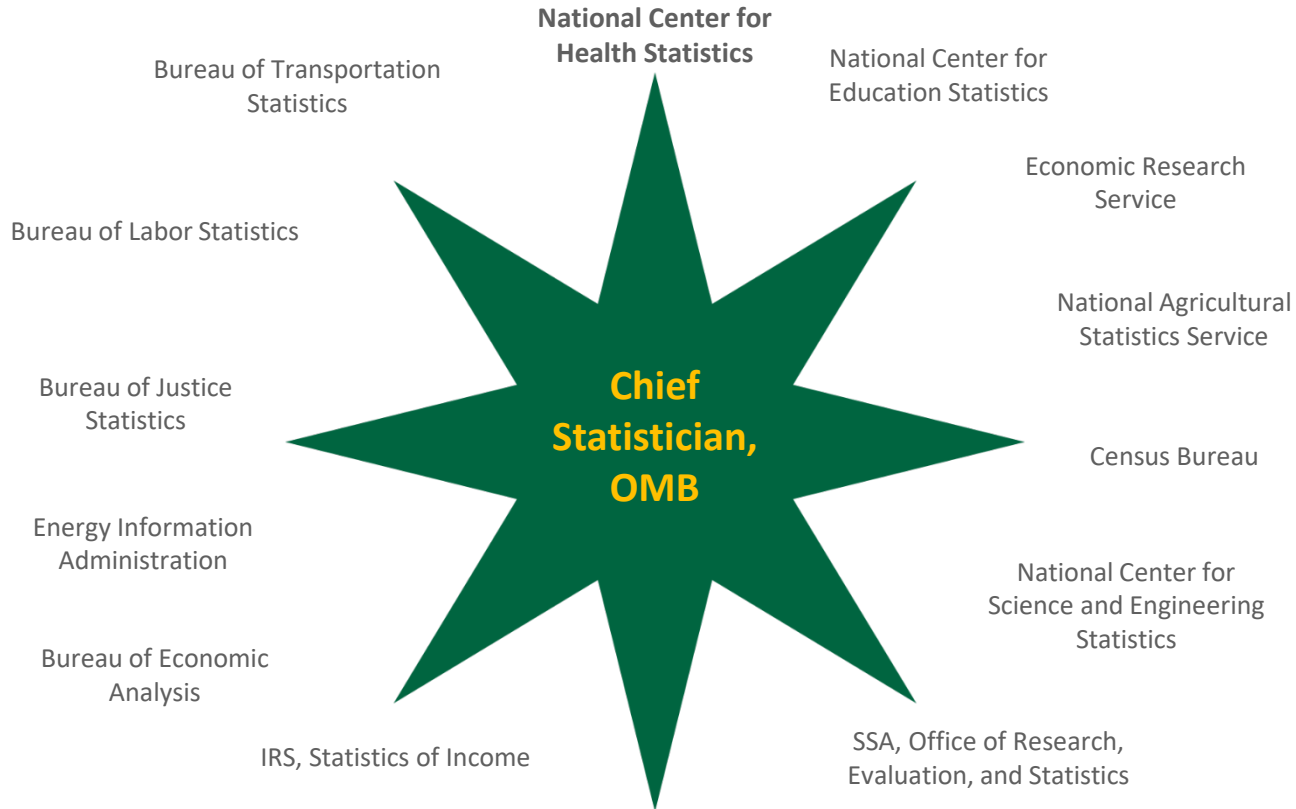# Introduction to NCHS and
Health, United States

Sheila Franco, Renee Gindi, Anne Mamish, and other members of *the Health, United States* Modernization Team

**2023 Federal Committee on Statistical Methodology
Research and Policy Conference**
October 24, 2023

Outline

- Introduce Centers for Disease Control and Prevention's National Center for Health Statistics

- What is *Health, United States*?

- Why redesign?

- What will be covered in today's session?

U.S. Principal Statistical Agencies

National Center for Health Statistics

Bureau of Transportation Statistics

National Center for Education Statistics

Economic Research Service

Bureau of Labor Statistics

National Agricultural Statistics Service

Bureau of Justice Statistics

Chief Statistician, OMB

Census Bureau

Energy Information Administration

National Center for Science and Engineering Statistics

Bureau of Economic Analysis

IRS, Statistics of Income

SSA, Office of Research, Evaluation, and Statistics

Health, United States: Background

- Published by the National Center for Health Statistics since 1975

- Congressionally mandated report from the Secretary of Health and Human Services to the President and Congress

- Educate and inform policymakers and the public about key health topics:
  - Health status and determinants
  - Healthcare utilization
  - Healthcare resources
  - Health expenditures and payers

Health, United States: Program Goals

- Educate and inform policymakers and the public about key health topics

- Bring together health information from multiple data sources

- Focus on trends over time

- Examine health disparities between population subgroups

NCHS Data Collections and *Health, United States*

National Vital Statistics System	National Survey of Family Growth	National Health Interview Survey	National Health and Nutrition Examination Survey	National Health Care Surveys	NCHS Data Linkage	Non-NCHS Data Sources

Health, United States brings reporting from these systems together with data from outside of NCHS for additional content and context.

Health, United States

Health, United States Components?

- At a Glance table

- Highlights

- Chartbook with special feature

- Trend tables

- Appendices
  - Data sources
  - Definitions and methods

- PowerPoint chartbook figures

- PDF and excel trend tables

Health, United States: Uses

- Find a statistic

- Monitor trends in the nation's health

- Set research and program priorities

- Develop policies and programs

- Evaluate progress toward meeting national health objectives

Why Redesign?

- Usability
- Findability
- Relevance
- Awareness

Session Goals

- Discuss the research NCHS conducted to inform the redesign

- Review the communication science and strategies that anchored the redesign

- Present the redesigned *Health, United States* suite of products

- Lessons learned

Health, United States Redesign Research and Findings

Sheila Franco, Renee Gindi, Ji-Eun Kim, Zakia Nelson, Ashley Woodall, and other members of *the Health, United States* Modernization Team

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Health, United States: Redesign Goals

Goals:

- Improve usability

- Improve findability

- Increase relevance

- Increase awareness

Design questions:

- What formats should be used to share information?

- What does a digital-first product look like?

- How do we modernize data access?

Health, United States Redesign Process
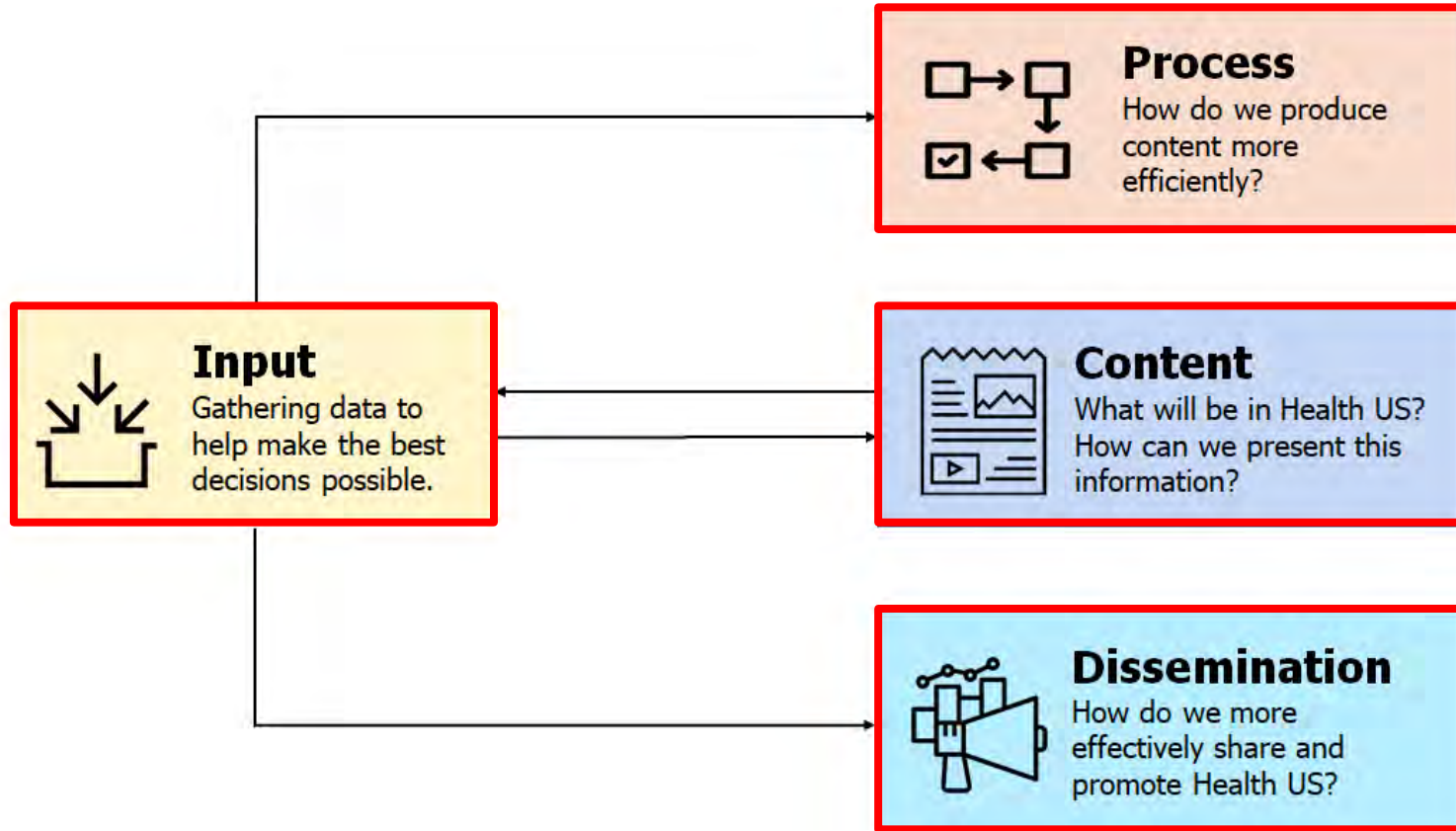
	Stakeholder interviews	▪ What do stakeholders think about the content, format, and dissemination of *Health, United States*?
	Web user survey	▪ Who are the people trying to access Health, United States online? What are they trying to access? How do they want to access it?
	Literature review	▪ How is Health, United States being cited (used) in publications? What parts of the report are most cited?
	Web analytics	▪ What is Health, United States doing successfully? What parts of the report are the most viewed or downloaded?
	Audience research	▪ How do policymakers, students, and researchers want to find, receive, and consume health information and data?
	Market analysis	▪ How do others (competitors, other agencies) provide data to their audience in terms of content and format?

Stakeholder Interviews

- Objective: Determine the features of a health statistics report that stakeholders need in terms of content, style, and dissemination.

- The interview questions were designed to determine how stakeholders use *Health, United States* or similar reports, and identify areas of the report that could be redesigned.

- 24 stakeholder interviews were conducted among:
  - Congressional staff members
  - Federal, state, and local government agencies
  - Academic institutions
  - Public health organizations

Stakeholder Interviews—Con.

- Stakeholders were asked a standard set of questions depending on their familiarity with *Health, United States*, such as:

    1. What kinds of questions require you to look for health statistics?

    2. What do you like about *Health, United States*? Are there particular sections, content, or features that you find particularly helpful?

    3. What do you dislike about *Health, United States*?

    4. What do you wish *Health, United States* (or NCHS more generally) were able to offer that is currently unavailable?

Stakeholder Interviews: Findings

- What format should be used to share information?

"**Get away from the PDF format** because it's not as searchable and won't be retrieved in Google searches."

Table HINone. No health insurance coverage among people under age 65, by selected characteristics: United States, selected years 1984–2019

Excel version (with more data years and standard errors when available): https://www.cdc.gov/nchs/hus/contents2020-2021.htm#Table-HINone

[Data are based on household interviews of a sample of the civilian noninstitutionalized population]

Characteristic	1984	1997	2000[1]	2005[2]	2009[2]	2014[2]	2015[2]	2017[2]	2018[2]	2019[2]
					Number (millions)					
Total, under 65 years[3]	29.8	41.0	41.4	42.1	46.2	35.7	28.7	28.9	30.0	32.5
					Percent of population					
Total, under 65 years[3]	14.5	17.5	17.0	16.4	17.5	13.3	10.6	10.7	11.0	12.0
Age group										
Under 19 years	14.1	14.4	12.9	9.7	8.5	5.7	4.8	5.2	5.5	5.2
Under 6 years	14.9	12.5	11.8	7.7	6.6	4.1	3.3	3.9	4.0	4.6
6–18 years	13.8	15.2	13.4	10.6	9.4	6.5	5.5	5.9	6.2	5.4
Under 18 years	13.9	14.0	12.6	9.3	8.2	5.4	4.5	5.0	5.2	5.1
6–17 years	13.4	14.7	13.0	10.1	9.0	6.1	5.1	5.5	5.8	5.3
18–64 years	14.8	19.0	18.9	19.3	21.2	16.3	13.0	12.8	13.2	14.5
18–44 years	17.1	22.4	22.4	23.5	25.9	19.7	15.9	15.4	15.4	17.0
18–24 years	25.0	30.1	30.4	29.1	29.6	18.1	14.6	14.0	14.3	15.7
19–25 years	25.1	31.5	32.3	31.7	32.8	19.7	16.0	15.2	14.9	17.5
25–34 years	16.2	23.8	23.3	25.6	27.8	22.7	18.0	17.0	16.9	18.6
35–44 years	11.2	16.7	16.9	17.9	21.4	17.7	14.6	14.7	14.4	16.2
45–64 years	9.6	12.4	12.6	12.9	14.6	11.8	9.0	9.3	10.2	11.1
45–54 years	10.5	12.8	12.8	14.2	16.5	13.7	10.2	10.7	12.0	12.3
55–64 years	8.7	11.8	12.4	11.1	12.2	9.7	7.7	7.9	8.5	10.0
Sex										
Male	15.3	18.7	18.1	17.9	19.4	14.7	12.0	11.9	12.1	13.0
Female	13.8	16.3	15.9	15.0	15.7	11.9	9.3	9.5	9.9	11.0

Stakeholder Interviews: Findings—Con.

- What does a digital-first product look like?

    Interested in a **"table of contents"** of **health data by topic**, from which a user can click into topics in any of the health reports, and information would be indexed in a way that one could look at the topic and go straight to the data rather than wading through the PDF reports.
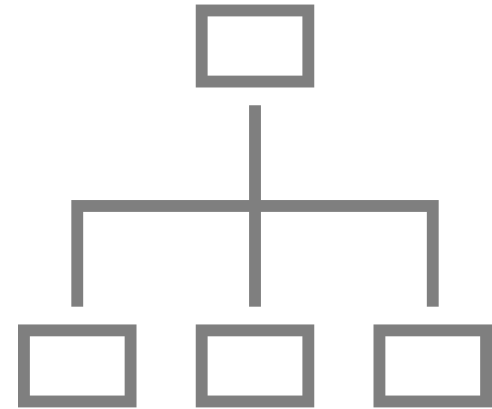
Stakeholder Interviews: Findings—Con.

- How do we modernize data access?

Stakeholders mentioned a preference for creating **custom views of the data**

"Website-driven and **interactive**"

"Things that are maximally flexible. **Picking variables** in interactive Excel spreadsheets with details is really useful."

"Interactivity to create **user-defined tables**, very simple in technical terminology"

Web User Surveys

- Objective: Learn more about HUS web audience, including who they are, what kind of work they do, what aspects of the HUS report they are looking for, what are their preferred ways to access to health statistics.

- Dependencies:
  - OMB approval
  - Web survey design
  - Communications and technology collaboration

Web User Surveys

- **NCHS Web Satisfaction Surveys, 2017–2019**
  - 14 questions: mostly multiple choice and likert scale
  - Fielded 3 months per year on NCHS website

- *Health, United States* **Web User Survey, 2019–2020**
  - 12 questions: multiple choice, likert scale, ranking, and open-ended
  - Estimated 10 minutes
  - Fielded for 3 months on Survey Monkey

- *Health, United States* **Pop-up Web Survey, 2020**
  - 2 questions: multiple choice only
  - Estimated 10–15 seconds
  - Fielded for 3 months on 4 products on the *Health, United States* website

Web Surveys: Findings
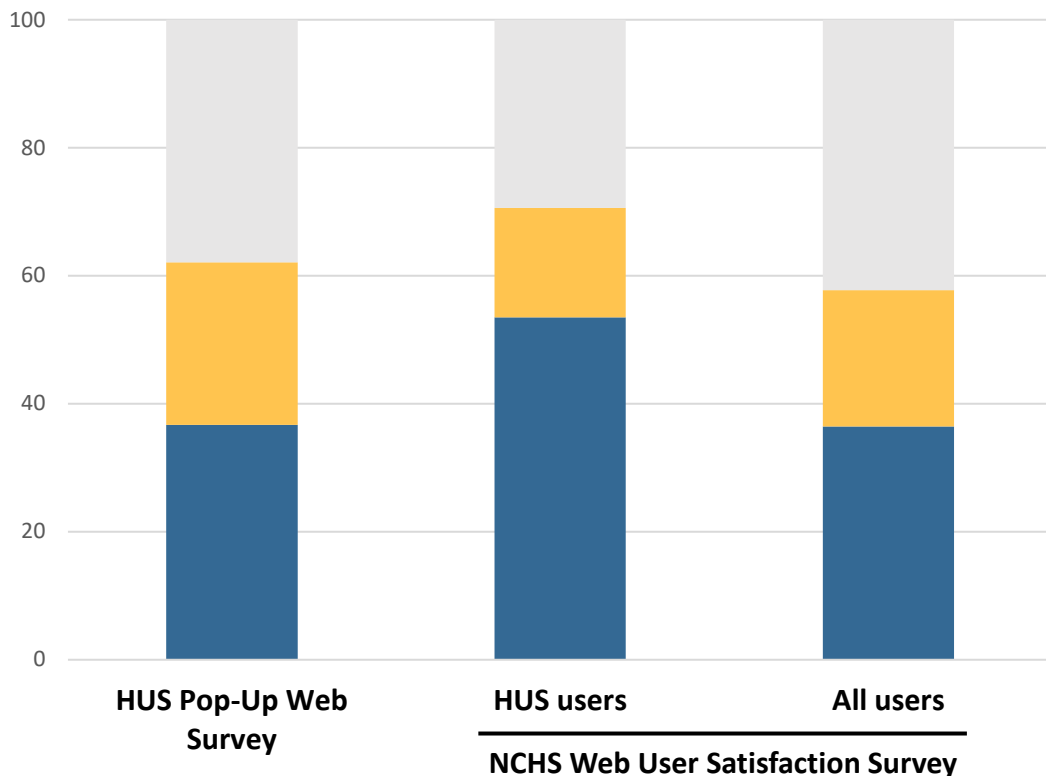
More than half of responses were from **students** or

those in **health-related fields**

Web Surveys: Findings—Con.

- **Policymakers** and **media are important audiences** for *Health, United States*, but they made up only a small percent (around 3%) of responses

- More than 80% of responses indicated the *Health, United States* products were helpful

Literature Review

- Objective: Understand **who** is citing HUS (government/academic/other), **what sections** are cited (chartbook, special feature, trend tables, highlights), and **what topics** are cited (special feature/core) to determine the utility of specific components of the report

- This project aimed to develop a catalog and tagging system that can be automated and run on a periodic basis

Literature Review: Findings

- *Health, United States* citations were found in **2,626 articles**

- **Trend tables** were the most often cited *Health, United States* product (83%)

HUS citations by product

Chartbook

Trend tables

Other

0   20   40   60   80   100

Percent
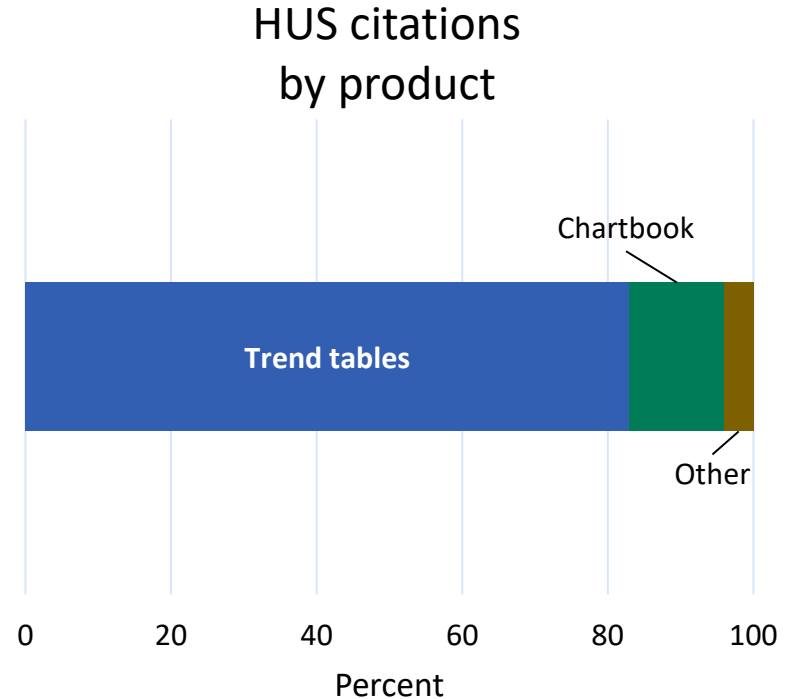
Literature review: Findings—Con.

- *Health, United States* topics were categorized into **55 major themes**

- The **top three themes** accounted for **66%** of all citations

- The **most cited topics** were:
  - Obesity/overweight
  - Prescription drug use
  - Leading causes of death
  - Mortality

Major Citation Themes

Theme	Number of citations
Chronic Conditions	81
Health Utilization	76
Mortality and Natality	67
Behavioral Risks	29
Health Determinants	27
Health Expenditure and Payers	19
Health Care Resources	8
Dental Health	8
Infectious Diseases	6
Mental Health	4
Injuries and Premature Death	4

Number of citations
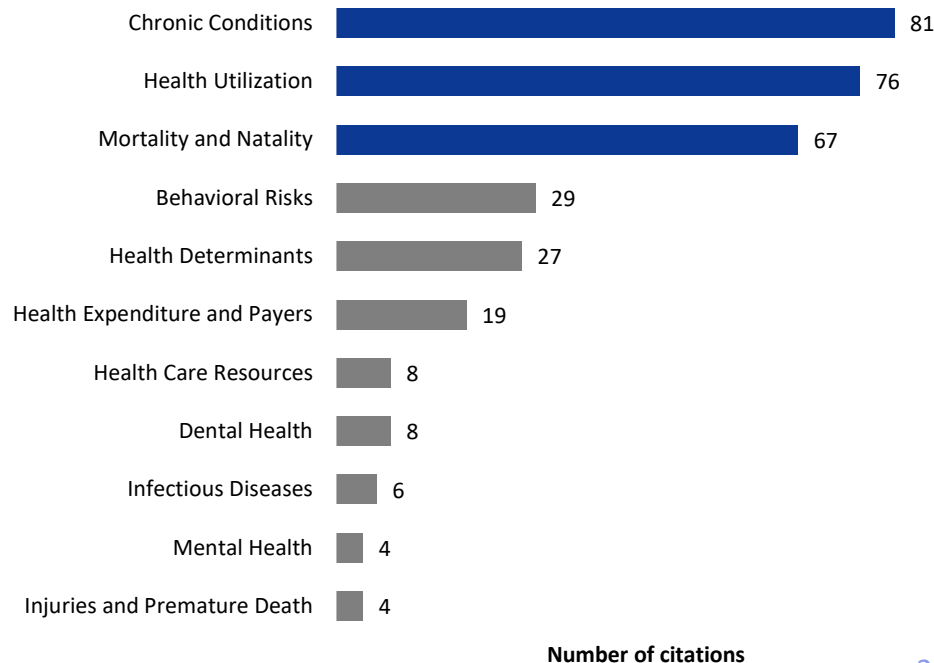
Web Analytics

- Objective: Gain familiarity with the Adobe Analytics platform and leverage Adobe Analytics metrics to answer questions about popular features and content in *Health, United States*

- As *Health, United States* moves towards a stronger digital-first program, creating a process for integrating Adobe Analytics into decision-making will be central to the product's success

- The volume of visits and downloads from the *Health, United States* website, as well as supplemental data sources like CDC Stacks were assessed

Web Analytics: Findings

Views to the **topic-based Data Finder** outpaced PDF downloads starting with the release of *Health, United States, 2018*.

Page views/file downloads
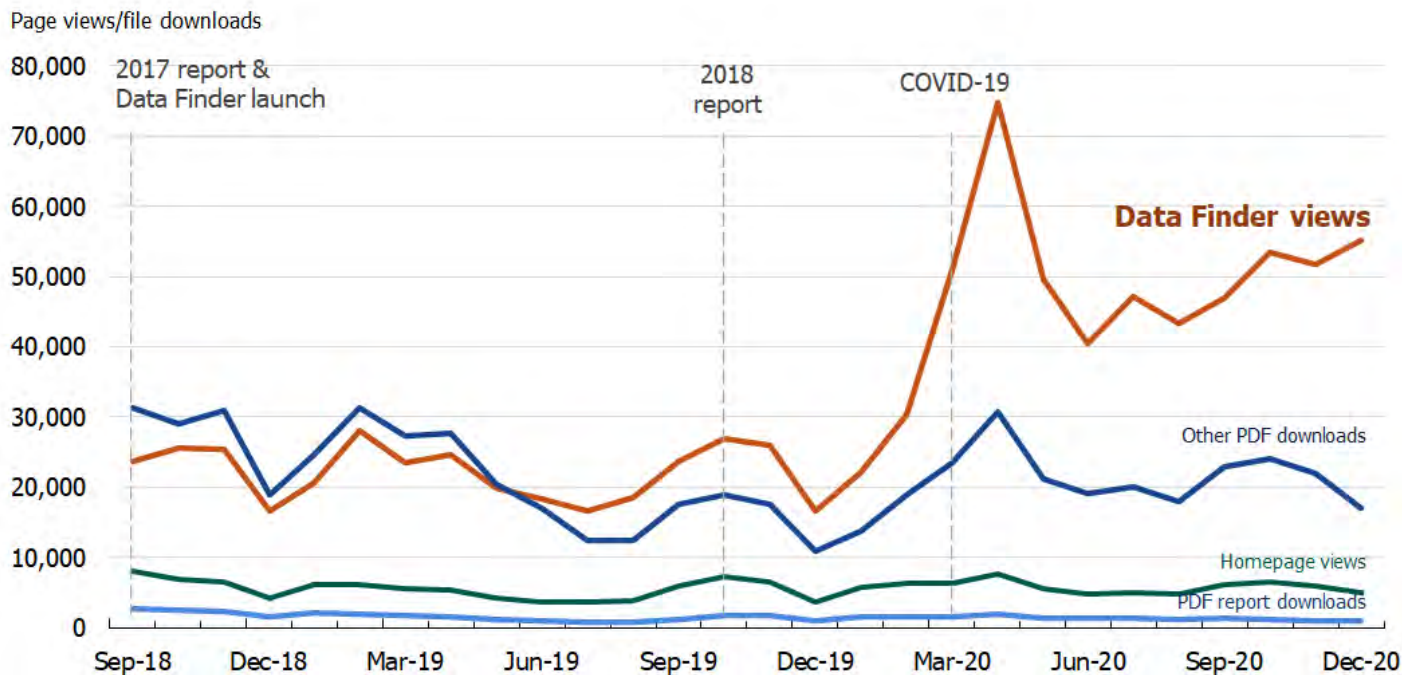
Audience Research

- Objective: Examine existing literature to determine how policymakers, students, and researchers prefer to find, receive, and consume health information and data.

- Literature search was limited to academic articles found on search engines like PubMed and Google Scholar using a combination of search terms, such as:
  - "audience + information preferences"
  - "audience + data discovery"
  - "audience + information retrieval"
  - "audience + information dissemination"

Audience Research: Findings

What does a digital-first product look like?

- **PDF is good for in-depth reading** and can be saved later as a lasting resource

- **HTML is good for immediate discovery** of content (search) and linking to additional information

—Aalbersberg (2013)

What format should be used to share information?

- "Researchers do not frequently use author names; rather, **keyword searching**, followed by detailed browsing through very long results lists, are more frequent strategies [….] Other social scientists search by **short keyword queries or social construct.**"

—Gregory (2019)

Market Analysis

- **Objective:**
  - Review successful statistical reports and websites with high uptake
  - Identify valuable design elements for incorporation into HUS prototypes
  - Stay updated on technology trends for visualization enhancement

- **Activities:**
  - Search for effective examples of statistical reports, data portals, and tools
  - Analyze content and format characteristics of identified examples
  - Store and categorize successful examples for reference

Market Analysis—Con.

- **Outputs:**
  - Comprehensive database of effective statistical reports, data portals, and tools

  - Database filterable by content and format elements

  - Report or presentation highlighting content and format characteristics of top examples

  - Matrix categorizing examples by feasibility

Market Analysis: Findings

What does a digital-first product look like?

~45% of the data products reviewed gave users the ability to **find or explore** the data dynamically

12 other formats
3 multiple formats (customizable)
17 data portals
7 visualizations (customizable)
5 visualizations (not customizable)
18 reports
62 total products reviewed
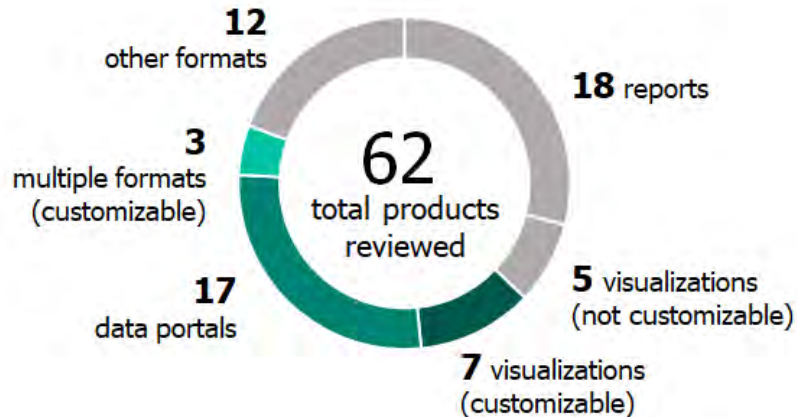
What format should be used to share information?

Over half of the products with a report component were **optimized for online display**. Many of these still had PDF components.

14 website with printable components
8 PDF-focused
5 website only
27 reports reviewed
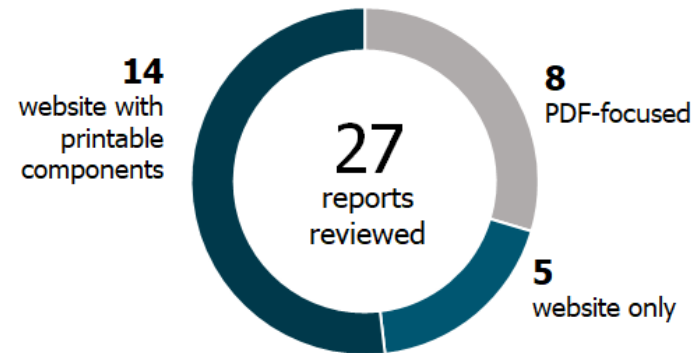
Market Analysis: Findings—Con.

Examples of popular format or design features:

- Find information by topic or indicator
  - — Search bar – city health dashboard
  - — Tabs, icons organized by topic or indicator –U.S Cancer Statistics
  - — Step-by-step query (question and answer layout) – AtlasPlus
  - — Drop-down menus for data visualization – Peterson-Kaiser Health System Tracker

- Icons or links to get to technical notes next to each figure – OECD.Stat

- Shareable resources – NCI Annual Report to the Nation

More Accessible | Interactive | Shareable
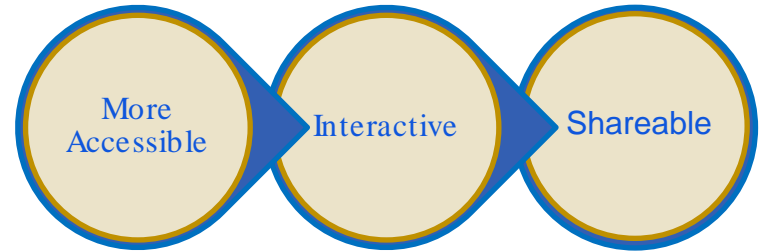
Conclusion

Health, United States redesign's systematic approach helped us understand **who** was using the report, **what** topics and analyses were most frequently used, and **why** stakeholder chose to use these data

Stakeholder interviews   Web user survey   Literature review   Web analytics   Audience research   Market analysis
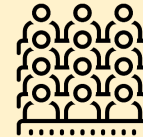
Conclusion: Next Steps

1

Create a suite of digital-first *Health, United States* products

2

Provide data more frequently

3

Transform trend tables into machine-readable datasets

4

Make data available on open platforms (data.cdc.gov)

5

Add interactivity for customized exploration

Integrating across **health topics** and **data systems** to examine **trends** in health statistics

Using communication science to redesign *Health, United States* products, develop dissemination strategies, and monitor user engagement

Christine Jones, Nora Castro, Melanie Collins, Zakia Nelson, Ashley Woodall, and other members of *the Health, United States* Modernization Team

2023 Federal Committee on Statistical Methodology Research and Policy Conference
October 24, 2023

Agenda

- Introduction
- Annual Perspective report
- Topic-based web pages
- Web and report metrics
- Promotion

Health, United States

Data from *Health, United States* are available
in two primary formats:

- Annual Perspective report
- Website
    - Topic-based webpage
    - Data finder

Annual Perspective

Changes made to improve the *Health, United States* annual report:

- Less content with more focused messaging
- More white space, bullets, and descriptive headers
- New "At a Glance" feature

Health, United States, 2020–2021

Annual Perspective

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention
National Center for Health Statistics

Annual Perspective—Con.

Excerpt from *Health, United States*, 2019

Excerpt from *Health United States*, 2020-2021: Annual Perspective

Topic-based Webpage on *Health, United States* Website

Created a new topic-based webpage for *Health, United States*. This new HTML addition improves data discovery and has several other benefits:

- HTML is easier to update
- HTML is smart-phone and tablet friendly
- Data are easier to find and use
- HTML provides better usage analytics

Web Metrics

- Total website visits (August 2022-August 2023): 598,710

  Frequently among NCHS' top 10 most visited sites

- Data finder visits (August 2022-August 2023): 347,876

- Most searched health topics:

  - Healthcare expenditures
  - Heart disease prevalence
  - Heart disease deaths
  - Births
  - Hospitalization
  - Illicit drug use
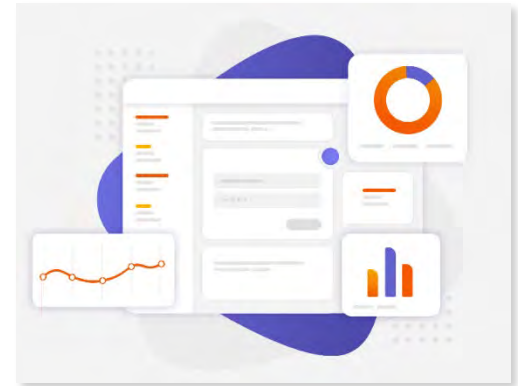
Report Metrics

- *Health, United States*, 2020-2021: Annual Perspective report downloads (January 2022-August 2022): **10,626**

  Health, United States, 2019 annual report downloads (March 2021-September 2021): **8,639**

- Percentage of unique monthly visitors to the website **increased 54%** in January—the month the Annual Perspective was released

Promotion

Marketing strategies used to increase the reach and impact of *Health, United States*:

✉ Sent Adobe Campaign and *Health, United States* listserv notification to **29,000 subscribers**

🏛 Notified Congress

📰 Distributed a press release and media advisory to **more than 500 reporters**

👍 Promoted website and report on social media

🖥 Presented a webinar to **280 attendees**

Reporting on the Nation's Health in *Health, United States*

February 16, 2023

Presented by:

Renee Gindi, PhD, Chief

Sheila Franco, MS, Health Statistician

Population Health Research and Dissemination Branch
Division of Analysis and Epidemiology

Centers for Disease Control and Prevention
National Center for Health Statistics
CDC

Unequal distribution of dentists creates shortages in some states

The national supply of dentists ↑ **increased** from 2010 to 2020, but

60 MILLION AMERICANS

live in areas with a **shortage of dentists**

In 2020, Arkansas, Alabama, and Mississippi had the lowest rate of dentists while Washington D.C., Massachusetts, and Alaska had the highest rate per capita

AR, AL, MS, MA, DC, AK

MALES DIE YOUNGER THAN FEMALES

High risk behaviors in males are related to risk of early death from injuries and disease

Males are more likely to die from

Leading causes of death

HEART DISEASE   **CANCER**

Males were more likely than females to die of the top two leading causes of death in 2019

Injury deaths
related to violence and drugs

SUICIDE AND HOMICIDE

Males died **3x** to **4x** as often as females from 2009 to 2019

DRUG OVERDOSE

Males died **2x** as often as females in 2019

Substance use is more common in males

HEAVY ALCOHOL USE

2x as likely in males as females from 2015 to 2019

SMOKING

15.5% of men compared with 13.0% of women in 2019

ILLICIT DRUG USE

1.5x as likely in males as females from 2015 to 2019

Males use less health care

Doctor visit rate was **27% LOWER** in males than females in 2018

Emergency department visit rate for adults aged 18–44 was lower in men than women in 2018

Men	33 visits per 100 men
Women	49 visits per 100 women
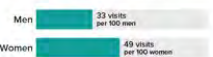
PATTERNS IN HOSPITAL USE AND PAYMENTS

Emergency department visits and hospital stays differ by health insurance coverage

People with Medicaid are more likely to

Visit the **emergency department (ED)**

Percentage of adults aged 18–64 in 2019 who visited the ED in the past year, by payer

Medicaid	37.7%
Private health insurance	16.5%
Uninsured	22.1%

Have a **hospital stay**

Percentage of people aged 1–64 in 2019 with a hospital stay in the past year, by payer

Medicaid	10.8%
Private health insurance	4.8%
Uninsured	4.7%

These findings may reflect higher rates of disability and chronic conditions among people with Medicaid. For more information, see level of difficulty estimates in Tables HIPriv, HIMcaid, and HINone on www.cdc.gov/nchs/hus/data-finder.htm.

Private insurance pays the largest portion of hospital expenditures

For all ages, one-third of **personal healthcare spending** in 2019 was on hospital care

Percentage of hospital expenditures in 2019, by payer

- Medicaid 17.3%
- Other* 19.4%
- Medicare 26.5%
- Private health insurance 36.8%

*Includes other payers and programs and self-pay.

Summary

Communication science methods used to improve *Health, United States*:

- Redesigned the Annual Perspective report to make it more engaging, readable, and visually appealing

- Released more information in html format to increase discoverability and usability and to obtain better, more informative metrics

- Created a strong brand identity for *Health, United States* to increase recognition and trust among users

- Promoted *Health, United States* in different ways to increase impact and reach

Reporting on the Nation's Health in *Health, United States*

Renee Gindi, Sheila Franco, Elizabeth Heitz, Zakia Nelson, Ashley Woodall, and other members of *the Health, United States* Modernization Team

**2023 Federal Committee on Statistical Methodology
Research and Policy Conference**
October 24, 2023

Outline

- New design for *Health, United States* products

- Findings from *Health, United States, 2020–2021*

- What's next for *Health, United States*?

Introducing the Redesigned *Health, United States*

Website
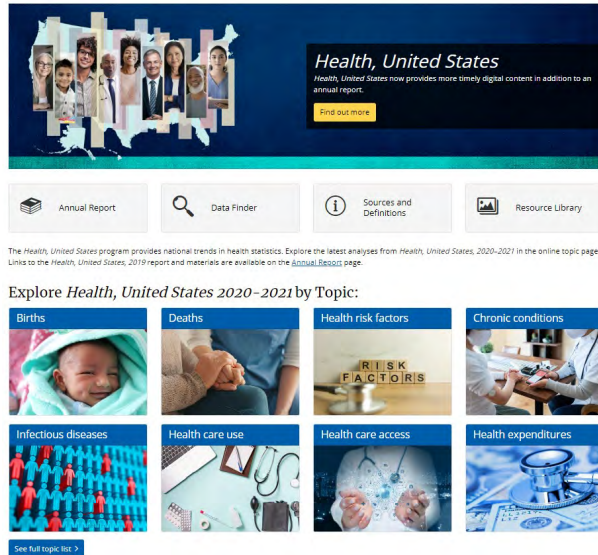
Presents *Health, United States* analyses and data by topic

Annual Perspective

Integrates *Health, United States* analyses to explore a single theme

Health, United States: Included in the 2020–2021 Edition

- **23 topic pages** with key findings, featured charts, and data downloads

- **43 updated trend tables** available for download in the Data Finder

- **96 sources and definitions pages** describing data sources, methods, and terms used in *Health, United States*

New: Find Analyses by Health Topic

New: National Trends and Trends by Selected Groups

New: Visual Trend Summary

Figure 1. Cancer death rates, by sex: United States, 2009–2019

New: Links to Data Tables and Definitions

New: Searchable Sources and Definitions

Sources and definitions

Search or filter to learn about

- Data sources
- Statistical methods
- Definitions of terms

New: Browse 5 Years of *Health, United States* Tables

Data finder

- Search all report editions since 2016

- Filter by 90+ health topics and 20+ population subgroups

- Trend tables available in Excel and PDF formats

New: Infographics

Infographic gallery

- Infographics presenting 3 health areas from the *Annual Perspective*

- Multi-panel and single panel graphics for sharing in varied settings

Health, United States, 2020–2021: Annual Perspective

Health, United States, 2020–2021

Annual Perspective

U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
Centers for Disease Control and Prevention
National Center for Health Statistics

- New *Health, United States* publication explores one theme across multiple health topics and data sources
  - Integrates selected analyses from other *Health, United States* products
  - Improves relevance by meeting the needs of multiple audiences

Health, United States, 2020–2021 Annual Perspective
Focus on Health Disparities
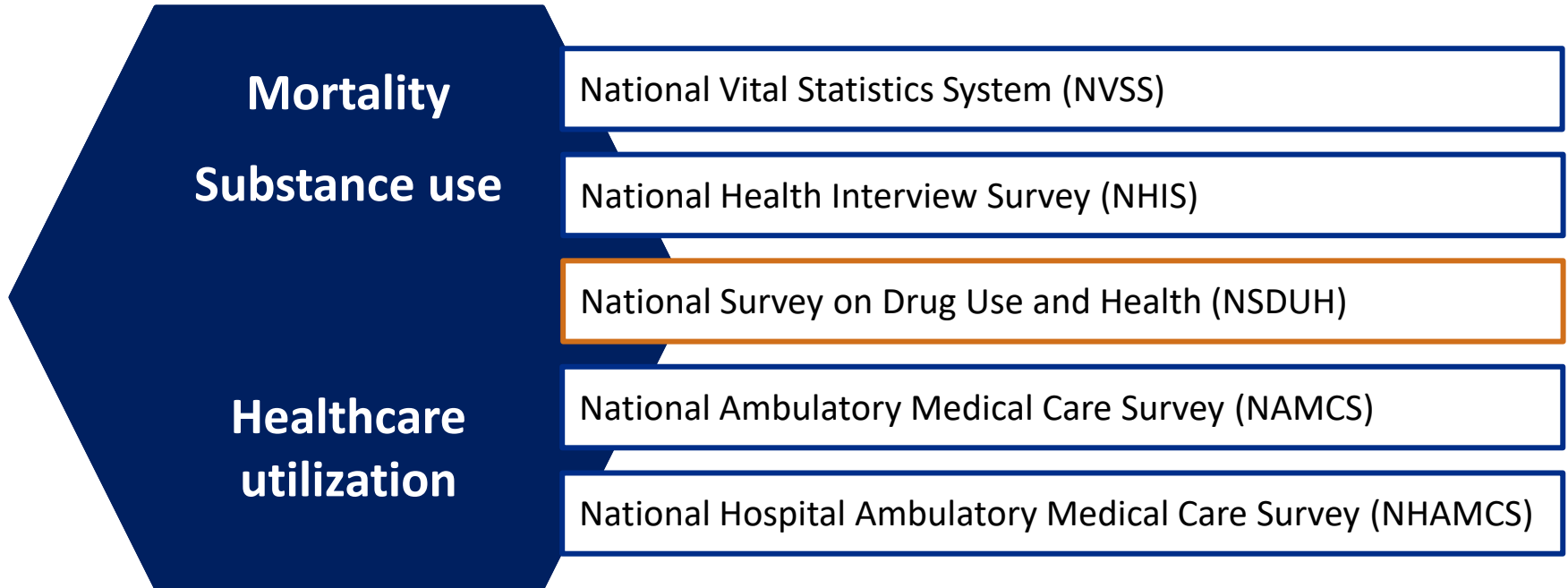

- The 2020–2021 edition theme is **health disparities**

- Health disparities are differences in health outcomes that are closely linked with sociodemographic, economic, or environmental disadvantage
  - The *2020–2021 Annual Perspective* examines disparities by sex, race and ethnicity, insurance status, poverty level, and education

Health, United States, 2020–2021: Annual Perspective
Health Areas Covered
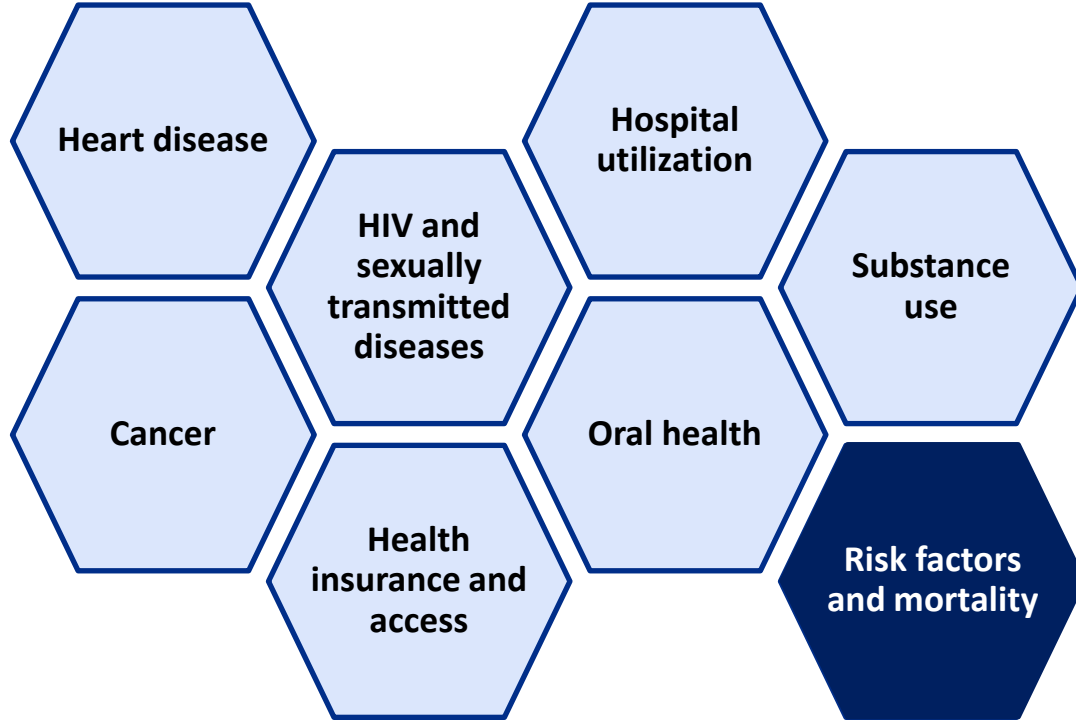
Risk Factors and Mortality: Disparities by Sex

Mortality

Substance use

Healthcare utilization

National Vital Statistics System (NVSS)

National Health Interview Survey (NHIS)

National Survey on Drug Use and Health (NSDUH)

National Ambulatory Medical Care Survey (NAMCS)

National Hospital Ambulatory Medical Care Survey (NHAMCS)

Males die younger, have higher substance use, and fewer health care visits

Males were more likely than females to die from the five leading causes of death

Risk Factors and Mortality by Sex

Males die younger, have higher substance use, and fewer healthcare visits

Mortality

Males were more likely than females to die from all causes and the five leading causes of death.

- While **all-cause mortality** decreased from 2009 to 2019, it remained one and four-tenths times as high in males as females (846.7 per 100,000 in males compared with 602.7 in females in 2019) (Table SlctMort [https://www.cdc.gov/nchs/hus/contents2020-2021.htm#Table-SlctMort], age-adjusted estimates). In 2019, this difference was largest in those aged 15–24 (two and six-tenths times as high) and 25–34 (two and two-tenths times as high) (66,67).

- For the **five leading causes of death**—heart disease, cancer, unintentional injuries, chronic lower respiratory diseases, and cerebrovascular diseases—death rates were higher in males than females in 2019 (Table LCODRace [https://www.cdc.gov/nchs/hus/contents2020-2021.htm#Table-LCODRace]; Table SlctMort [https://www.cdc.gov/nchs/hus/contents2020-2021.htm#Table-SlctMort]).
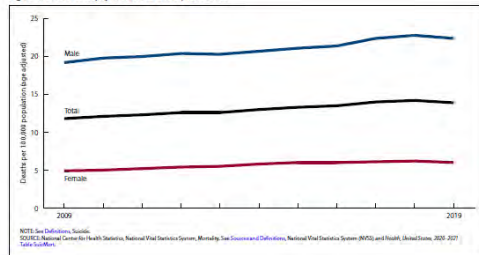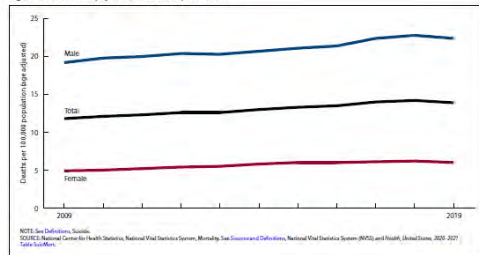
AT A GLANCE

Background

Males have higher mortality and lower life expectancy than females (6). Males are more likely to engage in risky behavior, such as substance use (59), and less likely to take preventive health measures, such as wearing seatbelts (68). Substance use is related to injury deaths (69–72). Men are less likely to use healthcare services (73,74), which may affect their receipt of preventive and curative care.

Select findings

Males have higher substance use and lower use of health care than females. Despite a decrease in deaths for males and females, males continue to die at younger ages than females.

Figure 8. Suicide rates, by sex: United States, 2009–2019

NOTE: See Definitions, Suicide.
SOURCE: National Center for Health Statistics, National Vital Statistics System, Mortality. See Sources and Definitions, National Vital Statistics System (NVSS) and Health, United States, 2020–2021 Table SlctMort.

22 Health, United States, 2020–2021: Annual Perspective

Compared with females, males died three times as often from suicide and four times as often from homicide.

- The age-adjusted **suicide** rate increased from 2009 (11.8 per 100,000) to 2019 (13.9); however, the rate in 2019 was lower than the rate in 2018 (14.2). During this time, males remained three to four times as likely as females to die from suicide (22.4 per 100,000 compared with 6.0 in females in 2019) (Figure 8).

- Males (9.6 per 100,000) were four times as likely to die from **homicide** as females (2.4) in 2019 (Table SlctMort [https://www.cdc.gov/nchs/hus/contents2020-2021.htm#Table-SlctMort], age-adjusted estimates).

- In 2019, males (29.6 per 100,000) were more than two times as likely as females (13.7) to **die from a drug overdose**—a leading cause of injury death. This difference was greatest in those aged 25–34 (49.7 in males compared with 21.1 in females) (Table ODMort [https://www.cdc.gov/nchs/hus/contents2020-2021.htm#Table-ODMort], age-adjusted estimates).

Substance use

More males than females reported current use of tobacco, drugs, and alcohol.

- In 2019, fewer adults **smoked cigarettes** than in the past several decades, but prevalence remained higher among men (15.5%) than women (13.0%) (Table SmokSex [https://www.cdc.gov/nchs/hus/contents2020-2021.htm#Table-SmokSex], age-adjusted estimates).

- Among 12th graders, cigarette smoking in the past 30 days was higher among males (6.9%) than females (4.0%) in 2019 (Table SubUseTn [https://www.cdc.gov/nchs/hus/contents2020-2021.htm#Table-SubUseTn]).

- **Nicotine vaping** has increased in recent years (75). In 2019, nicotine vaping in the past 30 days was more common among 12th grade males (28.1%) than females (22.9%) (Table SubUseTn [https://www.cdc.gov/nchs/hus/contents2020-2021.htm#Table-SubUseTn]).

- **Illicit drug use** in the past 30 days among people aged 12 and over was about one and one-half times as high among males as females from 2015 to 2019 (15.5% for males compared with 10.7% of females in 2019) (Table SubUse [https://www.cdc.gov/nchs/hus/contents2020-2021.htm#Table-SubUse]).

- Males were twice as likely as females to engage in **heavy alcohol use** in the past 30 days from 2015 to 2019 (7.6% of males compared with 4.2% of females in 2019) (Table SubUse [https://www.cdc.gov/nchs/hus/contents2020-2021.htm#Table-SubUse]).

Healthcare utilization

Fewer trips to physicians and emergency departments were made by young men than young women.

- In 2019, men (73.6%) were less likely than women (83.9%) to have had a wellness visit in the past 12 months (76).

- Fewer **visits to physicians** were made by males (224 visits per 100 males) than females (308 visits per 100 females) in 2018. This difference was largest in adults aged 18–44 (103 visits per 100 men compared with 243 visits per 100 women) (Table HCareVis [https://www.cdc.gov/nchs/hus/contents2020-2021.htm#Table-HCareVis]).

- Fewer **visits to hospital emergency departments** were made by men (33 visits per 100 men) than women (49 visits per 100 women) in adults aged 18–44 in 2018 (Table HCareVis [https://www.cdc.gov/nchs/hus/contents2020-2021.htm#Table-HCareVis]).

Health, United States, 2020–2021: Annual Perspective 23

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Males were more likely than females to die from the five leading causes of death: Heart disease

Health, United States, 2020–2021

Heart Disease Deaths

Print

Heart disease has been the leading cause of death in the United States since 1950 (1). Risk factors for heart disease include high blood pressure, high cholesterol, smoking, diabetes, overweight and obesity, unhealthy diet, physical inactivity, and excessive alcohol use (2).

| FEATURED CHARTS | EXPLORE DATA | DEFINITIONS | REFERENCES |

Key Findings

2009	2019	Trend: 2009–2019
182.8 Age-adjusted heart disease deaths per 100,000 population	**161.5** Age-adjusted heart disease deaths per 100,000 population	

The age-adjusted heart disease death rate decreased from 182.8 per 100,000 in 2009 to 170.5 in 2012, and then decreased at a slower rate to 161.5 in 2019. A total of 659,041 people died of heart disease in 2019. See Featured Charts for additional analysis.

SOURCE: National Center for Health Statistics, National Vital Statistics System, Mortality. See Sources and Definitions, National Vital Statistics System (NVSS) and *Health, United States, 2020–2021* Table SlctMort .

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Figure 1. Heart disease death rates, by sex: United States, 2009–2019
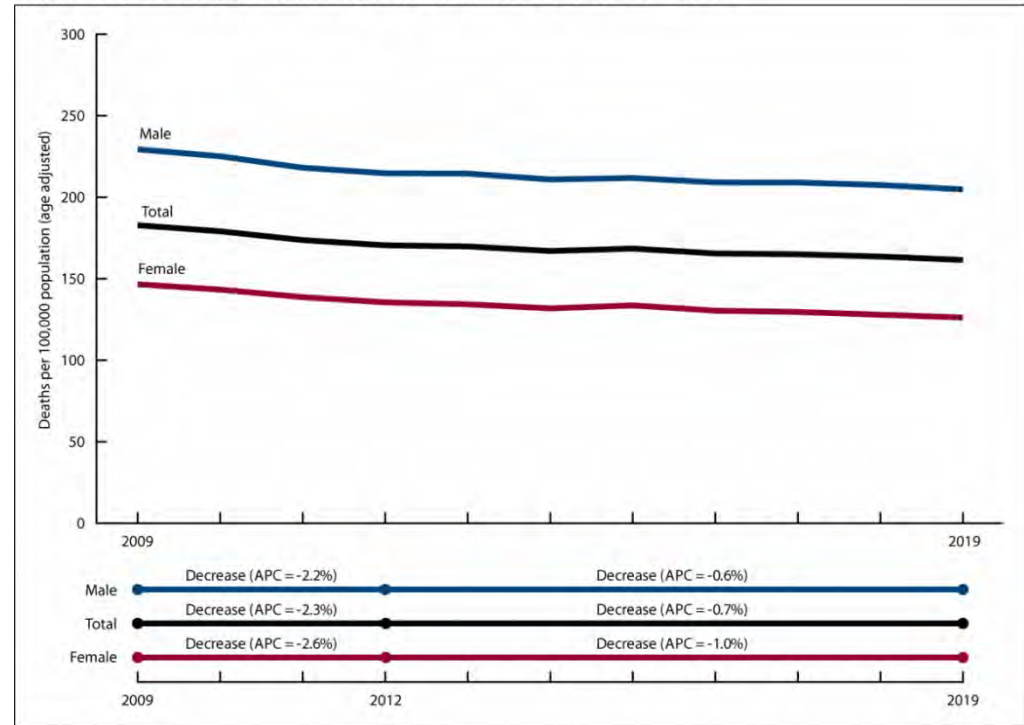
Males were more likely than females to die from the five leading causes of death: Cancer

Health, United States, 2020–2021

Cancer Deaths

Print

Cancer has been one of the top two leading causes of death for more than 75 years (1,2). Deaths from cancer have decreased over the past 3 decades (Table SlctMort), reflecting factors such as the decrease in cigarette smoking and increased use of cancer screening tests (3).

| FEATURED CHARTS | EXPLORE DATA | DEFINITIONS | REFERENCES |

Key Findings

| 2009	2019	Trend: 2009-2019
173.5 Age-adjusted cancer deaths per 100,000 population	**146.2** Age-adjusted cancer deaths per 100,000 population	

Age-adjusted cancer deaths per 100,000 population decreased from 173.5 in 2009 to 155.8 in 2016, and then decreased at a faster rate to 146.2 in 2019. A total of 599,601 people died of cancer in 2019. See Featured Charts for additional analysis.

SOURCE: National Center for Health Statistics, National Vital Statistics System, Mortality. See Sources and Definitions, National Vital Statistics System (NVSS) and Health, United States, 2020–2021 Table SlctMort .

Figure 1. Cancer death rates, by sex: United States, 2009–2019

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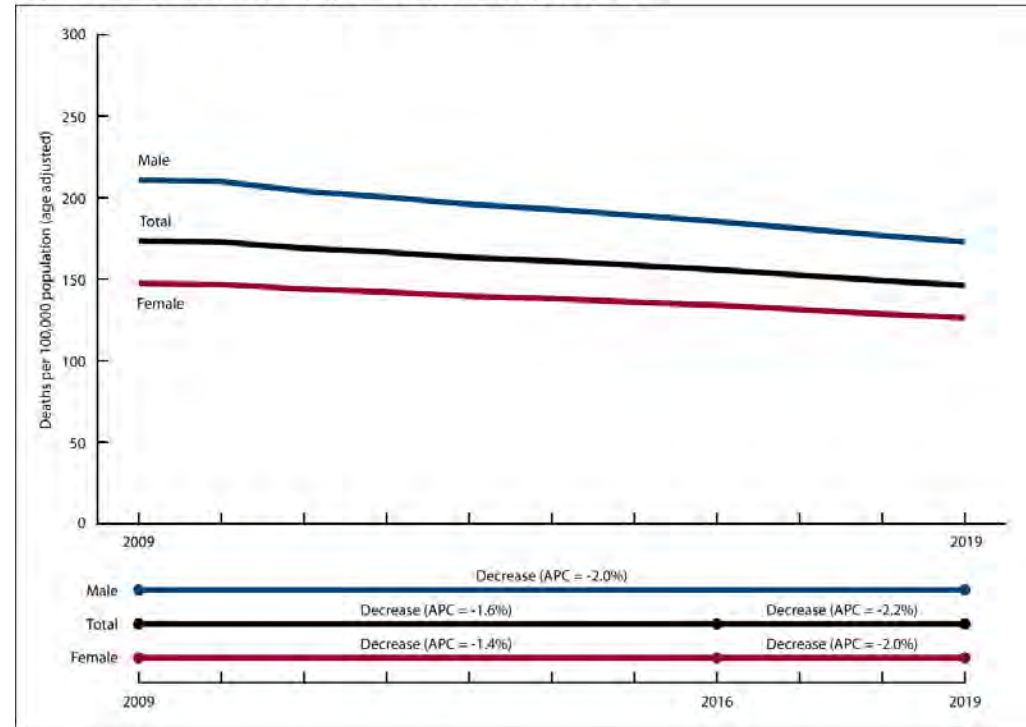
Males were more likely than females to die from the five leading causes of death: Trend table

Table SlctMort. Age-adjusted death rates for selected causes of death, by sex, race, and Hispanic origin: United States, selected years 1950–2019

Excel version (with more data years and standard errors when available): https://www.cdc.gov/nchs/hus/contents2020-2021.htm#Table-SlctMort

[Data are based on death certificates]

Sex and cause of death[1]	1950[2,3]	1960[2,3]	1970[3]	1980[3]	1990[3]	2000[4]	2005[4]	2009[4]	2018[4]	2019[4]
All people	Age-adjusted deaths per 100,000 population[5]									
All causes	1,446.0	1,339.2	1,222.6	1,039.1	938.7	869.0	815.0	749.6	723.6	715.2
Diseases of heart	588.8	559.0	492.7	412.1	321.8	257.6	216.8	182.8	163.6	161.5
Ischemic heart disease	- - -	- - -	- - -	345.2	249.6	186.8	148.2	117.7	90.9	88.0
Cerebrovascular diseases	180.7	177.9	147.7	96.2	65.3	60.9	48.0	39.6	37.1	37.0
Malignant neoplasms	193.9	193.9	198.6	207.9	216.0	199.6	185.1	173.5	149.1	146.2
Trachea, bronchus, and lung	15.0	24.1	37.1	49.9	59.3	56.1	52.7	48.4	34.8	33.4
Colon, rectum, and anus	- - -	30.3	28.9	27.4	24.5	20.8	17.7	16.0	13.4	13.1
Chronic lower respiratory diseases[6,7]	- - -	- - -	- - -	28.3	37.2	44.2	43.9	42.7	39.7	38.2
Influenza and pneumonia[7]	48.1	53.7	41.7	31.4	36.8	23.7	21.0	16.5	14.9	12.3
Chronic liver disease and cirrhosis	11.3	13.3	17.8	15.1	11.1	9.5	8.9	9.1	11.1	11.3
Diabetes mellitus[8]	23.1	22.5	24.3	18.1	20.7	25.0	24.9	21.0	21.4	21.6
Alzheimer's disease[9]	- - -	- - -	- - -	- - -	- - -	18.1	24.0	24.2	30.5	29.8
Human immunodeficiency virus (HIV) disease	...	...	...	...	10.2	5.2	4.2	3.0	1.5	1.4
Unintentional injuries	78.0	62.3	60.1	46.4	36.3	34.9	39.5	37.5	48.0	49.3
Motor vehicle-related injuries	24.6	23.1	27.6	22.3	18.5	15.4	15.2	11.6	11.7	11.5
Poisoning	2.5	1.7	2.8	1.9	2.3	4.5	8.0	10.3	19.3	20.2
Nephritis, nephrotic syndrome and nephrosis[8]	- - -	- - -	- - -	9.1	9.3	13.5	14.7	15.1	12.9	12.7
Suicide[10]	13.2	12.5	13.1	12.2	12.5	10.4	10.9	11.8	14.2	13.9
Homicide[10]	5.1	5.0	8.8	10.4	9.4	5.9	6.1	5.5	5.9	6.0
Male										
All causes	1,674.2	1,609.0	1,542.1	1,348.1	1,202.8	1,053.8	971.9	890.9	855.5	846.7
Diseases of heart	699.0	687.6	634.0	538.9	412.4	320.0	268.2	229.4	207.5	204.8
Ischemic heart disease	- - -	- - -	- - -	459.7	328.2	241.4	192.3	156.2	124.5	120.9
Cerebrovascular diseases	186.4	186.1	157.4	102.5	68.5	62.4	48.4	39.9	37.6	37.6
Malignant neoplasms	208.1	225.1	247.6	271.2	280.4	248.9	227.2	210.9	176.8	172.9

Health, United States, 2020–2021

Cause of death

Print

For national mortality statistics, every death is attributed to one underlying condition, based on information reported on the death certificate and using international rules for selecting the underlying cause of death from the conditions stated on the certificate. The underlying cause is defined by the World Health Organization as "the disease or injury that initiated the train of morbid events leading directly to death, or the circumstances of the accident or violence which produced the fatal injury." Generally, more medical information is reported on death certificates than is directly reflected in the underlying cause of death. Conditions that are not selected as the underlying cause of death constitute the nonunderlying causes of death, also known as multiple cause of death.

Cause of death is coded according to the appropriate revision of the *International Classification of Diseases* (ICD) (see Sources and Definitions, *International Classification of Diseases* [ICD]). Effective with deaths occurring in 1999, the United States began using the 10th revision of ICD (ICD–10); during 1979–1998, causes of death were coded and classified according to the 9th revision (ICD–9). COD-Table lists ICD codes for the 6th through 10th revisions for causes of death shown in *Health, United States*. In *Health, United States*, common terms are sometimes used in the text in place of medical terminology. Examples include cancer for "malignant neoplasm" and kidney disease for "nephritis, nephrotic syndrome and nephrosis."

Each ICD revision has produced discontinuities in cause-of-death trends. These discontinuities are measured by using comparability ratios that are essential to the interpretation of mortality trends. (Also see Sources and Definitions, Comparability ratio.) For further discussion, see: https://www.cdc.gov/nchs/nvss/mortality/comparability_icd.htm. (Also see Sources and Definitions, Comparability ratio; *International Classification of Diseases* [ICD]; and National Vital Statistics System [NVSS], Multiple Cause-of-Death File.)

COD-Table. Cause-of-death codes, by applicable revision of International Classification of Diseases (ICD)

Cause of death (10th revision titles)	6th and 7th revisions	8th revision	9th revision	10th revision
Communicable diseases	...	...	001–139, 460–466, 480–487, 771.3	A00–B99, J00–J22
Chronic and noncommunicable diseases	...	...	140–459, 470–478, 490–799	C00–I99, J30–R99

Males died three times as often from suicide

Risk Factors and Mortality by Sex

Males die younger, have higher substance use, and fewer healthcare visits

Mortality

Males were more likely than females to die from all causes and the five leading causes of death.

- While **all-cause mortality** decreased from 2009 to 2019, it remained one and four-tenths times as high in males as females (846.7 per 100,000 in males compared with 602.7 in females in 2019) (Table SlctMort [https://www.cdc.gov/nchs/hus/contents2020-2021.htm#Table-SlctMort], age-adjusted estimates). In 2019, this difference was largest in those aged 15–24 (two and six-tenths times as high) and 25–34 (two and two-tenths times as high) (66,67).

- For the **five leading causes of death**—heart disease, cancer, unintentional injuries, chronic lower respiratory diseases, and cerebrovascular diseases—death rates were higher in males than females in 2019 (Table LCODRace [https://www.cdc.gov/nchs/hus/contents2020-2021.htm#Table-LCODRace]; Table SlctMort [https://www.cdc.gov/nchs/hus/contents2020-2021.htm#Table-SlctMort]).

AT A GLANCE

Background

Males have higher mortality and lower life expectancy than females (6). Males are more likely to engage in risky behavior, such as substance use (59), and less likely to take preventive health measures, such as wearing seatbelts (68). Substance use is related to injury deaths (69–72). Men are less likely to use healthcare services (73,74), which may affect their receipt of preventive and curative care.

Select findings

Males have higher substance use and lower use of health care than females. Despite a decrease in deaths for males and females, males continue to die at younger ages than females.

Figure 8. Suicide rates, by sex: United States, 2009–2019

NOTE: See Definitions, Suicide.
SOURCE: National Center for Health Statistics, National Vital Statistics System, Mortality. See Sources and Definitions, National Vital Statistics System (NVSS) and Health, United States, 2020–2021, Table SlctMort.

Compared with females, males died three times as often from suicide and four times as often from homicide.

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- In 2019, males (29.6 per 100,000) were more than two times as likely as females (13.7) to **die from a drug overdose**—a leading cause of injury death. This difference was greatest in those aged 25–34 (49.7 in males compared with 21.1 in females) (Table ODMort [https://www.cdc.gov/nchs/hus/contents2020-2021.htm#Table-ODMort], age-adjusted estimates).

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- Males were twice as likely as females to engage in **heavy alcohol use** in the past 30 days from 2015 to 2019 (7.6% of males compared with 4.2% of females in 2019) (Table SubUse [https://www.cdc.gov/nchs/hus/contents2020-2021.htm#Table-SubUse]).
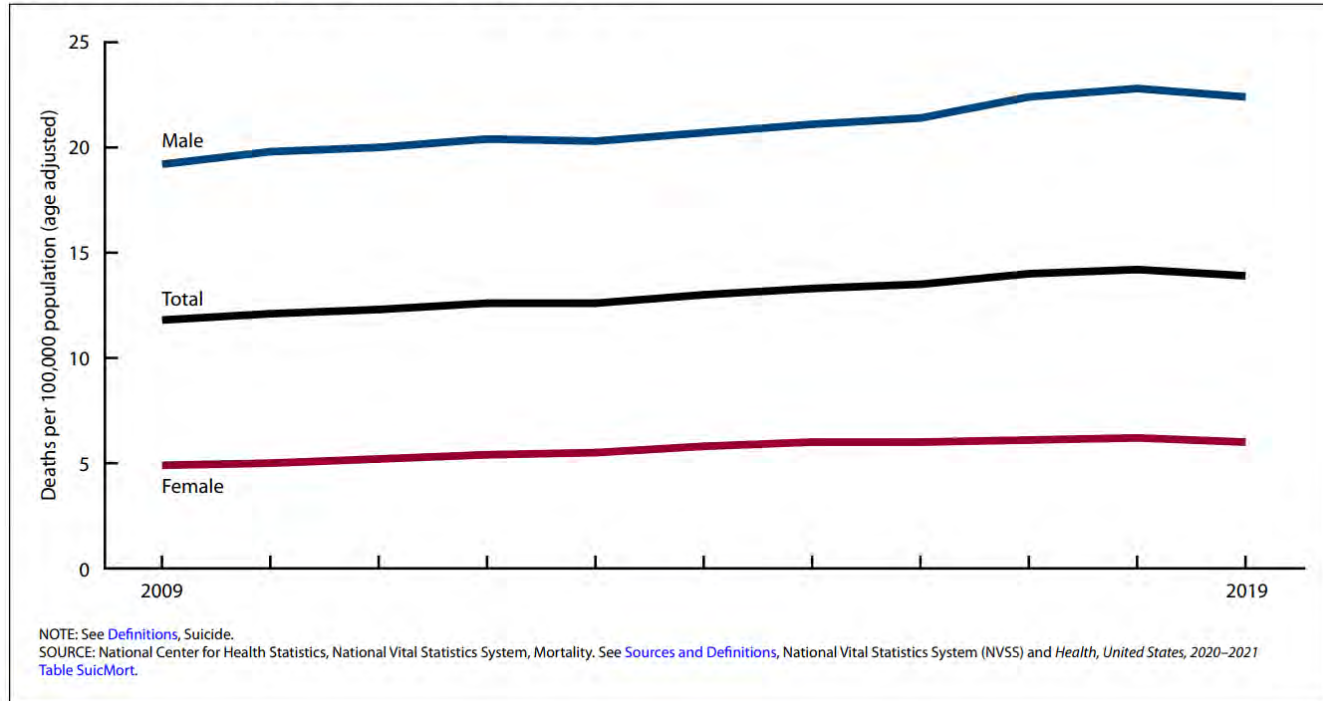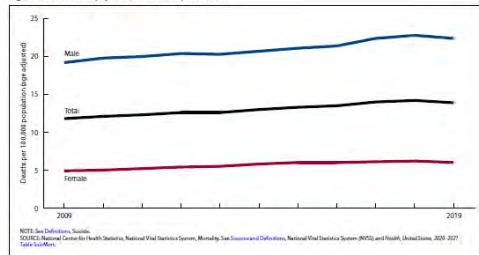
Healthcare utilization

Fewer trips to physicians and emergency departments were made by young men than young women.

- In 2019, men (73.6%) were less likely than women (83.9%) to have had a wellness visit in the past 12 months (76).

- Fewer **visits to physicians** were made by males (224 visits per 100 males) than females (308 visits per 100 females) in 2018. This difference was largest in adults aged 18–44 (103 visits per 100 men compared with 243 visits per 100 women) (Table HCareVis [https://www.cdc.gov/nchs/hus/contents2020-2021.htm#Table-HCareVis]).

- Fewer **visits to hospital emergency departments** were made by men (33 visits per 100 men) than women (49 visits per 100 women) in adults aged 18–44 in 2018 (Table HCareVis [https://www.cdc.gov/nchs/hus/contents2020-2021.htm#Table-HCareVis]).

Males died three times as often from suicide – Con.

Figure 8. Suicide rates, by sex: United States, 2009–2019

NOTE: See Definitions, Suicide.
SOURCE: National Center for Health Statistics, National Vital Statistics System, Mortality. See Sources and Definitions, National Vital Statistics System (NVSS) and *Health, United States, 2020–2021* Table SuicMort.

Greater Granularity on Suicide Deaths Topic Page

Greater Granularity on Suicide Deaths Topic Page – Con.

Figure 1. Suicide rates among males aged 10 years and over, by age group: United States, 2009–2019
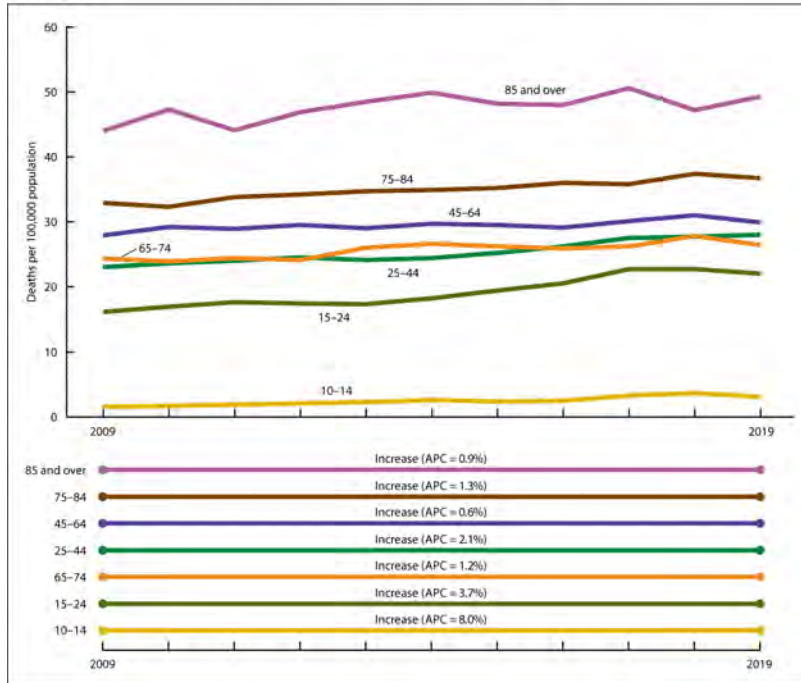
Figure 2. Suicide rates among females aged 10 years and over, by age group: United States, 2009–2019
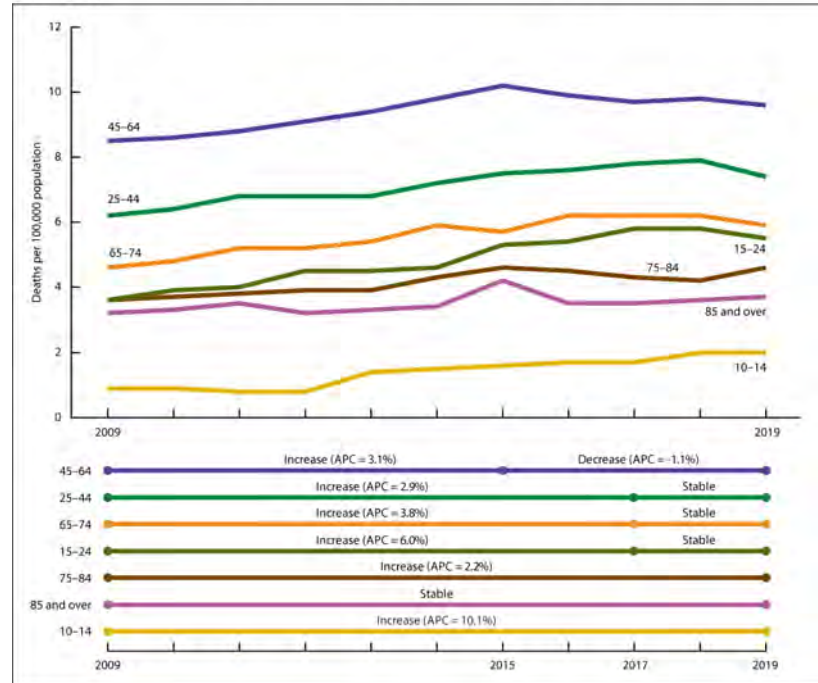
Greater Granularity in Suicide Deaths Trend Table

Table SuicMort. Suicide rates, by sex, race, Hispanic origin, and age: United States, selected years 1950–2019—Con.

Excel version (with more data years and standard errors when available): https://www.cdc.gov/nchs/hus/contents2020-2021.htm#Table-SuicMort

[Data are based on death certificates]

Sex, race, Hispanic origin, and age	1950[1,2]	1960[1,2]	1970[2]	1980[2]	1990[2]	2000[3]	2009[3]	2018[3]	2018[3] (single race)	2019[3]	2019[3] (single race)
White male[5]					Deaths per 100,000 resident population						
All ages, age adjusted[4]	22.3	21.1	20.8	20.9	22.8	19.1	21.4	25.5	25.6	24.9	25.1
All ages, crude	19.0	17.6	18.0	19.9	22.0	18.8	21.9	26.6	26.9	26.1	26.4
15–24 years	6.6	8.6	13.9	21.4	23.2	17.9	17.6	24.4	24.6	23.3	23.5
25–44 years	17.9	18.5	21.5	24.6	25.4	22.9	25.7	30.9	31.1	31.1	31.4
45–64 years	39.3	36.5	31.9	25.0	26.0	23.2	31.4	35.5	35.7	34.1	34.3
65 years and over	55.8	46.7	41.1	37.2	44.2	33.3	31.5	36.2	36.3	35.3	35.5
65–74 years	53.2	42.0	38.7	32.5	34.2	24.3	26.6	31.2	31.3	29.6	29.7
75–84 years	61.9	55.7	45.5	45.5	60.2	41.1	35.3	41.1	41.2	40.5	40.7
85 years and over	61.9	61.3	45.8	52.8	70.3	61.6	46.9	51.8	52.1	54.4	54.7
White male, not Hispanic or Latino[3,6]											
All ages, age adjusted[4]	- - -	- - -	- - -	- - -	23.5	20.2	23.4	28.4	28.6	27.9	28.0
All ages, crude	- - -	- - -	- - -	- - -	23.1	20.4	24.7	30.4	30.8	29.8	30.2
15–24 years	- - -	- - -	- - -	- - -	24.4	19.5	19.4	27.0	27.3	25.4	25.6
25–44 years	- - -	- - -	- - -	- - -	26.4	25.1	29.5	35.6	35.8	35.7	36.0
45–64 years	- - -	- - -	- - -	- - -	26.8	24.0	33.6	39.3	39.5	38.1	38.3
65 years and over	- - -	- - -	- - -	- - -	45.4	33.9	32.5	38.1	38.2	37.4	37.6
Black or African-American male[5]											
All ages, age adjusted[4]	7.5	8.4	10.0	11.4	12.8	10.0	8.9	11.6	11.8	11.8	12.0
All ages, crude	6.3	6.4	8.0	10.3	12.0	9.4	8.5	11.6	11.9	11.8	12.1
15–24 years	4.9	4.1	10.5	12.3	15.1	14.2	10.4	16.4	16.8	17.1	17.6
25–44 years	9.8	12.6	16.1	19.2	19.6	14.3	13.2	18.6	18.8	18.7	19.0
45–64 years	12.7	13.0	12.4	11.8	13.1	9.9	9.6	11.3	11.4	11.5	11.6
65 years and over	9.0	9.9	8.7	11.4	14.9	11.5	9.6	8.7	8.8	8.8	8.9
65–74 years	10.0	11.3	8.7	11.1	14.7	11.1	8.0	7.7	7.7	8.2	8.3
75–84 years[7]	*	*	*	10.5	14.4	12.1	11.9	10.7	10.9	10.4	10.4
85 years and over	- - -	*	*	*	*	*	*	*	*	*	*

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More males than females reported current use of tobacco, drugs, and alcohol

More males than females reported current use of tobacco, drugs, and alcohol – Con.

Fewer physician and emergency department visits were made by young men than young women

Fewer physician and emergency department visits were made by young men than young women –Con.

Males use less health care

Doctor visit rate was **27% LOWER** in males than females in 2018

Emergency department visit rate for adults aged 18–44 was **lower** in men than women in 2018

Men — 33 visits per 100 men

Women — 49 visits per 100 women

Health, United States: More to Explore

Health, United States is a suite of products for exploring trends in health data

Topic pages with key findings, featured charts, and trend analyses

Trend tables by demographic and socioeconomic populations

Infographics of disparities in related health measures

Annual Perspective integrating selected analyses from the *Health, United States* topics presented online

Health, United States Redesign Impact

Improvements for users include:

- **Usability:** Organizing by topic to navigate quickly; digital-first product allows for more trend analyses

- **Findability:** Topic-specific web pages provide more relevant search engine results

- **Relevance:** Continues to focus on trend analysis and integration across data sources, while developing innovative ways to communicate findings

- **Awareness:** Strong page view and download metrics

Next Steps

1 Create a suite of Digital-first *Health, United States* products

2 Provide data more frequently

3 Transform trend tables into machine-readable datasets

4 Make data available on open platforms (data.cdc.gov)

5 Add interactivity for customized exploration

Integrating across **health topics** and **data systems** to examine **trends** in health statistics

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