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HANDBOOK FOR ESTIMATION OF LABOR SUPPLY BY USE OF A COMMUNITY SURVEY.
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Techniques for estimating the labor supply in any locality from a town and its surrounding rural area to a county or multi-county area are presented. The labor supply in a community can be estimated by many means, including registrations of the unemployed, newspaper advertisements, and a census-type sampling survey of the population. Characteristics of each of these survey techniques are outlined briefly although the handbook discusses in detail only the sampling survey method, as it is the only low-cost method which can be used to get reliable estimates of a community's labor supply, both actual and potential. Five of the six chapters deal with constructing the community survey questionnaire, selecting the sample, administering the questionnaire, tabulating and analyzing the results, and estimating the costs involved. A sample community survey questionnaire is included. (ET)

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HANDBOOK

for

Estimation of Labor Supply by Use of a Community Survey.

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Without the assistance of the above mentioned people, this handbook would not have been possible; however, the opinions stated within are those of the author and are not necessarily those of any other person (or group) mentioned in this handbook.

CHAPTER I

INTRODUCTION

Why a Community Survey?

The following handbook is concerned solely with the estimation of the labor supply in a locality consisting of anywhere from a town and its surrounding rural area, to a county or multi-county area. It is not intended to be used for the estimation of the future demand for workers in a community. This latter problem would have to be approached from an entirely different view-point.

The labor supply in a community can be estimated by many means, including (1) registrations of the unemployed; (2) newspaper advertisements; (3) a census-type survey of the population; and (4) a sampling survey of the population.

Registration of the unemployed is a very inexpensive method of estimating the quantity and quality of labor in an area; however, it is also a very unreliable method. There is absolutely no way to insure that those who register constitute a representative sample of the population. This means that the registrations cannot be used to accurately reflect the labor characteristics of a population. In fact, the unemployed may possess among the lower of the labor skills in any area, and this method has nothing to say about the housewives, school youngsters, and farmers in the area who may be able to take part-time and full-time jobs under certain conditions.

Newspaper advertisements, containing blanks to be sent in by potential and/or actual workers, is a second inexpensive, but unreliable, method. There is no necessary correspondence between a labor market area and a newspaper's circulation area. Furthermore, there is no way to project the answers of the newspaper advertisement respondents to the population of the community. For example, if there are 20,000 people in a community and 1,000 people answer the advertisement, you cannot simply multiply the answer by 20 to get the population estimates of the labor supply. Only if everyone answered the advertisement could you make an accurate estimate of the labor supply from this method.

A census-type survey, a complete count of the population with respect to their employment characteristics, is the most reliable method that can be used, no matter what the size of the community. However, for most communities (even for small ones of a few hundred households) this method is far too costly. Fortunately, the principles of sampling allow one to get reliable estimates of a population by using only a sampling survey which costs a fraction of the census-type survey.

A sampling survey is a survey of a representative sample of the population in a community. The essence of this method is that a small portion of the population is selected in such a way as to yield results as good as the census-type survey, but at a cost within the reach of most communities. This handbook will be completely concerned with this sampling survey method,[1] as it is the only low-cost method which can be used to get reliable estimates

of a community's labor supply--both actual and potential.

A Word of Caution

Before a community undertakes a community survey, they should be sure that the information they are in need of cannot be estimated from existing government, or private, publications. The best source of labor supply statistics, by county and by state, is the Census of the Population undertaken by the federal government every ten years.[2] This source would be good for estimates of the civilian labor force, number of unemployed, and number of employed by major occupation group and by industry group. However, if a community wants this information updated, or if they want information on the potential labor supply (people currently outside the labor market but capable of being attracted into the market), then the community survey must be undertaken.

Finally, a community should read this entire handbook (and perhaps some of the references noted at the end of this publication), and plan every step of the survey, along with a cost estimate of every step, before any action is undertaken. Only then can a community decide whether the total costs involved in a survey will be outweighed by the value of the information derived.

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[1]The term "community survey" will always mean a "community sample survey" in this handbook.

[2]See U. S. Bureau of Employment Security, Handbook On Development of Basic Labor Market Information for Small Areas, Reprinted October, 1963, Bulletin BES No. R188, especially pp. 7-12.

Outline of the Handbook

The remainder of this publication is composed of chapters dealing with constructing the community survey questionnaire, selecting the sample, administering the questionnaire, tabulating and analyzing the results, and estimates of the costs involved.

CHAPTER II

CONSTRUCTING THE QUESTIONNAIRE

General Form of Questionnaire

In constructing the questionnaire to be used, a community should observe the following rules:[3]

1. The questionnaire should be as short and easy to fill out as possible. Needless questions should be eliminated before the interviews and not after, when the analysis of the answers is undertaken.
2. The anonymity of the respondents should be assured by not requiring a signature on the questionnaire.
3. The questions should proceed in a logical sequence and not jump from subject to subject.
4. The questions should contain only one major idea and should be so stated that different people would interpret them in the same manner. However, care should be taken not to state the question in such a way that a particular answer is implied by any question.
5. As a rule of thumb, it should not take the respondent more than one-half hour to complete the questionnaire. This

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[3]See C. Phillip Baumel, Daryl J. Hobbs, and Ronald C. Powers, The Community Survey, Iowa State University Press, November, 1964, Soc. - 15; and Kenneth E. Larsen and Everett L. Refior, Estimating the Labor Supply in a Rural Community, State University of Iowa, Bureau of Labor and Management Research Series No. 7 (1954).

would amount to a maximum of five to six typewritten pages of easily answered questions.

Sample Survey Questions

No untested questionnaire can ever serve for every possible labor supply survey. In one case, a community may be trying to attract a specific firm to a specific location, while in a second cas a community may just want general labor supply information to be used to attract any business firm in the market for a new geographical location. Thus, the following sample questions are meant only to suggest a starting point for developing a specific-purpose questionnaire. Wherever possible, the group undertaking the community survey should receive expert advice from a statistician (and an economist) in order to strengthen the questionnaire.[4]

These questions were compiled from the sources in footnote 3, and from The Facts on Labor, Clarinda Industrial Board, Clarinda, Iowa (1956-57). The Clarinda Labor Survey was undertaken using the method suggested by K. E. Larsen and E. L. Refior. At this point, it should be noted that the Survey Center at Iowa State University (Ames) would be a very good place to get expert advice on constructing a valid questionnaire. In fact, a check with the University of Iowa (Iowa City) confirms the statement that the Survey Center at Ames is the best place in Iowa today to get such advice.

(Name of Community) Labor Survey

The questionnaire should begin with a short, clear statement of the purpose of the survey. The anonymity of the respondent should also be assured.

1. Sex? _____ Man _____ Woman.

2. What is your present marital status?

   _____ Married _____ Single.

3. What age are you (last birthday)?

   _____ 14 to 19
   _____ 20 to 24
   _____ 25 to 34
   _____ 35 to 44
   _____ 45 to 54
   _____ 55 to 64
   _____ 65 or over.

4. What was the last grade in school that you completed?

   _____ 4th or lower
   _____ 5th to 8th
   _____ 9th to 11th
   _____ 12th (high school graduate)
   _____ 13th to 15th (attended college)
   _____ 16th (college graduate)
   _____ 17th or more.

5. Have you any vocational training other than high school and college (such as night school or correspondence courses)? (Please be specific).

   _____

   _____

6. What is your main activity?

   _____ Keeping House
   _____ Going to school
   _____ Working for wages, salary or commission
   _____ Running own business or profession
   _____ Operating farm (as owner or tenant)
   _____ Looking for work
   _____ Retired
   _____ Other (please specify)_____.

7. If you have a full-time job (40 hours or more per week), give the name of that job. (Please be very specific. If you drive a truck, write "drive milk truck," or "drive semi," etc. If you work in a factory, write "operate turret lathe," or "lathe operator's helper," etc.)

_____

8. List types of work you are experienced in that are not listed in questions 6 and 7 above.

Job_____

Years of experience_____

9. Please check the range which includes the total number of hours you usually work each week in all of the kinds of work you listed in question 7 and 8.

_____	Under 6		
_____	6 to 13	_____	38 to 41
_____	14 to 21	_____	42 to 45
_____	22 to 29	_____	46 to 53
_____	30 to 37	_____	54 or over.

10. How many weeks out of the year do you usually work?

_____.

11. Please check the range which includes your average total earnings per week from all the kinds of work in questions 7 and 8. (If you do not receive wages weekly, please take 1/50 of your annual earnings.)

_____	Under $10.00	_____	$70.00 to $79.99
_____	$10.00 to $29.99	_____	$80.00 to $89.99
_____	$30.00 to $39.99	_____	$90.00 to $99.99
_____	$40.00 to $49.99	_____	$100.00 to $119.99
_____	$50.00 to $59.99	_____	$120.00 to $149.00
_____	$60.00 to $69.99	_____	$150.00 or over.

12. Please state the occupation for which you think you are best fitted._____

13. Where is your present work located?

_____ Not Employed at present
_____ On farm
_____ In town (please name town)_____

14. Would you consider accepting a part-time job in addition to what you are doing now? If so, for how many hours? (Please check one)

_____ Would not consider it
_____ 7 or less
_____ 8 to 11
_____ 12 to 15
_____ 16 to 19
_____ 20 to 23
_____ 24 to 27
_____ 28 to 31
_____ 32 or more.

15. If a new industrial plant was built in (name of town), would you take a full-time job in this plant?

____ Yes ____ No

16. What kinds of work in (name of town) would you accept?

_____ Production work in a factory
_____ Managerial work
_____ Office work
_____ Selling
_____ Paid housework
_____ Other (Please specify)_____
_____ Already working in (name of town)
_____ Wouldn't accept a job there.

17. How much pay per week would you need before you would take a job in a new industry in (name of town)?

_____ $40.00 to $49.99
_____ $50.00 to $59.99
_____ $60.00 to $69.99
_____ $70.00 to $79.99
_____ $80.00 to $89.99
_____ $90.00 to $99.99
_____ .00.00 to $119.99
_____ $120.00 to $149.99
_____ $150.00 or more
_____ Wouldn't take the job there.

18. Which of the following conditions would be necessary in order for you to take a job in a new industry in (name of town)?

_____ No special conditions necessary
_____ A certain kind of job
_____ A certain kind of industry
_____ Special hours of work
_____ Slack season in my regular work
_____ Someone to help care for children or dependent adults
_____ Other reason (please specify)_____
_____.

19. If you were to take a job in (name of town), which of the following arrangements would you prefer?

_____ Moving permanently to (name of town)
_____ Driving daily from present home
_____ Rooming there during the week
_____ Already live there
_____ Other (please specify) _____.

(If you are presently looking for a job, please answer questions 20 and 21. If you are not looking for a job now, you may stop here.)

20. How long have you been without a job and looking for work? (Please check one)

_____ Less than 2 weeks
_____ 2 to 6 weeks
_____ 7 to 13 weeks
_____ 14 to 26 weeks
_____ 27 weeks to 1 year
_____ 1 to 2 years
_____ Over 2 years.

21. Are you registered with your nearest office of the Iowa State Employment Service?

_____ Yes _____ No.

Thank You For Your Cooperation!

Occupation Titles

The above sample survey will have to be altered depending on the particular community involved and the exact goal involved. One possible alteration of the survey could be including an occupation list attached to the survey in order to make the answering of questions 7, 8, and 12 easier (and perhaps more uniform). This would be especially useful where a new plant is planning to move into the community, and is particularly interested in certain occupations. In the latter case the occupation list would have to be devised in consultation with the business firm. However, in the general case an occupation list would have to be developed by the interviewing group.

One very useful source of occupation titles, which are also growth occupations in Iowa, is Job Opportunities for Iowa's Youth.[5] This publication is not meant to list all the possible occupation titles that exist, but only those which are either growing or declining in the state of Iowa and the United States. The use of such a listing would enable the community to check its labor characteristics against state-wide and nation-wide trends.

Pre-Testing the Questionnaire

No matter what the final form of the questionnaire, it should

[5]Edward B. Jakubauskas, Job Opportunities for Iowa's Youth, Iowa State University Press, Special Report No. 46 (February, 1966), especially pp. 7 - 12.

always be pre-tested before being used. Pre-testing consists of using the questionnaire on a group of twenty or thirty people (outside the geographical area in which the labor survey will ultimately be taken). The goal of such a pre-test is to eliminate useless questions and correct any problems of interpretation.

As was noted before the advice of a statistician would be extremely helpful in constructing a valid questionnaire. The advice would probably be most useful after a first draft of the questionnaire is completed, and again after the pre-testing. Such advice should come from the statistician selecting the sample for the survey.[6]

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[6]See Chapter III of this handbook.

CHAPTER III

SELECTING THE SAMPLE

Random Sampling[7]

A sample survey's principal advantage is the saving in time, and therefore expense, involved in interviewing much fewer respondents than a census survey. However, in order to give valid results for the population, the sample must be a random sample (or probability sample). That is, each respondent chosen from the population to be in the sample must be chosen in such a manner that each respondent in the population has a known chance of entering into the sample.

In order to insure a random sample the selection of the sample must be completely independent of human decision. The statistician achieves this goal by first constructing a frame--a list (or map) containing all the possible respondents in the population. Then the frame elements are numbered and the sample drawn at random.

Once all the rules of random sampling are met, then a small sample can accurately reflect the characteristics of the population. However, if any of the principles of random sampling are violated, then the sample results cannot be used to reveal the characteristics of the population. Thus, the advice of a statistician for selecting the sample is invaluable.

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[7]For a good discussion of the principles of random sampling, see John I. Griffin, Statistics, Holt, Rinehart and Winston (1962), especially Chapters 2, 8, and 9

Actual Selection

At tnis point a statistician's services must be employed by the community. If such services can be gotten from witnin the surveying group at no cost tnen this is fine. If such services are not available then the single best source is the Survey Center of Iowa State University (Ames).[8]

The cost of selecting a valid random sample can be very high unless the community is willing to undertake any necessary "groundwork" in building the population frame (with the supervision of a statistician), and only have the statistician do the actual sample selection.

The frame is built for most cities and towns with a City Directory. For smaller towns and open rural areas, the aerial maps of the U. S. Department of Agriculture would work fairly well. The Survey Center at Ames has this type of information for all parts of Iowa. In some cases the information they have would be sufficient to select the sample (at a fairly low cost) with no "groundwork." In the case where an actual count of households is needed for an area (in order to update and validate available maps or directories), then the

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[8]For cost estimates see Chapter VI of this handbook.

[9]Such as those published by the R. L. Polk Company of Kansas City. One usually exists for cities and towns of 7,500 or more people.

cost would increase unless the community would undertake this job themselves.

The Survey Center will select the sample in such a way as to insure valid results. Moreover, the sample will be weighted so that the community can easily turn the sample results into population data.

As was mentioned in the previous chapter, the Survey Center will also help the community refine the questionnaire to be used in the sample survey.

Estimates of Sample Size

When the statistician selects the sample, he of course will vary its size relative to the size of the population. In order to give the reader an idea of the sample size needed for various population sizes, the following table is included. But remember that these are only rough estimates; a statistician must study the exact population involved in each case and determine the actual sample.

Estimates of Sample Size[10]

Total Number of Households	Number of Households in Sample	Total Number of Households	Number of Households in Sample
300	171	3,000	353
400	200	4,000	364
500	222	5,000	370
700	255	6,000	375
900	277	7,000	378
1,000	286	8,000	381
1,500	316	9,000	383
2,000	333	10,000	385

[10]See Table 2 in C. Phillip Baumel, etc., The Community Survey, ..., p. 19.

CHAPTER IV.

ADMINISTERING THE QUESTIONNAIRES

Method of Distribution and Collection

The questionnaires can be distributed (and collected) by either mail, telephone, or personal interview. A telephone survey is only good if the questionnaire consists of one or two simple questions. For a thorough labor supply survey, a telephone canvass is useless. A mail survey would be better than a telephone survey, but will mean a low percentage of returns. In fact, the percentage return would be so low as to bias the sample results and make population estimates from the sample results unreliable. Again, a mail questionnaire, like a telephone one, could only succeed with an extremely short questionnaire--and not with a thorough labor supply survey.

Thus, for a labor supply survey of the type discussed in this handbook, only a personal interview would generate enough respondents to make the sample results valid as population estimates. The personal interview technique should be used for both the distribution and collection of the surveys. In fact, if the questionnaire isn't too complex, then it would be best for the interviewer to have the person he contacts in the household fill out a survey for each person 14 years of age or older in the household. This would insure a 100% return for every household contacted--where at least one adult was present. If the latter method is found to be infeasible, then the interviewer can leave the questionnaires (one for each member in the household), and then make an appointment to come back and pick up the completed questionnaires.

Paid vs. Volunteer Interviewers

For best results the obvious choice is to use paid (professional) interviewers--such as those available through the Survey Center at Ames. However, this would put the costs of a labor survey well out of the financial reach of most communities. Thus, the use of volunteer interviewers[11] may in reality be the best choice available to a community. The savings in money should far outweigh the poorer results that volunteer interviewers will bring in, as opposed to the results brought in by professional interviewers.

If volunteer interviewers are to be used, then this information must be given to the statistician drawing the sample, since this will have a bearing on whether the sample will include substitutes for households where no one is at home when the initial interview-contact is made. As a general rule, the sample and the questionnaire should be kept as simple as possible when volunteer interviewers are being used, and no substitution of households in the sample will be allowed. This latter point will help determine the size of the sample, but only a statistician can make the final decisions as to the sample's dimensions.

Interviewing Instructions

When professional interviewers are used, then all the community

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[11] Such as members of a Junior Chamber of Commerce. See K. E. Larsen, etc., Estimating the Labor...; and The Facts on Labor, Clarinda..., p. 2.

must supply is their salaries and the questionnaire. However, whe volunteer interviewers are used, then it is best to hold at least training meeting for the volunteers before the survey is undertake At this meeting, the interview assignments can be made (and record to keep track of the questionnaires), and the interviewers can be given instructions as to the proper procedure to distribute and pi up the questionnaires.

The following is a general guide[12] for instructing volunteer interviewers:

1. Explain the reason for the survey to the respondent.
2. Stress the anonymity of the respondent.
3. Stress the need for 100% return from the sample in order to allow valid population results.
4. Have the head of the household fill out the questionnaire for each member of the household (14 years of age or olde or, if this is not possible, leave the questionnaires and make a definite appointment to call back to pick up the completed questionnaires.
5. Interview only the housenolds in the sample. If no one i at home, call back again at a later time. Do not make su stitutions.[13]
6. Explain carefully to each respondent how to complete the questionnaire.

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[12]See C. P. Baumel, etc., The Community Survey..., Chapter V; and K. E. Larsen, etc., Estimating the Labor..., p. 37.

[13]This rule could be modified by the statistician drawing the sample.

7. If a respondent refuses to cooperate, give him a little more detailed explanation of the reason for the survey, the sponsoring groups and the need for good response from the sample. Stress his anonymity. If he still refuses, thank him and leave. Never lose your temper!
8. Try to distribute and collect all the questionnaires in a one-week period.

As a rule of thumb, there should be one interviewer for every ten to fifteen households in the sample and, of course, these households should be in as compact an area as possible for each interviewer. Finally, each interviewer should be given official identification in order to insure as much cooperation from the respondents as possible.

Publicity

The best interview results will be obtained if there is some publicity (explaining the survey's goals and methods) just before the interviewers are sent out. This publicity can be in the form of newspaper advertisements, local radio spots, or even local television announcements, and should inform the population of the date the questionnaires will be distributed.

CHAPTER V

TABULATING AND ANALYZING THE RESULTS

Tabulation

The tabulation of the sample data consists of editing, coding, and tallying. It can be done either by computer or manually; however, for most community labor surveys the tabulation has to be done manually by volunteer workers because of the savings in cost.

Editing consists of reading the questionnaires to make sure that all the questions were answered as intended. For example, if one question called for average weekly wage and the person answered "$5,000 a year," then this answer should be changed to "$100 a week" in order to make it compatible to the other questionnaires.

Coding consists of substituting a number for a word answer. For example, in question 3 of the sample questionnaire (in Chapter II of this handbook) a number (one through seven) is assigned for each of the seven possible answers. Now a computer could be used to record the answers to question 3., or it can still be done manually, but now the coding eliminates the need for recording lengthy answers to questions.

Tallying consists of recording the answers to each question so that they can be totaled. This completes the tabulation.

The above process of tabulation can be handled by turning over all the questionnaires to the Survey Center at Ames. However, this can involve a high cost--especially since the editing must be done

by hand. In order to keep the costs low, the community group could do the editing (and any coding). However, once this is done the tabulation costs could become zero by having volunteer workers do the tallying. A computer would, of course, be extremely fast, but manual tallying, for most community labor surveys, would not be too complex a job and, with careful checking of the results, can be as accurate as the computer.

Analysis

When the statistician sets up the sample, he will weight it so that the population estimates can be gotten directly from the tabulated sample data. He will also instruct the community group on the range of accurateness that can be expected if the interviewers bring in well-completed questionnaires and the tabulation is done carefully. Remember, a sample interview always involves some error in its population estimates, so the community group doing the survey must make every attempt to follow the statistician's instructions fully and cover as close to 100% of the sample as is possible. This will insure small errors and therefore valid population estimates.

With the tabulation done (and carefully checked), the population estimates can now be displayed in table form. One of the simplest methods is to take a blank questionnaire and record the total population estimates for each answer to each question in the proper place on the questionnaire.[14]

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[14]See The Facts on Labor, Clarinda..., pp. 3-4.

Another method would be to simply make a separate table for each question, so that if the sample questionnaire (in Chapter II) was used then tables could be made showing the distribution of the adult (14 years of age or over) population in the community by sex (question 1.), marital status (question 2.), age (question 3.), education (question 4.), occupation (question 7.), weekly earnings (question 11.), willingness to work in (name of town) (question 15.), conditions necessary to accept work in (name of town) (question 18.) etc.

With the survey completed and the data analyzed, the community group which sponsored the labor supply survey could now publicize the findings and try to achieve the original purpose of this survey. This purpose will usually be to attract new industry to the community based upon the particular quantity and quality of the labor available in that community.

Publicity can be best achieved by publishing the data in an attractive booklet form, and releasing the data, in the form of news stories, to local mass media.

CHAPTER VI

COST ESTIMATES[15]

Professional Services

What could a community expect to pay if a sample survey was done completely by a professional group such as the Survey Center at Iowa State University?[16]

The first cost would be that cost associated with the drawing of the sample. For most counties in Iowa this would amount to $300 (if the community did all the necessary block counts for households), or about $500 (if the Survey Center had to do the counting).

The next cost would be the interviewing. The use of professional interviewers would cost close to $2,500. Finally, the cost of data processing (including editing, coding, and table making) would be approximately $1,000; with overall supervisory costs at about $300

Thus, the complete use of professional services to perform a valid sample survey in an average Iowa county would be about $4,300. This amount of money would guarantee a professional job with almost no work required of the sponsoring community group--except for the writing and distribution of the final report of course.

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[15]These estimates are based upon cost estimates made by Professor Norman J. Strand of the Survey Center, Iowa State University.

[16]These cost estimates are based on the assumption that a questionnaire is already available. This is probably a good assumption because, once such a labor supply questionnaire was developed, it could be used over and over at no additional cost.

Volunteer Services

What could a community expect to pay if they were able to suppl volunteer workers?

The sampling cost would be about $300 for an average Iowa count with volunteer workers to do any necessary block counts for households. The interviewing and data processing costs would depend entirely upon the services available within the local community. That is, with complete volunteer service these costs would be zero, but they obviously could be positive if the sponsoring group decided to make token payments to the volunteers.

Summary

For the best results, a community should invest approximately $4,300 into the labor supply study by getting the Survey Center to supervise the sample survey.

If this investment is too large, then the community should provide any necessary block counters and volunteer interviewers in order to cut the cost of the sample survey to approximately $1,600 (which includes selection of the new sample, data processing and overall supervision).

Finally, if even this investment is too large and the community still wants local labor supply estimates, then the cost could be reduced to about $300 by having everything but the selection of the sample done by volunteer workers.

However, if valid labor supply estimates are desired, then it is best to have as much done by professional workers as possible. The sample selection must be done by a statistician. The data processing can be done by careful volunteer help, but should be done wherever possible by professional help. And finally, the interviewing should be done professionally, but is the first step in the sample survey that can be taken over by volunteer workers when the budget is limited. But remember, volunteer workers should be closely supervised and continually urged to do as careful a job as possible in order to have valid estimates when the survey is completed.

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