Biostat 202: Accessing Data and Large Datasets

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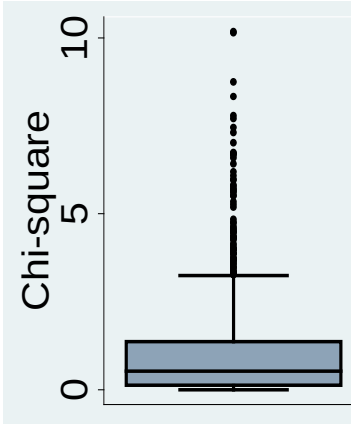
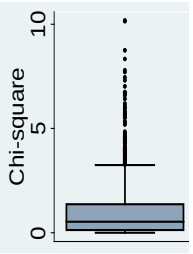
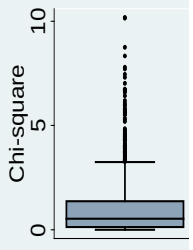


Biostat 202

Outline for today



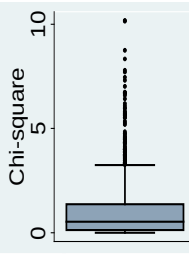
- File types
- Data formats
- Variable types and roles
- Best practices in data
- Availability of datasets
- CELDAC
- Research using APeX data



File types

Data are stored in many different file formats. You usually have to understand at least roughly how the data are stored to access them. In SPSS Modeler there are a number of nodes under the Sources tab and it can read data from a variety of different sources.

File types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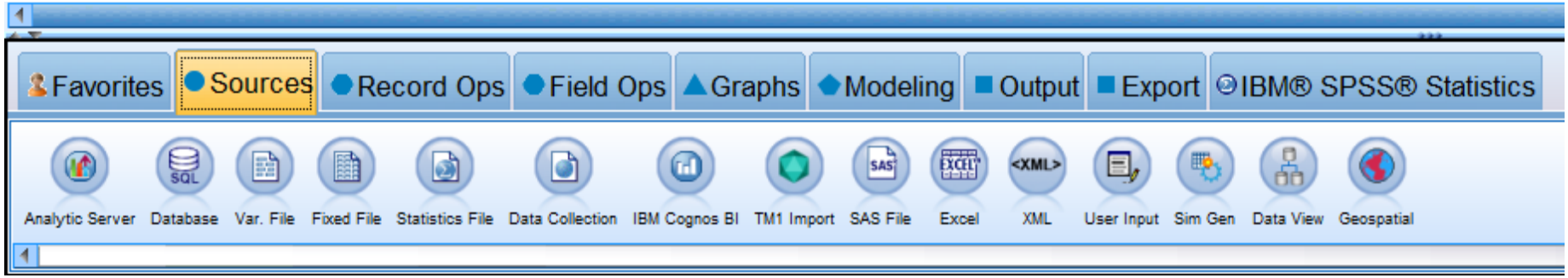
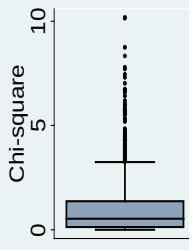
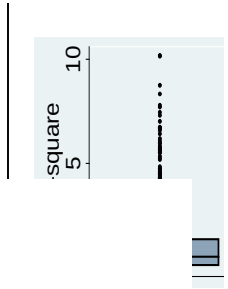

Favorites
Sources
Record Ops
Field Ops
Graphs
Modeling
Output
Export
IBM® SPSS® Statistics
Analytic Server
Database
Var. File
Fixed File
Statistics File
Data Collection
IBM Cognos BI
TM1 Import
SAS File
Excel
XML
User Input
Sim Gen
Data View
Geospatial

Some file types supported by Modeler



- Excel spreadsheet
- .csv file. Text file with a structured format – data elements separated by commas (delimiter).
- Text file with other delimiters.
- Text file with structured columns.
- SAS or SPSS statistics data file.
- .xml file. Text file with mark-ups to designate fields and field names.

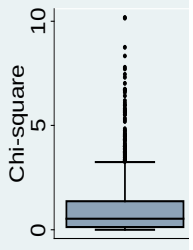
Files: What does a .csv file look like?



In homework we will use the data from the National Electronic Injury Surveillance System (NEISS).

- Designed by the Consumer Product and Safety Commission to monitor consumer products that can cause injuries (think hoverboard).
- Based on a national sample of U.S. hospitals. Records emergency department visits that involve injury related to a consumer product.
- The data from 2015 alone consists of approximately 360,000 records.

Files: What does a .csv file look like? Take a look at the NEISS dataset

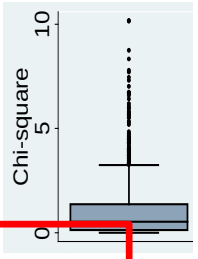


CPSC Case #,trmt_date,psu,weight,stratum,age,sex,race,race_other,diag,diag_other,body_part,disposition,location,fmv,prod1,prod2,narr1,narr2¶

150324089,3/9/2015,21,15.0591,V,28,1,0,,57,,76,4,0,0,1894,,28YM EVADING BAIL BONDSMAN&JUMPED FROM 3RD STORY WINDOW LANDING ONTO FA,"CE, +LOC/SZ LIKE ACTIVITIES>>MULTI FACIAL BONE FXS” ¶

150734952,7/4/2015,57,15.7762,V,20,1,2,,59,,82,1,1,0,1894,,20 YOM DX HAND LACERATION - S/P PT PUNCHED A WINDOW., ¶

Files: What does a .csv file look like? NEISS dataset from Homework



CPSC Case #,trmt_date,psu,weight,stratum,age,sex,race,race_other,diag,diag_other,body_part,disposition,location,fmv,prod1,prod2,narr1,narr2¶

Variable names

150324089,3/9/2015,21,15.0591,V,28,1,0,,57,,76,4,0,0,1894,,28YM EVADING BAIL BONDSMAN&JUMPED FROM 3RD STORY WINDOW LANDING ONTO FA,"CE, +LOC/SZ LIKE ACTIVITIES>>MULTI FACIAL BONE FXS" ¶

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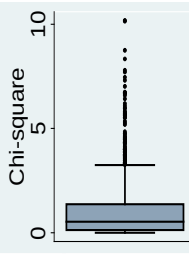

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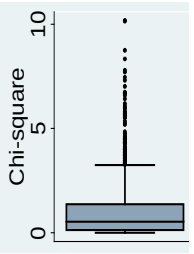
Data from an emergency room visit

Files: What does a .csv file look like? NEISS dataset from Homework



CPSC Case #,trmt_date,psu,weight,stratum,age,sex,race,race_other,diag,diag_other,body_part,disposition,location,fmv,prod1,prod2,narr1,narr2¶

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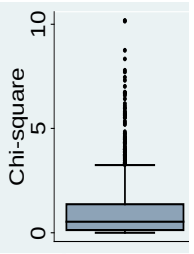
¶

End of a record

Files: Data issues
NEISS dataset from Homework



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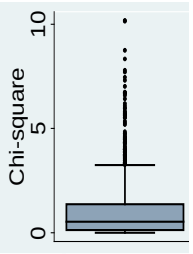
Issues?

Files: Data issues
NEISS dataset from Homework



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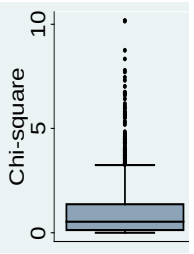
,, Issue?

Files: Data issues
NEISS dataset from Homework



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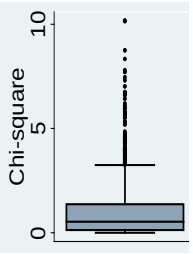
Issue?

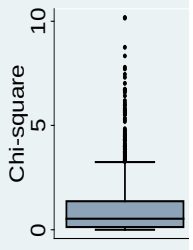
File types



Much data does not exist easily packaged into files. For example, suppose you wanted to develop a data mining algorithm to identify spam.

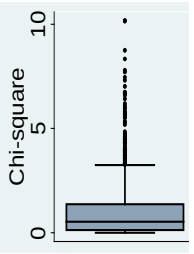
How would you go about summarizing the data?

Variable types



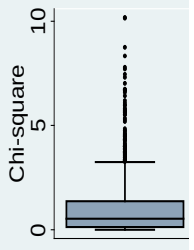
- Numeric - It is not usually necessary to distinguish continuous versus not. “Continuous” in SPSS Modeler
- Nominal – categorical. “Nominal” data type is more specific in SPSS Modeler vs “Categorical”
- Ordinal – ordered categorical. “Ordinal” in SPSS.
- “Flag” in SPSS is two level categorical. Better to use “Flag” vs “Nominal” if only two levels.
- Also: text, date, time

Variable types: Why is it important to distinguish?



- Most software will try to adapt the analysis depending on the variable type and read it correctly.
- Example: hospitalized on 12/7/2015, readmitted on 1/6/2016. Was that within 30 days? Many programs allow subtraction of dates.
- Example: Knee pain is coded as 1, 2, 3 and 4. Does is make sense to split it as 1 and 2 versus 3 and 4?
- Maybe if ordinal (1=no, 2=slight, 3=moderate, 4=severe pain). Probably not if nominal (1=no, 2=left knee only, 3=right knee only, 4=both).

Variable types - roles

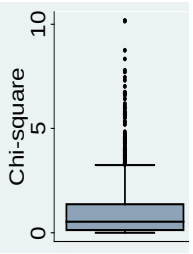


It is also important to designate the role of a variable in the analysis. Main ones are:

- Target. Also called outcome, response, dependent variable.
- Input. Also called predictor, covariate, independent variable.

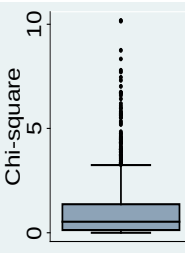
Modeler also has variable roles of Record ID (identification variable like medical record number), split (for separate analyses of subgroups), partition (for assessing training/testing).

Best practices in data



- Most analysis programs want the data in “rectangles” with each row a record or observation and each column a field or variable. Exception: the first row usually contains variable names.
- So a dataset with 10 variables and 300 people would have 10 columns and 301 rows (300 data rows and a variable names row).

Best practices: rectangular data



File Home Insert Page Layout Formulas Data Review View Developer Acrobat

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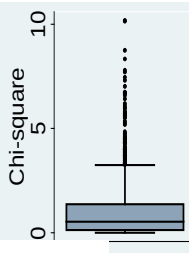
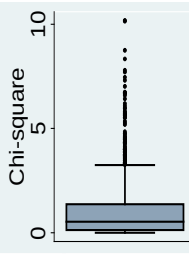
	A	B	F	G	H	J	L	M	P	R	T	U
1	CPSC Case #	trmt_date	age	sex	race	diag	body_part	disposition	prod1	narr1		
2	150733174	7/11/2015	5	1	0	57	33	1	1267	5 YR OLD MALE PLAYING SOCCER		
3	150734723	7/6/2015	36	1	1	57	34	1	1439	L WRIST FX(?)/36YOWM 2 WKS A		
4	150817487	8/2/2015	20	2	0	71	94	1	3274	20 YO F C/O EAR PAIN 1 DAY SAS		
5	150717776	6/26/2015	61	1	0	71	35	1	611	61YOM W/KNEE PAIN S/P FALLIN		
6	150721694	7/4/2015	88	2	3	62	75	1	1893	88YOF PAIN TO HEAD WHEN FALL		
7	150721815	7/2/2015	216	2	1	71	76	1	1715	16 MOF AT HOME PULLED FAMIL		
8	150713483	6/8/2015	25	1	2	51	33	4	1138	25 YOM WAS CAMPING WHEN FR		
9	150704114	6/14/2015	53	1	1	57	30	1	5040	53 YOM BIKE WRECK SUNDAY PA		
10	150736558	7/16/2015	98	1	2	59	76	1	1807	98 Y/O M FELL IN FLOOR AND LA		
11	150734928	7/13/2015	48	2	2	53	79	1	4057	48 YO F, C/O RT FLANK PAIN 6 DA		
12	150734952	7/4/2015	20	1	2	59	82	1	1894	20 YOM DX HAND LACERATION -		
13	150821622	7/20/2015	20	2	1	57	36	1	1267	L DISTAL FIB FX/20YOWF WHILE P		
14	150713631	7/4/2015	11	1	0	60	88	1	3274	DX LOSS TEETH D/T TRAUME: 11Y		
15	150666343	6/27/2015	26	2	1	62	75	1	1807	CHI,LEFT WRIST SPRAIN.26YOF SL		
16	150748843	7/16/2015	33	1	4	53	93	1	4057	33 YOM SMASHED FOOT INTO C		



Best practices in data

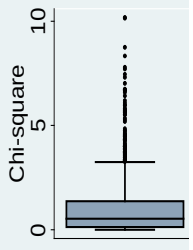
- Each column should contain 1 variable, or one unique piece of information about the subject. More than one piece of information should not be put into a variable. For example, don't enter blood pressure in one column as "130/90". That would be two variables -- one variable for systolic and one for diastolic.
- Another thing I have seen is the patient id variable coded such as "Fresno1133", "Parnassus0002" without a site variable elsewhere in the dataset.

Best data practices checklist part 1

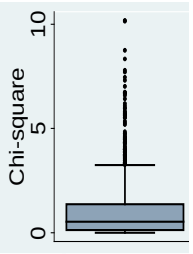


- One row per subject, one column per variable.
- Variable names in first row only.
- Variables represent a single piece of information.
- Generally good to avoid hyphens, or special characters in the variable names. Some programs don’t want variable names that start with numbers.
- Modeler does but many other programs don’t distinguish lower and upper case in names.

Best data practices checklist part 2



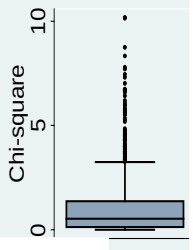
- Do not leave values blank when they are the same as the row above.
- For the majority of analysis programs leave *missing data* as blank. For advanced users of sophisticated packages like SAS, different flavors of missing data can be coded.
- Sometimes on questionnaires or surveys, "Unknown" or "Don't know" is a valid answer, different from missing data, and should have its own code.



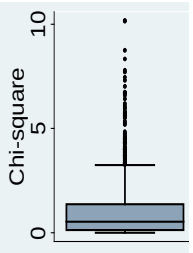
Best data practices checklist part 3

- Dates are often an important aspect of a dataset and sometimes you can designate that as the variable type. If not, entering it in the format of mm/dd/yyyy (e.g., 07/04/2016) can be read by just about any analysis package.
- Times are often an important aspect of a dataset and sometimes you can designate that as a variable type. It is usually easier to use military time (e.g., 14:00 instead of 2:00pm) and many programs can read a time if it is entered in the format of hh:mm (and seconds if necessary).

Best data practices checklist part 4



- Do not intersperse blank rows or columns, lines of labels, or summary statistics in with the data. The dataset should be a solid rectangle.
- It is hard for analysis programs to directly handle fields that contain comments or extended text.

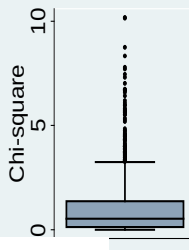


Best data practices: sad but true 1

When looking at the variable titled “patient ID” in the dataset:

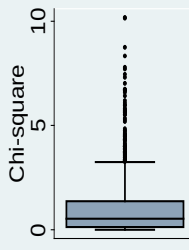
- Question: Is the patient with patient ID equal to 2 different from the one with patient ID equal to 2R?
- Answer: No – the patient with patient ID equal to 2 is the left and 2R is the right leg of the same patient.

Best data practices: sad but true 2



When modeling a response to different dosages of a drug:

- Question: Why didn't you analyze the data using the actual concentrations of the dose?
- Answer: We used the dose variable you sent us in the data which was coded as 0, 1, 2, …, 11.
- Question: Why? Those weren't the actual doses.
- And this was after scraping the data out of the body of an email.

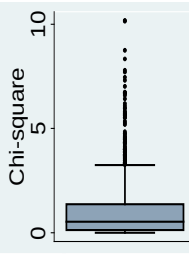


Best data practices: sad but true 3

When asked to compare the treatment and placebo groups in the dataset in which there was no treatment variable:

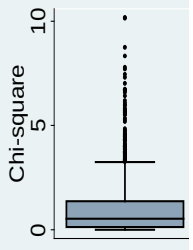
- Question: How can we tell which patients are in the treatment group?
- Answer: Those are the patient IDs that are in red in Excel.

Two common variations on the basic rectangular layout. 1. Longitudinal



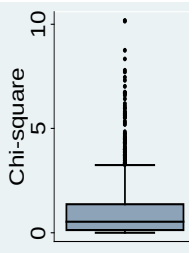
- It is quite common to collect data over time on the same “patient” (longitudinal data) across multiple “visits”.
- There are two common ways to arrange the data: one row per patient (sometimes called “wide” format because the rectangle of data would have many columns and be wide) and one row per visit (sometimes called “long” format because the rectangle of data would have many rows and be long).

Data layouts for longitudinal data



"Wide format"

SubjectID	Gender	Age_enroll	BMI0	BMI1	BMI2	BMI3
2011	M	57	28.0	28.5	29.0	28.9
…						
3123	F	63	23.0	.	23.1	22.9
3124	F	67	25.0	25.0	25.1	25.1



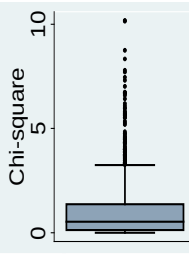
Data layouts for longitudinal data

For longitudinal analyses: “long format”

SubjectID	Visit	Gender	Age_enroll	BMI
2011	0	M	57	28.0
2011	1	M	57	28.5
2011	2	M	57	29.0
2011	3	M	57	28.9
…				
3123	0	F	63	23.0
3123	2	F	63	23.1
3123	3	F	63	22.9
3124	0	F	67	25.0
3124	1	F	67	25.0
3124	2	F	67	25.1
3				

Not a very efficient data storage format

Two common variations on the basic rectangular layout. 2. Relational

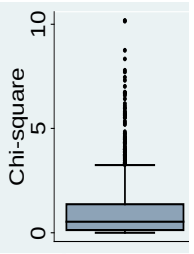


More efficient to store two files, one for patient level characteristics and one for visit level.

SubjectID	Visit	BMI
2011	0	28.0
2011	1	28.5
2011	2	29.0
2011	3	28.9
…		
3123	0	23.0
3123	2	23.1
3123	3	22.9
3124	0	25.0
3124	1	25.0
3124	2	25.1
3124	3	25.1

SubjectID	Gender	Age_enroll
2011	M	57
3123	F	63

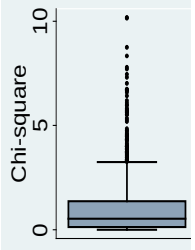
Two common variations on the basic rectangular layout. 2. Relational

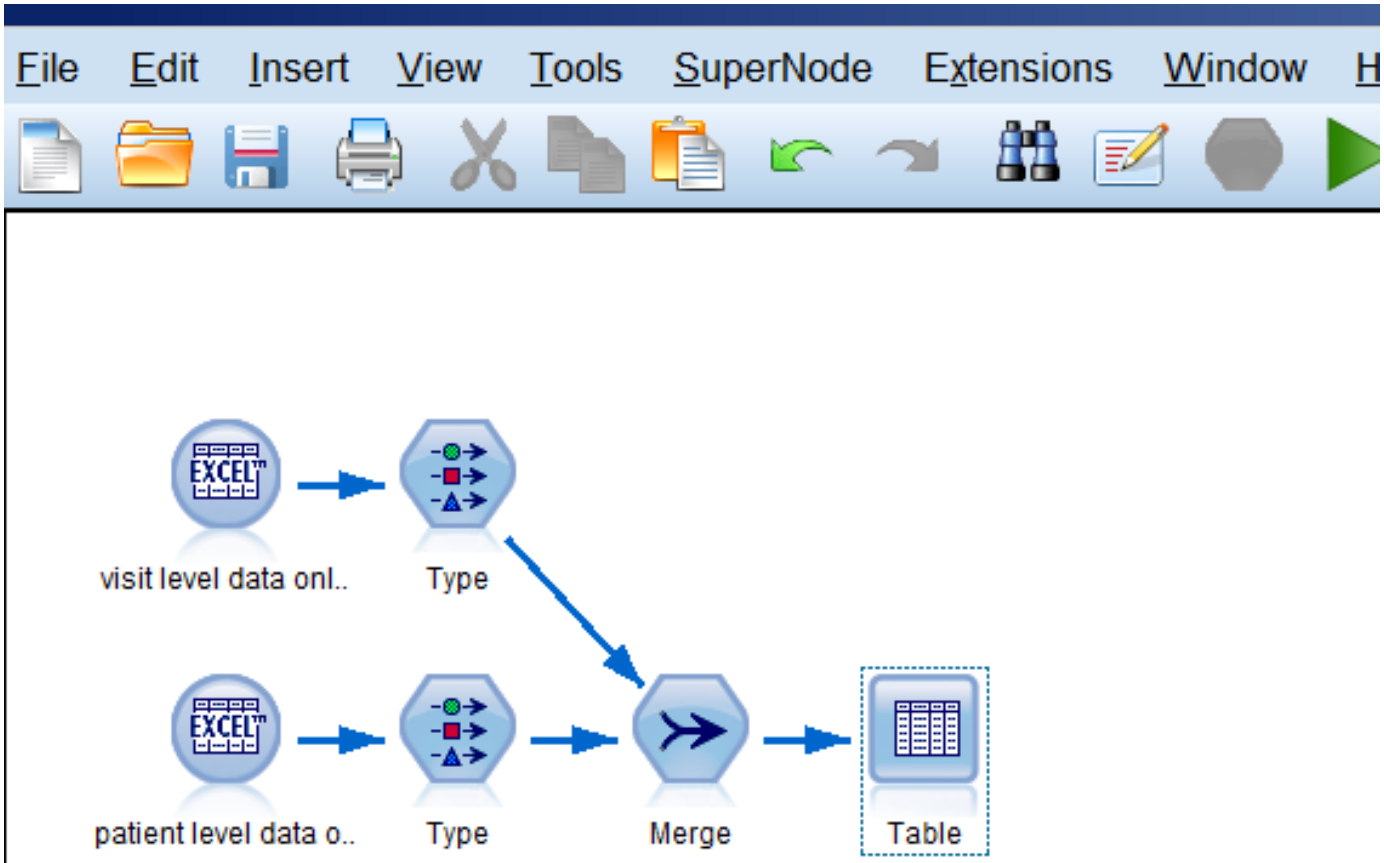


If the data are originally in two files but Modeler (or just about any other analysis program) wants the data in rectangular format, how can we do that?

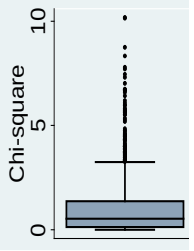
Need to merge the two datasets.

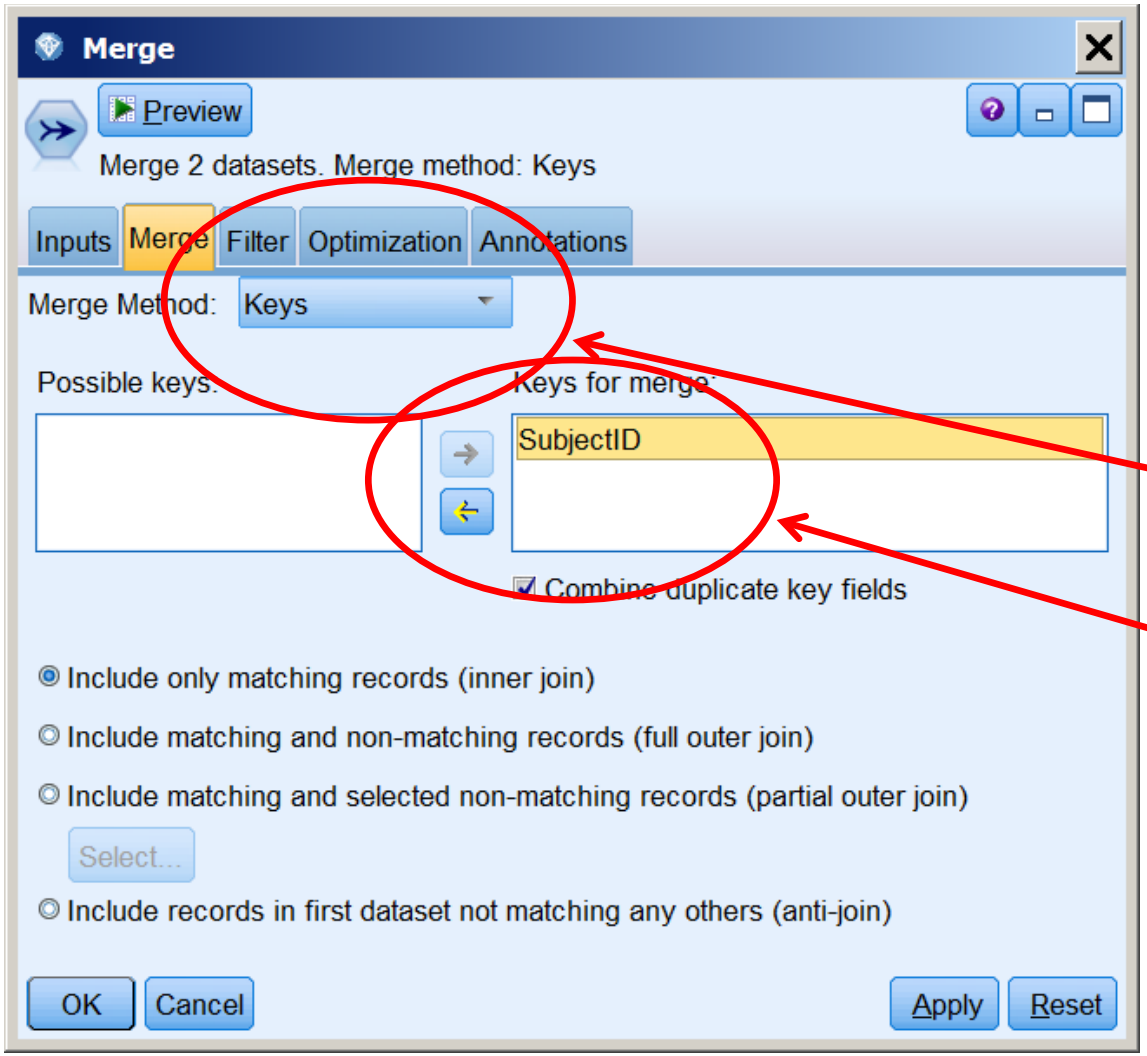
Relational database
Merging on records with the same ID





Relational database
Merging on records with the same ID

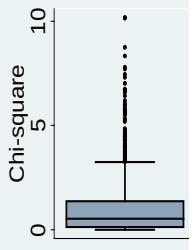


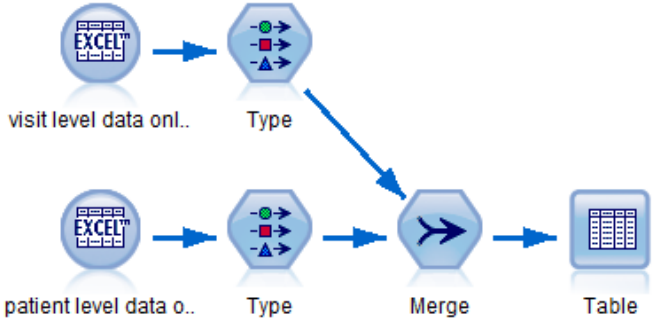


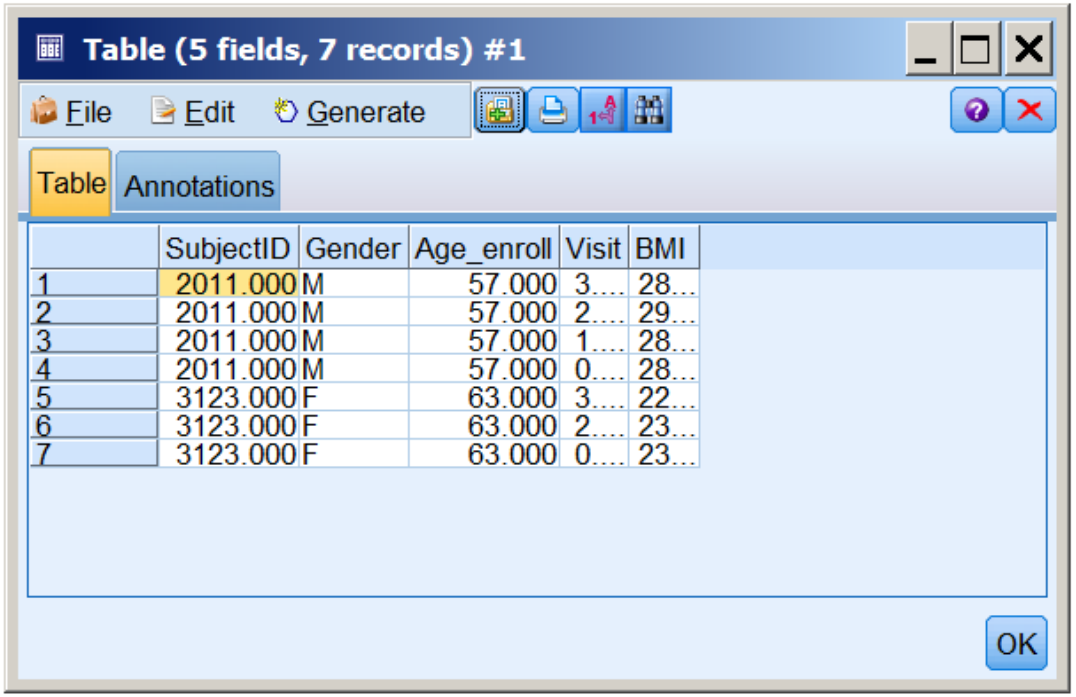
Merge on key variable

Match records with the same Subject ID

Relational database
Merging on records with the same ID

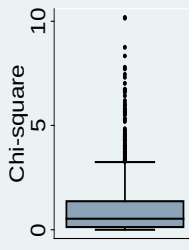






	SubjectID	Gender	Age_enroll	Visit	BMI
1	2011.000	M	57.000	3....	28...
2	2011.000	M	57.000	2....	29...
3	2011.000	M	57.000	1....	28...
4	2011.000	M	57.000	0....	28...
5	3123.000	F	63.000	3....	22...
6	3123.000	F	63.000	2....	23...
7	3123.000	F	63.000	0....	23...

Healthcare datasets are rapidly becoming much more available

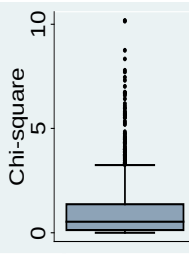


There are a number of datasets that are available for conducting research. The National Library of Medicine offers an entrée to many of them:

https://www.nlm.nih.gov/hsrinfo/datasites.html

I'll briefly talk about three examples: NHANES, NIS, and SOF.

Datasets: NHANES



- National Health and Nutrition Examination Survey.
- Description: NHANES is a set of studies for assessing the health and nutritional status of adults and children in the United States, comprising both interviews and physical examinations. It began in the early 1960s and, since 1999, has surveyed about 5,000 persons each year.
- Location: http://www.cdc.gov/nchs/nhanes/
- Datafile type(s): SAS transport files (.xpt)

Datasets: NHANES

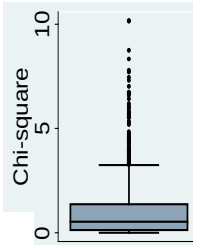


Table 1. Questionnaire topic areas

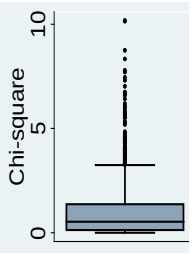
Component
Survey participant (SP) questionnaire
Acculturation (ACQ)
Allergy (AGQ)
Air quality (AQQ)
Balance (BAQ)
Blood pressure and cholesterol (BPQ)
Cardiovascular disease (CDQ)
Cognitive functioning (CFQ)
Demographic background (DMQ)
Dermatology (DEQ)
Diabetes (DIQ)
Diet behavior and nutrition (DBQ)
Dietary screener module (DTQ)
Dietary supplements (DSQ) and medications (RXC
Disability status (DLQ)
Early childhood (ECQ)
Health insurance (HIQ)
Hearing/audiometry (AUQ)
Hepatitis (HEQ)
Hospital utilization and access to care (HUQ)
Immunization (IMQ)
Inflammatory arthritis pain (ARQ)
Kidney conditions (KIQ)
Medical conditions (MCQ)
Miscellaneous pain (MPQ)
Occupation (OCQ)
Oral health (OHQ)
Osteoporosis (OSQ)
Physical activity and physical fitness (PAQ)
Physical functioning (PFQ)
Respiratory health and disease (RDQ)
Sleep disorders (SLQ)

Table 1. Questionnaire topic areas of the National Hea

Component or lab tes

Component	Sample description
Pesticide exposure (PUQ)	8 years and over
Physical activity (PAQ)	12–15 years
Prostate conditions (KIQ)	Males 20 years and over
Reproductive health (RHQ)	Females 12 years and over
Smoking and tobacco use (SMQ)—Adult	20 years and over
Urology (KIQ)	20 years and over
Volatile toxicants (VTQ)	1/3 sample 12 years and over
Weight history (WHQ)	8–15 years

UCSF Profiles search on “NHANES”



UCSF Profiles

SIGN IN TO EDIT ABOUT HELP SEARCH OPTIONS ▼

Search Results (120)

Sort Query Relevance ▼ Show (choose columns) ▼

Click **Why?** to see a researcher's relevant publications.

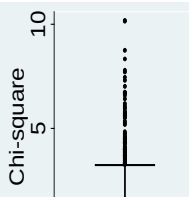
Name	Department	Researcher Type	Why
Neil Powe, MD, MPH, MBA	Medicine	Professor	Why?
Hilary Seligman, MD	Medicine	Associate Professor	Why?
Janet Wojcicki, PhD, MPH	Pediatrics	Associate Professor	Why?
Tracey Woodruff, PhD, MPH	Ob/Gyn, Reproductive Sciences	Professor	Why?
Elissa Epel, PhD	Psychiatry	Professor	Why?
Mark Pletcher, MD, MPH	Epidemiology & Biostatistics	Professor	Why?

Search Criteria
nhanes
University of California San Francisco

Search Options
Modify Search
Search Other Institutions

120 entries, mostly faculty who have published using NHANES

Datasets: NHANES examples



Clinical and Epidemiologic Research

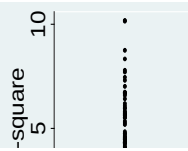
The Association between Glaucoma Prevalence and Supplementation with the Oxidants Calcium and Iron

Sophia Y. Wang,[1] Kuldev Singh,[2] and Shan C. Lin[1]

Purpose. To investigate the relationship between supplementary consumption of the oxidants calcium and iron and the prevalence of glaucoma.

Methods. This cross-sectional study included 3833 participants in the National Health and Nutrition Examination Survey (NHANES) for 2007 and 2008, ≥40 years of age, who reported a presence or absence of glaucoma. Participants were interviewed regarding the use of dietary supplements and antacids during the preceding 30-day period. Data pertaining to the supplementary intake of calcium and iron was aggregated and divided into quintiles. Information regarding the presence or absence of glaucoma and demographics, comorbidities, and health-related behavior was obtained via interview.

Datasets: NHANES examples



Annals of Internal Medicine

Trends in Prevalence of Chronic Kidney Disease in the United States

Daniel Murphy, MD; Charles E. McCulloch, PhD; Feng Lin; Tanushree Banerjee, PhD; Jennifer L. Bragg-Gresham, PhD; Mark S. Eberhardt, PhD; Hal Morgenstern, PhD; Meda E. Pavkov, MD, PhD; Rajiv Saran, MBBS, MD, MS; Neil R. Powe, MD, MPH, MBA*; and Chi-yuan Hsu, MD, MSc*; for the Centers for Disease Control and Prevention Chronic Kidne Disease Surveillance Team†

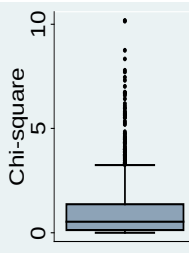
Background: Trends in the prevalence of chronic kidney disease (CKD) are important for health care policy and planning.

Objective: To update trends in CKD prevalence.

Setting: NHANES (National Health and Nutrition Examination Survey) for 1988 to 1994 and every 2 years from 1999 to 2012.

Conclusion: In a reversal of prior trends, there has been no appreciable increase in the prevalence of stage 3 and 4 CKD in the U.S. population overall during the most recent decade.

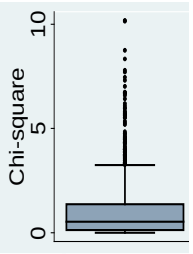
Ann Intern Med. 2016;165:473-481



Datasets: NIS

- National Inpatient Sample (NIS).
- Description: NIS is the largest publicly available all-payer inpatient health care database in the United States, yielding national estimates of hospital inpatient stays. It contains data from more than 7 million hospital stays each year.
- Location: https://www.hcup-us.ahrq.gov/nisoverview.jsp
- Datafile type(s): text, fixed file format (website includes code to read the files into SPSS, SAS and Stata).

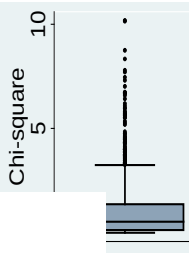
Datasets: NIS



The NIS contains clinical, nonclinical, and resource-use information that is included in a typical discharge abstract, including:

- Primary/secondary diagnoses and procedures,
- Patient demographics,
- Hospital characteristics,
- Payment source and total charges,
- Discharge status and length of stay, and
- Severity and comorbidity measures.

Datasets: NIS examples



Reconstructive Urology

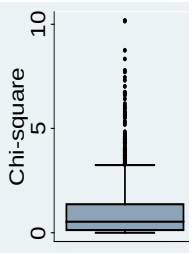
Trends, Utilization, and Immediate Perioperative Complications of Urethroplasty in the United States: Data From the National Inpatient Sample 2000-2010

Sarah D. Blaschko, Catherine R. Harris, Uwais B. Zaid, Tom Gaither, Carissa Chu, Amjad Alwaal, Jack W. McAninch, Charles E. McCulloch, and Benjamin N. Breyer

METHODS

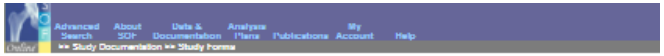
The National Inpatient Sample from years 2000 to 2010 was queried for patients with urethroplasty-associated *International Classification of Diseases, Ninth Revision, Clinical Modification* codes. We analyzed trends in urethroplasty procedures, patient demographics, comorbidities, and hospital characteristics. We evaluated the relationship between patient demographics and co-morbid disease, length of hospital stay, hospital charges, and inpatient complications.

Datasets: SOF



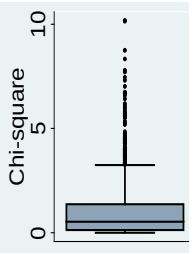
- Study of Osteoporotic Fractures (SOF).
- Description: SOF is an ongoing multi-center, longitudinal, prospective observational study of osteoporosis and aging in women. Location: sofonline.epi-ucsf.org
- Datafile type: SAS file (.sas7bdt).

Datasets: SOF

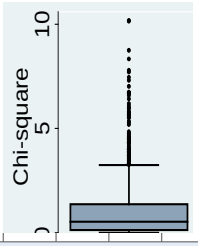


Click on a category name below to view a list of all questions pertaining to that category. Click below on the "form" icon to view the study form used to collect information pertaining to that subcategory. Forms are in PDF file format, which requires the free Adobe Acrobat Reader Version 5 or greater.

Category	Form title	Visit									
		V1	V2	V3	V4	V5	V6	AA	V7	V8	V9
Anthropometric Measures	Anthropometric Measures	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Cognitive function	California Verbal Learning Test (CVLT)										✓
	Digit Span										✓
	Digit Symbol Task		✓		✓						
	MMSE	✓			✓	✓	✓	✓		✓	✓
	Teng 3MS										✓
	Trail Making B		✓		✓		✓	✓		✓	✓
	Verbal Category and Fluency Exams										✓
Demographics	General	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Past Work and Occupation					✓					
Dual X-ray Absorptiometry (DXA)	Hip		✓		✓	✓	✓	✓	✓	✓	✓
	Hip Absolute Change				✓	✓	✓		✓	✓	
	Hip Adjusted for Longitudinal Analysis				✓	✓	✓		✓	✓	
	Hip Percent Change				✓	✓	✓		✓	✓	
	Spine		✓		✓						
	Spine Absolute Change				✓						
	Spine Adjusted for Longitudinal Analysis				✓						
	Spine Percent Change				✓						
	Whole Body				✓		✓	✓	✓		✓
	Whole Body Absolute Change								✓		
	Whole Body Adjusted for Longitudinal Analysis								✓		
	Whole Body Percent Change								✓		
Endpoints/Outcomes	Breast Cancer	✓	✓	✓	✓	✓	✓			✓	
	Fracture	✓	✓	✓	✓	✓	✓	✓		✓	✓
	Mortality	✓	✓	✓	✓	✓	✓	✓		✓	✓
	Overall Follow-up Time	✓	✓	✓	✓	✓	✓	✓		✓	✓
Exam Bookkeeping	All	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Family History	Family History	✓									
Female History	Breast exam/Breast cancer	✓	✓	✓			✓	✓			
	General	✓	✓			✓		✓			
Fractures and Falls History	History of Falls	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	History of Fractures	✓	✓	✓	✓	✓	✓	✓		✓	✓
Lab Data	Calcium 45 History and Lab Data				✓						
	Cohort Data from Breast Cancer Study	✓									
	Cohort Data from Fracture Study	✓									
	Stroke Case-Control Study	✓									
Lifestyle	Alcohol Use	✓			✓	✓	✓	✓		✓	✓
	Caffeine Use	✓	✓		✓	✓	✓	✓		✓	✓
	Diet	✓	✓		✓		✓	✓			
	Physical Activity and Exercise	✓	✓		✓	✓	✓	✓		✓	✓
	Smoking	✓	✓		✓	✓	✓	✓		✓	✓
	Walking	✓	✓		✓	✓	✓	✓	✓	✓	✓
Medical History	Arthritis History	✓			✓	✓	✓	✓		✓	✓
	Cancer History			✓	✓	✓	✓	✓		✓	✓
	Cardiovascular disease history	✓	✓	✓	✓	✓	✓	✓		✓	✓
	Dental Health				✓						
	General Medical Conditions	✓	✓	✓	✓	✓	✓	✓		✓	✓
	Hip, Knee and Joint Health	✓	✓		✓	✓				✓	
	Hospitalization	✓	✓	✓	✓						✓
	Neurological disease history	✓			✓	✓	✓	✓		✓	✓
	Osteoporosis	✓	✓	✓	✓	✓	✓	✓		✓	
	Symptoms Questionnaire				✓						
	Urinary Incontinence				✓	✓					✓
Medications	Hormones	✓	✓	✓				✓	✓		
	Medical Inventory Form				✓	✓	✓	✓		✓	✓
	Specific Medications	✓	✓	✓	✓	✓	✓	✓			✓
Morphometry: Vertebral fractures	General	✓		✓					✓	✓	
Physical function	Back Problems	✓	✓	✓				✓	✓	✓	✓
	Back Surgery					✓					
	Body Pain										✓
	Driving		✓	✓	✓	✓				✓	
	Functional Status	✓	✓	✓	✓	✓	✓	✓		✓	✓
Physical Performance	Chair Stands	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Grip Strength	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Muscle Strength	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Physical Performance	✓	✓		✓	✓	✓	✓			
	Reaction Time		✓	✓	✓						✓
	Six-Meter Usual Pace and Rapid Pace	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
	Tandem Stand and Tandem Walk	✓	✓	✓	✓	✓					✓
	Walking Aids and Problems	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Quality of Life	Anxiety Scale									✓	✓
	Depressed Feelings						✓	✓			
	Geriatric Depression Scale		✓		✓		✓	✓		✓	✓
	Key Life Events				✓						
	Life space										✓
	Self-rated health	✓		✓	✓	✓	✓	✓	✓	✓	✓
	Social Network and Support, Living Arrangement	✓	✓		✓	✓		✓		✓	✓
Sleep	Actigraphy									✓	✓
	Actigraphy--Activity, Sleep, Circadian Rhythm									✓	✓
	Epworth Sleepiness Scale									✓	✓
	Functional Outcomes of Sleep									✓	✓
	Overnight Polysomnography									✓	
	Dolmetty Morning Survey										✓
	Dolmetty Overnight Recording										✓
	Pittsburgh Sleep Quality Index									✓	✓
	Polysomnography									✓	
	Polysomnography Measurements									✓	
	Polysomnography Morning Survey									✓	
	Restless Legs Syndrome										✓
	Sleep Disorders									✓	✓

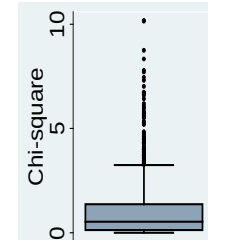


Datasets: SOF



Chair Stands (▲)												
☐	Use of arms to stand up 5 times (6 categories)	CHR										
☐	Time to complete 5 chair stands (sec)	CHRTM										
☐	Does participant use arms to stand up?	STDARM										
☐	Was this as fast as you can do it while feeling safe?	CHFAST										
☐	• If no, time to complete 5 chair stands, repeat test (sec)	CHTM2										
Esthesiometer (▲)												
☐	Right big toe filament	RFIL										
☐	Right big toe extremity cold to touch?	RCLD										
☐	Right big toe tested on callus?	RCAL										
☐	Left big toe filament	LFIL										
☐	Left big toe extremity cold to touch?	LCLD										
☐	Left big toe tested on callus?	LCAL										
Foot Tapping (▲)												
☐	Which hand is dominant?	DOMHND										
☐	Time to complete 10 foot taps using dominant foot (sec)	DMTAP										
Frailty Assessment (▲)												
☐	Defining frailty as a combination of the following characteristics (weak, unsteady and fragile), what is your overall assessment of this participants level of frailty?	FRAIL										
Functional Reach (▲)												
☐	Is the participant able to stand on both feet for 30 seconds?	FRSTD										

Datasets: SOF



THE GERONTOLOGICAL SOCIETY OF AMERICA®

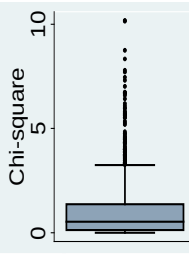
Background: Prior studies have only considered one measurement of physical performan
A single measurement is susceptible to large within-person changes over time, and thus, may
performance and the outcomes of interest.

Methods: Using data from the Study of Osteoporotic Fractures, we followed 7,015 women
information beyond this age. Trajectories of walking speed (m/s) and chair stand speed (stand
80 years using mixed-effects linear regression. Physical performance at age 80 (PF_age80) w
Hazard ratios (HRs) and 95% confidence intervals (CIs) were estimated using Cox proporti
adjusted for all other covariates.

Results: Greatest walking speed decline and chair stand speed decline were both associated w
1.03, 1.58 and HR: 1.26; 95% CI: 1.03, 1.54, respectively), but not nonspine fractures. Grea
decline were both associated with a significant 29% (95% CI: 17–42%) and 27% (95% CI:

Conclusions: Greatest declines in walking speed and chair stand speed were both associa
mortality independent of PF_age80 and other important confounders. Both physical perform
measurement should be considered in the etiology of hip fracture and mortality.

mortality independent of PF_age80 and other important confounders. Both physical performance change and the single physical performance measurement should be considered in the etiology of hip fracture and mortality.



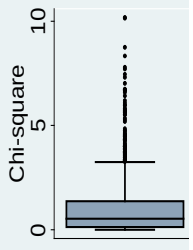
Datasets: SOF

Getting around a large dataset.

The NHANES website has examples and a tutorial.

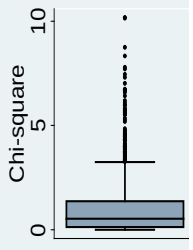
SOF Data Browser demonstration.

Finding your way around big datasets: CELDAC



CELDAC (Comparative Effectiveness Large Dataset Analysis Core) is a part of the Clinical and Translational Research Institute and its mission is to enhance UCSF's capacity for analysis of large local, state, and national health datasets to conduct research on health and health care.

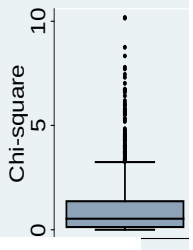
CELDAC’S Main Components



- Consultation to identify relevant datasets

- Repository of select datasets available through MyResearch

Dataset Repository



- CELDAC has created a repository of select large, public datasets that are available to UCSF researchers ***at no cost.***

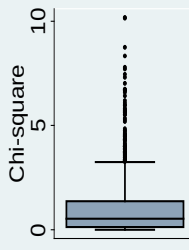
- These data sets include
  - National samples of hospital discharges and ED visits
  - Universes of hospital discharges and ED visits for select states
  - Data on characteristics of hospitals
  - County level data on demographic, socio-economic, and health system characteristics

How to Access CELDAC Datasets

- Obtain a MyResearch account
- Obtain CHR approval or exemption
- Request CELDAC help through CTSI at

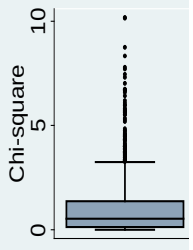
https://accelerate.ucsf.edu/research/large-datasets-application

Using Electronic Health Records for Research



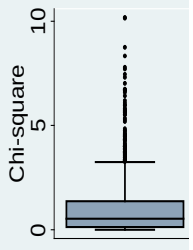
- The Academic Research Systems group has recently made a de-identified extract of the APeX files available.
- Details at: https://myresearch.ucsf.edu/research-data-browser-de-identified-export-and-flowsheet-files

Using Electronic Health Records for Research



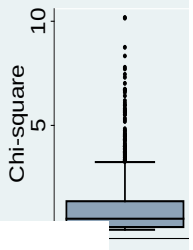
- SPSS modeler demonstration using the immunization data

Using Electronic Health Records for Research



- Before you can access the de-identified data you need to be granted access to the “Research Data Browser.”
- You can apply for access by following the instructions under “Getting Access” at the link on the prior slide. (If interested, email me first and then list me as “Approver” on the form)

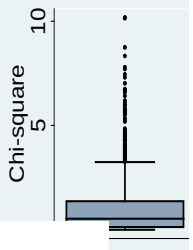
Using Electronic Health Records for Research



- If you want access to data *including identifiers*, you can request an extract of APeX data at UCSF through Academic Research Systems.
- First 8 hours of consultation are free.
- Need CHR approved protocol.
- Details available at:

https://myresearch.ucsf.edu/clinical-data-research-consultations

Using Electronic Health Records for Research

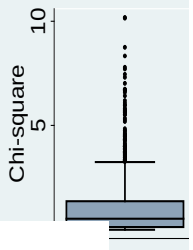


- Navigating the process of specifying what you need from APeX to conduct research can be a daunting task.
- CTSI's Data Management Unit can help with both the specification and the data request to Academic Research Systems.

http://accelerate.ucsf.edu/research/data-consult

- But note that these often require considerable work for which you would need to arrange funding.

Using Electronic Health Records for Research

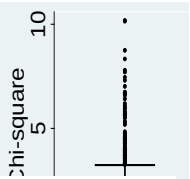


Also

- UCReX – University of California Research eXchange – a compendium of 14.5m data records from the five UC medical centers. See
- http://www.ucrex.org/ or
- https://myresearch.ucsf.edu/uc-rex

- Limited data.

Summary



1. It helps to know the format and layout of a dataset you want to analyze.
2. Paying attention to data formatting issues can save LOTS of time later.
3. Defining variable roles is important in IBM SPSS Modeler.
4. Access to rich data is easy.
5. Finding your way around can be hard.
6. Look for tools (tutorials, browsers),
7. Or get professional help (ARS and CTSI).