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**Utah Hospital
Utilization and
Charges Profile
H o s p i t a l
D e t a i l**

97

Utah Hospital Discharge Data
Standard Report I (ST-1:97)

19

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97

released by
Utah Health Data Committee

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Information from this report, and other Utah HDC reports and databases can be accessed through the Office of Health Data Analysis' website: www.healthdata.state.ut.us

Utah Hospital Utilization and Charges Profile

Executive Summary

The hospital discharge data base contains data on all hospitalizations from fifty-one acute care hospitals licensed in Utah and from the Veterans Administration Medical Center. With six years of data now available (1992-1997), it is possible to assess trends in health care utilization, quality, and access to hospital care. The annual Utah Hospital Utilization and Charges Profile is a compilation of statewide and hospital summary statistics for inpatient discharges occurring from January 1, 1997 to December 31, 1997. This profile was designed to meet the needs of the hospital industry for market studies. Other types of hospital data are available in a variety of formats and data products from the Office of Health Data Analysis:

Internet tables and data bases: <http://www.healthdata.state.ut.us/>
Public Data Set (single year or multiple year CD-ROM)
Research-oriented Data Set
Hospital comparative reports

Summary

The driving forces shaping inpatient hospital utilization in Utah continue to be the high penetration of managed care plans and the volume of maternity and childbirth related discharges. Managed care reimbursement policies favor outpatient settings for providing care and minimizing the time hospitalized patients spend in the hospital. These factors contributed to a continued low average length of stay of less than four days.

1997 Highlights

- Managed care was identified, most often, as the primary payer for inpatient care (30.2 percent), an increase from last year's 23.1 percent)—ahead of Medicare at 21.2 percent, other commercial payers combined at 16.6 percent, and Medicaid at 11.6 percent.
- Over 39.2 percent of all discharges were maternity or newborn related.
- Medicare represents approximately 28 percent of the payers in the rural areas. In urban areas, managed care plans cover approximately 37 percent of inpatient discharges.
- Utah's overall hospitalization rates have been declining since 1992. In 1992, over 87 hospitalizations occurred for every 1,000 Utah residents and more than 68.0 percent of these hospitalizations were conditions not related to childbirth. In 1997, the rate declines to about 82 hospitalizations for every 1,000 Utahns, with about 62 of these hospitalizations non-maternity related.
- Total hospital charges increased almost 6.6 percent. The average charge in the urban areas increased by 3.6 percent—lower than the increase in the Consumer Price Index for the Wasatch Front (4.1 percent).¹

¹ Charges do not reflect actual costs. Cost and payment information is not currently available from hospitals.

Introduction

The Health Data Committee

Chapter 33a, Title 26, Utah Code Annotated established the thirteen-member Utah Health Data Committee (committee). In accordance with the act, the committee's purpose is—

“to direct a statewide effort to collect, analyze, and distribute health care data to facilitate the promotion and accessibility of quality and cost-effective health care and also to facilitate interaction among those with concern for health care issues.”

The Health Data Plan

The committee worked with numerous organizations and individuals to develop the Utah Health Data Plan, which defines the implementation of a statewide health data reporting system. The committee realizes the need for information is great, but recognizes resources are limited so its activities must be prioritized.

The committee's first priority is inpatient hospital discharge data. According to statistics released by the Division of Health Care Financing, Utah Department of Health, hospital care accounted for 47 percent of total Utah health care expenditures in 1996. Additionally, hospital billing data was identified as a readily available data source which was comparable across hospitals at a state, regional, and national level.

Current committee priorities include measurement and evaluation (HEDIS and satisfaction surveys), hospital financial performance data from Medicare Cost Reports, and ambulatory surgery data from hospitals and freestanding ambulatory surgery facilities.

The Hospital Discharge Data Base

Administrative Rule R428-10 became effective De-

ember 1991, and mandated that all Utah licensed hospitals, both general acute care and specialty, report information on inpatient discharges. Since 1992, the Office of Health Data Analysis has collected a wealth of information from the fifty-four Utah hospitals which

have submitted data.

These hospitals include 41 general acute care facilities, seven psychiatric facilities, five specialty hospitals, and the Veterans Administration Medical Center. Shriners Hospital, a charity hospital, is exempt from reporting requirements.

All hospitals report “discharge data” for each inpatient served.

“Discharge data” means the consolidation of complete billing, medical, and demographic information describing a patient, the services received, and charges billed for each inpatient hospital stay.

Discharge data records are being submitted to the office quarterly. The data elements are based on discharges occurring in a calendar quarter. If a patient has a bill generated during a quarter, but has not yet been discharged by the end of the quarter, data for that stay is not included in the quarter's data.

Data Submission

The UHDC receives discharge data quarterly from hospitals in various formats and media. Most of the unaffiliated small rural hospitals submit hard copies of UB-92 forms. Discharges from affiliated hospitals are submitted in electronic format by the corporate office (IHC; and Columbia). Discharge data are converted into a standardized format by the Office of Health Data Analysis as specified in the Health Data Plan.

System Edits

Data are validated through a process of automated editing and report verification. Each record is subjected to a series of edits that check for accuracy, consistency, completeness, and conformity with the definitions

specified in the Technical Manual. Records failing the edit check are returned to the data supplier for correction or comment.

About This Report

The tables contained in this report present many of the factors within a hospital which drive the costs of patient care. The major issues addressed by these documents include:

1. volume and intensity of inpatient health care,
2. differences in inpatient services,
3. differences in patient demographics and complexity among hospitals.

Consumers, employers, payers, policy-makers, and providers can utilize these documents to plan for resource allocation, identify geographic areas of public concern, weigh purchasing decisions, and make peer comparisons. Purchasers may use the information to select providers and payers, or to tailor benefit offerings.

Organization of this Report

The 62 DRGs shown in this report were selected based on the statewide volume of discharges and sum of total charges. These DRGs collectively account for at least 60% of the total inpatient volume or at least 60% of all total charges.

This report presents the distribution, composition, and outcome measures of inpatient discharges by selected characteristics. The information is broken down by hos-

pital and arranged according to peer groups in the sequence listed above. Where appropriate, comparative statistics are shown for the hospital's peer group by state. Each hospital table is in four parts:

This report is designed to be a tool for analysis of health care issues, and includes a wide range of data for applications by many user groups. Consumers, employers, payers, policy makers, and providers may begin to use this type of data to make health care decisions. Health care reform policies rely heavily on the use of objective, comparable information to drive decision making by all parties.

ST 1-1 - Hospital discharges and facility charges by type of clinical services and major diagnostic category (MDC).

ST 1-2 - Summary statistics for facility charges and length of stay, overall and for 62 selected diagnosis related groups (DRG).

ST 1-3 - Summary statistics for facility charges and length of stay for 24 selected all patient refined diagnosis related

groups (APRDRG) with patient severity levels.

ST 1-4 - Patient profile: gender, age, type of admission, source of admission, discharge status, primary payer category and patient origin by local health district.

Description of Table Entries

Using health care data to impact decision making requires a commitment on the part of and type of user to understand the complex nature of health care. Decision making is not simple and cannot be reduced to a single indicator. Committee resource documents should serve as screens for the further analysis of provider selection, rather than devices that provide the final answer. The entries in the following tables will assist the

users in interpreting the information. Additional definitions of terms used in this report are in Appendix B.

Discharges - Number of inpatient discharges that occurred during the period from January 1, 1996 to December 31, 1996.

Total Charges - Sum of all charges included in the billing form, including both facility charges and professional fees and patient convenience items. This is different from cost of treatment or payment received by the hospital.

Facility Charges - Sum of all charges related to using a facility. Facility charge is calculated by subtracting professional fees and patient convenience item charges from total charge.

Type of Service:

Newborns - Patients with principal diagnosis code ICD-9 V30-V39 (Liveborn infants)

Obstetric - Patients assigned to Major Diagnostic Category (MDC) 14 (Pregnancy, Childbirth, & the Puerperium)

Pediatric - Patients age 0-17, excluding newborns

Medical/Procedure or Surgical - Patients are considered procedure or surgical if they had a procedure performed which would require the use of the operating room. DRG's have been classified as either procedure/surgical or medical.

Psychiatric - Patients assigned to MDC 19 (Mental Diseases and Disorders)

Rehabilitation - Patients assigned to DRG 462 (Rehabilitation) or discharged from a rehabilitation facility

Major Diagnostic Categories - Mutually exclusive principal diagnosis categories, from which DRGs are formed. The diagnoses in each MDC correspond to a single organ system or etiology and in general, are associated with a particular medical specialty.

Adjusted Average Charge - Average charge for a hospital divided by the hospital's case-mix index and excluding outliers.

Outlier - See "*Outlier Cases*" above.

Gender - Self-explanatory

Age - Derived from dates of birth and discharge.

Type of Admission:

Emergency - The patient requires immediate medical intervention as a result of severe, life threatening or potentially disabling conditions. Generally, the patient is admitted through the emergency room.

Urgent - The patient requires immediate attention for the care and treatment of a physical or mental disorder. Generally, the patient is admitted to the first available and suitable accommodation.

Elective - The patient's condition permits adequate time to schedule the availability of a suitable accommodation. An elective admission can be delayed without substantial risk to the health of the individual.

Newborn - Use of this code necessitates the use of a special source of admission codes, see Source of Admission below. Generally, the child is born within the facility.

Sources of Admission:

Physician Referral - The patient was admitted to this facility upon the recommendation of his or her personal physician not affiliated with a health maintenance organization (HMO).

Clinic Referral - The patient was admitted to this facility upon recommendation of this facility's clinic physician.

HMO Referral - The patient was admitted to this facility upon the recommendation of an HMO physician.

Transfer from a hospital - The patient was admitted to this facility as a transfer from an acute care facility where he or she was an inpatient.

Transfer from a skilled nursing facility - The patient was admitted to this facility as a transfer from a skilled nursing facility where he or she was an inpatient.

Transfer from another health care facility - The patient was admitted to this facility as a transfer from a health care facility other than an acute care facility or skilled nursing facility.

Emergency Department - The patient was admitted to this facility upon the recommendation of this facility's emergency room physician.

Court/Law enforcement - The patient was admitted to this facility upon the direction of a court of law, or upon the request of a law enforcement agency representative.

Normal delivery - A baby delivered without complications.

Premature delivery - A baby delivered with time or weight factors qualifying it for premature status.

Sick baby - A baby delivered with medical complications, other than those relating to premature status.

Extramural birth - A baby born in a non-sterile environment.

Muti-County Local Health District:

Bear River - Including Box Elder, Cache and Rich counties

Central Utah - Including Juab, West Millard, East Millard, Piute, Sevier, Wayne, Sanpete counties

Southeastern Utah - Including Carbon, Emery, Grand, and San Juan counties

Southwest Utah - Including Garfield, Iron, Kane, Washington, and Beaver counties

Uintah Basin - Including Daggett, Duchesne, Uintah counties

Weber/Morgan - Including Weber and Morgan counties

Limitations

This report shows total billed charges, which includes both facility charge and professional charge. Billed charges are to be used as only one indicator of hospital performance. All patients, or insurance plans, do not pay the same amount for similar treatments, supplies, services, and procedures, even though they may be billed the same amount. Hospitals offer a variety of contracts, many with discount arrangements based on volume. Because of this, the data reflects pre-contractual prices for hospitalization and not the actual payment between providers and payers.

This report can be used to compare broad measures of utilization for all hospitals, but more detailed data are needed to look at specific performance comparisons between hospitals. It addresses inpatient utilization issues, but does not directly measure the quality of medical care. This information serves as an important first step toward consumers' taking a more active role in health care decision-making.

The price of hospital services, while important, is not the only consideration in making inpatient hospital decisions. Other factors that may influence hospital services, including: the type of condition treated, the physicians who practice at the hospital, and the insurance company's managed care policies. The subscriber should be familiar with his or her health plan long before hospital care is needed. (For additional information on managed care performance please contact the OHDA at (801) 538-7048.)

Sources of Hospital Variation In Volume and Outcome of Charges

Users of this report must remember that several factors such as volume of patients discharged, coding inconsistencies, and severity of patient illness can influence inter-hospital comparisons. In interpreting the information shown in this report, the reader is advised to keep in mind the following:

Volume

If a hospital discharged only a few types of certain cases, comparing data with other hospitals would not be especially meaningful because a small number of cases are not sufficient to establish a pattern of treatment. The reader must exercise caution when interpreting measures shown in this report that were based on less than five discharges.

Coding

Inter-hospital variations may be a reflection of the differences in coding practices and quality of data. From the beginning, the committee worked to assure the best data quality possible. To do so, they implemented the following:

1. The Health Data Plan provides data element definitions and standards to ensure all hospitals will report similar data.
2. Systematic edits were put in place to identify missing or invalid data fields and hospitals are required to correct these.
3. Each hospital is provided with a 35-day review period to validate the committee's data against their hospital records.

Despite the detailed edit and validation process, data quality is still an issue but is expected to improve over time as hospitals become accustomed to reporting data for public dissemination. Any comparative analysis or decision-making, based on this data, should take into account issues of data quality.

Severity of Illness

Patients entering hospitals for the same treatment and conditions often vary in the severity of their illnesses. Factors such as age, gender, and secondary illnesses account for differences in severity. Treating severely ill patients is the most resource intensive and expensive. For instance, patients who are the sickest may need to be admitted to intensive care units, may need high-technology equipment, or may need to stay longer in hospitals than those less ill patients.

Some hospitals, especially regional referral centers such as Primary Children's Hospital and LDS Hospital, treat more acutely ill patients because of the specialized care available at their facility. The University of Utah hospital, which serves as a regional referral center as well as a major teaching hospital, treats more patients with complex medical conditions than other hospitals. Charges for patients cared for at these hospitals may be higher than at other hospitals due to the type of services offered and the type of patients served.

Rural hospitals often admit a mix of patients that may be chronically ill, uninsured, or elderly. The elderly are often more severely ill because of chronic and multiple health problems.

[The remaining sections are derived from comparative performance of U.S. Hospitals: The Source book, 1992, Health Care Investment Analysts, Inc. (HCIA).]

Size

Larger hospitals typically provide a more extensive array of services, including many not found in smaller hospitals, that are more sophisticated and resource-intensive, such as specialized intensive care units. The provision of more extensive and sophisticated services typically entails the need for more complex diagnostic

and therapeutic equipment, which often requires additional personnel with advanced training. As a result, in addition to the standby costs of maintaining a broader scope of services, larger hospitals generally treat a more complex and severely ill mix of patients. That is, the services that large hospitals produce are different in nature from those produced by small ones.

Furthermore, larger hospitals are more likely to be located in urban areas, which tends to increase costs. Finally, larger hospitals more frequently engage in the provision of graduate medical education and research which results in additional direct and indirect costs not incurred by smaller, nonteaching hospitals.

In contrast to the higher unit operating costs, larger hospitals do enjoy a number of advantages over smaller hospitals. As a result of their scope of services, teaching programs, and prestige, larger hospitals are better able to attract patients and physicians than smaller hospitals, and the quality of care they provide are perceived as being higher. Furthermore, the sicker patients for whom they care are less able to postpone care, compared with the patients of small hospitals. That is, a smaller proportion of their patients are elective admissions.

Location

Urban hospitals, compared with rural ones, have higher costs and revenues for a variety of reasons. The most important effect that urban or rural location has on a hospital is on the cost of labor. Hospitals in urban labor markets must typically pay more to employ nurses, administrators, hospital-based physicians, and nearly all other hospital personnel. Primarily because urban hospitals tend to be larger, but also because urban hospitals are faced with greater competition, they generally offer a broader scope of more sophisticated services than do rural hospitals. As a result, urban hospitals generally treat patients requiring more complex care, which further increases their costs compared with rural hospitals and inner-city urban hospitals tend to treat a patient mix that is disproportionately poor or elderly compared with suburban hospitals, which tends to increase their costs.

Teaching Status

Teaching hospitals are those that provide medical education, primarily graduate medical education. The commitment to providing graduate medical education can range from the maintenance of one or more graduate residency programs approved by the American Medical Association, to the more extensive offerings of larger institutions that are either directly affiliated with a medical school or are members of the Council of Teaching Hospitals (COTH).

The most prominent differences between teaching and nonteaching hospitals occur as a result of the contemporaneous provision of teaching and patient care. Teaching hospitals incur certain costs directly associated with medical education programs, the largest category being the salary and benefits expense for interns and residents. Furthermore, the process of educating interns, residents, and other medical trainees normally results in longer lengths of stay and the use of more ancillary services, since students most often learn treatment protocols through practice. As a result, an additional category of costs incurred by teaching hospitals is the “indirect” costs of graduate medical education.

The second major difference between teaching and nonteaching facilities is the broader and more complex scope of services offered by teaching hospitals. Teaching hospitals more frequently operate several intensive care units (which are often specialized), possess the latest medical technologies, and attract a diverse group of physicians representing most specialties and many sub-specialties. Major teaching hospitals also offer many unique tertiary-care services not found in other institutions, such as burn care, shock trauma, and helicopter transport services. As a result of the sophisticated service offerings and types of physicians who practice in teaching hospitals, they attract more severely ill patients, who frequently have more complicated diagnoses or are in need of more complex procedures.

It is commonly believed that, even within fairly narrow diagnostic categories, such as the Medicare DRGs,

the severity of illness of patients treated at teaching facilities is greater than that at nonteaching hospitals. As a result of the greater case mix complexity of teaching hospitals, greater amounts of resources are required to provide treatment. Moreover, the offering of many specialized services, such as neonatal intensive care and magnetic resonance imaging, necessarily entails

the presence of unused and costly standby capacity. As a result of their teaching programs, more sophisticated service offerings, more complex case mix, and other additional costs, revenues and expenses per discharge are generally significantly higher in teaching hospitals.

Strategies to Improve Comparability

Diagnosis Related Group (DRG)

The DRGs were developed for the Health Care Financing Administration as a patient classification scheme which provides a means of relating the type of patients a hospital treats (i.e., its case mix) to the costs incurred by the hospital. While all patients are unique, groups of patients have common demographic, diagnostic and therapeutic attributes that determine their resource needs. All patient classification schemes capitalize on these commonalities and utilize the same principle of grouping patients by common characteristics.

The use of DRGs as the basic unit of payment for Medicare patients represents a recognition of the fundamental role a hospital's "sicker" patients play in determining resource usage and costs, at least on average.

"The DRGs, as they are now defined, form a manageable, clinically coherent set of patient classes that relate a hospital's case mix to the resource demands and associated costs experienced by the hospital." (Diagnosis Related Groups, Seventh Rev., Definitions Manual, page 15.)

Each discharge in the Utah Health Discharge Database (UHDDDB) was assigned into a DRG based on the principal diagnosis, secondary diagnoses, surgical procedures, age, sex, and discharge status of the patient. This report includes 62 selected DRGs which cover about 60% of all discharges that occurred in 1996.

All-patient Refined (APR) DRG

The APR-DRGs are a patient classification scheme developed by 3M Health Information Systems (HIS) that follows the basic DRG methodology of classifying patients into disease categories, but further subdivides each disease category into severity of illness classifications. With a few exceptions, a patient in each disease category (called consolidated DRG) is assigned into one of four levels of severity: no/minor complication or co-morbidity (CC), moderate CC, major CC and extreme CC. Some of the exceptions to the four-level classification are newborns and neonates which are assigned to APRDRGs formed with the severity of condition already built-in (e.g., APRDRG 606: Neonate, birth weight 1000-1499g with significant O.R. procedure, discharged alive).

APRDRG categories were used to define charge and length of stay outliers and calculate the Case Mix Index (See CASE MIX INDEX).

This report includes 25 selected APR-DRGs which cover about 60% of all discharges that occurred in 1996.

Outlier Cases

Some patients have exceptionally low or high lengths of stay (LOS) or total facility charges. A hospital's charges can be affected by just a few unusually long (or short) or expensive (or inexpensive) cases. These high or low values could be a result of coding or data submittal errors, particularly in length of stay, total

charges, or data elements that affect DRG assignments. Other reasons for exceptionally low LOS or charges could be due to death or transfer to another facility. Exceptionally high LOS or charges could be due to a catastrophic condition. Whatever the reason, these values, referred to as “outliers,” distort the averages and were excluded from calculations. LOS or facility charge high outliers are defined in this and succeeding reports as values above 2.5 standard deviations from the mean. Means and standard deviations are APR-DRG specific and calculated on a statewide basis. The low outliers were defined as a non-newborn or non-normal delivery discharge with less than a \$300 charge. However, the calculations in this report do not exclude low outliers. A preliminary analysis showed that of the discharges that met this definition, a high proportion are in the DRG, “Other factors influencing health status,” for which it was difficult to determine whether they were true outliers.

Case-Mix Index

An important source of variation among hospitals in summary measures of outcome - such as length of stay, total charges, and severity of illness - is the differences in the complexity of the patients they treat. To allow for a meaningful comparison of outcome measures among hospitals, an adjustment factor based on patient complexity should be applied. For this reason, four case-mix indices (all-patient, acute, obstetric, and pediatric) have been calculated for each hospital and are shown on the tables in this report. A hospital’s case-mix index of 1.15 means that the overall case mix of a hospital requires 15 percent greater intensity of resource use relative to the state as a whole. See Appendix B for a description of the calculation of the case-mix indices.

Hospital Peer Groups

Comparing summary outcome measures (length of stay, total charges, readmission rates, mortality rate) among hospitals has always been a controversial issue because of the difficulty of defining what makes hospitals “comparable.” As discussed previously, summary outcome measures vary among hospitals depending on various factors such as location, bed size, owner-

ship, affiliation, and teaching status. If all these factors were to be considered in defining peer groups, each hospital might end up in a group by itself.

The question then is why define peer groups at all? The answer is that given hospital-level data, users tend to compare hospitals. Without peer groupings to refer to, readers would compare a hospital with either the state level data or to another arbitrarily chosen hospital.

Therefore, it was decided that this report would contain summary statistics for a hospital’s peer group as well as for the hospital and the state. Having decided this, the next issue was the basis for the grouping, which is discussed next.

Among various factors which affect a hospital’s average charges, location and case mix indicators play important roles in determining the complexity of patients treated in the hospital. Therefore, the bases for the 1993 hospital grouping are location (urban/rural) and the all-patient case-mix index, except for psychiatric and substance abuse hospitals and non-comparable hospitals.

The hospitals are assigned to peer groups according to 1996 UHDDDB all patient case-mix index (CMI). The 1996 UHDDDB all patient CMI is shown below.

Group 1: Acute Care, Urban, High CMI

LDS Hospital	1.4475
University of Utah Hosp & Clinics	1.3357

Group 2: Acute Care, Urban, Upper Medium CMI

St. Mark’s Hospital	1.1155
McKay-Dee Hospital Cntr	1.0659
Salt Lake Regional Medical Center	0.9747
Utah Valley Medical Center	1.0635

Group 3: Acute Care, Urban, Lower Medium CMI

Cottonwood Hospital Med Center	0.7741
Davis Hospital and Medical Center	0.7130
Lakeview Hospital	0.9416
Mountain View Hospital	0.8149
Ogden Regional Medical Center	0.8883
Pioneer Valley Hospital	0.8875

Group 4: Acute Care, Urban, Low CMI

Alta View Hospital	0.6263
American Fork Hospital	0.5710
PHC Hospital	0.8017
Jordan Valley Hospital	0.5665
Orem Community Hospital	0.4337

Group 5: Acute Care, Rural, High CMI

Ashley Valley Medical Center	0.6986
Brigham City Community Hospital	0.8371
Castleview Hospital	0.9461
Dixie Medical Center	0.8308
Logan Regional Hospital	0.6477
Valley View Medical Center	0.6812

Group 6: Acute Care, Rural, Low CMI

Allen Memorial Hospital	0.5736
Bear River Valley Hospital	0.5888
Beaver Valley Hospital	0.5328
Central Valley Med Center	0.6238
Delta Community Medical Center	0.5608
Fillmore Community Med Center	0.5371
Garfield Memorial Hospital	0.5426
Gunnison Valley Hospital	0.5147
Kane County Hospital	0.5698
Milford Valley Memorial Hospital	0.4786
San Juan County Hospital	0.5427
Sanpete Valley Hospital	0.5698
Sevier Valley Hospital	0.6262
Tooele Valley Regional Med Center	NA
Uintah Basin Med Center	0.6286
Wasatch County Hospital	0.5749

Group 7: Psychiatric & Substance Abuse Hospitals

Benchmark Regional North
Benchmark Regional South
Highland Ridge Hospital
Olympus View Hospital
Rivendell Psychiatric Center
University Neuropsychiatric Institute

Special Hospitals (not comparable)

Bonneville Health and Rehabilitation	
HEALTHSOUTH Rehab Hosp of Utah	
Primary Children's Med Center	1.4717
South Davis Community Hospital	
The Orthopedic Specialty Hospital	
Utah State Hospital	
Veterans Hospital	

Some industry experts contend that hospital comparisons are meaningful only when confined to a specific treatment, service or procedure. Thus, in analyzing total charges for Coronary Artery Bypass (CAB), one would only compare among hospitals that perform CAB. Among these hospitals, a logical peer grouping would be based on the volume and severity mix of discharges associated with this procedure. While this is obviously ideal, it would not be possible in a summary report such as this to define various peer groupings according to different procedures. However, the report contains information on the top 62 DRGs which can be used by the user to form hospital groupings appropriate for a particular analysis.

Additional Information

Future Reports

The ST-1 report contains a wealth of data and will serve as the basis for several consumer-friendly reports. Standard Documents will be published and distributed to a broad range of audiences.

Internet

The ST-1 reports are available on the Internet from 1993 through 1996. Detailed analysis can be performed

using the "Descriptive Statistic" query screen, under the title DATA BASES— Utah Hospital Discharge Database. The Internet URL is: www.healthdata.state.ut.us

Availability of the Hospital Discharge Data Base

The tables included in this report can be made available in electronic form upon request. Patient-level data are also available in electronic form (See Appendix D).



Appendix A

Case-Mix Index

The case-mix indices were derived as follows:

1. Calculate relative weight for each APR-DRG i:

$$W_i = \frac{C_i}{C_s}$$

where

i = APR-DRG i

s = State level

W_i = Relative weight for APR-DRG i

C_i = Average charge for APR-DRG i

C_s = Average charge for all patients

2. Calculate case-mix index for hospital j:

$$I_j = \frac{\sum_{i=1}^{1315} W_i N_{ij}}{N_j}$$

where:

j = Hospital j

I_j = Case-mix index for hospital j

N_{ij} = Number of discharges for
APR-DRG i and hospital j

N_j = Total discharges for hospital j

In the calculation of the all case-mix indices, the followings were excluded: higher outliers and discharges from psychiatric and substance abuse hospitals, South Davis Community Hospital, Bonneville Health and Rehabilitation, HEALTHSOUTH Rehabilitation Hospital of Utah, Veterans Hospital, and Utah State Hospital. Besides the above exclusions, the discharges included in each of case-mix indices are described below:

All-Patient Case-Mix Index: All discharges

Acute Case-Mix Index: All discharges but excluding Newborns (ICD-9:V30-V39).

Obstetric Case-Mix Index: Discharges assigned Major Diagnosis Category (MDC) 14 (Pregnancy, Childbirth, & the Puerperium)

Pediatric Case-Mix Index: Patients aged 0-17, excluding newborns

Appendix B

Definition of Terms Used in This Report

To ensure a common understanding, frequently used terms and measures displayed in the resource documents, and not explained elsewhere in this report, are defined here.

Length of Stay (LOS): Number of days from the date of admission to date of discharge. If a patient admitted and discharged in the same day this case will be given a length of stay of one day (LOS=1).

Average Length of Stay (ALOS): Average length of stay in days; calculated as LOS divided by related discharges.

Average Charge: Sum of total charges divided by number of discharges. The average lends itself to further mathematical manipulation (for example, by multiplying it with a projected number of discharges to predict future resource use). Thus it was chosen over other measures, such as the median or mode, neither of which has this statistical property.

Adjusted ALOS and Charge: The adjustment process accounts for the differences in reported values among hospitals which can be attributed to the types of patients or illnesses treated at each hospital.

Chart-Based Severity System: Severity systems which use clinical data, e.g., laboratory results taken directly from patient medical records, to determine the level of severity of a patient. Clinical information required by chart-based systems are not among the data elements in the Utah Hospital Discharge Data Base.

Code-Based Severity System: Severity systems which utilize information are generally available in a patient's

discharge abstract or uniform billing claim form (UB92) instead of using clinical data from patient medical records.

Severity Adjustment: An adjustment process to control for confounding in case mix, etiology, and severity among hospital patient populations. Low values imply NOT very sick and high values imply very sick.

Appendix C

Electronic Resource Document

Public Data Sets (PDS) are available with minimal controls. Different data files are designed to provide general health care data to a wide spectrum of users. Although the data are at the patient level, considerable care has been taken to ensure that no individual patient could be identified from the data. The data elements included in the public use data files are listed below.

- 1 Provider Identifier (Hospital)
- 2 Patient's age (in 5-yr. group)
- 3 Patient's gender
- 4 Type of admission
- 5 Source of admission
- 6 Total days stay
- 7 Patient's discharge status
- 8 Patient's postal zip code
- 9 Patient's residential county
- 10 Patient's migrant status
- 11 Patient's marital status
- 12 Patient's race
- 13 Patient's ethnicity
- 14 Principal diagnosis
- 15 Secondary diagnosis 1
- 16 Secondary diagnosis 2
- 17 Secondary diagnosis 3
- 18 Secondary diagnosis 4
- 19 Principal procedure
- 20 Secondary procedure 1
- 21 Secondary procedure 2
- 22 DRG
- 23 MDC
- 24 Total charge
- 25 Facility charge
- 26 Professional charge
- 27 Admitting physician specialty
- 28 Attending physician specialty
- 29 Consulting physician specialty
- 30 Surgeon's specialty
- 31 Primary payer category
- 32 Secondary payer category
- 33 Tertiary payer category
- 34 Patient's relationship to insured
- 35 Charge Outlier
- 36 Length of Stay Outlier
- 37 APRDRG
- 38 Patient's Severity Subclass
- 39 Discharge Quarter
- 40 Secondary diagnosis code 5
- 41 Secondary diagnosis code 6
- 42 Secondary diagnosis code 7
- 43 Secondary diagnosis code 8
- 44 Secondary procedure code 3
- 45 Secondary procedure code 4
- 46 Secondary procedure code 5

Research Oriented Data Set (RODS) is available through the "Request for Data Release" process outlined in the [Privacy and Confidentiality Policies and Procedures Manual](#), Appendix 4 of the Health Data Plan. This data set is designed for organized research of a bona fide nature in the health care areas of cost, quality, access, or prevention. The RODS will include more data elements and refined categories in detail than the PDS.

Please send requests for data to:

Office of Health Data Analysis
Utah Department of Health
288 North 1460 West
Salt Lake City, Utah 84114-4004
Phone: (801) 538-7048
Fax: (801) 538-9916

Appendix D

Hospital Characteristics: 1997

Hospital Name	Own*	Affiliation	Own/Type	County	City	U/R	Teach	Beds
Allen Memorial Hospital	G	Rural Hlth Mgmt Corp	GOV	Grand	Moab	R	N	38
Alta View Hospital	N	IHC, Inc.	IHC	SL	Sandy	U	N	70
American Fork Hospital	N	IHC, Inc.	IHC	Utah	American Fork	U	N	72
Ashley Valley Medical Center	I	Columbia	Columbia	Uintah	Vernal	R	N	39
Bear River Valley Hospital	N	IHC, Inc.	IHC	Box Elder	Tremonton	R	N	20
Beaver Valley Hospital	G	Freestanding	GOV	Beaver	Beaver	R	N	36
Benchmark Regional Hospital North	I	Ramsay Hlth Care	SP/Psych.	Davis	Woods Cross	U	N	68
Benchmark Regional Hospital South	I	Ramsay Hlth Care	SP/Psych.	SL	Midvale	U	N	80
Bonneville Health and Rehab	I	Bonneville Hlth Serv	SP/Surg.	SL	Salt Lake	U	Y	12
Brigham City Community Hospital	I	Columbia	Columbia	Box Elder	Brigham City	R	N	56
Castleview Hospital	I	Columbia	Columbia	Carbon	Price	R	N	84
Central Valley Medical Center	N	Rural Health Mgmt.	OTHER	Juab	Nephi	R	N	31
Cottonwood Hospital Medical Center	N	IHC, Inc.	IHC	SL	Murray	U	N	213
Davis Hospital and Medical Center	I	Paracelsus Health Care	OTHER	Davis	Layton	U	N	110
Delta Community Medical Center	N	IHC, Inc.	IHC	Millard	Delta	R	N	20
Dixie Regional Medical Center	N	IHC, Inc.	IHC	Washington	St. George	R	N	106
Fillmore Community Medical Center	N	IHC, Inc.	IHC	Millard	Fillmore	R	N	20
Garfield Memorial Hospital	N	IHC, Inc.	IHC	Garfield	Panguitch	R	N	20
Gunnison Valley Hospital	G	Rural Hlth Mgmt Corp	GOV	Sanpete	Gunnison	R	N	21
HEALTHSOUTH Rehab. of Utah	I	HealthSouth	SP/Rehab	SL	Sandy	U	Y	50
Highland Ridge Hospital	I	Am Intl Hlth Sys	SP/Psych.	SL	Salt Lake	U	N	34
Jordan Valley Hospital	I	Paracelsus Health Care	OTHER	SL	West Jordan	U	N	50
Kane County Hospital	G	Freestanding	GOV	Kane	Kanab	R	N	33
Lakeview Hospital	I	Columbia	Columbia	Davis	Bountiful	U	N	128
LDS Hospital	N	IHC, Inc.	IHC	SL	Salt Lake	U	Y	520
Logan Regional Hospital	N	IHC, Inc.	IHC	Cache	Logan	R	N	148
McKay-Dee Hospital	N	IHC, Inc.	IHC	Weber	Ogden	U	Y	428
Milford Valley Memorial Hospital	G	Rural Hlth Mgmt Corp	GOV	Beaver	Milford	R	N	34

*G=Government N=Not for Profit I=Investor-Owned

**Closed

Appendix D

Hospital Characteristics: 1997

Hospital Name	Own*	Affiliation	Own/Type	County	City	U/R	Teach	Beds
Mountain View Hospital	I	Columbia	Columbia	Utah	Payson	U	N	118
Ogden Regional Medical Center	I	Columbia	Columbia	Weber	Ogden	U	N	239
Olympus View Hospital	I	Comm.Psych.Serv.	SP/Psych.	SL	Salt Lake	U	N	102
Orem Community Hospital	N	IHC, Inc.	IHC	Utah	Orem	U	N	20
PHC Regional Hospital**	I	Paracelsus Health Care	OTHER	SL	Salt Lake	U	N	125
Pioneer Valley Hospital	I	Paracelsus Health Care	OTHER	SL	West Valley	U	Y	139
Primary Children's Medical Center	N	IHC, Inc.	IHC	SL	Salt Lake	U	N	232
Rivendell of Utah	I	Rivendell of Amer.	SP/Pysch.	SL	West Jordan	U	N	80
Salt Lake Regional Medical Center	I	Paracelsus Health Care	OTHER	SL	Salt Lake	U	Y	200
San Juan Hospital	G	Managed	GOV	San Juan	Monticello	R	N	36
Sanpete Valley Hospital	N	IHC, Inc.	IHC	Sanpete	Mt. Pleasant	R	N	20
Sevier Valley Hospital	N	IHC, Inc.	IHC	Sevier	Richfield	R	N	42
South Davis Community Hospital	G	Freestanding	GOV	Davis	Bountiful	U	N	39
St. Mark's Hospital	I	Columbia	Columbia	SL	Salt Lake	U	Y	306
The Orthopedic Specialty Hospital	I	Freestanding	SP/Surg.	SL	Salt Lake	U	N	14
Tooele Valley Regional Medical Center	G	Rural Hlth Mgmt Corp	GOV	Tooele	Tooele	R	N	38
Uintah Basin Medical Center	G	Freestanding	GOV	Duchesne	Roosevelt	R	N	42
University of Utah Hospital	G	Freestanding	GOV	SL	Salt Lake	U	Y	425
University of Utah Neuropsychiatric Institute	G	Freestanding	GOV	SL	Salt Lake	U	Y	90
Utah State Hospital	G	Freestanding	GOV	Utah	Provo	U	N	343
Utah Valley Regional Medical Center	N	IHC, Inc.	IHC	Utah	Provo	U	N	395
Valley View Medical Center	N	IHC, Inc.	IHC	Iron	Cedar City	R	N	48
Veterans Administration Medical Center	G	Freestanding	FEDERAL	SL	Salt Lake	U	N	180
Wasatch County Hospital	N	IHC, Inc.	IHC	Wasatch	Heber	R	N	40

*G=Government N=Not for Profit I=Investor-Owned

**Closed

Appendix E

Hospital Peer Groups and Case Mix Indices (CMI), 1993-1997

Sorted on Peer Group and All-Patient CMI (1997)

Peer Group	Hospital	Location U/R	All-Patient CMI					Acute* CMI	1997 Obstetric* CMI	Pediatric* CMI
			1993	1994	1995	1996	1997			
1	University of Utah Hospital	Urban	1.5048	1.5127	1.5076	1.5058	1.5058	1.3357	1.1008	1.5817
1	LDS Hospital	Urban	1.4353	1.3979	1.4369	1.4613	1.4613	1.4475	1.0298	1.7199
2	St. Mark's Hospital	Urban	1.0706	1.1428	1.1186	1.1046	1.1046	1.1155	1.0224	0.5969
2	Salt Lake Regional Medical Center	Urban	1.0124	0.9986	0.9902	0.9196	0.9196	0.9747	0.9706	0.6556
2	McKay-Dee Hospital	Urban	1.1003	1.1143	1.1082	1.0976	0.8778	0.8883	0.9760	0.7050
2	Utah Valley Regional Medical Center	Urban	1.0205	1.0631	1.0941	1.0917	0.5484	0.5749	1.0426	0.4169
3	Pioneer Valley Hospital	Urban	0.8988	0.8844	0.8871	0.8809
3	Mountain View Hospital	Urban	0.7832	0.7675	0.7728	0.7528	1.0917	1.0635	0.9604	0.9198
3	Lakeview Hospital	Urban	0.9622	0.9836	0.8932	0.9195	0.9195	0.9416	1.0039	0.7097
3	Ogden Regional Medical Center	Urban	0.7781	0.8494	0.8662	0.8778	0.8271	0.8017	1.0162	0.5047
3	Cottonwood Hospital Medical Center	Urban	0.6887	0.7456	0.7454	0.7179	0.7179	0.7741	1.0049	0.4554
3	Davis Hospital and Medical Center	Urban	0.6858	0.6259	0.6485	0.6949	0.6949	0.7130	1.0284	0.4747
4	PHC Utah Hospital	Urban	0.5781	0.7819	0.8288	0.8271	0.8365	0.8084	1.0406	0.4558
4	American Fork Hospital	Urban	0.5479	0.5083	0.5042	0.4856	0.7528	0.8149	0.9351	0.5098
4	Alta View Hospital	Urban	0.5719	0.5658	0.5423	0.5607	0.5607	0.6263	0.9528	0.5309
4	Jordan Valley Hospital	Urban	0.5481	0.5315	0.5282	0.4975	0.4975	0.5665	0.9692	0.4726
4	Orem Community Hospital	Urban	0.3586	0.3660	0.3791	0.3516	0.4856	0.5710	0.9332	0.5273
5	Dixie Regional Medical Center	Rural	0.8540	0.8244	0.8287	0.8272	1.0976	1.0659	1.0411	0.6913
5	Castleview Hospital	Rural	0.8993	1.0201	0.9938	0.9771	0.9771	0.9461	1.0000	0.5215
5	Brigham City Community Hospital	Rural	0.7683	0.8109	0.7967	0.7664	0.7664	0.8371	1.0025	0.6102
5	Valley View Medical Center	Rural	0.6764	0.5977	0.6230	0.6241	0.6241	0.6812	0.9491	0.5446
5	Logan Regional Hospital	Rural	0.6550	0.6430	0.6148	0.6031	0.6031	0.6477	0.9500	0.5055
5	Ashley Valley Medical Center	Rural	0.7388	0.7277	0.7125	0.6971	0.3516	0.4337	0.9757	0.4255
6	Sevier Valley Hospital	Rural	0.6208	0.6985	0.6779	0.6463	0.8426	.	.	.
6	Wasatch County Hospital	Rural	0.5051	0.4563	0.4677	0.5484	0.8272	0.8308	1.0360	0.5998
6	Tooele Valley Regional Medical Center	Rural	0.5949	0.5965			0.6971	0.6986	0.9907	0.5697
6	Sanpete Valley Hospital	Rural	0.5827	0.6776	0.5136	0.5632	0.6463	0.6262	0.9842	0.4589
6	Central Valley Medical Center	Rural	0.5913	0.6524	0.6107	0.6367	0.6367	0.6238	1.0661	0.4694

Appendix E

Hospital Peer Groups and Case Mix Indices (CMI), 1993-1997

Sorted on Peer Group and All-Patient CMI (1997)

Peer Group	Hospital	Location U/R	All-Patient CMI					Acute* CMI	1997 Obstetric* CMI	Pediatric* CMI
			1993	1994	1995	1996	1997			
6	Uintah Basin Medical Center	Rural	0.5501	0.6254	0.6407	0.6224	0.6224	0.6286	1.1136	0.4483
6	Allen Memorial Hospital	Rural	0.6037	0.6308	0.5696	0.6081	0.6081	0.5736	1.1432	0.4093
6	Bear River Valley Hospital	Rural	0.5326	0.5049	0.5973	0.5781	0.5781	0.5888	0.9456	0.4817
6	Garfield Memorial Hospital	Rural	0.5699	0.5969	0.5792	0.5779	0.5779	0.5426	1.0038	0.4003
6	Kane County Hospital	Rural	0.5918	0.5405	0.5711	0.5768	0.5768	0.5698	1.0272	0.3928
6	Gunnison Valley Hospital	Rural	0.5208	0.5527	0.5998	0.5067	0.5632	0.5698	0.9654	
6	Monument Valley Hospital	Rural	0.5971	0.5266	0.5394		0.5515	0.5427	0.9630	0.3710
6	Beaver Valley Hospital	Rural	0.5621	0.5588	0.5364	0.5487	0.5487	0.5328	1.0162	0.3342
6	Milford Valley Memorial Hospital	Rural	0.5223	0.5040	0.5575	0.5426	0.5426	0.4786	1.0395	0.3755
6	Fillmore Community Medical Center	Rural	0.5140	0.4732	0.5499	0.5407	0.5407	0.5371	1.0016	0.4407
6	Delta Community Medical Center	Rural	0.4786	0.4984	0.5479	0.5299	0.5299	0.5608	1.1292	0.4546
6	San Juan Hospital	Rural	0.5932	0.5039	0.5727	0.5515	0.5067	0.5147	1.0492	0.3641
7	Benchmark Regional Hospital North	Urban								
7	University of Utah Neuropsychiatric Institute	Urban					0.8809	0.8875	1.0011	0.4242
7	Highland Ridge Hospital	Urban								
7	Rivendell of Utah	Urban								
7	Benchmark Regional Hospital South	Urban								
7	Olympus View Hospital	Urban								
	Doxey-Hatch Medical Center	Urban								0.4424
	Primary Children's Medical Center	Urban	1.6754	1.6232	1.6432	1.7541	1.7541	1.4717	.	1.3597
	Utah State Hospital	Urban								
	Healthsouth Rehabilitation Hospital of Utah	Urban								
	Veterans Administration Medical Center	Urban								
	South Davis Community Hospital	Urban								
	The Orthopedic Specialty Hospital	Urban								

* Acute: Excluding newborns (ICD9 = V30 to V39). Obstetric: MDC 14 - Pregnancy, Childbirth & Puerperium.
 Pediatric: Ages 0-17, excluding newborns (ICD9=V30 to V39).