MAINTAIN AND EXPAND
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HCUP HOSPITAL MARKET STRUCTURE FILE:
1997 CENTRAL DISTRIBUTOR SID AND NIS USER GUIDE

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1997 Central Distributor SID and NIS User Guide

1.   Purpose

        The purpose of this data file is to provide Healthcare Cost and Utilization Project (HCUP) data users with measures that characterize the market structure of hospitals in HCUP databases. These measures provide estimates of the intensity of competition that hospitals may be facing under various definitions of market area. The file provides a supplemental set of hospital-level measures for hospitals in most states that participated in HCUP for the 1997 data year. States participating in the 1997 HCUP Hospital Market Structure File are: AZ, CA, CO, FL, GA, HI, IA, IL, MA, MD, MO, NJ, OR, UT, WA, and WI.

        This file can be linked to the 1997 HCUP inpatient databases – the NIS and the Central Distributor SID in participating states – by using the HOSPID variable. Hospital market structure measures can then be included in analyses using the NIS and Central Distributor SID. Because the 1997 KID contains a stand-alone record number that does not link to other HCUP databases, this file cannot be linked to the 1997 KID database.

2.   File Format

        The data set contains records at the hospital level for individual hospitals in the NIS and Central Distributor SID for states that agreed to release the Hospital Market Structure File with their data. This includes 735 of the 1,012 NIS hospitals; and 954 of the 1,227 Central Distributor SID hospitals in 1997 (unduplicated HOSPIDs, because the Central Distributor SID for CA and SC does not contain HOSPID, hospitals in those two states are not included in this count). All HCUP hospitals in this file are also contained in the American Hospital Association (AHA) 1997 Annual Survey Database. However, the identities of some hospitals are concealed.

        Six states that participated in HCUP for the 1997 data year are not included in the HCUP Hospital Market Structure File (CT, KS, NY, PA, SC, and TN). In three other states (GA, HI, and MO), some measures were set to *missing* to protect the identity of the hospitals.

3.   Linking to HCUP Inpatient Databases

        The Hospital Market Structure File includes variables that indicate whether a hospital is available in the HCUP NIS or Central Distributor SID. These variables aid in linking the file to the HCUP inpatient databases.

        Each of the 16 states in the Hospital Market Structure File participated in the 1997 NIS and a sample of their hospitals is included in each of these HCUP databases. Fourteen states participated in the 1997 Central Distributor SID and 12 states agreed to release the market structure measures with their data. However, because the Central Distributor

SID for CA does not contain HOSPID, CA SID is not included in the Hospital Market Structure File. The complete enumeration of hospitals from each of the remaining 11 states is included in the HCUP Hospital Market Structure File. The participating states are: AZ, CO, FL, IA, MA, MD, NJ, OR, UT, WA, and WI.

For the NIS, users should first select hospitals from the Hospital Market Structure File where NIS=1 and then link the resulting Hospital Market Structure File to the NIS by HOSPID.

For the Central Distributor SID, users should first select hospitals from the Hospital Market Structure File where CD_SID=1 and STATE=pc, where "pc" is the state postal code for the corresponding Central Distributor SID that will be used. Users should then link the resulting Hospital Market Structure file to the Central Distributor SID by HOSPID.

4.   Internal Validation

The HCUP Hospital Market Structure measures are based on the methods of Wong, Zhan, and Mutter (2005). More information can be found in the peer-reviewed article: Wong HS, Zhan C, and Mutter R. "Do Different Measures of Hospital Competition Matter in Empirical Investigations of Hospital Behavior?" *Review of Industrial Organization* 26: 61-87, 2005. A copy of the article may be obtained through AHRQ's online publication request service at http://www.ahrq.gov/news/pubcat/pubcat.htm by providing the AHRQ Publication Number, 05-R050.

Refinements to the methods employed by Wong, Zhan, and Mutter (2005) are noted below. The measures developed for 1997 were compared with the corresponding measures developed when the 1997 data was used in the study noted previously and the measures developed for 2000 and 2003. All measures are consistent.

Users of the HCUP Hospital Market Structure measures should cite Wong, Zhan, and Mutter (2005) in their work.

5.   Hospital Market Structure Measures by Market Definitions

For each market definition, the HCUP Hospital Market Structure File contains two broad measures of the intensity of hospital competition: the number of hospitals in the market (N) and the Herfindahl-Hirschman Index (HHI). HHI is the sum of squared market shares for all of the hospitals in the market. A hospital's market share is calculated as the number of discharges from that hospital divided by the total number of discharges from all hospitals in the market.

Hospital markets are defined by four different approaches: geopolitical boundaries, fixed radius, variable radius, and patient flow. A brief description of each approach follows. For further details, please see Wong, Zhan, and Mutter (2005).

A.   Geopolitical Boundaries

Markets defined by geopolitical boundaries are based on counties, Metropolitan Statistical Areas (MSA), and Health Service Areas (HSA). The county and MSA of each hospital were obtained from the AHA 1997 Annual Survey Database. HSA values were obtained from the 2004 Area Resource File (ARF).

B.   Fixed Radius

Under the fixed radius market definition, every hospital is assigned a unique market area, which is the region enclosed by a circle centered on the hospital and defined by a 15-mile radius. Hospital coordinates (i.e., longitude and latitude information) were obtained from the ArcView GIS.

C.   Variable Radius

The variable radius market definition allows the radius to vary for each hospital so that it captures 75% of the hospital's discharges (or 90%, depending on the market definition used). For each hospital, we calculated the distance between the hospital and the patient ZIP Codes that it served, and ranked patient ZIP Codes according to the distance, in ascending order. Patient ZIP Codes were obtained from the HCUP SID data. We then aggregated the discharges in each ZIP Code until 75% (or 90%) of the hospital's discharges were captured. The distance between the hospital and the last ZIP Code to achieve this cutoff was the *variable radius*. Under each market definition, the number of hospitals and the HHI are reported.

D.   Patient Flow

The patient flow approach defines a hospital's market as the collection of ZIP Codes that send a nontrivial amount of patients to the hospital, and that collectively account for 75%, 90%, or 95% of a hospital's discharges. For each patient ZIP Code, we first obtained the number of unique hospitals that served that ZIP Code and then ranked these hospitals in descending order of discharges in that ZIP Code. Next, we aggregated the discharges of hospitals until 75% (or 90% or 95%) of the ZIP Code's discharges were captured. The corresponding number of hospitals needed to achieve this level was the market structure measure for the ZIP Code. Third, for each hospital, we calculated the proportion of this hospital's discharges that came from each ZIP Code. That hospital's measure was the sum of ZIP-level measures weighted by the proportion of the hospital's discharges to that ZIP Code. HHI did not vary materially by 75%, 90%, or 95% of a hospital's discharges. Therefore, although we report separate measures for N, we only report one HHI measure.

6.   Variable List

There are 21 variables in the HCUP Hospital Market Structure File. The following list summarizes the variables (and their respective labels) included in this file.

Variable	Label
HOSPID	HCUP hospital identification number
COUNTY_HHI	HHI in market defined by county
COUNTY_N	N of hospitals in market defined by county
HSA_HHI	HHI in market defined by HSA
HSA_N	N of hospitals in market defined by HSA
MSA_HHI	HHI in market defined by MSA
MSA_N	N of hospitals in market defined by MSA
FIXEDRADIUS_HHI	HHI in market defined by 15-mile radius
FIXEDRADIUS_N	N of hospitals in market defined by 15-mile radius
PATFLOW_HHI	HHI in market defined by patient flow
PATFLOW_75PCT_ N	N of hospitals in market defined by patient flow (75%)
PATFLOW_90PCT_ N	N of hospitals in market defined by patient flow (90%)
PATFLOW_95PCT_ N	N of hospitals in market defined by patient flow (95%)
RADIUS_75PCT_HHI	HHI in market defined by variable radius (75%)
RADIUS_75PCT_N	N of hospitals in market defined by variable radius (75%)
RADIUS_90PCT_HHI	HHI in market defined by variable radius (90%)
RADIUS_90PCT_ N	N of hospitals in market defined by variable radius (90%)
NIS	Hospital is in NIS (1 = in NIS; 0 = not present)
CD_SID	Hospital is in Central Distributor SID (1 = in SID; 0 = not present)
STATE	Hospital state postal code
YEAR	Year for linking to HCUP records