



Rural and Urban Manufacturing Workers: Similar Problems, Similar Challenges

Results of the ERS Rural Manufacturing Survey

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Low skill levels among rural workers put rural manufacturing at a competitive disadvantage, according to the “skills shortage” theory. Data from the ERS Rural Manufacturing Survey, conducted in 1996, suggest that is not happening. Skill requirements are rising, but manufacturers who reported major problems finding workers with specific skills were relatively rare, among both rural and urban firms. Moreover, the most common problem was in finding reliable workers with an acceptable work attitude, traits not usually considered skills and difficult to address through typical skill development programs.

But the survey data also suggest a critical skills challenge for rural areas. Among high adopters of new technologies and management practices, the demand for computer, interpersonal/teamwork, problem-solving and other “new” skills is rising exceptionally rapidly. Such firms are much more likely than others to report major problems finding adequately skilled workers (although the problem is no greater in rural areas than in urban). This suggests that, in the long run, rural participation in the new economy depends less on remedial skill training for rural workers than on helping them acquire cutting-edge new skills.

Rural manufacturing prospered during the 1950's, 1960's, and 1970's, generating a million new jobs each decade and providing an economic base for the transition out of agriculture. To a large extent, this manufacturing growth was attributed to rural areas' more reliable and lower cost labor. The lower cost of rural labor was believed to more than compensate manufacturers for the relatively low skill levels of rural workers.

The 1980's saw little growth in rural manufacturing jobs, and growth in the current decade has been uneven. Many analysts blame this slowdown in growth on the relatively low skill levels of rural workers. Their argument is that, while once it was possible to compensate for the poor skills of rural workers, manufacturers now need highly skilled workers to compete in the highly

technological and global “new economy.” Manufacturers who want low-wage workers simply go abroad, while manufacturers who need more highly skilled labor find that rural areas cannot supply it in adequate quantities.

This “skills shortage” diagnosis has the virtue of simplicity and suggests a clear solution for rural manufacturing problems: more schooling for rural workers. A more educated, more highly skilled rural workforce will re-establish rural areas' comparative advantage of low wages and high reliability. Previous work by Economic Research Service (ERS) researchers, however, has suggested that demand for skill—at least as traditionally defined—is rising only slowly in rural areas and that the supply of skilled rural labor appears adequate to meet that demand (McGranahan and Ghelfi, 1991;

Teixeira and Mishel, 1992; Teixeira, 1995). If so, rural workers could get more schooling and skills—and perhaps improve their individual situations—but the effects on the health of the rural manufacturing sector would be small.

Whether—and to what extent—each of these views is correct has important policy implications. But until now, there has been no definitive way of resolving the issue, since analysts lacked direct data on the skill needs and problems of rural manufacturers. The Rural Manufacturing Survey (RMS) helps remedy this situation by providing relevant data on over 2,800 rural manufacturing firms, about 7 percent of all rural manufacturers, as well as over 1,000 urban manufacturers (see “About the Survey,” p. 8). Survey data include information on the changing skill requirements of jobs, problems finding job applicants with different skills, training practices of firms, and much more.

The data tell a fascinating story that contradicts conventional wisdom about rural workers (for example, that they are less skilled but more reliable, even at lower wage rates). The survey suggests that rural manufacturers rate their workers no less skilled than urban manufacturers rate their workers, but rural manufacturers also rate their workers no more reliable. The survey also shows that neither rural nor urban manufacturers consider their needs for skills as traditionally defined—math and reading—to be rising particularly rapidly, nor do they report a high incidence of problems finding workers with these skills. The biggest “skill” problem

reported by both rural and urban manufacturers is reliability—finding workers with a “reliable and acceptable work attitude.”

The survey data also show some interesting skill trends, which, if they do not suggest a skills disadvantage in rural areas, nonetheless suggest some skills rural areas may need to cultivate since rural workers no longer appear to have a reliability advantage over urban workers. For example, demand for nontraditional skills, like computer skills, interpersonal/teamwork skills, and problem-solving skills is rising fairly rapidly among both urban and rural manufacturers. And, among high adopters of new technology (who tend to pay their workers more) demand for these skills is rising especially rapidly, making these manufacturers much more likely to report problems finding adequately skilled workers (though no more likely in rural than in urban areas). This suggests that rural areas could make themselves particularly attractive to high adopters by finding ways to increase levels of these nontraditional skills among the rural workforce. Such skill upgrading, combined with the still-existing rural wage advantage, could give rural areas the edge they need to compete in the current economy.

Changes in the Skill Requirements of Jobs

The survey asked employers whether the skill requirements of jobs for production workers had changed over the last 3 years. And, going beyond previous surveys, the Rural Manufacturing Survey asked about a number of different kinds of skill require-

Table 1—Changes in skill requirements among rural manufacturers, 1993-96

	Increased:		Stayed the same	Decreased	Rural-urban difference ¹
	A lot	A little			
	Percent				Percentage points
Computer	32	32	32	0	-.7 ²
Interpersonal/teamwork	32	29	37	1	-2
Problem-solving	29	32	37	1	0
Non-computer technical	17	38	42	1	-1
Basic math	16	32	50	1	1
Basic reading	13	26	60	1	-1

¹Difference between rural and urban areas in “increased a lot” category (rural percentage minus urban percentage).

²Significant at .05 level.

Source: ERS Rural Manufacturing Survey, 1996.

ments—basic reading, basic math, problem-solving, interpersonal/teamwork, computer, and non-computer technical skills.

Nearly all rural employers reported an increase in skill requirements, but the rate of increase varied widely among the different skill requirements (table 1). Computer skills and interpersonal/teamwork skills had risen most rapidly (32 percent of employers reported that each of these skill requirements had “increased a lot” in the last 3 years). Problem-solving skills had increased almost as rapidly (29 percent said skill requirements had “increased a lot”).

Substantially less rapid rates of change were reported for the other three skill requirements— non-computer technical skills (17 percent said “increased a lot”); basic math skills (16 percent); and basic reading skills (13 percent). For the latter two skills, most rural employers reported that skill requirements had stayed the same over the last 3 years.

So the data suggest that skill requirements of jobs are being upgraded in rural areas, but that this upgrading is strongest for computer, interpersonal/teamwork, and problem-solving skills. The demand for basic academic skills, in contrast, was relatively stable.

Problems Finding Skilled Workers

While 62 percent of rural employers report at least some problems finding qualified appli-

cants for production jobs, substantially fewer of them (42 percent) report problems finding qualified applicants for professional or management jobs. Those who reported problems finding qualified production workers were also asked if they had problems finding workers with specific skills. The most common problem reported was finding production job applicants with “a reliable and acceptable work attitude.” Most employers reported at least a minor problem in this area, with 31 percent reporting a major problem (table 2).

The next most common problems were finding applicants with problem-solving skills (22 percent reported a major problem) and non-computer technical skills (21 percent), followed by computer skills (16 percent) and interpersonal/teamwork skills (15 percent). Interestingly, 60 percent of rural employers reported no problems at all finding qualified applicants with computer skills, even with demand for computer skills increasing faster than demand for most other skills.

Rural employers were least likely to report major problems finding qualified production-job applicants with basic math (12 percent) and basic reading (5 percent) skills. For basic reading, over two-thirds (68 percent) said they had no problems at all in this area.

So, despite the reported increases in skill requirements for rural jobs, major problems finding qualified applicants are relatively uncommon. However, to the extent there are

Table 2—Rural manufacturers reporting problems finding qualified applicants for production jobs

	Any problem:		No problem ¹	Rural-urban difference ²
	Major	Minor		
	----- Percent -----			Percentage point
Reliable and acceptable work attitude	31	25	45	3 ³
Problem-solving	22	29	49	1
Non-computer technical	21	25	53	-2
Computer	16	23	60	1
Interpersonal/teamwork	15	33	52	3 ³
Basic math	12	30	57	-2
Basic reading	5	27	68	-3 ³

¹Includes those respondents who said they had no overall problems finding qualified production workers and therefore were not asked about the specific skill problems in the table.

²Difference between rural and urban areas in “major problem” category (rural percentage minus urban percentage).

³Significant at .05 level.

Source: ERS Rural Manufacturing Study, 1996.

major problems, they are associated most strongly with problem-solving and non-computer technical skills. But the most commonly reported problem—a reliable and acceptable work attitude—has nothing to do with rising skill requirements as conventionally defined.

Whatever the origin of problems finding qualified production workers, about half of employers say that their problems have increased over the last 3 years (though note that the labor market tightened considerably over this time period). Forty percent say their problems have remained the same and just 9 percent say problems have decreased. However, while their problems finding qualified applicants may be increasing, rural employers at this point still see the overwhelming majority of production workers—74 percent on average—as being fully proficient at their jobs (though this figure was lower among manufacturers who reported major skill problems).

Training Practices of Rural Employers

The survey showed that, while only a minority of rural manufacturers (48 percent) currently provide formal training for their production workers, a strong majority of those that reported major skill problems do provide such training. And, among the half of rural employers who provide formal training, most (71 percent) have increased the amount of training provided over the last 3 years, split about evenly between those who have increased training a lot and those who have increased it only a little. About a quarter of

these employers have not changed the amount of training they provide and just 3 percent say they have cut back on training.

Most of the rural employers who had increased training reported heightened concern about product quality (79 percent) and improving productivity (70 percent) as major factors in their decisions to increase training (table 3). Just 37 percent of these employers said problems with low skills among new hires was very important in their decision to increase training (though this number was higher among those who also reported a major problem with worker skills).

Special Problems of Rural High Adopters

In an earlier report for this series, rural manufacturers were shown to lag urban manufacturers somewhat in the use of specific production and telecommunication technologies, but to lead in the use of new “high-performance” management practices (Gale, 1997). Taking production technologies, telecommunications technologies, and management practices as a whole, rural manufacturers are not far behind urban manufacturers in their overall adoption rate.

Rural firms that are “high adopters” (use more than 9 of the 16 production technologies, telecommunications technologies and management practices they were asked about) have more problems finding adequately skilled workers than low- or medium-adopter firms, the survey data suggest. To

Table 3—Reasons for increasing training reported by rural manufacturers¹

	Important:			Rural-urban difference ²
	Very	Somewhat	Not important	
	----- Percent -----			Percentage points
Heightened concern about quality	79	19	2	1
Improve productivity	70	26	4	1
Adoption of new equipment	48	39	17	-2
Adoption of new management practices	44	39	17	1
New employees less skilled than previous hires	37	34	29	0

¹Figures in table based only on rural manufacturers who said they had increased training of production workers in the last 3 years.

²Difference between rural and urban areas in “very important” category (rural percentage minus urban percentage).

³Significant at .05 level.

Source: ERS Rural Manufacturing Survey, 1996.

begin with, high adopters—about a fifth of rural firms—report substantially higher rates of increase in skill requirements than low/medium adopters. For example, 53 percent of high adopters said problem-solving skill requirements for their workforce had “increased a lot” in the last 3 years, compared with just 23 percent of low/medium adopters. Similar differences exist between high and low/medium adopters for the other skill requirements.

With their more rapidly increasing skill needs, it is not surprising that rural high adopters are substantially more likely than low/medium adopters to report major problems finding adequately skilled production workers (though note that rural high adopters have no more problems than *urban* high adopters, underscoring the point made earlier about rural/urban similarities). The two sharpest examples of this are problem-solving skills and non-computer technical skills, where about 30 percent of high adopters report major problems compared with 20 percent or less of low/medium adopters. Both high and low/medium adopters, however, are equally likely to report major problems finding workers with reliable and acceptable work attitudes (about 30 percent in each case).

Thus, high adopters not only are substantially more likely to encounter problems finding workers with specific skills—especially problem-solving and non-computer technical skills—but they also have the same problems as other manufacturers finding reliable workers. This suggests that, while skill problems may not be particularly important for most rural manufacturers, for the minority leading the way into the new economy, skill problems present more serious obstacles to further development. This interpretation is bolstered by the finding that lack of worker skills is the most commonly-cited major problem faced by firms seeking to implement new technologies and management practices (Gale, 1997).

Comparing Rural and Urban Manufacturers

Are rural firms having a more difficult time than urban firms in dealing with workers' skills, as implied in the skills shortage diag-

nosis discussed earlier? If so, this would suggest that, even if rural manufacturers' skill problems seem moderate, they may be enough to dissuade other manufacturers from moving in.

That does not seem to be happening. Skill requirements at rural manufacturing establishments are increasing at about the same rate as at urban establishments with one exception: computer skills. This suggests that rural manufacturers are as willing as their urban counterparts to raise skill requirements to meet new economy production standards, an assessment supported by the fact that nearly as many rural manufacturers as urban manufacturers (21 to 24 percent) qualify as high-technology adopters.

Even more convincing, rural manufacturers overall have little more difficulty than urban manufacturers in finding applicants with specific skills (3 percentage points or less difference; table 2). And, these differences do not always favor urban areas; the difference in “basic reading” skills, for instance, favors rural areas.

Other RMS survey data have shown no difference between rural and metro areas in the overall incidence of problems finding qualified production workers, in the proportion of production workers judged adequate for their jobs, and in the importance attached to poorly skilled production workers as a motivation for increased training. When combined with those observations, the findings from the survey suggest that, if there is a problem with underskilled workers, it is probably a *nationwide* phenomenon not a rural one. Therefore, skill shortages among workers may be less a source of rural competitive disadvantage than a problem that manufacturers, regardless of location, have to address to prosper in the future.

The similarity in reported incidence of skill problems among rural and urban manufacturers, however, could reflect mostly an adjustment on the part of rural manufacturers to an inferior labor pool. These manufacturers may demand less of rural workers, hence their level of dissatisfaction does not exceed that of more-demanding urban employers.

This line of reasoning seems implausible, however, given that the level of high-adopting manufacturers (who presumably have higher skill demands) in rural and urban areas is roughly similar. And, even more telling, the incidence of skill problems among high adopters in rural and urban areas is about the same (if anything, slightly higher in urban areas). Thus, rural manufacturers do not appear to be demanding less of rural workers, nor do they appear to be more disappointed when they make high skill demands. All this supports the interpretation that rural and urban manufacturers face similar challenges in adapting their workforces to the new economy, rather than that rural manufacturers have a competitive disadvantage relative to urban areas.

Problems With Location and Worker Skills

About a third of the rural manufacturing firms surveyed cited a major problem with the quality of the labor pool at their establishment's location. Analysis of the survey data shows that, not surprisingly, skill requirements are rising more quickly, and major problems finding workers with specific skills are more common, at firms reporting these local labor quality problems.

But which of the seven possible skill problems (see table 2) play the strongest roles in creating an overall problem with labor quality? I used statistical models to compare the association of the different skill problems with overall labor quality problems. The factor most closely associated with labor quality difficulties is an inability to find workers with a reliable and acceptable work attitude.

The next most powerful factors leading to a local labor quality problem were problems finding workers with non-computer technical skills and, interestingly, workers with basic math skills. The latter problem, as discussed earlier, is not common, but these findings say that where it exists, it is an important influence on manufacturers' perceptions of labor market difficulties.

When the technologically high-adopting firms are singled out, the pattern of results is substantially different. While finding reliable workers continues to be the most powerful

factor, finding workers with adequate non-computer technical skills is almost as closely associated with a major labor quality problem. This underscores the additional problems high adopters apparently face in rural labor markets.

By region, the quality of available labor was the most widely-cited major problem with rural location everywhere except in the Northeast (fig. 1). Rural employers in the Northeast are also less likely to say they encounter general problems finding qualified applicants for production jobs and less likely to say they have problems finding applicants with specific skills, including a sharply lower reporting of problems finding workers with a reliable and acceptable work attitude. This suggests that rural employers in the Northeast require fewer skills, draw on better equipped workers, or avoid labor market problems by some other mechanism.

There is little evidence that skill requirements of rural employers in the Northeast are rising less rapidly than in the rest of the country; if anything, the reverse is the case though the difference is small. Nor do the data suggest that the educational qualifications of rural Northeast workers are much higher than elsewhere; instead their qualifications are about the same as those in the rural Midwest and West.

Where rural Northeast workers differ is in their rates of pay—they are paid significantly more than workers in other areas of the country. This may help explain rural Northeast manufacturers' comparative lack of labor market difficulties, particularly in terms of finding reliable workers. Higher pay probably facilitates access to the best workers and helps ensure their loyalty and reliability.

The Skills Challenge for Rural Development

These skills findings suggest that a conventional "skills shortage" diagnosis does not accurately describe the situation facing rural policymakers. First, though skill requirements are rising among both urban and rural manufacturers, particularly among high adopters of new technologies and practices, requirements are rising most rapidly for skills—computer, interpersonal/teamwork,

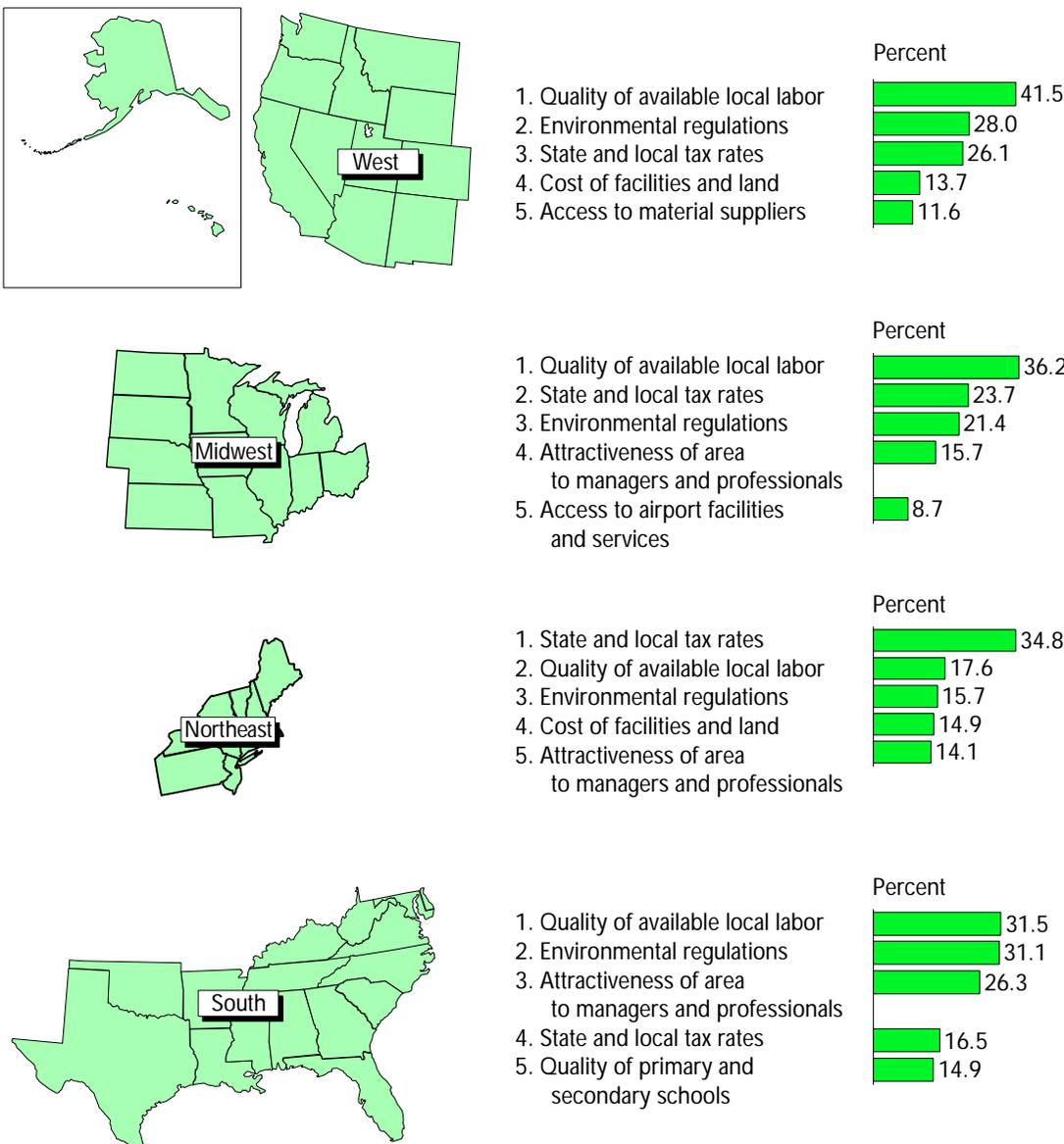
and problem-solving—that are not central to traditional academic instruction. Conversely, demand for traditional academic skills—reading and math—is rising least rapidly.

Second, despite rising skill requirements, manufacturers who reported major problems finding workers with specific skills are

relatively rare among both rural and urban manufacturers. Moreover, the most common problem was in finding workers with a reliable and acceptable work attitude, traits not usually considered skills and difficult to address through typical skill development programs. This suggests that the reported labor market problems of many rural manufactur-

Figure 1

Rural manufacturers reporting locational factors as major problems in their establishment's ability to compete, by Census region



Source: ERS Manufacturing Survey, 1996.

ers may have less to do with relative skill deficiencies than with problems attracting the best and most reliable rural workers, given prevailing wage rates.

But the survey data also suggest a critical skills challenge for rural areas. Among high adopters of new technologies and management practices, the demand for computer, interpersonal/teamwork, problem-solving and

other “new” skills is rising exceptionally rapidly. Such firms are much more likely than others to report major problems finding adequately skilled workers (although the problem is no greater in rural areas than in urban). This suggests that, in the long run, rural participation in the new economy depends less on remedial skill training for rural workers than in helping them acquire cutting-edge new skills.

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About the Survey

The data in this report are from a sample of rural and urban businesses in the 1996 ERS Rural Manufacturing Survey. The survey results are more comprehensive than those in previous studies of rural technology use, allowing researchers to evaluate barriers to technology adoption (as perceived by businesses).

The Rural Manufacturing Survey is a nationwide study of factors affecting competitiveness of rural and urban businesses. Telephone interviews were conducted with 2,844 rural and 1,065 urban establishments, representing all manufacturing industries.

To investigate issues of rural manufacturing competitiveness, the Economic Research Service, in cooperation with Washington State University, conducted a telephone survey of manufacturers, national in scope, but with a rural over-representation. We obtained 3,900 completed interviews from establishments which, together, employed over 2 million people. The survey response rate was about 70 percent. Our aim was to investigate issues of rural manufacturing competitiveness and enhance

the targeting of rural development programs at national, state, and local levels.

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