

Migration of boom-town construction workers: the development of an analytic framework

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ABSTRACT

High turnover and migration among boom-town construction workers seriously compounds the problems of rapid growth in nearby communities and is costly to industry. Yet, few socio-economic studies have examined this common problem in a comprehensive manner, and many studies simply explain away construction worker migration as a result of wanderlust or pathological transiency. This study is a secondary analysis of the Construction Worker Profile Household Survey and builds on internal migration studies that have found that migration tends to occur when the costs for remaining in the area outweigh the benefits. The findings suggest that, contrary to popular generalisations, wanderlust is not a significant variable for predicting migration ($r = 0.005$). Instead, the five strongest predictor variables were: time in the community ($r = -0.48$), job security ($r = -0.37$), age ($r = 0.36$), housing integration ($r = -0.34$), and dissatisfaction with facilities and services ($r = 0.28$). Building on these findings, possible policy options to limit the migration of this group such as regional planning, hiring locals, cross-training and the coordination of sub-contractors are presented.

INTRODUCTION

Research on the socioeconomic impacts of rapid energy resource development in the West has clearly demonstrated the need for effective planning for nearby communities. These towns are often small (average population is less than 7,000) rural communities that have experienced little or no population increases during the past few decades and, as a result, are often unprepared for the rapid influx of newcomers.¹⁴ Unplanned rapid growth, which can often double the population in these communities, can place severe strains on existing facilities and services and result in a decline in the quality of life for both the newcomers and long-time residents.^{2,4,14} Moreover, research suggests that both newcomers and long-time residents may experience an increase in stress, alienation, mental illness, alcoholism, crime and other social problems.^{27,47}

The rate of population growth has been the most salient aspect defining boom-town communities, since both the size of the community and the number of migrants are taken into consideration. There is little consensus as to whether or not boom-town communities can be classified according to a standard lower threshold in the rate of growth. While Gilmore suggests that unplanned population growth exceeding 15% a year leads to boom-town conditions,¹⁵ other researchers have criticised his work for a lack of rigorous empirical evidence and a failure to consider variations in the different communities.³⁵ Nevertheless, the period in which the most rapid growth occurs

is during the first few years of development, before tax revenues have had a chance to catch up with community expansion.²

During the first few years of a large development project, a town generally experiences a large but temporary influx of construction workers. This group often seriously compounds the pace of growth by its inordinately high rates of worker turnover, which have been reported to be as high as 200% a year in several western boom towns and commonly reach 100%. Thus, while a contractor may require 250 pipefitters for four years, a company with a 100% turnover rate may ultimately employ more than 1,250 different pipefitters. A total work force of 1,000 workers for four years may require as many as 5,000 men. Since an average of 60% of the work force is non-local (workers who move into these communities for employment),³¹ as many as 3,000 new construction workers will circulate through the community. In addition, each non-local worker will bring an average of 2.3 family members,³¹ and each job that is filled by a non-local worker (approximately 600 jobs in this example) will cause an average population increase of 1.5 secondary industry workers.

Although an understanding of the mobility of boom-town workers, apparently, would provide critical information for rational regional planning and impact mitigation, past research addressing the impacts of rapid energy development provides relatively little information about the nature of the construction worker population or why workers move, with the possible exception of demographic statistics.³⁶ Long-time residents often see this group as the major cause of boom-town social problems.^{23,24,29} This generalisation is commonly reflected in the media as well as in the socioeconomic research literature, where the migration of these workers is described as 'wanderlust', or a desire to remain mobile.⁷ One commonly quoted report refers to this group as 'psychopathic types' whose lack of stability causes them to drift from job to job.¹⁹ The acceptance of these generalisations, limits the ability of socioeconomic research to provide concrete policy issues and options to mitigate the problems of boom-town migration.

In addition to increasing the strain on facilities and services and influencing boom-town social problems, high turnover and mobility among construction workers can be extremely costly to industry in that they decrease company productivity. The high turnover at the Jim Bridger Power Plant in Wyoming, for example, was said to cause a 60–75% decline in labour productivity.⁴⁸ Moreover, turnover decreases the returns on any investments in employee recruitment and training. In 1976 this

loss was estimated to be as high as \$100,000 a year for a 10% turnover rate in a 1,000-man work force.

The purpose of this study is to develop a more comprehensive understanding of the turnover and migration of boom-town construction workers, thereby building a rational foundation for the examination of policy issues and options to limit their negative impact. Rather than assuming that variables such as wanderlust and past mobility are the major casual factors influencing migration, this study proposes that construction workers move frequently because they assess that the costs for remaining in a boom-town area exceed the benefits and they are therefore unable to maintain an equitable exchange with the social environment.

In contrast to the psychological generalisations used to explain construction worker migration and turnover, employment-related migration has received extensive empirical examination in studies of internal migration and business management. One of the more applicable approaches to examining employment-related migration is to view the individual in an exchange with his physical or social environment. Stated simply, if the individual perceives that the costs for remaining in an area exceed the benefits, he will migrate.^{5,38}

In a summary of the findings of past research that has examined the cost and benefit decision process for individual migrants, Rothenberg⁴⁰ states that the primary benefit for migration has been found to be new job prospects which tend to increase lifetime earnings and wage rates, and reduce unemployment. He states that: 'In all economic treatments of migration, improved income opportunities are accorded the premier influence' (Rothenberg,⁴⁰ p. 187). He categorises the most significant non-job benefits as: real income differentials, style of life, quality of housing and general public goods. These ingredients of the quality of life have less of a 'pull' influence than the employment factor, but when they are not present, they become significant costs for staying in the area. They can become more important than the employment factor in predicting migration since they are so integrally tied to the worker's self-concept.⁵

While past boom-town studies have not emphasised the migration and turnover of construction workers, they do provide considerable background information that has helped to identify potential variables that can be tested for their influence on boom town migration specifically. The traditional socioeconomic impact studies generally concentrate on infrastructure assessments or 'brick and mortar' planning. This includes projections of growth due to energy or mineral development such as the number of non-local workers, average family size and multipliers for the number of secondary industry workers that will be needed.^{2,4,31} The second major class of boom-town studies concentrates on the social problems experienced by the boom town residents, including construction workers,^{23,24,25} women²⁹ and long-time residents.⁸

In combining the information presented in these diverse areas of research, the following proposition was developed: *The construction worker tends to experience higher costs for remaining in a boom-town community and to possess the individual characteristics that have been found to influence migration in past studies.* These tendencies are in turn predicted to statistically explain much of the relationship between construction worker status and plans for migration.

METHODS

The data base, the Construction Worker Profile Household Survey, consisted of a 122-question survey that was administered to 1,432 respondents in nine western communities. The bulk of the sample ($n = 1,095$) was obtained in five western communities that were currently affected by large construction projects; 179 respondents were from two communities that expected development in the near future; 158 respondents were from two communities where development was recently completed. There were a total of 535 construction workers in the sample.³² This makes the survey the largest, most comprehensive data base on boom-town construction workers presently available.

Of the secondary data available, the survey provides data that were most compatible with the present research needs. Advantages of the data base include: a rigorous approach to probability sampling to assure the representation of critical variables; cluster sampling and random selection; and a healthy cross-sample of nine different communities.

The latter aspect of the survey allows testing the influence of contextual community variables such as size of community and the rate of growth on the migration decision. The use of all nine communities also increases the variation among all the variables, since most (738 out of 1,095) of the residents in the present boom towns are newcomers who share similar characteristics.

The basic plan of this analysis is to test and describe the relationships between the independent variables and plans for migration. With the exception of the dichotomous variables, the variables were designed to have an ordinal or interval level of measurement. The major tests of association shall be Pearson's correlations (r)* and discriminant analysis. Discriminant analysis was chosen for a multivariate analysis of the variables, since it examines plans for migration as a nominal variable. This will facilitate the comparison of all the response categories for plans for migration to the independent variables.†

Table 1§ lists the variables that have been developed from indicators in the survey data, and the predicted direction of their relationship with the dependent variable. Table 2 summarises research that justifies the conceptualisation of unusual casual relationships.

FINDINGS

All of the relationships between the costs for remaining in the area and plans for migration were in the predicted direction. The strongest predictor variables were: time in the community ($r = -0.48$), job security ($r = -0.37$),

*There is considerable controversy over whether ordinal and dichotomous variables should be used in parametric statistics. See Miller²⁸ and Stevens⁴⁵ for views that suggest that these variables should not be used; and Gaito¹¹ for opposing arguments.

†In the Pearson's correlations the response category (5) 'uncertain' will be eliminated from the dependent variable since it does not conform to the criteria of ordinal scaling. The inclusion of the 108 respondents that chose 'uncertain' may not be important in itself but these respondents may be described by a broader category.

§Given the space limitations, readers who are interested in how the variables were developed from the indicators in the survey data are asked to refer to the original study.⁹

Table 1 Variables, indicators and their predicted relationships with plans for migration

Variables	Indicators	Predicted direction of relationship with plans for migration
<i>Costs for remaining in a boom-town setting</i>		
Boom-town conditions	Compound var. testing rate of pop. growth and boom-town status (pre. boom etc)	+
Dissatisfaction with facilities and services	Compound var. testing sat. w/12 facilities and services on a five-point scale*	+
Job security	Single indicator nine-point scale response to 'How long do you think your job will last'	-
Status incongruence	Computed var.: high income + dissat. w/ present housing = status incongruence	+
Housing integration	Compound var. single family hm res. + mobile home residence	-
Time in community	Single indicator	-
Family absent	Dichotomous var.: family present/family absent	+
Commuting time	Single indicator: ten-point scale indicating time	+
<i>Individual characteristics</i>		
Occupation	Dichotomous var. construction worker /not const.	+
Age	Single indicator	-
Education	Single indicator	+
Income	Single indicator	+
Marital status	Dichotomous var. married/not married	+
Family size	Single indicator	-
Upward mobility	Computed var.: three-point scale: 1 - improved job status from last job; 2 - no change; 3 - less status	-
<i>Variables testing transiency</i>		
Wanderlust	Dichotomous var.: changed job for reasons relating to wanderlust†	No Rel
Past mobility	Single indicator: time in last community	+

*Five additional indicators testing dissatisfaction with facilities and services were available, however they were not included as a result of non-random missing values and/or low item to scale correlation.

†Wanderlust is used here as a desire to travel, live in a particular area, or get away from one's previous community.

housing integration ($r = -0.34$) and dissatisfaction with facilities and services ($r = 0.28$). The relationship between the absence of one's family and plans for migration was the only relationship that was not significant at the 0.05 level. These findings suggest that the costs for remaining in a particular area, particularly boom-town areas, do in fact have a direct influence on plans for migration.

The modest correlation between boom-town conditions and plans for migration suggests that the specific costs for remaining in the community, such as lack of job security, are more significant than the boom-town conditions and the possible resulting social problems. Alternatively, the modest correlation may reflect that the rate and stage of the boom town growth does not capture the full concept of boom town conditions.

Dissatisfaction with facilities and services is highly correlated to boom-town conditions. Residents in Rocks Springs, Wyoming, and Colstrip, Montana, two of the most severely impacted boom towns, were an average of 3% more dissatisfied than residents in other boom-town

communities, and approximately 70% more dissatisfied than residents in pre- and post-boom communities.

While the variable job security was highly correlated to plans for migration in a negative direction ($r = -0.38$), 901 (62.9%) respondents did not answer this question. The non-responses tended to be non-construction workers ($r = -0.41$) with lower incomes ($r = 0.17$) and not from pre-boom-town communities ($r = -0.16$).

Respondents who were not construction workers were more highly represented among the non-response category. One possible explanation for this variation is that construction workers often know how long their skills will be needed, and this time is generally short. Over 40% of the construction workers who responded to the question felt that their jobs would not last longer than six months (category 1), and another 30% felt that their jobs would last six months, but less than a year. The variation in non-responses in different communities is also interesting to note. In the pre-boom-town community of St George, Utah, for example, there were only four out of a possible 90 responses to this question. This may be a

Table 2 *Variables, concepts and justifications from past research*

<i>Variable</i>	<i>Concepts and justifications</i>	<i>References</i>
<i>Costs for remaining in a boom-town setting</i>		
Boom-town conditions	Infrastructure and social problems increase with the rate of growth.	8,15,27,29,47
Dissatisfaction with facilities and services	The few boom-town studies that have examined worker turnover have pointed to causes related to dissatisfaction with facilities and services.	4,15,24
Lack of job security	A lack of job security has been found to be a significant cost for remaining in an area in past internal migration studies. Similarly, the lack of job and employment security* was cited as the single most important factor influencing the turnover and migration of boom town construction workers in a preliminary study conducted by the author.	5,40 9
Status incongruence	In the present study, status incongruence refers to the inconsistencies among the construction worker population. While a construction worker's income is an average of 27% higher than the other respondents, this group claims that they are given few options but to live in low income trailer homes, that are often segregated from the rest of the community.	24
Family absent and commuting time	Leaving one's family at a more permanent residence and long commuting times are two common adaptations to boom-town employment that are seen as costs for remaining in the area.	31
Lack of housing integration	Massey makes the argument that the impacted community is often like a total institution for the construction worker. Total institutions such as hospitals maintain inmates through strict allocation of space and sharp boundaries which perpetuate a lack of solidarity between staff and inmates. In contrast, housing integration and the presence of community ties have been found to discourage plans for migration.	24,44
Time in the community	Time in the community is seen as a measure of integration. This variable has been found to create a cumulative inertia that hinders migration.	26,30,41
<i>Individual characteristics</i>		
	The individual characteristics that are examined in the present study have been found to influence migration in past internal migration studies. In general, these findings are not based on theoretical underpinnings; rather they are based on past statistical findings and fall more into the area of demographics.	5,17,41,46
<i>Transiency variables</i>		
Wanderlust	Despite the popularity that this generalisation has found in boom town studies, the author was not able to find any internal migration studies that test the influence of wanderlust on migration.	
Past mobility	If it is true that a construction worker's innate lack of stability causes him to continually move from place to place, then the construction workers should have a shorter duration of residence in their past community, and a shorter duration in the last community should predict plans for migration. However, studies reflect that the construction worker population cannot be accurately summarized as transients. (25)	
<i>Dependent variable</i>		
Plans for migration	Speare (44) found that the relationship between the wish to move and mobility had a path coefficient of 0.33 in his regression analysis of residential satisfaction. In a follow-up of Speare's study, Bach and Smith found that expectations for migration predicted migration quite consistently (R square change = 0.39).	3

*Employment security is used to mean that given a certain geographic area (a 50-mile radius for example) a person is able to find work in his craft or profession.

result of sampling error in the initial survey.

Housing integration was highly correlated to the dependent variable ($r = 0.34$). Whilst this variable is able to capture a certain measure of integration, its relationship with the dependent variable may be recursive and should therefore be interpreted with caution. (Does one's decision to buy a house precede the migration decision, or does the migration decision determine these actions?) Nevertheless, past research indicates that community integration is an important indicator of plans for migration. Moreover, a lack of integration or alienation has been cited as a common problem in western boom towns.^{3,29}

Surprisingly, the variables of commuting time and absence of family were only modest predictors of plans for migration, although these variables were highly correlated to construction worker status. Those with long commuting times tended to be young ($r = -0.25$) newcomer ($r = 0.24$) construction workers ($r = 0.32$).

When construction worker was held constant, the relationship between commuting time and plans for migration was significantly stronger for non-construction workers ($r = 0.12$) than for construction workers ($r = 0.003$). This suggests that construction workers have a different sense of local area than non-construction workers. While construction workers do tend to have longer commuting distances, they do not appear to perceive this as a significant cost, and they appear to be willing to maintain a larger radius of commuting distances in order to maintain employment in their crafts. Yet despite the lack of traditional ties to a community, the fact that 80% of the construction workers are married and that the workers are willing to travel long distances suggests that many of these workers attempt to maintain ties to a community in the context of their family life.

The relationships between the selected individual characteristics and plans for migration were also in the predicted direction, although the relationships between marital status and family size and the dependent variable were not significant at the 0.05 level. These results suggest that several of these individual characteristics do in fact influence plans for migration.

The strongest predictors were age, construction worker status and upward mobility. The tendency for the long-time residents to have a slightly higher increase in job status than the newcomers is interesting to note. This suggests that long-time residents do receive some benefits from energy development in their area.

Construction worker status was highly correlated to plans for migration ($r = 0.32$). An examination of a cross-tabulation of this relationship (see Table 5) reveals that 243 construction workers (49.7%) chose response number 3, 'Plan to stay as long as work was available', in response to their plans for migration. This represented 71.3% of all of those who chose this response. The non-construction workers are highly represented in response number 1, 'Plan to settle down here' (66.8%).

In contrast, the non-construction workers chose response number 4, 'Plan to stay until transferred', and number 5, 'Plan to leave immediately', more frequently than construction workers; however, only 120 of all the respondents chose these responses.

These results suggest that construction workers are more transient than non-construction workers, but for approximately half of these workers, their mobility is

Table 3 Relationship of perceived or actual costs for remaining in an area to plans for migration

	Simple r
1 Boom-town conditions	0.17
2 Dissatisfaction with facilities and services	0.28
3 Job security	-0.37
4 Status incongruence	0.16
5 Family absent	0.04
6 Commuting time	0.17
7 Lack of housing integration	-0.34
8 Wife working	-0.12
9 Time in the community	-0.48

Table 4 Relationships of selected individual characteristics to plans for migration

	Simple r
9 Age	-0.36
10 Education	0.18
11 Income	0.18
12 Marital status	0.02
13 Family size	-0.07
14 Upward mobility	-0.20
15 Construction worker/non-construction worker	0.32

based on their ability to find work. In fact, the author's preliminary survey of 40 respondents from various institutions involved in large-scale energy development in the west, found that 78% of the respondents felt that a lack of employment security and or job security was the major cause of migration and turnover. Many of the reasons given for perceived lack of employment security in boom-town areas referred to problems relating to the coordination of the different organisations involved in large-scale energy development. Problems that resulted in underhiring, overhiring, dramatic fluctuations in the demands for different crafts and frequent layoffs, for example were attributed to a failure to coordinate the available work force.

Moreover, the variable job security had one of the highest intercorrelations between construction worker status and the other independent variables ($r = -0.41$), suggesting that a construction worker's status decreases job security. However, given the number of missing cases to this variable, this relationship should be interpreted with caution. The key relationship here may not be job security *per se*; rather, the high representation of construction workers among those who plan to stay as long as work is available suggests that the broader issue of employment security plays a prominent role. To some extent, lack of job security is inherent in the construction industry: construction workers work their way out of a job by finishing a particular project.

Construction worker status correlated highly with other independent variables that are predicted to influence migration. Construction workers tended to be more prevalent in areas that were experiencing boom-town conditions ($r = 0.37$). They tended to be more dissatisfied with facilities and services ($r = 0.23$),

Table 5 Plans for staying in the area by construction worker status

	Non-construction worker n = 798 (%)	Construction worker n = 535 (%)
1 Plan to settle down here	66.8	22.9
2 Plan to stay until retirement	10.8	19.4
3 Plan to stay as long as work is available	12.3	49.7
4 Plan to stay until transferred	6.0	3.1
5 Plan to leave immediately	4.1	4.9
	100.0	100.0

Table 6 Reasons newcomers moved to present boom towns

Reasons	Construction workers n = 413 (%)	Non-construction workers, n = 313 (%)	Total, n = 726 (%)
Job improvement	70.0	54.6	63.4
Other (job-related)	20.8	26.5	23.3
Family related	3.1	6.7	4.7
Other (non-job-related)	1.7	1.9	1.8
Wanderlust	4.4	10.2	6.9
Total (%)	100.0	100.0	100.0

experience more status incongruence ($r = 0.18$) and have larger commuting distances ($r = 0.32$). Like other internal migrants across the country, this group tended to be young ($r = -0.23$) and have higher incomes ($r = 0.28$); yet, contrary to other internal migrants, construction workers tended to have less education ($r = -0.09$) than the general population.

Finally, there is only a very low correlation between construction worker status and wanderlust ($r = -0.02$), and the correlation is in a negative direction, suggesting a slight tendency for construction workers to be less willing to move for reasons of wanderlust than nonconstruction workers.

Contrary to the generalisations presented in the media, wanderlust is not a significant indicator of plans for migration. In fact, the variable is the lowest predictor of plans for migration of all the independent variables ($r = 0.005$). It is most highly correlated to boom-town conditions ($r = 0.1$). Perhaps more important are its low correlations to key independent variables: construction worker (-0.02), job security (-0.07), age (-0.07) and past mobility (0.03). Only 13.9% of the respondents claimed they changed from their last jobs as a result of wanderlust (to travel, see the area, live in a desirable community or leave an undesirable community), and only 14% of these respondents were construction workers.

Similarly, the newcomers to boom town communities were asked why they had moved to their present communities and only 6.9% stated they moved for reasons defined here as wanderlust. In contrast, a total of 86.7% of the newcomers stated they moved for job-related reasons. Construction workers appeared to move for job-related reasons more often; 70% of the construction workers stated they moved for job improvement,

while only 54.6% of the non-construction workers chose job improvement responses. Table 6 summarises these results.

Past mobility or the length of time newcomers lived in their previous community has a low correlation to the dependent variable (-0.06). This question was only asked of the newcomers in present boom towns. Nevertheless, with the exception of its weak relationships to education ($r = 0.11$) and age ($r = 0.08$), this variable showed little relationship to the other independent variables. Contrary to popular stereotypes, past mobility does not appear to be prominent among construction workers ($r = -0.06$), and is only very weakly related to time in the present community ($r = -0.04$).

Table 7 summarises the relationship of wanderlust and past mobility to plans for migration. Neither of the relationships were high, or significant at the 0.05 level, suggesting that this variable set adds little explanatory power to the prediction of plans for migration.

The variables previously used as independent variables were employed in a discriminant analysis to examine the characteristics of respondents who chose a particular response to plans for migration. Table 8 lists the eigenvalues, canonical correlations, Wilk's lambda and its associated test of statistical significance.

The eigenvalue is a measure of the discriminating strength of a function. In Table 8, the eigenvalue of the first function appears to capture most of the variation. Its contribution is 5.1 times larger than that of the second function. Similarly, the canonical correlations, and the Wilk's lambdas also reflect a marked decrease in discriminating power from function to function.

Even though four of the five discriminating groups are statistically significant, there is considerable overlap

Table 8 Summary statistics for the first discriminant analysis

Function	Eigenvalue	Percent of variance	Canonical correlations	Wilk's lambda	Significance
1	0.72	75.5	0.65	0.65	0.00
2	0.14	15.7	0.35	0.85	0.00
3	0.04	4.7	0.20	0.91	0.00
4	0.03	3.5	0.17	0.95	0.00
5	0.01	1.2	0.10	0.98	0.11

Table 9 Standardised canonical discriminant function coefficients

	Function 1
Dissatisfaction with facilities and services	0.33
Status incongruence	0.21
Time to work	-0.15
Time in the community	-0.53
Age	-0.19
Education	0.30
Family size	-0.30
Upward mobility	-0.12
Construction worker	-0.42
Wanderlust	-0.12

between the groups. This will limit the ability to correctly classify the cases. Only 61.95% of the cases were correctly classified. This amount of classification could probably be respectable for many research needs, but has limited utility when considering the present policy needs: to predict migration by knowing certain individual characteristics, and the responses to certain questions. Thus, the author will attempt to increase the discriminating power by reducing the number of functions and the number of groups.

The six values of the dependent variable seem to account for two separate groups. The first three values refer to a certain level of commitment to remaining in the community, while the last three values reflect a lack of commitment. Thus, the variable was dichotomised and set equal to the following two groups:

New Value	Original Value
1 Has made a commitment to stay in the area	1 Plan to settle down here 2 Plan to stay until retirement 3 Plan to stay as long as work is available
2 Has not made a definite commitment to remain in the area	4 Will stay until transferred 5 Uncertain 6 Plan to leave soon

While responses 2, 3 and 4 are all job-related, response number 4, 'will stay until transferred', reflects a commitment to the job before the community. In contrast, response number three reflects the desire to look for other work if the present job terminates or does not work out, thus placing a higher value on remaining in the community. Similarly, response 2, 'will stay until retirement', reflects a higher level of commitment to remain in

the area. This is particularly true for construction workers who commute long distances to different jobs in the region and maintain the same residence.

A second discriminant analysis was run using the dichotomised dependent variable. The resulting eigenvalue, canonical correlation and lambda were 0.12, 0.33, and 0.89, respectively. These statistics reflect that the variables and the function produce significant discriminating power.

Now that the number of functions needed to most efficiently discriminate group differences has been determined, we can turn to the discriminating variables to see which typologies emerge and how well these variables discriminate as a group. The standardised discriminant function coefficients tell us the relative contribution of a particular variable to a function. It is similar to a beta weight in regression analysis. Table 9 lists the standardised discriminant function coefficients for the ten variables that remain in the equation:

According to the typologies that emerged from the canonical discriminant functions, the group that did not display commitment to the community appeared to be 'other newcomers' as evidenced by the fact that they tended to have lived in the community for a relatively short period of time (-0.53) and to be non-construction workers (-0.42) who were dissatisfied with community facilities and services (0.33). This group also had smaller families (-0.30), higher levels of education (0.30), and a slight tendency to be prone to wanderlust (-0.12). The group centroids for this function were -0.15 for Group 1 and 0.78 for Group 2, showing a strong differentiation between those who reflected commitment to the community and those who did not. Of the cases, 84% were correctly classified.

The next major aspect of the posited hypotheses concerns the propensity of construction workers to experience higher costs for remaining in a boom-town community and to possess characteristics that are common among internal migrants, which statistically explains the relationship between construction worker status and the dependent variable. These relationships have already emerged in the preceding discussion; however, in order to examine this relationship more closely, a partial correlation analysis was used to control for the influence of the five strongest predictors of plans for migration while examining the correlation between construction worker status and plans for migration.

The five control variables were housing integration, age, time in community, boom-town conditions and dissatisfaction with facilities and services. The resulting correlation between construction worker status and plans for migration was reduced to 0.03. This suggests that the

causal relationship between construction worker status and the dependent variable is, to a large extent, statistically explained by intervening variables. There is some variation that is not explained by the other variables, however. This is understandable since the study is not comprehensive in scope and, therefore, does not capture some variables that influence the migration of construction workers specifically. Examples of these variables are lack of job security (which was not examined in the partial correlation as a result of the large number of missing cases), the demand for specific crafts and the availability of jobs in other communities.

POLICY IMPLICATIONS*

The results of the analysis suggest that the five strongest predictors for plans for migration in the present study are time in the community ($r = -0.48$), job security ($r = -0.37$), age ($r = -0.36$), housing integration ($r = -0.34$), and dissatisfaction with facilities and services ($r = 0.28$). The strong influence of time in the community suggests that non-local workers make up a significant proportion of the out migrants. Thus, efforts to recruit and train local workers should help create a more stable work force. Local recruitment and training should be considered for both construction workers and non-construction workers, since the results of this study's discriminant analysis suggests that the most transient group in the sample are newcomers who are not construction workers. This option may have only limited potential since many areas lack an indigenous work force. Thus, efforts to recruit non-local workers who are familiar with or compatible with the local climate and culture, as well as the work requirements, may address this problem. Also, examination of a worker's past job stability may be useful.

The lack of job security, particularly among construction workers, suggests that efforts to coordinate the work force through the different phases of development may help to limit turnover and migration. This could be done by cross-training workers, or training the workers in several related crafts, and by employing a full construction work force in one company so that workers could be transferred to different job sites. To employ this option, a company may need to hire non-union workers since craft unions often prohibit cross-training. While this study could not test the direct influence of employment security on plans for migration, the fact that a majority of construction workers stated they would stay as long as work was available suggests that this factor also has a strong influence on plans for migration. Options to address employment security include: the coordination of subcontractors, phasing development in order to maintain a regional work force without dramatic peaks and valleys, and maintaining an in-house construction force.

This study suggests that single-family home ownership limits migration. Thus, increasing the availability of single-family homes and opportunities for workers to purchase them may create an incentive for workers who purchase to remain in a community.

The influence of dissatisfaction with facilities and

services on plans for migration suggests that providing physical and social amenities in the community increases worker retention.

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