Developing Individual Budgets and Reimbursement Levels Using the Supports Intensity Scale

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About HSRI and the Authors

The Human Services Research Institute (HSRI) was founded in 1976 and is a non-profit, tax-exempt corporation with offices in Cambridge, Massachusetts and Portland, Oregon. For over 30 years, HSRI has assisted states and the federal government to enhance services and supports to improve the lives of vulnerable citizens, such as those with developmental disabilities or mental illness, or low income families. HSRI has provided consultation in such areas as strategic planning and organizational change, funding, systems integration, quality management and assurance, program evaluation, evidence-based practices, family support, self-advocacy, self-determination, and workforce development. For more information, visit: www.hsri.org.

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Contents

About HSRI and the Authors ........................................................................................................... ii
Acknowledgement ......................................................................................................................... v
Contents.....................................................................................................................................vi
1. Background Context for Reform .......................................................................................... 2
2. Strategic Planning Framework Tied to Individual Budget Allocations ......................... 7
3. Using the Supports Intensity Scale..................................................................................... 12
4. Selected State Results .......................................................................................................... 19
5. Conclusions and Next Steps .............................................................................................. 23
General Print and Internet References .................................................................................. 24
Internet Resources .................................................................................................................... 26
Appendix A: Validity Results of the SIS ................................................................................ A 1
Appendix B: Three Case Studies ............................................................................................... B 1
  Case Study #1: Assessing the Feasibility of Establishing a More Rational Resource Allocation System ........................................................................................................ B 1
  Case Study #2: Equitably Supporting People with Developmental Disabilities on the Comprehensive HCBS Waiver ......................................................................................... B 18
  Case Study #3: Implementing Individual Budgets in Comprehensive and Support Waivers ......................................................................................................................... B 41
Over the past three decades, federal and state developmental disability authorities have made significant progress in establishing comprehensive service systems to support their citizens with developmental disabilities. From 1997-2007, the number of people receiving Medicaid home- and-community-based services (HCBS), including 1915 (c) waivers, and Intermediate Care Facilities for the Mentally Retarded (ICFs/MR) services grew by 71% to serve 597,916 people in 2007. During this period, Medicaid expenditures for HCBS 1915 (c) waivers and ICFs/MRs more than tripled from $8.9 billion to $32.3 billion. In addition, by 2007 supporting people through HCBS waivers became the dominate approach with 83.9% of those served participating in HCBS waivers, although related expenditures amounted to just 62.8% of the total cost.¹

The growth in Medicaid waiver services reflects both improvements in the level and types of supports individuals receive and expansion in the number and variety of people being served. People leaving institutional settings as well as youth transitioning from special education programs have fostered the development of a much broader array of targeted services and supports. Families demand assistance in caring for their family members at home, and individuals used to the personalized supports found in the home demand more choice and self-direction from the public service system.

These trends toward more and varied Medicaid waiver services are facing formidable economic and structural challenges. States all over the country have serious budget shortfalls, reflecting both increasing demand and the current world-wide financial contraction. Further, the existing structure of community developmental disabilities service systems is not particularly conducive to consumer control. Using grant-in-aid contracts with private service providers enables states to control total spending and available service openings, but this limits the free selection of providers by individuals. While progress has been made toward fee-for-service payment arrangements that are more amenable to participant choice, the balance is still very much in favor of the established provider networks.

To address the dual challenges of decreasing resources and increasing demand for system reform – specifically in terms of a wider range of service options and more opportunities for self-direction – policy makers are seeking greater efficiency and equity in their service systems. Efficiency gains come from understanding exactly what it costs to provide a service at a given level of quality for a particular type of person. Most state developmental disability agencies, however, know little about per person actual costs. Equity requires understanding what supports individuals need, and a fair allocation of resources to address personal needs. Yet, few state systems have assessment processes that translate directly into resource allocations. Over time and across geographic areas within a state, decisions made about expenditures often appear idiosyncratic and unfair.

In response to internal state pressures and requests from the Centers for Medicare & Medicaid Services (CMS) to have states make changes to comply with federal law and regulation, state policy makers are pursuing alternatives to allocate resources more systematically and with

greater empirical confidence that individuals are getting what they need, no more and no less. Human Services Research Institute (HSRI) is currently working with eight states to design more rational and politically defensible reimbursement levels and/or individual budgets for recipients of HCBS Comprehensive or Support Waiver services. The key starting point is the Supports Intensity Scale (SIS), a standardized assessment of individual support needs developed in 2004 by the American Association on Intellectual and Developmental Disabilities (AAIDD). HSRI uses the individual assessment information in conjunction with past funding awards to uncover the implicit and explicit decision rules a state has employed for resource allocation. With this understanding as a foundation, states can move toward a system for allocating resources that is more equitable and more responsive to state programmatic and budgetary constraints. At the same time, because of its foundation in individual support needs, the SIS implicitly drives the resource allocation decision toward greater quality, in that it reinforces the importance of participant-centered planning, participant safeguards, and other key components of service quality.2

This report describes recent progress in moving state developmental disability systems using HCBS 1915 (c) waivers toward greater efficiency and equity, in the context of pressing issues in the field. It is important to note that these initiatives could be equally well applied to other Medicaid waiver populations. For example, HSRI is currently engaged in a similar approach in two other states, one developing three individual budget models for adults with physical disabilities, the frail elderly, and adults with developmental disabilities, and the other exploring individual budget levels for individuals served through a 1915 (b)/(c) waiver.

The four sections of this paper discuss:

- Background context on the key challenges facing policy makers,
- The strategic planning framework needed to support individual budget allocations,
- The importance of the Supports Intensity Scale as a foundation for this work, and
- Selected results for several states, exploring similarities and contrasts and highlighting core components of the developmental process.

In addition, Appendix B provides brief profiles of three states with which HSRI has worked, detailing the process undertaken, some state-specific findings, benefits derived and challenges encountered, and anticipated next steps. These close-up views of state experiences offer valuable insights to other states contemplating a similar endeavor.

1. Background Context for Reform

Policy makers are increasingly challenged to utilize resources efficiently, and to do so while advancing policy goals emphasizing self-direction. These pressures are working to encourage states to establish data-based methods for allocating resources to individuals.3 To move

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forward effectively, it is helpful if states first understand the nature of the challenges facing them: (a) the roots of the demand for meaningful community integration and personal empowerment, (b) the growing imbalance between service needs and available state resources, and (c) the need to utilize Medicaid more efficiently.

### Challenges Faced by Policy Makers

1. Need to promote community integration and personal empowerment
2. Rising service demand and state budget shortfalls
3. Need to utilize Medicaid efficiently

### Future Service System

#### Decisions Made by Policy Makers in Response

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**Promoting Community Integration and Personal Empowerment**

Over the past 30 years, best practice in the disability field has evolved from a reliance on facility-based or congregate service approaches to promotion of community integration and person-centered supports. It has been a gradual process, marked by small, hard-won gains. Service recipients have begun to influence the character of services and supports available but professional judgment remains a stronger force in deciding what is provided. People with disabilities and their families have more choices among services and service providers but they are still restricted to choices among items on a limited menu. Emerging practice, however, supports the belief that people with developmental disabilities and family members can play leading roles in determining the substance of their lives, and that relevant and preferred supports should be provided as needed. This is seen as the most effective approach for both individuals and the service system. It is no longer a question of whether the field will embrace consumer-direction but when and how.

Two major developments in the developmental disabilities field reflect this new thinking. First, in 2002, CMS unveiled the Independence Plus Waiver, offering states a simplified model for increasing consumer choice and self-direction. The waiver design drew on the lessons learned by states that had tried to establish a consumer choice model. By 2007, states were moving to incorporate self-direction into their waivers instead of going for the Independence Plus designation which had lost some of its appeal as states wished to build their continuum within waivers. According to CMS, as of 2009, more than 90 waivers included some form of self-direction. Secondly, some states are also using brokerage services to help administer, support, enhance, and develop a foundation for self-direction. Brokerage services can serve as both formal and informal support systems for all self-directed waivers. The aim is to offer the individual a support person who can aid in such tasks as managing personal budgets or negotiating with providers. A broker helps the individual by providing community information and community connections and enabling the person to live a meaningful life with the allocated resources. Connecticut, Oregon, and Tennessee are among the states giving consumers more
control over their support plans through this service.

Family support practices have long reflected this primary principle. Phrases such as “family-directed” or “family-driven” reflect the level of empowerment sought. The logical extension of this argument is that adults with disabilities should also be making service decisions. Whether or not the individual resides at home with parents, the goal is to promote and honor self-determined lives. Phrases like “self-directed” or “participant-directed” illustrate the empowered role adults with disabilities should play in controlling their own lives.

Going forward, policy makers should assure that a next generation of services is structured so that individuals and family members can choose and direct the supports they receive. Indeed, research consistently shows that support is most effective when the receiver of such support can exercise control over it.\(^4\)

**Reconciling Increased Service Demand and State Revenue Shortfalls**

Demand for publicly-funded developmental disabilities services is growing nationwide. Generally, it has been increasing at a rate greater than population growth alone. It is not uncommon to observe year-to-year increases of four percent or more in applications for publicly-funded developmental disabilities services. This increase in service demand is the product of several factors. First, as a result of better health care, people with developmental disabilities are living longer, approaching the longevity of the general population. This means that once an individual begins receiving public supports, he or she remains in the system for a longer time; turnover among individuals receiving services is reduced and, thereby, there is less capacity to absorb new demand. Second, a growing number of individuals live in households with primary caregivers who are themselves aging. These people seek services because their families cannot continue to support them or they need additional assistance. In 2003, over 416,000 people (a quarter of the national population of people with developmental disabilities living at home) had caregivers over age 60.\(^5\)

A third factor leading to increased service demand is the “success” of the special education system. Each year significant numbers of youth with developmental disabilities exit special education systems and seek ongoing services and supports to help them live independently and participate in the adult world of work.

At present, the challenge these circumstances place on policy makers is compounded by a weak economy resulting in state revenue shortfalls. A 2008 report published by the Center on Budget and Policy Priorities documents that 43 states presently forecast state budget gaps totaling over $78 billion.\(^6\) Many states have already cut public health programs, K-12 education, higher education, and state workforce levels. In addition, programs for seniors and people with disabilities have not been immune. At least seven states are cutting medical, rehabilitative,


home care, or other services, or significantly increasing their cost to individual recipients.

Most states operate their developmental disabilities service systems for home- and community-based services under fixed capacity limits. Only a handful of states (e.g., Arizona and California) provide for automatic annual caseload increases to accommodate additional eligible individuals. System capacity is managed by capping dollars or “slots” (service openings), or a combination of both. In addition, capacity is regulated by changes in funding from year to year. Capped system capacity, coupled with rising demand for services, has resulted in individuals spilling over onto “wait lists.” The number of people on a wait list measures the gap between current system capacity and expressed service demand. This gap grows when the expansion of system capacity does not keep pace with growth in service demand. A 2008 report indicates that, nationally, more than 88,000 people are on wait lists for out-of-home residential services. To meet this need, residential systems would need to expand by about 20%.

**Utilizing Medicaid More Efficiently**

Medicaid serves as a primary funding engine for developmental disability services. States use state funds to earn Medicaid match of 50% or more, depending on the state. In 2007, 78% of states’ available funds for developmental disabilities services went to match federal Medicaid reimbursement. In light of budget shortfalls throughout the country, it is hard to envision many states being able to expand their Medicaid program. Instead, they are looking to use existing Medicaid dollars more efficiently.

State Medicaid programs can include ICFs/MR services, but importantly, since 2001, they more often use dollars from the HCBS waiver authority. Nationwide, waiver initiatives in states presently serve about 501,000 people. Most are served with “comprehensive waivers” that can offer a wide array of services, including out-of-home residential services offering 24/7 support.

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9 Comprehensive waivers offer services to complement those available through the state Medicaid plan. Typically this is done to address the needs of a particular population group.
Increasingly, states are using Medicaid waivers to help finance services for individuals living at home. In the interests of efficiency, states are also fashioning “supports waivers” that offer a restricted set of services to people living at home. Significantly, support waivers do not offer residential services or 24/7 support, and the number of people served is capped, as is the amount of money that may be allocated to an individual. As Figure 1 above shows, the number of people on support waivers has increased substantially since 2000. But this growth has been fiscally contained: the amounts allocated per individual typically are far less in supports waivers (on average $14,000 per person annually) than in comprehensive waivers (about $47,000 on average per person annually).

The dual-waiver strategy allows policy makers to stretch the resources they have to reach more people, most notably people receiving “in-home supports.” Seventeen states presently administer supports waivers, with other states seeking to do so. As illustrated by Figure 1 above, supports waivers are carrying an increasing share of the service load in states, 27.6% in 2006.

This trend toward more targeted use of Medicaid waivers will likely continue. Medicaid is an essential component to any state’s developmental disabilities support system. The challenge for states is determining how best to incorporate support waivers in the larger service system. Several state leaders view supports waivers as an option within a range of supports that includes the comprehensive waiver and other state-funded options, configured from least to most costly (see Figure 2 to the right). Ideally, these options fit together to provide a seamless, cost effective approach whereby individuals are matched to the option that most effectively meets their needs. Individuals might start by securing modest amounts of state-funded services and not need to use any waiver services. If more supports are needed, individuals could be enrolled in a supports waiver. Finally, if still more supports are needed the individual could be enrolled in the more costly comprehensive waiver.

Medicaid waivers are a core funding source but it is important to recognize that the waivers do not hold all the answers. Among the more obvious limitations:

- Medicaid waivers can only serve the “beneficiary,” which is to say “the individual with disabilities.” “Families” do not qualify for a Medicaid waiver, although waivers can offer services that support the family to ensure better outcomes for the individual (i.e., respite, respite, respite).
family counseling). Some family members can qualify to be paid to provide specific types of services.

- Not everyone is eligible for a Medicaid waiver; it depends on income and disability.
- Not everyone can get into a waiver, even if they are eligible; there are waitlists.
- Medicaid does not meet every need a person/family has. As a result, systems tend to recast human needs as “what is Medicaid reimbursable.”

Exploring ways to use Medicaid waivers more efficiently may yield results for state systems – more people getting some amount of public support and in a manner that offers more people the appropriate and adequate amount of support. But the journey is a technical as well as a political one, requiring states to clarify what they want, understand what they are now doing, and to systematically plot their next steps. The following section describes one viable approach.

2. Strategic Planning Framework Tied to Individual Budget Allocations

In the face of major challenges to developmental disabilities service systems, policy makers need a roadmap for moving forward. In particular, they require methods for systematically assessing the support needs of individuals and allocating resources more efficiently and equitably based on the support needs. This entails establishing assessment-informed means for setting individual budget allocations, as well as reasonable associated service reimbursement rates. System reform key to these ends presents a formidable task. Over 20 years of working with states to improve resource allocation processes, and more recent efforts using the SIS, HSRI has developed and refined a comprehensive strategic planning framework which has proven useful in leading to needed systemic improvements. This approach has four main phases: (a) preparation for the project, (b) data collection, (c) setting individual assessment levels, IBAs and service rates, and (d) implementation.
Phase 1: Preparatory Tasks

The first preparatory step is for state policy makers to articulate their goals. While the overarching intent is obviously to improve the efficiency and effectiveness of resource allocation across Medicaid waivers, under that umbrella may fall varying policy goals. There are different stakeholders to consider: individuals needing sufficient resources to meet basic needs and some opportunity for choice, service providers needing reasonable reimbursement rates to sustain a business and retain skilled staff, advocates seeking equitable service allocations for individuals regardless of where or when they entered the system, managers seeking to comply with CMS requirements and state regulations, and policy makers pursuing complementary interdepartmental initiatives. At the work’s outset, policy makers should identify the goals that most drive the reform effort. These decisions will continue to influence the planning and implementation activities.

The second planning step is a direct outgrowth of the first: engaging stakeholders throughout the course of the project. Stakeholders include service recipients, parents, service providers, and others concerned with the outcome of resource allocation transformation. A “Stakeholders Committee” can continually provide broad input and feedback, to ensure that the envisioned changes and their implementation are consistent with service system values and principles. This involvement also may contribute to ensuring the feasibility and practicality of the changes that are made.

The third step is tackling a very concrete problem: choosing feasible measures of individual needs and resources used. The data to be gathered must be sufficient to accurately and appropriately differentiate among waiver participants with respect to their supports needs. For instance, the Supports Intensity Scale (SIS) is an assessment tool that is used by several states.12 Other tools are available and states may find it preferable to use legacy tools that have been in use for years. However, it is essential that the instrument selected be capable of reliably assessing support needs and also be useful in determining the relationship between these needs and dollars expended (or direct service hours delivered). Collecting specific information about resources used to support each individual becomes the baseline for developing resource allocation, although supplementary cost information may be needed to guide the development of more appropriate provider rates in the future.

Lastly, information must be collected on the amount of money that is expended to service providers annually for each participant. In order to be most useful this expenditure information should not be biased by legacy reimbursement rates that are caused by differing geography-based and administrative jurisdictions, rates set to deal with specific deinstitutional events, or

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12 Since its inception, the use of the SIS in the United States has been rapid. As of the end of 2008, SIS On-line had collected 90,000 individual results. As this information grows, careful analysis has revealed that, for example, states with SIS results for individuals 18 years or older using comprehensive or support waiver services show similar results. The primary author of the SIS, Jim Thompson, feels that these results affirmed the SIS norming process. In contrast, the managing author of the ICAP, the late Brad Hill, collected results for the ICAP from 38 states. Analysis of those results for ten states (Campbell and Fortune, 1995-2006) revealed that individual budgets developed by stepwise regression tended to result in individual state profiles that were different from state to state, reflecting differences in recipient waiver eligibility, overall funding, waiver service and recipient composition, and the culture and evolution of each state’s DD system. Initial information from the SIS suggests that states with people using comprehensive or support waivers may have generally similar results. Comparing the ICAP to the SIS shows the validity and flexibility of the SIS; it allows for use in model development with a sense of predictability on how it will react to the data.
significant differences between providers resulting from a negotiation process. Removing the reimbursement system bias from the expenditure data may be an extensive task, but is essential to deriving IBAs/LBAs that satisfy the equity objective.

**Phase 2: Data Collection**

The first issue to decide regarding data collection is whether to begin with a small portion of the population or to gather information on all waiver recipients. Eventually, if new assessment practices and rates are to be implemented for all HCBS participants, the state will need to have information on the entire population. However, a state may find it more feasible, financially as well as practically, to start data collection with a representative random sample. As long as the sample is drawn properly, it can serve as a legitimate proxy for the entire population. This approach allows state policy makers to essentially field-test crucial components of the change process: to learn how best to manage the data collection process, to smooth out logistical difficulties, and to explore the potential impact of changes in the resource allocation model. Larger samples increase the certainty of the results, especially where there are modest relationships between assessments and expenditures. Alternatively, policy makers may choose to start by assessing the entire population. While this requires greater investment at the onset, it makes for more reliable analysis of potential risks and impacts.

Regardless, of how a state begins this process, it is nonetheless advisable to delay implementing the new resource allocation model until the SIS (or some other standardized assessment tool) has been administered across the entire population.

It is crucial that the data collection is managed carefully and thoroughly. Otherwise it may significantly set back the reform effort. Success requires that data collectors are well trained and a precise process is in place to guide their actions. The assessments need to be administered properly so that the funding application is built on a solid platform of consistent, reliable, and valid data. If there are questions about how well assessments have been performed, the entire funding application may be thrown into doubt. As data are collected, managers must continually check to assure that the data are being collected accurately and without bias.

The second critical issue related to data collection is proper compilation of the information. Accuracy and reliability must be assured. This requires reviewing data for completeness, internal consistency, and possible error patterns. Catching omissions or errors early can greatly reduce problems at the data analysis and interpretation stages.

**Phase 3: Levels and Rates**

The first step in establishing assessment levels and payment rates is to systematically analyze the data on individual support needs in relation to cost. Items in the assessment tool are examined individually and/or grouped into scales, to determine what combinations of variables can best explain variance associated with targeted dependent variables (i.e., annual costs and/or a measure of services hours). The analysis separates individuals into a reasonable number of “assessment” levels where there is meaningful separation between the levels. Typically, the levels depict low to high support needs, plus other categories related to complex behavioral or medical needs. Ideally, total waiver expenditures and hours of support change in
relation to changes in assessment level. The number of levels and their composition are dictated by the data set. The levels are subsequently tested against two major service categories: residential services and day services. This process results in defined levels composed of individuals who are assigned to each level. If the data allow, individuals can claim their own unique level and this could lead later to true “individualized budget allocations.” Achieving this level of precision, however, is hard to achieve initially.

The second step involves setting payment rates based on historical costs. HSRI employs a standard rate-determination framework that bases rates on the level of direct staff effort necessary to deliver a particular service to a person with a certain level of support need. At the same time, it is important to be clear about what part of the rate will incorporate support need factors and what part will be based on other provider cost information. In community residences, support needs principally affect the amount of direct support staff that is necessary. Other costs, however, are not directly affected by support needs, so the rate should also take into consideration usual and customary provider costs. This approach yields payment rates that reflect consumer support needs and ensure equitable levels of provider compensation for non-direct staff costs. The underlying principle is that each service provider should receive sufficient compensation to support the delivery of necessary services to each individual. Alternatively, if the assessment is to be used to generate prospective budget allocations, it is necessary to clarify what types of services and supports (e.g., residential services, day services or both) fall within the scope of the budget and which do not.

More specifically, the rate-setting process entails: (a) defining allowable costs and the subject service elements, (b) considering present provider costs by these cost elements, (c) developing cost models per service that are built on the defined cost elements and their costs, and (d) monitoring the impact of the resulting rates on the system, especially with regard to budget goals.

The third step is setting individual budget allocations (IBA). This may or may not be appropriate or possible in a particular state. IBAs are calculated by computer through systematic analysis like that described for level assignment and the revised rates. The intent is to set IBAs

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14 In Version 3.5 of the HCBS Waiver Application (CMS, 2008), CMS defines IBA as “a prospectively-determined amount of funds that the state makes available for the provision of waiver services to a participant”, which may encompass all waiver services or a subset of waiver services. The instructions go on to describe two ways that waiver services may be limited: using a prospective individual budget amount or limiting the budget by level of support. Reinhard, S. C., Crisp, S., Bemis, A., & Huhtala, N. (July, 2005). Participant-centered planning and individual budgeting. Rutgers Center for State Health Policy. Community Living Exchange Collaboration: A National Technical Assistance Program. National Academy for State Health Policy describe CMS requirements for setting individual budgets: (1) States must describe the method for calculating individual budgets based on reliable costs or services utilization. By 2007, for example, several states had engaged in waiver cost studies to determine cost-based reimbursement for waivers for people with intellectual disabilities (i.e., IL, WY, OR, FL, MA, OH, FL, MT, WA). Good cost and utilization data form the vital underpinnings of good individual budget development for the long-term goal of finding and delivering sustainable care. (2) States must develop individual budgets using a consistent methodology for all involved participants, and should review and monitor the individual budgets regularly. (3) From the perspective of service recipients and advocates, a viable methodology should be open to public inspection, should allow the participant to move money around, and should define a process for making adjustments in the individual budgets and for informing participants of amount authorized or changes to those authorizations. (4) From the perspective of the state, the methodology should permit the state to evaluate over and under expenditures in the individual budget as well as to project system-wide expenditures through the fiscal year.
consistent with both the assessment-based level assignment and the revised rate structure. These results will be equitable but not necessarily adequate – people may lack a sufficient budget amount to purchase what they need. IBAs need to be carefully set to achieve stated policy goals while minimizing disruption for individuals. Nonetheless, some individuals will experience increases or reductions in the amounts expended on their behalf. IBAs may also be used in a system of tiered waivers, using multiple caps at the lower cost range.

**Phase 4: Implementation**

Implementation requires careful reflection and planning. First, with assessment levels established and payment rates associated with each level or individual budget, it is time to step back and review what has been learned. Altering payments for services obviously has ramifications for people with developmental disabilities and for service providers. For example, some states have revised their provider rates only to experience unanticipated increases in expenditures. In some of these states, this has led to suspension of new enrollments in the HCBS waiver to avoid expenditure overruns. Other states have experienced serious disruptions in their provider networks as a result of rate restructuring, causing negative consequences not only for providers and their staff but also for people with developmental disabilities. It is critical that great care be exercised to ensure that the revised rates and payment levels do not result in major disruptions of the services and supports upon which people with developmental disabilities and their families rely day-by-day. The state needs to develop the capacity to anticipate and analyze the effects of proposed changes. In particular, it is important to simulate the results of the new payment structure, secure information about how funding patterns will change, and obtain feedback about the real-world implications of the change. Having ongoing involvement of stakeholders will be helpful in this effort.

Next, bearing in mind the impact of payment changes, a plan needs to be developed to implement the new policies and practices across the system. This will likely entail modifying administrative rules, building awareness among individual and providers, training staff who are key to the implementation process, developing individual service plans, revising billing and payment practices as needed, and otherwise assuring smooth implementation. In addition, state staff should be prepared to use “exceptional care/cost” procedures to accommodate individuals who have unique support needs and do not fit within the established cost allocation models. The model, after all, is a “best fit” solution to accommodate most individuals and will likely not be satisfactory for all.

Finally, the state will be ready to implement the new practices. State staff members are encouraged to work with waiver recipients, their families, service providers and others to see that new procedures and decision rules are put in place and monitored over time, so that adjustments can be made as necessary. Experience reveals that many iterations are typically needed before the new rate structure is used and becomes an accepted integral part of the overall service system. During the “transition” period, the state agency may find it necessary to mitigate the near-term financial impact of the new structure on providers as well as individuals.

Overall, the process is a challenging one, dealing with the uncertainty of what the data will present as well as the sensitive dynamics of the situation on the ground. It is not a process
which can be rushed. Each state is different. The basic approach is to follow the data and actively engage all stakeholders.

### 3. Using the Supports Intensity Scale

Key to making developmental disability systems more equitable and effective is the collection of reliable and accurate information on individual support needs. A variety of assessment tools are already available, including those developed by individual states (e.g., in New York, Wisconsin, Rhode Island, California, Florida) and others, such as the Inventory for Client and Agency Planning (ICAP), with multi-state application. In recent years, the Supports Intensity Scale has come to be seen as an instrument with strong potential for providing the required assessments\footnote{Smith, G, & Fortune, J (2008). The Supports Intensity Scale and Resource Allocation. AAIDD: White Paper. 3-6.}. The following section describes the nature of the SIS and how it is used to develop assessment levels and individual budget allocations.

**Background on the SIS**

Developed over a five-year period by AAIDD, the SIS directly measures the support needs of individuals. In sharp contrast to other assessment tools used in the developmental disabilities field, which tend to measure an individual’s lack of skills, the SIS focuses on what assistance the person needs. The SIS was designed primarily to inform individual service plan development. Now it is also being used to improve resource allocation decisions.

The SIS includes 86 items covering three sections:

**Section 1. Support Needs Scale:** This section documents the general support needs of the individual, in terms of how often the support is needed, how long it takes to provide the support each time, and what type of assistance is needed (from monitoring to full physical assistance). Six sub-sections address the major areas in which support is typically needed:

- Part A: Home Living Activities
- Part B: Community Living Activities
- Part C: Lifelong Learning Activities
- Part D: Employment Activities
- Part E: Health and Safety Activities
- Part F: Social Activities

**Section 2. Supplemental Protection and Advocacy Scale:** This section examines the types of activities the individual performs to protect and advocate for him/herself. As in Section 1, each activity is rated in terms of frequency, time, and type of support.

**Section 3. Exceptional Medical and Behavioral Needs:** This section documents extra support needed to deal with particular medical and behavioral conditions, above and beyond the regular daily supports covered in Section 1. Part A indicates medical supports needed, and Part B indicates behavioral supports needed.
The SIS is scored in several ways. First, six standard sub-scores in Section 1 are totaled to create the Support Needs Index (SNI, ranging in value from 38-143). Sections 2, 3a, and 3b are scored separately; they have scores ranging from 0-90 (Section 2), 0-32 (Section 3a), and 0-26 (Section 3b). It is important to note that Section 1 scores are standardized, but scores in Sections 2, 3a, and 3b are not standardized.

As documented in the SIS Users Manual, the SIS has been shown to have strong psychometric properties; including face validity, content validity, internal consistency, and construct and criterion validity (see details in Appendix A). In addition to its documented psychometric properties, the SIS, with its focus on support needs across the broad spectrum of life activities, is regarded as an integral and instrumental part of the planning process. Nationally normed in 33 states (n=1,306), the SIS allows states to see their service population against a national standardized group. In this way, it offers a consistent foundation for resource allocation decisions. Both of these roles make the SIS a crucial component in any movement toward consumer-directed service systems.

Since its first use by Georgia, Colorado, Utah, Louisiana and Washington in 2004, the SIS has gradually become the most frequently-chosen assessment tool for developmental disability service systems in the United States, gradually replacing the ICAP. As Harries et al. found in their 2005 study, the ICAP “adaptive behavior construct” and the SIS “support need construct” effectively measure the same conceptual, social and practical competencies. The SIS is currently being used in 14 states, four Canadian provinces, and 14 countries; and it has been translated into ten languages. Much of the attraction of the SIS lies in its utility for service planning, but also in its consistency across populations of individuals with intellectual and developmental disabilities in different jurisdictions (the “bell-curve” distribution of results). In addition, it has other strengths, such as its focus on measuring support needs and its capacity for capturing information on both behavioral and medical challenges faced by individuals as well as some of the natural supports individuals receive.

Using the SIS to Build Assessment Levels and Individual Budget Allocations

With extensive information on individual support needs, generated by systematic use of the SIS, a state agency is well positioned to create logical assessment groupings of its waiver participants and to assign each individual to an assessment level. The historical service costs for the individuals in each level are averaged to create a specific funding amount for each assessment level. Creating a set of assessment levels in this way is not very different from establishing individual budget allocations. Essentially, each individual has his/her own “level” which is the individual budget allocation (IBA). However, such a theoretically simple jump to IBAs actually requires much more complicated technical analysis and policy decisions. In much of its work, HSRI has followed a straightforward four-step process to build from SIS data to stable and defensible payment structures. The steps are described below, with examples from recent projects.

**Activity 1: Gather Assessment Information**

Given that a state has decided to use the SIS as its primary assessment tool, state administrators must decide on how to gather information and how to assure inter-rater reliability. They have three alternatives:

1. **Contract with AAIDD to have trained assessors come to the state and collect information.** This option will assure that the data are collected properly, but it is relatively expensive. States incur travel and labor costs for the surveyors as well any associated fees. Still, states may find this approach desirable, especially for collecting information on an initial study sample, and if training local surveyors is built into the effort.

2. **Create specialized capacity within the state to administer the SIS.** Oregon, for example, has chosen to use a special unit of 13 state staff to complete SIS assessments on the 3,900 people on its comprehensive waiver. (Earlier, the state had used AAIDD-trained consultants from other states to conduct the SIS with 400 individuals in a representative sample, to confirm the viability of the SIS process.) Likewise, Virginia has geared up to train enough master trainers within the state to have statewide administrations of the SIS by 2012.

3. **Utilize existing staff, such as service coordinators.** Colorado had local Community Centered Boards case managers give the SIS but discovered that a great deal of state involvement was necessary to assure proper administration and consistent practices across the provider-given SIS interviews.

Once the data are gathered, states typically choose to use “SIS On-line” ([http://www.siswebsite.org/cs/SISOnline](http://www.siswebsite.org/cs/SISOnline)) to compile the data and make it available electronically for subsequent analysis. States often use tablet computers to store the results in the field during administrations, making nightly downloads to the central SIS On-line secure database.

Regardless of the approach taken, it is essential that policy makers and stakeholders alike have confidence in the information collected. Later, parties may not especially like how the results are applied to set budget allocations and reimbursement rates, but at least they are less likely to question the reliability and validity of the interview data.

**Activity 2: Understand Past Service Allocations**

Individual assessment information should lead to current service awards. The state developmental disabilities agency has looked in some fashion at characteristics of the individual and determined what services the person needs and what that should cost to provide. From the start, there should be information on what has been expended per person to meet his/her needs. These data usually take the form of historical expenditures for the last complete year or the current allocations for individuals in a new fiscal year. The dollar amounts may often be obtained from a statewide Medicaid Management Information System. Usually this information requires some careful scrutiny. For example, individuals with less than a full year of service are screened out. Or, people with extended nursing home, hospital or other extraordinary behavioral concerns may need to be flagged as potential outliers. In addition, if the data covers only a
sample of waiver recipients, it may be necessary to know the entire state expenditures or approved allocations to ensure that the sample group is representative of the population.

Sometimes the actual dollar amount of the current service award is not available. A viable substitute may be the number of hours of service the person receives. In the few states which have done a cost study, those data can sometimes be translated into service hours\textsuperscript{18}. For the majority of states, however, another approach is needed. One way to capture information on service hours is to use a tool called the Individual Service Survey (ISS)\textsuperscript{19}. The ISS measures the amount of direct service hours an individual receives and the types of services used. The ISS simultaneously offers a reference check on the SIS. By cross-referencing the needs a person has (SIS) and the direct services hours he/she is receiving for those needs (ISS), individuals can be accurately placed into groups by what service they receive and how many hours of direct service they need.

Another useful way to put a cost on service awards is to conduct a Provider Cost Survey (PCS)\textsuperscript{20}. The PCS generates comprehensive service cost information at the provider level, gathering data on total organizational expenses and income. The process yields detailed data about indirect costs and fixed expenses as well as direct staff hours and cost. Like the ISS, the PCS can provide a cross-check to the SIS. In Oregon, for example, the ISS and the PCS results both indicated that providers spent an average of 9.2 hours of direct care per SIS respondent living in an adult residential setting. Such cross-checking is extremely useful for building reimbursement models and refining the rates used. While it is better to have dollars and hours for each waiver recipient, many times the work has to be built largely on historical expenditures alone. The PCS looks at how much it costs a provider to give the supports an individual needs. This approach is valuable in states that do not have adequate cost and expenditure data for individuals.

Collecting information about how much the individual is currently receiving – whether in dollars or service hours – is essential for mapping the relationship between support needs of the participant and current resource allocation, and thus to truly understand the fiscal pressures a state faces. In most states, providers do not know the actual cost of each service they provide – they simply take what they are paid and make that allocation work. Shedding light on this issue helps states to move toward a person-centered service arrangement where dollar amounts meet support needs. A person-centered system gives the individual more flexibility to obtain the supports needed and inevitably live the life he/she wants, rather than being limited to a prescribed (and pre-priced) service package. Without obtaining good cost information it is impossible to establish rates which actually meet an individual’s support needs and allows the individual to be more in control of his or her life. Historical expenditures do not mean that the appropriate amount has been spent in the past or that it is adequate to meet the support and service needs of individuals on the waivers. Rather, it is just the best data that is available in the short term.

\textsuperscript{18} For example, in Oregon the cost study data was easily converted into service hours, but in Colorado it could not be.

\textsuperscript{19} Developed in 2007 by HSRI.

\textsuperscript{20} This process was developed in 2007 by HSRI and Burns & Associates.
In recent work with Oregon, HSRI has helped to develop a model which uses levels of need (determined by SIS scores and ISS hours) in combination with unit costs of the needed services, to systematically determine the proper waiver reimbursement for an individual (see Figure 1 below). In developing this system, HSRI used the PCS to survey providers regarding their services and costs – claims, billings, approved waiver expense, direct service hours, types of services and supports provided, and total service expense and income. In Oregon, the three sources of information enabled the state to move from survey and assessment results to levels of hours of support and cost per hour, and then to the formation of five tiers of residential reimbursement and two tiers of employment and day program reimbursement.

Figure 3: Oregon Schema for Determining Reimbursement

This model gives states the ability to set reimbursement levels or IBAs that explicitly take into consideration support needs, current service hours and realistic hourly costs, resulting in sustainable rates for providers and total payments for individuals.

Activity 3: Analyze the data into needs categories

Once the data are gathered and compiled electronically, the analysis can begin. Initial inspection of the data involves frequency distributions and simple correlations, and checking for errors or unexplained tendencies. HSRI has begun to observe common characteristics across multiple state data sets. Figure 4 (on the following page) showing the distribution of SIS total scores reveals similar bell-shaped curves for the scores from recipients of Comprehensive waivers. Each bar in the histograms is equal to 5 SIS Support Needs Index (SNI) points on the SIS. Each state’s data has slightly more people with more support needs, indicated by the taller bar to the right of the center of the graph. The SIS SNI has an average score of 100, as illustrated by the black curved line.

To analyze the support needs scores in relation to costs (and perhaps direct service hours), regression analysis methods are applied to individual items and scales of items (and combination of scales) to determine which constructs best explain the variance associated with historical costs and/or services hours.

From this analysis comes a set of distinct “assessment” levels, typically going from low to high support needs, with additional groupings primarily for people with extensive and complex
behavioral or medical needs.

At this point it is advisable for the state to have data on the full population of service recipients. Using only a small sample of recipients can yield “prototype” levels, indicating the viability of the approach but not the specifics of the full-population resource allocation model. In several states (Colorado, Oregon, Virginia, Louisiana), HSRI has recently used this strategy to develop prototype draft waiver reimbursement models. Typically the models consist of 6 levels. In Colorado the methodology was refined to include assignments to 42 subgroups within six levels.

Figure 4: SIS Results in Four States

These reimbursement systems are inclusive and adaptable. They include individuals who need the least and most amount of support, allowing everyone served by HCBS waivers to be covered. In a systematic way, more dollars are matched to the individuals who have the most support needs, medical and behavior problems, and community safety supervision needs; and fewer resources are matched to individuals with fewer needs. This matching can be accomplished using levels of reimbursement or with the formation of individual budgets. The framework adapts itself to the available information and desired goals of different states. In one state, the framework guided the formation of a six-level prototype model that will be revisited in the future to form reimbursement tiers. As Table 1 illustrates, the assessment levels can be expressed as decision-making rules based on SIS scores.

Table 1: Prototype Decision-Rules based on One State’s Non-Random Sample

<table>
<thead>
<tr>
<th>Level 1 (n=200)</th>
<th>SIS Sum Scales ABE</th>
<th>SIS ABE National Percentile</th>
<th>Section 3a Medical Support Score</th>
<th>Section 3b Behavior Support Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>≤ 30 &amp;</td>
<td>50th percentile or less</td>
<td>Not Used</td>
<td>≤ 6</td>
<td></td>
</tr>
<tr>
<td>Level 2 (n=151)</td>
<td>≥ 31 to &lt; 36 &amp;</td>
<td>51st to 75th percentile or less</td>
<td>Not Used</td>
<td>≤ 9</td>
</tr>
<tr>
<td>Level 3 (n=37)</td>
<td>≥ 37 &amp;</td>
<td>76th percentile or greater</td>
<td>Not Used</td>
<td>≤ 10</td>
</tr>
<tr>
<td>Level 4 (n=35)</td>
<td>≥ 12 to ≤ 21 &amp;</td>
<td>33rd to 60th percentile</td>
<td>Not Used</td>
<td>7 to 10</td>
</tr>
<tr>
<td>Level 5 (n=30)</td>
<td>Not Used</td>
<td>Not Used</td>
<td>≥ 8 or</td>
<td>Not Used</td>
</tr>
<tr>
<td>Level 6 (n=68)</td>
<td>Not Used</td>
<td>Not Used</td>
<td>Not Used</td>
<td>≥ 11</td>
</tr>
</tbody>
</table>


**Activity 4: Develop payment levels or individual budgets**

When states seek to adopt person-centered funding levels informed by individual assessment scores, they typically have two fundamental objectives:

1. To establish IBAs that are rational, fair and non-discriminatory and based on a standardized assessment of waiver participant support needs. The IBA will serve as the basis for individual service planning and budget determination. The introduction of IBAs into the service system will not only affect funding but also require alteration of the Individual Support Plan (ISP) development process; and

2. To restructure and standardize state payments for waiver services so that they reflect not only the support needs of individuals but also clear definitions of allowable costs and the scope of covered services.

The service rates themselves are graduated (based on the cost model) to take into account differing intensities of support needs exhibited by waiver participants, as well as other potential
factors (e.g., policy preferences pertaining to allowed indirect expenses, allowed expenditures for staff training or health insurance for staff). Initial prototype service rates should be subsequently reviewed and revised as warranted.

While assessment levels depict the range of supports a group of individuals need, the payment level attached to each assessment group represents the actual average cost for the individuals assigned to the level. Frequently, however, it is difficult to make good groupings due to the lack of recent provider cost surveys and aging waiver rates which in some cases may not have been seriously examined in many years. It is also difficult to work with changing reimbursements in states which seem to be heavily influenced by large and well connected provider associations and groups. After gathering the needed information, HSRI works with the state to integrate the data with respect to technical constraints and the state policy context. In Colorado, the rate structure used had 42 custom subgroups across six levels. The best alignment of individual assessment results (SIS predictor variables) explained 52% of the variance in residential habilitation waiver reimbursements\(^\text{21}\). In contrast, in Georgia, the process by-passed the creation of levels and sub-groups, instead going directly to individual budget amounts. In developing budget allocations and an implementation plan, policy makers were sensitive to the challenges of replacing the oldest HCBS waiver in the nation with new comprehensive and support waivers within a state that is ranked 49th in per person waiver expenditures\(^\text{22}\). Policy-makers chose a five-year phase-in implementation where the first year, 80% of waiver payments are based on the FY08 historical allocation and 20% based on the new model. The phasing is gradual over the next five years until 100% of the new model allocations – individual reimbursement amounts – are used by case managers.

4. Selected State Results

The following section highlights selected findings from five states, including Colorado, Georgia, Louisiana, Oregon and Virginia. Results include: (a) SIS scores from each state, distinguishing between comprehensive and supports HCBS waivers, and (b) SIS scores used to build individual budgets and reimbursement levels.

**SIS Scores for Comprehensive and Supports Waivers**

As discussed in section 1, states have flexibility in developing their Medicaid waivers, with options for stretching their resources to cover more people and simultaneously creating an overarching waiver strategy that encompasses the full breath of their waiver-eligible population. The field uses the informal terms “comprehensive” and “support” to distinguish waivers by extent of services covered. Comprehensive waivers provide extensive services including licensed residential services provided outside the family home. Supports waivers are designed to complement the unpaid supports that are provided by family caregivers. Logically, the per-person cost in comprehensive waivers is substantially greater than in supports waivers. But,

\(^{21}\) Smith,G., Fortune,J (et al.) (2007). *Comprehensive Waiver Residential Habilitation and Day Services Payment/Funding Levels: Final Recommendations*. HSRI.

insofar as the two types of waivers “meet” at a particular need and cost point in each state, such that individuals with only somewhat different support needs fall into different waivers, just how different are the populations served by the two waivers? SIS data from five states offer an initial answer.

HSRI examined the support needs profile of individuals on seven comprehensive and support waivers, using three summary SIS measures: the sum of Section 1 standard scores on subsections A, B, and E (“ABE”); the Section 3a medical score; and the Section 3b behavioral score. Table 2 (on the following page) displays summary scores for these SIS domains by state and waiver (n = 17,757). Four of the waivers are comprehensive and three are supports.

Overall, the table indicates that:

- Mean scores on each of the summary measures for the 9,822 individuals on four comprehensive waivers significantly differed from the mean scores of the 7,935 people on three support waivers.\(^23\)
- Three groups of state waivers had significantly similar mean scores on the SIS ABE measure.\(^24\) These three groupings are:
  - Georgia and Colorado support waiver groups,
  - Georgia, Colorado, and Oregon comprehensive waiver groups, and
  - Oregon and Virginia comprehensive waiver groups.
- Three waiver groups had significantly similar mean SIS Medical scores:\(^25\)
  - Colorado and Louisiana support waiver groups and the Georgia and Virginia comprehensive waiver groups,
  - Colorado and Virginia comprehensive waiver groups, and
  - Colorado and Oregon comprehensive waiver groups.
- Two waiver groups were found to have significantly similar mean SIS Behavioral scores:\(^26\)
  - Georgia and Louisiana support waiver groups, and
  - Oregon and Virginia comprehensive waiver groups.

Two patterns emerge from these findings. First, states group very differently depending on the measure. Colorado and Georgia ABE scores line up in both types of waivers, but their medical and behavioral scores do not. Oregon and Virginia are similar on ABE and medical but not behavioral. These findings are not surprising. ABE is the core descriptor of each waiver population, revealing the basic commonality across state developmental disability populations, while the medical and behavioral scores hint at the areas of diversity among state systems. The groupings suggest that somewhat different populations are currently being served through the states’ waivers. Administering the SIS to people on the wait list could prove enlightening.

\(^{23}\) .000 level of statistical significance using student t-tests
\(^{24}\) Homogenous subsets tested with the Ryan-Einot-Gabriel-Welsch ANOVA post-hoc test at the .01 level of statistical significance.
\(^{25}\) Homogenous subsets tested with the Ryan-Einot-Gabriel-Welsch ANOVA post-hoc test at the .01 level of statistical significance.
\(^{26}\) Homogenous subsets tested with the Ryan-Einot-Gabriel-Welsch ANOVA post-hoc test at the .01 level of statistical significance.
Second, despite the statistically significant differences, the magnitude of the variations across the five states is not substantive. ABE shows a range of less than four (4) points from lowest to highest state mean, where the possible range is 105. The medical and behavioral measures vary only a few points within a narrow possible range. It may be that the statistical variations are more a function of waiver sample or population size than meaningful population differences. Further, it is important to note that the two Section 3 scales are not standardized. This makes it more difficult to determine the significance of the few point differences in state results for these SIS scales.

Overall, these findings reinforce the normative anchor in the SIS and foster confidence that a limited number of resource allocation models can be built that will advance equity and efficiency in many different states.

**From SIS Assessment Levels to IBAs**

While the findings discussed above suggest that SIS scores across states and waiver types are fundamentally similar, the primary issue in using the SIS for resource allocation decisions is the relationship between SIS scores and waiver expenditures.

Assessment levels are established to differentiate the population in terms of support needs, from those with least to most need, but also in relation to expenditures. The objective in developing assessment levels is to establish the highest correlation between SIS scores and expenditures. In essence, the greater the correlation, the greater the variance explained, and thus the greater the confidence in using SIS scores to establish individual budget allocations.
As explained above, the level-building progresses so that the lowest level includes individuals with the mildest support needs and/or medical or behavior problems. The goal is to build assessment levels where no individual presents a support need and/or medical problem or behavior problem that does not match the financial resources that will later be associated with each level.

The frameworks developed tend to vary in the explained variance they offer. As Table 3 shows, the models developed in five states make ample use of SIS scores, but are strengthened when other variables are added – specifically, whether or not the individual poses a community safety risk and the person’s residential facility size or type. In Oregon and Virginia, adding these factors almost doubled the amount of variance explained. Colorado illustrates that, in general, comprehensive waivers are easier to explain than support waivers even with a shared framework of support levels. Georgia clearly shows the advantage of using a common resource allocation individual budget model for the full populations of both types of waivers.

<table>
<thead>
<tr>
<th>Predictor Variables</th>
<th>Colorado Comp</th>
<th>Colorado SLS</th>
<th>Oregon Comp</th>
<th>Virginia Comp</th>
<th>Louisiana Now</th>
<th>Georgia Comp &amp; Now</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIS Sum of ABE</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>NA</td>
</tr>
<tr>
<td>SIS Medical Section</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>SIS Behavioral section</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
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<tr>
<td>Community Safety Risk</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Residential Facility Size or Type</td>
<td>NA</td>
<td>NA</td>
<td>√</td>
<td>NA</td>
<td>√</td>
<td>NA</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>51.5%</td>
<td>22.3%</td>
<td>44.5%</td>
<td>47.6%</td>
<td>45.6%</td>
<td>75.3%</td>
</tr>
<tr>
<td><strong>Unknown</strong></td>
<td>48.5%</td>
<td>77.7%</td>
<td>55.5%</td>
<td>52.4%</td>
<td>54.4%</td>
<td>24.7%</td>
</tr>
</tbody>
</table>

Greater explained variance may increase understanding of the population dynamics and, thus, inspire greater confidence in the validity of the model as a foundation for resource allocation decisions. Yet, the real challenge comes when the assessment levels are used to establish reimbursement levels or individual budgets by tying the levels to available waiver expenditure, provider cost, and individual service hours and types of services. For instance, in one state six assessment levels were established. Levels 1-3 include individuals with less to more life-skill support needs but low medical and behavioral needs. Level 4 was characterized primarily by high behavioral support needs, and Level 5 by high medical needs. Level 6 was primarily characterized by extraordinary behavioral needs. The levels were reconciled against expenditure patterns to establish six potential waiver reimbursement levels. It is important to note that the exploratory prototype was built on a population sample and is presented for discussion purposes only.
Table 4: SIS Metrics and Waiver Reimbursement Levels

<table>
<thead>
<tr>
<th>Levels</th>
<th># of People</th>
<th>SIS Sum of ABE Standard Scores: Avg.</th>
<th>SIS Section 3A Medical Total: Avg.</th>
<th>SIS Section 3B Behavior Total: Avg.</th>
<th>Total FY07 Average Cost27</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>200</td>
<td>24.94</td>
<td>1.17</td>
<td>2.38</td>
<td>$49,792</td>
</tr>
<tr>
<td>Level 2</td>
<td>151</td>
<td>33.43</td>
<td>2.30</td>
<td>3.42</td>
<td>$61,857</td>
</tr>
<tr>
<td>Level 3</td>
<td>37</td>
<td>40.95</td>
<td>2.54</td>
<td>3.57</td>
<td>$63,056</td>
</tr>
<tr>
<td>Level 4</td>
<td>35</td>
<td>27.23</td>
<td>1.89</td>
<td>8.51</td>
<td>$66,717</td>
</tr>
<tr>
<td>Level 5</td>
<td>30</td>
<td>39.13</td>
<td>12.23</td>
<td>4.07</td>
<td>$72,765</td>
</tr>
<tr>
<td>Level 6</td>
<td>68</td>
<td>33.01</td>
<td>2.32</td>
<td>13.82</td>
<td>$79,585</td>
</tr>
<tr>
<td>Total: People Average</td>
<td>521</td>
<td>521</td>
<td>30.56</td>
<td>521</td>
<td>2.43</td>
</tr>
</tbody>
</table>


5. Conclusions and Next Steps

The past three years have witnessed substantial growth in states’ commitment to improve the equity and efficiency of developmental disability service systems, especially regarding resource allocation processes that help to achieve adequacy and sustainability. Budget shortfalls combined with increased demand for supports – not just more service hours but also more person-directed supports – have coincided with advances in the technical knowledge and capacity to understand individual needs and respond in a rational manner. The emergence of the SIS as a standardized, reliable tool for assessing individual needs has been a crucial development. Many years of creative and thoughtful waiver financing in a few states (Wyoming, Connecticut, South Dakota, Idaho, Minnesota, Wisconsin, and Washington) has given the field a wealth of insight into how to structure reimbursement systems to maximize the fit between individual needs and state financial resources. With recent support from the Centers for Medicare & Medicaid Services, HSRI has been able to carefully explore the SIS as a core building block for advancing the systemic goals of supporting more people with developmental disabilities in ways that increase their engagement in everyday community life and yield greater benefits for taxpayers as well as the general citizenry.

HSRI will continue to carry this work forward, in more depth in the existing state projects as well as through initiatives in additional states. A subsequent report to be issued in the spring of 2009 will encapsulate the overall progress made in technical and substantive terms, and will prepare the field to move more strongly and consistently toward equitable and efficient person-driven service delivery systems.

27 Data is paid claims from November 2006 through October 2007.
General Print and Internet References


Internet Resources


HCBS Community Living Clearinghouse Exchange Collaboration from http://www.communitylivingta.info/

Improving Home and Community Based Services Waiver Resource Allocation: Cross State Examination of Efforts to Develop Reimbursement Levels and Individual Budgets Using the Support Intensity Scale at the 24th National Home and Community Based Services Conference, Boston MA October 1, 2008 from http://www.nasua.org/hcbs_conference/hcbs_08.html


National Core Indicators from http://www.hsri.org/nci/


Sustainable Care Presentation by HSRI Val Bradley from http://www.hsri.org/docs/sustainfuture_OC.ppt

Use of the SIS in evaluation of costs of services for persons with disabilities: experience in the USA, November 12, 2008 from www.anffas.net/download.asp/file=J_FORTUNE.pdf


Appendices

A) Validity Results of the SIS
B) Three Case Studies
Appendix A: Validity Results of the SIS

- **Face Validity.** Developed to measure the construct of supports, the SIS has greater face validity than the ICAP or other traditional assessments. The assessment of support needs using the SIS is done directly by persons with first-hand knowledge of the individual. The SIS directly measures the level of supports needed to enable an individual to participate successfully in the life of his or her community. It necessarily looks at more than skills and deficits, considering motivation, health, etiology, problem behavior, environment and other variables influencing the need for supports. By measuring individual support needs directly, it avoids the error inherent in inferring support needs statistically based on adaptive and maladaptive behavior scales. It is transparent. The SIS assessment of needed supports is more explicit and straightforward than other traditional instruments, and hence is a more open platform for the stakeholder deliberation and decision-making that attends individual resource allocation and payment processes. The SIS uses multi-point scales to rate the type (monitoring – full physical assistance), frequency (none to hourly) and intensity (no time to more than 4 hours in a 24 hour period) of supports needed by an individual to participate in 57 distinct aspects of life in their communities. Behavioral, health and other factors affecting support needs are considered.

- **Content Validity.** To assure its content validity, the SIS constructs were tested by 74 professionals working in the field of developmental disabilities. Using a Q-sort methodology, they narrowed the 130 candidate support indicators to 57, and reduced the 12 domains containing these indicators to seven. This makes the instrument more concise while still asking the right questions.

- **Internal Consistency.** The SIS is internally consistent\(^{28}\). It has good inter-item reliability (all items or subscales in the measure are measuring the same construct). The internal consistency reliability coefficients for all the SIS subscales, computed using Cronbach’s Alpha method\(^{29}\), exceeded .90, which is the level widely accepted as demonstrating an acceptable level of internal consistency in assessment scales. The SIS also has a high degree of inter-rater reliability\(^{30}\): the SIS Index (total score) correlation coefficient was .87 (same interviewer, different respondent), .90 (different interviewer, same respondents), and .85 (different interviewer and different respondents) (N=40).

- **Construct and criterion validity.** The high correlation of SIS subscale scores with one another shows that the SIS measure has good construct validity, meaning that scores on the SIS are highly correlated with scores on measures of other constructs (for example, adaptive behavior and intelligence) that are believed to be correlated with the construct measured by the SIS. To establish its criterion validity, the SIS measures of support needs were correlated with an independently constructed “criterion measure” – a Likert-type scale of support needs. All correlation coefficients exceeded the .35 minimum level required to demonstrate criterion-related validity\(^{31}\).

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\(^{30}\) Thompson, J. (Feb 21, 2006). SIS reliability: preliminary findings and procedures. Email from J. Thompson to J. Ashbaugh.

Appendix B: Three Case Studies

This appendix provides descriptions of three states with which HSRI has worked in the past few years. The states have been selected because they highlight particular aspects of the planning process described in the foregoing paper. State #1 chose to develop a prototype resource allocation model, based on a small sample and designed to test the feasibility of making reimbursement decisions more rational and equitable. It was not intended for statewide implementation. State #2, under pressure from CMS, urgently wanted a set of reimbursement levels it could implement, but encountered a variety of technical and political obstacles that have delayed implementation. State #3 took the initiative to push forward with IBAs simultaneously in two new waivers, skipped over the level-building step, and has begun implementation.

Each case study details the development process undertaken, presents some state-specific findings, highlights some of the benefits derived and challenges encountered, and notes some expected next steps. These close-up views of state experiences offer valuable insights to other states contemplating a similar endeavor.

Case Study #1: Assessing the Feasibility of Establishing a More Rational Resource Allocation System

In 2007-2008, HSRI worked with State #1 to help it better understand its options for making future improvements in its HCBS Waiver programs. In particular, the state office responsible for developmental disabilities services contracted with HSRI to develop an exploratory prototype for a six-level reimbursement system for its Comprehensive HCBS Waiver. The impetus for this initiative was to improve their person-centered planning process; subsequently, they chose to explore broader use of the Supports Intensity Scale (SIS) as a resource allocation tool.

Since HSRI completed its work, the state has experienced serious financial strain; it is projecting a double-digit budget shortfall for FY09, which may have severe ramifications for the developmental disabilities system.

1. The Process

Because the state was using this project as a test-run for revamping its waiver reimbursement system, HSRI followed an abbreviated process compared to the normal approach employed in other states. The preparatory steps of setting goals and engaging stakeholders were taken by the state prior to our involvement. We briefly discuss here the collaborative process we engaged in with the state to decide on appropriate data sources for the project, followed by details concerning sampling, data collection and analysis.

1.1 Selecting Data Sources and Tools

Creating a set of assessment levels for the state requires data from three sources: the SIS, elements added to the SIS by the state (especially the Supplemental Supports/Risk Assessment), and some additional individual-level data items. With regard to using the SIS, the
state had earlier undergone a fairly extensive exploratory process to examine several different assessment tools. In July 2006, prior to engaging HSRI in this project, the state initiated a pilot study to determine whether the SIS would be useful as part of a person-centered assessment process to identify individual support needs. To recruit waiver recipients willing to participate in the SIS pilot, the state office directly approached local Service Boards (SBs), making limited funds available to them to conduct SIS interviews on some or all of the individuals they serve through the waiver. Various SBs committed to recruiting and assessing certain numbers of people. In addition, one statewide provider who was already familiar with the SIS offered to participate. This broad involvement of SBs around the state built a constituency of support for future use of the SIS.

The second major data source is items added by the State to the base SIS instrument.

- The State Supplemental Supports/Risk Assessment is an 18-item tool created by the state office to capture particular risks related to caretakers, environment, behavior, and health. It is modeled on a similar tool used in Utah. These supplemental questions were added to the end of the SIS so that the questions would be asked as part of the SIS interview; it is henceforth referred to as “Section 4.”

- Following the lead of a few other states, the state office also opted to expand all the Sections of the SIS, adding to each question “to” and “for” measures, to assure that what is important to the individual is included. This expansion reflects the deep commitment of state leaders to enhancing the person-centered nature of the waiver programs.

The third data source used by HSRI included two items historically used to determine levels of service needs. One is living arrangement, such as living alone or living in a group home; the other is the Inventory for Client and Agency Planning (ICAP) Service Scores, which had not been required in the state since 2000.

To supplement these three sources of client-level needs information, it is necessary to have data on waiver service costs. The state provided HSRI with two years of historical annual expenditures for all individuals on the Comprehensive Waiver.

1.2 Constructing the Sample

Because the state had already begun a SIS pilot project, expected to yield SIS assessments on several hundred waiver participants, it seemed reasonable to use as many of these individuals as possible for the HSRI project. This group included ten volunteers from among the waiver recipients who had recently been moved out of one of the residential institutions. The resulting sample was considered to be of sufficient size and diversity (having representation from the major geographic regions as well as a mix of urban and rural areas) to be reflective of the full waiver population. Table 1 lists the ten locations from which the SIS results were obtained and the percentage of individuals from each location.

Because the study sample was not constructed for the purpose of creating prototype resource allocation levels but rather, to test the usefulness of the SIS as a planning tool, HSRI deemed it

32 See section 1.4 below for details on how the sample became 521 people.
important to examine the representativeness of the study group. Comparing the sample to the waiver population (Table 1, right-hand columns) suggests that the sample is not geographically representative of the total waiver population. First, the three locations contributing the most people to the sample –SB#5, SB#7 and the provider – appear to constitute a fairly small portion of the overall waiver population\textsuperscript{33}. Second, in the 8 sample locations which also have data on their total waiver population, the eight contribute 69% of the sample but only 26% of the larger population. In addition, this sample includes people from only 10 of the total 40 service boards throughout the state.

<table>
<thead>
<tr>
<th>Location</th>
<th>Urban/Rural</th>
<th># Waiver Recipients w/ SIS Results</th>
<th>% of Overall Sample</th>
<th>% of Waiver Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>SB#1</td>
<td>Mix</td>
<td>7</td>
<td>1.3%</td>
<td>2.5%</td>
</tr>
<tr>
<td>SB#2</td>
<td>Urban</td>
<td>14</td>
<td>2.7%</td>
<td>5.7%</td>
</tr>
<tr>
<td>SB#3</td>
<td>Urban</td>
<td>62</td>
<td>11.9%</td>
<td>1.0%</td>
</tr>
<tr>
<td>SB#4</td>
<td>Urban</td>
<td>10</td>
<td>1.9%</td>
<td>8.0%</td>
</tr>
<tr>
<td>SB#5</td>
<td>Rural</td>
<td>100</td>
<td>19.2%</td>
<td>1.9%</td>
</tr>
<tr>
<td>SB#6</td>
<td>Mix</td>
<td>27</td>
<td>5.2%</td>
<td>2.5%</td>
</tr>
<tr>
<td>SB#7</td>
<td>Mix</td>
<td>74</td>
<td>14.2%</td>
<td>2.7%</td>
</tr>
<tr>
<td>SB#8</td>
<td>Rural</td>
<td>65</td>
<td>12.5%</td>
<td>1.9%</td>
</tr>
<tr>
<td>Provider</td>
<td>Rural</td>
<td>152</td>
<td>29.5%</td>
<td>unknown</td>
</tr>
<tr>
<td>State Institution</td>
<td>Mix</td>
<td>10</td>
<td>1.9%</td>
<td>NA</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td></td>
<td><strong>521</strong></td>
<td><strong>100%</strong></td>
<td><strong>26.2%</strong></td>
</tr>
</tbody>
</table>

Although not representative at the individual SB level, the sample may nonetheless sufficiently reflect urban versus rural distinctions. Table 1 provides some support for that contention. The three locations denoted as rural are also three of the four that contribute the most to the sample, and are the ones that are the most overrepresented in the sample. Similarly, the three locations denoted as urban comprise 16.5% of the sample. Urban-living waiver recipients undoubtedly exceed that proportion, since the three sampled sites alone constitute 14.7% of the waiver population and yet several urban areas in the state are not included in the sample. In short, it appears that this sample has more representation from rural areas and is slightly less urban than the overall waiver population.

\textsuperscript{33} Data is missing on one provider’s contribution to the overall waiver population.
A third dimension to examining the representativeness of the sample is the variation in residential settings. HSRI’s work in other states has frequently shown residential setting to be a powerful predictor of waiver costs. Table 2 displays the residential alternatives and community settings used by people in the sample. Over half the sample participants live in congregate settings, including group homes, foster care homes, or licensed alternative living facilities. The next largest group is people living with parents or relatives or in sponsored family home placements, constituting 37.8% of the sample group. A small but notable portion of the sample is composed of individuals living independently in their own homes or in a supported apartment (5.7%). These small settings have become increasingly common as people have moved out of the state institutions and into the community, or just enrolled in the waiver initially. Significantly, as waiver participants live in smaller, more individualized living arrangements, the matching of their support needs to their financial support becomes even more essential.

Table 2 provides insight into the comparability of the sample to the waiver population with respect to living arrangement. The last column of the table shows some striking contrasts. People living independently constitute similar proportions of the sample and the general waiver population, but the relative size of the other two groupings differs sharply: while over half of the sampled individuals live in congregate settings, only one-third of the waiver population do. In addition, less than 40% of the sample lives in family homes compared to over 60% of the waiver population as a whole. These figures suggest that the sample over-represents people living in residential facilities and under-represents those living in family situations.

<table>
<thead>
<tr>
<th>Living Arrangement</th>
<th>Total People in Sample</th>
<th>% of Sample</th>
<th>Total Waiver Population</th>
<th>% of Waiver Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lives Alone</td>
<td>23</td>
<td>4.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Supported Living/Apartments</td>
<td>6</td>
<td>1.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal: Lives independently</strong></td>
<td><strong>5.7%</strong></td>
<td><strong>208</strong></td>
<td><strong>4.4%</strong></td>
<td></td>
</tr>
<tr>
<td>Lives with parents/relatives</td>
<td>112</td>
<td>22.2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sponsored Family Homes</td>
<td>79</td>
<td>15.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Subtotal: Lives with parents, relatives or in a sponsored family home</strong></td>
<td><strong>37.8%</strong></td>
<td><strong>2,962</strong></td>
<td><strong>62.2%</strong></td>
<td></td>
</tr>
<tr>
<td>Adult Foster Care Home</td>
<td>3</td>
<td>0.6%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Group Home</td>
<td>277</td>
<td>54.9%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DSS Licensed Alternative Living Facilities</td>
<td>5</td>
<td>1.0%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
This diversity in where people live is also seen in the waiver expenditures associated with each setting. Table 3 shows that each of the residential placements has a distinctive cost. While, overall, placements have an average cost of $61,502 dollars, the waiver expenditures range from a mere $15,494 for a DSS Licensed ALF (Alternative Living Facility) to a high average of $77,842 for a sponsored special placement in a family training home. Naturally, the average cost for people living with their parents or relatives is the second lowest at just under $30,000. People living alone cost a little more, at $37,607. The most common placement (n=277) in group homes costs an average of $72,578.

<table>
<thead>
<tr>
<th>Subtotal: Congregate Setting</th>
<th>56.4%</th>
<th>1,590</th>
<th>33.4%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total for Sample/Population</td>
<td>505</td>
<td>100%</td>
<td>4,760</td>
</tr>
</tbody>
</table>

Table 3. Waiver Expenditures in State Residential Settings

<table>
<thead>
<tr>
<th>State Residential Settings</th>
<th>Average</th>
<th>People</th>
<th>Standard Deviation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lives alone</td>
<td>$37,607</td>
<td>23</td>
<td>$22,353</td>
</tr>
<tr>
<td>Parent(s)/relatives</td>
<td>$29,946</td>
<td>112</td>
<td>$27,419</td>
</tr>
<tr>
<td>Supported living/apartments</td>
<td>$56,342</td>
<td>6</td>
<td>$43,206</td>
</tr>
<tr>
<td>Sponsored /Family Home</td>
<td>$77,842</td>
<td>79</td>
<td>$18,264</td>
</tr>
<tr>
<td>Adult Foster Care Home</td>
<td>$56,827</td>
<td>3</td>
<td>$5,158</td>
</tr>
<tr>
<td>Group Home</td>
<td>$72,578</td>
<td>277</td>
<td>$22,227</td>
</tr>
<tr>
<td>DSS Licensed ALF</td>
<td>$15,494</td>
<td>5</td>
<td>$2,146</td>
</tr>
<tr>
<td>Total</td>
<td>$61,502</td>
<td>505</td>
<td>$30,104</td>
</tr>
</tbody>
</table>

1.3 Gathering the Data

Compiling the needed data has been a major task for the state office. During the first few months of the project, the state office trained SIS interviewers in each of the participating localities to administer the tool. Typically, these were state case managers, not directly involved with provision of waiver services but carrying some responsibility for the individuals they interviewed. The trained interviewers then conducted the enhanced34 SIS surveys with service

34 “Enhanced” refers to the fact that State’s SIS assessment includes a Section 4, the State Risk Assessment Tool, and additional questions in Section 1 and 2.
recipients at their agency. The interviewees were selected by the participating service boards.

In the course of working with the state’s data set, HSRI has identified several potential challenges to the validity and reliability of the data. First, inconsistent scoring resulted from the steep learning curve required to give the SIS during the first year and a use of the older guidelines for administration. Second, while the training program to give the SIS meets the requirements of AAIDD and thus provided essential training to individuals and organizations conducting the assessments, the state office did not conduct any reliability checks (e.g. having a second interviewer conduct some SIS assessments on individuals already surveyed and then comparing the results for consistency) until the second year of the pilot; nor did the state office monitor for errors such as the maximization of scores in SIS Section 1 or do as much of the monitoring and oversight that is done in other states. Third, guidelines for coding Section 4 appeared to be poorly understood.

These challenges potentially limited the applicability of the database to the larger population of waiver recipients. Further, it raised the possibility that the data do not even give a fully accurate description of the sample group itself. However, it is nonetheless an important step in the process of developing a prototype resource allocation system.

1.4 Compiling and Analyzing the Data

The state office entered the SIS information into a database, and provided that and additional demographic data to HSRI. We then began to merge all the information into usable SPSS files; the initial file contained 889 individual cases from the pilot study. Among these cases were 368 cases that did not use the waiver for services. By the end of January 2008, after additional cleaning and clarification, HSRI produced a reasonably complete file of 521 cases from a variety of locations in the state, far fewer than were originally expected.

Using multiple regression techniques, HSRI proceeded to isolate key factors which explain the variations in resource use across the sample population. Patterns among the significant predictor variables were further analyzed to extract feasible groupings of consumers. These groupings are called “assessment levels.” Several iterations of the process led to the refined groups presented below.

2. Findings

This section presents findings resulting from each of four types of analysis HSRI used. In the first analysis, we used regression to determine which of the 700 variables worked well together to best predict waiver expenditures. The second analysis compared the SIS Service Needs Index (SNI) score for the state sample with the SIS national norm group. The third analysis examined scores on key predictor variables that emerged from the earlier regression analysis. Finally, we discuss the six waiver assessment and reimbursement levels that emerged from the data.

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35 HSRI found this occurred twice in the sample.


2.1 Results of Regression Analysis

Bearing in mind the non-randomness of the sample, HSRI tested a plethora of factors to explain the state's historical waiver allocations to individuals. From the SIS and the supplemental data sources outlined above, HSRI tried over 700 variables, but found that most did not have any statistical significance. In the end, the analysis yielded a modest statistical explanation of the relationship between support needs and resource allocation. In statistical terms, the regression model has explained nearly half of the variability in individual awards – 47.6% \(^{36}\). Figure 1 shows the combination of key predictor variables. Specifically, 18.8% of the variance is explained by the SIS results of the people using the waiver, and 28.8% of the variance is explained by type of residential setting. HSRI used a method known as entry style regression, with the SIS scores loaded into the regression model first, followed by residential setting.

In other states where HSRI has worked, these key predictor variables have proven to have face validity as well as a significant role in explaining statistical variance of waiver expenditures. The ABE score is the support needs of an individual in three specific areas of the SIS -- Part A: Home Living Activities, Part B: Community Living Activities, and Part E: Heath and Safety Activities. The total SIS 3A Medical score is the intensity of exceptional medical supports that a person needs. The total SIS 3B Behavioral score is the intensity of exceptional behavioral supports that a person needs. The residential setting used contains seven categories (see list in Table 2).

Figure 1: Contribution of Each of the Key SIS Predictive Variables.

One dilemma presented by the use of residential settings in the regression concerns the value of consumer choice. While residential setting does contribute substantially to explaining the variance in resource allocation, this added predictive power is lost if or when the individual

\(^{36}\) r-squared of .476 (F=115.609, p=.000). HSRI used a method known as entry style regression, with the SIS scores loaded into the regression model first, followed by residential setting.
chooses a residential setting different than the one currently used. In this model 52.4% of the variability is not explained and is unknown. This result is no better or worse than other states where HSRI has worked and where they are wrestling with aligning their waiver reimbursement with individuals’ support needs.

Notably absent from Figure 1 are the data elements which the state added to the basic SIS – the Section 4 supplemental risk information and the expanded response options for Sections 1 and 2. A similar supplemental risk measure has proved to be important in HSRI’s work in other states, but, in this case, the risk items were not significant predictive contributors. This result is not entirely surprising: other states have found it difficult to identify supplemental SIS questions which help predict waiver expenditures.

### 2.2 Overall SIS Support Needs Index

This section examines the comparability of the state sample to a national population in terms of SIS Support Needs Index (SNI) scores. The SIS is normed using a nationwide sample of 1,306 adults 18 years of age or older with developmental and other disabilities in 33 states. The norm group included a wider range of individuals than just waiver recipients. One would expect the state waiver sample to look a lot like the individuals in the SIS norm group. Figure 2 supports this view. The bars represent the state sample scores; the dark curved line shows normal distribution. It appears that the non-random sample of 521 waiver participants looks a lot like the SIS norm group. This helps build confidence that the state’s SIS sample, despite being non-representative in terms of geography and living arrangement, may nonetheless reflect the underlying state waiver population in terms of support needs.

![Figure 2: SIS SNI Results (State #1)](image-url)
While the distribution of sample SIS scores largely mirrors national norms, it is important to note the slightly higher needs. The distribution in this sample group leans a little toward scores over 100 – the average SNI score is 101.74, which is about two points higher than the national norm. There are several possible explanations for this higher average SIS score. It may be that the volunteer sample construction is an influence – e.g. are people with higher needs easier for SBs to contact and encourage to undergo the SIS assessment? Or perhaps having so many different interviewers leads to less reliable scoring. It is not known how eight of the ten locations selected SIS participants. At two locations the residential program managers gave the SIS instead of the case managers. This raises the possibility that use of staff as SIS interviewers may introduce bias into the scoring process, in that they may be so familiar with the individual that they emphasize the individual’s support needs more than the SIS protocols and interview instructions dictate.

The essential finding can be summarized as follows: While overall SIS scores resemble other states and national norms, the slightly higher average scores suggest a slight tendency for the state’s waiver to serve people with more support needs than is the case elsewhere. However, this conclusion is tempered by recognizing the possible non-representativeness of the volunteer sample and the likelihood that the SIS results would change with increased monitoring and oversight.

### 2.3 Scores on Key Variables

This section presents more in-depth information on the sample population in terms of the factors found to be significant in the regression model displayed in Figure 1. Table 4 presents the basic metrics for the sample group. It is important to note that the SNI appears in the table as a frame of reference, even though it was not a significant predictor.

<table>
<thead>
<tr>
<th>Table 4: Major SIS Results for Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td># of People</td>
</tr>
<tr>
<td>----------------</td>
</tr>
<tr>
<td>SNI score</td>
</tr>
<tr>
<td>ABE Sum of standard scores</td>
</tr>
<tr>
<td>Section 3A Medical Support Needs total</td>
</tr>
<tr>
<td>Section 3B Behavior Support Needs total</td>
</tr>
</tbody>
</table>

The sample results for these key variables are similar to the U.S. norms. The composite of SIS ABE scores reaches 30.56 for the state sample, while the national norm group is 30.00 (the 50th percentile for each part of ABE is a scaled score of 10). People in the sample have higher
needs (in three key activity areas) than the average person in the SIS population. By contrast, the Medical Support Needs Scale averages 2.43 and the Behavior Support Needs Scale averages 4.77. These average scores are comparable to national norms. The apparent differences among both medical and behavioral scores are very small, given the range that is possible. This comparison suggests that, while it is given that the state sample was not randomly selected, it may nonetheless reflect the state’s underlying needs profile.

### 2.4 Levels of Assessment and Reimbursement

In this section we present the main analytic results – the six waiver assessment levels and the six corresponding levels of waiver reimbursement that have emerged from the SIS volunteer sample of waiver participants in the state.

The bulleted list below describes the types of individuals that characterize each of the six Waiver Assessment Levels, derived using the 521 people in the sample. Levels 1-6 sort individuals into six common levels of need, from least to most. Intensive inspection of the data allowed HSRI to establish these six levels, with a reasonable number of people in each assessment level and a reasonable amount of clinical separation in the average SIS results at each level. The assessment levels are built by grouping people with similar SIS results, and then adjusting the groups as necessary to accommodate the medical and behavioral scores. Addition of the medical and behavioral scores increases the distinction among the levels. In the end, the levels should have symmetry, in that scores on the various SIS dimensions at any given level should vary from the adjoining levels. The number of people in the levels should diminish as the needs become more intense.

Two explanations may be helpful in understanding the bullets below. First, an individual was included in a particular level only if all of the identified criteria were met. Second, notation indicating a particular type of score is “not relevant” means that the scores on that factor varied too much to be helpful in defining a distinct level.

- Level 1 contains individuals with below-average support needs, reflected in an ABE score at the 50th percentile or less. Individuals in this group also have six or less behavioral indicators. The medical indicators are not relevant to this group.

- Level 2 includes individuals with average needs, having ABE scores between the 51st and 75th percentile. People in this level also have nine or fewer behavior indicators. The medical indicators are not relevant.

- Level 3 consists of individuals with above-average support needs, having ABE results that fall into the 76th percentile or higher. This group includes people with ten or less behavior indicators. The medical indicators are not relevant.

- Level 4 is comprised of individuals with low-average to slightly above-average support needs but high behavior indicators. The ABE results are in the 33rd to 60th percentile, with scores ranging from 21 to 33. The behavioral scores range from 7 to 10 behavioral indicators. The medical indicators are not relevant.

Roughly speaking, structuring the initial levels using quartiles of SIS ABE scores.
Level 5 encompasses individuals with extraordinary medical support needs. The individuals in this group have mainly medical challenges, with 8 or more medical indicators. The ABE score and behavioral indicators are not relevant.

Level 6 covers individuals with extraordinary behavioral support needs. The individuals have eleven or more behavior indicators. The ABE score and medical indicators are not relevant.

Table 5 presents the levels in terms of specific decision rules. People are assigned to a level beginning with the highest level of need (Level 6). Thus, everyone with extreme behavioral scores is a member of Level 6, regardless of their scores on the other key variables. Similarly, all those with extensive medical support needs (except for those already assigned to Level 6) fall into Level 5. For membership in Level 4, individuals must have a SIS ABE score in the specified range and 7-10 behavior support needs. In this way, HSRI has constructed six distinct levels for the state system which reflects the sample group’s support needs as currently assessed.

<table>
<thead>
<tr>
<th>Level</th>
<th>SIS Total ABE Score</th>
<th>SIS ABE National Percentile</th>
<th>Section 3A Medical Support Score</th>
<th>Section 2B Behavior Support Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1 (n=200)</td>
<td>≤ 30</td>
<td>50th percentile or less</td>
<td>≤ 6</td>
<td></td>
</tr>
<tr>
<td>Level 2 (n=151)</td>
<td>&gt; 31 to ≤ 36 &amp;</td>
<td>51st to 75th percentile or less</td>
<td>≤ 9</td>
<td></td>
</tr>
<tr>
<td>Level 3 (n=37)</td>
<td>≥ 37</td>
<td>76th percentile or greater</td>
<td>≤ 10</td>
<td></td>
</tr>
<tr>
<td>Level 4 (n=35)</td>
<td>≥ 21 to ≤ 33 &amp;</td>
<td>33rd to 60th percentile</td>
<td>7 to 10</td>
<td></td>
</tr>
<tr>
<td>Level 5 (n=30)</td>
<td></td>
<td>≥8 or</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Level 6 (n=68)</td>
<td></td>
<td>≥11</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Just as the assessment levels depict increasing amounts of support needs, so too the waiver reimbursement levels capture increasing resource requirements to meet those support needs. In general, individuals in Level 1 have a significant and necessary need for waiver services but their need is the least, relative to people in the higher levels. One would expect them to need fewer resources, on average, to meet their support needs. By contrast, individuals with extensive behavioral needs – in Level 6 – likely require the largest resource allocation. The process of building the levels from the highest need to the lowest ensures that no individual with serious support needs and/or behavioral or medical indicators is hidden in a lower level. A lower
reimbursement tier could lack the financial resources necessary to meet the needs of such individuals.

Applying the draft decision rules to the sample, HSRI calculated the average budget allocation across all members of each level. Table 6 presents average budget figures in the larger context of average SIS scores for each group and historical waiver annual expenditures. The levels progress from less to more support needs; consequently, it takes increasingly more funds to support the needs at each reimbursement level.

### Table 6: SIS Metrics and Waiver Reimbursement Levels

<table>
<thead>
<tr>
<th>Levels</th>
<th># of People</th>
<th>SIS Sum of ABE Standard Scores: Avg.</th>
<th>SIS Section 3A Medical Total: Avg.</th>
<th>SIS Section 3B Behavior Total: Avg.</th>
<th>Total FFY07 Average Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>200</td>
<td>24.94</td>
<td>1.17</td>
<td>2.38</td>
<td>$49,792</td>
</tr>
<tr>
<td>Level 2</td>
<td>151</td>
<td>33.43</td>
<td>2.30</td>
<td>3.42</td>
<td>$61,857</td>
</tr>
<tr>
<td>Level 3</td>
<td>37</td>
<td>40.95</td>
<td>2.54</td>
<td>3.57</td>
<td>$63,056</td>
</tr>
<tr>
<td>Level 4</td>
<td>35</td>
<td>27.23</td>
<td>1.89</td>
<td>8.51</td>
<td>$66,717</td>
</tr>
<tr>
<td>Level 5</td>
<td>30</td>
<td>39.13</td>
<td>12.23</td>
<td>4.07</td>
<td>$72,765</td>
</tr>
<tr>
<td>Level 6</td>
<td>68</td>
<td>33.01</td>
<td>2.32</td>
<td>13.82</td>
<td>$79,585</td>
</tr>
<tr>
<td>Total: People</td>
<td></td>
<td>521</td>
<td>521</td>
<td>521</td>
<td>521</td>
</tr>
<tr>
<td>Average</td>
<td></td>
<td>30.56</td>
<td>2.43</td>
<td>4.77</td>
<td>$60,579</td>
</tr>
</tbody>
</table>


The metrics displayed in Table 6 offer strong support for the integrity of the six proposed reimbursement levels. As the levels increase, one or more of the average SIS scores increase and the average waiver expenditure amount increases. The first two waiver reimbursement levels should include a majority of the individuals, and they do – 67.4%. Also, the levels should be characterized by clinical results that are discernibly different at each level. This too appears to be the case; for example, the average individual in first waiver reimbursement level has the lowest ABE score of any group, and also has the lowest medical and behavior scores. This person is relatively “easier” to serve than people in other levels, while still being clinically eligible for the waiver. Accordingly, the average waiver payment is $49,792, substantially less than the average for the entire sample.

Levels 2 and 3 display a similar pattern. Individuals in the second waiver reimbursement level

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38 Although the State provided HSRI with two years of SIS and expenditure information, only the second year of data appears here. We analyzed the first year as well with similar results but do not use it here due to the tendency for the first administration of the SIS to be improved by the second administration as the interviewers and informants, such as families or providers, gain experience using the SIS tool. This state and other states report that the second administration of the SIS is more reliable.

39 Data is paid claims from November 2006 through October 2007.
have slightly more medical and behavior support needs, and a higher average ABE result; their average budget amount is also higher, very close to the average overall. The individuals in Level 2 seem to have average support needs requiring average waiver resource allocations. Level 3 appears to be a “middle” group. It includes individuals with above-average support needs in all three SIS areas. The average budget allocation for this group is half way between the figure for Level 1 and that for Level 6 – $63,056.

Level 4 brings together a mixed group of people. It has average ABE and medical support needs somewhat lower than Level 3, but a high average behavior score. The behavior support needs appear to be driving the average budget amount higher than for Level 3, nearly to the average for Level 5.

Finally, Levels 5 and 6 capture the individuals with the most extreme medical and behavioral needs. Level 5 includes all the individuals with the highest medical support needs. The medical needs score averages 12.48, much higher than the average medical needs score for the entire sample, 2.51. Understandably, the average budget amount is substantially higher for Level 5 than for the sample overall – $72,765 compared to $60,541. Level 6 metrics follow a similar pattern: the behavioral needs score averages 13.82, contrasting to the 4.78 average behavioral score for the entire sample. The budget amount is at its highest in Level 6, is $79,585.

3. **Benefits Derived from the Project and Challenges Encountered**

The preceding sections of this report have described a successful process to design a prototype system for waiver resource allocation, composed of six distinct waiver reimbursement levels. Three major findings have emerged: first, the sample of 521 waiver recipients does not appear to be representative of the larger population of waiver participants but nonetheless provides a useful basis for developing a prototype resource allocation system. Second, application of the standardized SIS has yielded greater understanding of the relationship between individual support needs and budget expenditures; careful analysis has identified some key predictive factors in the state – several dimensions of support needs plus residential setting – which are ones HSRI has found to be important in other similar work. Third, the resulting set of six reimbursement levels display robust statistical characteristics that recommend them as a foundation for future system-wide development. In short, we conclude that the state office has the capacity to move forward, expanding and refining its existing data sources to construct a viable waiver reimbursement methodology.

At the same time, our work surfaced several challenges which the state office will need to address before continuing to do further work on this prototype system design. The five issues include: obtaining a valid sample, assuring consistency of SIS administration, constructing a risk factor, supplementing the SIS questions, and handling individuals with extraordinary needs.

**3.1 Obtaining a Valid Sample**

As described above, the 521 individuals used in this study do not appear to be representative of the general waiver population in the state. The sample draws from only 10 of 40 service boards in the state, and seems to be biased toward waiver recipients living in congregate settings and
away from people living in family homes. In addition, the sample itself is much smaller than originally anticipated, thus somewhat limiting the ability to examine differences among sub-state jurisdictions. Before the state office can proceed with the prototype level system, it is essential that the model and levels be tested on a larger and more representative population.

To obtain a more representative sample, the state office should attend to two considerations: engaging more service boards in the SIS assessment process, and assessing a larger and more diverse set of waiver recipients. HSRI recommends this representative sample include 900 individuals randomly chosen from the waiver rolls. At the least, this will require a more systematic effort by the state office to explain the purpose of the SIS, to offer guidance to providers in obtaining cooperation from waiver recipients, and perhaps to set specific participation targets by region. It may be important to start an ongoing discussion with service boards and provider agencies, as a foundation for not only recruitment of waiver participants but also establishing a systematic process for administering the SIS assessment.

### 3.2 Assuring Consistency of SIS Administration

HSRI’s work to compile useable data files revealed a variety of errors which suggest problems in the administration of the SIS assessments. The problems may be related to who administers the assessment and how the process is monitored and validated.

Because some of the SIS interviews were administered by staff of the service boards, there is a risk that their ongoing involvement with the individual may have influenced the scoring, unconsciously or not. It is important for the state office to assure the reliability of SIS scoring, by increasing the number of trained persons who can conduct a second assessment on some individuals. This is standard procedure, and benefits all parties by enhancing confidence in the consistency of the assessment process.

In addition to conducting reliability checks, the state office should institute procedures for ongoing monitoring and oversight of SIS administration. Screening data for particular patterns of responses can help identify biases in scoring in certain locations or among certain groups of interviewers or participants. While the observed differences may be due to genuine differences in the type of people served in a particular location, it may nonetheless be important to inspect the individual SIS scores more closely, and even test the patterns of different scores to see whether the observed differences were likely to have occurred by chance.\(^{40}\)

Similarly, there is the possibility of scoring errors. For example, any individuals who score at the maximum on SIS Section 1 should have their assessments examined closely and perhaps redone. Routine screening for this type of “maximization” error is possible if the state uses a common statistical analysis program like SPSS.

Who gives the SIS and who routinely checks the SIS results clearly require some additional attention if the state hopes to use the SIS results for waiver reimbursement. Several states have committed not only to SIS training but also to systematic SIS monitoring and oversight to help

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\(^{40}\) One approach to testing is to use Analysis of Variance; HSRI has employed both the liberal Bonferroni and more conservative Sidak techniques, assuming equal variance with post hoc multiple comparisons.
ensure useful and accurate SIS assessments. It is reasonable to think that the state’s existing plan to train more program managers to give the SIS tool would ultimately require more state staff resources, as would any increased state oversight and monitoring of the SIS process.

### 3.3 Constructing a Risk Factor

As described above, the state chose to expand the SIS tool to include Section 4, Supplemental Supports/Risk Assessment, to capture special risks not fully addressed elsewhere in the SIS. A similar supplemental risk measure has proved to be important in HSRI’s work in other states, but it did not emerge as a significant predictor in this project. This may be due to problems in the scoring process, or it may arise from the construction of the supplemental questions. In initial data cleaning stages, substantial inconsistencies and inaccuracies appeared in the Section 4 scoring: for example, a large number of individuals (29) had results ranging from 15 to 32, placing them in the top 3% of people in the sample; when these scores were reviewed and corrected, only five individuals retained their same total problem score, and 117 problems/risks were removed out of a total of 525 originally reported.

The most important aspect of risk that is addressed in many states’ tools seems to be related to criminal activity. Section 4 includes two items concerning criminal activity, but neither of these items helped predict the state’s waiver expenditures. In this small sample of 521 people, the incidence of criminal activity was very small: few individuals were convicted of crimes noted in the two relevant Section 4 questions, no caretakers were noted as having criminal involvement, and only 14 waiver participants had criminal justice involvement not related to sexual activity that requires extensive support. Two states have been successful in creating a criminal or community-safety risk item that serves as an important partner to the standard SIS information and a good predictor of cost. One of these states is Colorado. Its community safety-risk variable is for people who have either been convicted and pose a current safety risk, or have the same extreme behaviors such as murder, fire-setting, rape, or pedophilia, and were not convicted. The question is designed to identify just the individuals with hard core current safety risks. In general, this group of people might include 2-5% of individuals served. The formal definitions used in Colorado are:

**Convicted and a Current Safety Risk (requires a secure setting):** Convicted Public Safety Risk Requiring a Secure Setting - any individual currently in DD funded Supported Living Services (their support Waiver) or Comprehensive Waiver Services: (A) who has been found guilty though the criminal justice system of a criminal action involving harm to another person or arson, AND (B) whose behavior severity due to security/community safety issues currently requires either: a specially controlled environment that limits the person’ ability to leave the setting unsupervised and/or 24-hour direct supervision. Individuals in this group will have Rights Restrictions in place through the DD system, parole, or prohibition requirements, or a court order that restricts their rights.

**Not Convicted but a Current Safety Risk (requires a secure setting):** Non-Convicted Public Safety Risk Requiring a Secure Setting - any individual in Comprehensive Waiver Services whose behavior severity due to security/community safety issues currently requires either: a
specially controlled environment that limits the person’s ability to leave the setting unsupervised and/or 24-hour direct supervision. Individuals in this group will have Rights Restrictions in place through the DD system, or a court order that restricts their rights.

In over 200 SIS supplemental items which HSRI has examined in various states, this Colorado community safety risk variable is the only one that has reliably predicted waiver expenditures.

### 3.4 Supplementing the SIS Questions

Assuring consistent use of the SIS tool is a critical issue. The SIS has been carefully constructed and validated, standardized for a nationwide population, which gives it important statistical qualities. Even though the analyses conducted by HSRI here and in other states have not found all sections of the SIS to be significant to understanding budget allocations, it is nonetheless essential that the SIS be administered completely as written so that national norms can be used. If the state were to use only a portion of the SIS tool – for example, just the ABE parts of Section 1 – it risks changing the testing experience for the individual and thus possibly the results, while removing the existing assurances provided by the national norming process.

### 3.5 Handling Individuals with Extraordinary Needs

In every state, the HCBS Waiver serves some individuals who have extreme levels of need and thus are particularly costly to support. In the state sample, the average waiver user had an annual cost in FY07 of $60,579, with the least expensive person costing $84. The sample also included 42 people who cost more than $100,000, with a range from $101,141 to the most expensive person who cost $143,221.

Incorporating people with extraordinary needs – the “outliers” – into a systematic set of reimbursement levels can have the effect of inflating the average budget allocation for one or more of the levels. More efficient would be to treat such unusual individuals separately, exempting them from the decision rules that assign people to a reimbursement tier. In any reimbursement system, some exceptions will need to be made; the group of individuals might comprise as much as 7% of the waiver population. The state would benefit from using a CMS-required process to review such cases and, as appropriate, reserve some dollars to pay for these exceptional or extraordinary support needs.

### 4. Recent Progress

This case study documents that six waiver reimbursement levels can be built creating a prototype state system based on the information collected from a sample of 521 individuals, using the AAIDD Supports Intensity Scale and historical waiver expenditures. These levels and the decision rules used to build the levels can be expected to change over time, as new data are gathered from additional waiver recipients, or SIS results for existing participants change, or revised waiver awards are made. Having this first system prototype is a vital step in informing policy decisions and possibly increasing the relationship of funding to individual support needs. This same dataset can be used to form individual budgets instead of levels for the 521 individuals but that additional effort would have all of the limitations described in this paper.
Despite the moderate explanatory power of the regression model -- explaining 47.6% of variance in recent waiver expenditures using individual SIS scores and residential setting – the resulting system prototype is an excellent beginning on which to build an improved waiver reimbursement level system. Because state DD systems generally seek cost-neutral waiver reimbursement solutions, it is desirable (and indeed, probably necessary) to have SIS results for a substantial portion of the waiver population. In that way, the impact of any proposed “level” system can be accurately calculated for sub-state jurisdictions, providers, and even for families and individuals.

Any move toward assessment-based reimbursement, even if supported with extensive cost studies and professional rate setting, will result in dislocation for some parties, as waiver financial support is shifted to those most under-resourced and away from those whose needs can most easily be accommodated with less funds. It is important to consider ways to phase-in any new system, reducing the immediate impact on many individuals while building support for the longer-term shifts.

Having this basic understanding of the factors which most influence resource allocation is a crucial step in developing equitable and distinct waiver reimbursement levels. The state office has already taken steps in response to the HSRI project, beginning a multi-year process to develop a valid, rational reimbursement model applicable to the entire waiver population. In particular:

- The state has begun to gather SIS assessments on all waiver recipients, so that HSRI can use full-population data to create a valid resource allocation model.
- To improve the consistency and reliability of SIS interviews, the state has limited the number of people who will administer the SIS, and has increased the number of Master Trainers available to monitor and support the trained interviewers. The state has recently completed SIS training for all waiver providers.
- The state has adopted the Colorado risk-safety question and begun to use night-time supervision information and number of hours of unpaid natural support received from the family, friends, and the community.
- The state team has added a statistical analyst to manage the dataset, giving them the ability to inspect the data for completeness and accuracy both before and after giving the information to HSRI. One early task should be to develop a systematic way to track the size of the residential setting in which each individual lives (in terms of total number of service recipients living there); in the past this data has been incomplete or unreliable, reducing the usable cases for the analysis.

As an integral part of this full-population enterprise, HSRI is continuing to provide advice about sampling, data clean-up, data integrity, staff assessment training, statistical analytical needs, statewide SIS assessment, and resource allocation model building scheduling. The state expects to have full data available by late 2011, and a new resource allocation by 2012.
Case Study #2: Equitably Supporting People with Developmental Disabilities on the Comprehensive HCBS Waiver

The Colorado Department of Human Services, Division for Developmental Disabilities (DDD), and Colorado Health Care and Policy Finance (HCPF) share responsibility for the state’s waiver programs to support individuals with developmental disabilities in the community. In seeking to improve the process for allocating resources and managing a Comprehensive HCBS Waiver and Support HCBS Waiver, in 2007 DDD contracted with HSRI to develop resource allocation models for both waivers. Although DDD was under pressure from the federal Centers for Medicare & Medicaid Services (CMS) to revamp its Waiver reimbursement approach, nonetheless the state deserves credit for being the pioneer in this arena. This work was HSRI’s first foray into SIS-based level construction, and served as a valuable foundation for all subsequent resource allocation projects.

HSRI’s engagement with DDD has extended over a three-year period, encompassing design and development work on reimbursement models for both the Comprehensive and the Supports waivers. This case study presents the initial results of HSRI’s work, focusing just on the Comprehensive waiver and emphasizing the gradual evolution in our analytic approach.

Section 1 provides valuable context for understanding the Colorado DD system, and elucidates the factors that fostered and challenged the developmental process. Section 2 describes the major steps taken, and Section 3 presents some key analytic results. The next section highlights some of the challenges encountered and how they were surmounted. We conclude by outlining further steps which Colorado is planning and, in some cases, already pursuing.

It is important to recognize that this condensed story is told more fully and with greater clarity in several earlier reports prepared by HSRI and other documents related to the rate-setting portion of the project, conducted and reported on by Navigant Consulting, Inc. Interested readers are encouraged to review these documents.

1. Colorado Context

Colorado operates two HCBS waivers to support adults with developmental disabilities in the community. The longer-standing waiver is the Comprehensive (HCB-DD) Waiver. This waiver furnishes residential habilitation, day habilitation, supported employment, and other services to persons who require 24/7 services and are served in living arrangements outside the family home, usually settings operated and controlled by service providers. During the 2007 state fiscal year, the state expected to serve 4,169 individuals in this waiver at a total cost of $239.6 million ($57,471 per waiver participant). The HCB-DD waiver includes people who are served in the

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41 In a subsequent paper, HSRI will describe the work related to Colorado’s Supports Waiver.
42 For more information, we refer the reader to: http://www.cdhs.state.co.us/ddd/ComprehensiveWaiverReform_MeetingMinutes.htm
43 A third waiver – the Children’s Extensive Services waiver – also is operated by the DDD, but it is outside the scope of HSRI’s work.
44 This comes from a recently proposed waiver amendment that was submitted to CMS. As of the date of this report, the amendment had not yet been approved.
state-operated “satellite” group homes attached to Regional Centers, as well as through Community Centered Boards (CCBs) located throughout the state.

In Colorado, individuals apply for waiver services through the CCB that serves the area in which the person resides. CCBs are responsible for performing intake, establishing waiver eligibility, and developing the service plan for waiver services. In both waivers, CCBs either provide services directly to waiver participants or arrange for their provision by non-CCB providers.

In the late 1990s, under the auspices of the System Change Project, Colorado adopted what amounted for all practical purposes to a block funding arrangement for the provision of community services through CCBs. Under System Change, CCBs were characterized as Managed Services Organizations (MSOs). As MSOs, CCBs were afforded latitude in managing community funding, and had to meet certain performance markers with respect to the number of individuals they served.

In order to implement System Change, the state modified its HCBS waivers. In line with federal Medicaid policy, the state designed “bundled” payment arrangements for its waivers. In the case of the Comprehensive Waiver, the state decided to make wrap-around per diem payments to CCBs for each day that waiver participants received services. The amount of the wrap-around per diem payments varied by CCB, principally as a result of historical factors.

CMS approved the new waiver configurations in 1999, and for several years after, did not have any issues with these waiver configurations. However, in late 2005, CMS raised serious concerns about the operation of the Colorado Comprehensive Waiver (HCB-DD). The concerns centered on the state’s method of paying for waiver services and attendant problems in ensuring financial accountability. When the state was unable to satisfy CMS concerns with regard to how it accounted for payments of Medicaid waiver services, CMS demanded that the state take immediate steps to establish a direct link between waiver services provided and payments to the agencies supplying the services. The subsequent changes made by the state effectively unraveled the waiver payment/waiver management architecture put into place through the System Change initiative. In effect, these changes stripped away the pre-existing quasi-block funding arrangement and the management of waiver funding within a fixed allotment of funds to each CCB. The amount of waiver funding authorized for each waiver participant would now be based on the service plan developed for the individual and not be further conditioned by the requirement that a CCB also manage dollars within a fixed dollar allotment.

In this stressful environment, DDD decided it was time to bring greater rationality and transparency to its waiver reimbursement process. The goal of HSRI’s work was to design a new Colorado Level Reimbursement System for assigning Comprehensive HCBS Waiver recipients to a reimbursement level.

2. The Process

Because this project was HSRI’s first major foray into SIS-based resource allocation modeling, the process followed a somewhat more circuitous path than is now used in other similar projects. The main steps are the same but the sequence occurred multiple times as the dataset
grew, with each iteration informing the subsequent ones so that, in the end, a reasonable process could be detected. We simplify the experience by describing the four tasks as a smooth process: selecting data sources, constructing the sample/population, gathering the SIS information, and compiling and analyzing the data.

2.1 Selecting Data Sources

Creation of new reimbursement levels required analysis of extensive data from four sources: the SIS, elements added to the SIS by Colorado (supplemental questions including the three types of living arrangement and number of beds in group home settings), Prior Authorization Requests System (PARS) data, and information from the state’s mainframe data system. The PARS is a client-level information management system used to collect and maintain data related to all individuals served in the Colorado Medicaid Developmental Disabilities service system. Information contained in the state mainframe data system includes demographic characteristics, community safety risk (i.e. the individual’s likelihood of injuring another person), services received, and waiver expenditures (waiver billings and paid claims). In all, the Colorado dataset had some 650 variables.

It is important to explain a bit more about community safety risk. In exploring various states’ measures of this key concept, HSRI has found Colorado’s definition and data elements to be the best constructed and most useful for developing waiver reimbursement levels. The Colorado measure includes two key aspects – involvement with the criminal justice system and need for a secure setting. Colorado’s community safety risk variable is for people who have either been convicted and pose a current safety risk, or have the same extreme behaviors (such as murder, fire-setting, rape or pedophilia) but were not convicted. The question is designed to identify just the people who currently pose safety risks to others. In general, this group of people might include 2-5% of individuals served under the waiver.

2.2 Constructing the Sample

Because Colorado DDD was the early trend-setter in seeking to develop a SIS-based Waiver reimbursement system, it endured a more lengthy iterative process of gathering SIS data and having HSRI do analyses of variously-sized datasets. In all, DDD constructed three different arrays of waiver clients – first a moderately-sized representative sample, then nearly a full population, and finally a truly full population. In 2006, DDD gathered an initial sample of SIS results to determine how useful the SIS would be as part of a person-centered assessment process to identify individual support needs. DDD had chosen to use the SIS with everyone participating in the Medicaid waiver programs. Analysis of the representative sample data by HSRI showed clearly that it was possible to use the SIS results to help shape a reimbursement system for the state. Colorado did not stop there; after the initial study of the 517 SIS results had been completed in early 2007, DDD supplied HSRI with additional SIS data. This larger file included SIS results for the full population in 18 of the 20 CCBs. In order to move forward with the analysis as quickly as possible (the work had already lasted far longer than originally

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45 For a more detailed description, please reference Case Study #1 on page B16.
Appendix B

anticipated), HSRI chose to make appropriate adjustments to the dataset to approximate a full waiver population. This yielded an adjusted full population dataset of 3,590 people. Soon thereafter HSRI received data on the full HCB-DD Waiver population of 3,631 people; this larger dataset did not appreciably alter the analytic results from the adjusted full population.

Although constructing multiple study groups may appear, in retrospect, to have been unnecessary, since ultimately the state accumulated full population data, in fact the early representative sample data provided valuable insight into potential challenges in gathering valid SIS assessments and in developing the resource models, which then benefited the subsequent Colorado efforts.

2.3 Gathering the Data for Everyone

SIS interviews began in Colorado in 2006. As required by the AAIDD, the assessments were administered as semi-structured interviews with support coordinators serving as the interviewers in each of DDD’s regions. Where possible, the support coordinators interviewed two or more respondents that knew the individual well. This conformed to standard SIS procedures. Respondents must have known the person being rated for at least 3 months and have had recent opportunities to observe the person in one or more environments for substantial periods of time (at least several hours per setting). The individual could serve as a respondent; or a parent, relative, guardian, direct support staff, or significant other could do so. Interviewers met sequentially with respondents or in a small group format, and took responsibility to integrate the information from the multiple respondents to arrive at final ratings. The support coordinators had direct work experience with people with developmental disabilities and were trained on how to request and verify information from respondents.

DDD arranged for a Master Trainer from AAIDD to train and certify at least one person in each regional office as an Agency Master Trainer. These Agency Master Trainers then trained and consulted with other support coordinators in the region, and continued to periodically monitor the accuracy of the assessments in each region. CCB case managers were trained in 2006 and began completing the SIS and Supplemental Data Sheets for individuals in the Comprehensive Waivers. DDD developed a User’s Handbook including instructions for on-line data entry, expanded definitions of the SIS items, definitions of the Supplemental Data items, and scoring instructions and clarifications. The training, certification and review of SIS interviewers met AAIDD standards for SIS administration. In addition, DDD conducted reliability checks (i.e. having a second interviewer conduct some SIS assessments on individuals already surveyed and then comparing the results for consistency), further promoting the quality of the data.

2.4 Compiling and Analyzing the Data

In each iteration of the SIS data collection, DDD compiled the SIS information into a database, and provided that and the PARS data to HSRI. HSRI then merged all the information into usable SPSS files. There followed an intense period of data cleaning and clarification, conducted by

46 The sample results from the two missing CCBs were scaled up to reflect the proportion of individuals that these CCBs serve in the full Comprehensive Waiver population.
both DDD and HSRI. Early on, HSRI identified some serious problems related to the data collection process. One was maximization, whereby SIS interviewers systematically rate particular individuals at the highest possible score on certain items in order to assure that their “unique” challenges are appropriately represented in the summative score; this erroneous approach misunderstands the sophistication of the SIS instrument. In the initial sample results, interviewers had emphasized Section 3 behavioral or medical problems by artificially elevating the SIS Support Needs Index (SNI) scores and underlying subscale scores for a significant percentage of individuals, thus distorting Section 1 results. These scores were corrected, sometimes through re-administration of the SIS. A second problem in the data appeared to be systematic over- or under-rating of support needs by certain CCBs, making them materially different from other CCBs. Upon closer review, DDD determined that some of the SIS scores were consistent with the individuals’ support needs; in other cases, it appeared that there were underlying problems in the rating process, likely due to training and monitoring variations. Re-administering the SIS in these cases satisfactorily resolved the matter.

With each of the datasets (the sample, the adjusted full population, and the full population of 3,631 individuals), HSRI conducted the same analysis. Our basic approach to assigning individuals to residential habilitation levels was to identify people who have similar characteristics and then group those individuals based on resource consumption patterns. The analysis proceeded in four parts. The first analysis examined the population distribution on various SIS scores, looking at the entire HCB-DD waiver population in comparison to the SIS national norm group. We also focused on particular sub-groups, to identify any systematic differences in SIS scores.

The second analysis concentrated on identifying the SIS and other factors that explain the variations in resource use across the population of waiver recipients. HSRI performed step-wise regression analysis to identify the predictors of current allocations for residential and day services. The analysis began with the SIS results, and then added in other information about consumers. This analysis was performed including and excluding people thought to have extraordinary levels of need. Determining the predictors of the present tier assignments provided basic information about consumer-based and other factors that lie behind the present distribution of resources in Colorado’s HCB-DD Waiver.

We then proceeded to create discrete reimbursement groupings for the Comprehensive Waiver, introducing a set of subgroups to fine-tune the six reimbursement levels. The fourth analysis applied the complex array of Waiver reimbursement levels to the full population of HCB-DD Waiver participants.

On October 4, 2007, HSRI forwarded recommendations for a SIS-based funding system to Colorado officials.

3. Findings
This section presents findings resulting from each of four analyses HSRI used to develop reimbursement levels in Colorado. The first section below presents the results from examining the population distribution on various SIS scores, showing the fundamental similarity between
Colorado and the SIS national norm group, and uncovering some differences among subgroups of the HCB-DD Waiver population. The second section reports results from the regression analysis, indicating which of the SIS variables worked best in predicting existing waiver expenditures for the Comprehensive waiver. We then detail the creation of discrete SIS-based groupings and subgroups, which take into consideration SIS scores and residential tier assignments to move forward to a more rational array of reimbursement levels. In the final section, we present the complex array of waiver reimbursement levels that emerged from the analyses and which set the stage for later rate setting work.

Notably absent from this discussion of the Colorado results is the Day Habilitation findings. HSRI engaged in substantial analysis of the existing funding authorization levels for day habilitation and supported employment services. In the end, the data did not support the creation of sustainable reimbursement levels for day services without linking individual results to the residential groupings. For simplicity of presentation in this case study, we do not discuss the day services findings at all.

3.1 Descriptive Analysis of SIS Information

We describe here several different perspectives on the full population SIS data. First, we compare the total HCB-DD Waiver population scores – SNI as well as Medical and Behavioral total scores – to national scores. We then take a closer look at how the existing residential tiers compare on SIS scores.

**Total SIS Scores:** SIS metrics for full HCB-DD Waiver population show that Colorado is comparable to national norms in terms of SIS SNI scores. The SIS is normed using a nationwide sample of 1,306 adults 18 years of age or older with developmental and other disabilities in 33 states. The norm group included a wider range of individuals than just waiver recipients. One would expect the HCB-DD Waiver population to look a lot like the individuals in the SIS norm group. Figure 1 supports this view: it appears that Colorado’s population of 3,631 HCB-DD Waiver participants looks like waiver adult samples or populations in other states and in the SIS norm group. This helps build confidence in the Colorado SIS HCB-DD Waiver results.
The Colorado SNI distribution more or less parallels the SIS U.S. norms, with slightly more people with more support needs making the small spike to the right of the center of the graph. This similarity of Colorado and the larger national sample in the SNI results is also evident in other portions of the SIS. Table 1 shows the SNI scores as well as the total Medical Support Need and the total Behavior Support Need for Colorado and the national SIS sample.

<table>
<thead>
<tr>
<th>Table 1: Comparisons of Colorado SIS Scores to National Norms</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SIS Norms</strong></td>
</tr>
<tr>
<td># People</td>
</tr>
<tr>
<td>Support Needs Index (SNI) (range 38-143)</td>
</tr>
<tr>
<td>Medical Support Needs (range 0-32)</td>
</tr>
<tr>
<td>Behavioral Support Needs (range 0-26)</td>
</tr>
</tbody>
</table>


The distribution of Colorado’s SIS scores largely mirrors national norms. The SNI average norm score is 100.0, with half the individuals having more support needs and half having fewer support needs. Colorado departs most noticeably from the SIS norm group in the dimension of extraordinary behavioral support needs, reflecting the presence of people with slightly more needs across multiple behavior support total challenges. Nonetheless, the Table 1 figures lend an additional measure of confidence that the Colorado SIS results align reasonably well with results across the U.S.
HSRI also compiled CCB-by-CCB SIS information, and found, in the adjusted full population dataset, some modest variations. However, no CCB exhibited SIS results that were statistically improbable departures from the results for the overall population or the other CCBs; in short, the groups of individuals served by each CCB do not appear to differ markedly from one another in terms of support needs.

**Residential Tiers:** Colorado’s existing payment system is built on a set of seven residential tiers, with daily rates increasing from $53.15 in Tier 1 to $196.14 in Tier 6, and special rates for Tier 7 individuals. It is important to note that a residential tier does not correspond to a particular type of living arrangement; indeed, people populating each tier are distributed across all three types of living arrangement (group home, host home, and other IRSS). As Table 2 suggests, there is a generally positive correlation between payment tier and support needs as measured by the SIS. Greater support needs are associated with higher payment amounts. People in the higher payment tiers tend to be further distinguished from individuals in the lower tiers by greater behavioral and medical support needs. This table also introduces an important factor first addressed by Colorado: community safety risk. It is noteworthy here because it appears to be the principal characteristic that distinguishes people in Tier 7 from those in Tier 5 or 6.

At the same time, it must be noted that there is overlap tier-to-tier in the measured support needs of individuals. For example, some people in Tier 4 are indistinguishable from individuals in Tiers 3 and 5, and so forth.

### Table 2: SIS Summary Results by Tier

<table>
<thead>
<tr>
<th>Tier</th>
<th>People</th>
<th>SIS Index Score</th>
<th>Mean ABE</th>
<th>Mean 3a</th>
<th>Mean 3b</th>
<th>Community Safety</th>
<th>% of Persons with Community Safety Status of 2 or 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>217</td>
<td>88.41</td>
<td>23.36</td>
<td>1.35</td>
<td>3.78</td>
<td>1.01</td>
<td>1.40%</td>
</tr>
<tr>
<td>2</td>
<td>979</td>
<td>95.31</td>
<td>26.7</td>
<td>1.83</td>
<td>4.98</td>
<td>1.04</td>
<td>1.70%</td>
</tr>
<tr>
<td>3</td>
<td>1,196</td>
<td>101.37</td>
<td>29.9</td>
<td>2.65</td>
<td>5.95</td>
<td>1.08</td>
<td>6.00%</td>
</tr>
<tr>
<td>4</td>
<td>550</td>
<td>104.15</td>
<td>31.28</td>
<td>3.4</td>
<td>7.08</td>
<td>1.13</td>
<td>9.30%</td>
</tr>
<tr>
<td>5</td>
<td>235</td>
<td>104.54</td>
<td>31.58</td>
<td>3.61</td>
<td>7.6</td>
<td>1.13</td>
<td>9.40%</td>
</tr>
<tr>
<td>6</td>
<td>278</td>
<td>106.67</td>
<td>32.69</td>
<td>5.46</td>
<td>8.28</td>
<td>1.18</td>
<td>14.40%</td>
</tr>
<tr>
<td>7</td>
<td>134</td>
<td>105.81</td>
<td>32.25</td>
<td>5.18</td>
<td>8.4</td>
<td>1.43</td>
<td>31.30%</td>
</tr>
<tr>
<td>ALL</td>
<td>3,589</td>
<td>100.15</td>
<td>29.26</td>
<td>2.84</td>
<td>6.11</td>
<td>1.09</td>
<td>4.90%</td>
</tr>
</tbody>
</table>

Table 2 asserts the basic validity of Colorado’s existing payment system in terms of grouping people according to level of support needs. However, the fact that there is substantial overlap among the tiers points to potential inequities in current resource allocations, and reinforces the importance of DDD’s commitment to revise its waiver reimbursement approach.

#### 3.2 Explaining Residential Habilitation Payment Levels

Using the data gathered from the full HCB-DD Waiver population, HSRI tested a very wide array of factors to explain historical spending on individuals. The statistical analysis yielded a strong explanation of the relationship between support needs and resource allocation. In statistical terms, the regression model explained a little more than half of the variability in individual
awards in residential habilitation – a solid 51.5%\textsuperscript{47}. HSRI used a method known as backward regression, with the SIS scores loaded into the regression model first, followed by other variables.

In initial efforts to explain the variance in historical expenditures, HSRI found CCB membership and types of living arrangement to be most powerful. Since funding levels varied considerably CCB-to-CCB, it was not surprising to find that CCB was the strongest predictor. A somewhat less powerful but still significant predictive variable was type of living arrangement. For example, all other things being equal, payments tended to be lower for people served in host homes than in group homes or other IRSS settings.

Unlike other states, Colorado from the start wanted to revamp its reimbursement approach, moving toward consumer-directed waiver allocations at the same time as it created assessment-informed payment levels. This meant building the new waiver reimbursement system without reference to residential setting or geographic location. So HSRI built around the CCB and living arrangement factors, creating assessment levels that grouped people appropriately in terms of support needs anchored in historical allocations. Left for the later rate setting process was determination of precise dollar amounts, at which point cost differences among residential settings could be more accurately and appropriately accommodated.

Designing level reassignment based on SIS results corrects Colorado’s prior payment tiers which were not well-aligned with assessed support needs. Then Colorado went through a uniform rate setting process with our Navigant partners. Later Colorado continued work on the Comprehensive Waiver service rates, attempting to reconcile their limited budget with the new reimbursement levels from HSRI and rate work from Navigant.

In HSRI’s subsequent analysis of the full population dataset, four specific factors emerged as the most statistically significant in explaining variances in payment amounts:

- **Section 1 scores.** As indicated above, the SNI is a normed score and Colorado appears to have a distribution of scores similar to the national norm. However, HSRI found that the sum of the Section 1A, 1B and 1E standard scores had about the same level of statistical significance in explaining payment variance as the overall SNI Score (a not surprising result, since there is a close correlation between these scores and the Total SIS SNI Score). HSRI decided to employ the sum of the ABE scores in the formulation of residential habilitation payment levels rather than the index score because of the variability in CCB scoring of certain other parts of Section 1 of the SIS (most notably “life-long learning”). In any case, SIS Sections 1A, IB, and 1E address areas of support that are arguably the most relevant in the provision of residential habilitation services.

- **Section 3a Medical Support Needs.** The total raw score from this section emerged as a significant predictor of funding.

- **Section 3b Behavioral Support Needs.** This section’s total raw score also was found to be a significant predictor of funding.

\textsuperscript{47} r-squared of .515 (F=944.398, p=.000)

- **Community Safety Risk.** Whether a person requires supervision or has convicted status also is a significant predictor of funding.

In this model, 48.5% of the variability is not explained and is unknown. This residual unexplained variance is attributable to other “system” factors, again principally the underlying variance in CCB-by-CCB funding levels, residential setting, and the manner in which the present funding tiers were constructed by merging disparate payment rates into a limited number of payment tiers. It is important to note that this result is better than other states where HSRI has worked and where other states continue to wrestle with aligning Waiver reimbursement with individuals’ support needs. This model's predictive statistical results are very comparable with the first Wyoming ICAP Service Level Waiver reimbursement system in 1995 that preceded the pioneer Wyoming DOORs Waiver model results when it first became a CMS promising waiver practice in 1998.

However, because prior tier assignments were not well-aligned with assessed support needs, constructing payment levels based on the four types of factors described above will result in the shifting of funds among individuals and CCBs. This is a necessary adjustment in order to make the new reimbursement system more equitable.

HSRI did not perform additional step-wise regression analysis to drill down to identify additional discrete items that might contribute to explanation of variance. In HSRI’s experience, this type of analysis can result in giving more weight to individual items than they merit. The more global HSRI statistical analysis has identified the main factors that merit being taken into account in formulating residential habilitation payment levels.

### 3.3 Creating Reimbursement Levels and Sub-groups

In developing the new SIS-based reimbursement levels, HSRI was guided by the following parameters:

- ✓ There should be no more than seven levels. As discussed below, HSRI identified six levels. This left in reserve a seventh level to accommodate the Regional Center group homes and/or individual rates for persons who have special circumstances.

- ✓ The residential habilitation levels must be budget neutral. That is, the overall amount of payment authorizations associated with the proposed levels must be about the same as the current total amount of authorizations. For the purpose of defining levels, this parameter means that additional dollars could not be infused to dampen the impact associated with differences between the amount of funding associated with a person’s current payment tier and the new reimbursement level to which the person might be assigned.

- ✓ The new levels should apply waiver-wide. This means that the levels are not designed to accommodate CCB-by-CCB differences in overall funding.

- ✓ The amount of funding associated with each level should be neutral with respect to residential setting. Reimbursement levels are not constructed to take into account type of living arrangement.
Reimbursement levels should be formulated so that they have face validity and are understandable to constituencies. That is, differences in funding levels should stem principally from differences in assessed support needs.

Again, it is worth emphasizing that the residential habilitation levels that HSRI has developed are not the same as payment rates. The development of payment rates occurred after the SIS levels had been constructed; at that point, Navigant Consulting, Inc. began the rate analysis.

**ABE Groupings.** HSRI’s basic approach to assigning individuals to residential habilitation levels was to identify people with similar characteristics and then group those individuals based on existing resource consumption patterns. Figure 2 depicts this formulation.

The first step was to sort the adjusted full population data set into four principal groups based on ABE score, that is, group waiver participants according to their basic support needs. The groupings by ABE score were structured to mirror as closely as possible the distribution of Colorado waiver participants by percentile. The four basic groups are:

- **Group 1: ABE Score < 25.** Persons with ABE scores in this range fall into approximately the 25th percentile or less of waiver participants with respect to the intensity of their basic everyday support needs. Persons in this group may be portrayed as having relatively low everyday support needs. The ABE cut-off score for inclusion in this group is a little higher than the U.S. SIS 25th percentile (ABE = 24). There were 892 people in this group, constituting 24.8% of the adjusted full population data set.

- **Group 2: ABE Score 26 to 30.** Individuals in this group fall between the 26th to 50th percentiles of waiver participants with respect to their basic support needs. [An ABE score of 30 marks the 50th percentile of the U.S. SIS norms.] These individuals may be portrayed as having relatively moderate support needs. There are 984 people in this group, representing 27.4% of the adjusted full population data set.

- **Group 3: ABE Score 31 to 33.** Persons in this group have basic support needs in the 51st to 75th percentile relative to the adjusted full population data set. Their basic support needs are above average but not the most intensive. With respect to the U.S. SIS norms, an ABE score of 33 marks the 60th percentile of support needs. There is a higher concentration of Colorado waiver participants with scores in this range than would be expected based on the U.S. SIS norms. There were 823 people in this group, representing 22.9% of the adjusted full population data set.
✓ **Group 4: ABE Score > 34.** People in this group have support needs that fall into the 75th percentile or higher among all HCB-DD Waiver participants. These individuals may be characterized as having the *most intensive* basic support needs among waiver participants. There were 891 people in this group, 24.8% of the adjusted full population data set.

![Development of Payment Levels Diagram](image)

HSRI elected to use this basic approach to grouping individuals because it is relatively straightforward and easy to understand. People with similar needs should be receiving somewhat similar allocations, so it is reasonable to compute an average reimbursement for each ABE group. However, HSRI studied the groupings carefully before going forward. In particular, we examined the distribution of people in each of the new ABE groups across the existing residential tiers. While this generally revealed the expected pattern – that every ABE group has some members from each of the seven tiers, but that the proportion of individuals in the lower tiers diminished as the ABE score increased – the relationship was not tight. It became clear that people with community safety “supervised” or “convicted” status were mixed into all the tiers, thus increasing the average payment amount. When these individuals were relocated to three groups outside of the four ABE categories, this yielded slightly lower average payment amounts for the four groups. Importantly, this shift also meant that people with community safety issues could be assigned to a group with an appropriately higher payment level. In fact, the 338 individuals were distributed among three groups: two groups derived from those formerly in Tiers 1-6, and a third group for those who had been in Tier 7. This final group was held in abeyance during the subsequent level formation because of their unusually intense needs.

The four primary ABE groups plus the two additional groups created for people with community safety concerns served as the starting point for the formulation of the residential habilitation levels.
After these reassignments, there were 3,251 individuals who remained in ABE Groups 1-4. Table 3 provides descriptive statistics for each of the four groups. The SIS-measured characteristics of these persons are about the same as the full population. However, average payments are about $6 less per day than the amount associated with the full population. A positive correlation is apparent between ABE score and average payment. There is also a correlation between Medical Support needs and ABE score across the four groups.

<table>
<thead>
<tr>
<th>Group</th>
<th>People</th>
<th>Mean Index Score</th>
<th>Mean ABE Score</th>
<th>Mean Medical Support Score (3a)</th>
<th>Mean Behavioral Support Score (3b)</th>
<th>Avg. Payment</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. ABE&lt; 25</td>
<td>796</td>
<td>85.24</td>
<td>21.42</td>
<td>1.44</td>
<td>3.93</td>
<td>$90.08</td>
</tr>
<tr>
<td>2. ABE 26 - 30</td>
<td>885</td>
<td>97.89</td>
<td>28.13</td>
<td>2.02</td>
<td>6.25</td>
<td>$102.88</td>
</tr>
<tr>
<td>3. ABE 31-33</td>
<td>757</td>
<td>105.51</td>
<td>32.06</td>
<td>2.55</td>
<td>6.58</td>
<td>$115.72</td>
</tr>
<tr>
<td>4. ABE &gt; 34</td>
<td>813</td>
<td>112.39</td>
<td>35.75</td>
<td>5.15</td>
<td>6.03</td>
<td>$138.82</td>
</tr>
<tr>
<td>All</td>
<td>3,251</td>
<td>100.19</td>
<td>29.31</td>
<td>2.79</td>
<td>5.70</td>
<td>$111.72</td>
</tr>
</tbody>
</table>


Subgroups. HSRI then further subdivided each ABE group into ten distinct subgroups. These subgroups are defined in the same terms across each of the four primary groups. The subgroups cluster individuals with similar behavioral and medical support needs within each major group. For example, one subgroup contains people with minimal medical or behavioral support needs. Another contains people who have relatively higher behavioral support needs. Creating these finer sub-groupings supports more accurate assignment of individuals to levels based on their resource consumption patterns.

The subgroups are designed to separate individuals by whether their behavioral or medical support needs are dominant and then by the intensity of those needs. Table 4 (on the following page) shows the distribution of individuals across the ten subgroups along with their mean Section 3a and 3b scores. In Subgroups A and B, individuals generally have relatively low medical and behavior support needs. Subgroups C-F include people for whom medical support needs are dominant. In Subgroups G-J, behavioral support needs are clearly dominant. With respect to the distribution of people among the subgroups, the number of individuals generally decreases the higher the Section 3a or 3b score. HSRI believes that this is a reasonable approach to initially grouping individuals. The approach ensures that people in each subgroup have similar SIS-based characteristics.
Table 4: Distribution of Individuals by Subgroup

<table>
<thead>
<tr>
<th>Subgroup</th>
<th>People</th>
<th>% of All Persons</th>
<th>Mean 3a</th>
<th>Mean 3b</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subgroup A</td>
<td>410</td>
<td>12.61%</td>
<td>0.5</td>
<td>1.02</td>
</tr>
<tr>
<td>Subgroup B</td>
<td>710</td>
<td>21.84%</td>
<td>1.33</td>
<td>3.27</td>
</tr>
<tr>
<td>Subgroup C</td>
<td>309</td>
<td>9.50%</td>
<td>3.41</td>
<td>2.56</td>
</tr>
<tr>
<td>Subgroup D</td>
<td>179</td>
<td>5.51%</td>
<td>5.54</td>
<td>2.63</td>
</tr>
<tr>
<td>Subgroup E</td>
<td>134</td>
<td>4.12%</td>
<td>7.49</td>
<td>3.3</td>
</tr>
<tr>
<td>Subgroup F</td>
<td>143</td>
<td>4.40%</td>
<td>12.01</td>
<td>2.57</td>
</tr>
<tr>
<td>Subgroup G</td>
<td>693</td>
<td>21.32%</td>
<td>2.07</td>
<td>7.39</td>
</tr>
<tr>
<td>Subgroup H</td>
<td>446</td>
<td>13.72%</td>
<td>2.43</td>
<td>11.23</td>
</tr>
<tr>
<td>Subgroup I</td>
<td>127</td>
<td>3.91%</td>
<td>2.35</td>
<td>14.34</td>
</tr>
<tr>
<td>Subgroup J</td>
<td>99</td>
<td>3.05%</td>
<td>3.21</td>
<td>17.83</td>
</tr>
</tbody>
</table>


It is important to stress that these subgroups were created for analytical purposes. Later, some of the subgroups are combined in formulating residential habilitation levels.

### 3.4 Forming Residential Habilitation Levels

Next, HSRI arrayed the average per diem payment amount associated with each subgroup from low to high. We then divided the array into six levels, principally by considering the extent of separation between average per diem payments among the subgroups as well as how many individuals would populate a payment level. For example, Level 1 combines three subgroups for which per diem average payments range from $77.92 per day to $89.76 per day. Level 2 starts with a subgroup with an average payment of $95.31 per day and ends with a subgroup with an average payment of $104.70 per day. In other words, each level is populated by subgroups with similar average payment amounts. Table 5 provides summary information about the financial characteristics of the levels.
Table 5: Financial Characteristics of Levels

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 1</td>
<td>561</td>
<td>3</td>
<td>$77.92</td>
<td>$89.76</td>
<td>$11.84</td>
<td>$83.49</td>
</tr>
<tr>
<td>Level 2</td>
<td>909</td>
<td>9</td>
<td>$95.31</td>
<td>$104.70</td>
<td>$9.39</td>
<td>$99.29</td>
</tr>
<tr>
<td>Level 3</td>
<td>810</td>
<td>7</td>
<td>$108.82</td>
<td>$115.68</td>
<td>$6.86</td>
<td>$111.48</td>
</tr>
<tr>
<td>Level 4</td>
<td>547</td>
<td>9</td>
<td>$120.51</td>
<td>$131.87</td>
<td>$11.36</td>
<td>$127.60</td>
</tr>
<tr>
<td>Level 5</td>
<td>306</td>
<td>8</td>
<td>$135.49</td>
<td>$142.50</td>
<td>$7.01</td>
<td>$138.74</td>
</tr>
<tr>
<td>Level 6</td>
<td>323</td>
<td>6</td>
<td>$145.18</td>
<td>$162.26</td>
<td>$17.08</td>
<td>$152.37</td>
</tr>
</tbody>
</table>


HSRI also avoided creating residential habilitation levels that would be populated by fewer than 10 percent of individuals in the population. In part, this parameter was necessary to ensure that there would be six or fewer payment levels. Generally, the range of payments in each level is reasonably compact, except for Level 6. Narrowing the Level 6 range would entail shifting subgroups to Level 5, which would result in Level 6 being populated by only 230 individuals.

Obviously, different choices could be made on where to divide the population by level. The dividing lines that HSRI selected seemed reasonable and hang together programmatically.

Lastly, it is worth noting that the parameter that there can be no more than six basic levels necessarily constricts the choices that can be made in dividing the population into levels. HSRI notes that, the fewer the levels, the wider the range of costs that must be combined into a level. The wider the cost range, the more likely it is that funding will shift among individuals.

The resulting six residential habilitation levels have the following broadly-defined features:

- Persons who are in community safety “supervised” or “committed” status are variously assigned to Levels 4-6 regardless of their SIS results. The community safety supervised group has been broken into two subgroups based on payments. Persons in this status with accompanying high behavior support needs were found to have appreciably higher costs than other persons in this status. People in community safety “convicted” status are assigned to Level 5, again based on costs. This group could be promoted to Level 6, if desired, since their costs are not a great deal different than people in supervised status with high behavioral support needs.

- Level 1 is composed entirely of individuals with relatively low support needs as measured by SIS Section 1 and generally low medical and behavioral support needs. Some 72% of these persons presently have Tier 1 or Tier 2 payment rates. Individuals at
Appendix B

this level with payment rates at Tier 3 or above do not exhibit appreciably different support needs from other individuals at this level.

- Similarly, Level 2 is by and large composed of persons with moderate basic support needs who do not have more extraordinary medical or behavioral support needs.
- Level 3 is generally composed of persons with moderate to above average basic support needs along with some who have elevated behavioral support needs.
- Level 4 is composed of persons with moderate to above average basic support needs but who have more intensive medical support needs along with some individuals with somewhat more elevated behavior support needs.
- Level 5 includes persons with higher basic support needs accompanied by elevated medical support needs.
- Level 6 is composed of people with higher levels of basic support needs accompanied by more intensive behavioral support needs.

These levels have reasonable face validity. At the same time, the individuals included in Levels 4-6 are not entirely homogenous with respect to SIS characteristics.

Table 6 below shows how the residential habilitation levels align with the present payment rate tiers of individuals (excluding Tier 7). As is immediately evident, the levels do not particularly align closely with the current payment tiers. The alignment problems are most evident at Level 4 and above. In large part, the alignment problems stem from the fact that current payments themselves were not well-aligned with assessed support needs. In Colorado, there were quite different payments for people with similar support needs, caused in part by historical funding disparities among CCBs.

<table>
<thead>
<tr>
<th>Table 6: Levels v. Current Tiers</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tier 1</td>
</tr>
<tr>
<td>Level 1</td>
</tr>
<tr>
<td>Level 2</td>
</tr>
<tr>
<td>Level 3</td>
</tr>
<tr>
<td>Level 4</td>
</tr>
<tr>
<td>Level 5</td>
</tr>
<tr>
<td>Level 6</td>
</tr>
</tbody>
</table>

Table 7 shows the CCB-by-CCB impact of the proposed residential habilitation services levels. Again, people in Tier 7 are not included. This impact assessment assumes that average payment amount associated with each level would be applied to individuals at each CCB. Once payment rates are set, these impacts would change.

It is also important to recognize that the effect of the new levels is to standardize payments across CCBs based on assessed support needs. Overlaying any standardization scheme atop a system that has not operated under uniform rules inevitably leads to a redistribution of funding.

Ten of the 20 CCBs would experience gains or losses of five percent or less. CCBs where average residential habilitation payments currently are significantly above or below the state average for the entire HCB-DD Waiver population generally are the ones that would be most affected by the new payment levels.
### Table 7: CCB-by-CCB Impacts

<table>
<thead>
<tr>
<th>CCB</th>
<th>Individuals</th>
<th>Current Avg. Payment</th>
<th>New Avg. Payment</th>
<th>Difference</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arkansas Valley</td>
<td>64</td>
<td>$95.84</td>
<td>$104.07</td>
<td>$8.23</td>
<td>8.59%</td>
</tr>
<tr>
<td>Blue Peaks</td>
<td>51</td>
<td>$111.04</td>
<td>$103.59</td>
<td>($7.45)</td>
<td>-6.71%</td>
</tr>
<tr>
<td>Colorado Blue Sky</td>
<td>241</td>
<td>$114.33</td>
<td>$126.15</td>
<td>$11.82</td>
<td>10.34%</td>
</tr>
<tr>
<td>Community Connections</td>
<td>54</td>
<td>$93.86</td>
<td>$103.36</td>
<td>$9.50</td>
<td>10.12%</td>
</tr>
<tr>
<td>Community Options</td>
<td>101</td>
<td>$95.75</td>
<td>$106.72</td>
<td>$10.97</td>
<td>11.45%</td>
</tr>
<tr>
<td>Denver Options</td>
<td>484</td>
<td>$111.49</td>
<td>$114.76</td>
<td>$3.27</td>
<td>2.93%</td>
</tr>
<tr>
<td>DDC/Imagine!</td>
<td>258</td>
<td>$129.43</td>
<td>$123.48</td>
<td>($5.95)</td>
<td>-4.60%</td>
</tr>
<tr>
<td>DDRC</td>
<td>371</td>
<td>$120.17</td>
<td>$116.86</td>
<td>($3.31)</td>
<td>-2.76%</td>
</tr>
<tr>
<td>Dev.Oppt/Starpoint</td>
<td>86</td>
<td>$103.72</td>
<td>$118.57</td>
<td>$14.85</td>
<td>14.31%</td>
</tr>
<tr>
<td>Developmental Pathways</td>
<td>371</td>
<td>$144.12</td>
<td>$123.84</td>
<td>($20.28)</td>
<td>-14.07%</td>
</tr>
<tr>
<td>Eastern</td>
<td>102</td>
<td>$94.93</td>
<td>$109.07</td>
<td>$14.14</td>
<td>14.90%</td>
</tr>
<tr>
<td>Envision</td>
<td>173</td>
<td>$114.69</td>
<td>$118.24</td>
<td>$3.55</td>
<td>3.10%</td>
</tr>
<tr>
<td>Foothills</td>
<td>261</td>
<td>$119.90</td>
<td>$116.23</td>
<td>($3.68)</td>
<td>-3.07%</td>
</tr>
<tr>
<td>Horizon</td>
<td>38</td>
<td>$106.12</td>
<td>$108.53</td>
<td>$2.42</td>
<td>2.28%</td>
</tr>
<tr>
<td>Mesa</td>
<td>166</td>
<td>$121.29</td>
<td>$117.59</td>
<td>($3.69)</td>
<td>-3.04%</td>
</tr>
<tr>
<td>Mountain Valley</td>
<td>76</td>
<td>$105.34</td>
<td>$103.79</td>
<td>($1.55)</td>
<td>-1.47%</td>
</tr>
<tr>
<td>North Metro</td>
<td>256</td>
<td>$116.11</td>
<td>$121.32</td>
<td>$5.21</td>
<td>4.49%</td>
</tr>
<tr>
<td>Southeastern</td>
<td>22</td>
<td>$108.50</td>
<td>$114.99</td>
<td>$6.49</td>
<td>5.98%</td>
</tr>
<tr>
<td>Southern</td>
<td>38</td>
<td>$94.02</td>
<td>$114.36</td>
<td>$20.34</td>
<td>21.63%</td>
</tr>
<tr>
<td>The Resource Exchange</td>
<td>348</td>
<td>$116.08</td>
<td>$116.43</td>
<td>$0.35</td>
<td>0.30%</td>
</tr>
</tbody>
</table>


### 3.5 The Final Set of Reimbursement Levels

In the end, HSRI developed for Colorado a carefully designed structure of six levels which better match individual support needs with funding. Table 8 describes the Colorado Level Model, illustrating how the SIS metrics within the subgroups line up to create waiver reimbursement levels carefully tailored to fit the HCB-DD Waiver population.
## Table 8: Residential Habilitation Levels: 10/22/2007

<table>
<thead>
<tr>
<th>Level/Subgroup</th>
<th>People</th>
<th>Mean SIS Index Score</th>
<th>Mean ABE Score</th>
<th>Mean Section 3a Score</th>
<th>Mean Section on 3b Score</th>
<th>Mean Comm. Safety Score</th>
<th>Average Current Payment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Level 1 Recap</strong></td>
<td>982</td>
<td>90.13</td>
<td>24.34</td>
<td>1.37</td>
<td>2.38</td>
<td>1</td>
<td><strong>$88.24</strong></td>
</tr>
<tr>
<td><strong>Level 2 Recap</strong></td>
<td>596</td>
<td>97.32</td>
<td>27.95</td>
<td>1.71</td>
<td>5.44</td>
<td>1</td>
<td><strong>$103.14</strong></td>
</tr>
<tr>
<td><strong>Level 3 Recap</strong></td>
<td>589</td>
<td>102.67</td>
<td>30.70</td>
<td>2.33</td>
<td>7.21</td>
<td>1</td>
<td><strong>$111.82</strong></td>
</tr>
<tr>
<td><strong>Level 4 Recap</strong></td>
<td>489</td>
<td>106.63</td>
<td>32.81</td>
<td>3.17</td>
<td>8.52</td>
<td>1</td>
<td><strong>$124.32</strong></td>
</tr>
<tr>
<td><strong>Level 5 Recap</strong></td>
<td>504</td>
<td>106.52</td>
<td>32.79</td>
<td>4.06</td>
<td>8.22</td>
<td>1</td>
<td><strong>$135.15</strong></td>
</tr>
<tr>
<td><strong>Level 6 Recap</strong></td>
<td>267</td>
<td>107.49</td>
<td>33.27</td>
<td>7.45</td>
<td>9.34</td>
<td>1.47</td>
<td><strong>$154.88</strong></td>
</tr>
</tbody>
</table>

4. **Benefits Derived from the Project and Challenges Encountered**

The preceding sections of this case study have described an extended and intense process to design a new waiver reimbursement approach for Colorado’s Comprehensive HCBS Waiver. The impetus for the reform came from both federal and state stakeholders, seeking to make resource allocations more equitable across the full waiver population and all local service delivery systems. The intent was also to make the developmental disabilities system more consumer-directed. The resulting set of six waiver reimbursement levels furthers both of these goals. The strength of the SIS as a systematic foundation for individual allocations not only helps Colorado justify necessary adjustments in waiver awards, but it also increases the field’s ability to more rationally allocate limited support dollars.

Of particular benefit is Colorado’s contribution to documenting the importance of community safety in any resource allocation system. The first to design an individual-level measure of community safety risk, DDD has provided a valuable template that other states can use to capture needed information about persons who have engaged in extreme behaviors that pose a safety risk to the community.

Over the course of three years, HSRI has encountered and, together with DDD, addressed several significant challenges to the system reform effort. The first was dealing with the intense time pressure generated by CMS demands for change. Both federal and state stakeholders sought to engender reform of the waiver reimbursement system relatively quickly, anticipating that one year would be sufficient time for full development. Not surprisingly, the intensive process has already taken considerably longer, with implementation of the HCB-DD Waiver reimbursement model now imminent. HSRI’s experience in various states has shown that development cannot be rushed, without significant costs in terms of data quality and analytic precision, not to mention community receptiveness.

In Colorado as in most other states, HSRI encountered substantial data quality issues. Two stand out: maximization of SIS scoring and jurisdictional scoring biases. Both became evident in the early phases of the work, so that necessary corrections could be made to the SIS data and adjustments made related to future training and monitoring of SIS interviews.

5. **Conclusion and Next Steps**

This case study documents that a new and more equitable waiver reimbursement system can be built on a foundation of the AAIDD Supports Intensity Scale (SIS), other variables and historical waiver allocations. Having this first Colorado Level System model is an important step for the developmental disabilities field, laying the groundwork for systematically increasing the relationship of funding to individual support needs for individuals served through HCBS comprehensive waivers.

Since HSRI and Navigant finished work on the Colorado Comprehensive Waiver at the end of 2007, the state has been taking some important steps to further the process:

- Upon receipt of HSRI’s and Navigant’s recommendations, the state began to reinvestigate the rate structure for services, to improve the alignment of rates to actual
costs. Additional surveys were conducted to collect direct service hours of care information for host family settings. The state also spent time reviewing the levels developed by HSRI, opting to move one subgroup from Level One to Level Two. In addition, DDD gathered additional information about waiver participant self-injury in an attempt to find additional explanation for adult waiver expenditures.

- The State plans to roll out a new HCBS Supports Waiver reimbursement system in the summer of 2009.
- The State plans to renew both HCBS waivers by March 2009 using the approved CMS HCBS waiver applications.\(^\text{48}\)
- The State will roll out the Comprehensive Waiver reimbursement system on January 1, 2009.\(^\text{49}\)

Perhaps most important, Colorado is moving forward to reform its HCB-DD Waiver in ways that go beyond the new reimbursement system. In a recent paper entitled “An Overview of Changes to the Colorado Home and Community Based Services Waiver for People with Developmental Disabilities,”\(^\text{50}\) Colorado officials identify eleven specific changes which have been or are being made in the HCB-DD Waiver:

1. **Informed Choice:** Waiver participants and their families will receive information that allows them to make an informed choice between receiving services in an institution or in the community. They also will receive information about all qualified Medicaid providers who could provide the services and supports identified in their Service Plans.

2. **Audit Trail:** A clear audit trail will be established, to be subsequently reviewed by CMS, HCPF and DDD during field audits. The audit trail will document that each person receiving services is a member of the target population (i.e., has a developmental disability) and would need institutional level of care within a month if he or she did not receive waiver services. The audit trail will also show the need for each service as recorded on the waiver participant’s Service Plan and the number of units of service needed. Additionally, each payment made for services delivered will show the name of the waiver participant, the number of units of service delivered to the participant, the date service was delivered and the amount paid for each service delivered.

3. **The Service Plan:** The Service Plan for each waiver participant will identify the amount, scope, and duration of services based upon the person’s needs. The Service Plan will be developed annually to reflect the full range of a participant’s service needs and will include Medicaid and non-Medicaid services and supports necessary to allow the individual to live in the community. HCPF developed a uniform Service Plan for all waivers that is accessed by case managers through the Benefits Utilization System. The developmental disabilities system has an additional section in the Service Plan that

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\(^{48}\) [Link](http://www.colorado.gov/cs/Satellite?blobcol=urldata&blobheader=application%2Fmsword&blobheadervalue1=Content-Disposition&blobheadername1=Content-Disposition&blobheadervalue1=Inline%3B+filename%3D418%2F67%2FLTC-CMSWaiverStCommOvviewDD081209.pdf&blobheadervalue2=abinary%3B+charset%3DUTF-8&blobheadervalue3=MongoBlobs&blobkey=id&blobtable=MungoBlobs&blobwhere=122957407881&ssbinary=true)

\(^{49}\) [Link](http://www.colorado.gov/cs/Satellite?blobcol=urldata&blobheader=application%2Fpdf&blobheadervalue1=Content-Disposition&blobheadername1=Content-Disposition&blobheadervalue1=Inline%3B+filename%3D418%2F67%2FLTC-CMSWaiverStCommOvviewDD081209.pdf&blobheadervalue2=abinary%3B+charset%3DUTF-8&blobheadervalue3=MongoBlobs&blobkey=id&blobtable=MungoBlobs&blobwhere=122957407881&ssbinary=true)

\(^{50}\) [Link](http://www.colorado.gov/cs/Satellite?blobcol=urldata&blobheader=application%2Fpdf&blobheadervalue1=Content-Disposition&blobheadername1=Content-Disposition&blobheadervalue1=Inline%3B+filename%3D418%2F67%2FLTC-CMSWaiverStCommOvviewDD081209.pdf&blobheadervalue2=abinary%3B+charset%3DUTF-8&blobheadervalue3=MongoBlobs&blobkey=id&blobtable=MungoBlobs&blobwhere=122957407881&ssbinary=true)
addresses needs specific to people with developmental disabilities. Medicaid is the payer of last resort for all services identified in the Service Plan.

4. **Prior Authorization of Waiver Services and Supports:** Detailed information about individual services is now included in the PARS. Documentation now demonstrates that DHS/DDD approves Medicaid payment only for services and supports identified within the Service Plan. Approval must be received before services are delivered in order for the provider to receive payment for the service delivery.

5. **Provider Reimbursement:** Providers will bill for services by the dates and individual types of services provided. Since each of the nine waiver services must be paid in this manner, providers no longer have the flexibility to use funds for a greater variety of services or in an amount beyond that specified in the waiver. DHS/DDD changed the way that reimbursement is made so that payment is made only when the dates, type, and units of services provided for each waiver participant are shown on the claim.

6. **Portability of Waiver Resources:** Waiver participants will retain their enrollment in the waiver and are eligible to receive waiver services wherever they move in the state when there is a provider available and willing to provide the services. Enrollment and the availability of services is no longer restricted by geographical areas. Qualified providers are free to provide services in any geographic service area.

7. **Transparency:** Individuals/guardians are to be informed about and provided upon request the following documents: information about benefits available in the waiver, a listing of qualified Medicaid providers within the state, a copy of all assessments, an explanation of how service and support needs were identified, explanation of the services and supports that will be met through the Service Plan, a copy of the Service Plan, and a copy of the dispute resolution process.

8. **Preventing Conflicts of Interest:** In the developmental disabilities system, the potential for a conflict of interest arises when the same agency that determines eligibility for an individual also develops the individual’s service plan and then provides the services. Another potential for conflict of interest exists when the agency that provides quality assurance for a service provider is also the service provider. New processes are in place and others are still being developed to prevent or lessen the potential for conflict of interest, or the appearance of conflict of interest, among case management agencies, administrative agencies and providers.

9. **Uniform Rate Setting Methodology:** DDD will use a methodology that results in uniform rates among all Medicaid providers within the state. Rates for residential and day habilitation will be paid to providers according to an individual’s level of support needs. Support needs are identified with a consistent and uniform assessment process, using the Supports Intensity Scale (SIS) along with additional factors. The SIS score, combined with the other factors, is linked to one of six levels of service delivery. Each level is then related to a rate that is paid to the provider to deliver the services. The new rate methodology benefits individuals because they know what needs are identified for
them, how those needs translate to a support level and how the support level relates to the rate paid to a provider to deliver the support. Providers will be paid using the new uniform rate setting methodology beginning January 1, 2009.

10. **Dispute Resolution Process:** Waiver participants and/or their legal guardians will receive information about their rights to dispute resolution. All waiver participants and their legal guardians receive information on the dispute resolution process at the time they apply for services. They also receive a standardized form whenever services are denied or reduced. This form gives them information about how to file a complaint if they do not agree with the decision that was made about the services available to them.

11. **Administrative Authority:** HCPF, as the Single State Medicaid Agency, will retain administrative authority for the waiver, even when DHS/DDD is managing the day-to-day operations of its three waiver programs. DHS/DDD and HCPF now meet on a regular basis and jointly develop DHS/DDD program policies.

All of these actions address system factors which directly impact the ultimate viability of the new reimbursement levels. Together with the implementation of the SIS-based reimbursement system and the parallel work HSRI has performed on the Supports Waiver, these reforms will move the Colorado Developmental Disabilities system to a new level of individual choice and equity.
Case Study #3: Implementing Individual Budgets in Comprehensive and Support Waivers

Georgia has a long history of providing community services for people with developmental disabilities and was the first state in the U.S. to fund such services through a Home- and Community-Based Services (HCBS) Waiver. The Office of Developmental Disabilities, under the Division of Mental Health, Developmental Disabilities and Addictive Diseases, within the Department of Human Resources, is in the process of implementing two new HCBS Waivers: the New Options (NOW) Waiver and the Comprehensive Waiver. One aim of the redesign effort was to develop a funding methodology that was more attuned to the support needs of individuals than the existing fee-for-service system. This new resource allocation model apportions individual financial support more equitably according to need and allows consumers and families to exercise greater choice.

Like several other states, the Office of Developmental Disabilities (Office of DD) is using an individual assessment – the Supports Intensity Scale (SIS) – to gauge consumer needs and is using variables from this assessment as part of a statistical model to set individual resource allocations. The model was developed using the approved waiver funding amounts for individuals participating in the Mental Retardation Waiver Program and Community Habilitation and Support Services Waiver Program as of FY2008.

In 2007, the Office of DD contracted with Human Services Research Institute (HSRI) to develop a single individual budget model for both new HCBS waivers. The goal of this work was to design a new system for assigning assessment-based individual resource allocations to recipients of HCBS funding for both the Comprehensive and the NOW Waivers. In addition, the Office of DD wanted to keep individuals living with their families in their home communities whenever possible, not disrupting existing family ties and support arrangements.

1. The Process

This section describes the technical approach used to build the Georgia resource allocation system, including the selection of data sources, sampling and data gathering, and compiling and analyzing the data.

1.1 Selecting Data Sources

Developing a new resource allocation model for the state required having four sets of data: the SIS assessment scores, supplemental SIS information related to an individual’s residential setting, state case management information, and historical prior authorization data. Georgia has had a long-term commitment to using the SIS; from the start, the state wanted to use this assessment tool as the foundation for a new and more equitable resource allocation system. Data denoting the residential setting of the individual, gathered as part of the SIS interview, was considered crucial in developing the reimbursement model, primarily because it enabled the state to formalize its support for family-based approaches. Case management information, especially demographic characteristics of individuals, was available from a state data...
management system. With respect to waiver expenditure data, while HSRI was given access to historical spending information from the state’s MMIS, of most use was the allocated funding amount for the individual for the current year.

1.2 Constructing the Sample

In 2006, the Office of DD initiated a pilot study of the SIS to determine whether it would be useful as part of a person-centered assessment process, and the SIS was chosen by Georgia for use with everyone on its waivers. An initial sample study conducted by HSRI demonstrated that it was also possible to use the SIS results to help shape a reimbursement system for the state. This sample of 528 people was judged to be of sufficient size and diversity (having representation from the major geographic regions as well as a mix of urban and rural areas) to be reflective of the full waiver population. In 2007, HSRI did a second study utilizing SIS results that had been gathered from most of the individuals using the HCBS Waiver in Georgia; this dataset was used to test and finalize the resource allocation model.

1.3 Gathering the Data

Compiling the needed data was a major task for the Office of DD. During the first few months of the project, the Office of DD trained SIS interviewers in each of the participating localities to administer the tool. These individuals were often directly involved in the lives of the service recipients or worked with respondents who had recent knowledge about the support needs of the individuals being interviewed. The trained interviewers then conducted the SIS surveys with service recipients and gathered information on about 10,168 individuals on Georgia’s HCBS Waiver.

The Office of DD chose to use SIS Online as the data depository for the SIS interview information; this provides accurate scoring and excellent data security, and also assures the independence of the database, keeping it with a third party. In a similar way, Georgia decided to protect the integrity of the analysis by having all the necessary data files conveyed to HSRI for compilation into a single comprehensive file.

In the course of working with Georgia’s data set, HSRI identified two aspects of the data collection process that promote the validity and reliability of the data. First, the training program for administering the SIS meets the requirements of AAIDD and thus provided essential training to individuals and organizations conducting the assessments. Second, the Office of DD did conduct reliability checks (e.g., having a second interviewer conduct some SIS assessments on individuals already surveyed and then comparing the results for consistency) as required by AAIDD protocols for the tool.

1.4 Compiling and Analyzing the Data

As noted above, the State used HSRI as a third party to compile and analyze the data, to keep the process neutral and unbiased. HSRI obtained SIS files from SIS Online and all other needed data sets from Georgia. HSRI then merged all the information into usable individual-level data files for analysis. The complete merged dataset contained some 650 variables.
By the middle of September 2008, after extensive data cleaning and clarification, HSRI produced a reasonably complete file of 10,022 cases from all over Georgia. These individuals lived in a variety of residential settings including 3,359 who lived in congregate settings (children’s services, hospital/ICF, host home, licensed home), 5,432 people who lived with their parents or family members, and 1,231 individuals who lived independently.

Using multiple regression techniques, HSRI isolated key factors that explained variations in resource use across the population and then further analyzed patterns among the significant predictor variables to form individual resource allocations. HSRI had responsibility for running all of the syntax for developing the individualized budgets and then reporting the results to the Office of DD.

2. Findings

This section presents findings from two types of analyses performed by HSRI. The first analysis used regression to determine which of the 650 variables worked well together to best predict waiver expenditures and to identify individual resource allocations for the two new Georgia waivers. The second analysis compared the SIS scores for Georgia with the SIS national norm group. We also discuss how Georgia chose to deal with individuals having extraordinary needs.

Absent from this discussion of Georgia’s results is documentation of the algorithms that will be used to calculate individual budget allocations. This is an important difference from the other case studies offered in this report, and is a direct result of the state’s decision to maintain the independence and neutrality of the model development process. As Georgia rolls out the new individual resource allocation system, it will become increasingly evident how the underlying model operates.

2.1 Results of Regression Analysis

The final analysis, which was based on data gathered from most (98.6%) of the waiver population, yielded a strong statistical explanation of the relationship between support needs and resource allocation. In statistical terms, the regression model explained a little more than three-fourths of the variability in individual allocations – 75.3%\(^{51}\). In order to ensure the fair and consistent application of the SIS tool, the specific scores used and the relative contribution of each of the predictor variables are not presented in this paper. HSRI used a method known as entry style regression, with the SIS scores loaded into the regression model first, followed by other variables. This process allows for the examination of the separate contribution of each variable or set of variables to the prediction of resource allocation. The regression model gauges the extent to which these costs vary with indices of consumer need. The Office of DD will use this linear regression model to assign a specific resource allocation amount for each individual receiving HCBS Waiver services and for those individuals who enter the waivers in the future.

Compared with similar types of reimbursement models, the Georgia system is statistically very

\(^{51}\) r-squared of .753 (F=11,341.549, p=.000).
powerful. Although 24.7% of the variability is not explained and is unknown, this result is better than findings in other states that are wrestling with aligning their waiver reimbursement with individuals’ support needs. The Georgia model’s predictive statistical results are also very comparable with the results of the pioneer Wyoming DOORs Waiver model, which first became a CMS promising waiver practice in 1998 and was renewed in 2004.

2.2 Comparison of SIS Scores to National Norms

This section examines the comparability of the Georgia waiver population to a national population in terms of SIS Total Support Needs Index (SNI) scores and other key predictor variables that have emerged from earlier regression analyses. The SIS is normed using a nationwide sample of 1,306 adults 18 years of age or older with developmental and other disabilities in 33 states. The norm group included a wider range of individuals than just waiver recipients.

Table 1 shows substantial similarity in Georgia’s SIS results for the SNI, the total Medical Support Need scores and the total Behavior Support Need scores, in comparison to scores for a large national sample. The SIS SNI average norm score is 100, with half the individuals having more support needs and half having fewer support needs. The similarity in Georgia’s and the national scores suggest a tendency for Georgia’s waivers to serve clinically eligible people with support needs similar to the national population.

<table>
<thead>
<tr>
<th>Table 1: Comparisons of Georgia SIS Scores to National Norms</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SIS Norms</strong></td>
</tr>
<tr>
<td># People</td>
</tr>
<tr>
<td>Support Needs Index (SNI) (range 38-143)</td>
</tr>
<tr>
<td>Medical Support Needs (range 0-32)</td>
</tr>
<tr>
<td>Behavioral Support Needs (range 0-26)</td>
</tr>
</tbody>
</table>

The similarity in SNI scores is displayed even more clearly in Figure 1. The frequency or number of people with a particular score is represented by each vertical bar. The majority of individuals have scores near 100, which is the average overall score according to SIS norms. While the distribution of Georgia’s SIS scores on the Comprehensive Waiver leans a little more toward scores under 100, the shape of the distribution does conform to the basic bell-shaped curve.

2.3 Exceptions for Individuals with Extraordinary Needs

In every state, the HCBS waiver serves some individuals who have extreme levels of need and thus are particularly costly to support. In the Georgia population, the average waiver user had an historical annual allocation in FY08 of $37,012, with the least expensive person allotted $62. The sample also included eight people with allocations of more than $100,000.

In any reimbursement system, some exceptions will have to be made for people with extraordinary needs; this group of individuals might comprise as much as 4 to 7% of the waiver populations. Georgia has used a CMS-required process to review such cases and, as appropriate, reserve some dollars to pay for these individuals with exceptional or extraordinary support needs. Including people with extreme levels of need in an individual resource allocation model might have the effect of inflating the average allocation amount. It is more efficient to treat such unusual individuals separately, exempting them from the use of statistical procedures like regression analysis that may be used to assign individual budget allocations. Statistically, the way to do this is to identify “outliers” in the dataset. Individuals in Georgia whose predicted allocations were more than two standard deviations different from historical allocations were defined as outliers and made up of a total of 6.7% of the population. Their individual waiver allocations were not changed.

3. Benefits and Challenges Associated with the Project

The foregoing sections of this case study have described an intense process to design an assessment-based individual resource allocation model applicable to both Georgia HCBS waivers. Factors related to the SIS are strong predictors of historical waiver expenditures, reinforcing the state’s decision to use the SIS as the foundation for its new resource allocation process, and testifying to the solidity of the models being used to generate individual budget amounts.

Any substantive change in resource distribution rules will encounter challenges. The move toward assessment-informed allocation will result in increases and decreases for some parties, as waiver financial support is shifted to those most under-resourced and away from those
whose needs can most easily be accommodated with less funding. Throughout the process of developing individualized budgets for waiver participants in Georgia, HSRI encountered two key challenges: (1) fashioning a viable implementation process, and (2) correctly matching SIS results to waiver participants.

Due to the drastic change in Georgia’s funding methodology for waiver services, developing a roll-out plan that would cause the least amount of dislocation to both waiver participants and providers within the state was a significant challenge. HSRI worked closely with the Office of DD to design a process for phasing in the new individualized budgets over a period of five years, in hopes of minimizing the impact at any one point in time. In the first year, the individual resource allocation will draw only 20% of the amount determined by the new model, with 80% remaining the same as the previous allocation. In the second year, the percentage coming from the new model will be 40%. This gradual process will continue until 100% is reached in the fifth year. The individual resource allocations will be applied to each individual as a new waiver service plan is developed at the time of the individual’s birthday. This strategy serves to reduce the immediate impact on many individuals while building support for the longer-term shifts. This plan is partially dependent on the financial health of the state as well as the nation. If, for example, the state faces future reductions to its waiver budgets, the phasing of the roll-out process may be extended over a longer period of time.

Another challenge related to the roll-out of the new resource allocation system is the opportunity it presents to move individuals out of state-run institutions and into community settings. Such a move is in keeping with the Olmstead decision and the policy intentions of the state. However, as in all deinstitutionalization efforts, it has been a struggle to deal with how to transition individuals out (process and timing), where individuals will live (considering a limited community-residential structure), and how to assure full integration of the large population of individuals who will be transitioned out of these facilities.

Lastly, in analyzing the data, HSRI confronted difficulties matching the correct SIS results to the waiver participant’s name. Amidst nine potential client identifiers, on average only two could be matched between the SIS interview data and the rest of the database; in some cases, there were no matches. In other instances, one individual would have been given multiple names when the SIS was recorded. Without having SIS scores for the individual, HSRI was unable to calculate the individualized budget allocation for that individual. In the end, HSRI staff spent more than three months of intensive labor to correct the data.

4. Recommendations and Next Steps

This report documents that individual resource allocations for waiver services can be built using the powerful Georgia statistical model generated from information collected on 10,022 individuals, using the AAIDD Supports Intensity Scale (SIS), other variables and historical waiver allocations. The Georgia resource allocation model is a vital step in informing policy decisions and ultimately increasing the relationship of funding to individual support needs. In the face of excellent explanatory power of the regression model – explaining 75.3% of variance in the most recent waiver allocations using individual SIS scores and other variables – the
resulting Georgia model is an excellent foundation on which to build an improved waiver resource allocation system for statewide use.

Based on the work that has been completed to date, HSRI has noted areas wherein the state could improve the current procedures to create a stronger system. First, the state should build into the current MIS the ability to measure the impact of the new funding allocations, not only on groups of individuals but also on regions and providers. Such a task, though time consuming and difficult, would allow the Office of DD to better manage the impact on any one group over time, as well as giving the Office better control of the funding flows and thus its state budget.

Secondly, the Office of DD should devise a standard routine for gathering identifying information, and should pre-populate the SIS-Online records to facilitate matching to other state datasets. Once established, this systematic practice will facilitate a much smoother process for allocating funds to individuals.

Going forward, the state plans to administer SIS assessments to individuals on an annual basis. Once a new assessment is completed, the results will replace the prior results. This will, in essence, allow the state to always have the most up-to-date assessment information and potentially foster tighter fiscal control.