METHODOLOGIES USED IN MEASURING NEED

The discussion of such concepts as at-risk populations, estimations of need, and data availability in the previous chapter underscores the fact that needs assessment is more than just the application of technique in a predetermined cookbook fashion. Furthermore, just as we discussed four different but complementary perspectives on need in Chapter 4 (normative, perceived, expressed, and relative), we find that there are different methodologies available as we attempt to measure need. Each of these, however, has its own strong and weak aspects, and program planners need to be aware of these as they consider what resources are available for the needs assessment, how soon the assessment has to be completed, and how accurate or precise the assessment has to be. Six methodologies are explored in this chapter: (1) extrapolating from existing studies, (2) using resource inventories, (3) using service statistics, (4) conducting a social survey, (5) holding a public forum, and (6) focus groups.

EXTRAPOLATING FROM EXISTING STUDIES: NORMATIVE NEED

All too often, program planners assume that any attempt to assess need must be based on primary data sources (i.e., data they themselves collect). In doing so, they ignore the value of using secondary sources (data collected by others in other geographical areas or for other purposes). In ignoring secondary sources, planners often confuse specificity with accuracy—thinking, for example, that because the studies were not carried out in their county they cannot accurately describe their situation. Not only can these studies be useful, they often provide the most efficient and effective strategy for assessing need when time and resources are factors.

Furthermore, the number and subject matter of these studies cover most of the issues of concern to local communities. For example, the National Center for Health Statistics (NCHS; www.cdc.gov/nchs) is one of four general-purpose statistical agencies of the federal

government charged with collecting, compiling, analyzing, and publishing data for general use. The other three are the Bureau of Labor Statistics (www.bls.gov), the Census Bureau (www.census.gov), and the Department of Agriculture's National Agricultural Statistics Service (www.nass.usda.gov). Within the NCHS, the Health Interview Survey is one of three major survey programs, the other two being the Health Examination Survey and the Health Records Survey. These surveys provide estimates of the prevalence of specific diseases and disability in the United States. For example, national surveys have been carried out in this country and others that estimate a prevalence rate for the severely mentally disabled of 3 per 1,000 population, with more age-specific prevalence rates of 3.6 per 1,000 persons under 15 years of age and 2.2 per 1,000 persons aged 15 and over. Application is then fairly straightforward. Table 5.1 presents an example of a hypothetical county's age distribution.

The number of those in Franklin County's population under the age of 15 is 111,521. When we apply the prevalence rate of 3.6 per 1,000, we can conclude that the number of severely mentally disabled children is approximately 400 (111,521 × .0036). Similarly, the number of people in the county aged 15 and over is 388,388. When we apply the

Table 5.1 Age Distribution, Franklin County

Age	Male	Female	Total
0–4	17,896	17,072	34,968
5–9	18,891	18,025	36,916
10–14	20,273	19,364	39,637
15–19	20,103	19,338	39,441
20–24	17,411	17,124	34,535
25–29	15,641	15,811	31,452
30–34	16,951	17,304	34,255
35–39	19,061	19,835	38,896
40–44	19,448	20,343	39,791
45–49	17,630	18,463	36,093
50–54	15,544	16,429	31,973
55–59	11,834	12,824	24,658
60–64	8,876	10,120	18,996
65–69	7,639	9,553	17,192
70–74	6,402	8,935	15,337
Over 74	8,851	16,918	25,769
Total	242,451	257,458	499,909

prevalence rate of 2.2 per 1,000, we can conclude that the number of severely mentally disabled people aged 15 and over is approximately 855 (388,388 × .0022). The total number across all ages would be approximately 1,255.

There are also special topic surveys covering such areas as child abuse (e.g., the National Center for Child Abuse and Neglect, www.childwelfare.gov), children (e.g., Hobbs, 1975), the elderly (e.g., www.aoa.acl.gov/Aging_Statistics/index.aspx), and mental illness (e.g., www.nimh.nih.gov/health/statistics/index.shtml). The prevalence rates in these surveys can be useful for estimating need and for serving as benchmarks against which proposed targets can be measured.

Strengths and Limitations of Surveys

Two important qualifications need to be introduced at this point. First, it must be noted that the data from these surveys will not be specific to the geographic area of concern. Before the rates can be applied, differences in population characteristics must be weighted. For example, most prevalence rates are age and sex specific; that is, different rates are given for different groupings. Functional status and ability are highly correlated with age. The elderly, for instance, are much more likely to be physically disabled. Yet an overall rate for the population over 65 years of age can be misleading. Program planners need to apply differential rates—that is, rates for the "frail elderly" (those over 75 years of age) as well as rates for the "young elderly" (those 65 to 74 years of age; see Table 5.2). This refinement will generate more sensitive and precise estimates.

Table 5.2 Impairment and Disability, by Age (Rates per 1,000)

Age	Very Severely Disabled	Severely Disabled	Appreciably Disabled	Total
16–29	0.46	0.41	1.02	1.89
30–49	0.86	2.28	4.18	7.32
50–64	2.65	9.59	16.47	28.71
65–74	8.28	23.99	50.67	82.94
> 74	33.91	52.95	74.90	161.76
Total	3.47	7.68	13.37	24.52

Source: Adapted from Harris, A. (1971). *Handicapped and impaired in Great Britain.* London: HMSO; see Moroney (1986) for a discussion of the methodology and definitions of terms.

The next task is to apply these rates to our own data (Table 5.1). Table 5.3 provides estimates only for the total number of the disabled as an example of how the rates might be applied to a local community.

A second caveat is related to the definitions behind the estimated rates. How is the condition operationally defined? For example, a number of epidemiological studies over the years have suggested wide-ranging estimates of the number of people who have suffered mental illness.

Table 5.3 Estimates of Persons With Disabilities, Franklin County

Age	No.	Rate per 1,000	No. Handicapped
16–29	105,428	1.89	190
30–49	149,043	7.32	1,088
50–64	75,627	28.71	2,170
65–74	32,529	82.94	2,167
> 74	25,769	161.73	4,167
Total			9,782

- 1930s: A study by the United States Public Health Service estimated that 3.5% of the population experienced mental illness (National Resources Committee, 1938).
- 1960: Leo Srole (1962) estimated that 40% of the residents of New York City were experiencing mental health problems.
- 1978: The President's Commission on Mental Health (1978) estimated that 10% of the population experienced mental health problems.
- 1998: Applying the *Diagnostic and Statistical Manual of Mental Disorders* definitions, it was estimated that 18.5% of the population experienced mental health problems (Tonja, Overpeck, Ruan, Simons-Morton, & Scheidt, 2001).
- 1999: The Surgeon General reported a mental illness prevalence rate of 20% (U.S. Department of Health and Human Services, 1999).

Although all five studies used the term *mental illness*, they used different definitions. In the earliest study (done in the 1930s), assessment tools were primitive, and only the more seriously and obviously ill would have been counted. Srole, a sociologist, built his assessment largely on Durkheim's notion of anomie and related that to signs of depression. The President's Commission estimates were based on an analysis of existing studies that used more stringent criteria than the earlier studies, and the final two were similar in their estimates.

On a theoretical level, none of these studies is more *correct* than the others. The program planner must choose the study that incorporates definitions that are the most meaningful for program development in his or her community. To use only prevalence rates and not evaluate the appropriateness of definitions can be dangerous. The definitions used must correspond to the specifics of the planned intervention.

A complementary approach to the above also addresses the category of normative need and is based on professional or expert judgment. In the previous chapter, for example, we introduced the *New Jersey Plan for Physically Abused Women and Their Families* (Department of Human Services, 1978). Rather than relying on the published document, we could have invited someone from the program to translate the New Jersey system to our community. His or her expertise would not be in the processes of planning or administration, but would be in a specific substantive area such as family violence. Such specialists are likely to be most

familiar with existing surveys and relevant research in their area of expertise and are usually in a position to propose specific strategies and suggest reasonable levels of service provision.

The strengths of expert judgment are numerous. Costs are likely to be reasonably low (consultant fees can be as low as $800 per day to $1,000 per day), and the time required is likely to be short. The planning effort will benefit in that parameters of need are established by recognized experts, so the credibility of subsequent budgetary requests will be fairly high. Although the limitations of using experts are considerable, they tend to be subtle.

Professionals, even experts, are often biased and at times view problems through a form of tunnel vision. In fact, the very successes that have gained them recognition can limit their problem-solving abilities should they take on the attitude that experience has provided them with the "solutions" before any new analyses are undertaken.

For example, we estimated that of the 25,769 elderly persons in Franklin County 75 years of age and over, 13,710 were persons with disabilities. Expert A might recommend a home care program with a public health nursing emphasis; Expert B might suggest a new program with a strong case management focus; and Expert C might propose a program based in the local senior center that would provide both nutritional and social interaction services. Each of these experts brings recommendations with him or her, and this is to be expected.

To counter this possibility, such consultations should be initiated only after a basic programmatic strategy has been outlined by the planning staff: community support services, residential care, respite care, nutritional programs, and so on. Consultants, then, are relied on to offer suggestions based on their substantive expertise: estimating numbers at risk, establishing feasible targets, and designing relevant programs or interventions.

USING RESOURCE INVENTORIES: NORMATIVE NEED

A resource inventory is basically a mapping strategy in that it attempts to amass a considerable amount of information so that the total system can be identified and its boundaries established. The inventory usually begins with an identifiable at-risk population group, such as the aged, single-parent families, persons with mental illness, or persons who have substance problems. Program planners attempt to identify all agencies, public and private, that offer service to these subpopulations. To carry out an inventory (for planning purposes) requires going beyond a simple listing. Optimally, this activity involves the development of discrete and meaningful categories so that services can be grouped by function and purpose, by the eligibility criteria they use (in a standardized format), and by their perception of their overall capacity to meet greater demand.

Table 5.4 presents an example of the type of form that might be used as the first step in conducting a resource inventory attempting to identify and assess the capacity of a community system for women who have been abused. In this example, all agencies that possibly offer services to these women in Franklin County are contacted (more often than not by phone) and asked whether they offer any of the services listed on the form.

The interviewer (a) checks those services provided by the agency and (b) asks the respondent whether the agency is in a position to meet the needs of all who request that

service, as well as meet the agency's eligibility criteria, or whether it has waiting lists or refers clients to other resources. The information in Table 5.4 shows that the Franklin County Community Action Agency offers six of the listed services. Moreover, it has sufficient resources to provide information/referral, employment referral, and housing assistance to all who have requested assistance in those areas, and although it does offer legal services, individual counseling, and case management services, it is not able to provide these services to all who request them.

Following this analysis, the information is aggregated by service. The planners are in a position to document how many agencies in Franklin County are providing transportation services, counseling, information/referral, and so forth. This is the planner's equivalent of the geologist's surface survey. After program planners have completed this phase, they are in a position to collect more detailed information from each agency providing services to the population.

Strengths and Limitations of Resource Inventories

The critical problems in developing resource inventories are in the areas of standardization and of applying mechanisms to reduce definitional disagreements. What is "case management"? What is "counseling"? Do all service providers define the activity the same way? We have found that it is not uncommon for agencies to use the same

Table 5.4 Resource Inventory, Franklin County Services for Women Who Have Been Abused, Franklin County Community Action Agency

Service	Available and Adequate	Available but Inadequate	Not Available
Transportation			×
Case management		×	
Individual counseling		×	
Legal services		×	
Group counseling			×
Employment referral	×		
Housing assistance	×		
Job training			×
Information/referral	×		
Crisis financial assistance			×
Self-help groups			×
Parent education			×
Crisis counseling			×
Socialization/recreation			×

terminology but carry out quite different activities under those headings. Many communities have resolved this problem by designing a taxonomy of common terms covering problems, needs, and services. This was partly a response to purchase-of-service contract requirements and partly a realization that without such a system, effectiveness-based program planning on a community-wide basis would be impossible.

Through the resource inventory, the program planner is in a position to evaluate whether the existing system is functioning to capacity, whether specific agencies in the system are capable of serving more people, and whether there is an overlap of services. This assessment may result in the conclusion that there is a need for growth and expansion or, just as likely, that better coordination can meet increased demand. For example, rather than each agency providing case management services or information and referral, agreements for sharing this function might be negotiated, thus reducing the need to develop more of these services.

It is useful to include a survey of service providers under the heading "Resource Inventories." Asking service providers to identify the problems or needs of at-risk groups is quite different from both asking people themselves what their needs are and analyzing utilization data. A survey of providers generates statements of normative need—what the providers consider the problems to be—based on their day-to-day practice. In that many new initiatives are likely to build on the existing system (i.e., modification and/or expansion), program planners seek more than the opinions of the existing human service leadership. Indirectly, these providers are invited to become members of the planning team, a strategy that could potentially generate a sense of cooperation and reduce the likelihood of domain or turf protection when the implementation stage is reached. A resource inventory may provide formal information on the system, but the provider survey may give insight into the real capacity of the system to change.

Finally, it is important to recognize that service providers are likely to make recommendations based on their knowledge of consumers and not necessarily based on the nonuser population. This perspective emphasizes demand and not need. Despite this limitation, the information received can be extremely useful for needs assessment as long as those analyzing the findings understand the context in which the data were collected.

USING SERVICE STATISTICS: EXPRESSED NEED

Using service statistics involves analysis of utilization data, which builds on the previous activity, the inventory of resources. Whereas the task in the previous section was to identify whether an agency was providing services and, if so, whether that provision was adequate (the agency was expected to respond yes or no in Table 5.4), the program planner now uses that information as the basis for collecting service reports from direct-service agencies. The reports provide a rough measure of agency effort expended and are valuable for the maintenance of support activities and for establishing monitoring procedures. These data, often referred to as *utilization data*, reflect activity under each category or service of the inventory (Table 5.5), such as transportation, counseling, and legal services, and are descriptive of (a) who was receiving, (b) what, (c) from whom, and (d) at what cost.

Table 5.5 Service Utilization Survey, Franklin County Community Action Agency

Service	Number of Clients Served per Month	Number of Units Delivered per Month	Cost per Unit
Transportation	50	225	$18.75
Case management	20	30	$40.00
Individual counseling	25	25	$37.50
Legal services	5	5	$25.00
Group counseling	15	15	$20.00
Employment referral	75	100	$18.75
Housing assistance			
Job training			
Information/referral			
Crisis financial assistance			
Self-help groups			
Parent education			
Crisis counseling			
Socialization/recreation			

Note: One unit is defined as follows: legal services = 30 minutes; information/referral = 15 minutes; case management = 15 minutes; individual counseling = 1 hour; employment referral = 30 minutes; housing assistance = 30 minutes.

Following the initial resource inventory, the Franklin County Community Action Agency was asked to generate more detailed information on the six services it offers to women who have been abused. These data identify the number of clients served in an average month, the number of units of specific services provided, and the cost per unit of service. As with the initial data (Table 5.4), these data can be aggregated across agencies, giving the planner a fairly comprehensive picture of capacity of the current "human service system."

The "who" data describe the characteristics of the utilizers. Although in theory all agencies in this example would provide services for our target population, services may be restricted to a subset of women who have been abused, whether it is defined by age, presence or absence of teenage members, family status, or income. Or within an agency some services are more likely to be targeted to one subgroup, whereas others are targeted to another. For example, basic training for employment may be given to those with no prior employment experience, while more advanced training would be given to those women with work experience, and support groups may be available to all.

The "what" data describe not only the services provided but also the volume of those services. How many units of services are provided to what types of clients with what type of problems over some agreed-on standard period (e.g., monthly, quarterly, semiannually,

annually)? For example, we might find that one agency provided 45 hours of parent training to 30 families over a 15-week period, while another provided 30 hours over this same period.

The "from whom" data document staffing ratios or caseloads. The average caseload for a caseworker providing counseling services might be 15, whereas that for a case manager might be 25.

The "at what cost" data are gross financial data that can be used to demonstrate the level of commitment for a specific service across agencies and to extrapolate the level of resources that might be necessary if services were to expand. For example, we found that one agency in an average month provided 30 counseling sessions to 20 abused women. The agency spent $27,000 annually for this service (this includes both direct and indirect costs), or $2,250 per month. Using this as a base, we can derive a unit cost of $75 per session ($2,250 ÷ 30). These concepts are discussed in greater detail in Chapter 13.

In using this approach to a resource inventory, program planners are now in a position to aggregate the above data across agencies and produce a comprehensive picture of services currently being provided by the human service delivery system at the community level.

Strengths and Limitations of Service Statistics

The obvious advantage of this approach is the availability and accessibility of the data, assuming that the issue of confidentiality can be resolved. It is clearly more economical in terms of resources and time to rely on existing data than on newly collected special survey data. Needs assessment using available data can be described as a "low-profile" activity that minimizes the potential problem, already discussed, of increasing expectations among recipients or potential recipients. Furthermore, agencies will have data that cover extended periods of time, thus allowing the planner to analyze trends in service delivery and demand.

The major limitation of service statistics is that they do not provide adequate data about *prevalence* or *unmet need*—data that are essential for effectiveness-based program planning. From a planning perspective, the practice of using data that are descriptive of service utilizers and those on the waiting lists to "plan" for the total population is fraught with danger. In fact, it is possible that the characteristics of the groups are markedly different, and often these differences are what determine utilization.

Waiting lists are affected by actual service provision. For example, in one community, waiting lists for residential care placements had remained fairly constant over a 10-year period. Although there had been significant increases in resources over that period, these facilities were always operating at full capacity. As more places became available, they were filled from the existing waiting lists; as people moved from the waiting lists, their places were filled by others. Although the factors associated with this situation are complex, one reason was that increases in service provision raised expectations, and this, in turn, was translated into demand. If it is known that there are limited resources and that the waiting lists are lengthy, many people will see no value in even applying for help. If, on the other hand, people find that additional services are available, they are more likely to apply. This is precisely what happened in England in the early 1970s. One local authority was approached by a few women who sought help in leaving an abusive situation. The agency, not knowing the extent to which this was a problem, agreed to set up a small shelter to provide these women with a safe place to stay. Once the shelter opened its doors, more and more women sought help.

Service statistics do, however, have value. Utilization data can be used to identify the characteristics of the subpopulations in contact with the human services agencies: who they are, where they live, the types of services they receive, and the extent to which they are helped. These data can be used to assess the capacity of agencies to deliver services and, if the program planners anticipate increased demand, the capacity to expand.

Such information can produce census lists, admission and discharge statistics, and other types of population reports useful for planning and policy formulation. It is then possible to extract information indicating trends in caseloads, client characteristics, and program needs for forecasting and research activities. Such information can also provide the basis for examining the treatment process. As information on individuals and families is accumulated, it becomes possible to identify service needs for total populations and potential caseloads. It also becomes possible to determine cost patterns incurred in providing services to recipient groups with common problems or needs and, as a result, to offer a more rational basis for adjusting priorities and program plans.

CONDUCTING A SOCIAL SURVEY: PERCEIVED NEED

Of all the approaches, the social or community survey is, in many ways, the most powerful method available for assessing need. In that it is concerned with collecting information from people residing in the community, it provides original data tailored to the specific needs of the geographic area in question. Furthermore, it is the one strategy that can produce information on the attitudes of consumers and potential consumers.

The social survey usually has two foci: (1) the identification of the respondent's perception of need and (2) the determination of knowledge about existing services. Both are important for planning. The first provides information useful in the delineation of targets; the second may identify barriers to utilization, whether financial, physical, or attitudinal. Information about these barriers might indicate a need not only for a particular service but also for various supportive services (e.g., outreach, transportation, advocacy, education) that could be instrumental in achieving program success.

The purpose of a survey is to provide a valid description of a situation. It begins by defining the problem in conceptual and operational terms. Program planners can then construct appropriate data collection instruments, draw a sample, conduct interviews, analyze the data, and produce planning recommendations. (It is beyond the purview of this book to discuss the technical aspects of survey research, but interested readers are referred to such texts as Babbie, 2004.)

A survey also offers other benefits. If a survey identifies shortages or barriers to utilization, it can serve to legitimate change. In this sense, it becomes a tool for action and a stimulus for marshaling support. As a process tool, it can heighten the awareness of a community and thus serve an educational purpose. To achieve this, the community survey must involve agency representatives, community leaders, and actual and potential consumers in the planning and implementation of the survey itself. Involvement of this kind can produce support for the recommendations that will follow. Finally, although most surveys offer only a static description of a community at one point in time, they establish baseline data and reference points for evaluation at a later time.

Strengths and Limitations of Social or Community Surveys

Time and expense are major considerations in conducting social or community surveys. The amount of time and effort involved in the initial phases of the survey are usually underestimated. To many, a survey is equated with the actual fieldwork, the interviewing of respondents, and a program planner may spend little time on the design of the survey itself. Data items and questions are often included with minimal thought given to their usefulness for the planning task.

The analysis strategy, however, is not something to put off until after the data are collected. It should begin in the design phase of a survey. Before any data items are included, the program planner should know why the information is being sought (the rationale) and how it will be incorporated in the analysis. This requires careful design preparation and much discussion. Otherwise, it is likely that the analysis will become a fishing expedition, and those responsible for the analysis may become lost in a morass of information.

A number of technical concerns need to be addressed in the creation of survey instruments. Pretests need to be conducted to determine whether the questions are understandable, whether they elicit the types of responses desired, and whether they motivate the respondents to participate. These matters touch on the issues of validity and reliability. A critical concern is the sampling procedure used. All too often, surveys are based on methodologically and statistically inadequate samples. Rather than discussing such a technically complex issue here, we will merely suggest that a sampling expert be brought in to develop an appropriate strategy. Without some confidence in the final sample, it is impossible to generalize to the total target population, a requirement essential for the planning of social services.

Although the social survey is probably the most powerful method of determining need in a community, it does have severe limitations that should be weighed. The more information (variables) you add, the more respondents you will need in the survey. Sample size is a function of the number of variables to be used in the analysis, and in a survey of social service need, the required number of respondents can be relatively large. Sample size is directly related to costs. A final concern is the time involved in designing and implementing a survey. A conservative estimate would be 6 to 9 months from design through analysis.

Given these limitations, program planners should exhaust available data sources before finally deciding on the survey. Is it really necessary? Planners should consider the time and financial costs as well as the potential danger of raising expectations that might not be met. If these are not outweighed by the benefits to be derived, then an original survey should not be conducted.

HOLDING A PUBLIC FORUM: PERCEIVED NEED

The public hearing approach to needs assessment usually takes the form of an open meeting to which the general public is invited and at which they are welcomed to offer testimony. Quite apart from political or community relations aspects, such meetings may be required by law. Since the 1960s, such hearings have been conducted through neighborhood meetings first encouraged by Office of Economic Opportunity–organized community action

agencies. Later public forum activities were stimulated by programs such as Model Cities and revenue sharing (especially community development programs). Since the mid-1970s, the Title XX amendments to the Social Security Act have required public forums as a part of some planning processes.

Ideally, those attending the meetings are able to articulate their own needs, to represent the concerns of their neighbors, and, in some instances, to speak for organized constituencies. Needs and priorities are then determined by a consensus of those involved in the process or through tabulation of articulated concerns to be prioritized at a later time.

Strengths and Limitations of Public Hearings

Public meetings have the advantage of compatibility with democratic decision making. They are less costly than surveys in terms of both money and time, and they tend to encourage clarification of issues and cross-fertilization of ideas through open discussion. The major problem in this approach is the issue of representation. Do the elderly who attend a meeting represent their individual needs or those of the broader group? Do all interested (or potentially affected) groups attend the meetings, or are some (such as the homeless or welfare recipients) self-excluded because of perceived stigma attached to their needs? Is it possible that those with the greatest need feel uncomfortable or embarrassed in attempting to articulate their concerns in the presence of more educated professionals? Experience to date suggests that attendees usually are not representative, that some groups are more aggressive than others and more familiar with lobbying strategies, and that different communication patterns are often a barrier.

Program planners need to anticipate these possible problems before deciding to hold these meetings. First, planners should recognize that an announcement of a meeting in the press or on radio and television will not necessarily produce a cross-section of the community. Use of the media in traditional ways will not prove successful if our concern is to attract consumers or potential consumers of human services. Resources should therefore be allocated to help reach important target groups, resources that include outreach and community organization activities in places such as neighborhood shopping centers, churches, social service agencies, and schools, to name only a few. Second, planners must assume that attendance per se will not necessarily result in equal and effective participation by all present, especially if the participants include professionals and consumers.

Professionals and consumers are likely to speak different languages. Professionals often use jargon and are perceived as experts, thus intimidating the other participants. The purpose of a community meeting is not to produce a narrow listing of needs. Rather, the initial goal is to generate a comprehensive list leading to a dialogue that eventually can be pared down. Process techniques that attempt to structure participation should be introduced. Delbecq, Van de Ven, and Gustafson (1975) described in considerable detail a number of group techniques for needs assessment and problem analysis. Two of these approaches are the nominal group technique and the Delphi technique; these are useful for involving various participants early in the analysis phase and helping them to identify problems, clarify issues, and express values and preferences.