

IPUMS.ORG







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IPUMS.ORG

- Access data and documentation via web-based data dissemination systems
- Build a customized dataset
- Receive an email when data are ready
- Download and analyze microdata
- Draw on tutorials, user forum, and user support



IPUMS.ORG

- Harmonization and data enhancements
- Comprehensive online documentation
- Create and download customized datasets
- Online data analysis tools
- User support



# DATA AVAILABLE

4796138925825634972846961  
2862516197341212569321437  
3154782418936587121934598  
9283891389276967  
3479142038424  
15- 8766362894871828  
691- 2917467656465  
5367- 11707597  
717- 15232  
86473864 35928721659837  
32521479186274181421539898  
94193289181147  
836169159567  
192542468  
6847213  
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## USA

U.S. Census and American Community Survey microdata from 1850 to the present.

## CPS

Current Population Survey microdata including basic monthly surveys and supplements from 1962 to the present.

## INTERNATIONAL

World's largest collection of census microdata covering nearly 100 countries, contemporary and historical.

## TIME USE

U.S. and international time use data from 1965 to the present.

## NHGIS

Tabular U.S. Census data and GIS boundary files from 1790 to the present.

## GLOBAL HEALTH

Health survey data for Africa and Asia, including harmonized data collections for **DHS** and **PMA2020**.

## HIGHER ED

Data on the science and engineering workforce in the U.S. from 1993 to the present.

## HEALTH SURVEYS

Health survey data from the National Health Interview Survey and the Medical Expenditure Panel Survey.

## TERRA

Integrated data on population and the environment from 1960 to the present.

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Census

Demographic  
Surveys

Health Surveys



Census

Demographic  
Surveys

Health Surveys

USA

NHGIS

International  
Census



Census

USA

NHGIS

International  
Census

Demographic  
Surveys

CPS

(labor force)

ATUS

(time use)

International  
Labor Force

Health Surveys



Census

USA

NHGIS

International  
Census

Demographic  
Surveys

CPS

ATUS

International  
Labor Force

Health Surveys

NHIS

MEPS

DHS

PMA



Census

USA\*

NHGIS

International  
Census

Demographic  
Surveys

CPS\*

ATUS\*

International  
Labor Force

Health Surveys

NHIS\*

MEPS\*

DHS

PMA



## 2. USING IPUMS DATA TO STUDY THE HEALTH WORKFORCE



# 2A. DEFINING THE HEALTH WORKFORCE



# Direct vs Indirect Identification

- Direct
  - Use occupation and industry
  - USA, CPS, ATUS, NHIS
- Indirect
  - Provider characteristics from an interview respondent
  - MEPS



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# Unharmonized Occupations

- Great for analysis of a single year or small set of years
- Great for analysis of most recent year(s)
- Most fine grained identification of occupations



# Unharmonized Occupations

- Changing occupation coding schemes over time
  - 1950
  - 1960
  - 1970
  - 1980
  - 1990
  - 2000
  - 2018



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- Great for trends over time
- Great for pooling years where occupation coding schemes are different
- Some detail is lost compared to unharmonized occupation variables



# Harmonized Occupations

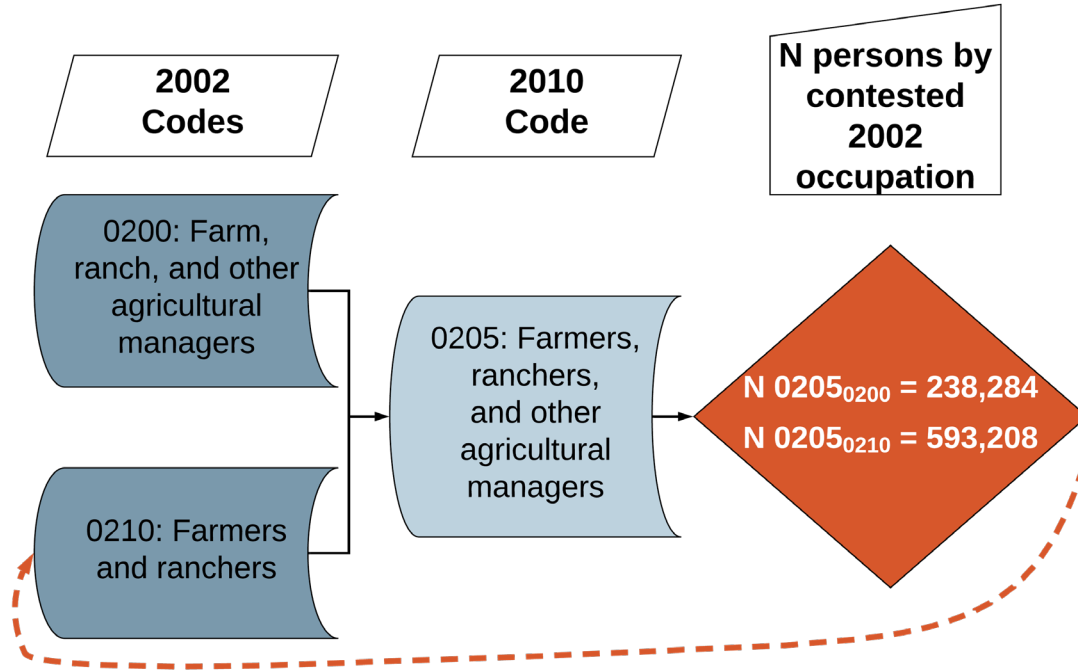
- IPUMS uses Census Bureau crosswalks that describe how occupations are collapsed and split over time to create harmonized occupation variables
- Convenient for researchers



[illegible]



# Harmonized Occupations: Less Detail over Time





# Detailed Occupations

- IPUMS Products: USA, CPS, ATUS
- Unharmonized: OCC, OCCSOC (USA only)
- Harmonized: OCC1950, OCC1990, OCC2010



# Recent Health Care Occupations (OCC)

- Health Care Practitioners and Technical Occupations
  - 29 categories in 2000
  - 31 categories in 2017
- Health Care Support Occupations
  - 6 categories in 2000
  - 11 categories in 2017



# Health Care Practitioners and Technical Occupations (29 codes in 2000)

- Chiropractors
- Dentists
- Dieticians & Nutritionists
- Optometrists
- Pharmacists
- Physicians & Surgeons
- Physician Assistants
- Podiatrists
- Registered Nurses
- Audiologists
- Therapists (e.g. Physical, Radiation)
- Dental Hygienists
- LPNs, EMTs



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# OCC1990

## Registered Nurses (95)

# OCC - 2017

1. Registered Nurses (3255)
2. Nurse Anesthetists (3256)
3. Nurse Practitioners & Nurse Midwives (3258)



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# NHIS: Coarse Occupational Coding Schemes

## OCC: “Detailed occupation,” 2004-present



# NHIS: Coarse Occupational Coding Schemes

OCC: “Detailed occupation,” 2004-present

OCCUPN APPENDIX: OCCUPATION RECODE APPENDIX based on 4-digit Census codes (from the 2010 SOC)

Numeric listing of Response Values and Labels for OCCUPN1 (detailed occupation recode)

Column 1 Input Response Values	Column 2 Output Response Values	Column 3 Output Response Labels
		<b>Healthcare Practitioners and Technical Occupations</b>
3000, 3010, 3030, 3040, 3050, 3060, 3110, 3120, 3140, 3150, 3160, 3200, 3210, 3220, 3230, 3235, 3245, 3250, 3255, 3256, 3257, 3258, 3260	29	Health diagnosing and treating practitioners
3300, 3310, 3320, 3400, 3420, 3500, 3510, 3520, 3535	30	Health technologists and technicians
3540	31	Other healthcare practitioners and technical occupations
		<b>Healthcare Support Occupations</b>
3600	32	Nursing, psychiatric, and home health aides
3610, 3620	33	Occupational and physical therapist assistants and aides
3630, 3640, 3645, 3646, 3647, 3648, 3649, 3655	34	Other healthcare support occupations



# NHIS: Coarse Occupational Coding Schemes

## OCC1995: Harmonized occupational codes from 1969-present



# NHIS: Coarse Occupational Coding Schemes

**OCC1995: Harmonized occupational codes from 1969-present**

OCC	OCC1995
29 = Health diagnosing & treating practitioners	0222 = Health diagnosing occupations
30 = Health technologists & technicians	0301 = Health technologists and technicians
31 = Other healthcare practitioners & technical occupations	
32 = Nursing, psychiatric, and home health aides	0805 = Health service
33 = Occupational & physical therapist assistants and aides	0223 = Health assessment & treating occupations
34 = Other healthcare support occupations	0805 = Health service



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# Occupation Dimensions Summary

	Granularity	
Comparability	Detailed	Coarse
Unharmonized	USA, CPS, ATUS	NHIS
Harmonized	USA, CPS	NHIS



# Occupation vs. Industry

- Occupation – who provides direct care
- Industry – who works in a health care environment
- Example: social workers (occupation) who work in hospitals (industry)



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# Topics of Study Possible with IPUMS

- Describe members of the health workforce
- Characterize the nature of jobs
- Depict activities outside of paid work
- Assess health behaviors and outcomes
- Describe aspects of health care delivery or financing



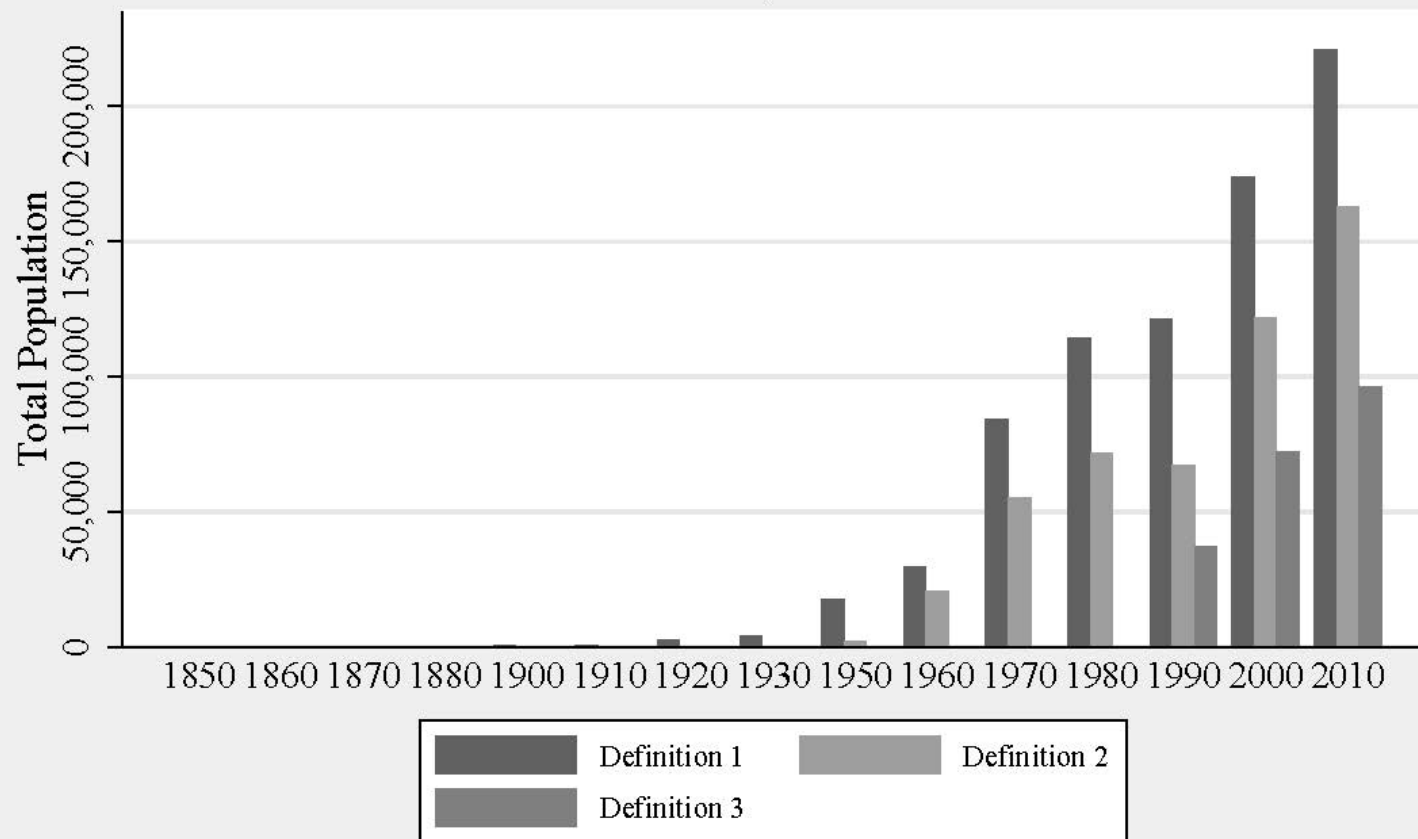
# Characteristics of Health Workers

- Demographic characteristics
  - Sex, racial/ethnic, age breakdowns
- Income, educational attainment
- USA and CPS
- Example: Heggness et al. study that could be replicated for Health workforce



# Biological and Medical Scientists by Year

## United States, 1850 to 2010

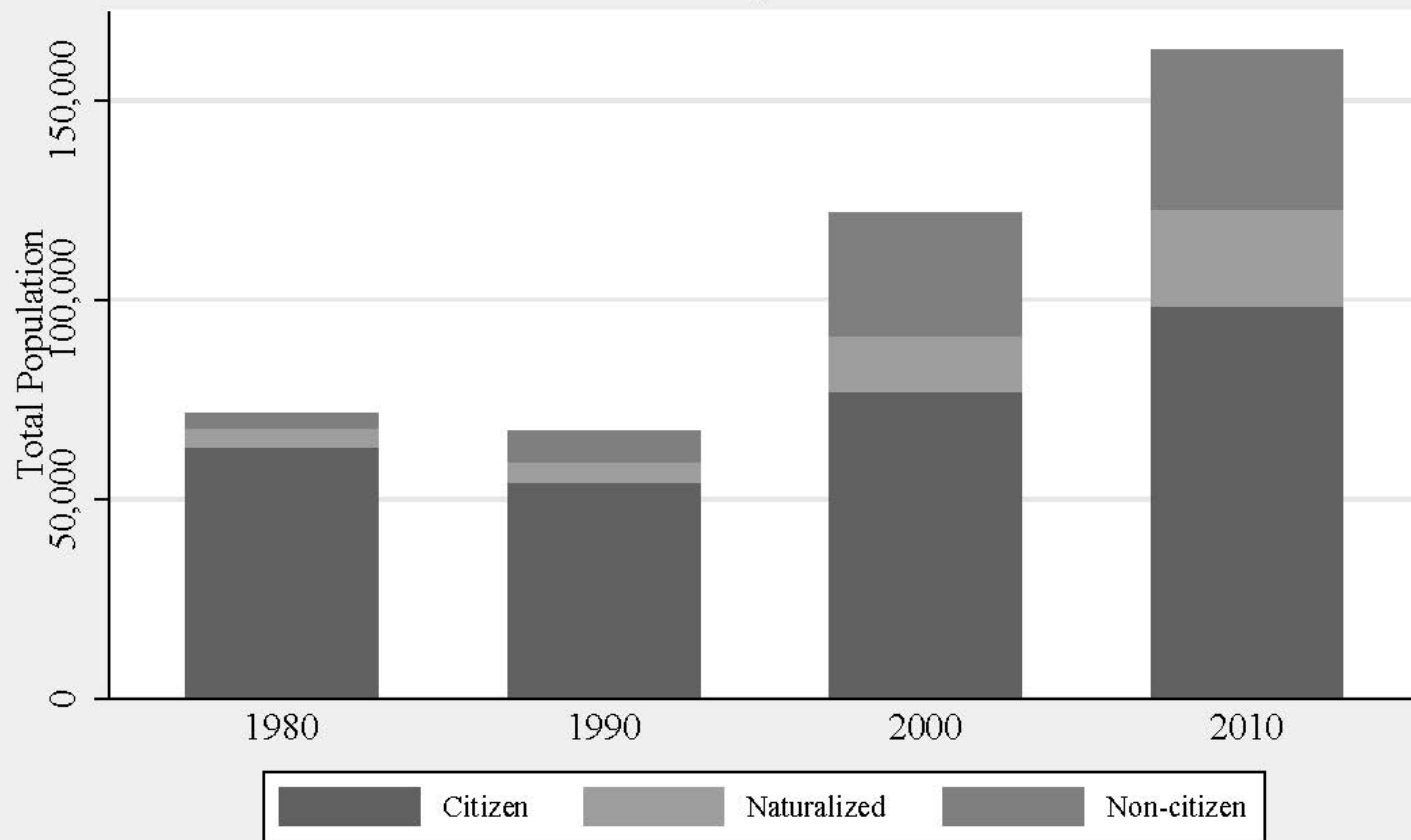


Source: Author's calculations, IPUMS decennial censuses and IPUMS ACS 2010 ([ipums.org](http://ipums.org))



# Biological and Medical Scientists by Citizenship Status and Year

## United States, 1980 to 2010



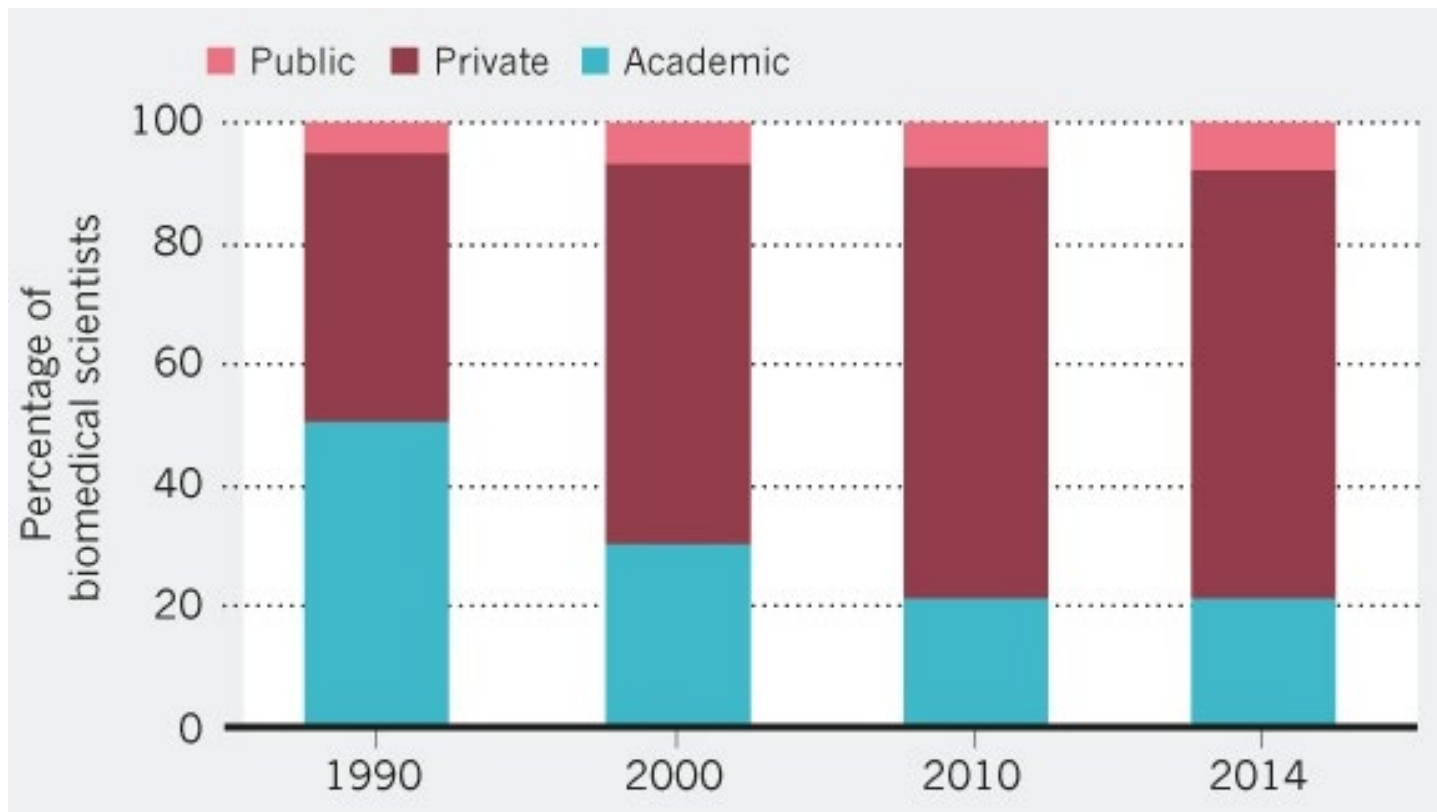
Source: Author's calculations, IPUMS decennial censuses and IPUMS ACS 2010 ([ipums.org](http://ipums.org))



# Attributes of Jobs Held by Health Workers

- If employed: work hours and wages (unions), commute to work, mode of transport
- If unemployed: looking for work, length of unemployment
- USA and CPS





Source: Heggness, Gunsalus, Pacas & McDowell 2017

<https://www.nature.com/news/the-new-face-of-us-science-1.21229>

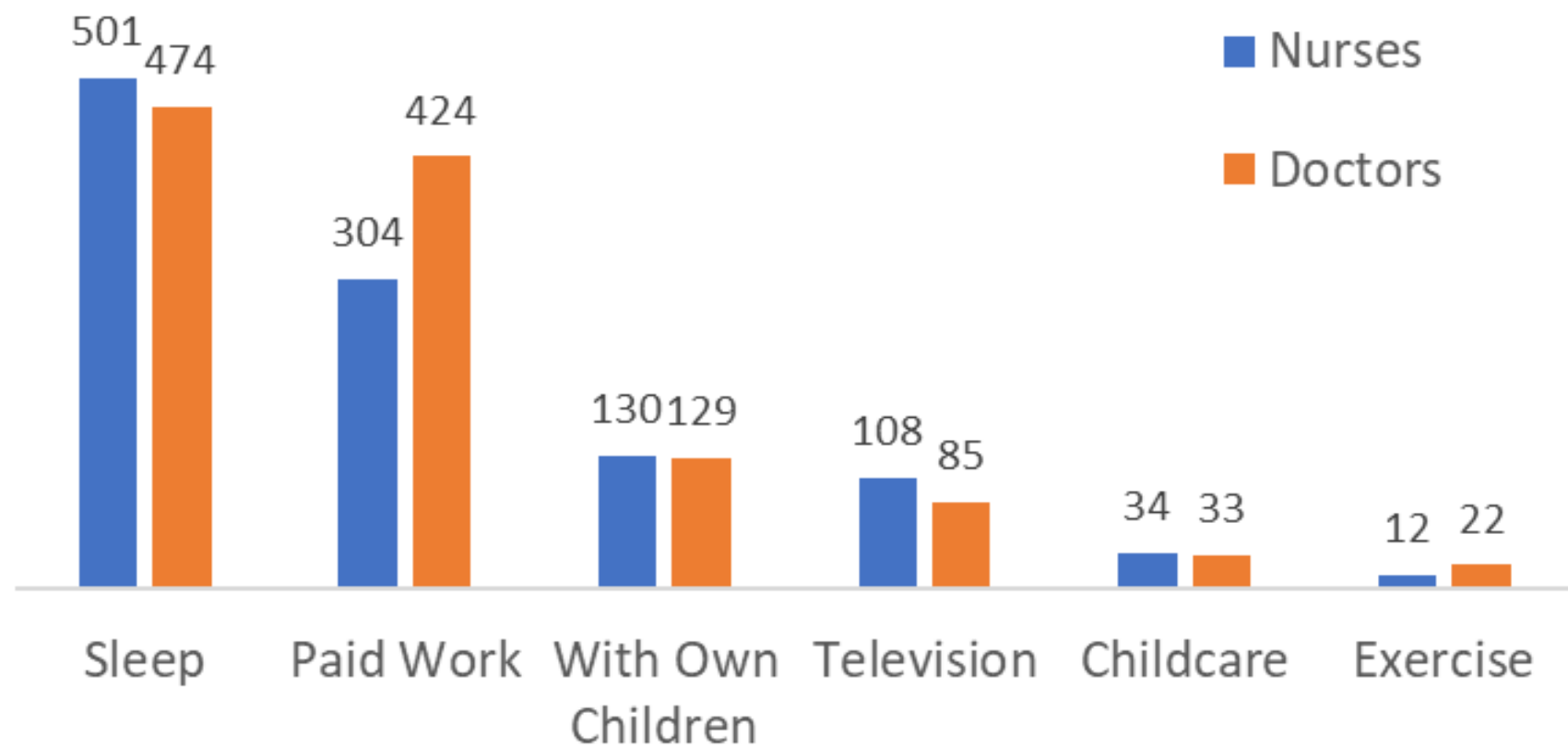


# Activities Outside of Paid Work

- Sleep, Physical activity, Unpaid work, Caregiving, Volunteering, Sedentary behavior, Leisure
- ATUS



## Daily Time Use of Nurses versus Doctors



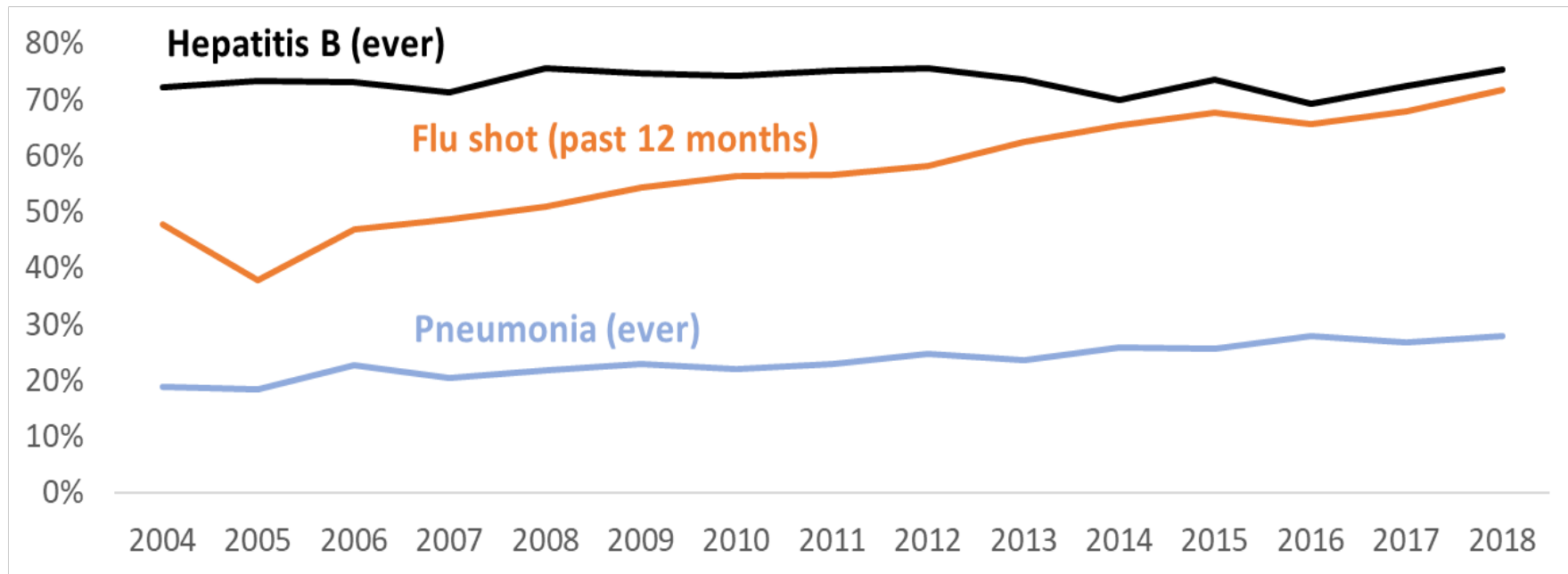


# Health Behaviors, Outcomes, and Utilization

- Health behaviors
- Occupational health
- Health outcomes (low back pain, mental health, etc.)
- Health care utilization (CAM, routine & acute care, etc.)
- ATUS and NHIS



# Percentage of Health Workers with Selected Vaccinations, NHIS 2004-2018



Note: “Health Workforce” defined as persons working in both Health Workforce associated occupations AND industries.



# Consumer Perspectives on Treating Behaviors

- Can indirectly identify type of usual source of care provider
  - Characteristics of providers from consumer's perspective (demographics, quality of/satisfaction with care, etc.)
  - Match provider to consumer
- MEPS



## SELECT SAMPLES

Group: Access to Care – ANNUAL

DESCRIPTION	CODES	COMPARABILITY	UNIVERSE	AVAILABILITY	SURVEY TEXT	WEIGHTS	FLAGS
-------------	-------	---------------	----------	--------------	-------------	---------	-------

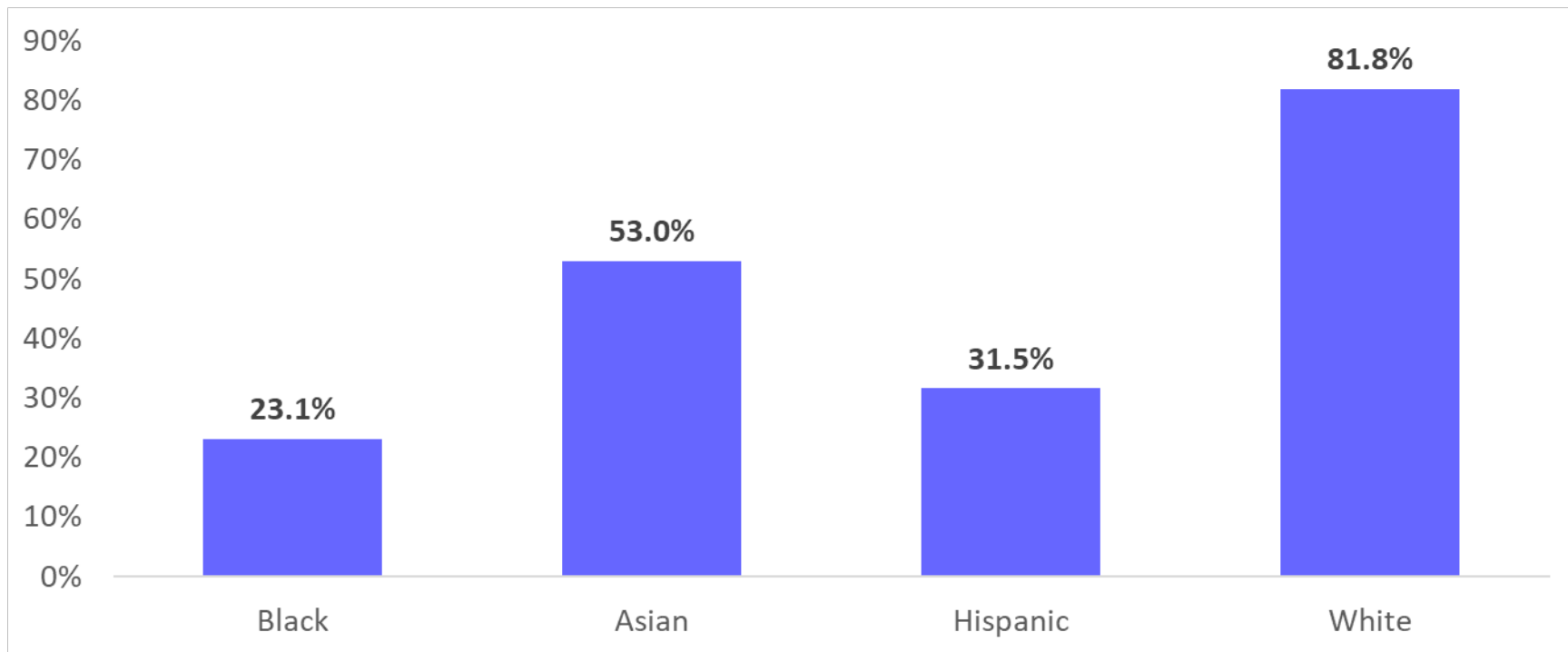
- ☒ Category availability view
- ☐ Case-count view

An 'X' indicates the category is available for that sample

[illegible]



# Share with usual source of care provider who has same race/ethnicity as self, 2017 MEPS



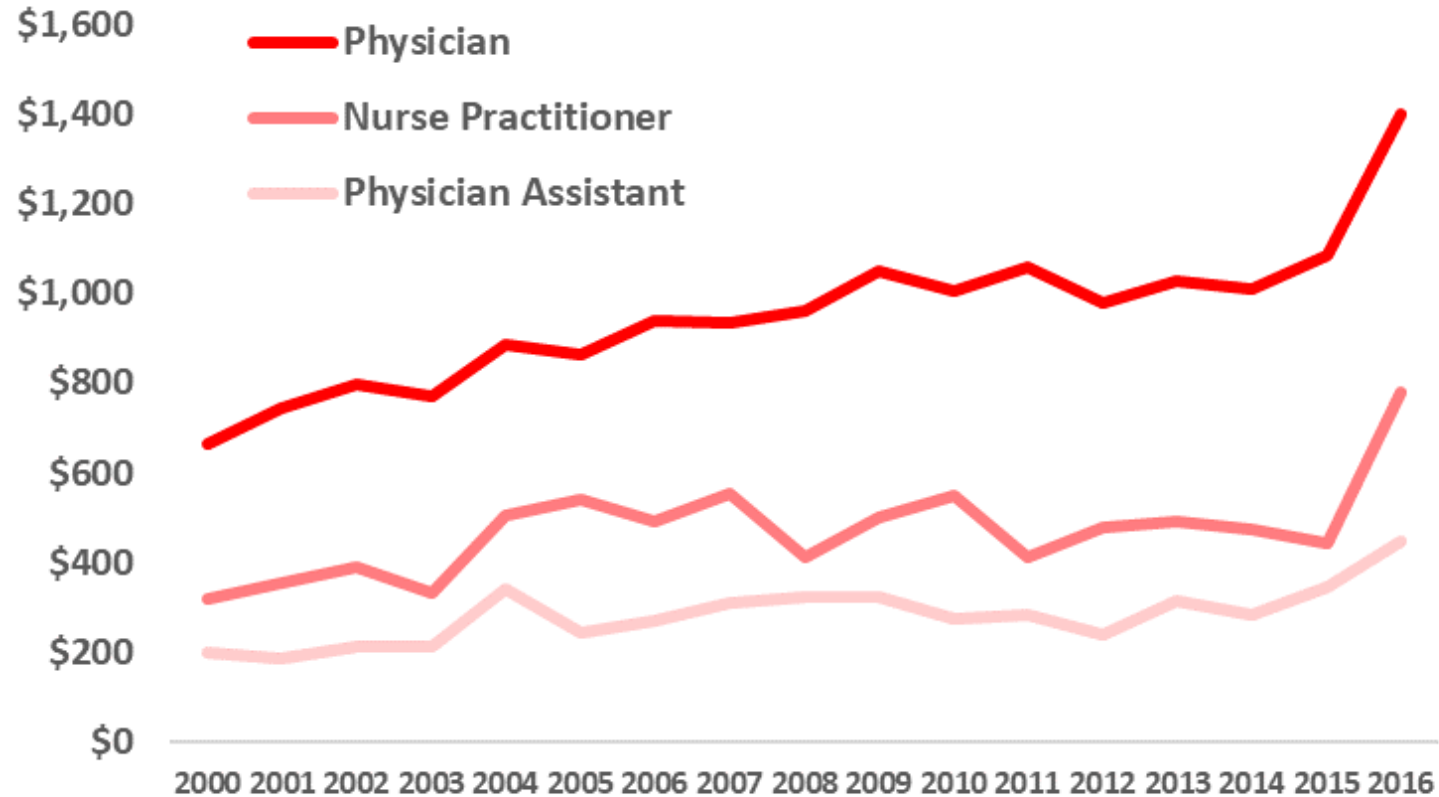


# Health Care Expenditures

- For specific types of providers
  - By setting: office-based, outpatient, hospital, etc.
  - By title: physician, nurse practitioner, physician's assistant, chiropractor, optometrist, physical therapist, etc.
- By payer: self/family, private, Medicaid/SCHIP, Medicare, etc.
- MEPS



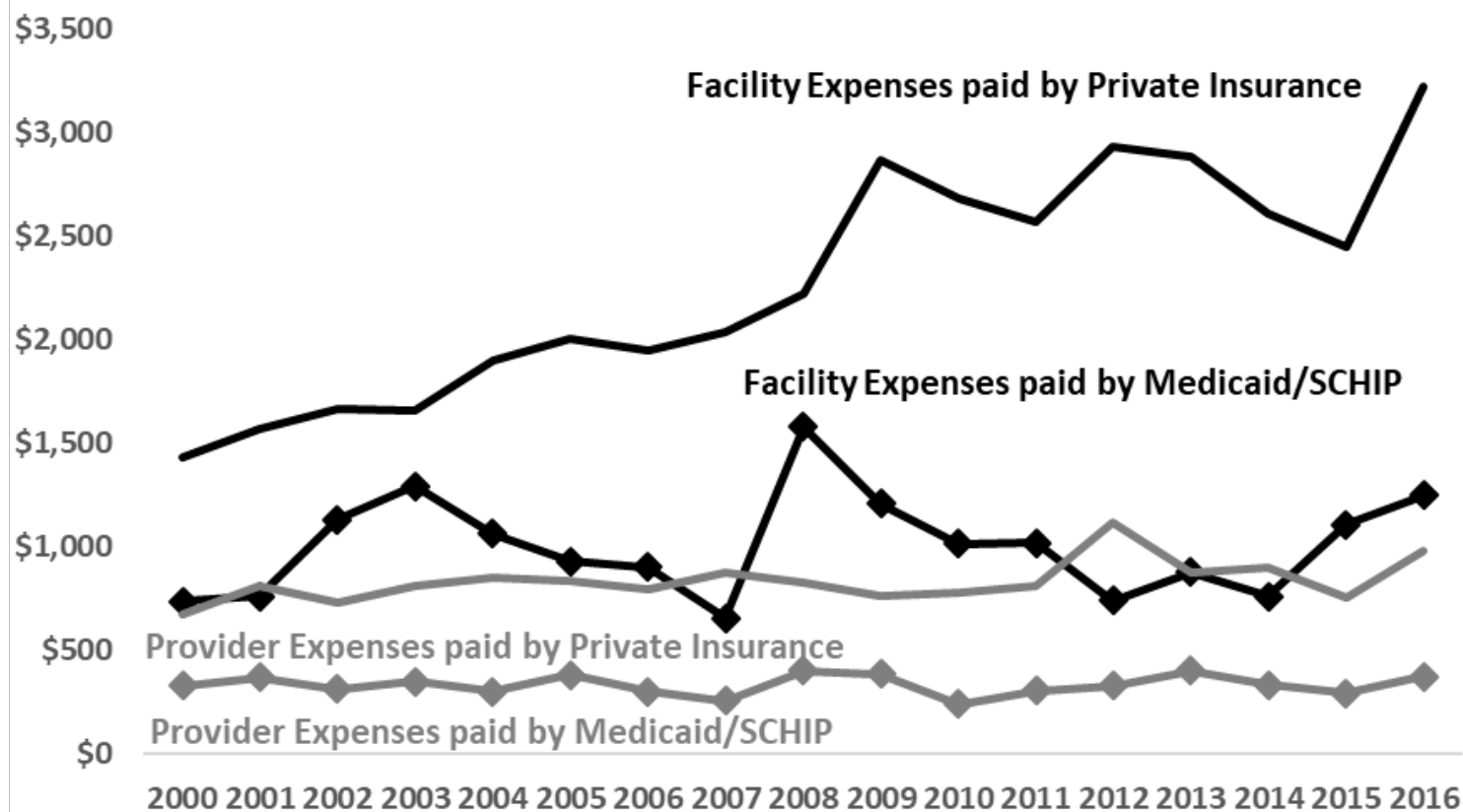
# Average Expenditures for Office-Based Providers by Type, 2000-2016 (2009 dollars)



Note: For those with at least \$1 in expenditures. Source: IPUMS MEPS.



# Private Insurance and Medicaid/SCHIP Expenditures on Outpatient Physicians by Facility vs. Provider, 2000-2016



Note: 2009 dollars for expenditures of \$1 or more, Source: IPUMS MEPS



## 2C. ANALYTIC CONSIDERATIONS







USA

NHGIS

CPS

ATUS

Health

SES



Housing



Work



Income



Poverty





USA

NHGIS

CPS

ATUS

Health

Fertility

Household  
or FamilyHealth  
insuranceHealth  
behaviors

Disability



Migration





# Geography

- USA: PUMAs
- CPS: Best at state level, some counties
- ATUS: Best at national level, states and some counties
- NHIS & MEPS: Best at national level, has census region



[illegible]

- Temporal coverage
- Frequency of data collection



1790

1960s

2000s

Present

USA

CPS  
NHIS

MEPS  
ATUS



Low  
Freq

---

High  
Freq

USA

Decennial

USA - ACS

CPS

ATUS

NHIS/MEPS

CPS - supplements



### 3. INTERNATIONAL DATA



# IPUMS International



[HOME](#) | [SELECT DATA](#) | [MY DATA](#) | [FAQ](#) | [HELP](#)

## DATA CART

YOUR DATA EXTRACT

0 VARIABLES

0 SAMPLES

## ISCO88A

ADD TO CART

SELECT SAMPLES

Occupation, ISCO-1988, 3-digit

Group: [Work — PERSON](#)

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211	PROFESSIONALS Physicists, chemists and related professionals	X	.	X	X	.	X	.	.	X	X	X	X	X	X	X	211
212	Mathematicians, statisticians and related professionals	X	.	X	.	X	X	.	.	.	X	X	X	X	X	X	212
213	Computing professionals	X	X	X	X	.	.	.	.	X	X	X	X	X	X	.	213
214	Architects, engineers and related professionals	X	X	X	X	X	X	X	.	X	X	X	X	X	X	X	214
221	Life science professionals	X	X	X	X	X	X	.	.	X	X	X	X	X	X	X	221
222	Health professionals (except nursing)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	222
223	Nursing and midwifery professionals	X	.	X	X	.	.	.	.	X	X	.	X	X	X	X	223
231	College, university and higher education teaching professionals	X	X	X	X	X	X	X	.	X	X	X	X	X	X	X	231
232	Secondary education teaching professionals	X	X	X	X	X	X	X	.	X	X	X	X	X	X	X	232
233	Primary and pre-primary education teaching professionals	X	X	.	X	.	.	X	.	X	X	X	X	X	X	X	233
234	Special education teaching professionals	.	X	X	X	.	.	.	.	.	X	X	X	X	X	X	234
235	Other teaching professionals	X	X	X	X	X	X	.	X	X	X	X	X	X	X	.	235

Code	Label	armen 2011	belaru 2009	boliv 1992	boliv 2001	botsw 2001	botsw 2011	cambo 1998	cambo 2004	cambo 2008	chile 1992	costar 2000	cuba 2002	ecuad 2001	egypt 2006	elsalv 1992	Code
241	Business professionals	.	X	X	X	X	X	X	.	X	X	X	X	X	X	X	241
242	Legal professionals	X	X	X	X	X	X	.	.	X	X	X	X	X	X	X	242
243	Archivists, librarians and related information professionals	X	.	X	X	X	X	.	.	X	X	X	X	X	X	X	243
244	Social science and related professionals	X	X	X	X	X	X	.	.	.	X	X	X	X	X	X	244
245	Writers and creative or performing artists	X	.	X	X	.	X	X	.	X	X	X	X	X	X	X	245
246	Religious professionals	X	.	X	X	X	X	X	.	X	X	X	X	X	X	X	246
299	Professionals no elsewhere classified	X	X	.	X	X	X	.	X	X	X	.	X	.	.	.	299
TECHNICIANS AND ASSOCIATE PROFESSIONALS																	
311	Physical and engineering science technicians	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	311
312	Computer associate professionals	X	.	X	X	X	X	.	.	.	X	X	X	X	X	X	312
313	Optical and electronic equipment operators	X	.	X	X	X	X	X	.	X	X	X	X	X	X	X	313
314	Ship and aircraft controllers and technicians	X	.	X	X	.	.	X	.	X	X	X	X	X	X	X	314
315	Safety and quality inspectors	X	.	X	X	X	X	.	.	.	X	X	X	X	X	X	315
321	Life science technicians and related associate professionals	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	321
322	Modern health associate professionals (except nursing)	X	X	X	X	X	X	X	.	X	X	X	X	X	X	X	322
323	Nursing and midwifery associate professionals	X	X	X	X	X	X	X	X	X	X	.	X	X	X	X	323
324	Traditional medicine practitioners and faith healers	.	.	X	X	X	X	X	.	X	X	.	.	.	.	.	324



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## Global Health Observatory data repository

[Data analysis](#)[By category](#)[By theme](#)

### Welcome to Global Health Workforce Statistics

#### In this section:

- [Medical doctors](#)
- [Nursing and midwifery personnel](#)
- [Dentistry personnel](#)
- [Pharmaceutical personnel](#)
- [Environmental and Occupational Health and Hygiene Personnel](#)
- [Medical and Pathology Laboratory Personnel](#)
- [Physiotherapy personnel](#)
- [Traditional and Complementary Medicine personnel](#)
- [Community Health Workers](#)
- [Other data sources](#)



# Resources

- Video tutorials: [ipums.org/support/tutorials](https://ipums.org/support/tutorials)
- User forum: [forum.ipums.org](https://forum.ipums.org)
- Data training exercises:  
[ipums.org/support/exercises](https://ipums.org/support/exercises)
- Dedicated user support: [ipums@umn.edu](mailto:ipums@umn.edu)