled labor is easier to find, because we’re so small it makes it harder. There is also a lot of ‘almost nepotism’ in this state where if you’re complaining about your wages you might be complaining to your employer’s cousin, brother, friend, etc. even if you think that it’s safe because you’re in a different town.”

(Female respondent, age 51)

How to Address the Gap

When asked how to address the wage gap, our respondents were asked for both their ideas as well as who should be responsible for implementing their suggestions. Not surprisingly, education was seen as key, but not merely education of children but also of employers regarding the value of women as workers. Other suggestions followed from respondents’ beliefs about the wage gap: Those who saw women’s choices regarding labor force participation often suggested that the way to close the gap would be to have women switch into traditionally male occupations; however, others saw a need to value more highly occupations traditionally held by women. Some spoke about the need for better and subsidized childcare in order for women to participate more fully in the labor force. Many spoke about diversifying the economy, in particular small companies that would offer high pay and benefits. Others spoke about the need for long-range planning by the State in order to capitalize on current trends that could lead to economic stability for the State; one respondent commented that increasing the minimum wage would help. Finally, several respondents noted that there needed to be more oversight regarding equal pay policies, and employer practices.

Most respondents saw that the responsibility for implementing the changes as the responsibility of individuals, employers, and the state; however, several adamantly saw any change as the responsibility purely of individuals, not the state or employers.

REDUCING THE WAGE GAP

As suggested above by the respondents to Study II in their comments solutions to the wage gap between males and females can be addressed on several levels including: government solutions, private sector employer's solutions and individual solutions. What follows is a summary of approaches being tried elsewhere in the country to deal with wage disparity issues. These can be the source of ideas (good and bad) for Wyoming's solutions.

Government Solutions

The US Department of Labor. Through the Department of Labor's Internet web site, (<http://www.dol.gov/wb>) employers and workers will find a wealth of information about equal pay issues, economic security, child and elder care, and balancing work and family. DOL has launched a public education campaign to ensure that women have information to ensure sufficient funds for their retirement. To carry out the Secretary's Equal Pay Initiative, DOL is:

- Encouraging federal contractors to do self-audits of their pay systems and providing them with information to help them do so through federal contractor Industry Liaison Meetings and Town Halls;
- Conducting compliance evaluations of federal contractors, including glass ceiling reviews, to ensure nondiscrimination;
- Enhancing employment opportunities for women in the higher-paying non-traditional jobs, apprenticeships and the trades, through its Construction Mega-Projects;
- Highlighting pay and pension related relief in its press releases, fact sheets and Town Hall and other regional presentations;
- Recognizing employers' best practices, through its EVE Awards, which helps other employers learn how they can promote equal opportunity for all employees;
- Educating workers about their employment rights;
- Assisting workers in getting the information they need to protect their pension and health benefits and helping employers understand their legal responsibilities regarding pension and health benefits;
- Working with EEOC, GSA and Women's Bureau to combat pay discrimination; and
- Remedying wage discrimination. Since the Equal Pay Initiative began April 19, 1999, DOL has recovered more than \$15 million in back pay for 11,000 women and minorities and resolved more than 30 pay related actions.

Consistent with the Pay Initiative, DOL is increasing its outreach and technical assistance to federal contractors on equal pay issues and assisting employers find qualified employees through its partnership efforts and the new nationwide network of One-Stop Career Centers. The Equal Pay Initiative also includes a focus on helping women obtain and retain employment in non-traditional jobs. (www.doleta.gov/usworkforce/onestop/)

As a result of all of these efforts, DOL is attempting to raise public awareness that the pay gap is real and strengthen the DOL's enforcement efforts. In the long-run, DOL predicts that 1) the pay gap between working women and men will narrow; 2) occupational segregation will be reduced and employment opportunities enhanced and 3) a higher percentage of working women will be covered by, and receive, higher benefits from pension plans. For further information, visit the DOL website:<http://www.dol.gov/dol>.

The U.S. Department of Labor (DOL) has initiated a program titled "Narrowing the Wage and Opportunity Gap for All Workers." This initiative is designed to promote equal pay, economic opportunity and fair treatment of all working Americans and their families. DOL has a multi-faceted strategy that: 1) strengthens civil rights enforcement; 2) increases public education and awareness; and 3) builds strategic partnerships to enhance the Department's efforts to foster equal pay and equal employment opportunity in America's work places.

Finally, the DOL enforces laws that ban illegal pay discrimination in employment. The laws also require that Federal contractors take pro-active steps to ensure that all individuals have equal employment opportunities, including women and minorities, individuals with disabilities, and veterans.

State Legislation. Hundreds of state, city and county governments, community colleges, universities and other employers have changed wage-setting practices for traditionally female jobs after studying the issue. In two-thirds of the states that have adjusted pay systems, more than half of all women workers received pay increases through these programs. (U.S. DOL 1997)

More progress toward fair pay has been made in the public sector than in the private sector, partly because the wages and job descriptions of government employees are public information. Job evaluation studies that compare and measure actual job responsibilities can be made to fit civil service systems. After such studies and recommendations, elected officials control whether or not money may be designated to narrow any wage gap found. Several states have addressed the wage gap through legislation. According to the Center for Policy Alternatives, by April 3, 2001, 69 equal pay bills were introduced in 31 different states. (Center For Policy Alternatives, 2002) Minnesota, for example, implemented equal pay for all public sector employees in 1982. Between 1982 and 1986, the state spent \$26 million to upgrade the salaries of jobs based on a pay equity study. 8,500 state employees, mostly clerical and health care employees in 200 female-dominated jobs and about a third of the state work force, received average raises of approximately \$2000 - \$2500. Today, those increases have remained. In 1979 women in Minnesota earned 69 percent of what men earned on an hourly basis. In 1996 women's earnings were 86 percent of men's – a 17 percent increase, and a gap much smaller than the national average.

Wyoming State Government. With 25% (22.6 % if federal workers are excluded) of Wyoming workers employed by the federal or state government (Bullard, Nov, 2002), it could be time for an updated pay equity study for state workers. Wyoming state female workers are, on average, more equitably paid than those working in the private sector. The 1985 pay equity

study of Wyoming State government workers showed that the wage gap was 28.5 percent, significantly less than the 33 percent overall gap in the state public and private sectors, fifteen years later (Preliminary Study, 1985). However, this is an area where the wage gap can be reduced and the state can take the lead in examining its own pay policies.

In particular, two traditionally female-dominated occupations in Wyoming, Teachers and Nurses both of which are often associated with government entities, are considerably underpaid in comparison with the rest of the country. Figure 18 illustrates the overall gender wage gap by state, along with the specific rankings of states for teacher and nurses salaries. It is not surprising that the gender wage gap in Wyoming is large with nurses' salaries 49th in the country and teachers 42nd, (Figure 23). While not all states with a low wage gap have higher salaries for nurses and teachers (e.g. Arizona and Iowa), and not all states with a higher wage gap have poor salaries for nurses and teachers (e.g. Rhode Island and Michigan), there is a strong correlation between the two. Thus, one possible solution to the wage gap in Wyoming is to look specifically at adjusting the salaries in nursing and teaching occupations, perhaps bringing them to the national average. The cost and benefits of such a decision will be estimated later.

Figure 23
Ranking of Wage Disparity Between Women and Men Employed Full-Time, Year-Round, 1997, and the Average Hourly Wage For Nurses By Ranked By State, 1999, and the Average Salary for Teachers Ranked By State, 2000

<u>State</u>	<u>Rank</u>	<u>Rank Nurses</u>	<u>Rank Teachers</u>	<u>State</u>	<u>Rank</u>	<u>Rank Nursing</u>	<u>Rank Teachers</u>
Dist. of Columbia	1	**	6	West Virginia	26	46	39
Hawaii	2	1	18	Mississippi	27	35	48
Maryland	3	7	14	Pennsylvania	27	16	5
New York	4	4	2	Nebraska	29	44	44
Arizona	5	18	41	Delaware	30	17	13
California	6	2	8	South Dakota	31	47	50
Massachusetts	7	6	9	Ohio	32	28	17
Florida	8	22	28	Tennessee	32	39	31
Texas	9	19	27	Kansas	34	42	32
Iowa	9	50	35	New Hampshire	34	38	26
Missouri	11	35	36	New Mexico	34	33	46
Connecticut	12	5	1	New Jersey	37	3	3
North Carolina	12	29	23	Virginia	38	25	25
Idaho	14	32	38	North Dakota	39	45	49
Colorado	15	15	24	Montana	40	48	47
Washington	16	8	20	Alabama	41	41	29
Alaska	17	10	10	Illinois	42	24	11
Nevada	17	12	15	South Carolina	42	20	34
Oklahoma	17	40	50	Rhode Island	44	11	7
Vermont	20	26	30	Wisconsin	44	27	22
United States	**	14.5	16.5	Oregon	46	13	12
Kentucky	21	34	33	Michigan	47	14	4
Maine	21	31	37	Indiana	48	36	16
Arkansas	23	43	43	Utah	49	21	40
Minnesota	24	9	21	Louisiana	50	23	45
Georgia	25	30	19	Wyoming	51	49	42

(Sources: Compiled From American Federation of Teachers, 2000 and Bureau of Labor Statistics, 2002)

Private Sector Employer Solutions

Five primary tools have been suggested by the DOL for Private Sector employers to use to help narrow or eliminate pay gaps in their workplaces. (Woman's Bureau DOL, 2000) After each "tool" are examples of "best practices" by some employers that have won the U.S. Department of Labor's Opportunity 2000 and EVE (Exemplary Voluntary Efforts) awards. These awards honor Federal contractors for outstanding programs that have enhanced equal employment opportunity in the workplace. The companies identified as engaging in "best

practices" have been recognized by the Department of Labor for past exemplary efforts. These represent additional "ideas" for private companies that wish to look at solutions to the wage gap in Wyoming.

Tool #1: Evaluate The Company's Compensation System

Under the Equal Pay Act, covered employers must provide equal pay to women and men who perform substantially equal work in the same establishment. Title VII prohibits employment discrimination based on sex, including wage discrimination, by employers of 15 or more employees. Executive Order 11246 prohibits Federal contractors and Federally-assisted construction contractors and subcontractors who had Government contracts or subcontracts exceeding \$10,000 from discriminating in employment decisions on the basis of race, color, religion, sex, or national origin. This includes wage discrimination. In addition, under the Executive Order, each government contractor with 50 or more employees and \$50,000 or more in government contracts is required to develop a written affirmative action program (AAP) for each of its establishments. The Executive Order is enforced by the Office of Federal Contract Compliance Programs (OFCCP) of the U.S. Department of Labor. Title VII and the Equal Pay Act are enforced by the Equal Employment Opportunity Commission (EEOC).

OFCCP has stated that closing the wage gap is among the biggest challenges it faces in the 21st Century. Its principal enforcement mechanisms are compliance evaluations, including corporate management (glass ceiling) reviews. OFCCP also investigates discrimination complaints against Federal contractors. When the OFCCP reviews a company, among the many factors it examines are pay disparities. OFCCP will continue looking at companies' compensation practices to determine whether they apply fairly to women and minorities. The agency has urged companies to examine their own compensation practices and not wait for an OFCCP compliance evaluation.

Employers should ask if there are pay differences between women and men and/or between minorities and non-minorities in their company, and examine whether these differences are based on nondiscriminatory factors such as a seniority, merit, or incentive system, or on any other factor other than sex. Sometimes, historical inequities continue into the present. Also, are there differences between women and men in fringe benefits and perks? And do not neglect to look at any bonus structure to ensure that women are eligible for bonuses or other incentive compensation on the same basis as men.

Examples of Best Practices:

Blue Cross Blue Shield of Delaware

To ensure that all its employees are paid fairly, Blue Cross Blue Shield of Delaware, a health benefits organization, has set up a salary administration program that analyzes pay and benefit levels in all job classifications. Its compensation plan is designed to keep employees' pay current with the market and to compensate all employees according to their level of performance. Annual and ad hoc studies are done to prevent pay disparities between female staff members and male employees who work in the same classification and/or salary grade. Each year the Board of Directors is given a complete pay and benefits study that analyzes the pay levels of each employee category.

Pacific Northwest National Laboratory

Pacific Northwest National Laboratory is an environmental science and technology establishment. Staff salaries are reviewed against external and internal data, and if inequities are found for women, pay adjustments are made.

Eli Lilly and Company

Eli Lilly and Company, a global research-based pharmaceutical corporation, has developed and implemented a proprietary computer analysis used by Human Resources representatives during the performance evaluation process to alert them to any potential areas of concern before final decisions are made. The company performs compensation analyses after each cycle of merit pay delivery.

Tool #2: Establish Effective Recruitment, Hiring, and Promotion Practices

There is a great deal of competition for good talent. Be sure that employment practices are inclusive in order to ensure the effective use of all talent in the applicant pool. Are recruitment efforts reaching the broadest possible audience? Do qualified women have an equal opportunity to be in the applicant pool? Make sure the job listings are sent to industry associations formed for women, such as the Association for Women in Science or Women in Cable & Telecommunications, etc.

Do hiring and promotion practices ensure women an equal opportunity to be hired and to advance? If not, review them and revise them as necessary. The majority of Human Resource professionals think that women continue to face barriers to career advancement in today's workplaces, according to a survey. (Society for Human Resource Management, 2000) The barriers faced include corporate cultures that favor men, stereotypes and preconceptions of women, exclusion from informal networks, and the perception by management that family responsibilities will interfere with work.

Train all employees involved in recruitment, interviewing, hiring, and promotion practices in effective techniques for reaching women and ensuring that they have an equal opportunity to be hired and promoted. Keep records of the entire selection process used by the company and periodically analyze them in order to monitor effectiveness, as well as make changes as needed.

Examples of Best Practices:

Hawaiian Electric Company, Inc. (HECO)

Hawaiian Electric Company, Inc. (HECO), which, along with its subsidiaries, provides electricity to 95% of Hawaii's residents, made a good-faith effort to expand its pool of applicants in trade, engineering and craft positions that historically were held by men. HECO increased the number of women in trade and craft positions through a partnership formed with the YWCA's NEW Program (Non-traditional Employment for Women). The program teaches carpentry, sheet metal and electrical skills through training and apprenticeships. HECO also established

agreements with many community organizations, rehabilitation centers and Veterans' Affairs offices, soliciting referrals of women, minorities, veterans, and persons with disabilities.

Pacific Northwest National Laboratory

- Staff members are paid a \$1,000- \$3,000 bonus if they refer women scientists, engineers and managers who are hired by the Lab.
- The Lab manages the Energy Department's undergraduate laboratory fellowships, and in 1998, 70% of the fellowship interns were women. The Lab also hires summer interns from 11 regional community colleges with highly diverse student bodies as part of an Energy Department initiative.

Eli Lilly and Company

The company's succession management process identifies individuals with potential. One of the key drivers of the process is ensuring that women are appropriately represented in the diverse talent pipelines. For each management job opening, the "next most ready" women are identified. As a result, there are more than four times as many women identified in the talent pipeline today as in 1996 when the succession management process was formalized, and the number in the talent pipeline has nearly doubled.

Tool #3: Address Diversity

The workforce is becoming increasingly diverse. Between 1998 and 2008, the labor force participation rates of women in nearly all age groups are projected to increase; men's aggregate labor force participation is projected to continue to decline. Diversity can refer not only to differences in gender, race, and national origin, and the differences which flow from these characteristics, but also to differences in such things as personality, socioeconomic level, and work style. Managing diversity in today's environment is a business imperative. It can help you improve the quality of the workforce and compete successfully for customers among an increasingly diverse customer base. (Society for Human Resource Management, 2000) Seventy-five percent of Fortune 500 companies and 36 percent of companies at-large have diversity programs that were developed more than five years ago, according to a survey of human resource professionals. (Society for Human Resource Management, 2000)

Diversity training tries to ensure that employees appreciate the differences among workers, which can lead to improved working relationships. When organizations commit to an effective diversity training program, all employees benefit from an atmosphere of "improved morale" and "high performance" work teams. The best companies in America place a great value on training and foster a culture of positive relationships among employees. Ninety-three percent of Fortune 500 companies with diversity programs include training as part of that program, as do 92 percent of companies at-large. (Society for Human Resource Management, 2000)

Example of Best Practices:

Payne & Dolan, Inc.

This highway construction company, which averages 600 employees per year, entered into a partnership with the Wisconsin Department of Transportation in 1993 to bring women into the highway construction industry. The resulting Transportation Alliance for New Solutions (TRANS) provides recruitment, screening, and industry awareness training to women. New employees are recruited through the YWCA, and the Boys and Girls Club of Greater Milwaukee. Several years ago the company began an annual week-long, off-site training conference for its entire staff. Employees select from almost 100 classes on a variety of subjects, including workforce diversity.

Tool #4: Implement Mentoring Programs

In study after study, people who "make it" attribute their success to someone higher up who made it happen for them -- a mentor. In most companies, this kind of mentoring is very informal. We tend to mentor people in whom we see our own reflection. This is only natural, but it's not hard to see how women may get short-changed. It may be time to put in place a more formal mentoring program, which would benefit everybody. Successful programs are carefully constructed so that mentors and mentees are appropriately matched and that both are trained in the process. Mentoring is often the key to people's moving into higher positions. Women and men senior executives could, for example, actively mentor women in their companies who show potential. Mentoring can often help people better understand what it takes to succeed and how to make their contributions known and recognized. Mentoring of new hires or newly promoted employees helps companies better use their employees, which in turn is beneficial to their bottom line.

Example of Best Practices:

Eli Lilly and Company

Eli Lilly and Company has an Executive Mentoring Program whose objectives include (1) facilitating short- and long-term business performance by developing the executive talent pool, with an emphasis on diversity, and (2) further developing the competencies of those being mentored, leading to understanding of organizational culture, personal development, job satisfaction, and new career opportunities. Key elements of the program include one to two meetings per month between those being mentored and their mentor and an orientation focused on understanding key issues in starting and maintaining mentoring relationships.

Tool #5: Have a System to Ensure Accountability

If there are pay gaps and/or opportunity gaps between women and men in the company, it takes a concerted effort by all concerned to make a positive change. Leadership is key. If the leaders in an organization articulate the importance of equal pay, then others follow. For example, a task force dedicated to ensuring equal opportunities and equal pay could help this process. A task force can collect data, set objectives, assign responsibility for actions and monitor success. When senior management is actively involved the chances for success increase exponentially. Make sure that managers are accountable and rewarded for their initiatives in ensuring a level playing field. But just remember, whatever you do, the most important criterion for success is the attitude

and determination of the leadership -- equal opportunity and equal pay will happen only when the leaders say it should.

Example of Best Practices:

Eli Lilly and Company

Key Result Areas or KRAs are the foundation of Eli Lilly's performance management system. How employees are rewarded is directly related to how they perform in these KRAs. The People KRA, introduced in 1977, is one of the tools in place to hold management accountable for diversity. The People KRA applies to all employees who supervise others and is designed to help Lilly attract, retain, and develop a diverse workforce by having supervisors model behaviors to ensure an environment where performance and results are valued and individuals are learning and growing. Prominent parts of the People KRA are: identifying women candidates for future opportunities at the manager level and above; ensuring that succession planning focuses on accelerating the development of women candidates; and getting to the bottom of specific organizations' women retention issues and implementing solutions.

Tool #6: Websites That Offer Information and Technical Assistance

The following United States government web sites offer other resources:

The Bureau of Labor Statistics' Occupational Employment Statistics provides wage rates for 750 occupations in 4000 geographic areas. To get there: 1. click on "DOL Agencies" in the left-hand column; 2. click on "Bureau of Labor Statistics" (BLS); 3. click on "Surveys and Programs"; 4. click on "Employment and Unemployment"; 5. click on "Occupational Employment Statistics"; 6. click on "View Occupational Employment and Wage Estimates"; 7. click on geographic area of interest, National, State or Metropolitan; 8. click on "occupational divisions" of interest; and 9. click on occupational code of interest.

The Office of Federal Contract Compliance Programs (OFCCP) website contains compensation information, regulations, and technical assistance which can be of help to Federal contractors and subcontractors.

The publications section of the Women's Bureau website provides information on fair pay and other work force information relevant to women.

The EEOC provides information for employers on their rights and responsibilities under Federal equal employment opportunity laws, including information about technical assistance and training programs, and in-depth information on laws, regulations, and policy guidance.

Individual Solutions

According to one study, “despite the narrowing of the gender gap in recent years, the family gap in pay between women with children and women without children is, if anything, growing larger (Waldfogel 1998). In particular, while childless women do very well in the labor market today, earning wages very close to men’s, women with children have not fared as well,

and the position of never-married mothers has actually worsened relative to men and other women over the past few decades. Single mothers now earn only 56-66 percent of what men earn, substantially less than women who are married mothers or not mothers at all; they are also less likely to be in jobs that offer family benefits such as a job-protected maternity leave, child care assistance, or flexible work hours.

According to Waldfogel, while equal pay and opportunity policies are helpful, they are not sufficient to overcome the barrier posed by motherhood. In fact, the United States does at least as well as other countries in terms of equal pay and equal opportunity legislation, but lags in the area of family policies such as maternity leave and child care. Even with the passage of the Family Medical Leave Act in 1993, the United States is tied with Switzerland in offering the shortest period of leave – a maximum of 12 weeks. Moreover, the United States is the only one of 12 surveyed countries that does not offer some degree of paid leave. Second, parents in the United States rely more heavily on the private market for the provision of child care, while other countries offer subsidized care. As a result, the out of pocket price of care relative to a women's earning is higher in the United States than in other countries (with the exception of the United Kingdom). Waldfogel argues that one of the results of these policies is that a “family-penalty” exists for women with children that translates to lower wages while controlling for education and work experience, and fewer married women with careers.

Women, themselves, can play a large part in increasing their own wages and possibly the wages of others. Several resources from places such as the U.S. Department of Labor Women's Bureau, and United for a Fair Economy Activist Network, contain information and tips on how individuals and small groups of women can create change in the wage gap.

The DOL's Women's Bureau launched a campaign titled, “Working Women Count!” After surveying women nationwide, they offered several observations. Women in labor unions tended to fare far better than those not in unions. The Bureau also recommended that women within an establishment band together to push employers to conduct a job evaluation survey in order to highlight wage disparities as well as problem areas.

The organization, Women Work! offers advice for individuals including the following:

- Consider a career in a nontraditional field.
- Research salaries in one's own field to ensure that you are being paid fairly.
- Join a union
- Consider additional job training or taking on special projects in order to be better positioned for a promotion
- Ask for a raise. Do so by keeping a written record of contribution and a list of skills and accomplishments.
- If necessary, file a discrimination charge if you are being treated unfairly.

Activist strategies are encouraged by the organization, “United for a Fair Economy (UFE).” UFE encourages local media attention to the problem of the wage gap, and lobbying local, state and federal representatives to introduce legislation to combat wage disparities.

The Women's Bureau of the US Department of Labor developed an Equal Pay Checklist for individual women as a guide to issues that affect pay. When was the last time you:

1. Thought about what you do on the job, the skills you use, your contributions, and the value you bring to your employer?

2. Compared your skills and responsibilities to those of others in your workplace and industry?
3. Consulted trade journals, career publications, or Department of Labor wage information to get a sense of salary ranges for someone of your qualifications within your industry, or in similar jobs in other industries?
4. Had a performance review and used it as an opportunity to discuss your responsibilities and the value of your skills to the company?
5. Asked for a raise if you feel you are being underpaid based on your duties and responsibilities?
6. Gathered information from supervisors and colleagues about the kinds of skills and training needed to move into better paying jobs in your company?
7. Networked with other people outside your company to broaden your knowledge of your occupation and trends in your industry including information about salaries, essential skills and training opportunities?
8. Sought training, special projects or other skill building opportunities that could lead to a better paying job?
9. Pursued opportunities at your current place of employment?

Additional ideas include establishing a program that gives women the opportunity to chart out their career plans with a professional career planner (Taylor, 2001), and developing a “Money Conference for Women” designed to teach women about responsible financial planning, in a way that is dedicated to the specific and unique needs of women. This program could be similar to one developed in Massachusetts.

IDEAS FOR POSSIBLE WAGE DISPARITY SOLUTIONS IN WYOMING

The preceding ideas are based on what other entities are doing regarding the wage gap. The following ideas are especially for Wyoming’s situation. There has been no attempt to screen these ideas, nor have they been evaluated for their efficacy or political plausibility. They are just ideas, some “good” and some “bad” perhaps. As such they can stimulate discussion and perhaps other ideas.

Three of the ideas will be evaluated after the list is presented to calculate costs and benefits and to demonstrate their effect on the wage gap in Wyoming.

LIST OF IDEAS

- Education makes a significant difference in the wages of Wyoming women workers. Encourage women to pursue higher education with non-traditional but marketable majors.
- Encourage girls to pursue math and science in elementary and high schools, and continue that education in college.
- Encourage better career planning for young women and girls.
- Encourage girls and women to pursue “non-traditional” careers, and thus change the occupation matrix.
- Increase the average wages of Wyoming teachers and nurses to at least the national mean.
- Diversify the Wyoming economy by attracting new business and industry.
- Increase the number of women owned businesses. Increase the number of employees in these businesses.
- Increase the percentage of women who belong to a union.
- Increase the number of women who go into the skilled trades apprenticeship programs.
- Increase greatly the number of women working in the mining, construction and TCPU industries.
- Encourage the construction industries to train via apprenticeship programs, and encourage women to become apprentices. Encourage the State to require the construction industry to employ apprentices.
- Increase the proportion of women who work full time.
- Increase childcare availability so that women with young children have the opportunity to maximize labor force continuity and work full time.
- Find ways to cut the cost of childcare so more women can work full time.
- Encourage changes in state and private Human Resource practices that result in a reduction of the wage disparity.
- Enforce all laws related to wages and illegal employment discrimination.
- Raise the minimum wage.
- Conduct a pay equity (comparable worth) study and implement the findings for state and other public workers. [Encourage private employers to do the same.]

- State of Wyoming could conduct equal pay audits of private employers.
- State government could target adjustments for the most under valued female dominated job classes in state government.
- State government could revise the compensation system for state employees with an eye toward the wage gap.

Three of these ideas have been developed further, and analyzed with cost/benefit analysis and their impact of Wyoming's wage disparity estimated. These are covered next and they are:

- More women in “non-traditional” occupations
- Increasing average wages of Wyoming teachers and nurses to the national average
- Increase full time participation rates among women

Idea - Changing Where Women Work: Costs and Benefits for Wyoming

As has been noted, part of the wage gap problem can be explained by *where* women work. Some occupations can be classified as “male” to the extent that, when we look at the gender makeup, male employees far outnumber females. These jobs tend to be, though are not always, higher paying. On the other hand, “female” occupations, those that are female-dominated, tend to be lower paying. In fact as part of this study it was calculated that a 1% increase of the “Femaleness” of the occupation (among those that currently have high female participation) causes the overall occupational differential to rise by \$6. So an occupation with a 30% female workforce has a wage gap of \$6 less than one with 31%.

Part of the solution may be, therefore, to shift the gender makeup of “male” occupations – that is, increase the number of women in them. This section looks into how this could impact women's wages.

Where Men Work. According to Census 2000 and Bureau of Labor Statistics' Current Population Survey, the occupations in Wyoming that can be classified as predominantly male include:

- Management occupations (except farmers and farm managers)– approximately 62% male
- Architects, surveyors, cartographers, and engineers – approximately 89% male
- Drafters, engineering, and mapping technicians – approximately 84% male
- Life, physical, and social sciences (overall) – approximately 70% male
- Protective services – approximately 77% male
- Fire fighting, prevention, and law enforcement workers, including supervisors – approximately 88% male
- Construction and extraction supervisors – approximately 98% male
- Construction trades workers – approximately 95% male
- Extraction workers – approximately 94% male
- Installation, maintenance, and repair in construction and extraction – approximately 96% male

- Production (overall) – approximately 80% male
- Transportation and material moving (overall) – approximately 85% male
- Motor vehicle operators – approximately 85% male
- Rail, water, and other transportation (except motor vehicles, aircraft operators, and air traffic control) – approximately 89% male
- Material moving – approximately 83% male

These occupations do *not* necessarily have high wage disparities between male and female workers – rather, they are occupations that largely employ men. In fact, the wage disparity is notably low in some of them. For example, in rail, water, and other transportation occupations, the average unadjusted female wage (that is, *not* accounting for work experience, education, etc.) is 95% of men’s. In material moving, women make 90% of men’s average wages (unadjusted); female architects, surveyors, cartographers, and engineers have an unadjusted average wage that is 89% of men’s; and in construction and extraction occupations, women make the same wage on average as men. Thus, encouraging women to go into these male occupations could render a reduction in the wage gap.

What if Women Worked Where Men Work? What impact would a change in the gender makeup of these male occupations have? To investigate, this study increased the size of the female workforce in each of the above listed occupations by 10%, 15%, 20%, and then 50%. These increases are *not* applied to the *percentage* of females in the occupation – for example, the study did not increase the percentage of females in management occupations from 39% to 44%, then 49%, and so forth. Rather, the *number* of females employed is increased by 10%, 15%, and so on. This is a more realistic policy goal – to do the former, we would either have to reduce the number of men working in the occupation (which is of course not the state’s goal) or increase the population of Wyoming by unrealistic high numbers. With the more modest scenario, females could realistically be drawn into male occupations from entering the workforce. The numbers of females in any of these occupations is currently small enough that increasing their participation would have a minimal impact on other occupations.

Wage Effects of Changing Where Women Work. The impact on the wage disparity statewide is shown in the estimated cost/benefit table in Figure 24. For each occupation, the percentage of women in the workforce working in that occupation was found from Census data. However, here we also must account for the possible impact of increasing total labor force size if these women are recruited from the entering workforce. Using these percentages, we find the weighted average median wage for the state if the number of women in each occupation rose by 10, 15, 20, and 50%, assuming that the balance of the female workforce earns the median weekly wage of \$452.

Again, these are rough estimates, but the effect is telling. Increasing the number of women in these male occupations reduces the wage differential substantially. Increasing participation by 10% reduces the wage differential by 3.9 – 4.1%; increasing it by 15% reduces the differential between 4.1% and 4.2%. When female employment in these occupations rises 20%, the wage differential is estimated to fall 4.4 – 4.5%. Finally, when female participation doubles, the wage differential falls by 5.9 – 6.1%.

To see how this exercise impacts wage differentials, let us begin by examining the male occupation with the highest disparity, extraction. This exercise is shown in Figure 24a. Figure 24 consists of 6 pages (A-F).

Figure 24 (a)
Occupations with Large M/F Participation Disparity

Action:
 Increase percent of Women

in “Male Jobs

Occupations with large
 M/F participation disparity

	Number of Male Workers:	Male Average Wage	% Female	Number of Female Workers:	Female Average Wage	Unadjusted Wage Gap	National Average Wage
Management occupations	10555	\$1,038.00	38.53%	6616	\$732.00	70.52%	\$891.20
Architects, surveyors, and engineers	2153	\$1,149.00	10.85%	262	\$1,022.00	88.95%	\$1,188.40
Drafters and mapping	1234	\$680.00	15.77%	231	\$535.00	78.68%	\$832.40
Life, physical, science	1989	\$1,056.00	29.84%	846	\$758.00	71.78%	\$1,121.20
Protective service occupations	3277	\$658.00	23.17%	988	\$509.00	77.36%	\$844.80
Fire fighting, and law enforcement	2402	\$796.00	12.40%	340	\$703.00	88.32%	\$643.60
Supervisors	3488	\$749.00	1.52%	54	\$749.00	100.00%	\$830.80
Construction trades	14534	\$595.00	4.86%	743	\$424.00	71.26%	\$604.80
Extraction workers	3466	\$789.00	5.84%	215	\$477.00	60.46%	\$908.40
Installation and repair	12537	\$767.00	4.06%	530	\$548.00	71.45%	\$561.60
Production occupations	10135	\$501.00	19.96%	2528	\$368.00	73.45%	\$691.20
Transportation and material	15516	\$587.00	14.65%	2664	\$439.00	74.79%	\$568.00
Motor vehicle operators	8061	\$591.00	14.57%	1375	\$422.00	71.40%	\$516.40
Transportation occupations	2301	\$919.00	10.99%	284	\$871.00	94.78%	\$1,077.60
Material moving	4533	\$540.00	16.63%	904	\$486.00	90.00%	\$603.20

**Figure 24 (b)
Changes at 10%**

Occupations with large
M/F participation disparity

	Female Employment with 10% increase	Additional Women Working	Unadjusted Wage Gap @ Nat'l Avg.	Entering Females Total Earnings @ Nat'l Avg.	Entering Females Total Earnings @ M Avg. (WY)
Management occupations	7278	662	71.92%	\$493,875.93	\$686,740.80
Architects, surveyors, and engineers	288	26	90.25%	\$27,168.77	\$30,103.80
Drafters and mapping	254	23	82.66%	\$12,983.66	\$15,708.00
Life, physical, science	931	85	74.91%	\$66,922.93	\$89,337.60
Protective service occupations	1087	99	82.00%	\$53,308.31	\$65,010.40
Fire fighting, and law enforcement	374	34	87.64%	\$23,718.22	\$27,064.00
Supervisors	59	5	100.93%	\$4,082.15	\$4,044.60
Construction trades	817	74	74.03%	\$32,725.64	\$44,208.50
Extraction workers	237	22	65.54%	\$11,118.08	\$16,963.50
Installation and repair	583	53	71.61%	\$29,109.59	\$40,651.00
Production occupations	2781	253	79.26%	\$100,383.85	\$126,652.80
Transportation and material	2930	266	76.79%	\$120,076.87	\$156,376.80
Motor vehicle operators	1513	138	72.86%	\$59,206.18	\$81,262.50
Transportation occupations	312	28	96.78%	\$25,258.60	\$26,099.60
Material moving	994	90	91.95%	\$44,887.94	\$48,816.00
				\$1,104,826.73	\$1,459,039.90
				Also Change in Earnings @ Nat'l Avg., Marginal Benefits to Females, Marginal cost to employers	Also Change in Earnings @ Nat'l Avg., Marginal Benefits to Females, Marginal cost to employers

**Figure 24 (c)
Changes at 15%**

Occupations with large M/F participation disparity

	Female Employment with 10% increase	Additional Women Working	Unadjusted Wage Gap @ Nat'l Avg.	Entering Females Total Earnings @ Nat'l Avg.	Entering Females Total Earnings @ M Avg. (WY)
Management occupations	7608	992	72.51%	\$746,975.51	\$1,030,111.20
Architects, surveyors, and engineers	301	39	90.63%	\$40,923.18	\$45,155.70
Drafters, and mapping technicians	266	35	84.45%	\$19,898.00	\$23,562.00
Life, physical science	973	127	76.29%	\$102,228.00	\$134,006.40
Protective service occupations	1136	148	83.99%	\$81,903.32	\$97,515.60
Fire fighting, and law enforcement	391	51	87.35%	\$35,459.18	\$40,596.00
Supervisors	62	8	101.41%	\$6,152.37	\$6,066.90
Construction trades	854	111	75.21%	\$49,874.32	\$66,312.75
Extraction workers	247	32	67.56%	\$17,191.89	\$25,445.25
Installation and repair	610	80	71.68%	\$43,707.64	\$60,976.50
Production occupations	2907	379	81.84%	\$155,478.07	\$189,979.20
Transportation and material	3064	400	77.67%	\$182,177.24	\$234,565.20
Motor vehicle operators	1581	206	73.48%	\$89,568.60	\$121,893.75
Transportation occupations	327	43	97.74%	\$38,266.35	\$39,149.40
Material moving	1040	136	92.84%	\$67,983.49	\$73,224.00
				\$1,677,787.17	\$2,188,559.85
				Also Change in Earnings @ Nat'l Avg., Marginal Benefits to Females, Marginal cost to employers	Also Change in Earnings @ Nat'l Avg., Marginal Benefits to Females, Marginal cost to employers

**Figure 24 (d)
Changes at 20%**

Occupations with large M/F participation disparity	Female Employment with 20% increase	Additional Women Working	Unadjusted Wage Gap @ Nat'l Avg.	Entering Females Total Earnings Entering Females' Total Earnings @ Nat'l Avg.	Entering Females Total Earnings Entering Females' Total Earnings @ M Avg. (WY)
Management occupations	7939	1323	73.08%	\$1,003,761.52	\$1,373,481.60
Architects, surveyors, and engineers	314	52	91.35%	\$55,000.21	\$60,207.60
Drafters, and mapping	277	46	85.94%	\$26,997.82	\$31,416.00
Life, physical, science	1015	169	77.52%	\$138,516.32	\$178,675.20
Protective service occupations	1186	198	85.88%	\$111,659.53	\$130,020.80
Fire fighting and law enforcement	408	68	87.07%	\$47,129.45	\$54,128.00
Supervisors	65	11	101.85%	\$8,238.50	\$8,089.20
Construction trades	892	149	76.34%	\$67,493.17	\$88,417.00
Extraction workers	258	43	69.59%	\$23,608.88	\$33,927.00
Installation and repair	636	106	71.74%	\$58,328.75	\$81,302.00
Production occupations	3034	506	84.23%	\$213,350.26	\$253,305.60
Transportation and material	3197	533	78.46%	\$245,377.31	\$312,753.60
Motor vehicle operators	1650	275	74.07%	\$120,385.32	\$162,525.00
Transportation occupations	341	57	98.53%	\$51,432.52	\$52,199.20
Material moving	1085	181	93.62%	\$91,407.49	\$97,632.00
				\$2,262,687.07	\$2,918,079.80
				Also Change in Earnings @ Nat'l Avg., Marginal Benefits to Females, Marginal cost to employers	Also Change in Earnings @ Nat'l Avg., Marginal Benefits to Females, Marginal cost to employers

**Figure 24 (e)
Changes at 50%**

Occupations with large
M/F participation disparity

	Female Employment with 20% increase	Additional Women Working	Unadjusted Wage Gap @ Nat'l Avg.	Entering Females' Total Earnings @ Nat'l Avg.	Entering Females' Total Earnings @ M Avg. (WY)
Management occupations	9924	3308	75.58%	\$2,595,245.09	\$3,433,704.00
Architects, surveyors, and engineers	393	131	93.73%	\$141,075.47	\$150,519.00
Drafters and mapping	347	116	93.11%	\$73,127.90	\$78,540.00
Life, physical and science	1269	423	83.13%	\$371,333.09	\$446,688.00
Protective service occupations	1482	494	94.20%	\$306,188.12	\$325,052.00
Fire fighting and law enforcement	510	170	85.85%	\$116,177.66	\$135,320.00
Supervisors	81	27	103.60%	\$20,951.84	\$20,223.00
Construction trades	1115	372	81.29%	\$179,681.18	\$221,042.50
Extraction workers	323	108	78.50%	\$66,581.42	\$84,817.50
Installation and repair	795	265	72.03%	\$146,409.32	\$203,255.00
Production occupations	3792	1264	94.74%	\$599,965.18	\$633,264.00
Transportation and material	3996	1332	82.04%	\$641,451.24	\$781,884.00
Motor vehicle operators	2063	688	76.68%	\$311,542.00	\$406,312.50
Transportation occupations	426	142	102.20%	\$133,363.28	\$130,498.00
Material moving	1356	452	97.16%	\$237,153.55	\$244,080.00
				\$5,940,246.33	\$7,295,199.50
				Also Change in Earnings @ Nat'l Avg., Marginal Benefits to Females, Marginal cost to employers	Also Change in Earnings @ Nat'l Avg., Marginal Benefits to Females, Marginal cost to employers

Figure 24 (f)
Summary of Costs and Benefits of Changing Women to “Male” Jobs at 10%, 15%, 20%, 50% Rates

% Increase in Female Employment in “Male” Jobs	<u>Cost @ National Average</u>	<u>Benefit to the State</u>
10%	\$1,104,826	\$1,657,239
15%	\$1,677,787	\$2,516,680
20%	\$2,262,687	\$3,394,030
50%	\$5,940,246	\$8,910,369

At current employment levels, the unadjusted female average wage is approximately 60% (Figure 24(a)) of the average male wage. In this case, women are a small minority of these extraction workforce (roughly 6%), and are paid much less on average (\$789 for men, \$477 for women). With a 10% increase in the female extraction workforce, 22 more women, the differential falls to roughly 66% at the national average wage and 64% at the Wyoming male wage. At a 15% increase in female employment, the differential reduces to 68% and 66% at national and male average wages, respectively. For a 20% increase in females, the differential becomes roughly 70% at the national average wage and 67% at the Wyoming male wage. Finally, for a 50% increase in female employment, the extractive occupation differential falls dramatically, 79% at the national average wage and 74% at the Wyoming male average wage.

The next largest occupational wage differential in Wyoming is in management occupations, where women earn a little over 70% of what men do. At a 10% increase in female employment, the wage differential moves to almost 72% at the national average wage, and 73% at the Wyoming male average wage. When 50% more women are employed in management, we see the management wage differential change to almost 76% at the national average, while it changes to over 80% at the male average.

Moving to one of the occupations with the smallest wage gaps, rail, water, and other transportation, we see that currently with only 284 women, they constitute only 11% of employees but are paid nearly 95% of what men are. Because women and men are paid very close average wages currently (\$919 for men vs. \$871 for women), changing female employment will have a small impact on the differential within the occupation. However, increasing women's employment in this relatively high-wage occupation (\$45,292 average female annual earnings, compared to Wyoming average annual pay \$26,837) would have a positive impact on the overall Wyoming wage differential.

A 15% increase in employment narrows it to nearly 98% and 95.5% at the national and male average wages, respectively. Doubling the number of women in the profession eliminates the female wage differential completely at the national average wage, moving women's wages to over 102% of men's. A 50% increase in women's employment at the male average wage narrows the gap to over 96%.

Most of the occupations shown in this male-occupation matrix are relatively high-paid. The lowest, measured at the male average wage, pays \$26,052 annually, only slightly less than the state average annual wage. The highest paid at male average wages is architects, surveyors, cartographers, and engineers, with an annual wage of \$59,748 – even the female average wage yields an annual income of \$53,144. Moving women into these male occupations would obviously be a boon to women's earnings in the state.

How Do We Change Where Women Work? The challenge of increasing female participation in traditionally male occupations is a large one. Several factors could encourage this shift – better access, childcare, education, and recruiting on the part of firms, for example. We examine these next, but leave detailed discussion of shifting women from part- to full-time work to the “what if women worked more?” section.

Childcare in Wyoming is fairly widely available, with about 177 centers and 577 home providers statewide, according to a 2001 survey by the Wyoming Department of Family Services. It may however be more available in city centers than in more rural areas. Hours of operation tend to be traditional workday hours (6:30 a.m. – 6:00 p.m.), with some 15% offering nontraditional hours (5 a.m. – 11 p.m.), though very few offered 7-day service. (Wyoming child

care center and home childcare provider market and operations survey, April 2001.) Monthly average full- and part-time fees for various ages from the survey are summarized below in Figure 25.

Figure 25
Monthly average fees, by age group, full- and part-time care

	<u>Full</u>	<u>Part</u>
Infants (6 wk. – 1 yr)	\$392	\$271
Young Toddlers (13 –23 mo.)	\$382	\$274
Two Year Olds (2 year)	\$341	\$223
Preschoolers (3-4 years)	\$340	\$240
Kindergarteners (5 years)	\$327	\$211
School Age (6 years or over)	\$279	\$187

The cost of childcare ranges from a little over \$4700 yearly for full-time care of the youngest children to a little over \$2200 for school age, part-time care. If we shift women into higher-paid male occupations, these costs would be quite manageable because of the additional income to pay the childcare bill. However, at current female median wages (\$22,397 according to Census 2000), these amounts are a very high portion of women’s income.

Higher education, the key to many of the higher paid male occupations, is very accessible to women in Wyoming. The annual cost of attending the University of Wyoming for the 2003-04 academic year is estimated to run \$12,300 for residents and \$18,150 for nonresidents (including tuition, fees, and living costs). These are among the lowest costs for college attendance in the nation. Women also make up the majority of the U.W. student population. In fact, participation rates of women at the University of Wyoming are 50.2% for full-time undergraduate, 60.4% for part-time undergraduates, 50.4% for full-time graduate students, and 71.2% for part-time graduate students. The high participation of women in part-time education reflects, most likely, the high accessibility of the university statewide via teleconference courses, online courses, and so on. The high participation rates of women in higher education outstrip the female population of Wyoming (49.7%). Women and men currently have roughly the same educational attainment – 30.8% of women have a high school degree compared with 31.2% of men, and 15.1% of women have a bachelors degree compared with 14.8% of men.

If education is so accessible for women in Wyoming, why aren’t there more women in high-wage male occupations that require at least a bachelors’ degree (architects, engineers, managers, and sciences)? The keys are most likely the majors that women choose in college and the “brain drain” of all Wyoming graduates, both male and female. The extent of Wyoming’s brain drain is substantial. Recall that the study cited earlier by the Research & Planning Section of the Wyoming Department of Employment (“Tracking University of Wyoming Graduates Into

the Wyoming Work-force”, 1995) showed that 45% of U.W. graduates moved into the Wyoming workforce after they graduated. The remaining 55% could “seep out” because they are still in school (graduate, second-bachelors, etc.), but there is no doubt that a large portion of these graduates simply left the state.

As to college major choice, there is some evidence that women and men continue to make vastly different choices. For example, at U.W. in the Fall 2002 semester, there were 863 women enrolled in College of Education courses compared to 312 men (Office of Institutional Analysis, University of Wyoming, 2003). This is significant given the relatively low wages teachers are paid. On the other hand, in the College of Engineering, 204 women were enrolled compared to 1001 men – also significant, since engineering occupations are among the highest paid. Not all majors with divergent wage profiles experience this degree of gender segregation (for example, there are far more female Accounting majors than male), but this does indicate that choice of major continues to have a telling effect.

A practical solution, is for employers to actively recruit women into traditionally male-occupations beginning at an early age. This of course would require reinforcement for women at earlier ages to take classes throughout their educational career that would allow them to enter male dominated occupations – science, mathematics, and so forth. But private firms consciously increasing the diversity of their workforces by making it a goal to bring in more women would ultimately have the largest impact on keeping well-educated women in the state, thus reducing Wyoming’s wage differential.

Idea - Changing What Women Make Where They Currently Work

Two occupations in Wyoming that are overwhelmingly female are teaching which is over 70% female, (except college level), and nursing, which is over 90% female. They are also among the professions in Wyoming whose workers are paid far below the national average wage. Figure 26 shows national and Wyoming averages for those occupations.

The figure shows the difference between wages of registered nurses and teachers in the U.S. and in Wyoming. It is obvious from the table that these female occupations are paid much less than the national average in Wyoming. The smallest difference between Wyoming and U.S. wages is in preschool teaching (except special education, with a \$3,240 difference). The largest is in secondary school special education teachers, a whopping difference of \$11,660. One way, therefore, to reduce the wage differential is to bring earnings in these heavily female occupations up to national average for both women and men. The figure shows the calculations if the wages in these occupations were raised to the national average.

In Figure 26, “Total Employment WY,” shows the total number of workers in these occupations according to Census 2000. “Change Annual WY Income from Occupation if at US Avg,” has a dual interpretation. This is both the additional cost to employers (taxpayers in the case of teachers) of paying these occupations the U.S. average wage. It is also the total direct economic benefit to those workers and the state, or additional direct income, generated by paying teachers and nurses the U.S. average.

Figure 26

Occupation (BLS 2001)	US Average Wage	WY Average Wage	US-Wyoming Average Wage Differential	Total Employment WY	Change Annual WY Income from Occupation if at US Avg.
Registered Nurse	\$48,240	\$39,590	\$8,650.00	3,640	\$31,486,000.00
* Preschool Teachers	\$20,940	\$17,700	\$3,240.00	390	\$1,263,600.00
* Kindergarten Teachers	\$41,100	\$34,520	\$6,580.00	280	\$1,842,400.00
Elementary School Teachers	\$43,320	\$36,270	\$7,050.00	2,640	\$18,612,000.00
** Middle School Teachers	\$43,570	\$36,360	\$7,210.00	1,350	\$9,733,500.00
Middle School	\$43,340	\$33,590	\$9,750.00	100	\$975,000.00
** Secondary School Teachers	\$45,370	\$37,500	\$7,870.00	2,120	\$16,684,400.00
Secondary School	\$45,050	\$36,230	\$8,820.00	320	\$2,822,400.00
Elementary School	\$44,900	\$35,800	\$9,100.00	470	\$4,277,000.00
Middle School	\$43,040	\$36,020	\$7,020.00	270	\$1,895,400.00
<u>Secondary School</u>	<u>\$45,670</u>	<u>\$34,010</u>	<u>\$11,660.00</u>	<u>240</u>	<u>\$2,798,400.00</u>
Total					\$92,390,100.00 (also employer cost of raising avg)
* Except Special Education					
** Except Special and Vocational Education					

Because of the multiplier effect increasing the direct income of teachers and nurses would not only affect those workers. Calculation in Figure 26 shows the impact of raising nurses' and educators' wages in the state. As we can see, the statewide benefits of these wage increases far surpass the costs. The total cost of increasing Wyoming teachers' and nurses' wages is estimated (from Figure 26) at \$92,390,100. A conservative estimate of total multiplier benefits to the state from increasing average wages is \$138,585,150, which exceeds the costs by \$45,195,050 annually. Using the mid point between the lower and upper bound produces a potential benefit of \$76,221,832 annually.

Figure 27
Marginal Benefits / Costs (annual)

Action:	
Increase wages of registered nurses, educators to national average (except college)	
	<u>Change in Wage Gap</u>
Registered nurses	2.00%
Preschool teachers, Middle school vocational education teachers	0.10%
Kindergarten teachers, High school vocational education teachers, Middle & High school special education teachers	0.20%
Elementary school teachers	1.30%
Middle school teachers	0.70%
High school teachers	1.10%
Preschool-elementary special education teachers	0.40%
Cost / Benefit Analysis	
Lower Bound Statewide Benefits	\$138,585,150.00
Upper Bound Statewide Benefits	\$198,638,715.00
<u>Costs (increased wage bill)/Direct Income Benefits</u>	<u>\$ 92,390,100.00</u>
Total Net Benefits, Lower Bound	\$ 46,195,050.00
Total Net Benefits, Upper Bound	\$106,248,615.00
Benefits Mid Point	\$168,611,932.00
Benefits Mid Point	
Costs Mid Point	\$ 92,390,100.00

What is the impact on the wage differential statewide if we bring the wages of teachers and nurses up to the national average? To get a rough estimate, we use the Census data to find the percentage of the female workforce that works in each occupation. Assuming the balance of female workers continue to earn the median female wage, \$452 per week, we find the weighted average median wage by multiplying the percentage of women earning the new, higher wage by that wage, then multiplying the remaining proportion of women by the median wage. The results shown in Figure 27 are very promising. Raising registered nurses' wages to the national average reduces the wage differential by 2% -- women's weighed average median wage moves to \$465. For teachers, increasing wages to the national average reduces the wage differential between 0.1% and 1.3%.

Idea - What if Women Worked More?

According to the Bureau of Labor Statistics (“Usual Weekly Earnings Summary,” April 17, 2003), part-time male workers in the U.S. earned a median salary of \$175 per week in 2002, while female part-time workers earned \$193 per week. This is on par with the demographics of part-time workers – over 53% of part-time male workers are aged 16-24, which is traditionally the lowest wage earning age category; only 32% of females in this age group are part-time workers.

Even though women may earn more on average in part-time work than men, the fact remains that 69% of part-time workers are women, and that nearly 70% of part-time female workers are aged 25 or over. This means that their lifetime earnings profile is significantly lower than if they worked full time. In addition, the part-time participation rate of women in the Wyoming workforce is more than double men’s part-time participation. Over 33% of women report working fewer than 35 hours per week at least one week in 1999, according to Census 2000, while only a little over 13% of men reported the same hours worked – in other words, women are 2.5 times more likely than men to have worked part-time. Some of this number may be attributable to time between jobs and the nature of the occupations. However, almost 12% of women reported working fewer than 35 hours per week for 50 to 52 weeks, compared to only a little over 4% of men reporting the same (Census 2000). Thus, “full-time” part-time employment is almost 3 times more likely among women than men in Wyoming.

Impact of More Women Working Full-Time. What if we could bring some of these female part time workers into the full-time workforce? According to Census 2000, 130,593 women worked in Wyoming in 1999. Of these, 15,584 worked 34 or fewer hours per week for 50-52 weeks of the year. What if half, or 7792, of these women came into the full-time workforce working 35 or more hours per week. To simplify, we assume that they enter the workforce at the female average full-time annual wage, \$22,397, or an average weekly wage (assuming 52 weeks worked) of approximately \$430. This is approximately \$12.30 per hour. Assume that part-time workers earn approximately the same average weekly and hourly wage, and that they work 20 hours per week. Thus, women working 20 per week would have a median wage of roughly \$12,800. The difference between this wage and the full-time female wage is \$9597 in this exercise.

Now, assume 7792 “full time” part-time women workers enter the workforce full-time. The direct economic impact of their increased income would be \$74,799,824. Estimating the multiplier effect of this increased income on the state, the total economic impact could range between \$112,199,736 and \$160,819,622. This provides a conservative estimate for changing some part-time workforce into full-time workers.

After exhaustive searches, data on women’s part-time wages in Wyoming were not found – hence the “back of the envelope” calculation above. However, another imputation for part-time female Wyoming wages can also be found using the estimate from the Bureau of Labor Statistics (Highlights of Women’s Earnings, 2001 (May 2002)) that part-time female workers make 36.4% of the median wages for female full-time workers. As such, estimated median female part time wages would be \$8,063 annually. The difference between full time and part-time wage here would thus be \$14,334. If half of the female part-time workforce, or 7792 women, entered full time work, the direct economic impact would be \$111,690,528; the total economic impact would be between \$167,535.792 and \$240,134,635.

Costs of Women Working More. To analyze the costs of increasing women's participation in the workforce, we must examine the most likely reasons that women are not in the full-time workforce as much as men. The most obvious culprits might be education and child-care costs.

As previously noted, women and men in Wyoming have very similar education levels. Census 2000 shows that 30.8% of Wyoming women have a high school or equivalent degree, 9% have associates degrees, 15.1% have bachelors degrees, and 4.4% have masters degrees. By way of comparison, 31.2% of men have a high school or equivalent degrees, 7% have associates degrees, 14.8% have a bachelors degree, and 4.8% have masters degrees.

Women also participate at high rates in college in Wyoming. At the University of Wyoming, women make up more than half the full-time undergraduate class and over 60% of part-time undergraduates; they also are over half of the full-time graduate students, and over 70% of part-time graduate students.

Let us examine the possibility that inadequate educational levels keep women in occupations that only employ them part-time as a way of estimating some of the costs of moving women to the full-time workforce. The annual total cost (including tuition, fees, and living costs) of attending the University of Wyoming for 2003-04 is estimated at \$12,300 for residents. Again, assume we bring in half, or 7792, of the women currently working 34 or fewer hours per week into the full-time workforce. Suppose that these women need a bachelors degree to enter full-time employment, and that they will attend full-time to obtain their degree. Suppose that half of these women (3896 of them) have at most a high school or equivalent degree, and the other half an associates degree. Assuming tuition stays constant and that a bachelors degree takes 5 years, the cost for the high school educated women to obtain a bachelors degree would be \$61,500 each, for a \$239,604,000 total cost or \$79,868,000 per year. The cost for associate-degree holding women to obtain a bachelors, assuming 3 more years of college, would be \$38,400 each, for a total cost of \$149,606,400 or \$49,868,800 per year.

Recall that we assumed these women were making a median salary for their part-time work (20 hours per week) of \$12,800. We can make two assumptions here – either they continue to work at their part-time jobs while attending school (20 hours per week is a very common work-load for full-time students), in which case they will lose no wages. At the upper bound of costs, these women could completely quit their part-time jobs. If they did, direct income of \$99,737,600 would be lost annually to Wyoming. Using the multiplier, this would translate into between \$149,606,400 and \$214,435,840 in lost income to Wyoming annually for the 3-5 years they were in school. However, these costs are accrued only for a very short time scale.

There are also large long-term benefits to increasing educational attainment that should be factored into our discussion on education. On average, a college-graduate earns \$20,000 more annually than a high-school graduate (Census 2000). Thus, the long-term earning profile of these women would increase dramatically, regardless of the wage gap.

It is easy to imagine that caring for children is among the reasons many women may not participate in the full-time workforce. Although as noted before child-care facilities in Wyoming are fairly widespread, including over 750 facilities, women have a myriad of reasons for not

taking full advantage of these services. For reference, monthly average full- and part-time fees for various ages from the survey are summarized previously in Figure 25. Recapping, child-care costs range from a little over \$4700 yearly for full-time care of the youngest children to a little over \$2200 for school age, part-time care.

Assume that the women moving from part-time work to full-time school use child-care at the same rate as they did before school. This means that we will assume additional child-care will only be applied to the women who move from school to full-time work (or directly from part-time to full-time work). Assume also that every woman moving from part- to full-time employment is using part-time child-care initially. To simplify, we will also assume that the change in childcare will be from part-time to full time for each of the women we move from part- to full-time employment.

With these assumptions, the 7792 women moving from part-time work are assumed to have incurred the highest possible (infant) part-time child-care costs. As such, the child-care bill they pay initially in total is \$25,339,584 annually. With the move to full-time care, their child-care bill will increase to an annual amount of \$36,653,568. The change in the child-care bill is therefore \$11,313,984 annually.

Figure 28 summarizes the costs and benefits of moving more women to full-time work under these assumptions.

Figure 28
Costs and Benefits of More Full Time Work for Women

Action:	
More Women Work Full Time	
<u>Benefits:</u>	
Lower Bound Statewide <u>Benefits</u>	\$112,199,736.00
Upper Bound Statewide <u>Benefits</u>	\$160,819,622.00
<u>Costs:</u>	
Increased wage bill/direct income benefits, post-education	\$74,799,824.00
Education costs (3 years)	\$49,868,800.00
Education costs (5 years)	\$79,868,000.00
Child-care costs, post education	\$11,313,984.00
Total Net Benefits, post-education, Lower Bound	\$26,085,928.00
Total Net Benefits, post-education, Upper Bound	\$74,705,814.00
Mid Point Benefits = \$136,199,736	Net Benefit = \$85,803,865
Mid Point Costs = \$ 50,395,871	

Estimated Decrease in the Wage Gap From Three Actions.

Three actions were evaluated on a cost/benefit basis above: increasing female participation in higher paying male occupations, changing what women (specifically nurses and teachers in this example) make on their current jobs, and increasing the proportion of women who work full time. Figure 29 summarizes the impact of those three actions on Wyoming’s wage gap.

Figure 29
Total Effect of 3 Actions on Wyoming’s Wage Gap

<u>Action:</u>	<u>Reduces the Gap by:</u>
Increase female participation in “male” jobs	3.5 – 6.1 points
Changing what nurses and teachers make	2.1 – 3.3 points
Increasing women’s full time work (using a 20% PT to FT assumption)	4.5 points
Total	10.1 to 13.9 points reduction in wage gap

The total difference between men and women’s wages in Wyoming today is about 33% (100% - 67%). With these changes that disparity could be cut to an estimated 19 – 23%. Wyoming women’s wages would be 77 – 81% of men’s in the state, placing the state at or above the national average and well above the regional average.

CONCLUSION

Wyoming has one of the largest gender wage gaps in the nation – defined as the difference between average male and female wages. Undoubtedly there is some illegal discrimination against women that explains part of this disparity. That is the conclusion at the national level, but the amount is in dispute. Research cited in this paper estimates the amount at from 2% to 12% and some would argue for more. However, data were not available to estimate the amount of wage disparity resulting from any illegal discrimination in Wyoming.

The reasons for the wage disparity in Wyoming are diverse, but much of the gap between full time male and female workers can be explained by the reality that Wyoming women work more frequently in occupations and industries that pay less than the occupations and industries where Wyoming men are employed. Moreover, when considering all workers including above average part-time and seasonal female employment, it is clear that women spend less time at work than men do, further reducing woman’s pay relative to men’s pay in the state.

This paper presents a number of ideas (of both long term and short term time frames) that can provide the basis for a serious discussion on the issues raised by wage disparity. They include both public policy options and private industry solutions. To illustrate how the wage gap might be altered, three approaches were analyzed using very conservative assumptions. By moving more women into traditionally “male” jobs, bringing certain female dominated jobs up to the national average wage, and improving the opportunity for more women to work full-

time Wyoming's wage disparity could easily go from among the worst in the country to the national average or well above.

Wage disparity costs the state a lot of money each year. In addition, we are losing our educated women (and men) to employment out of state or underemployment within the state. The result is a "brain drain," and underutilization of our female human capital.

Focusing on the wage gap is a useful, but potentially deceptive exercise. While Wyoming has a very large wage gap some states with a small wage gap are not better off economically. For example, Vermont's smaller wage gap is attributable to low men's and women's wages leading to greater parity between women and men. Low wages for both men and women, of course, is not a laudable goal for Wyoming to pursue. Clearly, increasing overall economic well being for both women and men improves overall household income levels for all households.

The reality remains that whatever indicator one chooses to consider, women in Wyoming make less than men and less than they do nationally. This costs both women and the state in very tangible ways. The wage gap is closing slowly over time as society changes. The question for the political process in Wyoming is whether some of the things that might be done to speed along the reduction of disparity are desirable or possible.

Appendix 1

Where Does Wyoming
Work?

Where Does Wyoming Work?

Industry	Company Name	Wyoming Locations
Mining	Amoco Production Company	Statewide
Mining	Amax Coal West Inc.	Gillette
Manufacturing	F M C Corporation	Green River, Kemmerer
Service	Grand Teton Lodge Co.	Moran
Retail Trade	Hamilton Stores Inc.	Yellowstone
Mining	Kerr Mcgee Coal Corp.	Gillette
Retail Trade	Mini Mart Inc.	Statewide
Mining	Pacific Minerals Inc. Rock Springs	Rock Springs
TCPU	PacifiCorp	Statewide
Mining	Powder River Coal Co.	Gillette, Wright
Fire	Safecard Services	Cheyenne
Retail Trade	Safeway Stores 44 Inc.	Statewide
Manufacturing	Sinclair Oil Corporation	Statewide
Mining	Solvay Minerals Inc.	Green River
Retail Trade	Sugarland Enterprises	Sheridan, Casper, Cheyenne
Mining	Thunder Basin Coal Co.	Wright
TCPU	United Parcel Service Inc.	Statewide
Retail Trade	Wal Mart Associates Inc.	Statewide
Service	Wyoming Medical Center Inc.	Casper

Source (Wyoming Department of Employment, "Wyoming's Largest Employers, June 1997")

Appendix 2

Description of Minimum and Maximum Values of Variables (Extension of Figure 10)

Several of the minimum numbers may look a bit disconcerting. The minimum annual average earnings was \$7,849 for men and \$5,579 for women, numbers well below minimum wage. This represents one census block, in which the percent of men working full time was 14% (11% for women). Given its location this block appears to be heavily populated by UW students. For those working full time the number is considerably higher.

Descriptive Statistics			
	Mean	Minimum	Maximum
Avg Household Inc	\$ 44,240	\$ 16,640	\$ 78,530
Avg \$(k) Fulltime employed men & women combined	\$ 33.647	\$ 18.633	\$ 48.859
Avg Age (of those between 16 - 69)	40.15	22.53	45.29
Percent with Children 18 or under	28.30%	10.40%	32.68%
ALL Occupational Index	26.73	7.62	51.73
Industry Index ALL	29.15	19.46	38.09
Median Earnings Male	\$ 27,285	\$ 5,613	\$ 47,446
average male earnings	\$ 32,175	\$ 7,848	\$ 50,513
Avg \$(k) Fulltime employed men	\$ 38,445	\$ 18,630	\$ 59,180
Avg Age of Men (between 16 -69)	40.15	22.82	44.97
Avg Yrs of School Men	14.31	12.00	16.55
% men working full time (35+hrs/wk >40wks)	72.39%	14.30%	89.28%
% men working 15-34hr/wks >40wks	4.98%	0.00%	24.12%
% men unemployed/men in labor force	5.58%	0.00%	28.04%
Median Earnings Female	\$ 13,272	\$ 4,145	\$ 21,645
average female earnings	\$ 16,933	\$ 5,578	\$ 25,279
Avg \$(k) Fulltime employed women	\$ 23,500	\$ 14,210	\$ 38,040
Avg Age of Women (between 16 -69)	40.18	22.25	45.63
Avg Yrs of School Women	13.23	11.63	15.26
% women working full time (35+hrs/wk >40wks)	52.45%	11.40%	70.73%
% women working 15-34hr/wks >40wks	14.17%	6.63%	31.25%
% women unemployed/men in labor force	4.99%	0.00%	14.78%
total number employed in county	1913	28	4912

Appendix 3

Regression Analysis of Income

The number we will focus on primarily will be the average earnings for full time workers. While this will not consider the pay received for part time work, which is a disproportionate part of working women's experience, it provides a comparable point of comparison. Viewed in these terms women make 60% of what men do.

While the rationale for using the measures is quite different, the measures are closely associated. As is illustrated in the table below when the average household income, median household earning and average earning for men and women combined are correlated, the relationship is substantial. This suggests that the results would be highly similar regardless of which measure was used.

		Avg Household Inc (k)	Median Earnings in 1999 (Dollars)	Avg \$(k) FT employed M&F
Avg Household Inc (k)	Correlation	1.00		
	Sig. (2-tailed)	.		
Median Earnings in 1999 (Dollars) by Sex for the Population 16 Years and Over with Earnings Total	Pearson Correlation	0.81	1.00	
	Sig. (2-tailed)	0.000	.	
Avg \$(k) FT employed M&F	Correlation	0.88	0.77	1.00
	Sig. (2-tailed)	0.000	0.000	.

Industry and occupation are generally presumed to be associated with different levels of income. However, this relationship can be examined specifically. Below is a regression based on the percent of people working in each occupation with household income as the dependent variable. The occupations are organized in terms of the unstandardized beta coefficient's value. The unstandardized beta might be interpreted as the number of dollar increase in average household income that is associated with a 1% increase in the percent of people working in the occupation. So, for each percent increase in the proportion of the employed population that works in the arts, the average household income declines by \$305. There are three caveats. First, the variability in the percentages across census blocks will differ for each occupation. This affects the confidence that one may have in the estimated effect. The likelihood the result occurred by chance is reported in the right most column. Usually, a probability of less than 5% is used as the cut off point. So, the effect of employment in the arts has a probability that it occurred by chance of .012, so one might be confident that it is not a random event. We might be less confident of the estimated effect of increasing the percent of computer specialists. Second, an increase or decrease in household income for the block does not mean the people who are in these occupations necessarily bring home more or less money. For example teaching is generally one of the less well paid professions, yet it is associated with higher average household income. One possible explanation is that communities with higher average household income can afford proportionately more teachers. Third, there is a risk of over-prediction of the dependent variable. With so many occupations it is possible that the frequency of some of these occupations increases long with others. If one occupation tends to increase in prevalence along with another occupation, the association with household income will be split between the two, reducing the apparent effect of each. Still, what this does provide is the best estimate of household income based on participation in different occupations within an census block.

These three caveats apply to efforts to interpret the importance of each individual occupations as a determinant of income. However, if we wanted an index reflecting the overall value of the occupations in which people work, simply multiplying the percent of people in a census block working in each of the occupations by its corresponding unstandardized coefficient would provide a good estimate. This is the way the occupation index was created. It indicates the value in terms of increased or decreased household income reflected by the types of occupation occupied by people in the census block.

Regression with DV = Household Income	Unstandardized Coefficients		Standardized Coefficients		Sig.
	B	Std. Error	Beta	t	
(Constant)	57.32	12.79		4.48	0.000
% arts/occupation	-305.46	119.27	-0.19	-2.56	0.012
% computer specialists/occupation	-176.82	139.41	-0.09	-1.27	0.208
% supervisors, transportation/occupation	-117.69	44.96	-0.22	-2.62	0.010
% firefighting/occupation	-106.82	76.86	-0.23	-1.39	0.168
% health technologists/occupation	-102.71	82.76	-0.13	-1.24	0.218
% other protective/occupation	-96.95	80.39	-0.18	-1.21	0.231
% drafters,etc/occupation	-90.38	68.11	-0.10	-1.33	0.188
% business operations specialists/occupation	-74.35	83.02	-0.08	-0.90	0.373
% motor vehicle/occupation	-58.04	60.62	-0.08	-0.96	0.341
% personal care/occupation	-53.81	40.11	-0.17	-1.34	0.183
% installation/occupation	-47.95	228.14	-0.01	-0.21	0.834
% architect/occupation	-42.56	66.63	-0.05	-0.64	0.525
% sales and related/occupation	-36.73	48.72	-0.08	-0.75	0.453
% community/occupation	-28.95	28.80	-0.09	-1.01	0.317
% health diagnosing/occupation	-21.27	67.19	-0.10	-0.32	0.752
% farm manager	-16.00	74.27	-0.02	-0.22	0.830
% extraction/occupation	-1.14	36.99	0.00	-0.03	0.975
% building and grounds/occupation	19.12	31.65	0.09	0.60	0.547
% farming fishing and forestry/occupation	19.49	31.24	0.05	0.62	0.534
% healthcare support/occupation	21.54	127.61	0.02	0.17	0.866
% aircraft/occupation	27.28	62.38	0.03	0.44	0.663
% construction trade/occupation	48.43	33.64	0.12	1.44	0.153
% food preparation/occupation	72.92	85.02	0.10	0.86	0.393
% management/occupation	76.03	92.40	0.06	0.82	0.413
% supervisors, construction/occupation	105.70	53.12	0.19	1.99	0.049
% office and administrative support/occupation	123.04	66.36	0.14	1.85	0.067
% law/occupation	136.56	86.06	0.14	1.59	0.116
% education/occupation	174.03	57.05	0.27	3.05	0.003
% life & other science/occupation	245.26	111.82	0.21	2.19	0.031
% production/occupation	321.10	314.91	0.07	1.02	0.310

For purposes of understanding difference in pay it may be more useful to look at the magnitude and direction of the effect attributable to participation in these occupations for men and women separately. Do the same occupations result in equally favorable effects on household income when it is a woman rather than a man in the occupation? At this point we will focus on the standardized coefficients because they allow a direct comparison and adjust for the size of the underlying numbers. (Standardized coefficients vary from -1 to +1 just as do correlation coefficients.)

Regression with DV = Household Income, for men & women	Men		Women	
	Standard Beta	Sig.	Standard Beta	Sig.
Management occupations not farming	0.16		0.06	
Farm managers	-0.28	0.007	0.03	
Business operations specialists	0.08		-0.07	
Computer & math. occupations	0.02		0.00	
Architects, surveyors, & engineers	0.18	0.030	0.10	
drafters, engineering & Mapping technicians	-0.13		-0.26	0.004
Life, physical & Social sci. occupations	0.00		-0.18	
Community & social service	-0.20	0.011	-0.09	
Legal occupations	0.11		0.01	
Education, training & library occupations	-0.20	0.032	0.01	
Art, entertainment & media	-0.02		0.14	
Health diagnosis & treating, practitioners & techs	0.09		0.08	
Health technologists & technicians	-0.14		-0.16	
Healthcare support services	-0.03		-0.26	0.028
Fire fighters & law enforcement	0.02		-0.22	0.011
Other protective service, includes supervisors	-0.19		0.18	0.045
Food preparation & related services	-0.33	0.000	-0.38	0.037
Building & grounds maint. & cleaning	-0.19	0.021	-0.14	
Personal care & service	0.18	0.018	-0.19	
Sales & related occupations	-0.12		-0.22	
Office & administrative support	0.01		-0.03	
Farming, fishing & forestry occupations	-0.08		-0.17	
Production occupations	-0.07		-0.29	0.006
Supervisors of transport & moving workers	-0.03		0.02	
Aircraft & air traffic control	0.16	0.044	0.04	
Motor vehicle operators	-0.19	0.036	-0.04	
Rail, water & other transportation occupations	-0.03		0.06	
Material moving workers	-0.13		-0.05	

The occupations associated with higher household income are different for men and women. Indeed, in some cases the effects appear to be opposite. Increased proportions of men working in farm management is associated with less household income, while for women there is a non-significant positive coefficient. There is a similar pattern for education, protective services other than fire fighting and policing, and (in the opposite direction) personal care. In almost every instance the significant factors for women are negative, that is household income is better the smaller the proportion of women report being in these occupations.

A similar analysis may be conducted for industry. The first table shows the relationship between the percent of employed people in the industry within a census block and household income. In interpreting this information the same caveats apply as they did with the corresponding table for occupation. (e.g., The modest negative effect from mining probably does not mean that miners

are paid lower than others but that in areas where more people are employed in mining there may be a number of [other] low paid jobs.)

Regression with DV = Household Income	Unstandardized Coefficients		Standardized Coefficients		
	B	Std. Error	Beta	t	signif.
(Constant)	71.89	12.17		5.91	0.000
% health care and social /industry	-102.20	24.27	-0.35	-4.21	0.000
% professional, scientific/industry	-99.10	52.84	-0.14	-1.88	0.063
% administrative and support/industry	-90.90	20.79	-0.38	-4.37	0.000
% public administration/industry	-76.15	21.37	-0.42	-3.56	0.001
% manufacturing/industry	-66.96	26.11	-0.23	-2.56	0.012
% management/industry	-62.75	17.15	-0.38	-3.66	0.000
% transportation/industry	-61.08	55.93	-0.08	-1.09	0.277
% accommodation and food/industry	-34.43	19.80	-0.15	-1.74	0.085
% mining/industry	-34.10	24.60	-0.11	-1.39	0.169
% arts, entertainment/industry	-33.59	40.73	-0.06	-0.82	0.411
% agriculture/industry	-27.96	25.05	-0.09	-1.12	0.267
% utilities/industry	-9.08	42.49	-0.02	-0.21	0.831
% wholesale/industry	-7.35	34.94	-0.02	-0.21	0.834
% construction/industry	21.59	46.61	0.03	0.46	0.644
% educational/industry	32.82	57.48	0.04	0.57	0.569
% retail/industry	57.73	46.89	0.10	1.23	0.221
% finance insurance/industry	70.05	48.05	0.13	1.46	0.148
% other services/industry	164.36	26.57	0.49	6.18	0.000
% information/industry	167.20	73.34	0.17	2.28	0.025
% real estate/industry	1462.65	1018.21	0.09	1.44	0.154

Of more interest are the differences in the associations of industry with household income depending on whether one looks at the proportion of men or women in the occupation.

DV = Avg. Household Income	<u>Percent Men in Industry</u>			<u>Percent Women in Industry</u>		
	Standardized b	t	Sig.	Standardized b	t	Sig.
Agriculture, forestry, fishing and hunting	-0.06	-0.80		0.00	0.00	
mining	0.36	4.25	***	0.22	2.10	*
Construction	0.04	0.31		0.04	0.51	
Manufacturing	0.07	0.99		0.07	0.82	
Wholesale trade	0.11	1.49		0.04	0.47	
Retail trade	-0.13	-1.19		0.03	0.22	
Transportation and warehousing	-0.05	-0.62		0.10	0.90	
Utilities	0.11	1.59		0.07	0.85	
Information	0.05	0.55		-0.06	-0.63	
Finance and insurance	0.20	2.08	*	0.03	0.31	
Real estate and rental and leasing	0.40	3.49	***	0.25	2.32	*
Professional, scientific, and technical services	0.36	2.93	**	0.36	2.61	**
Management of companies and enterprises	0.14	1.96		0.05	0.59	
Administrative and support and waste management services	-0.18	-2.11	*	-0.08	-0.71	
Educational services	-0.11	-1.37		0.07	0.76	
Health care and social assistance	-0.13	-1.52		-0.28	-2.22	*
Arts, entertainment, and recreation	0.25	3.23	**	0.03	0.31	
Accommodation and food services	-0.33	-2.47	*	-0.26	-1.90	
Other services (except public administration)	-0.22	-2.70	**	0.14	1.17	
Public administration	0.21	2.44	*	0.15	1.37	

Here we see effects substantially in the same direction, but somewhat larger for men, it may be due to the higher probability of men working full time, thus magnifying the impact on household income.

However, analysis of household income while suited to describe the environment in which employment occurs may not be the most interesting in terms of sex based differences in pay. To take a closer look at inequity we will examine the earnings of men and women employed full time. (The examination of industry and occupation relative household income was necessary to establish the indices that will be used in the subsequent analyses.)

What makes the difference in men and women's pay for full time work? One way to explore this question is to look at the variables widely used to explain those differences and their relationship with income. The following table reports the results of two regression equations, one for men and one for women. The independent variables are the ratio of children 18 or under (for the census block, so it is the same number of men and women), average age of men and women in working years (usually viewed as a surrogate for experience), educational attainment (a human capital variable), occupational and industry index (described above, indicates the monetary value of opportunities in the block), and labor pool participation (percent employed full time, part time 15 – 34 hours per week, or unemployed).

In the analysis reported below all these variables were forced into the equation, permitting a direct comparison between the effects for women and men. When viewed together the only effect significant for men is occupation, what one does. While occupation does play a substantial role for women, so do years of education and the abundance of children in the block. Children are generally supposed to reduce the earnings of women due to childcare responsibilities. Here the effect is the opposite, children are associated with higher earnings for women employed full time. The best explanation comes from the qualitative portion of our analysis, where interviews showed that the costs of child rearing encourage women to seek more lucrative work.

Force Regression DV = earnings of full time men & women	Men			Women		
	Standardized Beta	t	Sig.	Standardized Beta	t	Sig.
House with Kids under 18/pop	0.10	0.98		0.26	2.821	0.01
Avg Age (16 -69) *	-0.06	-0.59		-0.04	-0.372	
Avg Yrs of School *	0.12	1.75		0.36	4.185	0.00
Occupational Index *	0.61	7.85	0.000	0.32	3.492	0.00
Industry Index *	0.07	1.00		0.11	1.333	
% work FT 35+hrs/wk >40wks *	0.13	1.20		0.13	1.479	
% work 15-34hr/wks >40wks *	0.05	0.52		-0.01	-0.134	
unemployed/men in labor force *	-0.06	-0.86		0.01	0.133	

* numbers computed within men or women

The concern with conducting the analysis as was done here (forcing all the variables into the equation) is that if some of the variables are redundant their effect will be shared. This creates the possibility that an effect that would otherwise have been important disappears as its impact is shared among several variables. To avoid this one uses a stepwise procedure in which the variables which best predicts income is entered first, then the one which best predicts the remaining variance, until the addition of the next effect does not significantly improve the model. The results from such an analysis are reported below.

	Men			Women			
	Standardized Beta	t	Sig.	Standardized Beta	t	Sig.	
Men Occupational Index	0.63	9.59	0.000	Women Occupational Index	0.36	4.397	0.00
Avg Yrs of School Men	0.17	2.88	0.005	Avg Yrs of School Women	0.37	4.672	0.00
% men work FT 35+hrs/wk >40wks	0.18	2.85	0.005	House with Kids under 18/pop	0.23	3.299	0.00
				% females work 35+hrs/wk >40wks	0.17	2.340	0.02

We see very similar models for men and women. Occupation, educational attainment and percent working full time all associated with higher average earnings for full time employees. The last factor, percent working full time may warrant further consideration. The fact that the more people working full time is associated with higher average pay for fulltime work suggest a market effect. It is a more attractive market, so more people are pulled into full time work. The one factor which is unique to women is the effect of children.

Given the importance of occupation for both men and women, it is worth taking a closer look at each occupation in relation to the average earning of full time workers (broken down by sex). Again, there are differences between men and women in what is associated with greater earnings. Of the significant effects larger percentages of men in architecture and lower percentages in farm management, community/social service, protective services other than fire and police, food preparation, building & grounds maintenance, office & administrative support, farming & forestry, motor vehicle, and material moving are associated with higher earnings. Only two of these variables are significant for women. Farming and forestry is negatively related to earnings (as was true for men), but the proportion of people working in protective services other than fire or police is positively related to earning, opposite to the effect for women. The percent of women in drafting, health technology, fire fighting & policing, and production are associate with lower earnings for women.

Regression DV = Earnings of fulltime men and women with % (men or women) in each occupation	Men			Men		
	Standardized			Standardized		
	Beta	t	Sig.	Beta	t	Sig.
% Management occupations not farming	0.04	0.32		0.13	0.97	
% Farm managers	-0.43	-4.26	0.000	0.00	-0.01	
% Business operations specialists	-0.01	-0.15		0.07	0.74	
% Computer & math. occupations	-0.03	-0.28		0.02	0.25	
% Architects, surveyors, & engineers	0.24	2.89	0.005	0.05	0.70	
% Drafters, engineering & Mapping technicians	-0.08	-1.14		-0.20	-2.39	0.019
% Life, physical & social Science	-0.03	-0.42		-0.06	-0.73	
% Community & social service	-0.17	-2.20	0.031	-0.10	-1.11	
% Legal occupations	0.03	0.32		0.16	1.78	
% Education, training & library occupations	0.05	0.54		-0.04	-0.22	
% Art, entertainment & media	-0.17	-1.92		0.01	0.12	
% Health diagnosis & treating, practitioners & techs	0.12	1.25		0.09	0.76	
% Health technologists & technicians	-0.12	-1.45		-0.24	-2.73	0.008
% Healthcare support services	-0.16	-1.78		-0.20	-1.93	
% Fire fighters & law enforcement	0.00	-0.05		-0.27	-3.40	0.001
% Other protective service, includes supervisors	-0.24	-2.39	0.019	0.18	2.22	0.029
% Food preparation & related services	-0.23	-2.58	0.011	-0.27	-1.62	
% Building & grounds maint. & cleaning	-0.17	-2.10	0.039	-0.20	-1.62	
% Personal care & service	0.04	0.51		-0.14	-1.50	
% Sales & related occupations	-0.16	-1.86		-0.30	-1.42	
% Office & administrative support	-0.19	-2.35	0.021	-0.14	-0.63	
% Farming, fishing & forestry occupations	-0.26	-2.66	0.009	-0.30	-2.92	0.004
% Production occupations	-0.13	-1.35		-0.32	-3.34	0.001
% Supervisors of transport & moving workers	-0.02	-0.26		0.03	0.44	
% Aircraft & air traffic control	0.12	1.50		0.09	1.18	
% Motor vehicle operators	-0.21	-2.34	0.021	-0.13	-1.22	
% Rail, water & other transportation occupations	0.00	0.06		0.11	1.44	
% Material moving workers	-0.23	-2.71	0.008	-0.13	-1.61	

Once again, the number of variables used to make predicts risk redundancy, so a step wise regression is employed to identify the variables in a sequential fashion to identify the occupations which are most influential

Stepwise Regression DV = Earnings Full Time Men	Men			Stepwise Regression DV = Earnings Full Time Women	Women		
	Standardized Beta	Coefficients t	Sig.		Standardized Beta	Coefficients t	Sig.
% M Architects, surveyors, & engineers	0.36	5.09	0.000	% F Management occupations not farming	0.24	3.50	0.001
% M Management occupations not farming	0.40	5.74	0.000	% F Health diagnosis & treating, practitioners & techs	0.25	3.48	0.001
% M Food preparation & related services	-0.26	-3.53	0.001	% F Legal occupations	0.24	3.42	0.001
% M Farm managers	-0.44	-5.36	0.000	% F Production occupations	-0.22	-3.25	0.002
% M Healthcare support services	-0.29	-4.42	0.000	% F Farming, fishing & forestry occupations	-0.20	-3.11	0.002
% M Office & administrative support	-0.17	-2.31	0.023	% F Healthcare support services	-0.15	-2.31	0.022
% M Sales & related occupations	-0.16	-2.18	0.031	% F Building & grounds maint. & cleaning	-0.17	-2.55	0.012
				% F Health technologists & technicians	-0.15	-2.21	0.029
				% F Other protective service, includes supervisors	0.16	2.42	0.017
				% F Fire fighters & law enforcement	-0.15	-2.21	0.029

For men, the occupations associated with higher full time earnings are management (except farm management which is negatively associated with earnings) and architecture. The other occupations have a negative relationship with men's full time earnings: food service, health support, office support, and sales. For women non-farm management also is associated with higher earnings, as is participation in legal and health diagnosis occupations. Participation in fire fighting and police work is associated with lower earnings, while participation in other protective services is associated with higher earnings for women. There is a negative association with the full time earnings of women based on participation in health support (also true for men), health technology, farming & forestry, building maintenance, and production.

One concern is that the male/female differences may be due to women and men accessing different jobs within the occupation. For example, there are a range of jobs within production, and they have a range of pay. If women are only accessing the jobs at the lower end of the pay scale, then increased participation would lead to lower average wages for women. If men were accessing the full range of positions then there would be negligible impact on average earnings. The results are consistent with this explanation, although the statistics certainly do not prove that this is what is happening.

Women's participation in full time employment.

One of the questions which has not been addressed are the possible reasons for women participating in full time employment at a substantially lower rate than do men. Looking at some

of the factors which might influence the choice to work full time, the only independent factor is the industry index (based on all people working).

DV = % Women working full time	Standardized Coefficients Beta	t	Sig.
Households with Kids under 18	0.09	0.70	
Occupational Index ALL	-0.03	-0.22	
Industry Index ALL	0.38	3.16	0.002
Avg Age Women (16 -69)	0.18	1.50	
Avg Yrs of School Women	0.02	0.19	

To take a closer look at this a stepwise regression was used to identify the most influential industries in terms of women's full time participation in work. However, the results look quite different if we use the percent participation in industries for everyone in the census block or limit it to women. First we look first at everyone, which is consistent with thinking of industry as an attribute of the area (i.e., if one were to bring jobs into a community it would be done based on the opportunities it would create for all).

	Standardized Coefficients Beta	t	Sig.
% management/industry	-0.28	-3.86	0.000
% utilities/industry	0.22	2.95	0.004
% information/industry	0.21	3.25	0.002
% construction/industry	0.23	3.37	0.001
% accommodation and food/industry	0.25	3.30	0.001
% agriculture/industry	0.19	2.63	0.010
% administrative and support/industry	0.17	2.41	0.017

Note that of the 6 industries that have a positive association with women's participation in full time employment, several have been associated with lower earnings for women. The more workers who are in management, the less the participation of women.

If we use the percent of women who work in the different industries we see a different picture. As the percent of women who work in support, agriculture, the arts, healthcare, and manufacturing go up, the percent of women working full time goes down. As most of these fields were associated with lower earnings this makes sense.

DV = % Women working full time	Standardized Coefficients		Sig.
	Beta	t	
% women in support	-0.50	-6.96	0.000
% women in finance/industry	0.14	2.00	0.048
% women in manufacturing/industry	-0.26	-3.52	0.001
% women in health care/industry	-0.26	-3.81	0.000
% women in professional/industry	0.15	2.04	0.043
% women in other services/industry	0.18	2.64	0.009
% women in arts,etc/industry	-0.18	-2.44	0.016
% women in agriculture/industry	-0.13	-2.04	0.044

One way of looking at the question is as one of difference between men and women, most frequently expressed as women's wages as a fraction of men's wages. When this is computed for each of the census blocks the average ratio is 62.0%, the smallest ratio for a census block was 43.5% and the highest was 89.2%.

We can treat this ratio as the dependent measure and regress the other measures we have been using in a stepwise manner to explore which factors are associated with the magnitude of difference. A negative coefficient means that the ratio is smaller (i.e., women make less relative to men) the greater the value of the variable. The more households with children 18 or under, the higher the occupational index for men, and the more women who are working part time, the lower the ratio. Women's earnings are relatively higher when the industry index for women is higher, women have more education, are older (i.e., more experience), and are working full time.

DV = (women's earnings / men's earnings) for full time workers	Standardized Beta	t	Sig.
House with Kids under 18/pop	-0.35	-3.23	0.002
Industry Index Women	0.26	3.05	0.003
Men Occupational Index	-0.35	-4.18	0.000
females work 15-24 hrs/wk >40wks	-0.15	-1.83	0.069
Avg Yrs of School Women	0.29	3.63	0.000
Avg Age Women (16 -69)	0.23	2.35	0.020
men unemployed/men in labor force	0.19	2.57	0.012
% females work 35+hrs/wk >40wks	0.18	1.99	0.049

Given the positive effect of industry, one might want to look at which industries are associated with greater similarity in earnings. The results of the stepwise regression of percent women in industry with the wage ration. The results are somewhat disconcerting. The more women in

mining, the less the ratio! Presumably this is not due to the women who work in mining, but due to the fact that more men than women work in mining. If the jobs are there for women to take, they are taken by men in still greater numbers. Thus, the increases in wages due to employment in the mining industry is enjoyed by more men than women, which would drive the ratio down. Increased participation in the real estate industry might be easily understood to improve women's relative earnings.

DV = (women's earnings / men's earnings) for full time workers	Standardized Beta	t	Sig.
% women mining/industry	-0.34	-4.22	0.000
% women accommodation/industry	0.24	3.04	0.003
% women real estate/industry	0.21	2.59	0.011

Appendix 4

Survey Instrument for Telephone Survey

SUBJECT CONSENT

Good [morning, afternoon, evening.] Let me introduce myself. I am [] from the University of Wyoming. First, let me tell you, I am not a telemarketer. I am a [graduate student or professor] conducting research on the wage disparity between men and women in Wyoming. In order to understand the issue better we are conducting a phone survey that will take approximately 10-20 minutes. We are interviewing three people in each county and your name was randomly selected from the phone directory.

The survey includes questions regarding the jobs that people in your household do, as well as how you have made decisions regarding your work choices. When we finish our interviews, we will report our findings, in aggregate, to the state legislature as well as any other interested body. You will not be personally identified in any of our reports. Files from this survey will be kept by the researchers for 5 years, and will only be accessed by the researchers. Your participation may help the state, employers, and/or individuals address the wage gap between men and women.

Please note that your participation in this research is entirely voluntary and you may discontinue at any time. Refusal to participate will involve no penalty or loss of benefits to which you are otherwise entitled. All you need to do is tell me you want to stop and we will terminate the interview. We foresee minimal risk to your participation in this survey. Are you willing to participate?"

Name, _____ Date _____ Time _____

If you have any questions or concerns you may contact my supervisor, Catherine Connolly, Director of Women's Studies and Associate Professor of Sociology at 307-766-2733.

Survey Instrument

1. Describe your current household- how many people, their ages, race and/or ethnicity, and their relationships to each other. [Note – make sure to indicate who is responding to the questions.]

2. For the past year, describe every way that income was generated by the members of the household—e.g. paid jobs in regular full-time work, temporary or part-time work, lemonade stands, etc... If you're uncomfortable doing so, indicate about how much each person earned from that income last year.

3. Tell us about the benefits the people in your family receive from their employer. For example, do you or another family member receive health insurance, a pension plan, retirement, etc. through your job?

4. Has the inclusion of benefits ever affected the decisions your family has made concerning involvement in the paid labor force?

[If yes,] how so?

5. Describe the educational and/or vocational training of your household members.

6. Describe specific things that you or members of your household do in the informal work sector. For example, do you watch your neighbors kids occasionally, sell crafts or feed, paint houses, walk dogs, etc?

7. Describe care giving that is done by members of your household for others not in your house hold, for example—babysitting for grandchildren, care of an elderly parent who lives outside the household, etc. How frequently do you do these things?

8. If you answered yes to either of the last two questions, how does this care giving and informal work impact paid labor force participation by members of your household?

9. How far do you travel to get to work?
 - 9a. In general, how far would you be willing to travel to work everyday?

10. In your household, is one person's career considered primary and the others secondary. For example, do some members of your household need to modify their work or career choices for the primary person's career? Explain.

11. Were you born in Wyoming? If not, where did you come from, when did you move here and why?

12. As an adult, have you, along with other members of your household, ever relocated/moved from another town or area?
- a. [If yes,] For which member of your household did you all relocate for?
 - b. Why was the decision to relocate made?
 - c. What kind of work did the other adult member(s) of your household find after you relocated?
 - d. Was this work in their field?
 - e. Was it difficult for the other adult member(s) of your household to find employment?
 - f. Do you think that the relocation has had a significant effect on the household? Please explain.
13. If you were offered a job that paid more, had better benefits, or simply offered more opportunity than your current employment situation, do you think your spouse/partner would agree to relocate to enable you to accept the opportunity?
- a. What if there was not an equal or better opportunity for him/her in the new community?
 - b. If the situation were reversed, how would you respond if your spouse/partner or other household member were offered a better job in another area? Would you relocate? Would you relocate if there wasn't an equal or better opportunity for you?

14. Have you ever had children living in your household? Describe (if different from the answer to Question 1).

- a. Did either you or your partner leave the workforce after having your child[ren], other than for a short maternity leave (i.e. less than 8 weeks)?
- b. If yes to a, For how long did s/he leave the workforce?
- c. If yes to a, In what line of work was s/he in?
- d. If yes to a, Do you think that leaving, then re-entering the workforce has had a significant impact on her/his income and/or job opportunity?
- e. If yes to a, How important was this to her/him? Please explain?
- f. If yes to a, Was it difficult for him/her to find employment after deciding to re-enter the workforce?

15. If yes to 14, Did s/he alter the conditions and practices of employment after re-entering the workforce? In what way(s) were her/his work practices altered? (i.e. will s/he travel, work late hours, work overtime, etc.)

16. In Wyoming, women earn less than men on the average do. It is usually not because they aren't paid the same for the same jobs since that is illegal. Why do you suppose that women earn less than men do? Do you think it is important for individuals, employers and/or the state to address the issue? Explain what you think might be the best types of responses.

17. Is there anything that you would like to add?

Appendix 5

Complete Calculations for Cost/Benefit on Where Women Work

These calculations are done on an Excel spread sheet. To get the calculations into a format that would fit this report considerable summary was done in Figure 24. This appendix shows the original spreadsheet and all the basis for those calculations.

Occupations with large M/F participation disparity 241,055

Male:

Management occupations, except farmers and farm managers	10,555
Architects, surveyors, cartographers, and engineers	2,153
Drafters, engineering, and mapping technicians	1,234
Life, physical, and social science occupations	1,989
Protective service occupations:	3,277
Fire fighting, prevention, and law enforcement workers, including supervisors	2,402
Supervisors, construction and extraction workers	3,488
Construction trades workers	14,534
Extraction workers	3,466
Installation, maintenance, and repair occupations	12,537
Production occupations	10,135
Transportation and material moving occupations:	15,516
Motor vehicle operators	8,061
Rail, water and other transportation occupations	2,301
Material moving workers	4,533

Male Average W	% Female	Female:	Female Average W	Unadjusted W Differential	National Average W*
\$1,038	38.53%	6,616	\$732.00	70.52%	\$891.20
\$1,149	10.85%	262	\$1,022.00	88.95%	\$1,188.40
\$680	15.77%	231	\$535.00	78.68%	\$832.40
\$1,056	29.84%	846	\$758.00	71.78%	\$1,121.20
\$658	23.17%	988	\$509.00	77.36%	\$844.80
\$796	12.40%	340	\$703.00	88.32%	\$643.60
\$749	1.52%	54	\$749.00	100.00%	\$830.80
\$595	4.86%	743	\$424.00	71.26%	\$604.80
\$789	5.84%	215	\$477.00	60.46%	\$908.40
\$767	4.06%	530	\$548.00	71.45%	\$561.60
\$501	19.96%	2,528	\$368.00	73.45%	\$691.20
\$587	14.65%	2,664	\$439.00	74.79%	\$568.00
\$591	14.57%	1,375	\$422.00	71.40%	\$516.40
\$919	10.99%	284	\$871.00	94.78%	\$1,077.60
\$540	16.63%	904	\$486.00	90.00%	\$603.20

* to be applied c
to new F worker

Occupations with large M/F participation disparity

**50% increase
Occupation w/
Low F**

Management occupations, except farmers and farm managers	9924
Architects, surveyors, cartographers, and engineers	393
Drafters, engineering, and mapping technicians	347
Life, physical, and social science occupations	1269
Protective service occupations:	1482
Fire fighting, prevention, and law enforcement workers, including supervisors	510
Supervisors, construction and extraction workers	81
Construction trades workers	1115
Extraction workers	323
Installation, maintenance, and repair occupations	795
Production occupations	3792
Transportation and material moving occupations:	3996
Motor vehicle operators	2063
Rail, water and other transportation occupations	426
Material moving workers	1356

only
rs

50% Change Employment	Weighted Avg. F Wage @ Nat'l avg.	Unadjusted W Differential @ Nat'l avg.	Weighted Avg. F Wage @ M avg. (WY)	Unadjusted W Differential @ M avg. (WY)
3308	\$784.54	75.58%	\$832.98	80.25%
131	\$1,076.91	93.73%	\$1,063.91	92.59%
116	\$633.14	93.11%	\$582.85	85.71%
423	\$877.86	83.13%	\$856.34	81.09%
494	\$619.81	94.20%	\$558.17	84.83%
170	\$683.40	85.85%	\$733.69	92.17%
27	\$775.99	103.60%	\$749.00	100.00%
372	\$483.66	81.29%	\$480.43	80.74%
108	\$619.36	78.50%	\$579.96	73.51%
265	\$552.49	72.03%	\$620.27	80.87%
1264	\$474.66	94.74%	\$411.89	82.21%
1332	\$481.57	82.04%	\$487.84	83.11%
688	\$453.15	76.68%	\$477.77	80.84%
142	\$939.18	102.20%	\$886.84	96.50%
452	\$524.68	97.16%	\$503.82	93.30%

% Female @ 50% increase	Entering Females Total Earnings @ Nat'l Avg.	Lower Bound Economic Impact @ Nat'l Avg.	Upper Bound Economic Impact @ Nat'l Avg.	Entering Females Total Earnings @ M avg. (WY)
48.46%	\$2,595,245.09	\$3,892,867.63	\$5,579,776.94	\$3,433,704.00
15.44%	\$141,075.47	\$211,613.21	\$303,312.26	\$150,519.00
21.92%	\$73,127.90	\$109,691.85	\$157,224.99	\$78,540.00
38.95%	\$371,333.09	\$556,999.63	\$798,366.14	\$446,688.00
31.14%	\$306,188.12	\$459,282.17	\$658,304.45	\$325,052.00
17.51%	\$116,177.66	\$174,266.49	\$249,781.97	\$135,320.00
2.27%	\$20,951.84	\$31,427.76	\$45,046.45	\$20,223.00
7.12%	\$179,681.18	\$269,521.76	\$386,314.53	\$221,042.50
8.51%	\$66,581.42	\$99,872.12	\$143,150.04	\$84,817.50
5.96%	\$146,409.32	\$219,613.98	\$314,780.04	\$203,255.00
27.23%	\$599,965.18	\$899,947.78	\$1,289,925.15	\$633,264.00
20.48%	\$641,451.24	\$962,176.86	\$1,379,120.17	\$781,884.00
20.37%	\$311,542.00	\$467,313.00	\$669,815.30	\$406,312.50
15.62%	\$133,363.28	\$200,044.91	\$286,731.04	\$130,498.00
23.03%	\$237,153.55	\$355,730.33	\$509,880.14	\$244,080.00
	\$5,940,246.33	\$8,910,369.49	\$12,771,529.60	\$7,295,199.50

Also Change in
Earnings
@ Nat'l Avg.,
Marginal Benefits
to Females, Marginal
cost to employers

Also Change in
Earnings
@ Nat'l Avg.,
Marginal Benefits
to Females, Marginal
cost to employers

Lower Bound Economic Impact @ M avg. (WY)	Upper Bound Economic Impact @ M avg. (WY)
\$5,150,556.00	\$7,382,463.60
\$225,778.50	\$323,615.85
\$117,810.00	\$168,861.00
\$670,032.00	\$960,379.20
\$487,578.00	\$698,861.80
\$202,980.00	\$290,938.00
\$30,334.50	\$43,479.45
\$331,563.75	\$475,241.38
\$127,226.25	\$182,357.63
\$304,882.50	\$436,998.25
\$949,896.00	\$1,361,517.60
\$1,172,826.00	\$1,681,050.60
\$609,468.75	\$873,571.88
\$195,747.00	\$280,570.70
\$366,120.00	\$524,772.00
\$10,942,799.25	\$15,684,678.93

Occupations with large M/F participation disparity

Management occupations, except farmers and farm managers

Architects, surveyors, cartographers, and engineers

Drafters, engineering, and mapping technicians

Life, physical, and social science occupations

Protective service occupations:

Fire fighting, prevention, and law enforcement workers, including supervisors

Supervisors, construction and extraction workers

Construction trades workers

Extraction workers

Installation, maintenance, and repair occupations

Production occupations

Transportation and material moving occupations:

Motor vehicle operators

Rail, water and other transportation occupations

Material moving workers

Total

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