DATASET OVERVIEW

The National Health Measurement Study (NHMS)

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NHMS Documents Available:

1. Dataset Overview
2. Sample Design and Weight Calculation
3. Codebook
4. Explanation of Computed Variables
5. Computer Assisted Telephone Interview (CATI) Script
This document provides a general overview of the data elements in the NHMS data
elements. Much more detailed information about each specific data element is contained
in a document presenting the actual computer assisted telephone interview script and a
document with the codebook for the data set, both of which are available with the data
along with the present document.

The main purpose of the National Health Measurement Study (NHMS) was to compare
commonly used preference-based health-related quality-of-life (HRQoL) instruments
when they were co-administered to a cross-sectional sample of U.S. adults. These
instruments are used for national tracking studies and for policy-focused cost-
effectiveness analyses of health and medical care interventions. It is widely known that
they may give different numerical results for HRQoL but there are few data sets in which
two or more have been administered for direct comparison. The HRQoL indexes
collected by NHMS are summarized in Fryback et al. (Fryback et al.,2007), and population
norms established for these indexes in NHMS are presented in the same paper. All
interviews were conducted in English by trained interviewers at University of Wisconsin
Survey Center using commercial computer-assisted telephone interview software.

But the NHMS survey also provided an opportunity to collect respondent-level
information thought to be associated with HRQoL and information concerning the
Census tract in which each respondent resided to provide contextual information that
could be relevant to HRQoL.

Four HRQoL questionnaires were the main interest of NHMS—the SF-36v2™, the
Health Utilities, Inc., (HUI) questionnaire, the EuroQol EQ-5D questionnaire (EQ-5D),
and the Quality of Well-being scale questionnaire (self-administered version – QWB-
SA). From these questionnaires many standard scales and indexes are computed for the
data set. The order in which these questionnaires were administered was randomized for
each respondent, with the exception that the first question of the SF-36v2™ was always
the first item asked about the respondent’s health. This question, SF1, asks the
respondent, “In general, would you say your health is excellent, very good, good, fair, or
poor?” We wished to get at least this self-rated health question answered in case the
respondent discontinued the interview early.

The data elements may be divided into categories. These categories and their
subdivisions are used as navigation bookmarks in the PDF files for the NHMS Codebook
and NHMS CATI Script. Users are urged to use the bookmarks for quick navigation in
those documents.

1. Administrative Information
2. Respondent Characteristics
The data elements will be discussed below using these headings. But first we provide an overview of the flow of the interview.

**Flow of the Interview.**

When an interviewer first reached an adult in a household (the “informant”) there was a brief dialog about the purpose of the study and the informant was asked to enumerate adults in the household by age. Household enumeration information is not available in this data set.

If there were an eligible adult in the household, one was selected using a random procedure described in the document detailing sampling and computation of sample weights ("Sample Design and Weight Calculation"). The selected individual was invited to participate and told they would receive $25 for completing the interview. If the person agreed, then a brief informed consent statement was read and consent obtained, after which the interview was started. Because the interview was lengthy, if the person could not complete in one session, a callback was arranged. If the second session was not sufficient, a third callback was arranged, and so forth. Interviewers were instructed to be careful to break only between intact questionnaires. Callbacks were scheduled as soon as possible to avoid changes in health.

First, the age and gender (we use “gender” instead of “sex” since this is a self-reported variable) of the respondent were asked to verify what the informant had indicated. Age was verified at the end of the interview as well.

Once age was asked then the SF1 (self-rated health, first question of the SF-36v2™ questionnaire) was asked. Next the four questionnaires were administered (questionnaire order was randomized for each respondent; questions within each questionnaire were administered in fixed order according to the standard protocol for that instrument, except the SF-36v2™ was administered without SF1, which had already been asked). The remainder of the interview followed a fixed order.

Following the four questionnaires, items related to the Health and Activities Limitations Index (HALex) were asked, then 3 items from the CDC’s HRQOL-4 instrument. Following these respondents were asked about 11 health conditions, smoking status, height, and weight. Two psychology of well-being scales were administered, then 10 questions concerning perceived discrimination, demographics, household income and
assets, and finally health insurance status. Age was verified again at the end of the interview. Respondents were asked for a name and address to which to send the $25 completion check, and the interview was complete.

1. Administrative Information.

- A unique identifier for each respondent, is numbered serially from CASEID=10001 to CASEID=13844
- Analytic survey weights and associated stratum are used for statistical computations where it is important that the result generalize to the Census year 2000 target population of U.S. adults; see the document detailing sample design and derivation and use of weights
- Administration orders for the four main questionnaires (SF-36v2™, Health Utilities, Inc., questionnaire, EQ-5D questions, and Quality of Well-being questions for the QWB-SA form). The order in which these questionnaires were administered was block-randomized for each respondent. There is a data element for each questionnaire identifying its position.
- Time respondent took to complete various sections of the interview and total time (latter does not include time between sessions).
- The month in which the respondent was interviewed
- Whether or not the household received an advance letter with pre-incentive (described in detailed document about sampling and construction of weights)

2. Respondent Characteristics

A variety of information about the respondent was collected:

- Age at last birthday and gender
- Years of education
- Race and ethnicity (using Census categories)
- Marital status, whether living with spouse, number of children at home
- Work status

3. Primary questionnaires and HRQoL Indexes

These HRQoL indexes were the main focus of the study. Because many questions are similar, respondents were informed at the beginning of each questionnaire to expect similar questions as “We are testing different ways to ask about your health.” The order of the bullets below corresponds to sections in the NHMS codebook; the order in which they were presented to respondents was randomized for each respondent.

- SF-36v2™ (http://www.sf-36.org/) is a 36-item questionnaire which NHMS staff scripted for telephone administration. All 36 items are in the
data set. From this instrument there are 8 subscales computed according to standard published algorithms, and two composite scales, computed according using proprietary formulas based on norms in a private survey sample of U.S. adults in 1998. Also included is an alternative short form version of the two composite scales based on the SF-12v2™ questions embedded in the SF-36v2™ and a proprietary scoring system.

- **SF-6D** ([http://www.shef.ac.uk/scharr/sections/heds/mvh/sf-6d](http://www.shef.ac.uk/scharr/sections/heds/mvh/sf-6d)) is a utility-based summary score based on the SF-36v2™ items. Two alternative forms of SF-6D summary score are available, one based on SF-36v2™ and one based on the embedded SF-12v2™. Using the SF-36v2™ version, there are also 6 domain variables for the SF-6D available.

- **QWB-SA** ([http://hoap.ucsd.edu/qwb-info/](http://hoap.ucsd.edu/qwb-info/)) was adapted by NHMS for telephone administration. 20 questions ask about presence or absence of chronic symptoms or problems or use of health aides such as glasses, braces, etc. Another 37 questions elicit information about acute mental and physical symptoms experienced on each of the past 3 days. Finally there are questions about physical activity, mobility and social functioning. The QWB-SA score is computed from these questions. Finally, the QWB-SA also has a visual analog scale, but with 0 being “dead” and 100 being “perfect health” the respondent is asked to give the number between 0 and 100 that represents their health today.

- **EQ-5D** is a six question instrument ([http://www.euroqol.org/](http://www.euroqol.org/)). Each of the five categorical items are available singly in the dataset. The composite EQ-5D score is computed using published U.S. weights. In the paper-administered form of EQ-5D there is a 6th question, the EQVAS (visual analog scale) asking respondents to mark a 20 cm scale to represent their health with the best imaginable health state at the top (100) of the scale and the bottom (0) anchored by the worst imaginable health state. NHMS administered the VAS over the telephone asking respondents to imagine the EQVAS scale.

- The Health Utilities Index questionnaire used was the 1-week, interviewer-administered, English version ([http://www.fhs.mcmaster.ca/hug/index.htm](http://www.fhs.mcmaster.ca/hug/index.htm)). Content of the 40 questions on that questionnaire is proprietary and we are restricted by the HUI, Inc. license from disclosing the questions, response definitions, or algorithms mapping answers to the questions onto the health domains of the HUI2 and HUI3. Health Utility Index Mark 2 (HUI2) is a 6-domain index. Each domain is represented in two different ways, as levels (1-4, 1-5, or 1-6) and as single-dimension utility scales. Finally, the HUI2 summary score is in the data set. Health Utility Index Mark 3 (HUI3) is an 8-domain index. Each domain is represented in two different ways, as levels (1-4, 1-5, or 1-6) and as single-dimension utility scales. Finally, the HUI2 summary score is in the data set. None of the 40 items in the questionnaire subsuming the HUI2 and HUI3 domains and scorings is available as the HUI user license prohibits release of these questions.
4. Other HRQoL Scales

Two other sets of HRQoL items are available.

- The Health and Activities Limitations index (HALex) (Erickson, 1998) was constructed by researchers at the National Center for Health Statistics as an aggregate measure of HRQoL to be used post hoc to summarize NHIS survey data in conjunction with Health People 2000. It has two dimensions, activity limitations and self-rated health. For the latter dimension SF1 is used. For activity limitations a series of items (with skip patterns) is used to place the respondent in one of six possible activity levels ranging from no restrictions on activities to unable to do activities of daily living. The activity items are taken from NHIS and available in the NHMS data. Also the six-level activity restriction domain variable is available and the aggregate value of the HALex.

- The Centers for Disease Control and Prevention have developed a HRQoL profile they have named the CDC HRQOL-4 (http://www.cdc.gov/hrqol/hrqol14_measure.htm), which is widely administered in BRFSS, and these items are included in NHMS. One of the four items is the SF1. The remaining three items are termed “Healthy Days” and ask for number of days of activity restriction in the past 30 days due to mental health, due to physical health, and overall due to health.

5. Health Conditions and Risk Factors

Two personal risk factors are assessed:

- Current smoking status, and whether ever smoked
- Body Mass Index (BMI) is available from self-reported height and weight.

Many surveys ask respondents to self-report presence or absence of each of a list of health conditions. The NHIS survey uses the item stem, “Has a doctor or other health professional told you that you have <health condition name>?” NHMS uses this stem to ask about 11 common health conditions. If the respondent answers “yes,” many, but not all, of these have added follow up questions to differentiate subclasses of the disease and past and current treatment. Variables combining responses to the primary and follow-up questions have been constructed to facilitate use since follow-up questions have much missing data due to skip patterns. Health conditions assessed were:

- Coronary heart disease (plus 4 follow-up 1 combined variable)
- Stroke (2 follow-up, 1 combined)
- Diabetes (2 follow-up, 1 combined)
- Arthritis
- Cataract, macular degeneration, glaucoma (3 follow-up, 1 combined)
- Sleep disorder
- Chronic respiratory disease (3 follow-up, 1 combined)
• Depression (1 follow-up, 1 combined)
• Ulcer (1 follow-up, 1 combined)
• Thyroid disorder (1 follow-up, 1 combined)
• Severe chronic back pain (4 follow-up 1 combined)

Note that this list is augmented by the list of acute and chronic conditions queried in the QWB-SA questionnaire.

6. Psychological well-being scales.

Two abbreviated scales from a published six-scale measure of eudaimonic Psychological Well-being (Ryff & Keyes, 1995) were administered. The abbreviated scales used the identical subsets of items used in Project 1 of the national study, Midlife in the United States II (MIDUS II, http://www.midus.wisc.edu/midus2/). However, the self-administered response scales in the original instrument were modified from 7 category Likert scales (strongly agree … strongly disagree) to 5 category scales with the same endpoints after pre-testing with telephone administration revealed the 7 category scale labels were too difficult for respondents to recall. Composite scores were computed by scoring individual items 1-5 so that Likert scale endorsements indicating better well-being had higher scores, then summing scale items and linearly transforming the sum to range from 0 (worst) to 100 (best).

• Purpose in Life scale (8 items, one composite score)
• Self-acceptance scale (7 items, one composite score)

7. Self-perceived Discrimination

Two different scales of self-perceived discrimination, everyday discrimination (5 items, 6 responses from “never” to “almost every day”), and life-time discrimination (4, “yes/no” items) were administered. One additional item, asking the main reason respondent attributes for being discriminated against, was administered. A composite life-time discrimination score was computed by summing the number, out of 4, life-time discrimination items that were endorsed. An everyday discrimination score was computed by reverse scoring the response categories so that “never”=0 and “almost every day”=5, then summing the item responses.

8. Socioeconomic Status

• Household annual income was elicited in 8 categories from <$10,000 to $75,000 or greater.
• Difficulty in meeting monthly payments was assessed using 5-category item ranging from extremely difficult to not difficult at all
• Home ownership (yes/no)
• Household assets (in 6 categories from less than $10,000 to $100,000 or more)
9. **Health Insurance Items**

- Whether currently insured
- If currently insured, all types of coverage were listed
- Whether any time without insurance in past 12 months (yes/no)
- Whether any time with insurance in past 12 months (yes/no)

10. **Census Tract Information**

Addresses to which the $25 completion incentive was sent were geocoded and the associated Census tract was identified by the University of Wisconsin Applied Population Laboratory (APL). Non-street addresses (e.g., rural route, post office box) were geocoded to the geo-center of the route or zipcode using standard geographical information system methods. Records for 111 respondents were unable to be associated with a census tract because they declined completion incentive payment and provided no address, or because APL was unable to geo-code the address for technical reasons; census data for these records are coded as missing in the data.

U.S. Census year 2000 socioeconomic, age, and race/ethnicity data for respondent’s census tract were then extracted by APL and linked to the unique identifier for the respondent; after this, address information and low-level census tract identifiers were destroyed to de-identify the data. At this step 21 cases were determined to be in census tracts with population less than 1000, and the census data for these were set to “missing” for purposes of de-identification of the data. For the remaining 3844-111-21=3712 cases, information linked to respondent’s record in the NHMS data include:

- Census region containing the Census tract
- Total population
- Percent population living in urban area and percent in rural area
- Proportion population identifying themselves in each of the Census racial categories
- Proportion population identifying as Hispanic ethnicity
- Proportion <18 years old, percent 18-64 years, percent 65+
- Proportion by same age categories and male; percent by age categories and female
- Proportion with household income <$20,000; percent >$50,000, and median income
- Proportion below poverty line
- Proportion population with <HS diploma, HS diploma, some college or associate degree, with college degree, with graduate degree
References

