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## 2-1-1 Information services: Outcomes assessment, benefit–cost analysis, and policy issues<sup>☆</sup>

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### Abstract

This study investigates policy issues surrounding the implementation and assessment of 2-1-1 information and referral services. More specifically, the study explores the benefits that users receive from 2-1-1 referral services that are distinct from the actual social assistance provided by various service agencies; what policymakers should consider when funding and implementing 2-1-1 services; and the operational structure and interagency relationships that can maximize the benefit of the referral service to both individuals and existing social service agencies. Researchers conducted an extensive literature review and case study to examine dimensions of service performance, benefit–cost, and user outcomes of 2-1-1 services. This study further identifies potential measures and protocols for developing a holistic assessment program that goes beyond the reporting of quantitative inputs and outputs associated with a 2-1-1 agency. The centerpiece of this study is the creation of a logic model that identifies benefits and costs at three different levels: the individual, organizational, and societal. In addition, the model incorporates the dimension of time in order to distinguish between short-, medium-, and long-term benefits. Thus, the model provides a basis for incremental and flexible assessment of service performance that can lead to the creation of a culture of continuous improvement and ongoing evaluation for 2-1-1 services.

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## Introduction

In the aftermath of 9/11 and hurricanes Katrina and Rita, the need for information about emergency assistance, social needs, and crisis intervention services has risen to the fore of mainstream awareness. The rebuilding efforts in Louisiana, Mississippi, and Alabama will take years to address. Providing timely information will be critical to the responsive delivery of basic social services such as healthcare, housing, employment, and food assistance to a population that has been physically displaced and from a service delivery infrastructure that has been badly damaged. Whereas this rebuilding effort illustrates an extreme example of the need for information services to support relief efforts, on a lesser scale every city in the United States faces similar issues in coordinating resources toward serving those in need on a daily basis. The information infrastructure developed to publicize these services and communicate with users is a critical component in extending the reach and maximizing the efficiency of their operations.

Research indicates that the nationwide effort across states and counties to launch 2-1-1 service may have an important role in shaping the service delivery infrastructure. As 2-1-1 information and referral services are deployed and evolve, public policy regarding information service delivery and communication across agencies will also need to respond and evolve to both support and optimize the value of the information infrastructure in terms of facilitating access to social services by users, efficiency of the information service, benefit–cost analysis, and outcomes evaluation.

In 2004, the Washington Information Network 2-1-1 executive board commissioned the University of Washington to investigate dimensions of service performance, benefit–cost analysis, and user outcomes of 2-1-1 services and to further identify potential measures and protocols for developing a holistic assessment program that goes beyond the mere reporting of quantitative inputs and outputs associated with a 2-1-1 agency. As part of this study, a logic model was created to identify benefits and costs at three different levels: the individual, organizational, and societal. In addition, the model incorporates the dimension of time in order to distinguish between short-, medium-, and long-term benefits. The power of this model is to provide a basis for incremental and flexible assessment of service performance that will lead to the creation of a culture of continuous improvement and ongoing evaluation within WIN 2-1-1.

Based on this work, the University of Washington research team examined potential implications from a policy and a service delivery perspective for the deployment of 2-1-1 services more broadly throughout the nation. Potential scenarios could involve establishing a national outcomes registry for 2-1-1 organizations to share methods and findings pertaining to service impact or establishing a common platform for information transfer and communication between 2-1-1 organizations. The research questions that guided this study were as follows:

1. What are the benefits that users receive from 2-1-1 referral services that are distinct from the actual social assistance provided by the agencies to which they are referred? What are the indicators of these benefits?

2. What are the strengths and limitations of traditional approaches to benefit–cost analysis in terms of assessing the impact of 2-1-1 services? What are the methodological challenges in this context?
3. What should policymakers consider when deciding how to fund and implement 2-1-1 services? What operational structure and interagency relationships would maximize the benefit of the referral service to both individuals and existing social service agencies?

The answers to these fundamental questions will provide insight to the value and impact of a growing national movement to deliver information services.

### **History of 2-1-1 and literature review**

The 2-1-1 information service is a resource for individuals and organizations regarding critical health and human services available in their community. The national movement to establish 2-1-1 services is a prominent and far-reaching information effort serving millions of Americans. In 1996, the United Way of Metropolitan Atlanta petitioned the local public service commission to assign a dedicated three-digit number to its community I&R service. This idea was adopted by a number of other communities in the United States and Canada, until in 2000, a coalition of I&R organizations lobbied successfully for exclusive use of the 2-1-1 number as a free nationwide number for community information and referral services (Brier, 2003). Modeled on earlier services established in Canada and other countries, 2-1-1 was first launched by United Way of Metropolitan Atlanta in 1997. As of December 2005, the three digit code 2-1-1 can be dialed in 32 states and the District of Columbia connecting callers to information referral specialists who may help callers obtain information.

According to the national Web site (<http://www.211.org>), 2-1-1 offers information about the following types of services available in their local area:

- Basic human needs resource: food banks, clothing, shelters, rent assistance, utility assistance.
- Physical and mental health resources: medical information lines, crisis intervention services, support groups, counseling, drug and alcohol intervention, rehabilitation, health insurance programs, Medicaid and Medicare, maternal health, children's health insurance programs.
- Employment support: unemployment benefits, financial assistance, job training, transportation assistance, education programs.
- Support for older Americans and persons with disabilities: home health care, adult day care, congregate meals, Meals on Wheels, respite care, transportation, and homemaker services.
- Support for children, youth, and families: quality childcare, Success by 6, after school programs, Head Start, family resource centers, summer camps and recreation programs, mentoring, tutoring, protective services.
- Volunteer opportunities and donations.

The goal of 2-1-1 is to make vital information available for individuals and communities.

Efforts are underway both at the state and federal levels to implement 2-1-1 information services throughout the nation. Senators Elizabeth Dole (R-NC) and Hillary Clinton (D-NY) have introduced bipartisan legislation named the *Calling 2-1-1 Act* that would provide Federal funding for 2-1-1 and encourage support of it nationwide. Current federal funding includes a \$600,000 federal funding appropriation for the United Way 2-1-1 project in Anchorage, Alaska, in the omnibus appropriations bill passed by the U.S. Congress on November 20, 2004 (H.R. 4818, P.L. 108-447). State level actions include \$1,000,000 in funding for 2-1-1 in the Washington state budget proposed by former Governor Gary Locke and approved in 2005. Despite the tightening of budgets in recent years, the number of services and funding base of 2-1-1 services is continuing to grow nationwide. Led by the United Way of America and the Alliance of Information and Referral Systems (AIRS), currently government, community service, and social service organizations in all 50 states are involved in seeking to bring information and referral services to everyone in local communities.

Increasingly, the objectives of 2-1-1 can be linked to the objectives of government services. For example, in 2002 the state of Washington initiated a program for assessing the efficacy of government services entitled *Priorities of Government* (<http://www.ofm.wa.gov/budget/pog>) that identified 11 areas related to quality of life (e.g., health, safety, economic opportunity). 2-1-1 services have potential impact in 5 of the 11 areas (see underlined items in Table 1).

2-1-1 services have increasingly played a role in the delivery and coordination of services during natural disasters. In the immediate aftermath of Hurricane Katrina, 2-1-1 specialists at one of four surviving call centers in Louisiana handled a volume of 8,000 calls per day. The increased demand was made possible by re-routing calls from storm-damaged areas to other call centers in the state. In the weeks following, Texas 2-1-1 received approximately 267,000 calls as specialists assisted hurricane evacuees relocate to Houston, Dallas, and San Antonio (United Way of America, 2005). One of the challenges confronted by 2-1-1 in this type of emergency is to create a database of aid services in operation within a short time span. Traditional sources of help were not available in the New Orleans area, and 2-1-1 specialists had to create a new knowledge base of federal, state, and private agencies that changed on a

Table 1  
State of Washington, priorities of government

- 
1. Improve **student achievement** in elementary, middle, and high schools
  2. Improve the quality and productivity of our workforce
  3. Improve the value of **postsecondary learning**
  4. Improve the health of Washington citizens
  5. Improve the security of Washington's vulnerable children and adults
  6. Improve the economic vitality of business and individuals
  7. Improve **statewide mobility** of people, goods, information, and energy
  8. Improve the safety of people and property
  9. Improve the quality of Washington's **natural resources**
  10. Improve **cultural and recreational opportunities** throughout the state
  11. Strengthen government's ability to achieve its results efficiently and effectively
-

daily basis (Strom, 2005). Digital technology and distributed call centers give 2-1-1 services the flexibility to adapt under changing conditions.

An extensive literature review of earlier studies and discussion provided data identifying the types of inputs, outputs, and outcomes that had previously been considered or tested. The review included both published literature as well as many examples of “grey literature” (in-house reports and publications not widely available or documented in traditional indices). An online search included databases covering the fields of information science, public policy, communication, and social services.

The most informative sources were earlier studies of 2-1-1 services, usually conducted at the provincial (Canada) or state (U.S.) level. Most of these studies were produced within the last 8 years and were highly useful in defining key concepts and providing operational definitions of service inputs and outputs. However, most of these did not examine benefit–cost or outcomes assessment specifically. The most notable works to date are a 1998 study of the Texas I&R network conducted by the Ray Marshall Center at the University of Texas (King, O’Shea, and Betsinger, 1998), the University of Nebraska (2000) report on the Nebraska 2-1-1 system, and a national benefit/cost analysis report also conducted by the Ray Marshall Center (O’Shea et al., 2004). In addition to these external analyses, the Pennsylvania Health and Human Services (2005) recently announced an internal benefit/cost analysis showing \$2.2 million in savings through a consolidated health and human services call center. Table 2 outlines a brief summary of previous evaluation studies, the main objective of the study, the service outcomes being considered (if any), and the types of data collection and data analysis methods being employed.

Based on seven of the studies from Table 2, the researchers identified 34 concepts and 148 operational definitions of output and outcome. These measures are arranged thematically in a table identifying the subject of each measure (individuals, organizations, or society) and the timeframe at which the measure can be applied (short-, medium-, or long-term). Accordingly, this table is a tool for developing instruments, setting priorities for outcomes-based assessment, and proposing the types of specific measures that can be used in the near term for assessing impact at the individual level and benefit–cost at the organizational level. In many instances, these concepts were merely discussed in the cited study rather than field-tested. A significant contribution of this analysis has been the further identification of a method for observation of the given concept and placing it within the context of the logic model. Although the content is too large to share in this article, a summary list of measures is included in Appendix A (including a URL to the full report on each measure).

Croneberger and Luck (1976) describe I&R as “the active process of linking a person with a need or problem with a service which will meet the need or solve the problem.” Due to the wide and often confusing array of choices, it is necessary for the user to have access to an intermediary who will help determine their problem and refer them to the appropriate agency or service provider. McCook (2000) cites the need for service integration, in which a referral network links users with needed information and services. Shank and Rosenbaum (2003) also describe such coordination as a necessary prerequisite for effective service provision.

Table 2

A comparison of recent information and referral evaluation studies

Authors	Year published	Locale	Instrument(s)
Hwalek et al., (1998)	1998	Metropolitan Detroit I&R Collaborative (MDCIRC)	Semistructured interviews informed by logic model; augmented by automatically gathered quantitative data
Sim et al. (1998)	1998	Texas-based telephone I&R service	Automatically gathered quantitative data analyzed using ARIMA model; augmented with qualitative data from semistructured interviews
King et al. 1998	1998	The Value of a Comprehensive Texas Information and Referral Network	Analysis of budget and expenditure reports; operational data (call volume, service requests, and referral data); site visits and interviews
University of Nebraska Public Policy Center (2000)	2000	Final 2-1-1 Report: Survey of Existing I&R Services and A Nebraska 2-1-1 System Cost/Benefit Analysis	Survey of existing I&R services; interviews and consultations; analysis of budget and expenditure reports; review of relevant studies; operational data
PSComm, LLC (2001)	2001	Maryland 2-1-1: Benefits and Costs of a 2-1-1 System for Maryland	Analysis of costs; projected benefit–cost model development
Woods and Eyre (2003)	2003	2-1-1 for All Ontario: Bringing People and Services Together	Caller survey; analysis of operational data; content analysis of case examples; stakeholder interviews
O’Shea et al., 2004	2004	National Benefit/Cost Analysis of Three Digit-Accessed Telephone Information and Referral Services	Analysis of budget and expenditure reports; operational data (call volume, service requests, referral data, and sources); site visits and interviews
Fisher, Saxton, Naumer, and Pusteri (2005)	2005	WIN 2-1-1: Performance Evaluation and Benefit–cost Analysis of 2-1-1 I&R Systems	Staff and user interview methodology

Several researchers, among them Childers (1976) Mashuda (1980) and O’Brien (1983) have chronicled the early years of I&R services in public libraries. Durrance (1984) locates community information firmly in the domain of library services; she writes that public libraries have a particular focus on human services information, local information, and citizen action

information. Baker and Ruey (1988) write that many librarians see I&R as having some characteristics in common with traditional reference services and also observe that libraries are “easily accessible, are reasonably non-threatening to potential users, and are generally dedicated to providing information . . . at no charge” (p. 245). However, they also observe that limited resources have prevented many from offering more extensive I&R services. Chepesiuk (2001) notes that public libraries have long filled the role of an I&R intermediary because of their expertise in the areas of query negotiation and information resources.<sup>17</sup>

Following the model set forth by Hwalek et al. (1998) we might conceptualize I&R services as falling into two discrete categories: regular and enhanced. *Regular I&R* is limited to information provision and places the responsibility for future action upon the caller. *Enhanced I&R* goes a step further; it is a service where the call taker advocates for the caller, actively redirects a caller to a desired service, and performs follow-up. Both Sim et al. (1998) and Mon (2000) argue that because finite resources and funding often limit the degree of services provided by any single I&R service, interagency cooperation and partnerships are vital. Such collaborations can permit different agencies to pool resources and expertise in hopes of providing a more individualized I&R service.

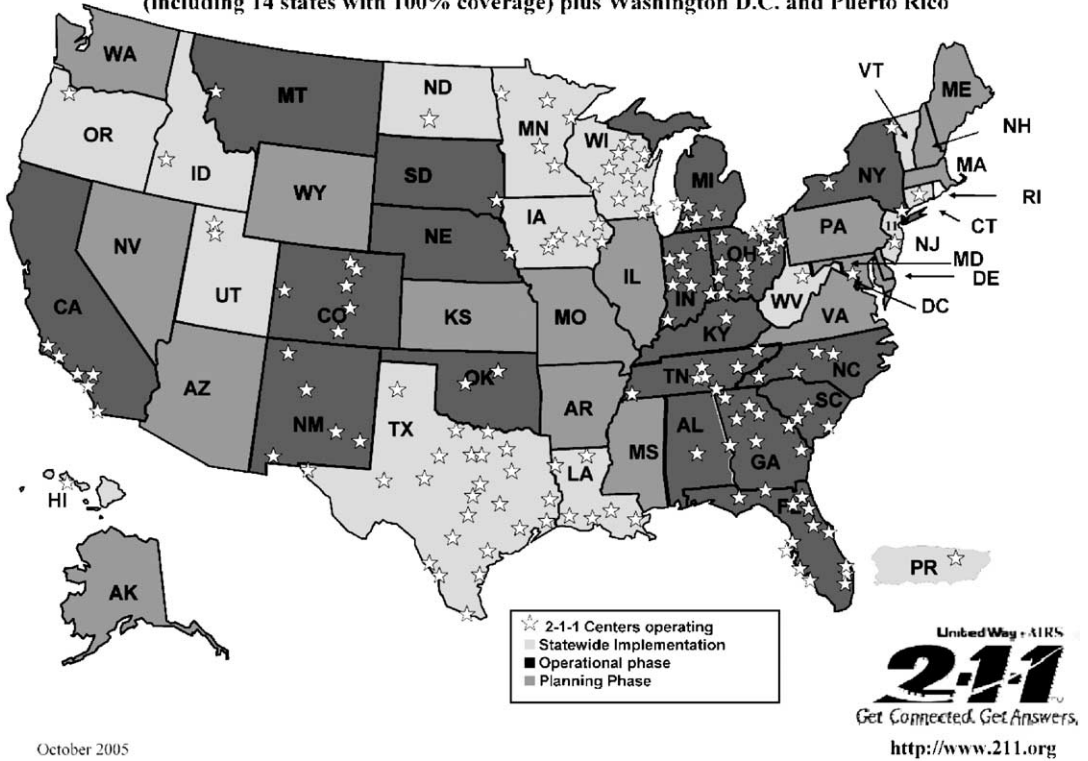
The 2-1-1 initiative has expanded exponentially in recent years. In 2005, the Alliance of Information and Referral Systems reported that there were 171 active 2-1-1 systems serving clients in 32 states, and 5 active 2-1-1 caller centers in Canada. The system continues to expand, with an ultimate goal of making the 2-1-1 system a nationally integrated system (see Fig. 1).

Despite this recent movement toward greater service integration, relatively few studies attempt to systematically assess and evaluate the impact of I&R services. Hwalek et al. (1998) underscores the dearth of empirical studies on outcome measurement, noting that a large number of articles such as Childers (1976) Burkhardt (1979) and Sallee (1977) suggest possible methods for measuring outcomes without gathering empirical data or creating instruments to measure the effects of I&R services. Many articles from this period approach the problem from a more exploratory or theoretical perspective and culminate in a call for such methods to be developed. More recently, the passage of the Government Performance and Review Act (GPRA) of 1993 has underscored the need for I&R agencies – particularly those which operate using public funds – to devise methods to evaluate their services.

Hwalek et al. (1998) in their study of the Metropolitan Detroit Community I&R Collaborative (MDCIRC), developed a semistructured interview which they administered to MDCIRC personnel. This instrument was based on a logic model and each question related to the various facets elaborated in the model such as inputs, outputs, activities, and outcomes from the point of view of the service providers. The data generated by this study were used to suggest further methods that might be used to gather data from the user community. Whereas Hwalek et al.’s (1998) study and that of Roston (1980) suggest follow-up telephone surveys as a method of gathering data from the user community, these studies are not actively involved in gathering such information.

Despite their long history of I&R service, public libraries have traditionally measured outcomes by what Rudd (2002) calls “counting up” measures such as quantifying attendance, circulation, and program participation. She notes that reliance on quantitative measures alone

2-1-1 serves approximately 139 million Americans - over 46% of the US population  
 171 active 2-1-1 systems covering all or part of 32 states  
 (including 14 states with 100% coverage) plus Washington D.C. and Puerto Rico



October 2005

Fig. 1. United Way/AIRS 2-1-1 Map, 2005.

“are insufficient to enable librarians to answer this larger question: What is the impact on program participants and service recipients?” Earlier, similar concerns were also voiced by Childers (1976). Whereas the approach he advocates is essentially a quantitative one, he acknowledges that such measures are simplistic and do not necessarily address deeper questions of impact, quality, or effectiveness. He also contends that any outcome evaluation should include a program of different measures rather than a single measure in order to get a more complete picture of program effectiveness. In other words, evaluation should not only integrate a wide range of data, but should also be an ongoing effort rather than a single, isolated event.

Other researchers stress that evaluative measures should also incorporate both quantitative and qualitative components in order to increase the richness of their data. Patton (2002) points out in his analysis of traditional quantitative methods that

What such statistics cannot do . . . is show the human faces behind the numbers. [It] is important to provide critical context when interpreting statistical outcomes as well as to make sure that the numbers can be understood as representing meaningful changes in the lives of people.

The work of Sim et al. (1998) demonstrates just such an integrated approach in their evaluation of a Texas-based telephone I&R service. Their study focused on two discrete

areas: outcome analysis and process analysis. The first phase of their study was a quantitative assessment of the number of calls per month. These data were placed in a scatter diagram in order to conduct trend analysis (e.g., to identify extrinsic variables, track trends in the data, and forecast future growth in the number of calls per month). These usage figures were then analyzed using the autoregressive integrated moving average (ARIMA) model to better assess call rates. These quantitative measures were augmented by a series of interviews with various stakeholders, including staff members, volunteers, and service providers. The themes that emerged supported recommendations for future changes in the service. Although the I&R service did have measures by which to conduct caller follow-up, the researchers recommended developing a more active program of soliciting caller feedback.

Researchers have acknowledged the many inherent difficulties in gathering information from I&R users. Rudd (2002) and Carlson (2003) mention the need to respect the caller's privacy. This includes limiting the amount of personally identifiable information the agency maintains. Tracy (2002) in her study of a 911 call center, notes that although operators must ask questions in order to ascertain the nature of a caller's problem, callers often regard such questioning as counterproductive.

... while call-takers view the interrogative series as facilitating the provision of appropriate assistance, callers may view it as insulting their own definition of an emergency, or as impeding upon their quest to receive police help.

The subsequent breach of respect between the call taker and the caller often resulted in abbreviated or aborted calls. In an earlier article, Tracy and Tracy (1998) explain that these interactions arise in part from what they call "expectation mismatches," where the caller and call taker do not hold similar ideas about what constitutes reasonable behavior and assistance in an emergency situation.

Perhaps most importantly, the Alliance of Information and Referral Systems (AIRS) states in its *Standards for Professional Information and Referral* (2002) that follow-up should benefit not only the I&R agency but also the caller. This type of reciprocal approach lays the groundwork for a relationship between the agency and the caller.

Follow-up should not merely be a necessary means for the I&R to achieve a purpose; rather, additional referrals should be offered during follow-up as appropriate, gaps in services or inaccurate agency information should be recorded and addressed and issues regarding the effectiveness of the I&R agency should be acted upon. (AIRS, 2002)

In summary, follow-up is not merely a means of documenting output and measuring performance but is also a key element in fostering a culture of continuous improvement throughout the 2-1-1 agency.

An added difficulty of interpreting feedback from users of the service is that of capturing the value of intangible benefits. In a study of e-government, Gupta and Jana (2003) explain that typical benefit–cost analysis is concerned with measuring increases in value of goods as a function of capital investment. When assessing investment in services, a fundamental drawback is that "...the true monetary value of benefits such as increased quality, faster service, flexibility, better citizen service, or improved working conditions for employees cannot be ascertained." To avoid spurious conclusions, the present authors have refrained from any attempt to quantify intangible benefits. However, as will be demonstrated in the following sections, a complete evaluation of 2-1-1 services and

understanding of the concomitant policy implications is not possible without identification, description, and discussion of the nature of the contextual values and affective state of the users and staff.

### **Methodology and data collection**

The traditional approach to benefit–cost analysis is usually calculated on a per unit basis. To clarify, the total cost of a service is divided by the number of service transactions to determine an individual transaction cost, and then some measure of benefit defined in monetary terms is assigned to each type of transaction (ideally, exceeding the per transaction cost). Whereas this approach may have some merit when the value of each transaction is homogeneous across clients and the client receives a good of fixed value, such an approach is weak when used to assess a diverse range of transactions where the same response to different clients could impact a different number of individuals (e.g., family units of different size) and is of varying economic value depending on the client’s personal situation (e.g., access to health care). Specifically, the robustness of this methodology is threatened in five critical ways:

- Monetary benefits assigned to transactions are easily challenged by critics, and minor decreases to the estimates for each type of transaction will reduce the estimate of total benefit significantly due to multiplier effects.
- Once a service hits a plateau in terms of call volume, transaction costs are highly likely to increase over time with inflation; such measures do not reflect the quality of the referral or the number of persons ultimately served by the transaction.
- Centralized service models will always have lower transaction costs than decentralized service models; such measures fail to capture the intangible benefits of service agents’ tacit knowledge of the local resources and the most feasible options for persons living in a given region.
- Transaction cost measures do not reflect actual savings to the partner service agencies ultimately providing the needed social aid.
- The systemic effect resulting from an increase in information flow regarding social services in a community is not captured by this approach.

To overcome these weaknesses, a more comprehensive methodological approach to benefit–cost and outcomes assessment should have the following characteristics:

- Identify social values for all stakeholders: individuals, organizations, and society.
- Focus on total costs rather than transaction costs.
- Discuss the efficiency and effectiveness of 2-1-1 services from the funding agency’s standpoint, usually by defining benefit–cost in terms of either (1) cost savings to currently funded services or (2) building greater capacity in current services for each dollar spent.

- Distinguish the benefits of the information and referral service from the benefits of the social service agency providing aid or benefits to the client.

A particular strength of this study was the holistic use of both quantitative and qualitative methods of observation and analysis. Methods for observing efficiency consist of quantitative analysis of service inputs (staff time, equipment costs, software, etc.) and service outputs (number of calls, length of calls, increases and decreases in call volume or referrals, etc.). Methods for observing effectiveness required observation of the nature of the transaction, such as analyzing call logs, surveying users, and interviewing staff. The results of this research enabled us to develop a comprehensive logic model used to build a framework to derive our measures. This logic model combined with new measures of analysis will provide innovative means for understanding the costs and benefits of 2-1-1 programs.

The case study of *211info* consisted of two forms of observation. Researchers from the University of Washington conducted interviews of staff, and a *211info* specialist conducted a series of callback interviews of callers. This approach provided evidence about the experience of both parties in the transaction, what they were trying to achieve, their feelings about the process, and if they felt successful or unsuccessful.

The research team visited the *211info* call center in Portland, Oregon, in December 2004 and March 2005 to gather documents and conduct interviews with seven staff members (including the director). The instrument for the staff interviews included items previously field-tested in outcomes-based evaluation studies of Yakima Valley community technology centers in Washington (Fisher, 2004a,) and basic coping skills classes for new immigrants conducted at the Queensborough Public Library in New York (Fisher, Durrance, & Hinton, 2004b).

Staff members were asked how they came to work at *211info*, their education and training, what they liked or disliked about their work, and to describe a typical call. In particular, staff members were asked to describe their perceptions of the users' state of mind during a call and how it could change over the course of a transaction. Next, staff members were asked what they considered to comprise successful or unsuccessful transactions. Analysis of these interview responses provided details about how to define and identify "success" both in terms of information provision, instruction, and emotional support of users.

In March–April 2005, a *211info* specialist conducted 30 callback interviews with earlier callers (hereafter referred to as "users") over a 6-week period using the pilot instrument (see Appendix B) comprised of 24 short-answer questions. In a sample of 30 calls, generalizations to the population at large are not possible, and one should not make an assumption that the distribution of transactions is representative of the entire population. However, the sample size is sufficient to indicate trends that are likely to persist in the total population. Each callback interview took approximately 10–15 minutes. Callers were asked about whether they had received the help they sought and to describe how they may have benefited. Staff also asked callers specifically about how the original call was handled, if the caller learned anything from the process, and how they felt about their situation at the end of the call. In addition, callers were asked some demographic questions. Analysis of these responses provided details about what the callers gained from 2-1-1 specifically as distinct from the benefit gained from the referred agency.

## Staff interviews

2-1-1 staff provided detailed responses to questions along with rich anecdotes about the people who use 211*info*. In terms of their work roles, 2-1-1 staff said that they linked people with needed resources by listening to people's stories, identifying their information needs and then providing referrals to community resources to address those needs. Listening and counseling skills were intrinsic to the job, and patience, understanding, advocacy, compassion, and empathy are key to being successful. People-oriented skills in addition to information-oriented skills are essential because people contact 2-1-1 in times of crisis. Whereas some people may call in anticipation of a need, the majority of people call while they are in the midst of a problem and contending with multiple stresses demanding immediacy and emotional support. Of equal importance is that 2-1-1 services are needed by people from all sides of the sociodemographic spectrum.

A primary reason that people contacted 211*info* centered around electricity shutoff notices, largely because the electric company includes 211*info*'s phone numbers on its letters. Other reasons for calling span the gamut of health and human services ranging from housing to domestic violence and food stamps. Whereas some callers directly ask for information about a subject, others are more indirect, especially if they are confronting a situation for the first time. Along this line, sometimes callers are given 2-1-1's number by someone who told them to call but not necessarily told them why to call or what to expect. Thus, the role of the 2-1-1 specialist is to work with the caller to understand his or her situation, identify his or her information needs, and then negotiate those needs against the health and human services system. In diagnosing situations, specialists draw upon their expertise to recognize potential, related problems that callers may experience and provide information in anticipation of those needs. Calls also range in complexity from a single need that requires little negotiation and the provision of several appropriate resources to some that comprise multiple information needs requiring multiple referrals. In this sense, calls evolve: What may appear as a straightforward request can actually diverge into a much longer and complex call.

In providing referrals, specialists ensure that callers have at least several options whenever possible. While providing only referrals that they feel are most appropriate, specialists also work up each referral by explaining to callers what to expect when they contact the services and how to respond. In this sense, specialists go far beyond simply providing information to actually educating and empowering 2-1-1 callers. Specialists recognize that the health and human services Web is complex, that callers are disadvantaged by being outside the system and thus need assistance with learning how to express their needs and navigate. Specialists also act as advocates by connecting callers with agencies and speaking on callers' behalves, as well as contacting agencies and seeking feedback from callers to ascertain the level of service provided by the agency. In some instances, however, no agency sources of help for callers are available, in which case specialists still provide an important service to callers by simply listening to their situations, clarifying options, and providing empathy.

Another complexity of the specialist's job is that callers frequently call on behalf of other people. Whereas it is common for caseworkers and other professionals to call on behalf of clients, it is also common for people to call on behalf of spouses, children, siblings, parents,

friends, and neighbors. Known as proxy seeking or the imposed query, this form of call is particularly challenging for specialists because they have to diagnose information needs and provide resources through a third party. People engage others for many reasons when contacting 2-1-1, including language, speech ability, cognitive, and affective factors. Gender may also play a factor where it is viewed as more acceptable for a woman to contact 2-1-1 with a family's needs (indeed, in many cultures it is a point of shame if a man has to seek help with supporting his family) and the phenomenon that women tend to seek information on others' behalves in their role as familial caretakers. Regardless of reason, this proxy behavior is a significant means of ensuring that a greater number of people in need of 2-1-1 help receive it.

The affective dimensions of a call were emphasized throughout the interviews. Indeed, our interview analysis suggests that one can model the affective changes in 2-1-1 calls. Typically, several stages emerge; initially, when people contact 2-1-1 they are stressed (ranging from moderate to high), agitated, and pessimistic and they face uncertainty about their situation and possible solutions. As the call progresses, callers' emotions become optimistic and less stressed because they are interacting with a specialist who cares about the person's situation, they are relieving stress through the process of relating (or ranting about) their problem, and they feel that solutions or help may exist. Finally, the calls end on one of several notes, ranging from continued optimism and hope to further anxiety, anger, disillusionment, or resignation. Alternatively, calls can start on a highly positive or optimistic note because the caller believes that he or she will receive help or desired answers by contacting 2-1-1, and then these feelings change to disappointment or despair if help is not actualized. Whereas further research is needed to understand the affective dimensions of 2-1-1 callers and to derive an effective model that reflects the phenomenon's far-ranging complexity, a key understanding would enable creating information interventions—strategies for providing the right information at the right time during a call and, more broadly speaking, a problematic situation that will assist callers in holistic ways and perhaps prevent further crises.

When asked about their perceptions of how 2-1-1 services help individuals, families, and society at large, agents described several direct and indirect outcomes, ranging from getting an actual service or instrumental form of help (e.g., getting their power restored, a place to sleep for the night, or a food box) and being able to access help through one central clearinghouse to the more intangible such as feeling better knowing that someone cares about you or that help exists if you need it later. Other benefits include education, empowerment, and self-efficacy. 2-1-1 benefits also extend beyond individuals to benefit families, neighborhoods, other groups and society in multiple ways. Whereas callers obtain help to solve problems that pertain to several people, the ripple effect extends to many others as our social fabric becomes stronger and holes are filled. A prime example is when an ethnolinguistic gatekeeper, such as a second-generation immigrant or bilingual community leader who facilitates communication across the language barrier for other members of an ethnic community, contacts 2-1-1 for information that is then relayed to an entire community.

In response to what they would like to know further about 2-1-1 services, agents expressed a need for deeper insights into what callers actually do with their information and how they are actually helped. To date, agents rely on anecdotal responses. More systematic reporting is

needed, especially along the line of follow-up calls, to learn what people did with their referrals, and to what effect.

### Callbacks and responses

The response rate of those contacted was 100%—not a single caller declined to respond to the survey when contacted by staff. This finding suggests that the effect of self-selection bias was low, and that the approach used when contacting and establishing rapport with the caller was effective. The total proportion of persons who were reachable by phone was approximately 50%. To obtain the 30 calls required for this survey, 211*info* staff attempted 68 calls (see Table 3). The most common reason for nonresponse was that the telephone was disconnected. The remaining callers could not be reached after three attempts. The high mobility, financial situation, or otherwise unsettled circumstances of many 2-1-1 callers will likely necessitate identifying a sample of callers twice the desired size.

The youngest caller was 16 and the oldest was 80 years of age. The age of respondents exhibited a roughly normal distribution, with an average age of 40, and a median of 36, suggesting a higher concentration of callers in the 20–40 range. This distribution pattern suggests that 2-1-1 services are being effectively marketed and publicized across all age groups.

Whites and Blacks are well represented in the sample (see Table 4), but only a small number of callers identified themselves as belonging to other racial groups. Such a finding is surprising given that economically disadvantaged segments of the community most likely to be in need of 2-1-1 services include a high level of racial and ethnic diversity. Future outreach to targeted ethnic communities might improve the balance exhibited in this sample.

Whereas callers in this sample are diverse in respect to age and ethnicity, they are nearly uniform in terms of gender. Women clearly constitute the largest majority of 2-1-1 users and are also more likely than men to call about the needs of a family group rather than just their own personal needs. Twenty-seven out of the 30 callers were female (90%). The average household size of female callers was 2.7 persons, whereas that of male callers was 1.7 persons. Four callers (13%) who contacted 2-1-1 on behalf of others (a child, a student, a tenant, and a neighbor) were also all female.

Table 3  
Response rate of callback interviews

	Number of calls	Percentage of total
Surveys completed	37 <sup>a</sup>	54.4
Telephone disconnected	20	29.4
No contact after 3 tries	11	16.2
Total	68	100.0

<sup>a</sup> 211*info* only reported on the first 30 interviews; additional surveys were completed for the internal information needs of 211*info*.

Table 4  
Ethnic distribution of callers

	Number	Percentage
White	17	57
Black	6	20
Asian	0	0
Native American	1	3
Hispanic	1	3
“Mixed”	2	7
No response	3	10
Total	30	100

Approximately two-thirds of the callers represented the needs of more than one person (see Fig. 2). The average household size was 2.4, with a range from 1 to 5 persons. In total, the needs of 67 persons were represented by 28 callers (2 callers declined to answer this question). This finding suggests that any measures of cost per transaction used in previous studies could have been underreporting the number of persons served by a factor of at least 2 to 1. In terms of impact, future evaluation studies of 2-1-1 services should shift the focus from the phone call itself to identify the total amount of individuals benefiting from that phone call.

Twenty-seven percent of callers indicated they had successfully resolved their problem at the time of the callback (see Table 5), yet 87% indicated that they would use the service again, and 80% indicated they would recommend 2-1-1 to friends and family. Clearly, users find additional value in 2-1-1 other than finding an immediate solution to their crisis. Several indicated they were still “working on it” and welcomed the information and advice that 211info had provided. One of the unique benefits provided by 2-1-1 services is to help the caller maintain independence, control, and confidence in their ability to seek resolution.

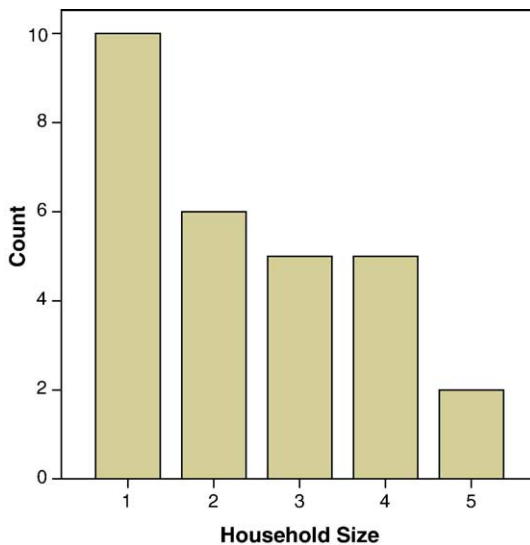


Fig. 2. Household size of callers.

Table 5  
Type and resolution of calls

	No. of calls by type of need	Percentage of total <sup>a</sup>	No. of callers indicating resolution	Percentage of calls resolved by type of need
Utility	13	43	4	31
Housing/rent	6	20	1	17
Health services	4	13	2	50
Employment	1	3	0	0
Food	1	3	1	100
Other	5	16	0	0
Total	30	100	8	27

<sup>a</sup> Percentages total less than 100 due to rounding.

This concept of resolution rate is a significant step forward to understanding the impact of 2-1-1. Every individual that fails to make a connection with an appropriate human service agency at a time of crisis or need will potentially require a more costly intervention at some later time (e.g., emergency room, homeless shelter, incarceration). For every individual caller who receives housing, utility assistance, employment, or health care, the benefit of 2-1-1 service far outweighs the per transaction cost. Accurate counts of the number of successful calls, the number of persons served, and an estimate of the economic benefit received based on the nature of the call will produce a firmer description of benefit–cost that will be harder for critics to challenge. Whereas the monetary benefits of these individual services are more directly attributable to the referred service agency rather than 2-1-1, the savings of early intervention can be assessed in whole or in part as a measure of efficiency. When then added to estimates of cost savings or increased capacity of service agencies, it will be possible to establish a complete and highly defensible benefit–cost analysis that is not based on specious estimates of value or unwarranted assumptions that every call is successful.

One significant observation was that callers were excited and delighted to receive a callback, and several expressed the feeling that the callback demonstrated a level of concern and caring on the part of 211info. As one caller stated, “Thanks for checking in.” Similar feelings were shared by the specialist who expressed, “I have enjoyed connecting with community in this way. I’ve really appreciated it.” For this reason, it would be advantageous for all staff to participate in callback interviews periodically to enjoy hearing about how people have benefited from the service, hear about changes in their lives, and receive the appreciation for their efforts.

### Logic model

Based on a review of the literature, the initial logic model (Fig. 3) consisted of identifying the following inputs, activities, reach, and outputs. The inputs identified were based on a strict benefit–cost analysis model identifying funding streams to the 2-1-1 project. The activity

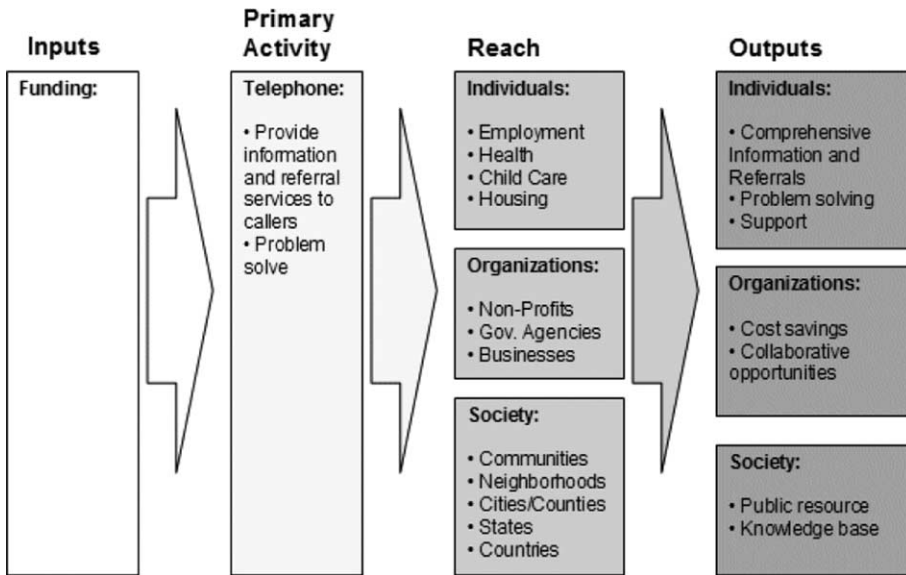


Fig. 3. Initial logic model.

identified was based on the description and mission of the 2-1-1 service. The reach was primarily informed by previous benefit–cost analysis and the mission statement of the 2-1-1 service. Finally, the outputs were developed according to the literature describing 2-1-1 services and a comprehensive review of the benefit–cost literature evaluating I&R services.

Based on findings from the study and a systems approach to the problem, we expanded our initial model to reflect additional inputs, activities, outputs and outcomes. This comprehensive view of the way that 2-1-1 serves individuals, organizations, and society provides us with new ways to understand and measure the value of 2-1-1 services. This expanded model (Fig. 4) is significant in terms of not only identifying new outputs but also new inputs. By making these additional inputs explicit at the front-end of our logic model, we recognize the need to develop measures that value these inputs in later stages of the logic model (Fig. 5).

Inputs were expanded beyond monetary support to include the efforts of partners and stakeholders such as United Way, AIRS, local nonprofit organizations, state and local agencies, and the public. It is evident that the United Way and AIRS have contributed significant value to the formation of 2-1-1 beyond financial support through their leadership and reputation. Our research indicated community nonprofit organizations as well as state and local agencies have contributed to the efforts of 2-1-1 through their support and referral of clients to the 2-1-1 service. Lastly, the public is also a contributor to the efforts of 2-1-1 through their referral and knowledge of the 2-1-1 service. We believe it is important to recognize the contribution of these partners and stakeholders throughout the logic model and consider ways in which these contributions might be expanded as the 2-1-1 service matures.

In addition to direct inputs such as financial support and partner involvement, other indirect inputs are important to consider when valuing the contribution of a 2-1-1 service. The

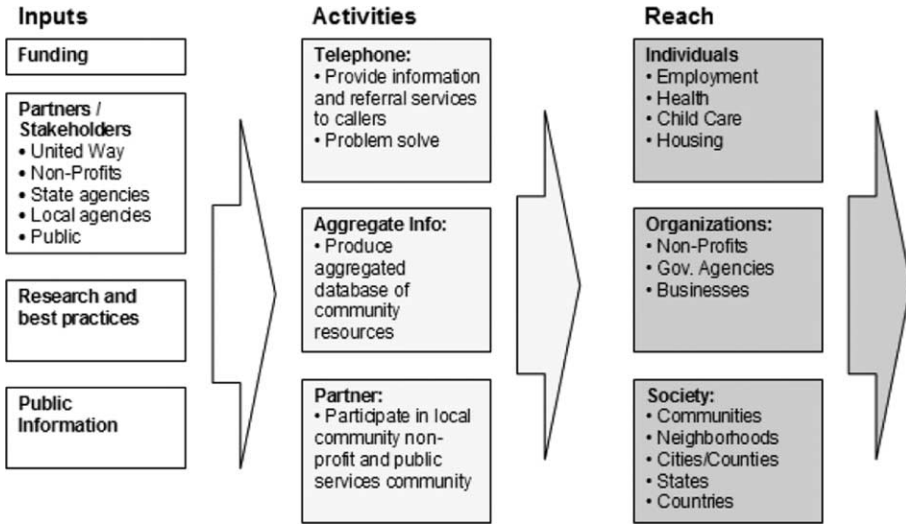


Fig. 4. Expanded model.

first area to be considered is research and best practices that may inform the development and delivery of 2-1-1 services. The second is information regarding the availability of services in the community. This type of public information may be found on the Internet, in print publications, and even in the phone book. This information may be important to improving the efficiency and effectiveness of 2-1-1 services and exists as part of the existing information infrastructure.

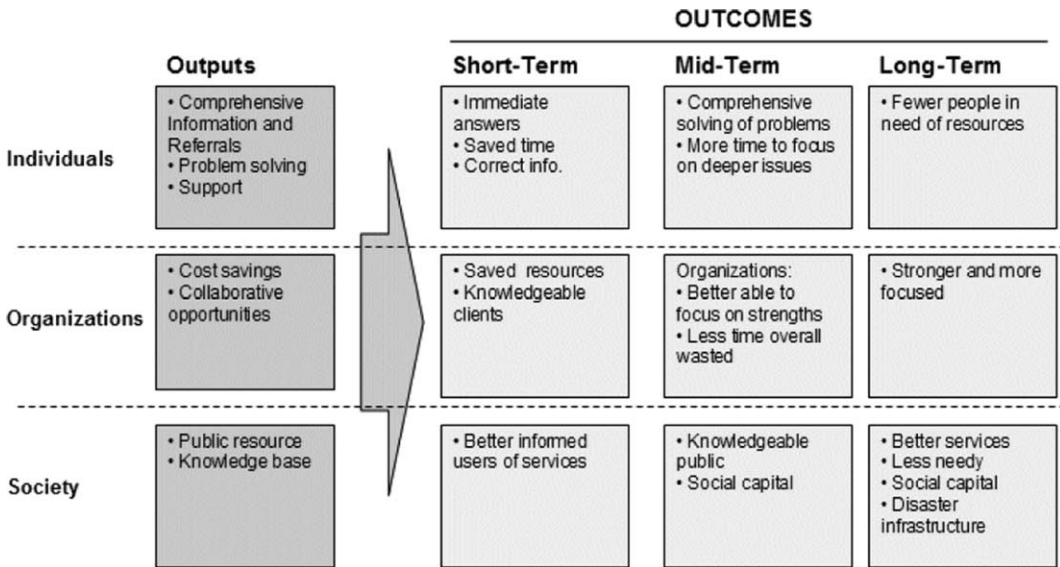


Fig. 5. Logic model.

Activities were expanded to include the function that 2-1-1 services play in aggregating information. Evidence suggests that this aggregated information could play an important role in shaping the way that the nonprofit health and human services industry as a whole evolve. In addition to a lack of aggregated information regarding available services, there has also been a dearth of information on the needs of the community. Preliminary findings indicate that 2-1-1 services may play an important role in disseminating important information regarding community needs.

The reach and outputs remained fairly constant from the initial model used to guide our research. We continued to view the reach and outputs in three levels: individuals, organizations, and society as a whole. The organization of reach and outputs according to these three levels is useful in identifying different types of measures necessary to evaluate the impact of 2-1-1. This organization is carried through into a more detailed evaluation of the actual outcomes to be measured.

In evaluating the results of our interviews and case studies, a clear trend emerged identifying short-, mid-, and long-term outcomes of 2-1-1 services. In response to this trend, we modified our logic model to reflect these three categories. Based on this classification of outcomes, a  $3 \times 3$  matrix emerged by which to evaluate outcomes. The vertical axis is comprised of values for individuals, organizations, and society and the horizontal axis short-, mid-, and long-term outcomes. This organization recognizes the comprehensive impact that 2-1-1 services have on many different levels over time. In order to capture this value, methods will need to be developed to measure the benefits of 2-1-1 across this matrix.

## Discussion and policy implications

The objective of 2-1-1 is to improve the conditions of individuals by linking them to services and resources in the community. Standard benefit–cost analysis traditionally focuses on evaluating the cost of a transaction. However, our findings indicate that 2-1-1 services provide benefits that extend beyond the individual transaction. In completing this evaluation study, we adopted a more holistic view of 2-1-1 services and reconceptualized the value of these services at the individual, organizational, and societal levels of analysis. At the individual level, the study challenged the concept that value is solely measured on a per transaction basis and presented evidence suggesting the impact of the service may have been underreported in the past. At the organizational level, the study's findings indicate that there is potential for 2-1-1 services to significantly impact the way nonprofits and government agencies work together toward mutual goals. Lastly, we see the overall issue of infrastructure development to be central to concerns at a societal level.

### *Service impact and information infrastructure*

The first research question investigates how benefits received from the information service are distinct from the actual social or medical aid being sought. When viewing 2-

1-1 as an information service, perhaps the indicator most commonly referred to is the extent to which users (and their family members) made a successful connection with a referral agency and received the desired assistance. Along these lines, user education is another outcome as users begin to learn more about their service local environment and how to navigate it. These benefits spread widely as users share their new knowledge with others in need. However, these are not the only outcomes of interest. When viewing 2-1-1 as a social service, alternate indicators can be used to determine the stage of problem or crisis when a call was placed. Early intervention has systemic benefits throughout all levels of the model. Information provision at an early enough stage empowers users to maintain self-sufficiency and control of their situation. In this way, 2-1-1 services may be viewed as an integral piece of the social service fabric and evaluated using measures associated with social services rather than strictly as a call.

Individuals who receive aid also enjoy an economic benefit, but this value is more directly attributable to agencies actually providing social assistance. However, economic impact can be directly attributed to 2-1-1 at the organizational level in terms of benefit–cost analysis. True benefit–cost to organizations can only be expressed as recovery of funds already being spent (cost savings) or as increased capacity per dollar being spent. For example, demonstrating that 2-1-1 service enables an agency to help more people by redirecting resources that would otherwise be spent in dealing with inappropriate referrals is one example of increasing benefit–cost. Another example could be if 2-1-1 service resulted in directing more clients to an agency, which is able to absorb additional volume without incurring excessive expense (e.g., no additional overhead), thereby improving their efficiency and helping them operate at optimal capacity. Likewise, directing clients to an agency in an early stage of a personal crisis may lead to reduced cost of intervention for the agency, reducing overall costs. Specific measures could include the reduction in number of misplaced calls, an increase in the number of appropriate calls, an increase in the number of early interventions, and an increase in capacity (number of successful cases per caregiver or service professional). All of these measures are easily associated with monetary values.

In this manner, every dollar invested in 2-1-1 service can be shown to have a multiplier effect in terms of direct savings to other service providers. Another area of cost savings that should be examined is the structure of the 2-1-1 service itself. Savings that accrue from sharing costs across a network of local centers should be captured as benefit–cost. Decreases in administrative overhead resulting from efficiency in infrastructure should be captured as benefit–cost. Measures could include the cost of resource creation and maintenance shared across agencies and increases in the number of interagency relationships.

At the broadest level, 2-1-1 services contribute to the common good in ways difficult to measure monetarily but with undoubtedly high impact on the quality of life in communities. Examples include reducing overall levels of need by publicizing and providing avenues to aid, increasing social capital (bonding and bridging across service agencies and subpopulations in the community), and building information infrastructure to sustain effective dissemination of public information and emergency disaster preparedness.

The primary value of 2-1-1 in building information infrastructure lies in providing a means for creating relationships between organizations through sharing of an information resource. This type of systemic impact would broaden understanding of the social service environment in a community that could potentially result in reshaping these social services. One example could be reducing overlap in services and promote increased cooperation among service providers, thereby creating a more efficient and effective social service network. The list of partners “linked” via 2-1-1 information services would include both government agencies (city, county, and state) as well as nongovernment organizations (NGOs) providing social aid.

Whereas privacy concerns must also be considered carefully when discussing the delivery of health services and financial assistance, reporting and collating information about service inputs and outputs across agencies will provide the data necessary to accurately assess the impact of 2-1-1 referral services as well as facilitate regional planning at the county and state levels for delivery of both information and social services. This type of information sharing is seen as a critical element in many other policy communities. Perhaps the most significant example occurred in the wake of the 2001 terrorist attacks when the federal government cited lack of information sharing between intelligence and law enforcement agencies as a key failure in preventing such a tragedy (Desouza, 2005). Beyond increasing communication and awareness between service agencies, 2-1-1 organizations may be uniquely positioned to gather, integrate, and share data that illustrate the overall reach and relationships between different social services for a given area.

The extent to which we are able to capture the benefit of cost savings or capacity building associated with 2-1-1 will only be limited by the extent to which 2-1-1 organizations are able to gather detailed information about the costs and workflow of the service providers to which they refer callers. The first stage of this analysis will involve meeting with representatives of different service agencies and examining the “intake” procedures (e.g., phone calls, walk-ins) to determine whether a measurable change occurs following the implementation of 2-1-1 service (e.g., reduction in number of inappropriate referrals). The second stage will require a review of service outputs to gauge trends as to whether that service is handling more clients and if those clients are approaching the service for assistance at an earlier point of need. A third stage would involve conducting interviews with service agency staff to discover whether they perceive clients as being more informed or more aware of what the agency has to offer and how best to obtain service. These observations all provide evidence of user benefits that can be attributable to information interventions conducted by 2-1-1 service.

#### *Continuous assessment*

The second research question pertained to the methodological challenges associated with benefit–cost analysis as applied to a service such as 2-1-1. The authors argue that a more comprehensive, holistic view be adopted instead of solely relying on the more traditional, transaction-based assessment as a way of understanding the value created by 2-1-1. This view supports the use of outcome evaluation data to inform decision making regarding policy and funding as well as to inform practice at the organizational level. This type of formative

research may have significant value in guiding 2-1-1 service agencies and their partner agencies toward providing a more efficient and effective level of service to citizens. This holistic approach using qualitative research methods in addition to quantitative approaches includes four components.

First, 2-1-1 services should establish a regular process of continuous follow-up interviews with callers. Brief “callback” interviews will yield information about whether clients are acting on the referrals they are given, whether they are able to solve the problem which prompted the call, how many people benefited from the referral, the affective state of the client (e.g., confidence, reassurance), and the stage of crisis the client is experiencing (early to late). Such calls should occur regularly as part of normal 2-1-1 operations and all service agents should participate to learn more about clients’ perspectives. Data generated through this effort should provide policymakers and service providers with a richer understanding of the value created for individuals.

Second, detailed analysis of call transcripts or audio recordings may also lead to insights regarding the emotional change and learning that take place during the course of a 2-1-1 call. When recordings of calls are made possible by the systems and software used to track and route calls, routine analysis of a random sample of calls may help provide insights as to verbal indicators of client understanding, confusion, confidence, relief, and other indicators that may signal a successful transaction and user intent to act on referrals. Analysis will also result in models of the communication process and identify the standard “moves” that characterize both successful and unsuccessful transactions, thus enabling agents to recognize and redirect clients that have difficulty expressing their needs, sharing personal information, or understanding directions.

Third, 2-1-1 services should conduct more in-depth interviews with callers to investigate the social context of clients’ problems and gain a deeper understanding of the motivations, problem-solving skills, and application of strategies and resources discussed during the call. The most important benefit of 2-1-1 services is the opportunity to provide an “information intervention,” an event where the sharing of information leads to a change or improvement in the user’s situation, understanding, or state of mind. Health, safety, and economic needs are satisfied by the referral agencies that callers ultimately contact. The unique service that 2-1-1 provides is to satisfy callers’ need for information, and by doing so in a timely fashion thereby reducing the level of need that other agencies must address. To fully understand this role of 2-1-1, we would seek the opportunity to conduct more in-depth interviews with callers to learn more about their information behavior. Where do callers typically turn to obtain information in their daily lives, and how do they validate that information? What gaps do 2-1-1 services fill in the information environment? This information would be helpful in understanding the systemic impact of 2-1-1 services across the network of social service agencies.

Fourth, periodic interviews of staff may facilitate the gathering of tacit knowledge from specialists who receive the greatest amount of feedback from clients on a daily basis and have a keen sense of whether calls are being answered well and the degree to which users are satisfied with the service. Many agents that we interviewed as part of this study have academic and professional training in social work or psychology, making them knowledge-

able, informed observers of clients' attitudes and behaviors. Regular interviews with staff members will reveal issues, challenges, and often solutions to improve both the efficiency and quality of service.

Rather than treating evaluation as an annual event for the purpose of submitting a summary report to various constituent bodies, the results of evaluation and outcomes assessment should be disseminated back into the organization on a routine basis to foster both staff awareness and responsiveness, as well as to nurture a culture of continuous outcomes assessment and reflection on the organization's strengths and weaknesses. Assessment activities should be integrated into the regular workflow of 2-1-1 operations, and all 2-1-1 staff should have the opportunity to participate in evaluation projects in order to learn about the impact their work has on the target population, suggest ways to improve practice, and learn more about the degree of usefulness of various resources and agencies to which they refer callers. The involvement of partner agencies in the evaluation process will yield evidence of the wider impact of the service. From a policy-making perspective, this type of research approach may yield a richer set of data by which to evaluate the value of 2-1-1 services and also reveal the impact of 2-1-1 services on the social service infrastructure by identifying ways in which service organizations are being affected and aided by the deployment of 2-1-1.

#### *Policy implications and future research*

The third research question pertained to identifying the factors policymakers should consider in the context of planning, funding, and implementing 2-1-1 services. The foregoing discussion identified measures generated through a holistic approach that utilizes qualitative and quantitative research methods. The discussion identified the value added aspect of 2-1-1 service directly provided to individuals and 2-1-1 service's impact on the social service infrastructure as a whole.

Our findings indicate that policymakers should consider the value of 2-1-1 service to individuals in terms of both the specific information referred to the callers and also the social service provided by assisting callers to better understand their problems and ways of addressing their problems. Evidence suggests that by providing a means for early intervention through information services such as 2-1-1, the long-term social service needs of individuals may be decreased. Therefore, policymakers should consider the short-, mid-, and long-term impact of 2-1-1 services.

From an infrastructure perspective, the findings indicate that 2-1-1 services may have a significant impact on shaping the social service infrastructure. This infrastructure comprised of multiple nonprofit, for-profit, local, state, and federal agencies is often fragmented in addressing social service needs. This fragmentation often results in the lack of interorganization cooperation and haphazard service delivery. 2-1-1 services may be the only comprehensive approach to organizing information to create a holistic view of services provided in a community. This continued effort to understand the social service network and provide information to citizens in need may also have an impact on organizing and restructuring the social service industry.

The impact on the social service network may occur by improving the way citizens come into the social service network such that they are directed toward the agency or organization best able to address their need. It may also help organizations better understand the social service landscape and begin to tailor their services to address more specific needs rather than duplicate other organization's services. The resulting infrastructure may provide a more solid foundation to more efficient and effective service as well as to create a platform to respond to emergency situations. If such a foundation were firmly in place in the states of Louisiana, Mississippi, and Alabama following hurricane Katrina, coordination and response of social service agencies may have been improved.

Beyond program evaluation of social services, policymakers and service providers are also interested in strategic information gathering to support the development of policy and services. Evidence presented in this study suggests that information generated through 2-1-1 services may be instrumental in better understanding the needs of a community. This information could be critically important to facilitating cooperation among organizations in understanding and addressing social service need. The use of these data to facilitate constructive dialogue may further the building of critical relationships among social service providers in a community, thus strengthening the social service infrastructure in that community.

These conclusions suggest multiple potential avenues for future research. Further investigation into the impact of information in promoting early intervention will yield a more precise understanding of the value created for the user. Exploring the role of 2-1-1 as a potential information aggregator and clearinghouse for social need data will illustrate the value created for organizations that rely on information infrastructure to deliver services. Implementation of a 2-1-1 outcomes registry would provide a workspace for gathering, recording, and sharing observations regarding the value 2-1-1 created for society.

2-1-1 sustains the ability of the social aid network to provide early intervention to persons in need. Timely delivery of information is a critical component of enabling users to resolve social, economic, and health needs at an early stage. Persons who are unaware of available aid or how to obtain it are more likely to ignore growing personal problems until a crisis prompts them to take some form of action. 2-1-1 services enable people in need to maintain independence and control of their situation by helping them identify and reframe their problems in terms of possible solutions, providing information about multiple options, and referring to organizations that can assist. Ideally, making social and health service information more widely accessible will result in a decrease of the number of persons and families reaching a personal crisis situation.

Connecting users with appropriate agencies for assistance can be a challenging responsibility, and one that is not necessarily a high priority for any of the individual service organizations. Agencies expend time and effort in redirecting users to other organizations that may be more appropriate for the users' given needs or requirements. This task is difficult when agencies are themselves unaware of the range of services provided by other organizations in the same area. 2-1-1 can act as a clearinghouse that aids both individuals and service agencies in learning about the availability of assistance in the region. Ideally, such awareness will result in saving time and effort because of fewer inappropriate referrals, enabling service providers to spend more time assisting their intended audience.

Greater awareness may also facilitate communication across agencies and reduce misdirection and potential duplication of effort.

Accumulating data to support decision making is most successful as a collective effort. An effective way to promote best practices and share both assessment methods and findings is the creation of a 2-1-1 national outcomes registry—an online toolkit, workbook, and digital library of outcomes, measures, instruments, and reports that will encourage other 2-1-1 services to develop ongoing, comprehensive evaluation programs. Innovative approaches that utilize both qualitative and quantitative methods, such as those described in this study, could be effectively disseminated across 2-1-1 organizations and foster collaboration in an evaluation effort. Furthermore, a registry of this nature could be used to pool data that would support informed decision making among policymakers, enabling them to study the national benefits of 2-1-1, and provide evidence for seeking ongoing financial support at both state and federal levels.

Such research opportunities will only be possible if legislators and local administrators recognize the inherent and potential value of the 2-1-1 concept. Policymakers should consider that each 2-1-1 caller represents an individual or family at risk in some way, and that timely sharing of information by the 2-1-1 specialist can prevent that risk from compounding into a greater and more complex problem. 2-1-1 helps people maintain their independence while using government and nonprofit resources more efficiently to meet their needs. In addition to providing contacts for direct aid, 2-1-1 may also give the caller a sense of confidence and educate them regarding their options. These benefits are spread exponentially as callers share this information with other friends and family. Any complete evaluation of the service must attempt to capture such intangible outcomes as well as the more visible measures of cost savings.

## Acknowledgments

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## Appendix A. Table of concepts and measures

A significant contribution of this study has been to place the concepts and measures identified in earlier studies within the context of our logic model and then identify data

collection methods that could be used to gather observations on each dimension of service. The following table of concepts and measures related to 2-1-1 service benefits and costs is thematically organized according to the categories in the following table. The full articulation of each measure is available online at <http://ibec.ischool.washington.edu>.

Access	Awareness Barriers Coverage Current information Customization Service
Capacity	Client service Control Coordination Reduction Marketing Matching Resource Services Social capital Staffing
Cost reduction	Administration Consolidation Directed calls Economy of scale Hardware Lost work Marketing Public assistance Time and travel Work loss
Data	Aggregation Analysis Dissemination
Expense	Fixed Labor
Service	Early intervention Ease of use Long term

### Appendix B. 211info user survey

Review the record of the original call to identify the nature of the caller's need, the date, and his or her name. When you contact the caller, please begin the interview with the following script:

Hello [Caller's Name]. This is [staff name] calling from the 2-1-1 Info service. I'm calling to follow-up on a call you made to 2-1-1 on [date] about [referral]. The purpose of my call is to ask you questions about our service, which should

take about 10 minutes. Your participation is completely voluntary, anonymous, and confidential. If you want to stop at any time, please let me know. Is it okay to ask you some questions at this time?

*If NO, then end the call. Set a new time to contact if the Caller indicates a willingness to speak at a later time. If YES, then: “Great! Do you have any questions before we begin?” Answer any questions they may have. “Okay, let’s begin.”*

1. How did you learn about 2-1-1 Info?
2. How did the specialist handle your call? What did they suggest?
3. Did you contact [referral]? Yes/No
  - If Yes
    - a. How did it go? Did you get any help?
    - b. Did you learn anything new?
  - If No
    - c. Do you plan to contact [referral]?
4. Would you use 2-1-1info again? Yes/No
5. Have you recommended 2-1-1info to other people? Yes/No
  - a. If yes who did you recommend it to? Friends? Family? Coworkers?
6. What is your age?
7. How many people are in your household?
8. What is your occupation?
9. What is your ethnic background?
10. Gender F/M

Thank you for participating in our follow-up about how people use 2-1-1 services. Your responses will help us to gain a better understanding of how people use and are affected by 2-1-1.

### **Appendix C. 211info staff interview guide**

1. How long have you been working with 2-1-1?
2. What does 2-1-1 provide?
3. Who are its users?
4. What is your role with 2-1-1? What are your responsibilities?
5. How do people know about 2-1-1?
6. What are people’s reasons for calling?
7. How do people express their needs? Directly or indirectly? How do you recognize callers’ needs?
8. Do callers seem to prefer particular resources? Why?
9. Do they know about the service they are looking for?
10. Does serendipity play a role in answering 2-1-1 calls? How?
11. Describe a typical call. What makes it typical?
12. How many referrals does a typical call require? How many for an untypical?

13. Do callers realize that they have multiple needs when they contact you?
14. How does an information request change or evolve during a 2-1-1 call?
15. What kinds of questions do you ask in order to understand a caller's needs?
16. How do you provide information? Do you use different strategies in different situations? Explain.
17. What percentage of calls would you say are contacting 2-1-1 on behalf of someone else? What is the reason for them to call on someone else's behalf?
18. How often do you think that callers act on your referrals?
19. In what ways do you perceive that callers respond affectively to 2-1-1? Explain.
20. How would you characterize the successes of 2-1-1?
21. How have individual users been helped? (ask for specific examples: most typical, most surprising, etc.)
22. In what ways have benefits been accrued by users' families? The community at large? What is your evidence for these observations?
23. What would you like to know about 2-1-1 services that you do not already know?
24. How could 2-1-1 be improved?
25. How would you like to see 2-1-1 develop in the future?
26. Who else should we talk with about 2-1-1?
27. Do you have any other comments?

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