

## **The Boom-Bust-Recovery Cycle: Dynamics of Change in Community Satisfaction and Social Integration in Delta, Utah\***

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**ABSTRACT** To better understand the long-term effects of rapid boom growth, we reexamine four subjective indicators of community satisfaction and social integration in Delta, Utah, that were originally analyzed by Brown, Geertsen, and Krannich in 1989. With 24 years of longitudinal data, we find that within approximately a decade of the boom period three of the four indicators returned to or exceeded pre-boom levels. We argue that we need to modify our theories and vocabulary regarding boomtowns to account for a “boom-bust-recovery cycle” that better takes into consideration the dynamic nature of communities and their residents and how they subjectively adjust to shifts in objective conditions.

### **Introduction**

Most likely every jilted young lover has been told (typically by some well-meaning friend or relative) “time heals all wounds.” Unfortunately, until recently time has not been a luxury for researchers when examining the social consequences of boomtowns. However, that situation has changed, as we now have at our disposal a number of boom-community case studies that have been examined through historical methods (see Freudenburg and Frickel 1994) or actively monitored over periods of time that in some cases exceed twenty years (see, for example, Smith et al. 2001; and Hunter et al. 2002). A quarter-century after the emergence of widespread energy resource development and boom growth in many rural areas of the American West, the opportunity does exist to examine the jilted lovers’ axiom in boom-growth impacted communities and see if, in fact, *time does heal all wounds*.

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Among the most formidable shortcomings of the early boomtown studies of the 1970s were a lack of appropriate baseline information and “hit-and-run” data gathering tactics that seemed to exaggerate the enormity of experienced social impacts (see Wilkinson et al. 1982). Thus even the earliest critiques of this literature indirectly focused on the importance of time to understanding boomtowns. The most important temporal issue at that point however, pertained to *pre-boom* conditions. This constituted rural sociology’s own version of Heisenberg’s Uncertainty Principle—how could accurate conclusions be drawn about the types and severity of impacts when there was no pre-announcement/pre-boom baseline?

In 1989, Brown et al. published a study of Delta, Utah, using eleven years of longitudinal data gathered at four different points in time (1975, 1982, 1984, and 1986) to assess the social impacts that occurred in that community due to the building of a large coal-fueled power plant. The study was unique in that it addressed many of these early methodological concerns primarily by incorporating a pre-project announcement baseline—the 1975 data set. They argued:

In virtually all instances, research has commenced after the communities in question had already undergone or were experiencing a population boom. Overall, these studies have reported a connection between the large and rapid influx of new population and a variety of disruptions . . . Unfortunately, the existing literature has relied upon research designs which make it impossible to determine how much of the disruption which occurs in boom towns is due specifically to demographic changes and how much might be attributable to other, nondemographic factors. Studies that are undertaken only after large influxes of immigrants have arrived may attribute increases in social disruption indicators solely to the population influx caused by a resource development project, ignoring other factors obscured by the timing of the data collection. Specifically, studies which fail to include measures of social conditions prior to the first announcement of a project are unable to assess possible *anticipatory* shifts in local perceptions and social structures that may occur before the actual boom commences (p. 571).

By using a pre-project announcement baseline, Brown et al. (1989) showed that anticipatory shifts in community members’ attitudes accounted for most of the shifts in community satisfaction and social integration across the boom-bust cycle. Again they state:

In anticipation of a pending boom, residents may respond to

their expectations about well-publicized negative disruptions, even if the actual impacts are minimal. In other words, the anticipation of adverse impacts may in and of itself be enough to bring about changes to the point that local residents create their own disruptions in the form of attitudinal and behavioral shifts (see Krannich et al. 1985: 582–583).

Two vital issues to future boomtown studies were identifiable in the original 1989 study of Delta: “the timing of the data collection,” and “the potential importance of subjective aspects of disruptions.” Both are intimately connected to one another. Regarding time, whereas the concern then involved a need for accurate baseline data, the focus can now shift to the other end of the continuum—what happens in the community *after* a significant amount of time lapses following the post-boom “bust” phase? Does time heal all wounds? Also, with over twenty years of data now available to monitor social change in Delta, are the same “subjective aspects” of social disruption identified by Brown et al. (1989) still at play, or have community members’ perceptions shifted back to pre-boom baseline levels?

We examine the same data used by Brown et al. (1989), while adding two more post-boom/post-bust data points representing the years 1995 and 1999. Across six data points spanning 24 years (1975, 1982, 1984, 1986, 1995, and 1999), we analyze shifts in the same set of community satisfaction and social integration indicators examined in 1989. Unlike the Smith et al. (2001) study which has already substantiated recovery in Western boom communities, the addition of the 1975 pre-boom baseline plus the long time frame—24 years—in our study is unique, allowing us to observe a theoretical beginning, middle, and end point in the boom, bust, and potential recovery cycle. Though our focus is on just one community, Delta represents the only case that we are aware of where both pre-boom baseline and longitudinal data are available. Thus, our study can more accurately assess both the extent and timing of social disruption consequences and post-boom recovery. Moreover, with these data we can determine not only whether Delta exhibited signs of recovery by the mid- to late-1990s, but also whether levels of subjective well-being returned to the documented pre-boom baseline levels evident in 1975, which was several years before the project was anticipated or announced.

### **Study Setting**

The Intermountain Power Project (IPP) first announced plans to build a 3,000 megawatt, coal-fueled, electric generating station near Delta, Utah, in December 1979. The project plans called for construction of

four 750 megawatt electric generating units (later scaled back to two) at a site approximately ten miles north of Delta, a geographically isolated community of approximately 2000 residents at that time. Project construction activities were initiated in September 1981. Funded primarily by the Los Angeles Department of Water and Power (LA DWP), the plant would eventually occupy over 4,640 acres and provide electrical power for municipalities in Utah and California, with over 90 percent of the electricity going to California (see Brown, et al. 2003).

Before the 1950s, Delta's remoteness was punctuated by the fact that no major highway connected it to the rest of the state. Livestock was the primary industry. Although a new highway constructed in the 1950s enhanced access to the surrounding region, Delta exhibited only modest economic and demographic fluctuations through the 1960s and 1970s. However, by the mid-1970s the Middle East oil embargo stimulated a national policy focus on domestic energy production, including a push for increased development of coal-fired electric generating facilities. Along with a number of other western rural communities, Delta was soon to experience rapid economic, demographic, and social change as a result of the construction and operation of this large-scale energy production facility.

The population of Delta swelled with construction of the plant, increasing from 1,930 residents in 1980 to 6,670 in 1984 at the peak of construction. In 1986, the population had declined to 4,900. By 1990, it had leveled-off at approximately 3,000 residents, where it continues to hover today. Overall, Delta's population increased by 99 percent between 1970 and 2000, a figure similar to that for the state of Utah as a whole (110 percent). However, in contrast to the sustained growth that occurred at the state level, Delta's increase over this period is characterized by sharp, episodic swings between periods of stability, rapid population growth, and substantial population decline. Such fluctuations can obviously have substantial consequences for a broad array of objective community conditions, such as employment and income levels, demand for and provision of public services, housing growth and real estate values, the range of community organizations and social groups that are present and active, and so forth. They can also substantially alter patterns of community interaction, and residents' subjective orientations toward and engagement with their community.

## **Variables and Measurement Approach**

### **Independent Variables**

*Community change.* As with the original 1989 study, the primary independent variable in our study is community change as measured

against the 1975 pre-boom baseline. The data are constructed in the same way as well (with the years in which data collection occurred entered as a set of dummy variables), with the exception that we used 1975 as the reference year rather than 1986, as was done in the original 1989 analysis. These year groupings represent the six time periods in which data were collected over the 24-year period. Using 1975 as the reference year allows a clearer picture of how Delta has changed over the 24 years because it represents the pre-announcement baseline context, when residents had no indication that significant changes associated with boom-growth were about to occur. The 1982 data correlate roughly with the beginning of the boom period, when construction was just beginning and in-migrants arriving. The 1984 data correspond to the peak of the “boom” period, when development activity and population growth effects were most evident. By 1986, the boom was over and the community was entering a downward population spiral typical of a “bust” period. Finally, data collected in 1995 and 1999 represent community conditions ten to fifteen years after the boom episode had run its course.

In addition to the variable representing these six distinct points corresponding to Delta’s pre-boom, boom, and post-boom periods, the analysis incorporates four socio-demographic “control” variables. Inclusion of these variables allows us to address the possibility that any observed fluctuations in levels of community satisfaction and social integration may be associated with shifts in the composition and characteristics of Delta’s population over time, rather than with the consequences of broader contextual changes occurring in the community.

*Age.* Age was measured in each of the six survey years, resulting in respondent ages ranging from 16 to 91 years. Age was retained as a continuous variable for this analysis.

*Education.* Education was initially measured in 1975 by asking respondents how many years of schooling they had completed. These responses were collapsed into a 6-point scale (see Table 1) to maintain consistency with the measurement approach used in subsequent survey years.

*Gender.* Past boomtown research has consistently included gender in analyses focused on rapid growth outcomes, and we have included it in our analysis as well, with male respondents coded as 0 and female respondents coded as 1.

*Length of residence.* Length of residence was measured by asking respondents how long they had lived in their present community. Because of differences in the length of residence scale across the six study years, the variable was collapsed into its lowest order grouping of three categories (Table 1). These categories, which were also used in

**Table 1. Variable Ranges and Coding**

Variable	Value Label	Value
<i>Satisfaction with community</i>	Not at All Satisfied	1
	Completely Satisfied	10
<i>Friends in the community</i>	No friends in the community	0
	One to five friends	1
	Six to ten friends	2
	Eleven to twenty-five friends	3
	Twenty-six or more friends	4
<i>Plans to move</i>	Definitely will move	1
	Probably will move	2
	No plans to move	3
<i>Borrowing from neighbors</i>	Never	1
	Rarely	2
	Sometimes	3
	Often	4
<i>Education</i>	Less than high school	1
	Some high school	2
	High school graduate or GED	3
	Some college	4
	College graduate	5
	Post graduate	6
<i>Sex</i>	Male	0
	Female	1
<i>Length of Residence</i>	Less than one year	1
	One to seven years	2
	More than seven years	3

the 1989 study, roughly grouped community members as newcomers (less than one year), middle-term residents (one to seven years), and longer-term residents (more than seven years in the community).

### Dependent Variables

*Community satisfaction.* The same variable used in 1989 to measure community satisfaction was also used in our study. Residents were asked to “imagine the ideal community in which you would like to live,” and then to identify how closely their present community matched that ideal on a ten-point response scale (see Table 1).<sup>1</sup> Based on other longitudinal research reported by Smith et al. (2001), we expected a post-1975 decrease in levels of community satisfaction over the three data points representing the boom and bust cycles (1982, 1984, and

<sup>1</sup> Data collected in all years but 1975 employed a 1 to 11 scale. In order to match scales values were recoded downward to the midpoint (6 to 5, 7 to 6, 11 to 10, etc.) as was done in the original 1989 study.

1986) to be followed by an increase by 1995 and 1999 to something approximating pre-boom levels.

Previous research on boomtowns has shown mixed results as to the effects of boom growth on community satisfaction (see Cortese and Jones 1977; England and Albrecht 1984; Seyfrit and Sadler-Hammer 1988; Brown et al. 1989; Smith et al. 2001). Part of the puzzle regarding the mixed results may be due to the timing of some studies, resulting in a failure to fully account for residents' ability to make subjective adjustments to the new conditions of their community—to reconcile its new emerging "story" with previously established expectations and understandings (see Flynn 1991; Hinchman and Hinchman 1997). Because communities are dynamic and adaptive to change (Kenyon 2000; Crow and Allan 1994), a long-term analysis should reveal such reconciliation, evidenced by a return of community satisfaction to approximately pre-boom levels.

Social integration was measured using three distinct indicators: residents' plans to stay or move away from the community, the presence of friends in the community, and levels of borrowing among neighbors.

*Plans to move.* In 1975, a large majority of Delta residents expressed a desire to continue living in their community, indicative of strong patterns of local social integration and community attachment. However, alterations to one's place—the local community—can force a redefinition of *how* community happens *there*. "In spite of its relatively enduring and imposing materiality, the meaning or value of the same place is labile—flexible in the hands of different people or cultures, malleable over time, and inevitably constructed" (Gieryn 2000:465). Place is "a piece of the whole environment which has been claimed by feelings . . . we are talking about a subjective thing, and it is quite useless to try measuring it, at least as social scientists try to measure indices of the 'quality of life.'" (Gussow 1971:27). If a place becomes too unrecognizable, it is reasonable to assume that some residents who find it irreconcilable with their view of what their community is or should be may wish to move (see Beckley 2003). Again, however, the factor of time should allow for adaptation and subjective reconciliation. This suggests that declines in this measure of integration observed during Delta's boom/bust period are likely to be followed by a return to approximately pre-boom levels in subsequent years.

Just as in 1989, respondents were asked if they had any plans to move away from the community in the next five years. This variable was originally measured as a 4-point scale (definitely will move; probably will move; probably will not move; definitely will not move), but was later collapsed into three categories (see Table 1), to ensure consistency in measurement across all years. Again, we anticipated an increase in

expectations to move during the boom-bust phase due both to the presence of a highly transient construction workforce during that period and subjective experiences of dissonance among some portion of the more established population. Over the longer term, we would expect such expectations to decrease substantially by 1995 and 1999, presumably to levels similar to those observed during the 1975 pre-boom baseline period.

*Friends in the community.* Previous research has shown that boomtown residents generally experience reductions in both the number of local friendships and the interactional quality of their friendships (see Brown et al. 1989; Greider and Krannich 1985; Freudenburg 1986). Based on prior research, we might reasonably anticipate that the number of friends reported by Delta residents would return to something like pre-boom levels by 1995 and 1999. However, on a precautionary note, Putnam (2000) and others (see Flora et al. 1997; Salamon 2003) have noted that there has been a general decline in local community and civic participation in recent years, and that friendships and allegiances are no longer necessarily local but tied to a much larger geographic arena. To the extent that these broader societal trends have affected Delta, they may dampen any return to pre-boom levels in the number of friends in the community.

Respondents were asked to report how many friends they had within the local community or within an hour's drive. While this variable was originally measured continuously, the allowable maximum value of the measure varied from 99 to 999 across the several data sets, resulting in a significantly non-normal distribution. Because transformations failed to correct that problem, it was necessary to collapse the response values into a five-category ordinal scale (see Table 1). Even after collapsing the variable, the 1999 data demonstrate a disproportional concentration at the end value (26 or more friends), with that category comprising 69 percent of the total responses for that year. This is at least partially the result of the variation in scales, and should therefore be considered when interpreting the 1999 coefficients.

*Borrowing with neighbors.* Finally, respondents were asked how often they borrowed items from their neighbors, on a scale ranging from 1 (never) to 4 (often). As stated in Brown et al. (1989:574), "this indicator measures respondents' local social integration by examining interactions with neighbors that demand a degree of commitment on the part of both parties which could be interpreted as indicative of primary or quasi-primary relationships." The same precautionary note discussed above holds for this indicator, and perhaps to an even greater degree. Both Putnam (2000) and Salamon (2003) suggest that contemporary Americans engage less in informal interchanges with neighbors

than was the case for prior generations. If conditions in Delta mirror this larger national trend, we may not see returns to pre-boom levels in the data representing community conditions in 1995 and 1999.

All dependent variables examined in the 1989 study were repeated in the 1995 and 1999 data collection efforts with two exceptions. "Friends in the community" was not asked in 1995, and the "borrow from neighbors" variable was not included in the 1999 survey. However, since both 1995 and 1999 were well beyond the boom growth and post-boom bust periods, the exclusion of these measures for either year does not restrict our ability to examine long-term change patterns.

### **Data Collection**

The 1975 survey of Delta was part of a larger study of several Utah communities. Sampling procedures included preparation of census-type maps, which detailed each block within the community and identified every housing unit. From these maps a systematic random sample of households was drawn. Randomly selected adults from a total of 153 households completed the self-administered questionnaire; the completion rate for the survey was 73.2 percent.

The 1982, 1984, and 1986 questionnaires were identical and included some sections that paralleled parts of the 1975 questionnaire. Local water utility records, supplemented by enumeration of households not individually listed in the records, were used to draw random samples of households in each of these three survey years; self-designated household heads completed the questionnaires. The sample sizes were 133 in 1982 and 200 in both 1984 and 1986; response rates were 75.2 percent in 1982, 74 percent in 1984, and 77 percent in 1986 (Brown et al. 1989:572-573). The 1995 data employed a similar self-completion methodology with an initial sample size of 171 and a response rate of 69 percent, yielding 118 valid responses.

In 1999 a telephone survey was conducted, with the sample drawn randomly from a local telephone directory. Data collection efforts resulted in a 64.9 percent response rate for a total of 323 valid responses. The sample size was much larger (498) in 1999 than was the case in the five previous data collection periods. Receipt of a grant to study the impacts of Delta's boom and recovery on women led to a decision to expand the 1999 sample size, insuring a substantial representation of both women and men in order to examine gender-based differences in responses. Additionally, we utilized telephone surveys versus the drop-off pick up methodology used in prior study periods because of the ability to contact a relatively large number of respondents at lower cost than with other methods. Because of this

much larger sample size in 1999, data for that year were proportionately weighted to adjust for the sample size disparity across the six study periods. We recognize that previous research has raised concerns about mixed-mode data collection (see, for example, Dillman 2001:217–244) and has encouraged caution in interpreting results when multiple data collection strategies are used. However, such concerns appear to be most relevant when survey questions focus on highly sensitive topics or when social desirability biases are likely to occur. Also, for most types of questions telephone surveys produce response patterns similar to those derived from other survey procedures (see Sykes and Collins 1988). Additionally, all six surveys used a “unimode” question design method, as recommended by Dillman (2001), which minimized variation between data sets. Finally, from a sampling perspective the 1999 data represent the population of Delta for that year, just as the other data sets do for their respective years.

## **Results**

Does time heal all wounds in boomtowns? Do subjective indicators of community satisfaction and social integration return to pre-boom levels over the long term? To examine this, we first use one-way analysis of variance to examine patterns of change in each of the dependent variables across the six survey years. Noticeable shifts in response tendencies across the six study periods suggest general trends in the directions of those shifts. We also used hierarchical ordinary least squares regression to examine relationships involving year and the other independent variables with our measures of community satisfaction and the number of friends in the community while statistically controlling for the effects of other variables. Relationships involving year and the other independent variables with our measures of borrowing with neighbors and plans to move from the community were examined using ordered probit regression analysis.

### **One-way Analysis of Variance**

As in the original 1989 analysis, we applied one-way analysis of variance, using Scheffe’s (1953) multiple range-test to examine the statistical significance of differences in response means for each of the dependent variables between all possible paired sets of survey years. Results are reported in Table 2. Because so many of the paired comparisons *were* significant, we focus our discussion only on those that were *not* significant. Additionally, because we wanted to see if there had been long-term recovery to pre-boom baseline levels, we were looking specif-

**Table 2. Comparison of Means for Dependent Variables, across Survey Years in Delta**

Survey Year	Ideal Community	Friends in Community	Borrow from Neighbors	Plans to Move
1975	7.26	2.72	2.87	2.80
1982	5.93	1.87	2.59	2.68
1984	4.85	1.20	2.27	2.08
1986	4.88	1.43	2.38	2.10
1995	7.19	NA	2.40	2.85
1999	6.98	3.29	NA	2.72
<i>F</i>	41.79*	105.76*	8.1*	34.57*
Pairs <i>NOT</i> significantly different	1975/1995	1982/1984	1975/1982	1975/1982
	1975/1999	1982/1986	1982/1984	1975/1995
	1984/1986	1984/1986	1982/1986	1982/1995
	1995/1999		1982/1995	1982/1999
			1984/1986	1984/1986
			1986/1995	1995/1999

\* All years were significantly different ( $p < .05$ ), with the noted exceptions.

ically for non-significant differences between 1975 and 1995 and 1975 and 1999 in the dependent variables.

As was documented in the 1989 study by Brown et al., the one-way analysis of variance shows that for all four of the dependent variables a significant decline occurred in the average response value between the baseline year of 1975 and the years representing the period of boom growth, a finding consistent with literature arguing for the existence of boom-induced social disruption. More importantly, the results also reveal that for two of the four dependent variables—community satisfaction and plans to move—there was no statistically significant difference in mean response values when comparing 1975 with 1995 and 1999. On these two dimensions of social well-being and integration, the community had apparently returned to pre-boom baseline levels by the mid to late 1990s. In contrast, differences were statistically significant when comparing 1975 response means with those from 1995 or 1999 for the “friends in community” and “borrow from neighbors” measures. For the “friends in community” measure the mean response value observed in 1999 was significantly higher than that observed in 1975. At face value this would suggest that this dimension of well-being was actually enhanced ten years after the boom episode relative to what had occurred both prior to and during the boom/bust period, although, as noted earlier, the very skewed distribution of responses to the measure of local friendships obtained in 1999 suggests that this result may at least in part be a result of methods effects involving measurement techniques and/or survey administration

**Table 3. Community Satisfaction Regressed Hierarchically on Year, Demographic Variables, and Length of Residence in Delta**

	Model 1		Model 2	
	B	std. err.	b	std. err.
Constant	7.258****	0.148	4.842****	0.434
y1982	-1.327****	0.268	-1.203****	0.264
y1984	-2.408****	0.251	-1.991****	0.254
y1986	-2.379****	0.251	-2.014****	0.251
y1995	-0.063	0.223	-0.066	0.222
y1999	-0.280	0.191	-0.327	0.192
Age			0.015***	0.004
Education			0.059	0.063
Sex			0.419***	0.141
Length of residence			0.464****	0.108
<i>R</i> squared	0.184		0.232	

\*\*\*  $p < .005$ ; \*\*\*\*  $p < .001$ .

procedures. In contrast, for the “borrow from neighbors” measure the mean value for 1995 remained very similar to what was observed in 1986, and was significantly lower than that obtained in 1975, suggesting that for this dimension of well-being recovery did not occur.

### OLS Regression

Due to the increase in sample size for the 1999 data, the 1999 data were weighted in all of the regression models to account for the inverse of the probability that the observations were included because of the sampling design. Because we used a weighted sample, adjusted *R*-squared scores could not be computed, so only *R*-squared values are reported. For the community satisfaction and friends in the community variables, we replicated the OLS regression approach used in 1989 (Brown et al. 1989). In both instances variables were loaded hierarchically in order to clearly depict the differing association of time (year) and the control variables with each of these dependent variables.

Table 3 presents regression analysis results for the dependent variable measuring community satisfaction levels. Model 1 incorporates only the dummy variables representing the years when data collection occurred. For our analysis, survey year is used as a proxy for, and interpreted to represent, community change. The dummy variables representing 1982, 1984, and 1986 were all statistically significant predictors of community satisfaction, as was the constant (representing 1975) at probability levels smaller than .001. Because 1975 is the reference year for this analysis, the mean adjusted score for that year, when controlling for the other years, is 7.258 (Model 1). In contrast, the mean adjusted score for 1982 is

**Table 4. Friends in the Community Regressed Hierarchically on Year, Demographic Variables, and Length of Residence in Delta**

	Model 1		Model 2	
	b	std. err.	B	std. err.
Constant	2.722****	0.104	1.337****	0.224
y1982	-0.853****	0.155	-0.707****	0.139
y1984	-1.294****	0.130	-1.147****	0.133
y1986	-1.294****	0.131	-1.009****	0.129
y1999	0.567****	0.124	0.571****	0.116
Age			0.010****	0.002
Education			-0.026	0.039
Sex			-0.078	0.074
Length of residence			0.384****	0.055
R squared	0.389		0.456	

\*\*\*\*  $p < .001$ .

substantially lower (7.258–1.327, or 5.931), and much lower still in 1984 (4.85) and 1986 (4.879). In contrast, mean adjusted scores for 1995 (7.195) and 1999 (6.978) are similar to that observed in 1975, and much higher than those observed during the boom/bust period. Consideration of the year of data collection alone accounted for approximately 18 percent of the variation in community satisfaction. In Model 2, which incorporates the sociodemographic control variables in conjunction with the year variables, the influence of year remains similar to that observed in Model 1, though regression coefficients are slightly smaller. By 1995 the average satisfaction level had returned to essentially what was observed in 1975, and significantly higher satisfaction levels were evident in 1975, 1995, and 1999 than during the boom years (1982 through 1986). In addition, age was positively and significantly correlated with community satisfaction ( $p < .005$ ). Also, women exhibited higher levels of community satisfaction than men, and longer-term residents expressed higher satisfaction than recent in-migrants. Similar to what was reported in the 1989 study, education was not a significant predictor of satisfaction. The addition of the demographic control variables and length of residence in Model 2 improved the model fit slightly, with the value of *R*-squared increasing from .184 to .232.

Table 4 reports the findings of the OLS weighted-sample hierarchical regression for number of friends in the community. Model 1, which contains only the dummy variables representing years of data collection, accounts for 39 percent of the variance in the number of friends reported by respondents. When all of the control variables are added in Model 2, the explained variance increases slightly to 46 percent.

The results of this portion of the analysis indicate that the breadth of friendship networks in Delta was significantly linked to the boom, bust,

and recovery cycle the community experienced over the 24 years covered by the surveys. Considering only the dummy variables representing survey year (Model 1), the lowest mean adjusted score for the friends variable was 1.428 (2.722 – 1.294), observed during the peak boom year of 1984 and also during the bust period in 1986. However, by 1999 the mean score had increased to 3.289, suggesting a significant expansion of friendship networks to levels substantially higher than those observed in the pre-boom period. These same patterns of year-to-year variation in the number of local friendships remained evident when socio-demographic characteristics of respondents were included in the analysis (Model 2). In addition, older respondents and those who had lived in the community longer were more likely to have a higher number of local friends across all five of the survey years in which this variable was measured. Overall, the results suggest that for this indicator the initial suspicion that broader societal trends might be reflected in a general reduction in the number of local friendships over time was not born out; by 1999 the number of local friendships reported actually exceeded pre-boom levels.

### **Ordered Probit Regression**

For the borrowing with neighbors and plans to move variables, we used ordered probit regression. Both employed ordinal scales with non-normal distributions, violating two key assumptions of OLS regression. While the stringent assumption of OLS is that the dependent variable must be continuous, most researchers still use OLS for many types of ordinal-scaled dependent variables, some arguing that a minimum scale of 5 points is necessary in order to use OLS, with others arguing for at least a 7 point scale. Because the plans to move and borrow variables used 3 and 4 point scales, respectively, and both had non-normal distributions, we chose to use a probit regression model for this analysis. For both variables we repeated the hierarchical addition of control variables used previously.

Table 5 reports the results of the hierarchical ordered probit regression analysis for the question asking how often respondents borrow things from their neighbors.<sup>2</sup> Consistent with the 1989 study,

<sup>2</sup> The coefficients produced by ordered probit regression are z-scores (probit regression uses the probit link, the inverse of the standard normal link). For this analysis the cut points displayed in the ordered probit analysis (see Tables 6 and 8) represent the z-scores for the reference year. For ordered probit regression, Stata sets the constant to zero and estimates the cut points for separating the various levels of the response variable ( $k - 1$ ) as cumulative values of the predicted probabilities. Therefore the number of cut points will always be one less than the number of categories in the dependent variable. When the cut points are converted to predicted probabilities, the results for cut points 1, 2 and 3 are .19, .53 and .86, respectively.

**Table 5. Hierarchical Ordered Probit Model Regressing Borrowing From Neighbors on Year, Demographic Variables, and Length of Residence in Delta**

	Model 1		Model 2	
	b	std. err.	b	std. err.
y1982	-0.288*	0.133	-0.295*	0.132
y1984	-0.649****	0.120	-0.606****	0.126
y1986	-0.527****	0.117	-0.516****	0.119
y1995	-0.494****	0.126	-0.520****	0.128
Age			0.001	0.003
Education			0.079*	0.038
Sex			-0.032	0.087
Length of Residence			0.069	0.065
Cut point 1	-0.823	0.082	-0.872	0.240
Cut point 2	0.121	0.073	0.080	0.238
Cut point 3	1.113	0.075	1.074	0.242
Pseudo <i>R</i> -squared	0.018		0.0213	
Wald $\chi^2$	40.64		444.58	

\*  $p < .05$ ; \*\*\*\*  $p < .001$ .

borrowing among neighbors declined sharply during the boom years (1982 and 1984) relative to what was observed in 1975. However, unlike the other three dependent variables, borrowing with neighbors exhibited only very modest increases in the years following the boom era. The coefficients in Model 1 depict a decline in the frequency of borrowing through 1984, at which point borrowing began to increase again. By 1995, however, the level of borrowing had increased only very slightly over what was reported in 1986, and remained significantly lower than in 1975. While the borrowing didn't follow the predicted pattern of boom, bust, and recovery, still the dummy year variables proved to be significant predictors for the level of borrowing among neighbors.

Inclusion of the sociodemographic control variables (Model 2) revealed a positive and significant relationship between education and the dependent variable ( $p < .01$ ), while the other independent variables failed to explain variation in borrowing with any level of significance. A one-unit increase in education was found to be associated with a .079 standard deviation increase in the value of the dependent variable. While probit regression does not provide the familiar *R*-squared value, it does generate a similar value in the Pseudo *R*-squared, which can be interpreted similarly in terms of the overall strength of association. Based on the low Pseudo *R*-squared, it is clear that the variables considered here fail to explain much of the variability in borrowing from neighbors. Consequently, we must conclude that community change associated with the boom-bust cycle and its aftermath was not the primary cause of modest shifts in borrowing

**Table 6. Predicted Probabilities of Borrowing From Neighbors in Delta**

	Model 1			
	Never	Rarely	Sometimes	Often
y1975	0.09	0.25	0.38	0.28
y1982	0.14	0.31	0.36	0.19
y1984	0.24	0.35	0.29	0.11
y1986	0.21	0.34	0.32	0.13
y1995	0.20	0.34	0.32	0.14

patterns in Delta. Here, it appears Putnam’s (2000) and Salamon’s (2003) arguments about societal shifts leading to reduced-levels of informal engagement among neighbors are substantiated.

One of the advantages of probit regression is the relative ease with which predicted probabilities for various groups can be computed. Table 6 shows the predicted probabilities of borrowing with neighbors by survey year. In 1975, the probability of never borrowing from neighbors was .09, while that number had increased to a probability of .2 in 1995. Conversely, the probability that community residents borrowed things from their neighbors “often” dropped sharply (.28-.14) from 1975 to 1999. While the frequency of borrowing was at its lowest during the boom period (1984 to 1986), only modest increases occurred between those years and 1995. The data, therefore, demonstrate a pattern of significant decline followed by much more limited recovery. However, because the model explained so little of the variation in the borrowing from neighbors variable, it is difficult to draw firm conclusions regarding the effects of the boom-bust cycle.

The probit models were more successful at explaining residents’ plans to move from the community (see Table 7). The dummy variables corresponding to the boom and bust years were highly significant ( $p < .001$ ), with the exception of 1982. Higher coefficients in 1975 (the unreported reference year), 1995, and 1999 correspond with a tendency for more residents in those years to anticipate continued residence in the community than was the case in either 1984 or 1986. Among the sociodemographic control variables, age, sex, and length of residence were also significant predictors of plans to move, consistent with prior research on migration intentions and propensity. When the control variables were added (Model 2) the Pseudo *R*-squared value more than doubled, from .101 to .215.

Table 8 shows the predicted probabilities, by year, for respondents’ plans to move. While the predicted probabilities for Model 2 are not displayed in Table 8, separate analyses yielded identical predicted probabilities in almost every instance, indicating that the community change construct is accounting for a very specific portion of the variance in plans

**Table 7. Hierarchical Ordered Probit Model Regressing Plans to Move on Year, Demographic Variables, and Length of Residence in Delta**

	Model 1		Model 2	
	B	std. err.	B	std. err.
y1982	-0.245	0.207	-0.003	0.228
y1984	-1.178****	0.166	-0.695****	0.175
y1986	-1.158****	0.166	-0.848****	0.178
y1995	0.150	0.199	0.112	0.225
y1999	-0.155	0.156	-0.216	0.168
Age			0.0139****	0.003
Education			0.0159	0.044
Sex			0.263**	0.100
Length of Residence			0.645****	0.065
Cut point 1	-1.536	0.133	1.666	0.298
Cut point 2	-1.036	0.133	2.268	0.304
Pseudo <i>R</i> squared	0.101		0.215	
Wald $\chi^2$	139.01		260.78	

\*\*  $p < .01$ ; \*\*\*\*  $p < .001$ .

to move that is not shared with the control variables. Referencing Model 1 data for 1975 (Table 8), the probability of residents having no plans to move compared to the probability of probably or definitely moving in the next five years was .85. In 1984, at the peak of the boom period when the community was experiencing higher levels of social disruption as well as the presence of a highly transient construction workforce, the probability of planning to move had increased to .35, compared to only .06 in 1975. By 1995, that probability had dropped back down to .05. Conversely, the probability that residents, would not anticipate moving from the community, compared to the probability that they definitely or probably expected to move, decreased by .38 (.85 - .47) from 1975 to 1984. By 1999, the probability of expecting to remain in the community shot back up to .81. Clearly, respondents were much less likely to anticipate moving both before the boom occurred and over a decade after it had ended. During the boom cycle, however, they were more

**Table 8. Predicted Probabilities for Plans to Move, by Year Predicted Probabilities in Delta**

	Model 1		
	Definitely Move	Probably Move	Will Not Move
y1975	0.06	0.09	0.85
y1982	0.10	0.11	0.79
y1984	0.35	0.18	0.47
y1986	0.34	0.20	0.46
y1995	0.05	0.08	0.87
y1999	0.08	0.11	0.81

likely to plan on moving than at any other time. Although some of this is attributable to the presence of temporary workers during the boom era, longer-term residents were undoubtedly both experiencing increased dissatisfaction with community conditions and exhibiting a higher propensity to consider a move to some other location.

### **Discussion**

Does time heal all wounds? Do subjective indicators of community satisfaction and social integration in boomtowns return to pre-boom levels given enough *time*, or is long-term recovery simply a matter of population stabilization? In the case of Delta, Utah, it appears that time does heal many wounds in the subjective interaction of residents with their community.

Our analysis revealed an inverse association between community satisfaction and the occurrence of population growth, a finding that resonates with prior literature suggesting that as communities experience rapid population expansion and large influxes of newcomers (outsiders), social integration and community satisfaction are eroded. Indeed, the largest shifts observed in responses to our “plans to move” measure of migration expectations occurred between 1982 and 1984 and between 1984 and 1995, periods that correspond to episodes of substantial population growth and decline, respectively. However, while the largest population shift in Delta occurred between 1982 and 1984 (+192%), this time period does not account for the greatest decreases in our measure of community satisfaction. In fact, the largest decrease in community satisfaction occurred between 1975 and 1982; during this time period the population in Delta increased by only 32 percent, a far cry from the nearly 200% increase that was still to come. Also, the largest increase in community satisfaction occurred between 1986 and 1995, a period when Delta’s population remained relatively stable. Analysis focusing on a measure of local friendship ties produced similar results: while the largest population shift occurred between 1982 and 1984, the largest shifts in friendship networks occurred between 1975 and 1982 and between 1986 and 1995.

Shifts in population alone fail to account for the significant changes that we observed over time in levels of community satisfaction and local friendship ties. Clearly, factors other than just shifts in population size were at work with respect to these dimensions of well-being. This suggests that anticipatory responses and subjective evaluations of community change were critical determinants of individual and collective responses not only during the boom and bust periods but in the recovery phase as

well. As the community changed, so too did its residents' subjective relationships to it. As Mealor (1979) explains:

We are all essentially terrestrial creatures identified with a particular town or area. No matter where we travel or what we do, there is in the back of our minds a place we call home . . . We are usually shocked at changes that have occurred to a place from which we have been absent for any length of time. Even if we do have an intimate, daily relationship with a place, we may be appalled at the changes that are taking place. (p. 189)

Though some residents "may [have been] appalled at the changes that [were] taking place" (Delta resident 1999) in their community as a result of boom growth, most appear to have reconciled their feelings with the new and changing community context over time. Three of the four indicators of community satisfaction and social integration considered in this analysis either returned to or exceeded pre-boom baseline levels 20 to 24 years after the initial data collection point. At this juncture IPP has become a *part* of Delta, Utah, not a new entity to be reconciled. A new generation of Delta residents has only known Delta as the home of IPP, and with the passage of time the older generation has also come to see it as the home of IPP.

We found substantial evidence that being attached to one's place through "thick and thin" helps residents subjectively adjust to the disruptions. Specifically, we found that longer-term residents maintained the highest levels of community satisfaction over the entire roller-coaster ride of the boom-bust-recovery cycle. Likewise, women and older community members appeared to be the least affected by the disruptions. While age and length of residence were significantly inter-correlated, they were not so strongly correlated as to suggest they were explaining the same variability in the community satisfaction indicator. This leads us to conclude that either being older *or* being a long-term resident buffered residents against declining community satisfaction. Older residents do not necessarily pine for things to return to the "way they used to be," as evidenced by the way older residents maintained the highest community satisfaction levels throughout the 24 years included in the study. They may however, have a greater commitment to the community and place (see Salamon 2003), which gives them a different perspective on community change and its dynamics. They have had the personal experience of seeing their community change and transform itself over the years, and this may contribute to a commitment to the community that helps to see them through periods of community upheaval and transformation.

Enough time has now passed, and enough evidence has surfaced through long-term longitudinal studies of boom communities (see Smith et al. 2001), that we need to adjust our theories and vocabularies to account for a “boom-bust-recovery cycle” in place of the traditional notions of a “boom-bust” cycle. How does a boomtown “recover?” Early boomtown studies almost exclusively attributed the source of disruptions in the community to objective demographic shifts, with new people arriving in such large numbers that they overwhelmed the capacity of the community’s infrastructure and social structures. Brown et al.’s 1989 article shifted the focus to impacts associated with the subjective interpretations of community residents, a conclusion derived from the use of the pre-boom baseline data revealing that residents experienced a decline in community satisfaction and social integration well *before* new people began to move in. Similarly, at the other end of this boom-bust-, and *now*, recovery cycle, the concept of “recovery” can be conceptualized as a consequence either of objective shifts—say in population size—or of subjective adjustments over time among residents, or some combination of both.

Keeping with the conclusions of Brown et al. (1989), we argue that recovery in boomtowns like Delta is attributable in large part to the dynamic influence of subjective agents that create and constantly recreate the ways in which the community is experienced and interpreted under changing objective conditions. While most attempts to explain the effects of boom growth have focused on the objective effects of shifting demographics, our longer-term window anchored on one end with a genuine pre-boom baseline and on the other by data collected a decade or more following the boom provides a different and unique vantage point from which to understand community change. From that vantage point, we conclude that it is the subjective capacity of humans to create anew interpretations of and relationships with their changing community that better allows us to understand the dynamics of community change. In Delta, the ebbing and flowing impacts on community satisfaction and social integration can be seen clearly through the life cycle of this one momentous event—the creation of IPP. There can be no doubt about the objective nature of social changes affecting the community, as evidenced by swings in population size and composition. But as our analyses also show, these are secondary to the existence and importance of the subjective aspects of “social disruption.”

Understanding how community is redefined by its members as a result of objective changes in the local setting constitutes the basis for understanding long-term community impacts. Humans are meaning-constituting observers. As Marans and Rodger (1975) demonstrated over a quarter of a century ago, it is not the objective characteristics of

the community *per se* that determine one's satisfaction, but the subjective interpretation of those objective characteristics. If we envision community more as the dynamic outcome of subjective interpretations and understandings that emerge out of social interactions and less as an objective entity, we can also envision community impacts precipitated by a singular event, such as IPP, as people subjectively transitioning from one community context (pre-boom) to another (boom) and yet another (post-boom recovery) without ever leaving that location. Yet in this transition, the definitions of both the place and the community change to accommodate the event creating the impact, for it is now part of a "new" community that occupies the same place as the old one. From this point in time the community can only be understood when the event, or thing, is considered a part of it.

Abrams (1982:8) notes that: "What people do in the present [is] a struggle to create a future *out of* the past, of seeing that the past is not just the womb of the present but the only material out of which the present can be constructed." Perhaps residents seek a subjective return to a perceived "golden-era" while still incorporating the new objective realities of their community. Regardless of the reason for the new conditions in a community, they become the "raw material" for people to work with in redefining their community. As people reconcile the new conditions of their communities, they also imagine their community in ways that they may never have imagined before. As researchers further test these ideas in other communities and under different conditions, we will be able to better assess the jilted lover's axiom that "time heals all wounds," as it seems to have in Delta.

## References

- Abrams, P. 1982. *Historical Sociology*. Ithaca, New York: Cornell University Press.
- Beckley, T.M. 2003. "The Relative Importance of Sociocultural and Ecological Factors in Attachment to Place." Pp.105–126 in *Understanding Community-Forest Relations*, edited by L.E. Kruger, Portland, OR; U.S. Department of Agriculture, Forest Service Pacific Northwest Research Station, General Technical Report PNW-GTR-566.
- Brown, R.B., M. Clay, S. Paksima, S. Dorius, and K. Rowley. 2003. "Local Flexibility in Spending Mitigation Monies: A Case Study of Successful Impact Mitigation of the Intermountain Power Project in Delta, Utah." *Impact Assessment and Project Appraisal*. 21:205–13.
- Brown, R.B., H.R. Geertsen, and R.S. Krannich. 1989. "Community Satisfaction and Social Integration in a Boomtown: A Longitudinal Analysis." *Rural Sociology* 54:568–86.
- Cortese, C.F. and B. Jones. 1977. "The Sociological Analysis of Boomtowns." *Western Sociological Review* 8:76–90.
- Crow, G. and G. Allan. 1994. *Community Life: An Introduction to Local Social Relations*. London: Harvester Wheatsheaf.
- Delta city resident. 1999. Interview by Ralph B. Brown and Michael Clay. Delta, Utah, July 1999.
- Dillman, D.A. 2001. *Mail and Internet Studies: The Tailored Design Method*, 2<sup>nd</sup> Ed. New York: Wiley and Sons, Inc.

- England, J.L. and S.L. Albrecht. 1984. "Boomtowns and Social Disruption." *Rural Sociology* 49:230–46.
- Flora, J.L., J. Sharp, and C. Flora. 1997. "Entrepreneurial Social Infrastructure and Locally Initiated Economic Development in the Nonmetropolitan United States." *Sociological Quarterly* 38:623–45.
- Flynn, D. 1991. "Community as Story: A Comparative Study of Community in Canada, England and the Netherlands." *The Rural Sociologist* 11:24–35.
- Freudenburg, W.R. 1986. "The Density of Acquaintanceship: An Overlooked Variable in Community Research." *American Journal of Sociology* 92:27–63.
- Freudenburg, W.R. and S. Frickel. 1994. "Digging Deeper: Mining-Dependent Regions in Historical Perspective." *Rural Sociology* 59:266–88.
- Gieryn, T.F. 2000. "A Space for Place in Sociology." *Annual Review of Sociology* 26:463–96.
- Greider, T. and R.S. Krannich. 1985. "Neighboring Patterns, Social Support, and Rapid Growth: A Comparison Analysis from Three Western Communities." *Sociological Perspectives* 28:51–70.
- Gussow, A. 1971. *A Sense of Place: The Artist and the American Landscape*. San Francisco: Friends of the Earth.
- Hinchman, L.P. and S.K. Hinchman. 1997. *Memory, Identity, Community: The Idea of Narrative in the Human Sciences*. Albany, New York: State University of New York Press.
- Hunter, L.M., R.S. Krannich, and M.D. Smith. 2002. "Rural Migration, Rapid Growth, and Fear of Crime." *Rural Sociology* 67:71–89.
- Kenyon, E. 2000. "Time, Temporality and the Dynamics of Community." *Time & Society* 9:21–41.
- Krannich, R.S., T. Greider, and R.L. Little. 1985. "Rapid Growth and Fear of Crime: A Four-Community Comparison." *Rural Sociology* 50:193–209.
- Marans, R.W. and W. Rodgers. 1975. "Toward an Understanding of Community Satisfaction." Pp. 299–352 in *Metropolitan America in Contemporary Perspective*, edited by A.H. Hawley and V.P. Rock. New York: Sage.
- Mealor, T.W., Jr. 1979. "Myths of Mississippi's Rural Landscape: Change and Challenge." Pp. 189–215 in *Sense of Place: Mississippi*, edited by P.W. Prenshaw and J.O. McKee. Jackson, MS: University Press of Mississippi.
- Putnam, R. 2000. *Bowling Alone: The Collapse and Revival of American Community*. New York: Simon and Schuster.
- Salamon, S. 2003. *Newcomers to Old Towns: Suburbanization of the Heartland*. Chicago: University of Chicago Press.
- Scheffe, H. 1953. "A Method for Judging all Contrasts in an Analysis of Variance." *Biometrika* 40:87–104.
- Seyffrit C.L. and N.C. Sadler-Hammer. 1988. "Social Impact of Rapid Energy Development on Rural Youth: A Statewide Comparison." *Society and Natural Resources* 1:57–67.
- Smith, M.D., R.S. Krannich, and L.M. Hunter. 2001. "Growth, Decline, Stability, and Disruption: A Longitudinal Analysis of Social Well-Being in Four Western Rural Communities." *Rural Sociology* 66:425–50.
- Sykes, W. and M. Collins. 1988. "Effects of Mode of Interview: Experiments in the UK." Pp. 301–20 in R. Groves, P. Biemer, L. Lyberg, J. Massey, W. Nicholls, and J. Waksberg (eds.), *Telephone Survey Methodology*. New York: John Wiley and Sons.
- U.S. Bureau of the Census. "U.S. Bureau of the Census Subcounty Population Estimates 1990–1999." Washington D.C.: Retrieved August 25, 2003 (<http://governor.utah.gov/dea/UPEC/CityPop90and99.PDF>).
- Wilkinson, K.P., J.G. Thompson, R.R. Reynolds, Jr., and L.M. Ostresh. 1982. "Local Social Disruption and Western Energy Development." *Pacific Sociological Review* 25:275–96.

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