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REGIONAL IMPACTS OF SUBSTANTIAL REDUCTION IN BASIC EMPLOYMENT: ECONOMIC/
DEMOGRAPHIC IMPACTS OF THE 1974-75 MINE CLOSURES ON BISBEE, ARIZONA

THE UNIVERSITY OF ARIZONA

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REGIONAL IMPACTS OF SUBSTANTIAL REDUCTION IN BASIC EMPLOYMENT:
ECONOMIC/DEMOGRAPHIC IMPACTS OF THE 1974-75
MINE CLOSURES ON BISBEE, ARIZONA

by

Steven Lee Vierck

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For the Degree of

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WITH A MAJOR IN GEOGRAPHY

In the Graduate College
THE UNIVERSITY OF ARIZONA

1983

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This thesis has been approved on the date shown below:

Raymond G. Gibson *April 21, 1983*

RAY JAMES GIBSON Date
Professor of Geography and
Regional Development

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ABSTRACT

Examination of certain economic and demographic indicators over time indicates that adverse impacts on Bisbee, Arizona associated with closure of the community's mines have been substantial. Yet, the overall impact has been much less severe than what was forecasted to occur through use of the conventional economic base methodology. Bisbee's decline has occurred gradually.

While the number of people in Bisbee has dropped only moderately, there have been tremendous shifts in the composition of the population. A much older population has resulted.

Certain factors have helped to both soften and delay adverse effects of the mine closures. These mitigative factors have complemented the strong desire of many residents to remain in the community. Bisbee's experience shows the importance of considering factors which are specific to negatively impacted communities when forecasting the effects of economic dislocations.

INTRODUCTION

This thesis examines certain economic and demographic changes in Bisbee, Arizona related to the closure of the community's mines in 1974-75. A primary focus is on the secondary effects of the mine closures on the local economy. The response of the local populace, in terms of changes in both composition and migrations, is also studied. Important consideration is given to the timing of these economic and demographic responses.

From the descriptive format within which these foci are examined, attention is then devoted to the roles which certain factors have played in softening and delaying the effects of the mine closures on Bisbee. This analysis is an important part of the overall treatment of the problem because the effects of the mine closures, thus far, have not been as severe as those forecasted by the conventional methodology normally used to deal with this type of problem. Review of a 1975 forecast of the effects of the mine closures on Bisbee, which is representative of the conventional economic base model forecasts, serves a useful purpose in helping to identify mitigative factors and measure their importance. Some of the factors which have played important mitigative roles in Bisbee could be expected to play important roles in tempering the effects of adverse economic impacts in other communities.

In considering both economic and demographic factors, this study allows examination of the interrelationships between the two types of

factors. In Bisbee's case, these interactions have played important roles, and analysis concentrated on just one type of response and not the other would sacrifice much in understanding the response of the community to severe economic impacts. The breadth of this study helps raise a wide variety of questions, which if probed, can assist in defining the perimeter of negative impact analysis and in developing a cohesive body of relevant knowledge.

The orientation of this thesis toward a community faced with the economic impact of the loss of a major employer is relatively uncommon as a research topic. However, the situation in which a community loses a major employer occurs frequently. The loss of a major mining operation, the specific problem examined here, is only a specific manifestation of a commonly occurring problem. The closure, or sharp reduction in activity, of other types of basic employers, such as manufacturing plants and military bases, can also severely affect a community's economic livelihood. In all cases, the affecting firms are major employers of area residents. The firms bring income into the region, and that income is recirculated to the region's businesses. Consequently, the loss of these firms frequently has profound and wide-ranging repercussions.

Copper mining has supplied many examples of economic dislocations. In the last decade, numerous mining, smelting and refining operations have shut down in places such as Anaconda, Montana, and Casa Grande, Arizona. In addition, the current recession has softened the copper market which has resulted in the temporary closures of many mines throughout the Southwest. In Arizona, the major copper

producing state in the nation, numerous mines, including those in Clifton-Morenci, Silverbell, and Ajo, have closed at least temporarily or have sharply curtailed operations in the past two years.

A similar situation has occurred with respect to many manufacturing and processing plants in the U.S. In the past two decades, manufacturing's share of national employment has shrunk and been largely replaced by service and retail trade jobs. Many goods which were previously manufactured in this country are now manufactured in other countries. In addition, there has been much interregional movement of firms within the U.S., particularly toward the Sunbelt, and all industries face the constant threat of structural shifts. Numerous plant closures have been associated with these shifts. Many observers see continuations of these trends. Many communities will be affected.

Although there is a strong need for information about the effects of adverse economic impacts on regions, due to the variety and frequency of situations in which they occur, little attention has been focused on the problem. In the recent past, most impact analysis has tended to focus on the effects of growth-oriented economic impacts on regions, particularly those associated with energy development in the West. Occasionally, it has been inferred that the methodologies employed in forecasting the effects of these new developments can be reversed and employed in negative impact situations. However, the two types of problems are not exactly the same. While there are similarities, important differences exist between the two situations which demand that some separate treatment be given to negative economic impacts. At least enough separate treatment is required in order to

determine what those differences might be and where the similarities between the two types of problems end. This thesis is essentially an attempt to supply more insight into the economic and demographic forces at work in a negatively impacted community.

LITERATURE REVIEW

In this study, the term "negative economic impact" is used to indicate an incident such as the closure, or sharp reduction in employment, of a major source of a community's income such as a mine, manufacturing plant, or military base. The term "positive economic impact" denotes a new development which brings with it increased regional employment. Although both types of impacts may create some positive and some negative effects, the terms are used here to indicate the direction of the initial change in employment tied to the impact.

Little scholarly research has been devoted to regions adversely affected by negative economic impacts such as those experienced by Bisbee. Instead, most of the studies done on economic impacts have been concerned with projecting the effects of positive impacts with the potential to create rapid growth. These impacts include the entrance of new mines, manufacturing plants, etc. into regions. Much of the growth-oriented literature is fairly recent, and is in response to the availability of energy development related funding tied to the increased demand for environmental impact statements (Pleeter, 1980).

Much of the limited amount of work that has been done on negative economic impacts has been concerned with the consequences of reductions in defense expenditures, either as the result of military base closures or reductions in defense industry activity. Much of this work was done in the 1960's and early 1970's when there was much concern over the potential effects of defense expenditure reductions on

local economies. Most emphasis was on strategies used in adjusting to defense related impacts. Udis (1973) examined communities impacted by base closures in the 1960's, and found "no identifiable pattern of change in employment growth relative to either the magnitude or timing of the closure..." (p. 160). Lynch (1970) also looked at a group of communities impacted by military installation closures and similarly found, that "employment effects of base closures ranged widely" (p. 288).

Lynch and many other defense impact researchers have relied on export base methodologies primarily developed for growth situations. The "central hypothesis" of export base methodologies is that regional income is largely determined by a region's exports (i.e. sales of goods and services outside the region) (Richardson, 1978). As exports change, the level of activity within the region will change in the same direction. Much attention has focused on producing multipliers which can accurately forecast just how much an effect a change in basic employment, which produces goods and services for non-local users, will have on non-basic employment, which serves local users. A variety of economic models have been developed which differ primarily in their degree of disaggregation. Almost all of the models used for small regions are of either the economic base or the input-output type (Williamson, 1975).

Input-output models are driven by changes in final demand and are adaptable through use of multipliers to both positive and negative impact projections. Frequently used in the past (Isard and Kuenne, 1953, Leontieff, 1965), they have the advantage of taking intersectoral

linkages within an economy more into account than do economic base studies. However, the latter are less expensive, easier to implement, and more applicable to small regions than are input-output models (Weiss and Gooding, 1968, and Williamson, 1975).

An important question concerns the timing of effects of changes in basic activity on non-basic activity. According to Gerking and Isserman (1981, p. 452), the empirical research concerning this point is "sparse and contradictory." However, Richardson (1978) identified the short term view as the "traditional view", and Williamson stated that most recent empirical tests support the short term view. Sasaki (1963) studied the effects of changes in defense expenditures on Hawaii's economy and found that there was a "rapidity of adjustment" to increases or decreases in defense spending. Lynch's (1970) regression model showed that employment multipliers for Department of Defense civilian personnel and military personnel assigned to operational bases were "significant and meaningful" within six months (p. 268).

Most empirical tests of the timing of multiplier effects have not differentiated between growth creating impacts such as the entrance of new manufacturing bases, military installations, etc. and contraction inducing impacts such as that experienced by Bisbee with the closure of its mines. However, a few studies have referred to differences in behavior between growing and contracting communities. Moody and Puffer (1970) not only hypothesized that there was a "much longer reaction process than suspected" for all types of economic impacts (p. 98), but also speculated that the timing of the reaction to an decrease in basic employment may be different to that of a increase.

Gerking and Isserman (1981) commented that transfer payments, such as unemployment benefits, would accompany decreased basic employment and help create different lags from positive imports. An early, little known, study by Leonard (1954) has some strong parallels to this study in that it looked at effects of changes in Phelps-Dodge Corporation mining employment on the economy and population of another isolated, southern Arizona town -- Ajo. Leonard found not only a "substantial lag in the time between changes in the basic working force and the respective changes in the non-basic working force," but that the lag was more pronounced when basic employment declined. Many researchers have looked at changes in basic regional employment, rather than basic regional income, due to the greater accessibility of employment data. However, Weiss and Gooding (1968) advocated using income as a measure due to considerations such as the effects of commuting and different spending habits.

The defense impact literature has been little concerned with the effects of a significant reduction in basic employment on the demographics of a region. This oversight is perhaps due for the most part to the uniqueness of the largely non-local military work force. However, many of the other types of negative impact studies have also largely ignored demographic repercussions. In this regard, the negative impact literature is less developed than the large body of positive impact studies, which since the late 1960's has included models which have synthesized economic and demographic submodels relating to rapid growth (Leistritz and Murdock, 1981).

An important exception in the negative impact literature is the contribution of Rust (1975), who commented that "traditional urban forecasting models ignore demographic processes and treat population size as a simple multiple of economic size" (p. 170). Rust concentrated on economic and population changes in ten no-growth metropolitan areas, most of which were former boom towns which had been dominated by a single industry. He noticed a "lag of population growth in adjusting to the loss of its underlying economic sources" (p. 29). Rust is also different from most impact researchers in that he considered, to some extent, the declining metropolitan areas within their regional settings.

Much of the research on economically declining communities has been based on observation of agricultural villages in the Midwest. In these cases, economic impacts were normally less sudden than that experienced by Bisbee. Nevertheless, these experiences of economic decline in these villages carried with them lessons applicable to declining regions in general. Salisbury and Rushton (1963) investigated the patterns of growth and decline of Iowa villages, and observed in the declining communities, some of which were coal mining towns, "a remarkable tenacity in clinging to the threads of economic life." Jenkins (1940), in a similar study, noticed that declining villages contained a relatively large proportion of old people and a relatively small proportion of very young. Hart, Salisbury, and Smith (1968) observed that the "capital invested in village housing appears to be an important conservative factor in maintaining village population" (p. 344).

Some studies have been done on Bisbee itself. A history which focused on the town's early development (Cox, 1938), and a historical geography (Newkirk, 1966), have all touched on the fact that decline is not a new experience for Bisbee. The community actually experienced two previous periods of decline at the end of World War I and during the Depression. Francaviglia (1982) recently looked at mining related environmental changes in the area and also mentioned some factors which have helped Bisbee withstand the mine closures. Some other fairly recent work has been done by the University of Arizona Department of Geography and Regional Development which has specifically examined Bisbee's economy in terms of the sectoral distribution of businesses and employment (Gibson, Reeves and Lloyd, 1971, Shenk and Edmonds, 1975, and Dunn, et al., 1981). The 1971 and 1975 studies also looked at intraurban business locations and shifts, while the recently completed 1981 study, done in conjunction with the Community and Rural Development Program of the Cooperative Extension Service, included additional material on local consumer buying patterns.

Immediately following the mine closures, a forecast of the anticipated overall effects of the mine closures was included in an Economic Development Administration funded development strategy (Gibson, et al., 1975). It is an important work in regards to this study, in that it supplied the maximum impact forecast which is compared to the observed impact in Chapter 8. The study also considered factors which could have mitigated the impact. Another industrial development study was undertaken several years earlier and contains relevant information on pre-impact conditions (Kirschner

Associates, 1972). One study, which was done in 1975 following the open pit mine layoffs, identified certain socioeconomic characteristics of the unemployed laborers by examining Job Service application forms (Martin, et al., 1976). Its results are contained in a strongly ideological account of the mine closures (Young and Newton, 1980). Another relevant study, a multidisciplinary examination of various large scale copper mining operations, included post impact Bisbee as a case study example (Clark, et al., 1976).

METHODOLOGY

Three intertwined goals of this study are 1) to better understand the economic and demographic effects of Phelps-Dodge Corporation's mine closures on Bisbee, 2) to determine the timing of those effects, and 3) to identify and measure factors which have acted to soften and delay the impact of the closures. In line with these goals, much reliance was placed on tracing certain economic and demographic indicators through time. Since a premium was placed on timing, data on the selected indicators were generally studied at the quarterly or annual levels, the time periods for which data were most often available. In those instances where annual data were not available, the finest possible temporal breakdown was used. In several cases, this meant that only one pre-impact and one post-impact reading could be used.

In order to reduce the illusion that all changes were necessarily directly related to the mine closures, the data sets, where possible, were extended back to several years before the mine closures. This provided a better view of pre-impact trends. Also, changes which occurred in Bisbee were considered in relation to regional trends. From this, certain trends were revealed which have been common to the entire surrounding region, and not just Bisbee. In most cases, monetary data were adjusted for inflation by an appropriate index.

Factors which acted to soften or delay adverse effects of the mine closures were analyzed. These factors were generally identified

as those which helped replace basic income lost by the mine closures. The importance of the substitution effect was estimated by calculating the net increases in basic income which these mitigative factors supplied between the approximate time of the closures and 1981. Monetary data were adjusted for the inflation which occurred within that period of time.

Various sources were used, ranging from personal interviews to published reports. Reductions in Phelps-Dodge Corporation's contributions to the community represented the central point for the impact analysis. Therefore, many data requirements were directly linked to Phelps-Dodge. These requirements included information such as employment over time, numbers of transfers and retirees, pension payments, and other types of aid. In some instances, this information was obtained from Phelps-Dodge itself. In other cases, it was necessary to utilize secondary sources such as newspaper articles and previous studies. Verification was sought for all types of relevant information. In some instances data were not available, and it was necessary to produce appropriate estimates.

The cornerstones of the economic part of the study were the 1975 and 1981 surveys of business establishments and employment, and an input-output study which was done in 1975 using 1974 data. Data for all three surveys were gathered by interviewing business establishments within the Bisbee area. Slightly different questions were asked in all three surveys but all three included questions on the type of business of the interviewed firm and its employment. Together the studies provided a pre- and post- impact comparison of the breakdown of

business establishments and employment by economic sector. The input-output table also provided measurement of the interindustry linkages in Bisbee before the impact. The earlier studies were used to construct a picture of Bisbee's economy in late 1974, preceding the first phase of the mine closures. This view was compared to the economy as it existed in 1981, and examined for changes in the number of firms and employment between the two points in time.

Problems arose from comparison of the three sets of data because their methodologies were different in some respects. The major difference was in coverage. The 1981 economic base study contained certain types of establishments, such as membership organizations and public administrative functions which were not included in the two earlier studies. It was possible to make up most of those deficiencies through joint use of the results of the two 1975 studies in that they generally filled in each other's gaps. In addition, 1974 and 1975 telephone books for the Bisbee area, and questions in the 1981 study which asked when the business was established and what the 1974 employment was, helped improve the picture of the pre-impact economy. Another problem with the economic survey is that the calculated reductions in employment between 1975 and 1981 are probably understated as a smaller proportion (78%) of the 1974 firms supplied employer information than did 1981 firms (90%). The services sector is particularly underrepresented.

The 1972 and 1977 censuses of Retail Trade, Wholesale Trade, and Services also provided valuable economic information. The censuses supplied data for points in time which were not covered by the economic

surveys. Unfortunately, there were differences in methodology between the economic censuses and the other surveys which prevented outright comparison of all results. Consequently, it was necessary to make two comparisons - one between 1972 and 1977 economic census data and the other between the pre- and post- impact surveys. Only general trends between the sets of data were comparable. Various other economic indicators were used as well, such as data on unemployment, bank deposits, and city sales tax receipts. Unlike the economic survey information, which provided only before and after impact profiles, these other sources provided annual or quarterly tracks.

A survey was administered to 417 households in Bisbee in June, 1981. A geographically stratified sample with approximately thirty interviews obtained from each of thirteen selected areas of Bisbee, the survey results provided some important economic and demographic information, such as the occupational history since 1970 of all working members of the households interviewed. These data illuminated employment shifts which occurred following the mine closures. The results also include valuable information in the study areas of demographics and the housing market. The survey results were keypunched onto computer cards and edited for errors before several SPSS (Statistical Package for the Social Sciences) routines were utilized for the tabulation and analysis. This allowed for more extensive cross tabulation of the data than would have been otherwise possible.

Demographic, as well as economic, changes in Bisbee were examined. The major source of demographic information was the U.S.

Census. The 1970 data was compared to the limited amount of information available from the 1980 Census at the time of writing. The household survey data were also useful, in that the survey included information not available from the Census, including much migration data, such as reasons given for moving into Bisbee and previous places of residence. School enrollment by grade, and household utility hookup and disconnect data also were used.

The effects of the mine closures on the housing market were inspected through real estate records on listing by owner, asking price, location, and date; and on sales by seller/buyer, price, location, and date. The household surveys were also worthwhile in this regard as they included information on the selling and purchase prices of the sampled dwellings, along with families' reasons for moving into their residences.

Along with sources dealing directly with particular study themes, much descriptive background data was obtained through such means as personal interviews and perusal of back issues of newspapers.

THE MINE CLOSURES

Pre-impact Conditions

Bisbee has been based primarily on the extraction of copper ores since its founding in 1877. The Phelps-Dodge Corporation has been the most dominant mining company in the area since 1885, when the then small eastern based firm formed the Copper Queen Consolidated Company. In the early years, Phelps-Dodge's influence was modified by the existence of many other mining companies. However, through time Phelps-Dodge bought out or merged with the other companies. Consequently, Bisbee was a one company town for all intents and purposes by 1948. Bisbee operations were a main reason for Phelps-Dodge's spectacular growth through most of the company's existence, and jobs with Phelps-Dodge were the mainstay of Bisbee's economy.

Bisbee experienced both "boom" and "bust" periods in its development. Both growth and decline were strongly tied to the condition of the copper market. The city's peak in terms of population was probably in the early 1920's when it is estimated that there were almost twenty thousand residents in the area (Newkirk, 1966). The 1930 Census listed a total of 15,636 inhabitants within the area, of which 8,023 resided within the then incorporated City of Bisbee (roughly comprised of what is now called "Old Bisbee") and 7,613 lived within the Don Luis, Lowell and Warren precincts. During the early years of development, much copper was needed by America's rapidly growing

industries and the Bisbee area satisfied much of this demand. Bisbee was one of the largest cities between El Paso and San Diego and boasted cultural attractions such as theatres and an opera house. The 1920's represented the zenith of Bisbee's growth. Although fluctuations in size have occurred since the 1920's, Bisbee has generally been a declining community since then. The large numbers of unoccupied buildings lining the hillsides are a testament to this decline.

Prosperity generally continued until the early 1930's when a greatly reduced demand for copper during the Great Depression caused the shutdown of almost all mining operations in the area and resulted in sharp population decreases. The population within the City of Bisbee fell to 5,853 in 1940 (U.S. Census, 1940). Increased copper demand during World War II and the Korean War brought a slight resurgence of life as mining employment picked up again. This period of relative prosperity was coupled to the opening in 1952 of the Lavender Pit mine which took advantage of improved surface mining technology. Population rose from 7,622 in 1950 to 9,914 in 1960. However, throughout the 1960's and early 1970's, improvements in mining technology reduced the need for labor and resulted in gradual paring of the mining workforce. Population changes paralleled these reductions as the population dropped to 8,328 by 1970 (U.S. Census).

Mining employment probably comprised over one-half of all local employment throughout most of the time from Bisbee's inception to the 1974-75 mine closures. In 1971, Phelps-Dodge had 1,600 employees, or 60% of all jobs in the community (Schenk, et al., 1971). Along with payroll contributions to the community, Phelps-Dodge was an important

force in other respects. The company operated three retail outlets. It built and subsidized the hospital and library. Phelps-Dodge also contributed to a wide range of civic projects. Groups with ideas for local projects often approached the company first for funding, and assistance was frequently given. Substantial tax revenues were derived from Phelps-Dodge's presence. However, tax revenues were limited somewhat by the fact that the company wielded enormous political power. As a result, only a small portion of the company's holdings were located within the city limits and were directly taxable by the city.

By 1974, the year of the open-pit mine shutdown, Phelps-Dodge remained the most powerful economic force in Bisbee through its huge payroll and other contributions, but certain trends were in motion which were diminishing its importance. One such trend was the aforementioned reduction in total workforce due to the implementation of capital-intensive mining technology. The workforce was reduced, mainly through attrition, from 1,600 employees in 1971 to 1,350 in 1974 (Schenk, et al., 1971, Gibson, et al., 1975). Partially substituting for the loss of miners and their families, were modest increases in the number of retired people in town and young people identified with an "alternative lifestyle". Part of the attraction for these two groups was in Bisbee's pleasant climate and picturesque surroundings. While this was happening, employment in the government sector was expanding primarily due to increases in Cochise County government employment. The population of Cochise County grew at a 38% rate during the 1970's (U.S. Census) and increases in the size of county government reflected this growth. Bisbee, as the county seat, benefited much from these

increases. Arizona's population and economy were also growing rapidly. The population increased from 1,302,161 in 1960, to 1,777,900 in 1970, to 2,718,215 in 1980. This rapid growth was influencing Bisbee in a wide range of ways. For one thing, the number of job opportunities increased in the growth centers of Tucson and Phoenix, which probably increased the attractiveness of these locations to Bisbee residents.

As early as 1967, Phelps-Dodge had warned of the likelihood of closing its Bisbee operations. These warnings were repeated throughout the years. However, many Bisbee residents ignored the repeated warnings largely because they had been heard so frequently through the period before the closures with no resultant action. The originally projected closure was in 1973, but high demand for copper with correspondingly high copper prices allowed the mines to stay open for another year (Pay Dirt, 1974). Some residents perceived the warnings as mere propaganda to be used for bargaining power in labor contract negotiations, etc. Many had grown up in Bisbee along with Phelps-Dodge and could not envision the city without Phelps-Dodge or Phelps-Dodge without Bisbee. According to a January 24, 1974 editorial in the "Bisbee Review" entitled, "Will It Be?" there was considerable difference of opinion over the possibility of mine closures. The editorial went on to say that "some people refuse to believe the axiom that "mines are born to die". When the first pound of ore is removed from a mine, at that moment it begins the process of dying - the only question remaining is when," (Bisbee Review, 1974).

These ominous warnings appear to have adversely affected business investment in the city. Bankers and other businessmen were

reluctant to invest in a city with the threatened closure of its dominant industry. Some businessmen left town and relocated in other rapidly growing areas of the state. Especially following an announcement printed in the January 17, 1974 edition of the local newspaper entitled "Phelps-Dodge Expects All Bisbee Mining To End This Year," in which Phelps-Dodge stated that it expected "Lavender Pit mining to cease no later than the end of June" and underground operations to close around the end of the year, (Bisbee Review, 1974). Although Phelps-Dodge again failed to meet the projected deadline, this time it only missed it by six months.

Direct Effects

The 1974-75 mine closures were due to a variety of factors. The remaining ore was of relatively low grade and operating costs were high. As the workings moved further from the surface transportation costs increased. Additionally, labor costs had recently risen due to the negotiation of a three-year contract following a strike in the summer of 1974. Perhaps the most important factor influencing the specific timing of the closure was a sharp decline in copper prices. The price per pound of copper on the London Metal Exchange had been increasing for about one year until July, 1974, when prices began to fall rapidly. Phelps-Dodge was forced to cut its prices from \$.85 to \$.79 per pound in September (Bisbee Review, September 14, 1974) and followed with another cut to \$.75 in October (Bisbee Review, October 24, 1974).

Phelps-Dodge Corporation drastically reduced its Bisbee work force through a series of major layoffs which eliminated over 1,000 positions in less than a year. The reductions in force involved transfers, retirements, and laying off of employees. Changes associated with the series of layoffs are depicted in Table 1, which divides the reductions in force into transfers, retirees, and laid off. Phelps-Dodge made a substantial reduction in its workforce on December 14, 1974, when it closed the Lavender Pit mine and concentrator. Subsequent open pit operations have been limited to leaching and precipitation of ores. Over 300 positions were terminated. Roughly 150 persons were transferred to other Phelps-Dodge operations, especially to the new Metcalf Mine and concentrator near Morenci, Arizona. Approximately 50 employees retired under either regular retirement or a series of early retirement plans specifically designed for the Bisbee shutdowns. Approximately 100 employees were laid off, thereby qualifying for company and state unemployment benefits (Bisbee Review, November 28, 1974; Pay Dirt, January, 1975).

Shutdown of the Bisbee concentrator meant an end to the underground mining of sulphide ores, which were processed in the concentrator, and the switch to direct smelting ore of which there were only limited reserves (Bisbee Review, November 28, 1974). This necessitated a partial underground layoff in January, 1975, which eliminated an additional 150 positions, of which approximately 100 employees were transferred to Metcalf and to Safford, Arizona where

Table 1
 PHELPS-DODGE EMPLOYMENT IN BISBEE
 TRANSFERS, RETIREES, AND LAID OFF WORKERS

<u>Date</u>	<u>Total Phelps- Dodge Employment</u>	<u>*Change from Previous Date</u>	<u>Principal Reason(s) for Change</u>	<u>Transfers</u>	<u>Retirees</u>	<u>Laid Off and Attrition</u>
October, 1974	1,375					
December, 1974	1,075	(300)	Lavender Pit & concentrator shut down	150	50	100
January, 1975	925	(150)	Partial underground mine layoff	100	25	25
June, 1975	225	(700)	Underground mines closed	125	170	400
June, 1976	180	(45)	Shattuck Shaft exploration suspended. Phasedown of operations to leaching & precipitation, administration, security	10	15	20
January, 1978	100	(80)	Continued phasedown of operations	25	35	20
May, 1981	90	(10)	Continued phasedown	5	5	-

Sources: Gibson, Lay James, et al, An Economic Development Strategy for Bisbee, Arizona, 1975, various issues of "Pay Dirt" magazine and the "Bisbee Review", and Robert Holland, Phelps-Dodge Corporation.

work had begun in developing an underground mine. An additional 25 employees took retirement under the variety of plans and another 25 were laid off.

The largest reduction in force occurred on June 13, 1975, when the underground workings were closed down and approximately 600 positions were terminated. The inevitability of this move had been made clear by the concentrator shutdown in December. This reduction, along with the loss of roughly 100 jobs due to attrition between December, 1974 and June, 1975, reduced Phelps-Dodge's workforce to about 225 employees from the October, 1974 level of 1,350. The high attrition rate was largely a result of many workers' expectation of the underground closure and reapplying elsewhere in order to "get in early". Of the 600 workers affected by the June closure, approximately one-half were laid off. Many were reinstated after a period of time at other Phelps-Dodge operations. Roughly 125 employees were transferred, primarily to Metcalf, while about 175 retired.

The workforce in late June, 1975 was temporarily inflated to 225 employees due to an exploration project and salvage operations. As these projects were reduced, operations were phased down to leaching and precipitation of ore in the Lavender Pit, and administration and security. The size of the workforce gradually fell to about 90 employees in May, 1981. Many of the eliminated positions involved the attrition of long-term employees, most of whom retired.

Transfers

Approximately 400 employees were transferred to other Phelps-Dodge operations. Phelps-Dodge paid their moving expenses. Transferred employees were also allowed to retain their seniority and tenure toward retirement benefits. In addition to transferred employees, many laid off workers applied and were reinstated at other Phelps-Dodge operations.

Many of those transferred in the reductions in force commuted to their new jobs on a weekly basis, often maintaining their homes and families in Bisbee while living during the work week in their place of employment. The proximity of the primary new places of employment encouraged this commuting. Safford is approximately 130 miles away, while Clifton-Morenci is 170 miles away. In addition, some locations maintained inexpensive quarters for men without families. A shortage of available housing, especially in the Safford area, also increased the tendency to commute. Some Bisbee men still commute on a weekly basis to their jobs. However, almost all had moved their homes and families by the end of 1977 (Holland personal interview, 1981).

Laid Off Workers

Many of those laid off had strong attachments to the Bisbee area and chose to stay rather than moving elsewhere in search of work. Many searched for work in Bisbee and surrounding communities such as Sierra Vista and Douglas. They were aided by both company and state unemployment benefits which extended up to 65 weeks. Initially, unemployment insurance payments from the state government were \$85 per

week for 26 weeks with Phelps-Dodge contributing an additional \$42.50 per week. However, the state extended the payment period and Phelps-Dodge increased its payment to \$75 per week. A person for the entire 65 week period could have collected up to \$8,580 in unemployment benefits. Some of those laid off qualified after one year for up to six months of Trade Reajustment Act money which paid for retraining in other fields. These payments were approximately \$200 per month.

A study which was conducted in 1975 and 1976 following the mine closures provides insight into the demographic characteristics of those laid off, and also into concerns such as the length of time the miners were out of work, and the types of workers who were/weren't able to find work (Young and Newton, 1980). The data base for the study was supplied by the Arizona Department of Economic Security through its Bisbee office. Comprised of those filing for unemployment, the data set included 629 "useable" cases. The data set excluded those who had transferred immediately following the closures, but included many who were receiving early retirement benefits.

The average ages of the unemployed miners in the sample was quite high -- forty-two years old for open-pit miners and forty-nine years of age for underground miners. The group had many years of experience with Phelps-Dodge. Underground miners had an average of twenty-two years of experience, while open-pit miners had a mean of fourteen years tenure. Approximately one-fifth of the open-pit and one-third of the underground miners were receiving early retirement benefits. Roughly one-half of the open-pit and two-thirds of the underground miners were employed as miners, muckers, swampers, or

motormen, while the remainder worked as truck drivers, technicians, security staff, laborers, etc. When queried as to their future plans, approximately one-third of the open-pit miners and two-fifths of the underground miners stated that they would work in Bisbee only (Young and Newton, 1980, p. 75).

Of 289 open-pit miners who filed for unemployment benefits following the closure in December, 1974, 146, or about one-half, were still unemployed five months later in May, 1975 (Table 2). Of the remainder, 65 were reinstated at Morenci or Safford, and 78 had found other work or moved and dropped their claims. After 11 months, in November, 1975, 106 of the 289 were still unemployed. It should be pointed out that unemployment was probably underrepresented as some of those who moved probably hadn't found work. Of those who did move, many went to work with other copper companies or in uranium mining, which utilizes the same basic techniques as copper mining (Bisbee Daily Review, April 3, 1975).

Young and Newton (1980) found those between the ages of 31 and 50 were most likely to be reinstated by Phelps-Dodge after being laid-off, while those aged fifty-one or older were most likely to still be unemployed approximately six months after their layoffs. Those workers under thirty were also less likely to be rehired and more likely to remain unemployed, although to a lesser extent than those over fifty.

The same study checked the status of underground miners laid off in June, 1975, and found that eight months after the layoffs (in February, 1976), 152 of 340 persons were still unemployed. Seventeen

Table 2

STATUS OF LAID-OFF PHELPS-DODGE EMPLOYEES

	Status of Open-Pit Miners 5 Months <u>After Layoffs</u>	Status of Underground Miners 8 Months <u>After Layoffs</u>
<u>Claim still active:</u>		
Worker unemployed	146	152
<u>Claim inactive:</u>		
Worker reinstated at Morenci or Safford	65	17
<u>Claim inactive:</u>		
Worker found other work or moved and dropped his claim	<u>78</u>	<u>171</u>
Total	289	340

Source: Young, John A. and Newton, Jan M., "A Company Town With a Hole in the Ground, and No Company," Capitalism and Human Obsolescence, 1980.

more workers had been reinstated at Morenci or Safford, and 171 had either found other work, or moved and dropped their claims. After 13 months, in August, 1976, 130 of the 340 persons were still unemployed.

A household survey which was conducted in Bisbee in June, 1981 (Gibson and Vierck), discovered that a large proportion of former Phelps-Dodge employees who still lived in Bisbee worked in mining elsewhere following the mine closures (Table 3). Forty-five percent of those who worked another job after the local mine closures, worked at some time in mining elsewhere. Almost one-half of those who worked in mining elsewhere worked at the Phelps-Dodge smelter in nearby Douglas.

About two-thirds of those ex-Phelps-Dodge employees who remained in Bisbee and changed to other industries worked in either the services or public administration sector (household survey, 1981). Others worked in construction, finance, insurance, and real estate, agriculture, and retail or wholesale trade. About one-fifth of the years worked at jobs other than in mining were spent in other communities besides Bisbee; generally either Sierra Vista, Douglas, or other places in Cochise County.

It appears that there was a high degree of job stability among those laid off who found other work. Over 70% were working the same job in 1981 that they originally switched to after being laid off.

There were some instances of retirees coming out of retirement to take a job. This is not surprising considering that more than one-half of those retiring under the series of plans were younger than sixty years of age and that roughly one-quarter of those who applied

Table 3
 INDUSTRY OF EMPLOYMENT AFTER PHELPS-DODGE EMPLOYMENT
 n = 47 jobs*

<u>Industry</u>	<u>% of Jobs</u>
Mining	45
Public Administration	19
Services	17
Finance, Insurance, Real Estate	4
Agriculture, Forestry	4
Retail Trade	4
Construction	4
Wholesale Trade	2

* 39 ex-Phelps-Dodge employees who worked after separation from the company were interviewed.

Source: Gibson and Vierck Bisbee household survey conducted in June, 1981.

for unemployment were receiving retirement benefits (Young and Newton, 1980).

Retirees

It is estimated that over 80% of the 300 retirees chose to remain in Bisbee, (Gibson, et al., 1975, Holland, 1981). They were sustained by relatively generous retirement plans. One plan was designed for those employees over 60 years old with more than thirty years of service. Its monthly pension payment was derived by multiplying a retiree's years of service by a factor (initially about \$11 and gradually increased through time to about \$18 in 1982). In addition, Phelps-Dodge paid \$135 to the retirees until they reached 65 years of age and could qualify for social security. Other benefits included the company's continued carrying of hospital/medical/surgical insurance for the pensioner. Also, employees could convert their life insurance to themselves at the same premium as paid through the company.

The other two major plans were known as the 70/80 plans. To qualify, employees under 55 years of age needed their age and years of service to equal or exceed 80, while employees 55 or older needed their service plus age to add to 70. Just as with the 60/30 plan, monthly pensions were determined by multiplying the years of service with Phelps-Dodge times a factor and included the social security supplement until 65. However, the 70/80 factor was somewhat less than the 60/30 plan. The 80 plan included hospital/medical/surgical insurance. In addition, miners under 65 could collect unemployment insurance

benefits. However, they couldn't collect social security disability or they lost their social security supplement.

Table 4 shows the amounts of the first pension payments (excluding the \$135 Social Security supplement) made to 264 people who retired from Phelps-Dodge's Bisbee operation between November, 1974 and November, 1975. Roughly three-quarters of all pensioners were receiving between \$250-449 per month. The payments have increased over time.

Table 4
NUMBERS AND AMOUNTS OF PHELPS-DODGE PENSIONS*

<u>Amount of Pension</u>	<u>Number on Pension</u>	<u>Percent of Total</u>
\$149 or less	3	1.1
\$150-\$249	17	6.4
\$250-\$349	96	36.4
\$350-\$449	98	37.1
\$450-\$549	29	11.0
\$550-\$649	14	5.3
\$650-\$749	<u>7</u>	2.7
	264	

* Amounts are for first pension check after retirement. Data describe the 264 people that retired from Phelps-Dodge's Bisbee operation between November, 1974 and November, 1975.

Source: Gibson, et al., An Economic Development Strategy for Bisbee, Arizona, Tucson, 1975. Unpublished notes.

Other Reductions in Phelps-Dodge's Presence

Phelps-Dodge reduced its local presence in other ways besides decreasing its workforce. It closed two of the three retail outlets that it operated. It also closed its headquarters building in Warren and leased it out to the city government at a nominal payment. It also

transferred its relatively new hospital to the Cochise County Hospital Association. One of its most significant actions was the sale of approximately 300 company homes that it owned. The houses were sold off at \$6,000 for a two bedroom home and \$7,000 for a three bedroom house. These low prices reflected the company's equity and not the market value of the houses. Occupants, many of them recently retired, were given the first chance to buy.

INDIRECT ECONOMIC EFFECTS

Some effects of the closures were induced by decreases in purchases of goods and services by Phelps-Dodge and by reductions in local mining income. These effects would be expected to be very severe. After all, Phelps-Dodge supplied over 45% of all jobs in the community before the closures (Gibson, et al., 1975). Sharp reductions in mining income, previously the primary source of local income, meant less money was available to spend on goods and services. It is estimated from using Arizona Department of Economic Security data on mining employment and average mining wage figures for Cochise County that mining income of locally employed Bisbee residents was approximately \$4.0 million dollars during the fourth quarter of 1974 and \$14.7 million for the year as a whole. This fell to roughly \$1.1 million for the first quarter of 1976 and \$4.5 million for the entire year. This tremendous decline in community income adversely affected those businesses dependent on miners' spending in the community; however, not to the degree that would be expected to occur as the result of such a large decline in earned income.

Sectoral Effects

Comparison of the input-output survey of businesses which was conducted in 1975 using 1974 employment data, (Gibson, et al., 1975), and a survey conducted earlier in 1975 which provides some data on certain types of businesses not covered by the input-output study

(Shenk and Edmonds, 1975) with a survey done in 1981 (Dunn, et al., 1981) provides pre-impact and post-impact views of the numbers of firms and employment by sector in Bisbee's economy. These indicators help gauge the effects of the mine closures on local businesses. Sales or income data would perhaps be better indicators of the strength of the local economy. However, these types of data for individual firms are not available. Consequently, two surrogates -- numbers of firms and employment are used. This information yields specific evidence of moderate decline from 1974, immediately preceding the closures, to 1981, six years later. These data are augmented by the 1972 and 1977 economic censuses of Bisbee's retail and wholesale trade and services sectors, which supply profiles of those sectors two years before the open-pit closure and two years after the underground shutdown.

Unfortunately, the economic censuses are not strictly comparable to the 1975 and 1981 surveys as the economic censuses defined businesses by sector somewhat differently and were more limited in coverage. For instance, the Census of Retail Trade did not survey non-employer firms with less than \$2,500 in reported sales, which excluded many side businesses. Also the censuses did not include proprietors and partners of unincorporated businesses in employment totals. Reductions in employment between 1974 and 1981, as derived from the other surveys, are probably understated because a smaller proportion (78%) of the 1974 firms supplied employment information than did 1981 firms (90%). The services sector is particularly underrepresented.

The total number of establishments in the Bisbee economy fell from 299 in 1975 to 290 in 1981, a slight net loss of approximately 3% (Table 5). Total full-time equivalent (FTE) employment, adjusted for in-commuters, decreased substantially from 2,601.6 in 1974, to 1,440.6 in 1981, a 45% drop (Table 6). The overall reduction in activity was not indicative of all parts of the economy as some sectors were severely impacted while others actually gained establishments and employment. Mining employment declined by about 1,200 workers, while the total number of employees in the other sectors actually increased slightly. The retail trade, wholesale trade, and transportation and public utilities sectors experienced net losses of both establishments and employment, while the services sector contained slightly more firms but had less employment. The construction, finance, insurance and real estate, and public administration sectors gained establishments and employment.

Retail Trade

The retail trade sector had a net loss of three firms between 1975 and 1981, and a decrease of 35.2 full-time equivalent employees (FTE's), 9% of 1974 employment. However, certain types of retail establishments such as eating and drinking places, apparel and accessory shops, and building materials and garden supplies stores, actually increased in number. The sector's overall decline in number of establishments was largely caused by a sharp reduction in the number of automotive dealers and gasoline service stations. A few of the automotive dealers relocated in proximate and rapidly growing Sierra

Table 5

CHANGE IN NUMBER OF FIRMS BY SECTOR, 1974-1981

<u>Sector/SIC</u>	<u>1974</u>	<u>1981</u>	<u>Change</u>
01-09 AGRICULTURE	2	1	-1
07 Agricultural Services	2	1	-1
10-14 MINING	4	2	-2
10 Metal Mining	3	2	-1
14 Nonmetallic Minerals, Except Fuels	1	-	-1
15-17 CONSTRUCTION	9	11	+2
15 General Building Contractors	4	2	-2
16 Heavy Construction Contractors	1	3	+2
17 Special Trade Contractors	4	6	+2
20-39 MANUFACTURING	7	4	-3
20 Food and Kindred Products	1	-	-1
25 Furniture and Fixtures	2	-	-2
27 Printing and Publishing	3	2	-1
32 Stone, Clay, and Glass Products	1	1	0
36 Electric and Electronic Equipment	0	1	+1
40-49 TRANSPORTATION AND PUBLIC UTILITIES	18	13	-5
41 Local and Interurban Passenger Transit	2	1	-1
42 Trucking and Warehousing	6	1	-5
43 U.S. Postal Service	3	2	-1
45 Transportation by Air	1	1	0
48 Communication	3	6	+3
49 Electric, Gas and Sanitary Services	3	2	-1
50-51 WHOLESALE TRADE	12	5	7
50 Wholesale Trade - Durable Goods	1	1	0
51 Wholesale Trade - Nondurable Goods	11	4	-7
52-59 RETAIL TRADE	108	105	-3
52 Building Materials and Garden Supplies	3	5	+2
53 General Merchandise Stores	7	4	-3
54 Food Stores	13	11	-2
55 Automotive Dealers and Gasoline Service Stations	24	15	-9
56 Apparel and Accessory Stores	3	5	+2

Table 5--Continued

57 Furniture and Home Furnishings	9	10	+1
58 Eating and Drinking Places	19	22	+3
59 Miscellaneous Retail	30	33	+3
60-67 FINANCE, INSURANCE AND REAL ESTATE	21	25	+4
60 Banking	5	5	0
61 Credit Agencies Other Than Banks	3	1	-2
63 Insurance Carriers	2	1	-1
64 Insurance Agents, Brokers, and Service	6	6	0
65 Real Estate	4	11	+7
66 Combined Real Estate, Insurance, etc.	1	1	0
70-89 SERVICES	110	115	+5
70 Hotels and Other Lodging Places	10	6	-4
72 Personal Services	23	19	-4
73 Business Services	2	7	+5
75 Auto Repair, Services and Garages	9	12	+3
76 Miscellaneous Repair Services	12	13	+1
78 Motion Pictures	2	1	-1
79 Amusement and Recreation Services	3	4	+1
80 Health Services	6	11	+5
81 Legal Services	8	6	-2
82 Educational Services	1	3	+2
83 Social Services	2	3	+1
84 Museums, Botanical, Zoological Gardens	2	2	0
86 Membership Organizations	27	25	-2
89 Miscellaneous Services	3	3	0
90-97 PUBLIC ADMINISTRATION	8	9	+1
91 Executive, Legislative, and General	3	3	0
92 Justice, Public Order, and Safety	2	2	0
93 Finance, Taxation, and Monetary Policy	1	1	0
94 Administration of Human Resources	2	3	+1
TOTAL	299	290	-9

Source: Claire A. Shenk, Jr. and Gerald W. Edmonds, A Survey of Private Sector Economic Activity in Bisbee, Arizona, Phoenix, 1975; Lay James Gibson, et al., An Economic Development Strategy for Bisbee, Arizona, Tucson, 1975; and Douglas T. Dunn, et al., Bisbee, Arizona: A Trade Area Analysis, Tucson, 1981.

Table 6

CHANGE IN ADJUSTED FULL-TIME EQUIVALENT EMPLOYMENT
BY SECTOR, 1974-1981**

<u>Sector</u>	<u>Adjusted Full-Time Equivalent Employment</u>		
	<u>1974</u>	<u>1981</u>	<u>Change</u>
Agriculture	5.2	4.3	-0.9
Mining	1,265.0	70.0	-1,195.0
Construction	31.0	48.0	+17.0
Manufacturing	19.7	31.6	+11.9
Transportation & Public Utilities	88.7	65.7	-23.0
Wholesale Trade	41.3	21.0	-20.3
Retail Trade	392.0	356.8	-35.2
Finance, Insurance, & Real Estate	67.3	80.1	+12.8
Services	448.3	416.8	-31.5
Public Administration	243.1	346.3	+103.2
TOTALS	2,601.6	1,440.6	-1,161.0

* Employment figures do not include non-residents employed in the Bisbee area.

** Employment figures were supplied by 223 firms in 1974 and 260 firms in 1981.

Source: Claire A. Shenk, Jr. and Gerald W. Edmonds, A Survey of Private Sector Economic Activity in Bisbee, Arizona, Phoenix, 1975; Lay James Gibson, et al., An Economic Development Strategy for Bisbee, Arizona, Tucson, 1975; and Douglas T. Dunn, et al., Bisbee, Arizona: A Trade Area Analysis, Tucson, 1981.

Vista. The loss of gasoline service stations paralleled a nationwide trend of this nature, although Bisbee's decline was relatively greater. There was also some reduction in the number of food stores and general merchandise stores. The miscellaneous retail category, which includes some of the arts and crafts shops frequently associated with a growing tourism concern in Bisbee, increased in both number of establishments and employment.

The 1972 and 1977 Censuses of Retail Trade also showed declines in the total number of establishments and employment (Table 7). However, the economic censuses exhibited much greater decline in retail employment than was shown in the other economic surveys. Since proprietors and partners in unincorporated businesses were not included in the employment figures of the Retail Censuses, but were included in the 1975 and 1981 surveys, it is possible that this discrepancy partially resulted from a shift toward smaller businesses. The Censuses of Retail Trade also portrayed sharp declines in sales and payroll. Retail sales fell from over \$17,500,000 in 1972 to just over \$14,000,000 in 1977, a decline of 40% in real dollar terms. Retail payroll fell from \$1,876,000 in 1972 to \$1,612,000 in 1977, or \$1,127,000 when adjusted for inflation by the Consumer Price Index. The declines in employment and real payroll both represented drops of roughly 30%. The declines in sales, payroll, and employment were more pronounced than the decrease in the number of retail establishments.

The Censuses of Retail Trade included breakdowns of business activity for some specific types of retail establishments. The total of six automotive dealers present in 1972 decreased to three by 1977,

Table 7
CHANGE IN RETAIL TRADE, 1972-1977

	<u>1972</u>	<u>1977</u>
Number of establishments	98	93
Sales	\$17,503,000	\$14,121,000 (\$9,875,000)*
Number of paid employees	451	319
Payroll for entire year	\$1,876,000	\$1,612,000 (\$1,127,000)*

* Amount within parentheses represents a figure adjusted for inflation by Consumer Price Index.

Source: 1972 and 1977 Censuses of Retail Trade.

while sales dropped from \$3,355,000 to \$2,347,000, a reduction of over 50% in real dollar terms. The number of gasoline stations went from 17 establishments in 1972, with combined sales of \$1,583,000, to 8 establishments in 1977, with combined sales of \$1,473,000, or \$1,030,000 when adjusted by the Consumer Price Index (CPI). This represented a decline of almost 40% which probably still understates the decline due to the fact that increases in gasoline prices during the period outstripped rises in the multiple item derived Consumer Price Index.

Wholesale Trade

The wholesale trade sector suffered severe decline between 1974 and 1981. The number of wholesale firms was reduced from twelve to five and employment fell from 41.3 to 21.0 full-time equivalent employees. All of this reduction was in the nondurable goods category,

where eight firms, carrying goods ranging from oil to soft drinks, ceased operations in Bisbee. Some of these firms transferred to the Sierra Vista area, which, because of its burgeoning population and retail sector, loomed more attractive as a wholesale location. Others transferred to Douglas, an area experiencing growth largely because of improved accessibility to Mexico. Previous to the mine closures, many Bisbee residents felt that the city's placement between Sierra Vista and Douglas made it a very viable location for wholesale firms, and that the wholesale sector could rapidly grow in Bisbee thereby partially substituting for the loss of the mines. These hopes were dashed with the widespread decline of the sector.

The 1972 and 1977 wholesale trade censuses also reflect much decline (Table 8), which seems to indicate much of the sector's reduction occurred between 1972 and 1977. The number of wholesalers fell from 12 in 1972 to 5 in 1977, while sales dropped from \$7,911,000 in 1972 to \$4,667,000 in 1977, or \$3,264,000 in real terms, a decline of almost 60%. Surprisingly, the number of wholesale employees only dropped by one from the 55 employed in 1972, while the year's payroll declined 22% in real terms.

Transportation and Public Utilities

The number of firms in the transportation and public utilities sector was reduced from 18 in 1975 to 13 firms in 1981. The decline was largely attributable to reductions in Phelps-Dodge's purchases of goods and services in the community. Most of the decline was in trucking and warehousing, where only two firms remained in 1981 of the

Table 8
CHANGE IN WHOLESALE TRADE, 1972-1977

	<u>1972</u>	<u>1977</u>
Number of establishments	12	5
Sales	\$7,911,000	\$4,667,000 (\$3,264,000)*
Number of paid employees	45	44
Payroll for entire year	\$323,000	\$326,000 (\$253,000)*

* Amount within parentheses represents a figure adjusted for inflation by Consumer Price Index.

Source: 1972 and 1977 censuses of Retail Trade.

six that were in business in 1975. Phelps-Dodge's drastic cutbacks in its Bisbee operations reduced its need for transportation services and removed a prime source of business for many of the firms. The remaining demand for trucking services was insufficient for most firms to maintain separate terminal facilities in Bisbee. The local branch of the telephone company was also severely affected by the Phelps-Dodge closures. It experienced a 20% drop in operator-handled calls, mostly Phelps-Dodge originated or destined calls, and was forced to close its Bisbee operator office, eliminating 28 jobs (Bisbee Daily Review, November 13, 1975).

Services

According to the 1975 and 1981 economic surveys, the number of services sector firms increased slightly while employment decreased. However, the 1972 and 1977 censuses of Services showed a decreased

number of firms and employment. This difference is partially accounted for the different methodologies employed in the various studies. The censuses of Services did not include religious organizations, government organizations normally falling with the services sector, and small individually run businesses claiming less than \$1,000 in sales to the Internal Revenue Service, while the other economic surveys included these types of businesses. According to the censuses, receipts increased from \$1,611,000 in 1972, to \$2,152,000 in 1977 (Table 9). However, this represented a slight decline in real dollar terms. Most of the decline was in establishments with payroll which declined in number from 27 to 19. Their receipts increased from \$1,330,000 to \$1,651,000, a slight 13% decrease in real terms. The payroll was most affected as it climbed only slightly in nominal dollars from \$428,000 to \$440,000, a drop of 28% in real terms. The number of people employed by establishments with payroll declined from 126 workers in 1972 to 87 in 1977. There were declines in the numbers of hotels and motels (10 to 6), and legal services (8 to 6).

Construction

Several sectors of Bisbee's economy didn't experience declines in their levels of activity. In fact, the construction, finance, insurance, and real estate, and public administration sectors all had net gains in both numbers of firms and employment. Construction lost two general building contractors, but this was more than made up for by the addition of two special trade contractors and two heavy construction contractors. Construction employment increased by 17

Table 9
CHANGE IN SERVICES, 1972-1977

	<u>1972</u>	<u>1977</u>
Number of establishments	67	57
Sales	\$1,611,000	\$2,152,000 (\$1,505,000)*
Number of paid employees	126	87
Payroll for entire year	\$428,000	\$440,000 (\$308,000)*

* Amount within parentheses represents a figure adjusted for inflation by Consumer Price Index.

Source: Censuses of Retail Trade, 1972 and 1977.

full-time equivalent employees (ftes). It would appear unusual that the number of construction firms and employees should increase in a declining community, but, perhaps this is largely explainable by several reasons. First, there was much turnover of housing in the years following the closures with the out-movement of many miners and their families partially balanced by the in-movement of others such as retirees. This high turnover and the age of much of Bisbee's housing stock created a high demand for the renovative types of work supplied by special trade contractors. Secondly, much of the demand for construction is for work done outside of Bisbee in other parts of Cochise County. A recent study found that almost two-thirds of all Bisbee area construction jobs are supported by work in other parts of Cochise County (Dunn et al., 1981). Hence, although Bisbee has declined since the mine shutdowns, the rest of Cochise County has grown

rapidly, thereby creating increased demand for construction, and thus more construction firms. Another reason may be linked to an immediate effect of the mine closures - a large supply of available labor. Many mining employees worked on construction types of occupations and could be expected to rather easily make the transition into the construction sector.

Finance, Insurance, and Real Estate

The finance, insurance, and real estate sector's large gain of four firms in the real estate segment, more than made up for small declines in two other classes of firms in the sector. Employment increased from 67.3 ftes in 1974, to 80.1 ftes in 1981. The growth in the number and employment of real estate firms is probably accounted for in part by the high turnover of housing in the area during the 1975-1981 period, accelerated by intense speculation in the residential and commercial markets.

Public Administration

The public administration sector increased in employment from 1974 to 1981 by 103.2 ftes, the largest gain of any sector. This increase was mainly due to the growth of Cochise County Government, based in Bisbee. The 1981 employment figures understate the actual growth of public administration employment following the mine closures, as Bisbee city government drastically cut its workforce by 100 employees in 1980.

Turnover of Establishments

Examination of the economic data contained in the 1975 and 1981 surveys of business establishments and the 1972 and 1977 Census of Retail Trade, Census of Wholesale Trade, and Census of Services yields some insights into changes which have taken place in Bisbee's economy. However, one shortcoming of relying on those sources is that what is revealed is only net change in the numbers of firms within sectors. It is also important to trace the 1974 firms through to 1981 in order to better determine the numbers of firms going out of business and changing ownership in that period of time (Table 10). What is relied on is data for only the two points in time, 1974 and 1981, so the numbers of business closures derived are only based on those businesses in existence in 1974, and do not account for establishments which may have opened after 1974 and closed before 1981.

There was much movement of firms into and out of Bisbee's economy between 1974 and 1981. Of the 299 establishments identified in 1974, 122 (41%) were no longer in business in 1981. An additional 28 firms (9%) changed ownership. Only one-half of the 1974 establishments were still in business under the same ownership in 1981. The loss of firms was partially compensated by the entrance of 113 new establishments into the community.

The retail trade and services sectors, by far the largest sectors in terms of numbers of businesses, both experienced much change. In the retail sector, only forty-nine firms, or 45% of those identified in 1974, were still in business and under the same owner in 1981. Forty-five firms went out of business, forty-two firms entered

Table 10
FIRM TURNOVER

<u>Sector</u>	<u>Number of Establishments in 1974</u>	<u>Number Still Present in 1981 Under Same Ownership</u>	<u>Number of Establishments Which Changed Ownership</u>	<u>Number of 1974 Establishments Not Present in 1981</u>
Agriculture, Forestry, & Fishing	2	1	-	1
Mining	4	2	-	2
Construction	9	6	-	3
Manufacturing	7	1	1	5
Transportation, Communications, & Public Utilities	18	13	1	4
Wholesale Trade	12	3	-	9
Retail Trade	108	49	14	45
Finance, Insurance & Real Estate	21	9	4	8
Services	110	58	8	44
Public Administration	<u>8</u>	<u>7</u>	<u>-</u>	<u>1</u>
Total	299	149	28	122

Source: Dunn, et al., A Trade Area Analysis of Bisbee, Arizona, Community and Rural Development Program, Cooperative Extension Service, University of Arizona, Tucson, 1981. Unpublished data.

the economy, and fourteen establishments changed owners. Changes in ownership of retail establishments comprised over three-fourths of all ownership changes in the Bisbee economy. In addition, four retail firms changed location within Bisbee. The miscellaneous retail segment had a particularly high turnover; almost two-thirds of all 1974 stores went out of business.

In the services sector, fifty-eight establishments, or 53% of those identified in 1974, were still in business and under the same ownership in 1981. Forty-four firms, or 40%, had gone out of business by 1981, and eight firms, or 7%, had changed ownership. Also, three firms changed location within Bisbee.

On a relative basis, the manufacturing and wholesale trade sectors were most adversely affected. Only three of the twelve wholesale firms or businesses in 1974 were still in business in 1981, while only two of seven small manufacturing firms present in 1974 were still present in 1981. One firm had changed ownership.

Timing of the Indirect Effects

Comparison of the 1972 and 1977 economic census data with the 1975 and 1981 business surveys seems to indicate that decline between 1972 and 1977, the years immediately preceding and following the mine closures was greater than the net decline between 1974 and 1981. In at least the case of the wholesale trade sector, the time of worst decline may be narrowed down to the period immediately following the closures, 1975-1977. Unfortunately, for most sectors it is impossible to gauge from the different sets of survey data exactly when the worst

reductions in economic activity took place as the 1972 and 1977 economic censuses are not comparable in methodology to the other surveys. Therefore, it is necessary to examine other types of information in order to more fully ascertain the timing of impacts related to the mine closures.

Several types of information support the finding that the mine layoffs did not severely impact Bisbee's economy in the short term. In this aspect, the Bisbee case runs counter to Sasaki (1963) and Lynch (1970) who concluded that most of the effect of changes in basic employment would be felt within six months of the initial impact. In the two years following the layoffs, decline appears to have occurred, but it was moderate and gradual. A December 18, 1975 Bisbee Review article summarized the condition of Bisbee's economy one year after the open-pit layoffs as "holding well". However, there were differential effects on the various economic sectors.

Short Term Effects on Sales

In October, 1975, as part of the input-output study conducted then (Gibson, et al., 1975) managers of Bisbee business establishments were asked to compare their third quarter, 1975 (post-closures) sales to their third quarter, 1974 (pre-closures) sales (Table 11). Of the 179 firms which supplied comparisons, 75 establishments, or 42% of the total, witnessed declines in sales in 1975 as compared to 1974. However, 49 establishments (27%) actually had increased sales and the sales of 55 businesses (31%) stayed about the same. The recession which was taking place may have had much to do with the sales

Table 11
CHANGE IN THIRD QUARTER SALES FROM 1974 TO 1975
CHANGE IN SALES

Type of Establish- ment	<u>Increased</u>	<u>Remained the Same</u>	<u>Decreased</u>	<u>Forced to Layoff Employees</u>	<u>No Layoff</u>
Agriculture	-	2	-	-	2
Construction	-	-	1	-	1
Manufacturing	-	1	1	1	1
Mining	-	-	-	1	-
Restaurants, Bars, Service Stations	4	7	14	6	19
Hotels & Motels	1	1	2	-	4
Other Services	16	20	19	3	52
Other Retail Trade	15	13	28	5	51
Wholesale Trade	1	1	5	-	7
Finance, Insurance, & Real Estate	10	3	2	-	15
Transportation, Communication, & Utilities	2	7	-	-	9
Government	<u>-</u>	<u>1</u>	<u>1</u>	<u>1</u>	<u>1</u>
Total	49	55	75	17	162

Source: Unpublished data collected as part of input-output survey conducted in October, 1975 by Lay James Gibson, et al.

decreases. Of the establishments with decreased sales, forty-nine firms had their sales reduced by 1-29%. Thirteen firms experienced sales declines of at least 50%, while an additional 21 firms had declines of 30-49%. The most severely impacted types of businesses were restaurants, bars, and service stations, other retail trade establishments, and wholesalers which all had sales declines in at least one-half of their businesses. Five of seven wholesalers experienced declines, while fourteen of twenty-five restaurants, bars, and service stations had drops in sales.

Only sixteen establishments stated that they were forced to lay off employees due to reduced business activity. This is surprising considering that 75 firms were doing less business and thirty-four businesses had sales drop-offs of at least 30%. Six establishments in the restaurant, bar, hotel category were forced to lay off workers, as were five retail establishments in the "other retail trade" category.

Some firms experienced sales increases from the third quarter, 1974 to 1975. The finance, insurance, and real estate sector appears to have been favorably affected following the mine closures as two-thirds of the surveyed firms experienced sales increases. These increases were mainly due to increased real estate activity because of closure related increases in the number of home listings and sales.

Utility Hookups

Utility hookup information also points to only moderate decline in commercial activity immediately following the large layoffs. Electricity is an especially good indicator as it is unusual for a

Bisbee establishment to have more than one electrical meter (Dunn, et al., 1981). Records of commercial electrical hookups (Table 12 and Figure 1) supplied by Arizona Public Service Company show a slight dropoff of 31 hookups, or 5%, in 1975 and a continuation of the low level in 1976, followed by a substantial increase in 1977. There was a decline in the number of commercial hookups in 1979, but hookups increased to above the 1974 level in 1978 and 1980 (Holland, 1981).

Table 12
COMMERCIAL ELECTRICAL HOOKUPS

<u>Year</u>	<u>Number of Hookups</u>
1973	664
1974	684
1975	653
1976	657
1977	682
1978	676
1979	686
1980	688

Source: Robert Holland, Arizona Public Service Company.

City Sales Tax Receipts

City sales tax receipts increased from \$307,340 in fiscal year 1973-74, immediately preceding the mine closures, to \$447,703 in 1980-81 (Table 13 and Figure 1). However, when adjusted for the high inflation of that period, city sales tax receipt actually declined by

Figure 1. Changes in the Number of Commercial Electrical Hookups and Adjusted City Sales Tax Receipts

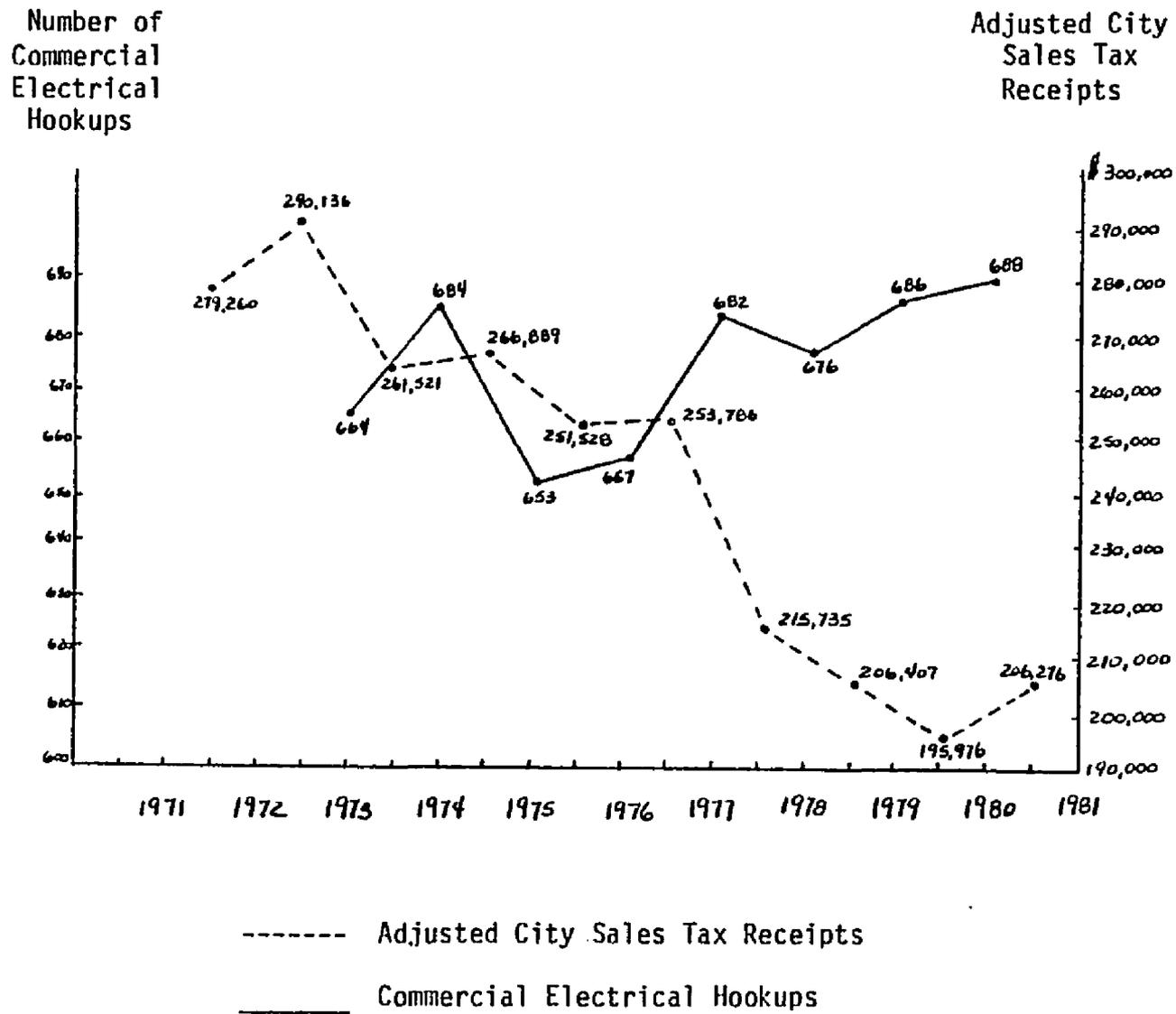


Table 13
CITY SALES TAX RECEIPTS

<u>Fiscal Year</u>	<u>City Sales Tax Receipts</u>	
1971-72	\$279,260	\$(279,260)*
1972-73	307,312	(290,136)
1973-74	307,340	(261,521)
1974-75	342,899	(266,889)
1975-76	342,280	(251,528)
1976-77	369,107	(253,786)
1977-78	337,064	(215,735)
1978-79	357,038	(206,047)
1979-80	388,190	(195,976)
1980-81	447,703	(206,276)

* Figures in parentheses are adjusted for inflation by the U.S. Department of Labor Consumer Price Index.

Source: Arizona League of Cities and Towns.

21%. The decline was not sudden. Instead, it was fairly gradual over the entire period. Adjusted taxable sales in the fiscal year 1974-75, containing the open pit closures in the middle of the year and the underground mine closures at the very end of the year, actually increased over 1973-74. However, sales fell by 6% in real terms in 1975-76. Adjusted sales rose again in 1976-77, but fell by 15% in 1977-78, more two years later than the underground closures. Adjusted taxable sales gradually dropped in 1978-79 and 1979-80, but rebounded in 1980-81.

Bank Deposits

Deposits in Bisbee banks actually increased between the end of 1974 and the latter part of 1975 (Table 14). Part of the explanation for this may lie in the fact that a large number of those laid off were given large sum settlement payments of roughly \$5,000. Many former Phelps-Dodge employees probably deposited their payments in the bank. Also, as Rust (1975) pointed out, in a situation of community decline, increased savings deposits may be due to risk-avoiding behavior. Deposits did decline after a short period of time. In both banks, deposits at the end of 1978 were at lower levels than in late 1975 - middle 1976. If adjusted for inflation, this decline would appear even more marked. This corresponds with the slight declines in late 1977 - early 1978 witnessed in other economic indicators.

Effects on Employment

Unemployment

One immediate effect of the mine layoffs and resultant impacts on dependent businesses was a sharp increase in the unemployment rate. As Table 15 shows, the annual average unemployment rate jumped from 5.3% in 1974 to 9.7% in 1975, where it stayed through 1977. The annual average rate came down in 1978 and 1979 to only slightly higher than the 1974 rate. As drastic as the 1974 to 1975 increase was, it still understates the actual loss to the community of locally employed individuals. Many of those transferred and given retirement by Phelps-Dodge Corporation were not included in the local unemployment figure as they didn't file for unemployment.

Table 14
BANK DEPOSITS

<u>Date</u>	<u>Arizona Bank</u>		<u>Date</u>	<u>First Interstate Bank</u>	
11/1974	\$15,296,000	\$(15,296,000)*	12/1974	\$22,554,000	\$(22,554,000)*
10/1975	21,457,000	(20,053,000)	12/1975	23,328,000	(21,802,000)
6/1976	19,019,000	(17,290,000)	12/1976	21,706,000	(19,380,000)
3/1977	16,687,000	(14,510,000)	12/1977	22,968,000	(19,140,000)
5/1978	22,916,000	(18,333,000)	12/1978	23,087,000	(17,624,000)
1/1979	23,423,000	(17,611,000)			
12/1979	27,574,000	(18,506,000)	12/1979	25,462,000	(17,204,000)
			12/1980	26,764,000	(16,123,000)
4/1981	29,844,000	(17,251,000)			

* Figures in parentheses are adjusted for inflation by the U.S. Department of Labor Consumer Price Index.

Sources: Gay Pilcher, The Arizona Bank, and Charles Swieg, First Interstate Bank.

Table 15
ANNUAL AVERAGE UNEMPLOYMENT

<u>Year</u>	<u>Percent Unemployment</u>
1974	5.3
1975	9.7
1976	9.9
1977	9.8
1978	7.6
1979	5.8
1980	7.1
1981	6.5

Source: Arizona Department of Economic Security, Bureau of Labor Statistics.

Table 16, which lists the numbers of active files of job applicants for Bisbee provides some indication of the misrepresentation of the average unemployment rates. Although the average unemployment rate of 9.7% in 1975 had risen to 9.8% in 1977, the numbers of active files of job applicants (indicating applicants still seeking work) fell from 1,706 as of September, 1975, to 764 for the year ending September 30, 1977. The diversity of the two indicators is probably due in part to the outmovement of many of those seeking work and the shrinkage of the local labor force. The smaller size of the Bisbee labor force would account for the consistently high unemployment rate at the same time as the number of those actively seeking work was falling.

Table 16 shows that there were large increases in the numbers of applicants for various job types besides mining which is included in the miscellaneous occupations. These increases were probably due not only to adverse effects of the mine closures on other businesses, but also to the fact that Phelps-Dodge workers were employed at a variety of different tasks besides mining. Many Phelps-Dodge employees were also engaged in jobs such as truck driving (90), structural work (80-89), security (37), clerical jobs (20-24), and administration and management (00-19). All of these occupational categories showed large jumps from September, 1974, to September, 1975. However, by September, 1977, 15 months after the open pit closures, the number of active files had been reduced to pre-closure levels, indicating that many of those laid off had either found work, left town, retired, or simply gave up looking for work.

Table 16

JOB SERVICE APPLICANTS BY OCCUPATION
ACTIVE FILE - CUMULATIVE JOB APPLICANTS*

<u>Occupation</u>	<u>Sept. 1974</u>	<u>Sept. 1975</u>	<u>June 1976</u>	<u>Sept. 1977</u>	<u>Sept. 1979</u>	<u>Sept. 1980</u>
Professional, technical, and managerial	45	170	110	97	59	78
Clerical and sales	180	299	245	157	102	170
Service	200	364	229	169	101	135
Agriculture	6	22	28	23	4	11
Processing	25	17	12	11	8	10
Machine trades	80	90	59	25	19	37
Benchwork	10	25	39	17	8	12
Structural work	175	399	358	172	84	157
Miscellaneous	147	311	257	88	47	86
Total**	818	1,706	1,339	764	431	697

* Cumulative data for years beginning October 1 and ending September 30 with the exception of the June, 1976 reading which covers the period July 1 through June 30. Fiscal year 1978 was not available because of revisional updating.

** Numbers may not sum to total, as some applicants specified more than one occupational background, while other applicants did not specify any occupational background.

Sources: Job Service Management Information and Reports Unit, Arizona Department of Economic Security. September, 1974 and September, 1975 data from Gibson, et. al., An Economic Development Strategy for Bisbee, Arizona.

Shifts in Employment by Industry

There has been a large shift out of mining into other industries. According to the household survey done in June, 1981, which queried current Bisbee residents as to their work history, the proportion of those remaining in town employed in mining fell from 33% in 1974 to 14% in 1981 (Table 17). This latter figure is held up somewhat by the large number of miners who have commuted to mining jobs in other towns. The retail trade, services, public administration and finance, insurance, and real estate sectors all increased their proportion of the area's employment. This trend is representative of a shift taking place throughout the entire U.S., although the relative strength of Bisbee's shift has been much stronger.

The Multiplier

Along with the shift in employment by sector, there has been a large increase in the size of the economic base multiplier which measures the proportion of total employment to basic employment, i.e. employment based on revenues derived from outside of the region. In 1975, following the open-pit closures but preceded by the underground closures, the economic base multiplier was calculated to be 1.47 (Gibson, et al., 1975), which roughly equates into each basic employee supporting through his spending in the community one-half of a non-basic employee. In 1981, the multiplier had risen to 2.17 (Dunn, et al., 1981). The large increase is largely due to the sharp decreases in mining employment, previously the primary source of basic income - the denominator in the equation used to calculate the

Table 17
 EMPLOYMENT BY INDUSTRY
 (% of All Respondents Employed in Particular Year)

<u>S.I.C Division</u>	<u>1970</u>	<u>71</u>	<u>72</u>	<u>73</u>	<u>74</u>	<u>75</u>	<u>76</u>	<u>77</u>	<u>78</u>	<u>79</u>	<u>80</u>	<u>81</u>
Agriculture, Forestry, and Fishing	-	-	0	-	0	-	1	0	1	0	1	0
Mining	35	35	34	33	33	26	19	17	16	15	14	14
Construction	3	3	4	4	5	6	7	6	6	5	6	5
Manufacturing	-	-	-	0	1	1	1	1	1	0	1	-
Transportation, Communications, and Utilities	5	5	4	4	5	4	5	6	6	5	4	5
Wholesale Trade	1	1	1	1	1	1	1	1	1	1	1	1
Retail Trade	12	12	12	11	11	12	13	13	14	15	15	17
Finance, Insurance, and Real Estate	2	2	2	2	2	2	3	3	2	4	4	4
Services	21	20	22	22	21	25	26	25	26	27	27	28
Public Administration	22	22	21	22	22	23	25	27	27	27	27	26
Number of Respondents	277	278	283	285	288	268	260	269	285	302	334	340

Source: Gibson and Vierck household survey conducted in June, 1981.

multiplier. While mining employment fell (1,350 in late 1974 to 90 in 1981), total employment in the other sectors actually increased.

An immediate short term increase in the size of the multiplier would be expected to occur following a sharp reduction in basic employment. However, the prevailing theoretical view is that in the long term, a negative economic impact situation would be expected to result in a reduction in the multiplier from what it was immediately preceding the impact. This long term reduction would result from the population decline tied to the negative economic impact. The demand for "food stores, barbershops, dentists, and other such local consumer activities would be expected . . . to change proportionately with the population-income movement" (Tiebout, 1962, p. 66). As customers moved out of the area, the minimum threshold levels of sales necessary to support certain businesses would no longer be present. Consequently, certain functions could no longer be supported by the local community. Local consumers would be forced to purchase more goods and services outside of the community, which would result in increased leakage of local income. Dollars would recirculate less in the local area. Consequently, the ratio of non-basic to basic employment in the community would fall resulting in a lower multiplier. However, this reduction had not occurred in Bisbee by 1981, six years after the underground mine closures.

Shifts in Occupational Types

There have been shifts in occupational types (Table 18). Professional, technical, and managerial; clerical and sales, and

Table 18

EMPLOYMENT BY OCCUPATION
(% of All Respondents Employed in Particular Year)

<u>Occupation</u>	<u>1970</u>	<u>71</u>	<u>72</u>	<u>73</u>	<u>74</u>	<u>75</u>	<u>76</u>	<u>77</u>	<u>78</u>	<u>79</u>	<u>80</u>	<u>81</u>
Professional, Technical, & Managerial	30.7	30.9	31.3	32.4	31.8	34.8	36.0	37.8	38.0	37.1	34.4	37.1
Clerical & Sales	22.4	21.9	21.8	22.0	21.8	22.1	21.8	21.7	22.5	23.5	24.9	24.3
Service	13.0	13.3	13.4	12.9	14.5	15.0	16.5	17.2	16.9	18.2	19.2	16.3
Agriculture	0.7	0.7	0.4	0.3	0.3	0.4	0.4	0.4	0.4	0.7	0.9	1.2
Processing	0.4	0.7	0.7	0.7	1.0	1.5	1.5	1.1	1.8	1.3	1.8	1.5
Machine Trades	1.8	1.8	2.6	2.3	2.7	3.0	1.9	1.5	1.8	1.3	2.1	2.1
Benchwork	1.1	1.1	0.8	0.6	0.3				0.4	0.3	0.3	
Structural Work	10.5	9.7	10.2	9.8	9.7	9.7	11.5	10.9	10.2	9.3	9.6	9.2
Miscellaneous	19.1	19.4	18.7	18.5	17.3	12.4	9.6	8.6	8.1	7.9	6.3	8.3
Number of Respondents	277	278	284	287	289	267	261	267	284	302	334	337

Source: Gibson and Vierck household survey conducted in June, 1981.

service occupations have made significant gains, while agricultural (generally gardening and landscaping) and processing trades (generally ore refining tasks at the Douglas smelter) also showed some increase. At the same time, the miscellaneous occupations category (containing mining) decreased greatly. Machine trades and structural work occupations also declined.

Commuting

Increasing proportions of Bisbee workers have commuted to jobs in other communities according to the 1981 household survey (Table 19). Although the beginning of this trend preceded the mine closures, it appears to have been accelerated by the widespread layoffs. In 1970, approximately 81% of Bisbee workers who still reside in Bisbee were employed in Bisbee. By 1981, this proportion had dropped to about 69%. The sources of the largest numbers of outside jobs have been the Sierra Vista-Ft. Huachuca area, about 25 miles to the west, with a combined total of 14% of all jobs held by Bisbee residents in 1980; and Douglas, about the same distance to the east, which more than doubled in importance as a job provider. The Sierra Vista area, adjacent to Ft. Huachuca, experienced much growth throughout the 1970's in population and employment opportunities. Employment at places outside of Cochise County also appears to have increased in importance following the mine closures. These increases indicate the frequency of commuting on less than a daily basis.

Large non-local employers of Bisbee residents included Ft. Huachuca, Cochise College, and the Phelps-Dodge smelter in Douglas.

Table 19

JOB LOCATION
 (% of All Respondents Employed in Particular Year)

<u>Number of Respondents</u>	<u>Year</u>	<u>Bisbee</u>	<u>Ft. Huachuca</u>	<u>Sierra Vista</u>	<u>Douglas</u>	<u>Other Cochise</u>	<u>Clifton-Morenci</u>	<u>Tucson</u>	<u>Other Arizona</u>	<u>Other Location</u>
275	1970	81.1	10.9	1.1	3.6	1.5	-	-	.4	1.5
277	1971	80.9	10.8	1.1	3.6	1.8	.4	-	.4	1.1
282	1972	80.1	10.6	2.1	3.2	1.8	.4	-	.7	1.1
284	1973	79.2	10.9	2.5	3.2	2.1	.4	-	.7	1.1
286	1974	76.9	11.5	3.1	3.1	2.4	.3	-	1.0	1.4
265	1975	72.8	10.6	3.8	4.9	3.4	.8	.4	1.9	1.5
259	1976	70.7	10.4	4.6	5.0	4.2	.4	.4	2.7	1.5
267	1977	68.9	11.2	5.2	5.6	3.0	.7	.7	2.6	1.9
284	1978	67.3	11.3	4.9	6.7	2.8	.7	.7	3.2	2.5
302	1979	69.5	10.6	4.0	6.3	3.3	2.0	.3	2.0	2.0
333	1980	70.9	10.2	3.6	7.2	3.0	1.8	.9	2.1	.3
331	1981	68.9	9.7	4.4	8.2	3.8	1.2	1.2	2.1	.6

Source: Gibson and Vierck Bisbee household survey, 1981.

The number of Bisbee residents employed at Ft. Huachuca actually decreased between 1975 and 1981 from 189 civilian and 25 military personnel to 173 civilians and 5 military. However, the Fort still remained the largest outside employer. Cochise College employed approximately 70 people at its two campuses in 1981, as compared to 29 at the then sole campus in Douglas in 1975. The Douglas smelter employed 27 Bisbee residents in 1981 (Dunn, et al., 1981), down somewhat from the number employed in 1975 (Gibson, et al., 1975).

Other Economic Changes

Income Levels

Shifts in occupational types and increased commuting may have helped buoy up income levels in Bisbee, following the loss of numerous, relatively high paying mining jobs. Bisbee's median per capita income increased from \$2,877 in 1970 to \$5,879 in 1980 (Table 20), which represented a 104% increase, slightly larger than the 98% increase in the U.S. Department of Labor Consumer Price Index (U.S. Census, 1970, 1980). This indicator may be somewhat misleading as Bisbee had a much smaller proportion of children in 1980 than in 1970 which would tend to create a higher per capita income. The median family income rose by only 41% to \$14,017, well below increases in inflation and the 107% increase in Arizona's median family income to \$19,019. Cochise County's median family income rose from \$8,337 in 1970 to \$15,484 in 1980, an 86% increase. In addition, 18.2% of Bisbee's population in 1980 had incomes below the poverty level, compared to 14.9% in Cochise County and 13.2% for the State of Arizona. The percent of those in

Bisbee with incomes below the poverty level increased 56% between 1969 and 1979, while the percentages in Cochise County and the State of Arizona decreased.

Table 20

INCOME LEVELS, 1969 AND 1979*

	<u>1969</u>			<u>1979</u>		
	<u>Bisbee</u>	<u>Cochise County</u>	<u>Arizona</u>	<u>Bisbee</u>	<u>Cochise County</u>	<u>Arizona</u>
Per Capita Income	\$2,877	\$2,563	\$2,427	\$5,874	\$5,738	\$7,043
Median Family Income	9,948	8,333	9,187	14,017	15,484	19,019
Percent of Persons With Incomes Below the Poverty Level	11.7%	16.1%	15.3%	18.2%	14.9%	13.2%

* Dollar figures are unadjusted for inflation which ran at 98% between 1969 and 1979 according to the U.S. Department of Labor Consumer Price Index.

Source: U.S. Census, 1970 and 1980.

Growth of the Surrounding Area

While the 1970's appear to have been a period of moderate decline for Bisbee, Cochise County as a whole grew at a very rapid rate. Population increased by nearly 40% (U.S. Census). The major part of this growth occurred in Sierra Vista, where population went from 6,689 in 1970 to 24,937 in 1980 (U.S. Census). Although over one-half of this increase was due to the annexation of Ft. Huachuca, containing 10,506 persons in 1980, Sierra Vista, alone, more than

doubled in population. Growth in Cochise County population and income levels reflected negatively in some respects on employment opportunities in Bisbee, as some Bisbee wholesale firms shifted location. However, Bisbee appears to have been favorably affected, overall, by County growth. Jobs in proximate communities were developed which allowed Bisbee residents to continue to live in Bisbee. Also the number of County government jobs increased by large numbers. Bisbee, the county seat, captured a significant share of the new government jobs. In addition, County growth increased the size of the proximate market for goods and services, albeit with increased competition from Sierra Vista and Douglas merchants. In 1981, sales to Cochise County residents living outside of the Bisbee area supported almost one-quarter of all Bisbee employment. Wholesalers who remained in Bisbee and also construction firms were particularly dependent with 73% and 62% respectively, of all jobs supported by sales to other parts of Cochise County (Dunn, et al., 1981).

Tourism

Tourism appears to have increased somewhat. In 1981, tourism supported about 7% of Bisbee's total employment (Dunn, et al., 1981). This figure probably increased from the early 1970's due to the opening of a mine tour which has averaged almost 2,000 visitors per month, the presence of a mining museum, the proliferation of small arts and crafts shops, and an aggressive advertising campaign by the Bisbee Chamber of Commerce aimed at increasing tourism.

Sales to Mexican Nationals

Sales to Mexican nationals are also a factor which may have increased in importance. In 1981, approximately 5% of total employment and 13% of retail trade employment was supported by this group (Dunn, et al., 1981). Douglas, twenty-five miles to the southeast, saw significant increases in its trade with Mexico following improvement of certain roads linking it with the interior of Mexico. Bisbee probably also benefited, although to a lesser extent, from the improved accessibility. However, recent peso devaluations and trade restrictions have cut into sales to Mexican nationals.

Local Government Employment

Local government would be expected to suffer greatly due to an impact the size of the 1974-75 mine closures. Loss of revenues such as city sales tax and property tax receipts, coupled with reduction in population based funding transfers from the state and federal governments would be expected to drastically reduce revenues while the inefficiency of supplying city services to a reduced population residing within the same sized area would be expected to hold up costs. But, Bisbee city government does not appear to have been severely impacted until 3-4 years after the closures. In fact, the number of city employees actually grew by large numbers following the closures (Table 21). The total number of city employees grew from a total of 77 in 1974 to 208 in 1979 (League of Arizona Cities and Towns). Even discounting CETA employees (for which the city is obligated to pay only a portion of the wages), the number of full-time and part-time city

Table 21
CITY OF BISBEE TOTAL EMPLOYMENT

<u>Year</u>	<u>Full-time</u>	<u>Part-time</u>	<u>Seasonal</u>	<u>CETA Full-time</u>	<u>CETA Part-time</u>	<u>Total</u>
1970	65	9	-	-	-	74
1971	62	10	6	-	-	78
1972	67	2	-	-	-	69
1973	68	-	-	-	-	68
1974	77	-	-	-	-	77
1975	85	2	-	-	-	87
1976	89	2	-	-	-	91
1977	108	1	-	-	-	109
1978	115	8	-	36	-	159
1979	155	11	-	42	-	208
1980	155	11	-	42	-	208
1981	89	2	-	-	4	95

Source: League of Arizona Cities and Towns.

employees increased from 77 full-time workers in 1974 to 155 full-time and 11 part-time workers in 1979, which represents an increase greater than 100% in 5 years. Part of the increase is attributed to the city's acquisition of the old Bisbee Country Club (forced to close by the out-movement of many of its members) with 6-9 employees and the staffing of a newly created mine tour with 5-11 employees. But even considering these additions, city employment rose rapidly following the mine closures.

Part of the reason behind Bisbee City Government's indifference to any fiscal effects of the mine closures lies in the fact that much of Phelps-Dodge's property was outside of the city limits and thus was not on property tax rolls to begin with. In addition, real retail sales declined only moderately and gradually which meant that there were no sharp reductions in city sales tax receipts. State privilege transaction tax receipts, another large item, are allocated largely on the basis of population and state receipts. Population, as examined before, declined only modestly, although Bisbee's share of the rapidly growing state population showed marked decline. Bisbee also received grant money from various agencies which helped maintain revenue levels.

DEMOGRAPHIC EFFECTS

The sudden loss of mining jobs and resultant impacts on other sectors had a pronounced effect on Bisbee's population. The loss of Phelps-Dodge jobs was at the core of the change in the area population. There were only limited employment alternatives available to those displaced by the mine closures. Consequently, many Phelps-Dodge employees chose to go elsewhere in search of work.

Transfers

The over 400 Phelps-Dodge employees who were transferred to or reinstated at other operations within the company (Gibson, et al., 1975, Pay Dirt, 1975, "Bisbee Review", 1975, Robert Holland, 1981) had extra incentive for leaving Bisbee - they had positions waiting for them. Many of these employees moved their families, with the assistance of company funds allocated for that purpose, to other Phelps-Dodge operations in Clifton-Morenci, Safford, etc. Most of those who received transfers following the open pit layoffs in December, 1974, and January, 1975, moved immediately or left their children in school through the end of the school year and then moved their families up in the summer of 1975 to their new job location. Many of those affected by the underground layoff in June, 1975, also moved in the summer of 1975. However, a large proportion of those transferred to Safford, which included most of the underground miners, left their families in Bisbee, due primarily to a housing shortage in

Safford and commuted on a weekly basis. It was estimated at the end of 1975 that about 150 of the 370 transferred miners still maintained their families in Bisbee (Gibson, et al., 1975). However, housing opened up in Safford in early 1976 and almost all transferred miners moved their families by the end of that year.

Laid Off Workers

Along with those workers who were transferred, many of the laid off workers applied for jobs with Phelps-Dodge operations in other places and were reinstated. Others took jobs with other copper companies. A tightening of the job market in late 1975, due to low copper prices, temporarily reduced the number of outside employment opportunities in copper mining, but a substantial number of miners found work before too long with uranium mines, primarily in northern New Mexico (Bisbee Daily Review, 1975). Others took jobs in other industries in other places. The diversity of occupational experience held by former Phelps-Dodge employees helped ease the transition for some into other industries. Unfortunately, a significant portion of those laid off were miners and muckers, with skills of limited utility in other fields besides mining.

Of the approximately 500 persons who were either laid off or quit during the period of time between October, 1974, and June, 1975, it is estimated that roughly 300 stayed in town through 1977, and 200 were still residing in Bisbee in 1981 (Holland, 1981).

Net Population Change

Comparison of the 1970 and 1980 Census of Population data shows that there were significant changes in the size and composition of Bisbee's population during the 1970's. Total population dropped from 8,328 in 1970 to 7,154 in 1980, a decline of 14%. These figures indicate to some extent that there was substantial outmovement of former Phelps-Dodge employees. Unfortunately, the ten year gap in census data supplies little information concerning the specific timing of population changes. Questions such as, "when were the most significant outmovements?" go largely unanswered and must be indirectly gauged through use of school enrollment figures. Another point to be considered is that the census population totals indicate only the net effect of population change and yield little insight into the actual volumes and types of immigrants vs. emigrants in the Bisbee region.

Retirees

It appears that the two groups were composed differently. As many middle-aged Phelps-Dodge employees with families left town, they were partially replaced by a group dominated by retirees and young "counter-culture" people. Table 22 compares the percentages of Bisbee's population in various age groups in 1970 and 1980 and shows that the proportion of those 65 or older increased significantly from 9.9% to 17.7%. Even allowing for some increase in the proportion of retirees due to the population decrease, the number of those aged 65 or older had to have increased by over 440.

Table 22

DISTRIBUTION OF POPULATION BY AGE GROUP (%)

		<u>Under 5</u>	<u>5-17</u>	<u>18-29</u>	<u>30-44</u>	<u>45-54</u>	<u>55-64</u>	<u>65 and Over</u>
Bisbee	1980	6.8	18.9	16.0	16.2	10.3	14.0	17.7
	1970	8.3	28.3	14.0	16.6	12.4	10.5	9.9
Cochise County	1980	8.4	23.1	20.3	18.5	9.9	9.5	10.3
Arizona	1980	7.8	21.2	22.3	18.6	9.3	9.4	11.3

Source: U.S. Census of Population, 1970 and 1980.

The older composition of Bisbee's population is similar to Jenkin's (1940) finding of a relatively large proportion of old and a relatively small proportion of young people within economically declining agricultural villages in the Midwest. Other evidence also suggests that older populations are very often found in economically contracting communities. Rust (1975) noticed many old people and relatively few young people in his study of no-growth metropolitan areas. He tied these older populations to selective migration, with older people less likely to leave. In Bisbee's case, the large increase in the number of retired people appears to be due not only to a relatively high resistance to outmigration, but also to increased immigration.

As judged from the results of the household survey conducted in June, 1981, many older people who chose to settle in Bisbee were not directly connected to mining and came from all over the United States. Many were retired even though they were less than sixty-five years of

age. The Census figures, tallying as they do those people aged 65 years and older, therefore underestimate the actual number of "retirees" in Bisbee, although they do hint at this phenomena somewhat as they reveal an increase of from 10.5% to 14.0% of the population aged 55-64 years old. Among the retired people interviewed in the May, 1981 household survey who were under 65 years of age, there were a considerable number of ex-Phelps-Dodge employees on pension. Of those Phelps-Dodge retirees interviewed in 1981, almost one-half were in their 50's upon entering retirement (Gibson and Vierck household survey, 1981).

Many of those retirees who moved into Bisbee during the post-1974 period had lived in Bisbee previously and were returning "home". Some had been laid off or transferred in 1974-75, moved elsewhere and worked, and then returned to Bisbee after qualifying for a Phelps-Dodge pension plan, etc. Others had been away for longer periods of time. A few had been away from Bisbee for over thirty years. Other retirees were primarily attracted by climate and/or health reasons. Others liked the small town lifestyle. Some wanted to be close to family and friends. A sizeable number were attracted to the inexpensive housing caused by the large sudden outmovement of many miners and their families (household survey, 1981).

Young Adults

Besides the large increase in the number of older people aged 55 and older, the group aged eighteen to twenty-nine was the only other age group listed in Table 22 to increase in relative numbers. This

group comprised 16% of the population in 1980, as compared to 14% in 1970. Increases in the group's numbers paralleled an increasing consciousness in the community of growing numbers of arts and crafts oriented young people as well as bicycle racing enthusiasts. Numerous newspaper editorials, some written prior to the mine closures, reacted against the inmovement. There was and still is friction between the long time residents and the "newcomers". It appears from the household survey that immigration of this group was heavily accelerated by relatively low housing prices and also by a circular feedback effect created by the attraction of having a sizeable number of craft oriented people in town. Climate and scenic surroundings were other major reasons given (household survey, 1981).

Median Age

Both the number of children and the number of middle-aged people shrunk as a proportion of the total population. The number of children showed the largest decline, falling to 26% of the population in 1980 from 37% in 1970. People aged thirty to fifty-four comprised 26% of the population in 1980, down from 29% in 1970. The combination of a decrease in the number of children in town and an increase in the number of those aged fifty-five or older resulted in an increase in the median age from 30.8 years in 1970 to 36.4 in 1980 (U.S. Census of Population, 1980). The sharp reduction in the number of young people may seriously affect the future size of Bisbee's population.

School Enrollments

Examination of Bisbee public school enrollment records yields some insights into the timing of reductions in the number of children in town which in turn reveals some things about the timing of the transformation from a population predominantly composed of middle aged people with children to a relatively old population with few children. As Table 23 shows, local enrollment figures were declining before the mine closures of 1974-75. There was a substantial reduction in enrollment between September, 1973 and September, 1974, possibly due to elimination of some mining jobs with only limited replacement. Warnings of eminent closure probably also influenced some residents' decisions to migrate out of Bisbee. The largest single annual decrease occurred between September, 1974 and September, 1975, a period encompassing both the open-pit and underground closures, when enrollment fell from 2,274 to 1,962. As the September, 1975 enrollment figure includes 104 students who transferred to the public school system from a parochial school which was forced to close, there was an actual reduction of over 400 students from the beginning of one year to the next. Enrollment declined an additional 240 students by September, 1976. Enrollment declines were less sharp after 1976. However, they still continued. Overall, total enrollment dropped by approximately 800 students, or 35%, from September, 1974 to September, 1979.

The sharp drop in enrollment from September, 1974 to September, 1975 is understandable considering that the open pit and underground layoffs occurred within that period of time. Many families appear to have left town during the summer of 1975. Some were undoubtedly

Table 23
BISBEE PUBLIC SCHOOL ENROLLMENT 1972-80

<u>Date</u>		<u>K-8</u>		<u>High School</u>		<u>Total</u>
Sept. 1972		1711		924		2635
Dec.	1684		898		2582	
March 1973	1666		887		2553	
June	1658		856		2514	
Sept.		1562		943		2505
Dec.	1529		910		2439	
March 1974	1533		882		2415	
June	1505		847		2352	
Sept.		1358		916		2274
Dec.	1368		915		2283	
March 1975	1325		897		2222	
June	1272		822		2094	
Sept.		1175*		787		1962*
Dec.	1180		769		1949	
March 1976	1165		723		1888	
June	1086		682		1768	
Sept.		1035		686		1721
Dec.	1036		670		1706	
March 1977	1027		649		1676	
June	994		640		1634	
Sept.		1009		647		1656
Dec.	1001		615		1616	
March 1978	976		594		1570	
June	969		574		1543	
Sept.		959		602		1561
Dec.	956		572		1528	
March 1979	968		561		1529	
June	970		553		1523	
Sept.		897		588		1485
Dec.	898		556		1454	
March 1980	902		545		1447	

* includes 104 students who transferred from a local parochial school which closed.

Source: Bisbee Unified School District.

families of open pit miners laid off in December, 1974, who were either transferred or sought work elsewhere, and chose to retain their children in Bisbee schools through the end of the school year. Others were probably children of employees laid off from the underground mines in June, 1975, who chose to move that same summer.

The continued sharp decline in enrollments during the period September, 1975 through September, 1976 is probably due in part to a lag in migration caused by two main factors: housing shortages in several of the new places of employment, especially Safford (Bisbee Review, 1975), and the tightening of the market for mining employment due to depressed copper prices which delayed the transfer of some employees to other operations.

Household Size

The sharp decline in school enrollment figures and the large change in the population age distribution according to the 1970 and 1980 U.S. Census indicates a remarkable transformation in Bisbee's population in a relatively short period of time. Large increases in the numbers of retirees and to a lesser extent, young adults, and large decreases in the number of middle-aged adults and children resulted in smaller household sizes. The number of households actually increased from 2,676 in 1970 to 2,883 in 1980, at the same time as the population was decreasing from 8,328 to 7,154. Average household size decreased sharply from 3.10 in 1970 to 2.42 in 1980 (U.S. Census of Population, 1970 and 1980). This trend reflected a similar trend toward smaller household sizes in Arizona and Cochise County. The state's average

number of persons per household fell from 3.20 in 1970 to 2.79 in 1980, while Cochise County's average dropped from 3.28 to 2.86 (U.S. Census of Population, 1970, 1980). However, Bisbee's decrease was larger and to a much lower level.

In-movement

It appears from inspection of the data that the substantial out movement of families composed predominantly of middle-aged adults with school age children was partially tempered by the prompt in-movement of a group of people heavily composed of retirees and young adults. A real estate broker interviewed in December, 1975, (Bisbee Review, 1975) stated that almost all available rentals were filled and the number of homes on the market was insufficient to meet demand. This indicates that the out-migration of miners and their families between December, 1974 and December, 1975 was balanced to a large degree by in-migration. However, interviews with real estate professionals indicate that beginning in 1976 and continuing into 1978, a glut in the supply of housing appeared which seems to indicate that the volume of out-migration was not matched by in-migration.

According to the 1981 household survey, approximately one-fifth of those moving into Bisbee after 1970 had job related reasons (Table 24). Many of these people worked at public administration jobs either locally with Cochise County Government, Southeast Arizona Government Organization or Bisbee City Government; or at Ft. Huachuca. A substantial number were employed at either the Douglas or Sierra Vista branch of Cochise College. Another one-fifth of all respondents cited

climate/health reasons as their primary motivation for moving into the community. Others mentioned the small town lifestyle, while some said they were returning to their hometown. Many respondents stated that the inexpensive housing in the area was the main reason for their move to Bisbee (Gibson and Vierck household survey, 1981).

Table 24

PRINCIPAL REASON GIVEN FOR MOVE INTO BISBEE
197 Responses*

<u>Reason</u>	<u>% of N</u>
Job related	21.3
Climate/health	21.3
Returned to hometown	11.1
Small town lifestyle	11.1
To be close to family/friends	7.0
Like it	7.0
Inexpensive housing	7.0
Retirement	3.7
Other	9.3

* Households which had moved into Bisbee after 1970.

Source: Gibson and Vierck household survey conducted in June, 1981.

HOUSING MARKET

Changes in the housing market bear looking into because of the influence that these changes appear to have had in both retaining residents and in attracting newcomers. It appears from inspection of Table 25, that the housing market was the softest in 1976 as many departing miners placed their homes on the market along with a large number that had been there since 1975. This created an oversupply and helped reduce the average selling price from \$17,954 in 1975 to \$14,978 in 1976 (Bisbee Realty Company and A.P. Brown Company). Even with lower selling prices, many homes were on the market for a considerable length of time indicating that market clearing prices were much lower than the levels to which sellers were willing to go in order to sell their homes. Phelps-Dodge's sale of 300 two and three bedroom houses on lease land in late 1975 and 1976 for only \$6,000 and \$7,000 respectively, probably contributed to the softness of the rest of the market.

When one adjusts the selling prices by the housing deflator of the Consumer Price Index for all U.S. urban consumers, the condition of the housing market appears even more troubled. The drop in the average sales price in 1976 becomes even more pronounced, and it appears that the slump has continued through 1980.

Both Udis (1973) and Lynch (1970), in studying military base closures, noticed severe impacts on the affected communities' housing markets similar to that experienced in Bisbee. However, the markets in

Table 25

RESIDENCE SALES BY PRICE (PERCENT OF ANNUAL SALES)*

<u>Sales Price</u>	<u>1974</u>	<u>1975**</u>	<u>1976**</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
Less than \$5,000	13.3	9.2	7.8	6.2	5.4	3.5	0.0
\$5,000-9,999	23.3	23.4	27.5	22.7	24.1	9.9	6.5
\$10,000-14,999	16.7	14.9	20.6	13.9	16.3	9.4	22.2
\$15,000-19,999	23.3	26.2	19.3	21.6	18.1	22.2	13.9
\$20,000-24,999	17.8	14.2	9.6	16.0	15.7	17.5	10.2
\$25,000-29,999	3.3	8.5	9.2	7.7	6.6	8.8	15.7
\$30,000-34,999	1.1	0.0	1.8	2.6	5.4	8.2	10.2
\$35,000-39,999	0.0	1.4	3.2	2.1	4.8	6.4	5.6
\$40,000-44,999	1.1	0.0	0.5	3.6	2.4	4.1	3.7
\$45,000-49,999	0.0	0.7	0.0	2.1	0.0	3.5	1.9
\$50,000 and over	0.0	1.4	0.5	1.5	1.2	6.4	10.2
Unadjusted mean selling price (thousands \$)	13.7	18.0	15.0	16.4	17.8	24.0	26.8
Adjusted mean selling price (thousands \$)	13.7	16.1	12.7	13.1	12.8	14.9	13.9

* Sales prices are not adjusted for inflation except for "adjusted mean selling prices" which were adjusted by the Consumer Price Index Housing-Homeownership deflator.

** In addition, Phelps-Dodge sold off 300 two and three bedroom houses on lease land in late 1975 and 1976 for \$6,000 and \$7,000 respectively.

Sources: Records of Bisbee Realty Co. and A.P. Brown Co. with an estimated combined market share of 80%. Consumer Price Index Detailed Report, January, 1981, U.S. Department of Labor, Bureau of Labor Statistics, Washington, D.C.

the communities studied by Udis and Lynch quickly recovered while Bisbee's market was depressed for more than three years. Lynch noticed considerable upgrading in housing quality on the part of the remaining population. This also was the case in Bisbee as many of those people remaining in town took advantage of the low prices and moved into better residences (Gibson and Vierck household survey, 1981).

The most active period of time for sales was from the last quarter of calendar year 1975 through the first quarter of 1977 (Table 26). The lag between the largest out-movements of miners in the summer of 1975 and the beginning of the active period for sales in the last quarter of 1975 is probably largely due to both the normal lag between when houses are listed and when the deals are closed and also to the rapidly developed glut in the market which further delayed sales of many homes. Phelps-Dodge's sales of approximately 300 houses are not included in the table as the exact sales dates were not available. However, it is known that they were all sold in late 1975 and early 1976. Inclusion of these would reinforce the predominance of sales activity in late 1975 - early 1976.

Use of the housing segment of the Consumer Price Index for all U.S. Urban consumers probably understates the actual average appreciation for Arizona homes. Tremendous population growth in the state over the last few decades has brought with it very strong demand for housing. As a result, house prices in growth centers such as Tucson and Phoenix increased at much higher rates than did the averages for the nation as a whole. This very rapid inflation of housing within the State probably made the relative decline and stagnation of Bisbee's

Table 26
 NUMBER OF RESIDENCE SALES
 BY LEADING REALTORS

<u>Quarter</u>	<u>Quarterly Total</u>	<u>Annual Total</u>
1974		
April - June	34	
July - September	30	
October - December	27	91
1975		
January - March	31	
April - June	32	
July - September	31	
October - December	49	143
1976		
January - March	55	
April - June	55	
July - September	47	
October - December	53	210
1977		
January - March	66	
April - June	46	
July - September	37	
October - December	45	194
1978		
January - March	41	
April - June	51	
July - September	40	
October - December	30	162
1979		
January - March	45	
April - June	37	
July - September	49	
October - December	38	169
1980		
January - March	39	
April - June	24	
July - September	20	
October - December	24	107

* In addition, Phelps-Dodge Corp. sold off 300 two and three bedroom company houses on lease land in late 1975 and 1976 for \$6,000 and \$7,000 respectively.

Sources: Records of Bisbee Realty Co. and A.P. Brown Co. with an estimated combined market share of 80%.

housing prices all the more attractive to not only outsiders with the possible intent to move into the community, but also to outside speculators. The attractiveness to the former group is evidenced by the considerable number of those surveyed who cited low housing prices as their major reason for moving in (Gibson and Vierck household survey, 1981), while increased speculation was confirmed in interviews with real estate personnel (Rosalie Butler, 1981).

Low housing prices in Bisbee enabled many in-migrants to sell off their previous residences in other communities at much higher prices than the prices they paid for the Bisbee residences which they moved into. According to the June, 1981 household survey, the median class of selling prices of in-migrants' previous residences was between \$25,000-29,999, while the median class of purchase prices for the in-migrants' Bisbee homes was from \$15,000-19,999 (household survey, 1981). The median owner-specified value of Bisbee homes in 1980 was \$27,000 as compared to the state median of \$56,600. This disparity is partially accounted for by the fact that Bisbee's housing stock is rather old. Almost 60% of all units were built in 1939 or earlier and only 3.6% were built in the period 1970-80. This contrasts with the fact that almost one-half of the houses in Arizona were built 1970-80 (U.S. Census of Housing, 1980). Rent prices were also low. The median contract rent in 1980 was \$108 per month in Bisbee as compared to the average for the state of \$228 (U.S. Census of Housing, 1980).

The number of occupied units increased from 2,676 in 1970 to 2,883 in 1980. Including some newly constructed or subdivided dwelling units, the number of vacant units increased to 419 units in 1980 from

291 units in 1970. This raised the vacancy rate from 9.8% to 12.7% (U.S. Census, 1980). However, the rental vacancy rate was 9.3% in 1980, less than the 14.0% vacancy rate in 1970, and below 1980 rental rates for both the State of Arizona and Cochise County (Census of Population and Housing, 1970 and 1980).

FORECAST EFFECTS

Bisbee has experienced substantial decline following the mine closures in 1974-75. However, actual effects of the layoffs appear to be much less severe than the effects which were forecasted to occur in a 1975 Economic Development Administration funded study of Bisbee's plight (Gibson, et al., 1975). Based on an input-output study, the 1975 forecast employed the same basic methodology that is frequently used in prior assessment of growth-oriented economic impacts. The only major difference was that the results were reversed to reflect the fact that a negative, economic impact situation was being studied. An employment multiplier was calculated. An employment multiplier essentially represents the amount of total employment in a region which is supported by a basic employee, i.e. an employee whose job is supported by revenues from outside of the region. The multiplier is frequently calculated by dividing total employment in the region by basic employment. The 1975 input-output study went one step further in that it calculated individual multipliers for the various sectors in order to also take account of intersectoral linkages, i.e. purchases of goods and services by local business in one sector from another. The mining sector's multiplier was calculated at approximately 1.5. This multiplier roughly translates into each basic mining job supporting one-half non-basic employee. Hence, the loss of about 1,140 mining employees was projected to result in the loss of 570 additional jobs in the Bisbee area. One of the assumptions of the model was that

unemployed workers would migrate out of the community with their families. Hence, after multiplying the employment figures by the ratio of total population to working age population (to account for dependent family members), and taking into account families with more than one working member, Bisbee's population was predicted to decrease by over 5,000 people from an estimated 8,800 in 1974 to the range of 3,280-3986 by ten to twenty years after the impact (1984-1994). The number of students was estimated to decline accordingly to about one-half of the 1970 total. The severe population loss was projected to reduce housing demand in the long term by about 1,667 units. These estimates are long term forecasts. They are contained in Table 27. Short run estimates are also included (Table 28). The short run forecast estimated that roughly 20% of the impact would be felt by the end of 1975 and about 61.5% would be experienced by the end of 1976 (Gibson, et al., p. 135, 1975).

It is too early to judge the accuracy of the long-term forecasts contained in the Gibson study as long term results were suggested to occur by ten to twenty years after the impact (1984-1994) and the completion of this analysis will be one year before the beginning of that period. However, some preliminary observations are in order. Overall, it does not appear that Bisbee has been and will be as severely impacted as forecasted. The size of the population, total employment, and housing demand have decreased only moderately, compared to the forecasts of greater than 50% declines. Only in estimation of the number of students has the forecast been relatively accurate thus far. However, as pointed out earlier, the sizable in-migration of many

Table 27
LONG RANGE FORECAST OF IMPACT

	<u>1970</u> <u>(U.S. Census)</u>	<u>1974</u> <u>(Estimated)</u>	<u>After Maximum</u> <u>Impact</u>
Total Population	8,328	8,800	3,632
Total Employment	2,772	2,875	1,166
Working Age Population	4,457	4,708	1,943
Students	2,150	2,454	1,013
Housing Units Demanded	2,686	2,839	1,172

Source: Gibson, Lay James, et al., An Economic Development Strategy for Bisbee, Arizona, Division of Economic and Business Research, College of Business and Public Administration, University of Arizona, 1975.

Table 28
SHORT RUN IMPACTS, 1975 AND 1976

	<u>1975</u>	<u>1976</u>
Basic Employment Lost	668	1,034
Population Lost	1,045	3,274

Source: Gibson, Lay James, et al., An Economic Development Strategy for Bisbee, Arizona, Division of Economic and Business Research, College of Business and Public Administration, University of Arizona, 1975.

older persons, and selective out-migration have resulted in an older population with relatively few young people and a relatively high death rate. Consequently, it is possible that population in the future may decline significantly and adversely affect the other indicators in the long term.

There were some moderate short-term effects of the mine closures as transferred miners and their families left the community and local businesses were faced with decreased demand for goods and services by Phelps-Dodge employees and by the company itself. However, as revealed by prior analysis of certain economic and demographic indicators through time, the overall short-term impact was much less than the 1975 estimate that 61.5% of the sharp decline would be experienced by the end of 1976. Bisbee's experience seems to conflict with the "traditional view that the economic base model is a short-term model" (Richardson, 1978); at least as far as economically declining communities are concerned. The disparity is accounted for by mitigative factors.

MITIGATIVE FACTORS

The Gibson study (1975) discussed the potential effects of "natural and institutional frictions" which could act to "soften and delay the ultimate impact." Unfortunately, these factors were not incorporated in the model used to forecast due to the difficulty of accurately quantifying them. Consequently, they were discussed only as qualifiers. These factors included the presence of "inertia which results in a lag between the decline in demand and the resulting loss of secondary employment," "the presence of an existing stock of durable assets, particularly housing," "sociological friction which makes residents reluctant to break existing social and institutional arrangements even in the face of a reduced standard of living," and "the existence of a variety of institutional arrangements which will soften the immediate income loss resulting from the mine closing." It appears from reviewing what has actually occurred in Bisbee over the last seven years that these factors have played very important roles in mitigating the impacts. Along with these may be added other mitigative factors including those tied to the growth of the surrounding region and those connected to the value of local amenities such as the attractive climate and surroundings of Bisbee. Along with acting independently to soften the blow of the mine closures, these factors also had strong interrelationships between themselves which in an overall sense helped reduce and delay the impact.

The contributions that most of these mitigative factors have made are best represented through changes in income rather than changes in local employment. Transfer payments, especially unemployment benefits and pensions, and increased out-commuting appear to have helped soften the blow of the mine closures without resulting in the direct creation of local, basic jobs. Weiss and Gooding (1968) commented on the "desirability of using income rather than employment as a measure of export and service activity" (p. 244) in their study of the effects of closing or reducing the size of a defense manufacturing facility. Part of the disparity between what was forecasted to occur in Bisbee and what has actually happened appears to be due to the fact that the model used in 1975 to forecast the impact of the mine closures was driven by changes in basic employment. Changes in income flows, except as represented by changes in employment, were largely not considered. Consequently, in order to more accurately gauge the importance of the mitigative factors, basic income changes, rather than basic employment changes are used where possible as the primary indicator of economic activity. The following analysis examines the major factors which appear to have softened and delayed the effects of the mine closures. Figure 2 displays the overall effects of such factors in softening adverse economic impacts.

Institutional Arrangements

Perhaps the most important factors are those identified as "institutional arrangements" by Gibson, et al. (1975). Included are both Phelps-Dodge and governmental payments such as severance pay,

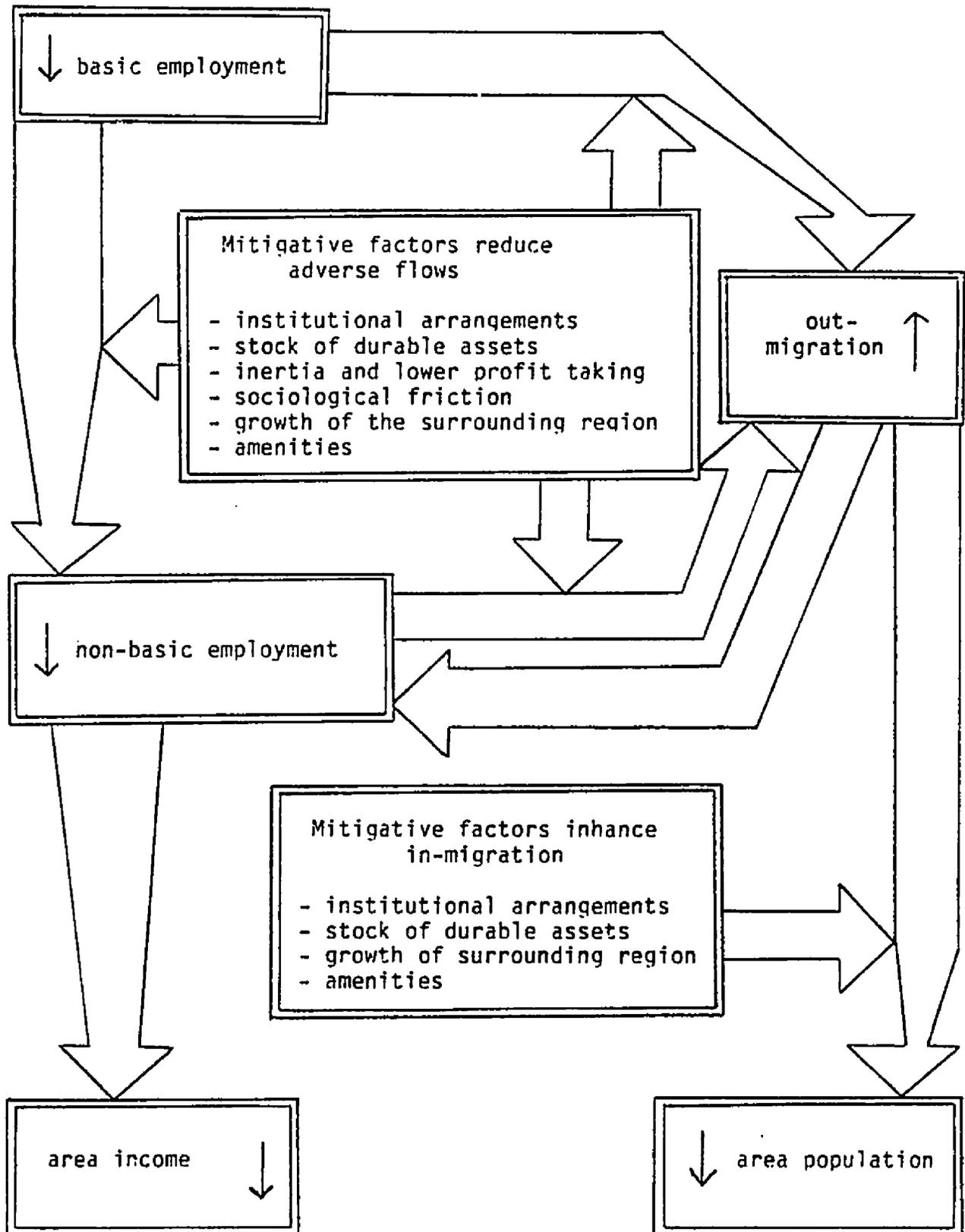


Figure 2. Mitigation of Negative Economic Impacts

unemployment benefits, retirement and early retirement, social security, and other public assistance. Also contained within this category are increased employment by the city government, transfer of the Copper Queen Hospital from Phelps-Dodge to the Cochise County Hospital Association, and the sale of company houses. The amount of local income attributable to these sources increased significantly following the closures and partially substituted for lost mining income.

Severance Payments

Lump sum severance payments of \$5,000 were made to those employees whose positions were terminated, with the exception of employees who chose to collect Company unemployment benefits. These payments, estimated at over \$1,000,000 for former employees remaining in Bisbee, had important short and long term roles in alleviating the impact. These payments made up for a part of the drastic reduction in mining income from roughly \$4,000,000 during the fourth quarter, 1974, to about \$1,000,000 in the first quarter of 1976. (These figures were estimated by using Arizona Department of Economic Security data for Cochise County on average weekly wages, total mining payroll, and total employment.) The lump sum settlements enabled many former Phelps-Dodge employees to purchase company houses that Phelps-Dodge sold off in late 1975 and early 1976. It is likely that the payments, coupled with the low prices for housing, influenced many former employees to remain in the community.

Unemployment Benefits

Gerking and Isserman (1981, p. 456) mentioned that transfer payments accompanying a negative change in basic employment would result in different impact lags from that experienced in positive situations. In Bisbee's case, there were several types of transfer payments which increased significantly following the mine closures. One type, unemployment benefits, helped to both soften and delay adverse effects of the closures. As discussed more fully in previous sections, payments were made by both Phelps-Dodge and the State of Arizona. A pensioner could receive both company and state unemployment benefits if he didn't collect the lump sum severance payment. It is estimated from using Young and Newton's (1980) data on numbers of unemployed Phelps-Dodge employees at certain points in time, that roughly \$3,000,000 in unemployment benefits were distributed to former Phelps-Dodge employees following the closures. Payments to open-pit miners could have extended up to March, 1976, while underground miners could have received assistance through September, 1976. The large total size of these payments delayed much of the adverse impact on the community of reduced mining employment as these payments represented roughly 40-50% of pre-closure income for most miners and enabled those laid off to continue to make purchases of goods and services within the community.

Early Retirement Benefits

Early retirement benefits discussed more fully in the section on retirees, also substituted substantially for lost mining income.

Adding to the benefit of these payments was the fact that they were longer term in nature than unemployment benefits. Also, a large proportion of those retired from Phelps-Dodge remained in Bisbee (Gibson, et al., 1975; Holland, personal interview, 1981). It is estimated that local Phelps-Dodge retirement benefits tied to the 1974-75 mine closures amounted to about \$100,000 per month, or \$1.2 million annually, in the couple of years following the closures. The size of these payments have increased through time due to adjustments. Many retirees filed for unemployment benefits and consequently had more than one income source through at least the sixty-five week benefit period. Roughly 170 of those who filed for unemployment benefits were receiving pensions (Young and Newton, 1980). Many found jobs and continued to have two incomes.

Transfers

Transfers of employees to other Phelps-Dodge operations provided another institutional arrangement which appears to have benefitted Bisbee in some respects. The arrangement benefitted the sizeable number of employees transferred because most were able to continue working at the same wage levels while retaining their seniority. Severance payments covered their moving expenses. The arrangement also benefitted the community as many transferred employees, as discussed earlier, kept their families, and a portion of their spending in Bisbee for some time.

Social Security

Payments by various governmental organizations also increased following the layoffs and have helped substitute for lost mining income. Monthly social security benefits increased from \$227,500 in June, 1974, to \$594,000 in June, 1980 (Table 29). This increase is partially attributable to increases in the number of senior citizens and partially due to inflation based on increases in individual benefits. Although precise records are not available, it is also likely to assume that other forms of public assistance, such as aid to families with dependent children (AFDC) and food stamps, increased following the closures as a result of the sizeable number of unemployed.

Table 29

OLD-AGE SURVIVORS, DISABILITY, AND HEALTH INSURANCE
(OASDI) PAYMENTS TO THE BISBEE AREA

<u>Date</u>	<u>Total Number of Beneficiaries</u>	<u>Number Age 65 and Over</u>	<u>Total Monthly Benefits (\$)</u>
June, 1973	1,477	940	227,700
June, 1974	1,567	1,011	272,400
June, 1975	1,631	1,057	311,300
June, 1976	1,725	1,083	359,000
June, 1977	1,771	1,139	402,000
June, 1978	1,855	1,194	450,300
June, 1979	1,891	1,227	512,300
June, 1980	1,908	1,264	594,700

Source: Social Security Administration.

City Government Employment

City government helped ease the effects of the mine layoffs by substantially increasing its payroll. Total employment rose from 77 in 1974 to 208 in 1979. Many of the new positions were at least partially funded by other government agencies. Numerous Comprehensive Employment Training Act (CETA) employees were hired, as well as workers for an underground mine tour initially funded by a grant from the Economic Development Administration. Many of the new government workers were former Phelps-Dodge employees.

Transfer of Phelps-Dodge Property

Another "institutional arrangement" involved transfer of Phelps-Dodge property. Phelps-Dodge's sale of about 300 company houses in late 1975 and early 1976 for very low prices helped retain former employees in the community. It also helped attract people from outside of the region. In addition, Phelps-Dodge transferred its hospital to the Cochise County Hospital Association and partially subsidized the facility following the turnover. The continued presence of a hospital probably contributed to many retirees' decision to remain.

Forewarning of the Closures

A further "institutional arrangement" involved the forewarning of the closures given by Phelps-Dodge. Although there was considerable disagreement in the community about the validity of the warnings, the community had been warned of closures as early as 1967. The warning released in January, 1974, and printed in the local newspaper was particularly clear in its message that Phelps-Dodge expected all mining

in Bisbee to end by the end of the year. Several planning reports done in the early 1970's were at least partially based on the expressed assumption that Phelps-Dodge closures were eminent. Some residents were influenced by the warnings and migrated out of the community. Some business people scaled their planning down and reacted in other ways to the warnings. As a result, the warnings helped smooth out over time the community's reaction to the closure and prevented an even sharper, more sudden response from taking place.

Presence of An Existing Stock of Durable Assets

Hart, Salisbury, and Smith (1968, p. 344), in their study of declining villages in the Midwest, noted that "the capital invested in village housing appears to be an important conservative factor in maintaining village population." The presence of an existing stock of durable assets in Bisbee, of which housing was the important type, appears to have helped slow the rate of out migration from what it would have been if retention was based entirely on the availability of jobs. The inventory of housing was a benefit because it encouraged settlement. With the outmovement of a considerable number of transferred Phelps-Dodge employees many homes were placed on the market. Housing prices went down and have remained well below the state average. Along with selling prices, rents remained low in Bisbee as compared to most other communities. Bisbee possessed a comparative advantage in regards to the cost of housing. This affected those people remaining in town, and it also made the community more attractive to outsiders. Bisbee residents could make less money and

still afford the "same" quality of housing as in other places. At the same time as Bisbee housing prices were declining, the price of housing was increasing dramatically throughout most of the rest of Arizona. This made it more difficult for a Bisbee resident to move elsewhere. Thus, the decline and stagnation of housing prices in Bisbee, coupled with increasing prices in the surrounding region acted to influence residents to remain in the community.

Along with the retention value, low housing prices also helped attract people into the community. Many were retirees not dependent on locally supplied jobs. Others worked in proximate communities. The lower price of housing in Bisbee as compared to their place of work made commuting an attractive alternative.

Several factors, discussed under "institutional arrangements" also could be contained in the category of durable assets. The large numbers of company houses sold by Phelps-Dodge affected the housing market and had both retentive and attractive value. Also, the continued presence of the Copper Queen Hospital had the same effect.

Inertia and Lower Profit Taking

This factor concerns the limited response of non-basic businesses to the substantial loss of relatively highly paid mining employees. The effects on businesses, in terms of closures and reductions in employment, were not as serious as would be thought. This disparity appears to be partially due to inertia and lower profit taking which allowed many businesses to experience sharp sales reductions without being compelled to close or drastically reduce

employment. For instance, seventy-five establishments made fewer sales in the third quarter of 1975 as compared to the third quarter of 1974. Thirty-three firms experienced declines of at least 30%. However, only sixteen businesses laid off employees. Over the period 1974-1981, non-mining employment actually increased while the number of businesses only declined by 3%. Although the continued strength of the secondary sector is partially due to the income replacement roles which certain of the mitigative factors played, these mitigative factors only partially substituted for lost mining income. If employment in the non-mining sectors was determined solely by the flow of basic income into Bisbee, it appears that the decline would have been much worse. Inertia, coupled with lower profits, helps explain the disparity. Although total income in the community declined following the mine closures and commercial opportunities were apparent in proximate, rapidly growing communities such as Sierra Vista and Tucson, many business people chose to remain in Bisbee. Even though profits were probably declining for many. Many had been in business in Bisbee for a long time. Strong personal relationships which had developed over that time probably contributed to the decision to stay. Also, their irretrievable equity in their business and the expense of relocating a business probably prevented many from moving. The relatively low cost of commercial space in Bisbee possibly made this relocation expense more apparent.

Sociological Frictions

Inertia is heavily tied to sociological frictions which appear to have been strong enough to make many people reluctant to leave. According to Gibson, et al. (1975), "in any community certain institutional and personal bonds develop which serve to attach individuals to a particular geographical area. The presence of friends, relatives, and institutional attachments act as a significant deterrent to out-migration when economic contraction occurs. People are willing to accept a lower economic standard of living in order to maintain certain social relationships...". These sociological frictions were very strong in Bisbee for several reasons. Bisbee is an old community. Many families had been there for long periods of time. Many miners affected by the closures had fathers and grandfathers who had worked in the mines. Associations between people had developed over long periods of time. Bisbee is a small community. It is one in which people are willing to help others. In addition, a large proportion of the population was Hispanic, with relatives in Mexico. Often, visits were made between those in the U.S. and those in Mexico. Many people appear reluctant to move away from the border as it puts additional distance between themselves and their relatives (Young and Newton, 1980, p. 85). Unemployed miners were often helped by friends and relatives in town. Resettling elsewhere meant removing one's family from this type of assistance. Largely as a result of the strengths of these sociological factors, over one-third of those former Phelps-Dodge employees contained in Young and Newton's (1980) data set indicated that they would work in Bisbee only (p. 74).

Growth of the Surrounding Region

"Situation" as well as "site" factors are important. Impacted communities must be considered in relation to their surrounding region as certain regional flows and linkages will act to modify the impacts. The region surrounding Bisbee experienced much growth at the same time as Bisbee was experiencing the effects of its mine closures. The surrounding region's growth has had numerous positive effects on the community which have in some cases substituted for the loss of mining income. The population of Cochise County grew by 38% between 1970 and 1980 (U.S. Census). Increases in Cochise County Government employment paralleled this population increase. Cochise County Government employment in Bisbee increased from 125 in 1974 to 242 in 1981 (Dunn, et al., 1981; Gibson, et al., 1975). Most of these new job openings have been filled by Bisbee residents. The presence of the county seat in Bisbee has meant that a large proportion of County employees live in Bisbee. Growth of County Government has also brought with it increased demand for ancillary services, many of which are located in Bisbee.

Growth of the surrounding region has also brought with it increased commuting opportunities. Sierra Vista, twenty-five miles to the west, has had remarkable growth in population and employment opportunities. Roughly 16% of Bisbee's employed residents worked there in 1977. The proportion of the workforce employed within Bisbee decreased from 79% in 1973 to 67% in 1978.

Growth of the surrounding region also meant an enlarged potential market for locally produced and distributed goods and services. In 1981, sales to Cochise County residents living outside of

Bisbee supported almost one-quarter of employment in Bisbee. Construction firms located in Bisbee did over 60% of their business in other parts of Cochise County (Dunn, et al., 1981).

When looking at growth indicators in absolute terms, Bisbee has experienced only moderate decline following the mine closures. However, when the community's change is viewed in comparison to the tremendous growth which the surrounding region has experienced, the actual consequences of the mine closures appear to be more severe. For instance, Bisbee was the only city in Cochise County which lost population between 1970 and 1980. Bisbee's losses on a real basis were significant.

Amenities

Amenities such as attractive surroundings, a pleasant year-round climate, and a rich history contributed to Bisbee's ability to partially offset the loss of its major employer. Tourists and new residents were attracted. Old residents were retained. The opening of a mine tour in 1976 which has attracted almost 2,000 visitors per month, the presence of a mining museum, and an increase in the number of the sponsored special events such as bicycle races, have increased tourism. In 1981, about 7% of employment in Bisbee was supported by tourism (Dunn, et al., 1980). There were 32 arts and crafts related establishments in 1981 with 50.0 fte employees residing in Bisbee, while there were only 17 such establishments in 1974 with 33.64 fte employees residing in Bisbee. FTE employment in hotels has increased

from 26.94 to 41.9, while the number of fte employees of eating and drinking places rose from 62.67 in 1974 to 98.94 in 1981.

Over 20% of the in migrants surveyed listed climate related factors as their primary reasons for moving into Bisbee. Many also mentioned the scenic surroundings, and the small town lifestyle as major reasons for moving in (Bisbee household survey, 1981).

SUMMARY AND CONCLUSION

There were many forewarnings of the mine closures. However, Bisbee was largely unprepared for the closures when they did occur. Closure of the underground mines and concentrator and reduction of work at the Lavender Pit mine to leaching and precipitation operations resulted in the termination of over 1,000 jobs within one year. The shutdowns eliminated most of the community's economic base and resulted in the loss of a substantial share of community income.

Indirect effects of the closures were substantial as transferred miners and their families departed and as some laid off miners left in search of other work. However, for the most part, decline occurred gradually. Bisbee's economy exhibited only modest decline in the year following the open pit shutdown. In this sense, the Bisbee case contradicts the prevailing view that multiplier effects are felt very quickly. Judging from most economic indicators, most of the adverse effect was felt between two and three years after the closures.

The amount of economic decline has been substantial, yet the impact has been much less severe than what was forecasted to occur through use of the conventional economic base methodology.

While the number of people in Bisbee has dropped only moderately, there have been tremendous shifts in the composition of the population. Many middle aged adults, the group most likely to be transferred by Phelps-Dodge, and their dependents have left the community. Retirees, and to a much lesser extent, young adults have

moved in to partially take their place. Although these changes have helped reduce the size of the net population loss they have resulted in a much older population with a relatively high death rate. Consequently, without substantial in-migration population should continue to decline in the future.

Certain factors have helped to both soften and delay adverse effects of the mine closures. These mitigative factors have complemented the strong desire of many residents to remain in the community. Institutional arrangements such as unemployment insurance and early retirement benefits have helped substitute for lost mining income. Consequently, levels of local purchases of goods and services have been buoyed up somewhat, thereby reducing the impact of the closures on local businesses.

At the same time, the existence of a stock of durable assets has played a major role in both retaining residents and attracting in-migrants. Housing prices fell as many people migrated out of the community following the mine closures. Coupled with the fact that housing prices in the state as a whole were increasing rapidly, the decline in the cost of Bisbee housing increased the attractiveness of the community from an economic standpoint. Some people have moved in and others have stayed as a result.

Other mitigative factors include sociological friction, inertia, local amenities, and growth of the surrounding region. The growth of the surrounding region has meant more employment opportunities for Bisbee residents and has helped make up for the lost mining jobs. However, when Bisbee's change is measured against that of the

surrounding region, the decline appears to be much worse than that calculated simply through use of historical data. When considered in a regional sense, Bisbee has suffered severely.

As Bisbee's experience shows, factors which are specific to negatively impacted communities need to be considered in forecasting the effects of negative, economic impacts. It is not enough to simply reverse the forecasting methodologies used in estimating the effects of positive economic impacts. Mitigative factors such as institutional arrangements and the existence of a stock of durable assets are present in almost all cases and act to reinforce people's resistance to moving out of established communities. In addition, it is essential to look at factors specific to the impacted community itself, such as amenities, sociological ties, and the regional context in which the community is placed, in order to accurately gauge the effects of negative economic impacts.

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