Bulletin No. 629

Employment Adjustments and the Economic Costs of Decline in a Small Rural Community: A Case Study in Kellogg, Idaho

Ian Hodge

LIBRARY
SEP 20 1984
UNIVERSITY OF IDAHO

Agricultural Experiment Station
University of Idaho
College of Agriculture

Introduction 3
The Loss of Productive Employment 3, The Cost of Seeking Alternatives 3, Adjustment Costs 3, Costs of Providing Services 4, The Study's Outline 4

A Background to Employment Conditions in the Silver Valley 4

A Survey of Unemployed Workers in Kellogg 5

The Effects of Unemployment and Expected Adjustments 6
Background and Employment History 6, The Effects of Being Unemployed 6, Future Expectations and Intentions 7

The Economic Costs of Decline 9
The Loss of Productive Employment 9, The Costs of Seeking Alternatives 10, Adjustment Costs 10, Costs of Providing Services 14, The Total Economic Costs of Decline 15

Conclusions 16
Summary 16, The Importance of Uncertainty 16, Potential Policy Responses 17, Conclusions 18

Literature Cited 18

Preface

This study was undertaken while the author was on a Special Studies Program from the University of Queensland, Australia, between July and October, 1982. The author would like to thank the Department of Agricultural Economics at the University of Idaho for the facilities and funds that made this work possible and Brian Calkins for his competent and reliable research assistance.

Thanks are particularly owed to the people of Kellogg, who, notwithstanding the other surveys that had already been undertaken in the area, willingly gave up their time for this study. The author is grateful to Gary Beck and Pat Callahan of the Department of Employment for their assistance, especially in providing a location for the interviews.

Finally, I would like to thank Joel Hamilton, Stephen Smith and Jerry Marousek. Their help with this project made it possible in part.

The Author

Ian Hodge is in the Department of Land Economy at the University of Cambridge, United Kingdom. He was on a special studies program between July and October, 1982. He worked with and for the Department of Agricultural Economics, College of Agriculture, University of Idaho, Moscow.

Published and distributed by the
Idaho Agricultural Experiment Station
Lee A. Bulla, Jr., Director

The University of Idaho offers its programs and facilities to all people without regard to race, creed, color, sex, or national origin.

IM 5-84

$1.50 per copy

Employment Adjustments and the Economic Costs of Decline in a Small Rural Community: A Case Study in Kellogg, Idaho

Ian Hodge

When the major employer in a small community closes its operation, it has a dramatic effect on all aspects of life in that community. The most immediate effect, in economic terms, is that closure forces labor and other resources to become idle. When the area offers little or no alternative opportunities for the use of these resources, the people must either remain idle or must move to alternative locations where employment opportunities exist. The major economic costs of company closure on the community result either from enforced unemployment or from the costs and consequences of resource adjustment. These changes influence all the resources that have been made redundant.

Because the land and capital are owned by the company, it must seek alternative uses or users for these resources and bear any capital losses. But, because the labor is hired, the employees must face the adjustment problem themselves, with some help from unemployment insurance or any other assistance that is available.

Those who are forced out of employment face the possibilities of either remaining outside the workforce, of finding employment within the local labor market or of moving away to a job elsewhere. Where the local labor market is seriously reduced, the most likely choice is between the first and last possibility. Not everyone, however, has the option of retirement. Those who are then forced to move must find an alternative location that can offer the best range of employment opportunities and other facilities.

This publication seeks to identify and measure some of the costs that are borne by the employees and by the community from a national point of view. It does not consider the costs borne by the owners of such companies when they fail, even though they may be substantial. The losses may be grouped into four categories: (1) the loss of productive employment, (2) the costs of seeking alternatives, (3) the financial and psychic costs of making the adjustment to the change and (4) the costs of providing services to the redistributed population.

The Loss of Productive Employment

The extent of the loss of productive employment when somebody loses his job clearly depends upon his productivity before this event. If he was previously being paid a wage that equalled the value of his marginal product in that occupation, this would provide a measure of the loss involved. Any new productive activity should be offset against this loss. Principally, this relates to those employees who are able to gain an alternative job. Even those, however, who do not have a formal source of employment may engage in some informal activities that they would not otherwise have undertaken.

The burden of these losses is, to some extent, shared more widely when transfer payments, primarily in the form of unemployment insurance, are made to those who are without employment and when they pay a reduced level of taxes. The company that closes may also provide payments to employees.

The Cost of Seeking Alternatives

A variety of costs are involved in the collection of information that is required to identify alternative employment options. The major costs to the individuals probably take the form of travel and accommodation associated with job search activities, although there are others, such as those paid for by government in operating Job Service offices.

Adjustment Costs

If a decision is taken to move to a different area, both financial and psychic costs result. If the person owns his house he will have to sell his property in the declining location and purchase a house at his destination. He will have to transport his and his family's belongings to the new location. Costs will be involved in settling in a new area. Beyond this, psychic costs will be associated with the enforced move away from friends and relatives. Perhaps further adjustment problems may occur for other members of the family who might work or go to school

in the old location. While these are not costs for which a financial payment must be made, they are equally or more important than many of the other costs involved.

Costs of Providing Services

The movements in population resulting from the company's closure will lead to reduced demand for services (schools, hospitals, sewerage, police and fire protection, etc.) in that community and to an increased demand for services elsewhere. If the migrants move to destinations that are operating at full capacity, and this is likely to be the sort of location where jobs are available, then new service facilities need to be provided.

An alternative side to this discussion of the costs of decline also exists. This is that any successful efforts to provide alternative, replacement employment opportunities in the declining location will mitigate or avoid them. Thus, these measures of losses can also be interpreted as estimates of the potential benefits that could result from employment creation in that particular community.

The Study's Outline

This study provides estimates of the economic costs of decline that have been identified earlier. Data collection was undertaken in Kellogg in northern Idaho's Silver Valley. This publication continues with a brief discussion of the changes in employment conditions that have recently occurred in that area. This is followed by a description of the survey and its results. Some conclusions are then drawn as to the nature and magnitude of the economic costs of decline.

A Background to Employment Conditions In the Silver Valley*

Kellogg is one of a string of small towns located in the Silver Valley in Shoshone County, northern Idaho. It has a long history, dating back to the discovery of gold in the early 1880s, of mining and processing a variety of metals, primarily lead, zinc and silver. Between 1880 and 1890, the population of Shoshone County grew from 469 to 5,382 (Livingston-Little 1963), and since that time population and employment have been heavily dependent upon the mining sector. The 1980 population of Shoshone County is shown in Table 1. All of the major settlements are located in the the Silver Valley. The divisions in the county beyond this are Murray to the north and Avery-Clarkia to the south. Details of the distribution of nonagricultural wage and salary workers for the county (by place of work) in 1981 are shown in Table 2. Table 3 gives numbers in and out of employment in the area (by place of residence).

On Aug. 25, 1981, Bunker Hill management announced it would close its Kellogg operation. This included two mines, a zinc plant, a concentrator and a smelter. Bunker Hill was then the major employer in the Silver Valley and the second largest employer in northern Idaho. It employed a total of 2,100 workers, mainly in its lead smelter and zinc refinery. The owners of Bunker Hill, Gulf Resources and Chemical Co., based in Houston, Texas, had projected a $40 million loss for the company during 1982, at current metal prices, after a loss of $21 million in 1981 (Anonymous 1982).

In October 1981, about 200 employees were off work. In December, another 325 workers were unemployed. By February 1982, less than 300 workers were still employed by Bunker Hill. In September, the number was less than 50.

In January 1982, employment in the region was again hit when Hecla Mining Co. announced the layoff of 116 workers from its two mines in Shoshone County, effective Jan. 15. In the next month, another 23 people were laid off from Hecla's Consolidated Silver Mine, and Sunshine Mining Co. reduced its workforce by 35. In June, Sunshine Mining Co. announced that it was to close its Sunshine Mine indefinitely, affecting more than 400 employees. In the same month, Hecla Mining Co. in-

*This section draws heavily on Callahan (1981-2).

Table 1. Population of Shoshone County, 1980.

Avery-Clarkia division	560
Kellogg division	10,290
Kellogg city	3,417
Pinehurst city	2,183
Smelterville city	776
Wardner city	423
Mullan division	1,517
Mullan city	1,269
Murray division	721
Wallace division	6,138
Osburn city	2,220
Wallace city	1,736
Shoshone County	19,226

Source: 1980 Census of Population.

Table 2. Nonagricultural wage and salary workers (annual average, 1981).

Manufacturing	
Lumber	170
Primary metals	1,308
Other	162
Nonmanufacturing	
Mining	2,795
Transport, communication	
Construction	82
and utilities	229
Trade	1,034
Finance, insurance	
and real estate	298
Miscellaneous	687
Government	1,347
Total	8,112

Source: Idaho Department of Employment

Table 3. Civilian labor force.

	1977	1979	1981
Civilian labor force	7,906	8,072	8,347
Unemployment	632	394	508
Percent of labor force	8.0	4.9	6.1
Total employment	7,274	7,678	7,839

Source: Idaho Department of Employment.

dicated its intention to close the Star mine on June 30, meaning that all of the nearly 400 workers would go onto permanent layoff.

Clearly, such massive job losses in a small community have had a traumatic effect on the local labor market and on the local community. In September 1982, the unemployment rate in Shoshone County was about 30 percent. The amount of wages lost by the Star and Sunshine closures exceeded $30 million per year. This was in addition to the $50 million lost because of the Bunker Hill closure.

The effects flow onto the service sectors of the local economies. Their extent depends on the pattern of expenditure and relationships among these sectors. Young (1981) suggested some indication of the potential magnitude of these effects. Based on simple economic base multipliers, 1980 employment data showed that the ratio of employment in nonbasic industries (such as wholesale and retail trade, services and local government) to employment in basic industries (mining, lumber, agriculture and federal and state governments) was equal to 0.7 in Shoshone County. This means that for every employee in a basic industry, another 0.7 of an employee was "supported" in the nonbasic sector. Thus, the loss of one basic job was likely to lead to the loss of 1.7 jobs in total.

This crude estimate would suggest that the 2,900 jobs that were lost from Bunker Hill, Hecla and Sunshine closures would lead to a further loss of 2,030 jobs in the longrun. If all of these people remained in the area as unemployed, this would amount to about 60 percent of the 1981 civilian labor force in Shoshone County. These effects would be mitigated by the increased flow of public funds to the area, especially unemployment compensation, by the expenditure of savings from previous earnings and retirement benefits and by the increased flow of earnings from people who have taken jobs outside the area and return money to families who have not moved with them. Further, some jobs may not have been lost permanently, and some new opportunities may arise to replace those that have been lost. Finally, the likely lower costs of housing and other living expenses in the area may attract new immigrants and earnings to the area.

The extent of wages lost can also be estimated on a similar basis. Again, Young (1981) has noted that the nonbasic-basic wage ratio is 0.35. This indicates that wages are substantially higher in the basic industries than the nonbasic. Thus, the $80 million per year loss in wages because of the closures of Bunker Hill, Star and Sunshine Mines would produce a total wage loss of $108 million per year. The same mitigating factors would apply.

The prospects for employment in the county in the longer term remain bleak. It is probable that changing conditions in the national economy could revive some employment opportunities, but any major revival in the fortunes of the Bunker Hill plant appears unlikely. Since the closedown, hopes for the sale of the company to new owners have been raised on a number of occasions. For instance, in December 1981, three businessmen held a 20-day option to purchase the Bunker Hill Company. In January 1982, the workers voted to accept a proposal containing wage, benefit and work rule concessions. The United Steelworkers Union officials, however, overrode the vote and refused to sign the proposal. On Jan. 20, 1982, the investor group indicated that it would not exercise its option to buy.

On Feb. 15, 1982, Bunker Hill announced that the sinter plant was to be disassembled and shipped to Mexico. This plant is necessary for the operation of the lead smelter and the silver plant. Other potential purchasers for all or for sections of the company have been suggested, but no major sales have eventuated. The Mining Annual Review (Anonymous 1982) reported that as of April 1982, "salvage appeared to be the only viable option." In early November 1982, the mine and other facilities were in fact sold to an Idaho based group. The buyers have, however, indicated that reopening the facilities must await substantial increases in the prices of lead, zinc and silver.

Those who have been laid off must make a choice whether to stay in the area in the hope that something will turn up or move away to seek work elsewhere. Given a national rate of unemployment which at the time of this writing was about 10 percent, the job opportunities outside the area were also limited, especially for those without appropriate skills. Those laid off were originally entitled to 26 weeks of unemployment insurance amounting to $145 per week. After state and federal extensions, this entitlement was extended to 52 weeks. This could be claimed anywhere in the United States.

As of September 1982, no clear evidence showed how many people had left the area to find work elsewhere. The number of Bunker Hill workers drawing unemployment checks from the Kellogg office for the week ending May 1, 1982, in Shoshone County was 887. This figure fell to 731 for the week ending Sept. 11. The reason for this fall includes those who have exhausted their claims, those who have found jobs and those who have moved. The relative importance of each of these is not known.

A Survey of Unemployed Workers in Kellogg

To evaluate the costs and likely effects of company closure that have been identified earlier, 102 personal interviews were conducted with people who visited the Department of Employment office in Kellogg between Sept. 22 and Oct. 5, 1982. Those selected for interview were simply those who happened to come to the office and who were prepared to participate in the survey. The population interviewed is thus not necessarily a random sample of those who have been laid off in the area. They could have had a variety of reasons for visiting the office, such as making inquiries about their unemployment payments, bringing themselves up to date on employment opportunities or seeking information about educational courses. The bias, therefore, is toward those who are more actively seeking work, although given that most of those people collecting umemployment insurance in the area will visit the office occasionally, this bias need not be severe.

Nearly everybody from whom an interview was requested was willing to respond. Those who declined usually indicated that they had some prior appointment so that they could not spare the time. On the other hand,

in that the survey was conducted about 14 months after the initial announcement of the Bunker Hill closure and about a year after the first layoffs, some of the more mobile and better qualified employees would have already left the area. The net results of these influences on the survey population are hard to predict. The sample, however, may well be more representative of those who are having to make adjustments to the changed employment conditions than a random sample of the whole population would.

The questionnaire was developed after discussions with people involved in research and administration in the area. A pilot interview was conducted before the final version was completed.

The interviews covered a range of topics, broadly falling into three categories: (1) background and employment history, (2) the effects of being unemployed and (3) future intentions. The first question sought information about past employment, age, education, housing and family. The second dealt with job search activities and any other activities in which respondents had been able to engage, given the extra time that they now had available. The third requested them to indicate how they perceived the likelihood of their getting a job in the area and of their being forced to leave the area within the next 12 months. They were also asked to indicate what wage they thought that a local job might pay if they could get one.

Those who indicated any possibility of moving away from the area were asked to suggest their most likely destination. The interview then covered the method and financial costs of moving, any important advantages or disadvantages involved in a move to this location, the likelihood of their being able to find work in this location and the wage which they believed that they could earn. Finally, two questions were asked which attempted to elicit quantitative evaluations of the total losses to them associated with a move to the location which they had indicated.

The Effects of Unemployment And Expected Adjustments

Background and Employment History

As previously noted, 102 interviews were conducted with people visiting the Kellogg Job Service Office. The respondents were predominantly males (91 percent) who had either been permanently laid off (71 percent) or temporarily laid off (16 percent). Some who had formally been laid off on a temporary basis felt that in actuality it would be permanent. Sixty-two percent of those interviewed had held their last permanent job with Bunker Hill. Others had been employed by Sunshine Mining (5 percent), Hecla (8 percent) and the timber industry (6 percent). The remainder had been engaged in a variety of other local activities. The wages earned ranged from $1.29 to $29.81 per hour. The mean rate was $10.93 (standard error = $0.42). The mean period in their previous occupation was 7 years, with a maximum of 38 years.

The sample had the characteristics of a relatively stable population. Nearly 80 percent were married, 57 percent had children living with them, and 63 percent either owned a house or a mobile home. The mean length of residence in Shoshone County was 18.9 years. The ages of respondents ranged between 19 and 61. The mean age was 35. The mean length of time spent in education was 12.1 years. Thirty-nine respondents had some form of college education.

The Effects of Being Unemployed

The period of time over which the respondents had been unemployed varied between less than 1 and 19 months. The mean period was 8 months. Given the predominance of Bunker Hill employees in the sample, this coincides with the period during which Bunker Hill was laying off its workforce. Two aspects of being unemployed were covered in the interview — job search activities and other activities.

Respondents had available to them a variety of information sources on employment opportunities at the Employment Office, such as access to listings of vacancies, out-of-state newspapers and career guidance information. They were asked to indicate whether they had travelled outside the area in search of work and, if so, how far they had travelled and how long this had taken. Of the 102 people interviewed, 64 indicated that they had travelled outside of the area (Shoshone County) in search of work. For some, this had involved regular or occasional visits to relatively close locations, such as Coeur d'Alene and Spokane. Others had undertaken much longer journeys, typically involving visits to other major western mining regions particularly to Montana and southern Idaho and beyond to Wyoming and Colorado.

Across all respondents, the mean distance travelled since becoming unemployed was about 1,500 miles, and the time devoted to it was 13 days. These figures varied considerably. One person claimed to have travelled 20,000 miles in search of job opportunities. The fact that they have remained unemployed in Kellogg is a reflection of the lack of work in these other places, especially in mining areas.

Respondents were also asked whether they had been through the Job Opportunity Group Seminars. These are short courses run at the Job Service Office in Kellogg that are designed to assist people in their job search activities, particularly in applying and interviewing for positions. About one quarter, or 23 respondents, had participated in these sessions.

The other aspect of unemployment covered in the interview related to the use that respondents made of the extra time they now had available. The possibilities were divided into seven categories. For each of these, an estimate was made of the total time devoted to it and whether or not there were any earnings received. Table 4 gives the activities and results. The survey stressed that respondents should only include any **extra** activities or **extra** time devoted to regular activities compared with their usual activities while they were working. A number of assumptions were used in converting details of actual activities into the number of days that would apply over a complete year. These were that gardening lasts for 5 months/year, home maintenance for 10 months/year and hunting and fishing for 3 months/year. Also, unless otherwise specified, people would not engage in more than 3 days/week extra hunting or fishing.

Substantial uncertainty exists relating to the realism of these figures. Many people were unsure as to how they would have spent their time if they had still been employed. For those who had recently become unemployed, they did not know exactly how they would spend their time in the future if they failed to find work. Where people had firm plans to take an educational course, this was included, but care was taken to avoid any double counting by recording both the activities that they had engaged in before undertaking the course as well as the course itself. One further point should be noted about those engaging in paid employment. The interview was generally organized so that people recorded details of their last permanent job and regarded the period since then as "unemployment." A few people, however, had had periods of temporary employment since losing their last permanent job. While presumably during those periods they would not regard themselves as "unemployed," these activities have been recorded as work for extra pay.

This question had a wide range of reactions. Some indicated that they had done nothing extra at all because these activities required money, which they did not have. Others had become involved in many activities. Clearly the nature of the local area — in this case with excellent opportunities for cutting wood, fishing and hunting — influences the level of participation in these activities. Other areas would provide a different and quite possibly a more limited range of opportunities.

Future Expectations and Intentions

Respondents were asked to consider their future prospects in the Silver Valley and the likelihood and consequences of being obliged to move out of the area to find employment. Each person was asked to think of the type of job that he felt had the greatest chance of becoming available in the Silver Valley and that he would be prepared to accept. He was then asked to rate how he perceived the likelihood of his getting a job like this within a period of 12 months. He was shown a list of phrases and asked to say which one best described his feelings. Table 5 shows the phrases and the results of this question.

The results suggest that several respondents had a high degree of confidence that they would be able to get a job in the Silver Valley within 12 months. Only about one-third of the sample believed that they were unlikely to get a job, and a further one-fourth were completely unsure. Nearly one-third believed that they almost certainly would or that they were very likely to get a job.

These results contrast with what would appear to be the situation in reality, where the prospects for employment would seem slight. The reason for this is unclear. It might be based on a belief that Bunker Hill could reopen. Other studies (e.g. Young and Newton 1980) have found a reluctance on the part of those laid off to accept that the company closure is permanent. Alternatively, it could be that people are unwilling to admit to themselves how little chance they have of finding employment. A further possibility would be that, while still receiving unemployment insurance, people had been concentrating their efforts on looking for jobs that would involve an equivalent level of skill or remuneration rather than looking for any available job. They could, therefore, believe that they could find something if they were willing to accept anything that was available.

Apparently, a relationship exists between how long the person had been unemployed and his expectation of getting a job. Table 6 shows the relationship. In this table, the range of expectations was reduced to three categories: likely (original responses 1, 2 and 3), no idea (original response 4) and unlikely (original responses 5, 6 and 7). Those who had been unemployed for more than 6 months indicated a lower probability of gaining employment than did the others. The reasons for this relationship could either relate to the fact that the longer term unemployed genuinely have poorer prospects of gaining employment or that the period of unemployment itself influences their perceptions.

Table 4. Extra activities because of unemployment.

Description of activity	Estimated time each respondent devoted to activity over a full year	Standard error	Average hourly earnings
	(days)	(days)	(1/hour)
Extra work in home or garden (e.g. painting, maintenance, gardening)	17.7	(4.1)	—
Extra activities outside the home for own consumption (e.g. cutting firewood, hunting, fishing)	17.3	(2.5)	—
Extra work to obtain items to sell or exchange (e.g. cutting firewood, fishing, hunting, mining)	4.0	(2.5)	—
Extra work for pay	16.7	(3.5)	2.10
Volunteer work	2.1	(1.0)	—
Unpaid work for friends or relatives (which they could have employed somebody else to do)	7.6	(2.2)	—
Involvement in education or training	15.2	(3.8)	—

Table 5. Perception of chances of finding employment and migrating

Perception of chances	Getting a job in the Silver Valley	Moving away from the Silver Valley	Getting a job in new place
	(number)	(number)	(number)
1. Almost certainly will	16	21	32
2. Very likely to	15	21	18
3. Quite likely to/ might well do	14	13	19
4. Completely unsure/no idea	25	13	24
5. Don't expect to/ quite unlikely to	12	7	—
6. Very unlikely to	13	11	6
7. Almost certainly will not	7	16	—
No reply	—	—	3
Total	102	102	102

Views about the likelihood that respondents would have to migrate from the Silver Valley within the next 12 months were also sought. Table 5 gives the results. The views given by some respondents appear to contradict the views expressed in the earlier question. Table 7 shows a cross tabulation of responses to these two questions. We anticipated that an inverse relationship would appear between the following: those people who expect to find work would expect not to need to migrate, and those who do not expect to find work would expect to need to migrate. While a majority of responses do conform to this pattern, a number (16) felt that both events were likely. One possible explanation to these responses would be that some people, while actually stating that they did expect to find employment in the Silver Valley, were in reality not as optimistic as they suggested.

Cross tabulations of many factors with the likelihood of migration are given in Tables 8 to 13. These suggest several influences on migration. Those who are married, who own their house, who are older or whose spouse has a job appear to be less likely to migrate. The longer they are unemployed, the less they are inclined to say that migration is unlikely. Amongst those who were married or divorced, their perception of the likelihood of migration did not seem to depend on whether they had children living with them.

A third question dealing with expectations concerned the chances of finding work in another location within 12 months of a move there. After the question on the probability of migration, respondents were asked to consider the most likely place to which they might move. Where respondents could not identify a particular location, they were asked to suggest somewhere which was the sort of place that they thought they would choose bas-

Table 6. Length of unemployment vs. likelihood of a Silver Valley job.

Length of unemployment	Likely No.	Likely Row %*	No idea No.	No idea Row %	Unlikely No.	Unlikely Row %	Total
0 to 6 months	17	56.7	7	23.3	6	20.0	30
7 to 12 months	22	37.3	13	22.0	24	40.7	59
13 to 21 months	4	36.4	5	45.5	2	18.2	11
Total	43		25		32		100

*Percentages in this and following tables are percent of row total.

Table 7. Likelihood of finding work in and moving from the Silver Valley.

Getting a job in the Silver Valley	Migrating from the Silver Valley: Likely No.	Likely %	No idea No.	No idea %	Unlikely No.	Unlikely %	Total
Likely	16	35.6	8	17.8	21	46.7	45
No idea	17	68.0	2	8.0	6	24.0	25
Unlikely	22	68.8	3	9.4	7	21.9	32
Total	55		13		34		102

Table 8. Length of unemployment vs. probability of migration.

Length of unemployment	Probability of migration: Likely No.	Likely %	No idea No.	No idea %	Unlikely No.	Unlikely %	Total
0 to 6 months	13	43.3	1	3.3	16	53.3	30
7 to 12 months	36	61.0	8	13.6	15	25.4	59
13 to 21 months	5	45.5	4	36.4	2	18.2	11
Total	54		13		33		100

Table 9. Age vs. probability of migration.

Age	Probability of migration: Likely No.	Likely %	No idea No.	No idea %	Unlikely No.	Unlikely %	Total
u to 20 years	5	83.3	0	0.0	1	16.7	6
21 to 30 years	24	55.8	8	18.6	11	25.6	43
31 to 40 years	13	59.1	3	13.6	6	27.3	22
41 to 50 years	6	40.0	2	13.3	7	46.7	15
over 51 years	7	43.8	0	0.0	9	56.3	16
Total	55		13		34		102

Table 10. Housing vs. probability of migration.

Housing	Probability of migration: Likely No.	Likely %	No idea No.	No idea %	Unlikely No.	Unlikely %	Total
Rent	25	65.8	5	13.2	8	21.1	38
Own	30	46.9	8	12.5	26	40.6	64
Total	55		13		34		102

Table 11. Marital status vs. probability of migration.

Marital status	Probability of migration: Likely No.	Likely %	No idea No.	No idea %	Unlikely No.	Unlikely %	Total
Married	39	48.8	12	15.0	29	36.3	80
Not married	16	72.7	1	4.5	5	22.7	22
Total	55		13		34		102

Table 12. Children vs. probability of migration.

Presence of children	Probability of migration: Likely No.	Likely %	No idea No.	No idea %	Unlikely No.	Unlikely %	Total
Children	30	51.7	10	17.2	18	31.0	58
No children	14	53.8	2	7.7	10	38.5	26
Total	44		12		28		84

Table 13. Spouse in employment vs. probability of migration.

Status of spouse	Probability of migration: Likely No.	Likely %	No idea No.	No idea %	Unlikely No.	Unlikely %	Total
Spouse has job	10	38.4	4	15.4	12	46.2	26
Spouse does not have job	28	53.8	8	15.4	16	30.8	52
Total	38		12		28		78

ed on their knowledge of possible job opportunities, distance from Kellogg and any other personal factors such as relating to friends or family. Table 14 shows the areas given. Typically, they represent other mining areas, locations close to Kellogg or places where people had relatives or friends. Sixty-four people said that they had friends or relatives living there, and 13 said that they had formerly lived there. Thirty-five gave the likely destination based solely on their expectation of finding work there.

Having determined this potential destination, some questions dealt with the implications of a move there. These covered the method and financial cost of moving, any special reasons for selecting this place and the likelihood that a job would become available there within 12 months of arrival. The results of this last question are detailed in the third column of Table 5. This shows that many felt confident of being able to find employment. Nearly a third said that they almost certainly would, and over two thirds thought that it was likely. Just under a quarter had no idea, and only 6 percent thought it to be unlikely. Table 15 gives a cross tabulation of this question with respondents' beliefs about the likelihood of migration.

As to be expected, where the overriding reason for migration is the search for work, most of those (80 percent) who felt that they were likely to find employment also felt that they were likely to migrate. Only one person who expected to migrate did not expect to find a job there. A significant minority (18) even though they expected to be able to find work did not expect to migrate. Within this group, eight people indicated that they almost certainly would find work if they migrated but that they almost certainly would not migrate. This must either reflect confidence in gaining employment in the Silver Valley or simply an unwillingness to move to a different area.

The other areas covered in the interviews related more closely to the economic losses associated with decline. As stated earlier, these are discussed in the next section.

Table 14. Locations given as migration destinations.

States	Number of times mentioned
Idaho	21
Washington	19
Montana	11
Colorado	7
Texas	6
Wyoming	6
Arizona	5
Oregon	4
California	4
Alaska	3
Utah	3
South Dakota	2

Others mentioned once: Florida, Illinois, Nebraska, New Mexico, Oklahoma, Pennsylvania, British Columbia and Middle East.

Table 15. Likelihood of moving from the Silver Valley and of finding work in the destination.

Finding work in Destination	Migrating from the Silver Valley: Likely No.	%	No idea No.	%	Unlikely No.	%	Total
Likely	44	63.8	7	10.1	18	26.1	69
No idea	10	41.7	3	12.5	11	45.8	6
Unlikely	1	16.7	2	33.3	3	50.0	99
Total	55		12		32		

The Economic Costs of Decline

Four categories of economic cost associated with a severe reduction in employment in a rural community were identified in the introduction. In this section, the data collected in the survey are used to provide tentative evaluations of many of these costs. The objective here is to identify broad orders of magnitude only. Each of the categories is considered in turn.

The Loss of Productive Employment

The loss of the value of output generated by labor may be defined simply as the contribution that labor would have made to production if the companies had not closed, less the value of any extra activities that would not otherwise have been undertaken.

The level of productivity is presumably related in some way to the wages paid. Wages and other benefits paid to employees represent one aspect of the costs of employment. Oi (1962) divided the costs of employment into fixed costs and variable costs. Fixed costs are comprised of the costs of hiring and training workers. Variable costs are the regular costs associated with employment, including wages and other employee benefits. When an employer hires a worker, he will expect the value of the output of the employee to cover the variable costs as well as to generate a sufficient return to cover the initial fixed costs of employment. In making a decision about laying off an employee, however, the fixed costs would be regarded as sunk costs. The employee would be retained while the value of the marginal product exceeds the variable costs of employment. Thus, in the context of a declining company, the variable costs of employment would reflect the value of the marginal product of labor.

The fact that the Bunker Hill Company was closed suggests that the value of the output of labor would in fact have been insufficient to cover the variable costs of employment. Note earlier that a $40 million loss was projected for Bunker Hill in 1982. This figure was very sensitive to the level of metal prices. For instance, Callahan (1981-82) estimated that a 1 cent change in zinc prices affected Bunker Hill profits by $1 million. Thus, the long-term position of the company would be extremely difficult to predict. If this projected loss, however, was "shared" across all costs of production, an adjustment could be made to the resulting productivity of labor.

The lead and zinc ores industries (Standard Industrial Classification 1031) — which include establishments primarily involved in mining, milling or otherwise preparing lead, zinc or lead-zinc ores — in 1977 had a total labor cost of $120.8 million compared with a value of shipments of $418.4 million (Bureau of the Census 1981). Thus, labor costs represented just under 30 percent of total sales. In a crude sense, then, 30 percent of the total loss of $40 million could be attributed to labor. The mean hours worked each week by the former Bunker Hill

employees was 40.6. For a workforce of 2,100, the overall loss represented $2.75/hour.

The mean wage reported by ex-Bunker Hill employees in the survey was $11.60 per hour. To this should be added the nonwage variable costs of labor such as Social Security contributions. Some of the fixed costs of employment, however, will in fact be reflected in wage costs in terms of those people paid by the company to administer hiring and training. Without data on the level of the fixed costs of employment in this industry, they will be assumed to cancel out the nonwage variable costs. On the basis of this discussion, the mean productivity of labor at Bunker Hill would have been $11.60 less $2.75, or $8.85 per hour. With a workforce of 2,100, each working 2,111 hours per year, this would represent a total loss of $39 million per year.

The number of days that respondents spent on extra activities was shown in Table 4. In the case of work undertaken for pay, the amounts earned were also recorded. The major problem in determining a value for these activities lies in evaluating the time spent when no wage was paid. Values derive from many sources. In some instances, people were undertaking work that could have been done by regular employees. More often though, they were gardening, collecting firewood, hunting or fishing, so the product was used by themselves. These activities, however, must be largely regarded as recreational, so the use made of the proceeds only represents a part of the activity's value.

No clear approach appears to evaluating these activities. Given the low opportunity cost of time for many of the respondents, their value could be quite low. The method adopted here has been to value paid work at the wage received, where this information is available. Other activities were valued at the minimum wage of $3.35/hour unless the individual concerned was using his own particular work skill. In this latter case, the activity was valued at the individual's previous wage. This situation only arose in the case of one person who undertook volunteer work and three people who undertook unpaid work for friends or relatives. These people were nearly all electricians. Table 16 shows the resultant values.

Given the fact that people were not actually employed to undertake most of these activities, the use of the minimum wage could overstate the value of these activities. In contrast, the value of the 15 days per year spent in education presumably reflects some investment in human capital as well as providing consumption benefits as an occupation and a goal for those without employment. These have not been evaluated and, therefore, may more than offset or at least offset in part the likely overevaluation of the other activities.

Table 16. Values of extra activities

	Mean value of activity per unemployed person
	($/year)
Extra work in home or garden	475
Extra activities outside the home	465
Extra work to get items to sell or exchange	106
Extra work for pay	834
Volunteer work	100
Unpaid work for friends or relatives	215
Total value	2,195

The value of these other activities may be compared with the value of the product that workers could have generated if they had continued to be employed by Bunker Hill by converting it into an hourly rate. This was done on the basis of a 40 hour week, giving $1.06 per hour. Thus, the net loss caused by the closure would be $7.80/hour for Bunker Hill employees. Other employees generally earned a somewhat lower wage ($10.02/hour). If the value of their extra activities is assumed to be the same and the previous wage assumed to represent their productivity, the net loss equals $8.96/hour.

The Costs of Seeking Alternatives

The survey concentrated solely on the costs incurred by respondents in travelling outside the local area in search of alternatives. The costs incurred by the public sector in administering unemployment insurance payments and in collecting and disseminating information about job vacancies have not been included. On the basis of replies received, the mean distance travelled in search or work was 1,500 miles. At a cost of $0.18/mile (the reimbursement rate paid by the Idaho state government for motor vehicle costs), this would represent an expenditure of $270. The extra cost of meals and accommodation is more difficult to identify. The interview, for reasons of brevity, did not attempt to detail the number of nights spent away from home and the type of accommodation used. Given their limited incomes, it would seem unlikely that many would have stayed in motels. A rough figure of $10 per day would provide an estimate of $130 per respondent. The Bunker Hill workers associated with the production of zinc were entitled to claim 90 percent of the costs incurred in looking for work. This included costs of mileage, meals and motels, up to a maximum of $600. Presumably, this group would have both been more likely to travel and more likely to use motels, so the rates used here could underestimate the job search costs. Adding the costs of transport, the total costs of job search became $400 per person.

Adjustment Costs

This section deals with the costs that result when an individual makes the decision to move himself and his family away from one area to find employment elsewhere. They will be dealt with under four categories: (a) costs of transport between areas, (b) costs of selling and buying houses, (c) any changes in the cost of living, and (d) psychic costs associated with the move.

Costs of Transport — First, respondents were asked whether they would make a preliminary visit to their potential migration destination. Seventy-two or 71 percent indicated that they would. The total cost of this has been estimated on the basis of a return trip of the appropriate distance at a cost of $0.18 per mile. The mean cost for those making the visit was $271.

Estimates of moving costs were made on the basis of the distances to the migration destination and the method that would be used for moving. Thirty-six respondents

indicated that they would only use their own vehicle, four that they would borrow a vehicle, 44 that they would rent a vehicle and eight that they would pay a mover. Five respondents would move their mobile homes. The others either would not move, would take a bus or would hitchhike. These last four have been ignored in estimating costs.

Details of the costs of renting a truck were obtained from a company operating from Coeur d'Alene that was advertising in Kellogg. The costs relate to a one-way journey with either an 11- or 14-foot truck. In practice, rates would vary depending upon times of year and the destination. The figures given in Table 17 reflect average rates. The costs of employing a mover are also shown in this table. These figures were supplied by a local moving company and include costs of fuel and basic transport, loading and unloading. They are for interstate moves originating in Shoshone County. A load of 5,000 pounds was assumed.

Each person who uses his own vehicle or who borrows one will have to pay for the variable costs of travel. This has been based on a figure of $0.18 per mile, which is the level of reimbursement paid by the Idaho state government for vehicle costs. Those people renting a truck will have to pay for gasoline for it. The survey assumed that such a vehicle would travel 10 miles per gallon of fuel and that fuel costs $1.30 per gallon. Both those renting a truck and a mover would presumably also have to move their own vehicle, and so a further 18 cents per mile has been added to these costs to reflect this. The cost of moving a mobile home was included at 50 cents per mile. Table 18 shows the results.

When people were asked to estimate for themselves the cost of transporting their belongings, the mean response was $720. This difference could either result simply from a lack of knowledge on behalf of the respondents or from a failure to include all the appropriate costs in the approach adopted here. One example of such costs would be any costs of meals and accommodation while traveling.

Table 17. Moving costs.

Distance	Costs of renting a truck	Costs of employing a mover
	($/mile)	($/mile)
100	1.08	7.78
500	0.66	2.00
1,000	0.53	1.49
2,000	0.41	1.20
3,000	0.35	0.99

Table 18. Costs of moving by various methods.

Method of moving	Number of cases	Mean cost
		($)
Own or borrowed vehicle	40	129
Rent truck	43	708
Pay mover	8	1,638
Move mobile home	5	83
All methods	96	512

Costs of Selling and Buying Houses — Sixty-four respondents owned a house or a mobile home in the Silver Valley. If they choose to move and to sell their property, they face an extremely depressed market. Respondents were asked whether, and if so to estimate by how much, the value of their property had declined since the announcement of the Bunker Hill closure 14 months earlier. Forty-one respondents gave estimates of the extent to which they believed that their property had declined. The mean value was $10,291 (standard error = $1,195). The values given ranged between zero and $35,000. The mean value for those owning houses was $12,137, and for those owning mobile homes was $6,444.

Presumably to a large extent because of this decline in value, however, nearly 30 percent of those owning houses indicated that they would not try to sell their property. Those who said that they would sell were asked to estimate the cost of selling their house in the Silver Valley and of buying another house elsewhere. Responses to this were received from 22 people. The mean estimate was $3,186.

One further aspect of the costs of changing houses relates to the general levels of house prices in the potential destinations compared with the Silver Valley. Discussion with a real estate agent in the Kellogg area indicated that property prices there had been less than in many similar areas before Bunker Hill's closure. Thus, even at that time, somebody moving from Kellogg would have had to buy a more expensive house to achieve an equivalent quality.

Clearly, the survey could not generalize the relative position between Silver Valley and all the possible migration destinations. Some examples quoted by the agent were that housing in California of an equivalent standard would be two times the price, in Nevada a third more expensive and in Minnesota a quarter more. There would, of course, be enormous variations within these states.

Thus, the property owner who is considering a move from the Silver Valley faces substantial losses if he decides to sell his house, as well as a need to find extra capital to gain access to an equivalent property elsewhere.

Changes in the Costs of Living — Clearly evident during the interviews was that differences in the cost of living between the Silver Valley and the locations to which people were considering a move was an important factor influencing the anticipated standard of living. Most respondents (60 percent) believed that the costs of living would be higher in their potential destination. Only 5 percent believed that the costs of living would be lower. The remainder were either unsure or believed that there was no difference. Respondents were also encouraged to estimate the extent of this difference. Taking all estimates together, the mean response was + 13.1 percent (standard error = 2.7). This ranged between -10 percent and + 180 percent.

Psychic Costs Associated with the Move — The reduced options facing people who have lost jobs in Kellogg forces them to make a choice between unattractive alternatives. Most people are reluctant to move away from a place where they have friends and families and where they are familiar with the area. Thus, those who have little or no choice are effectively forced to give this up.

The survey attempted to elicit from respondents quantitative evaluations of the total losses associated with a forced move away from the Kellogg area. Two questions were asked that adopted a contingent valuation approach. The first of the questions relates to the amount that an individual would be prepared to give up to avoid the need to move away from Kellogg. It, therefore, represents an equivalent variation measure of the loss of consumers' surplus associated with the move. The respondent was asked to imagine that he had a firm offer of a job in the location that he had indicated as his most likely destination. At the same time, he was offered back his old job from which he had been laid off in the Kellogg area. Both these jobs are assumed to be the same in all respects except the wage. The job in the other location paid the wage that he used to earn in his old job. He would be able to retain either of these jobs for as long as he wanted them, and he had no other prospects for employment either in Kellogg or elsewhere. He was reminded of the financial costs associated with the move as already discussed.

The question was then organized in the form of a bidding game. The respondent was first asked whether if his old job was offered to him at the old wage he would accept it. This provided a check that the respondent had understood the conditions of the offer. On a few occasions, this offer was not accepted primarily because of the belief that he could get increased job security by moving away from the area. At this point he was reminded that the job on offer was secure in either location.

Some people did have reasons for not wanting their old job back and for selecting the other job at the same wage. Some felt that they had been let down by Bunker Hill and that, therefore, they would rather work for another employer; others had been fired and did not wish to return to their old job. The level of the wage offered in Kellogg was then reduced, by increments of $1 per hour, until the respondent chose the job in the other location.

The answers to such hypothetical questions must be interpreted with caution. The best that can be hoped for is to avoid any particular bias in the survey technique. Schulze, d'Arge and Brookshire (1981) have considered four major potential sources of bias: strategic bias, information bias, instrument bias and hypothetical bias.

Much of the theoretical discussion of the evaluation of nonmarket factors through direct questioning has centered around the possibility of strategic bias. In practice, the evidence suggests that this form of bias is probably not important (Bohm 1972; Schulze, d'Arge and Brookshire 1981). In this example, possible incentives for strategic bias could be suggested. Those currently unemployed would be eager for employers to establish new forms of economic activity in the region. If the respondents believed that the results of this survey were to be used by potential employers to assess the likely cost of wages in the area, they could indicate a willingness to accept a lower wage to remain in Kellogg than they would really be willing to accept. This could encourage the establishment of new area jobs. Once this investment had been made, there would be scope for local action to force up wage rates. In contrast, because of the strength of area unionism, there could have been a bias in the opposite direction if respondents were reluctant to suggest that they would be willing to accept jobs at less than the original, union rates. Given the brief period of time, however, during which the question was asked and the need to concentrate on the major details of the question, the survey did not assume that the possibility of a strategic response occurred to respondents. No indication was evident that it did in any of their replies.

Information bias can be avoided by providing the respondent with complete details of the choices on offer. In specifying that both jobs in question were the same as his old job, the respondent is guaranteed to have full information about it, even though the interviewer did not. The uncertainty relating to other aspects of the move, in particular what it would be like to live in the nominated destination, applies equally to the decision that this group of people is facing in reality. Presumably, this will be reflected in a higher than perceived cost of moving.

The way in which the survey was administered could lead to instrument bias. Two characteristics of the technique could cause this — the way in which payment is made and the starting point in the bidding game. Nearly all respondents indicated their previous wage levels in terms of dollars per hour, and this was the measure used in this question. Where respondents gave their previous earnings in terms of dollars per month, the values were adjusted on this basis. Thus, respondents were effectively selecting the unit of measurement themselves. Starting-point bias arises where the bidding begins either at a point that implies an interviewer's own evaluation or where an excessively long bidding process causes boredom on behalf of the respondent. The first of these possibilities was avoided by starting at the same salary for both jobs. The second did not appear to be a problem, although where appropriate, some bids could be skipped to concentrate on those close to the indifference point.

Hypothetical bias arises where the respondent is unable to relate to the conditions being posed in the question. In this case, possibly apart from a very small number of people who had only recently lost their jobs, respondents had had many months while they must have been seriously considering the question of whether to move away from Kellogg. In this major respect, therefore, the question posed was not hypothetical.

One problem that did arise was that a small number of respondents found it difficult to accept that, where seniority is based on length of service, they could have equal seniority in the two positions offered. There appeared to be no solution to this other than to reemphasize that this was the case. The effect of this on the bidding is unclear but would seem unlikely to be significant. Thus, while uncertainty must surround the choices that were made, there does not appear to be good reason for any particular bias in those responses.

The second question attempted to evaluate the compensating measure of the loss of consumers' surplus associated with migration. The respondent was asked to consider the situation that he was still working in his old job without any expectation that the company would close down. He was then asked to indicate the minimum wage that would have attracted him to an exactly equivalent job in the location that he had indicated earlier. It was not felt necessary to go through the bid-

ding process again in this question. Much of the earlier discussion of these techniques is equally applicable here.

The first of these questions addresses each respondent's willingness to accept a reduced wage by exploring how low wages in the Silver Valley would have to fall to make the respondent indifferent between such a low wage Silver Valley job and a hypothetical job elsewhere at his old (preunemployment) wage level. In the bidding game, as the hourly wage rate stepped down at $1 increments, eventually a point was reached where the respondent replied that he would leave the Silver Valley rather than accept that low a wage. His actual indifference point was assumed to fall at the midpoint of the interval between the last wage at which he said he would stay and the first ($1 lower) wage at which he would move. This was then subtracted from the individual's old wage and represents the maximum hourly reduction in pay that he would be willing to accept to avoid moving away from the area. This hourly rate was translated into an annual amount by multiplying it by the numbers of hours worked by that respondent in his old job per week and then by 52. This annual sum was then capitalized into an equivalent present value based on a period of 10 years or until the respondent reached the age of 65, whichever was the shorter, and a 10 percent discount rate. Table 19 shows the results for this question.

A similar procedure was followed with the results of the second question. Six respondents indicated that they would not be willing to move to a job in another area, irrespective of the amount of the wage offered. This could be interpreted that only an infinitely high offer would attract them away. These replies were excluded from the further analysis of these figures, presumably leading to some underestimation of the mean loss associated with being forced to move away from Kellogg. The wage previously earned was subtracted from the figure given as the minimum wage needed to be offered in the other location. This was changed to an annual amount and a present value in the same way as before. Table 20 gives the results.

Table 19. Willingness to accept a reduced wage.

	Mean response	Standard error
	($)	($)
Previous wage	10.93	0.42
Indifference point	7.36	0.38
Equivalent annual wage reduction	7,747	657
Present value of wage reduction	46,758	4,022

Table 20. Incentive required to encourage migration.

	Mean response	Standard error
	($)	($)
Previous wage	10.93	0.42
Minimum wage to cause migration	14.33	0.55
Annual amount to cause migration	7,259	603
Present value	43,857	3,644

Two aspects of these results are perhaps surprising. First, the large absolute size of the amounts given in both questions, and second, the fact that the first question produced larger estimates than the second question.

In response to the first question, those interviewed indicated that they would, on average, be prepared to accept a reduction of $3.57 per hour to remain in the Silver Valley. In response to the second, they indicated a need to be offered $3.50 extra to be willing to move away from the area. These figures represent a large proportion of their total earnings. The actual effect of the different wage rates would depend upon an individual's liability to tax. That is, at a lower wage, there would be a lower proportion of income lost because of taxation. This would tend to encourage people to accept a lower wage in the Silver Valley.

Also, as noted earlier, respondents generally felt that a move away would increase their cost of living. The average extent of this was believed to be 13 percent. This would also increase the extent to which people would be willing to accept a wage reduction to stay in the Silver Valley. Taken together, these factors could lead to an overestimate of migration incentive or acceptable wage reduction by about 20 percent. Reducing the results by these figures produces present value estimates of $37,406 and $35,086 for the two questions respectively.

Nevertheless, these estimates still represent substantial sums, considerably larger than the financial costs of moving and the decline that has occurred in property values, which are presumably part of them. In addition, in light of the controversy over the problems of lead pollution in the Kellogg environment, they might be regarded as surprising. For instance, in a recent article on this issue, Tate (1981) quotes a Kellogg resident as saying, "There are pros and cons for living in the valley, but there is work here." Given that a large amount of this work is no longer available, the area might be seen to have little attraction. A number of factors, however, suggest why people could place a high value on the opportunity of remaining in the Silver Valley. These relate to the well established workforce in the area, the high proportion of married men, the high proportion owning their own houses and the high mean length of residence in the area. Further, away from the immediate vicinity of the mining and smelter, there is a large extent of relatively unspoiled area that provides a wide range of recreational opportunities.

The final issue must be the question whether these people would, if given the same choice in real life, make the same decisions as they have indicated here. This is always subject to doubt. Recent events are likely to have encouraged them to reexamine their values and options so that they could well have decided that they would be prepared to accept a substantial drop in their material standard of living. This would enable them to continue to live in the area. This could in part be a reflection of the increased level of community spirit that appears to have been at least an initial consequence of the closure. This might not be continued in the longer term. This is almost certainly in part a reflection of the lack of knowledge and uncertainty facing a move to a different part of the country after living in a small community where employment had appeared to be guaranteed. These issues could only be resolved through a more thorough

study of people's attitudes and perceptions than was possible here.

The second surprising aspect of these results is that the first question produced higher values than the second. Generally found is that an equivalent variation measure of the loss of consumers' surplus is lower than a compensating variation measure. Commonly, the difference exceeds that expected from any income effect over the relevant range (Gordon and Knetsch 1979). The contradiction here is more apparent than real. As noted above, those people who said that they would not move for any level of wage have been excluded from the second measure. If these are included at the maximum value indicated in response to this question, the mean value increases to a present value of $49,948 that exceeds the first measure.

Costs of Providing Services

Two reasons exist why the total (national) costs of providing community services could be increased as a result of the company closures in the Silver Valley. First, those moving away from the area will increase the demands placed on service facilities in their destination communities. A range of different types of location was indicated as possible destinations, but one feature of these places is that they are likely to be growing rather than declining communities. Such places will be the ones offering the highest chances of employment. The survey assumed, therefore, that when one person moves away from the area, new facilities will be needed for that person and his family. Second, the reduced size required to provide services and the surplus capacity of services in the Silver Valley mean that the average costs of operating and maintaining service facilities for those who remain will increase. This may, to some extent, be offset in that those communities that gain population may benefit from economies of scale, tending to reduce their average costs. This effect, however, would seem unlikely to compensate fully for the higher costs in the Silver Valley. The places to which people move are likely to be larger than the ones which they leave, and the scale effects will be of less importance. Because of the complexity of this effect, however, this aspect of service provision costs has not been evaluated.

Table 21. Costs of new services in alternative locations.

	Costs at 1978 prices
Education: Total construction costs **per capita** (community of 30,000)	= $ 914.40
Fire protection: Total investment firehouse **per capita** (community of 40,000)	= $ 23.52
Police protection: Total office/jail cost **per capita** (community of 40,000)	= $ 25.68
Sewage collection and treatment: Total sewer investment **per capita** (excludes treatment works) (community of 30,000)	= $ 434.24
Water supply: Total investment **per capita** (community of 30,000)	= $ 532.02
Solid waste disposal: Construction cost **per capita** (community of 30,000)	= $ 0.17
Total **per capita** investment cost	= $1,930.03

Rimbey and Meyer (1981 a through g) did a series of studies of the costs of providing a variety of local services. The studies demonstrate how the costs of service provision can be calculated and provide examples. They give a breakdown of the various cost components for different size cities. Not known was exactly to where or to what size communities migrants will move. These studies relate to the conditions in Idaho, although there is no particular reason why they should be different in other locations. For instance, while Idaho may be more remote from suppliers, other costs, such as labor, could be lower. From these reports, the capital costs of providing facilities for seven services were identified. Table 21 details these. The cost figures relate to communities of 30 or 40 thousand. The total per capita investment cost is $1,930. This would be equivalent to $2,692 in 1981 dollars when adjusted by the consumer price index.

What will happen to the costs of service provision in the Silver Valley? Capital costs are a large part of the expense of providing services. For the Silver Valley, these costs are sunk and cannot be recovered. Some savings will be realized in operating costs for services, but these are expected to be small, and no attempt has been made to estimate them. What seems most likely to happen in the Silver Valley is that the sudden loss of municipal tax revenue will force a curtailment of services and a loss of quality of services provided to those who remain.

To estimate the increased demand for services outside of the area because of the closure, a projection is needed of the likely number of emigrants and the average size of family. The results of the question relating to the likelihood of migration were discussed earlier. If the replies to this are interpreted as probabilities, the expected number of emigrants in the next 12 months can be calculated, as shown in Table 22.

The responses "almost certainly will" and "almost certainly will not" have been interpreted as representing probabilities of 0.9 and 0.1 respectively. The response "no idea" represents a probability of 0.5. The probabilities relating to the other replies have been spread evenly between these points. The total expected number of emigrants, based on the respondents' perceptions is, therefore, 55.5. The responses relating to marital status and numbers of children provide a figure of 2.93 for the average family size. Thus, the total number of people expected to leave the area would be 163. At a total capital cost of $2,691 per person, this suggests an overall cost of $438,633 in respect of the group sampled here.

These results may be, tentatively, extrapolated to the entire population. Concentrating on the Bunker Hill closure, 2100 jobs have been lost. This will in turn lead

Table 22. Expected number of emigrants during next 12 months.

Category	Probability	Number of responses	Expected number of emigrants
1	0.900	21	18.9
2	0.766	21	16.1
3	0.633	13	8.2
4	0.500	13	6.5
5	0.366	7	2.6
6	0.233	11	2.6
7	0.100	6	0.6
Total	1.000	102	55.5

to further job losses in the community. If, conservatively, we assume that only one half of the losses predicted by the economic base multiplier, as discussed earlier, actually occur, this gives a figure of 735 further job losses, i.e. a total of 2,835. By taking the same proportion of emigrants to that derived from the survey, 1,543 workers losing their jobs intend to leave the area within the next 12 months. By assuming the same family size, this represents a total population of 4,521. By taking the per capita capital cost of providing services of $2,691, this gives an overall cost of $12.17 million based on the entire population.

The Total Economic Costs of Decline

Each of the items that has been discussed represents either a continuing loss or a once and for all cost. The loss of labor, the costs of transport, the costs of buying and selling houses and the service costs that have been evaluated here are incurred once only. The costs that result from a person's becoming unemployed are dependent upon the adjustments that are made and upon personal circumstances and will be different for each individual. Table 23 gives some average figures.

Interpreting of these figures requires both care and caution. The numerous assumptions adopted in their computation have been noted at various stages in the discussion. The final selection of particular numbers is not intended to imply confidence in the results. They do, however, suggest the magnitude and relative importance of the costs that have been discussed. Further, the productivity and the losses associated with being forced to move away from the Silver Valley are of the former category. They will presumably be of decreasing significance through time as the economy adjusts and as people establish new associations in the places to which they move.

Table 23. The economic costs of decline (Mean values, $ per person).

Loss of productive employment	Bunker Hill employees	Others
Loss per hour	7.80	8.96
Loss per annum	16,467	19,923
Present value of loss over 10-year period at 10% discount rate	101,183	122,419

Costs of seeking alternatives	All respondents
Travel in search of work	270
Meals and accommodations	130
	400
Adjustment costs	
Preliminary visit to migration location	271
Calculated moving cost	512
Respondents estimated moving cost	720
Property depreciation (property owners only)	10,591
Cost of buying and selling house (those indicating would sell house only)	3,186
Willingness to accept reduced wages to avoid migration (present value over 10 years at 10% discount rate)	37,406
Incentive required to encourage migration wage (present value over 10 years at 10% discount rate)	35,086
Service costs	
Per family moving	7,949
Mean figure across all respondents (based on expectations of moving)	4,325

An estimate of total cost can be made on the assumption that costs last for 10 years and that they are discounted at 10 percent. Further, the estimates in the table should not be added to arrive at a total cost per person. For instance, the loss of productive employment relates to an individual who remains unemployed, while the costs of moving represent costs incurred in an effort to find a job. Only those people who move and then continue to be unemployed would cause both of these costs.

By far, the largest costs relate to the loss of productive employment. While they do reflect the considerable social losses associated with high rates of unemployment, no simple or clear way exists to avoid them. Under conditions of "full" employment and an efficient labor market, the periods of unemployment would be relatively short, and the losses would be regarded as a necessary cost of structural change in the economy, assuming that the plant was not profitable in the longrun. The solution to a potential long-term loss of productive employment lies to a large degree in policies that can raise the general level of employment. These will primarily be aimed at increasing the level of economic activity throughout the economy and will involve macroeconomic policies.

The second most important average cost is that which results from individuals being forced to move away from the area. The limitations to these evaluations have already been discussed. The implications of these figures is that people could be made better off by accepting some reduction in pay to continue to work and live in the Silver Valley. At a rather simplistic level, the reduction in hourly labor productivity that was estimated on the basis of the projected loss at Bunker Hill ($2.75) could be compared with the willingness to accept a lower hourly wage in order to be able to remain in the Silver Valley ($3.57). The fact that the latter is higher than the former suggests that an opportunity is possible for negotiating an agreement that would enable the plant to continue in operation where the losses could be shared between the company owners and employees. In fact, as pointed out in the background section, such an agreement was reached, although it was not implemented. The sale of the company to new owners could represent an alternative means of achieving this solution.

Property owners in the survey have experienced a considerable drop in the value of their houses. While the fabric of the housing stock has not changed dramatically, the level of demand in the Silver Valley has. This will provide benefits to those who do not currently own property in the area but who will purchase it in the future. It will enhance the attractiveness of the area as a location for retirement. Such a large fall in value also represents a severe burden to those property owners who elect to move away and will, therefore, retard the adjustment process because, when people believe that some prosibility exists of Bunker Hill being reopened and of conditions returning to "normal," they will hang on to their property in the hope of reducing the capital loss.

The other costs of moving — of buying and selling property and of transporting belongings — are relatively modest but must be paid by those choosing to move at a time when their major sources of income have been lost. Similarly, the costs of seeking alternatives represents the least costly item to have been evaluated. In that those interviewed, however, were all unemployed, the expenditure would appear to have generated little return beyond the knowledge that suitable jobs are not easily available in the locations visited.

The final item, the increased cost of providing services, would be shared by all those paying taxes at the emigrants' destinations. It does not include any increased costs in providing services for those remaining in the Silver Valley. Probably the receiving communities wish to increase their scale and that the emigrants are seen as beneficial. Without details of the destinations, the survey could not generalize on this.

Conclusions

Summary

The closure of Bunker Hill and of other mines in the Silver Valley has had a dramatic impact on the financial situations and expectations of those who live and work there. Most particularly and directly, it has affected those who have been laid off. Furthermore, because of the scale of the changes, the effects will be felt throughout the area.

At the time of writing (November 1982), the future prospects for employment remained uncertain. When the survey work was undertaken, the probability of a resumption of all or most of Bunker Hill's operations appeared to be very slight indeed. The general view among the professionals in the community was that a large proportion of people would be forced to leave the area if they were to have a reasonable chance of finding work. This report has examined, against this background, the situations, expectations and attitudes of a sample of people who have been caught up in these changes. Because they had yet to make full adjustments to their altered situations, much of the data collected, based in large part on expectations, should be treated with caution.

Those who lost their jobs in these circumstances faced a very limited range of options, both in terms of finding work locally and moving to a job elsewhere. Those people who were surveyed were more optimistic about the chances of obtaining work in the Silver Valley within a period of 12 months than would appear to be justified by the evidence available at that time. With the recent purchase of Bunker Hill, however, they could have had the more accurate perceptions of the future. Respondents indicated firmer views regarding the likelihood of being forced to move away from the Silver Valley within 12 months, and a larger number believed that they would actually have to do so. A significant number (16) indicated that they were both likely to get a job locally and likely to have to move away, suggesting some inconsistency in replying to these two questions.

A wide range of destinations was suggested as places to which people would move, principally in states in the West. The main reason given for selecting the particular location was the expectation of being able to find work there, although about two-thirds of the respondents indicated that they did have friends or relatives living in those destinations. Most of those who felt that they were likely to move also felt that they were likely to be able to find employment in their new locations.

The report has attempted to document and evaluate the more important costs borne by the individuals and communities affected. By far, the largest cost is associated with the loss of productive employment. The persistently high level of unemployment means that these losses could be sustained over a relatively long period. Some workers may realize the impossibility of finding alternative employment at all. Perhaps more surprising is the level of subjective costs associated with a move away from the Silver Valley. As indicated earlier, while there does not appear to be good reason for a bias in any particular direction, the accuracy of these valuations cannot be assured. Nevertheless, respondents gave evidence that a forced move away from the locality would involve a large cost to them. The other costs considered appear to be less important.

The Importance of Uncertainty

Perhaps the greatest impediment to the adjustment process arises from the uncertainty facing all those involved. This relates particularly to the expectations about the future of employment at Bunker Hill. Those intending to remain in the labor market must decide whether to move away from the area to look for opportunities elsewhere or to hang on in the Silver Valley hoping that "something will turn up." The decision can be characterized as a game against nature where each person has to decide whether or not to move, and the state of nature involves Bunker Hill either remaining closed or opening at some future date. Table 24 describes these conditions.

For simplicity, the survey assumed that people either make a complete move, i.e. selling their property and moving their family, or no move at all; that Bunker Hill will either be completely closed or will reopen at its previous level of employment and that there are no other local jobs available. Those who do move away are not in a position whereby they can easily move back.

The payoffs associated with this matrix are not all clearly defined, but can be described more generally:

A. If Bunker Hill remains closed and the individual decides to move away, then he has presumably made the correct decision in these circumstances.

B. If Bunker Hill remains closed and the decision is taken not to move, he is likely to be prolonging the adjustment period and will lose any earnings that he could get elsewhere. The value of property would probably continue to decline through this period as the small number of people interested in buying houses in the area have increasingly done so. He would have done better to have moved sooner, but probably not dramatically so.

Table 24. Payoff matrix for decision makers.

		States of nature	
		Bunker Hill closed	Bunker Hill open
Options:	Move	A	C
	Don't move	B	D

C. To choose to move when Bunker Hill actually opens represents the worst possible decision. The emigrant bears all the costs of moving, which have been shown to be substantial, when they could have been avoided simply by delaying the decision. He will have sold his property on an extremely depressed market when that capital loss could have been recaptured by not selling.

D. Choosing to not move when Bunker Hill reopens represents the best possible situation, where the decision-maker is returned to his initial position simply by waiting. The only costs to him are the lost wages.

While probably not useful is to attempt to place specific values on these payoffs, we should note their relative magnitudes, i.e.:

$$D > A > B >> C$$

In particular, C is by far the worst result, and the difference between A and B is probably quite small, especially where jobs are not easy to find in other locations. Thus, until people become convinced that the closure of Bunker Hill is permanent, they will be unlikely to risk a permanent move away from the area.

This analysis highlights the reasons for selecting an intermediate position whereby the head of the household moves away in search of work, and the rest of the household remain in the Silver Valley. This avoids the costs of moving belongings and of selling property. It does introduce new costs associated with separating families for an unknown length of time. It allows people time, however, to get full information before making a final commitment to leaving the area, thus minimizing the chance of result C.

Potential Policy Responses

Several types of public policy could have a role to play in mitigating the effects of the closure of large employers in small communities. None can solve the basic problem that resource-based operations are typically located in small communities, and that, at some time or other, these operations must close. Some possible directions for policy are considered under three categories: (1) the reduction of uncertainty, (2) the encouragement of movement out of the area and (3) the generation of alternative employment in the area.

The Reduction of Uncertainty — As has been implied earlier, the overall costs of adjustment would be reduced if people could be confident that the company either would or would not be reopened. Clearly, no one can foresee the future. If more information were available, however, about the exact reasons for the closure, the general feasibility of the operation and of the willingness of employees to accept reduced benefits, gaining a more accurate perception of future events would be possible. A certain degree of obfuscation is, of course, an inevitable part of the bargaining process. Managers will be unwilling to reveal their hand while negotiating a sale. Most likely, however, some information would be available to those engaged in negotiations but which was not general knowledge to other members of the community. This could, perhaps, provide some guidance as to whether any chance existed of the plant being reopened and at what scale.

An alternative possibility might be for the government to guarantee the operations of the company sufficiently for it to continue in operation while negotiations proceeded. This could easily have the effect of simply delaying serious negotiations until this guarantee runs out. Some arrangement could, though, be made whereby any eventual purchaser was liable for all or part of the government expenditure to encourage rapid and realistic negotiation. Any governmental rules would themselves need to be fixed and nonnegotiable. After some point, the level of liability of the potential purchaser would be such as to preclude the sale, and the subsequent closure would be permanent. These rules would, of course, be extremely difficult to enforce.

The Encouragement of Movement Out of the Area — Government's major role, aside from providing unemployment insurance, has been efforts to improve the workings of the labor market through providing information. Extensions of this could involve the payment of subsidies toward job search costs for all those who are laid off. The results, however, of this study suggest that this would be unlikely to have any great effect. Even when respondents were "offered" a guaranteed job in another location, they demonstrated a high perceived cost of moving. The costs of moving are far greater than the costs of looking for jobs. The encouragement of adjustment would only appear to be possible, given the existing level of uncertainty, through the provision of a much greater level of assistance to reduce the costs of moving. One possible approach would be to provide compensation for any depreciation in housing value, although this would probably be regarded as unfair to those who do not own property. Subsidies, however, of a similar order of magnitude to the losses sustained in property values would probably be required to have any significant effect on the rate of adjustment.

The Generation of Alternative Employment — In many ways, the generation of alternative employment opportunities in the area would provide the most acceptable solution. The potential scale of the benefits is demonstrated by the losses of productive employment and the costs of migration that could be avoided. An alternative to a short-term governmental guarantee of the operation of the company would be the provision of public employment while the future of the company is determined.

Work could be provided in developing industrial facilities in the area, in environmental improvement or in providing recreational facilities over a limited period. This period would give employees an opportunity to look for work outside the area, provide a "breathing space" while the future of the company can be finally resolved, and increase the opportunities for the local economy's diversification.

The conventional approaches to the attraction of employers to the area in the longer term, such as the provision of factory sites and factories together with advertisements for the area, are unlikely to be successful while the general level of unemployment is high and the rate of economic growth low, unless the area can offer special advantages. This study, however, suggests that substantial subsidies to employers moving into the area could be justified on the basis of the level of nonmarket benefits which could be achieved.

Conclusions

No easy solutions exist to the problems arising from company closure in a small, rural community. Inevitably where such companies are dependent on a finite, nonrenewable resource base, every company will close. The costs of adjustment to these changes must, therefore, be accepted. Perhaps all that can be hoped for is that with better knowledge and better planning, these costs can be minimized.

Literature Cited

Anonymous. 1982. Mining Annual Review, Mining Journal, London.

Bohm, Peter. 1972. Estimating the Demand for Public Goods: An Experiment. European Economic Review 3(2)111-130.

Bureau of the Census. 1981. 1977 Census of Mineral Industries: Subject, Area and Industry Statistics. U.S. Dept. of Commerce, Washington D.C.

Callahan, Pat. 1981-2. Emerald Empire Employment, Various issues. Idaho Dept. of Employment.

Gordon, I. M. and J. L. Knetsch. 1979. Consumer's Surplus Measures and the Evaluation of Resources. Land Economics 55(1)1-10.

Livingston-Little, D. E. 1963. Bunker Hill and Sullivan. Idaho Yesterdays 7(1)34-43.

Oi, W.Y. 1962. Labour as a Quasi-Fixed Factor, J. of Political Economy 70(6)538-555.

Rimbey, N. R. and N. L. Meyer. 1981a. Costs of Public Service: Education. Univ. of Idaho Ext. Bull. 604, Moscow.

Rimbey, N. R. and N. L. Meyer. 1981b. Costs of Pubiic Service: Fire Protection. Univ. of Idaho Ext. Bull 605, Moscow.

Rimbey, N. R. and N. L. Meyer. 1981c. Costs of Public Service: Police Protection. Univ. of Idaho Ext. Bull. 606, Moscow.

Rimbey, N. R. and N. L. Meyer. 1981d. Costs of Public Service: Sewage Collection and Treatment. Univ. of Idaho Ext. Bull. 607, Moscow.

Rimbey, N. R. and N. L. Meyer. 1981e. Costs of Public Service: Sheriff Protection. Univ. of Idaho Ext. Bull 608, Moscow.

Rimbey, N. R. and N. L. Meyer. 1981f. Costs of Public Service: Solid Waste Disposal. Univ. of Idaho Ext. Bull. 609, Moscow.

Rimbey, N. R. and N. L. Meyer. 1981g. Costs of Public Service: Water Supply. Univ. of Idaho Ext. Bull. 610, Moscow.

Schulze, W. D., R. C. d'Arge and D.S. Brookshire. 1981. Valuing Environmental Commodities: Some Recent Experiments. Land Economics 57(2)151-172.

Tate, Cassandra. 1981. An American Dilemma of Jobs, Health in an Idaho Town. Smithsonian 12(6)74-83.

Young, J. A. and J. M. Newton. 1980. Capitalism and Human Obsolescence. Allanheld/Universe, Montclair and New York.

Young, Shik C. 1981. The Regional Economic Effects of the Closure of Bunker Hill Mines. Business Journal 7(1)11-12.

SERVING THE STATE

Teaching . . . Research . . . Service . . . this is the three-fold charge of the College of Agriculture at your state Land-Grant institution, the University of Idaho. To fulfill this charge, the College extends its faculty and resources to all parts of the state.

Service . . . The Cooperative Extension Service has offices in 42 of Idaho's 44 counties under the leadership of men and women specially trained to work with agriculture, home economics and youth. The educational programs of these College of Agriculture faculty members are supported cooperatively by county, state and federal funding.

Research . . . Agricultural Research scientists are located at the campus in Moscow, at Research and Extension Centers near Aberdeen, Caldwell, Parma, Tetonia and Twin Falls and at the U. S. Sheep Experiment Station, Dubois and the USDA/ARS Soil and Water Laboratory at Kimberly. Their work includes research on every major agricultural program in Idaho and on economic activities that apply to the state as a whole.

Teaching . . . Centers of College of Agriculture teaching are the University classrooms and laboratories where agriculture students can earn bachelor of science degrees in any of 20 major fields, or work for master's and Ph.D. degrees in their specialties. And beyond these are the variety of workshops and training sessions developed throughout the state for adults and youth by College of Agriculture faculty.