



COMMONWEALTH OF VIRGINIA

Meeting of the Board of Pharmacy

Perimeter Center, 9960 Mayland Drive, Third Floor
Henrico, Virginia 23233

(804) 367-4456 (Tel)
(804) 527-4472 (Fax)

Tentative Agenda of Educational Forum

April 25, 2025

9AM

PAGES

TOPIC

Call to Order: Cheri Garvin, RPh, Chairman

- Welcome & Introductions
- Approval of Agenda

Call for Public Comment: The Board will receive public comment at this time. The Board will not receive comment on any regulation process for which a public comment period has closed or any pending disciplinary matters.

Overview/Discussion:

- | | |
|---|---------|
| • Status of pharmacy working conditions (30 minutes) | 2-17 |
| • Overview of inspection program (30 minutes) | 18-30 |
| • Overview of innovative pilot programs (30 minutes) | 31-38 |
| • Pharmacist licensure trends (40 minutes) | 39-77 |
| • Pharmacy technician trainee and pharmacy technician registration trends (40 minutes) | 78-115 |
| • Utilization of collaborative practice agreements and statewide protocols (30 minutes) | 116-117 |
| • Overview of process for handling theft/loss reports (30 minutes) | 118-122 |
| • Overview of Bylaws (15 minutes) | 123-127 |
| • Increase of stimulant prescriptions (30 minutes) | 128-208 |

Adjourn

****The Board will have a working lunch at approximately 12pm.****

Agenda Item: Pharmacy working conditions

Included in your agenda package:

- Draft final regulations regarding pharmacy working conditions;
- Staffing Requests or Concerns Form
- Town Hall summary page showing no comments were received regarding the proposed stage;
- Chapter 628 of the 2022 Acts of Assembly directing the Board to promulgate regulations related to pharmacy working conditions.
- Excerpts from NABP Model Act
- Monetary penalties associated with known cases

Project 7342 - Final

Board of Pharmacy

Pharmacy working conditions

18VAC110-20-110. Pharmacy permits generally.

A. A pharmacy permit shall not be issued to a pharmacist to be simultaneously in charge of more than two pharmacies.

B. Except in an emergency, a permit holder shall not require a pharmacist to work longer than 12 continuous hours in any work day and shall allow at least six hours of off-time between consecutive shifts. A pharmacist may, however, volunteer to work longer than 12 continuous hours. A pharmacist working longer than six continuous hours shall be allowed to take a 30-minute break. Breaks, including uninterrupted rest periods and meal breaks, shall be provided consistent with 18VAC110-20-113 B 5.

C. The PIC or the pharmacist on duty shall control all aspects of the practice of pharmacy. Any decision overriding such control of the PIC or other pharmacist on duty shall be deemed the practice of pharmacy and may be grounds for disciplinary action against the pharmacy permit.

D. A pharmacist shall not be eligible to serve as PIC until after having obtained a minimum of two years of experience practicing as a pharmacist in Virginia or another jurisdiction in the United States. The board may grant an exception to the minimum number of years of experience for good cause shown.

E. When the PIC ceases practice at a pharmacy or no longer wishes to be designated as PIC, ~~he~~ the pharmacist shall immediately return the pharmacy permit to the board indicating the effective date on which ~~he~~ the pharmacist ceased to be the PIC.

F. Although not required by law or regulation, an outgoing PIC shall have the opportunity to take a complete and accurate inventory of all Schedules II through V controlled substances on hand on the date ~~he~~ the pharmacist ceases to be the PIC, unless the owner submits written notice to the board showing good cause as to why this opportunity should not be allowed.

G. A PIC who is absent from practice for more than 30 consecutive days shall be deemed to no longer be the PIC. Pharmacists-in-charge having knowledge of upcoming absences for longer than 30 days shall be responsible for notifying the board and returning the permit. For unanticipated absences by the PIC, ~~which~~ that exceed 15 days with no known return date within the next 15 days, the owner shall immediately notify the board and shall obtain a new PIC.

H. An application for a permit designating the new PIC shall be filed with the required fee within 14 days of the original date of resignation or termination of the PIC on a form provided by the board. It shall be unlawful for a pharmacy to operate without a new permit past the 14-day deadline unless the board receives a request for an extension prior to the deadline. The executive director for the board may grant an extension for up to an additional 14 days for good cause shown.

I. Only one pharmacy permit shall be issued to conduct a pharmacy occupying the same designated prescription department space. A pharmacy shall not engage in any other activity requiring a license or permit from the board, such as manufacturing or wholesale-distributing, out of the same designated prescription department space.

J. Before any permit is issued, the applicant shall attest to compliance with all federal, state, and local laws and ordinances. A pharmacy permit shall not be issued to any person to operate from a private dwelling or residence after September 2, 2009.

18VAC110-20-113. Pharmacy working conditions.

A. A pharmacy permit holder shall protect the health, safety, and welfare of patients by consulting with the PIC or pharmacist on duty and other pharmacy staff to ensure patient care services are safely provided in compliance with applicable standards of patient care. A permit holder's decisions shall not override the control of the PIC or other pharmacist on duty regarding appropriate working environments for all pharmacy personnel necessary to protect the health, safety, and welfare of patients.

B. To provide a safe working environment in a pharmacy, a permit holder shall, at a minimum:

1. Ensure sufficient personnel are scheduled to work at all times in order to prevent fatigue, distraction, or other conditions that interfere with a pharmacist's ability to practice with reasonable competence and safety. Staffing levels shall not be solely based on prescription volume, but shall consider any other requirements of pharmacy staff during working hours;
2. Provide sufficient tools and equipment in good repair and minimize excessive distractions to support a safe workflow for a pharmacist to practice with reasonable competence and safety to address patient needs in a timely manner;
3. Avoid the introduction of external factors, such as productivity or production quotas or other programs, to the extent that they interfere with the pharmacist's ability to provide appropriate professional services to the public;
4. Ensure staff are sufficiently trained to safely and adequately perform assigned duties, ensure staff demonstrate competency, and ensure that pharmacy technician trainees work closely with pharmacists and pharmacy technicians with sufficient experience as determined by the PIC;

5. Provide appropriate opportunities for uninterrupted rest periods and meal breaks consistent with 18VAC110-20-110 and the following:

a. A pharmacy may close when a pharmacist is on break based on the professional judgment of the pharmacist on duty, provided that the pharmacy has complied with the 14-day notice to the public pursuant to § 54.1-3434 of the Code of Virginia and 18VAC110-20-135;

b. If a pharmacy does not close while the pharmacist is on break, the pharmacist must ensure adequate security of drugs by taking a break within the prescription department or on the premises. The pharmacist on duty must determine whether pharmacy technicians or pharmacy interns may continue to perform duties and whether the pharmacist is able to provide adequate supervision; and

c. If the pharmacy remains open, only prescriptions verified by a pharmacist pursuant to 18VAC110-20-270 may be dispensed when the pharmacist is on break. An offer to counsel any person filling a new prescription must be offered pursuant to § 54.1-3319 of the Code of Virginia. Persons who request to speak to the pharmacist shall be told that the pharmacist is on break and that they may wait to speak with the pharmacist or provide a telephone number for the pharmacist to contact them upon return from break. Pharmacists returning from break shall immediately attempt to contact persons who requested counseling and document when such counseling is provided;

6. Provide adequate time for a pharmacist to complete professional duties and responsibilities, including:

a. Drug utilization review;

b. Immunization;

c. Counseling;

d. Verification of prescriptions;

e. Patient testing; and

f. All other duties required by Chapters 33 (§ 54.1-3300 et seq.) and 34 (§ 54.1-3400 et seq.) of Title 54.1 of the Code of Virginia and this chapter; and

7. Ensure that pharmacy technicians shall never perform duties otherwise restricted to a pharmacist.

C. A pharmacy permit holder shall not override the control of the pharmacist on duty regarding any aspects of the practice of pharmacy, including a pharmacist's decision not to administer vaccines when one pharmacist is on duty and, in the pharmacist's professional judgment, vaccines cannot be administered safely.

D. Staffing requests or concerns as described in this section shall be communicated by the PIC or pharmacist on duty to the permit holder using the Staffing Requests or Concerns Form developed by the board or a form containing information identical to the form developed by the board, which may be electronic.

1. Such forms, once completed, shall be provided to the immediate supervisor of the PIC or pharmacist on duty, with one copy maintained in the pharmacy for three years, and produced for inspection by the board within 48 hours of request.

2. The PIC or pharmacist on duty may report any staffing issues directly to the board if the PIC or pharmacist on duty believes the situation warrants immediate board review.

3. Under no circumstances shall a good faith report of staffing concerns by the PIC, pharmacist on duty, or notification of such issues by pharmacy personnel to the PIC, pharmacist on duty, or board result in workplace discipline against the reporting staff member.

E. Permit holders shall review completed staffing reports and shall:

1. Respond to the reporting staff member to acknowledge receipt of the staffing request or concern;
2. Resolve any issues listed in a timely manner to ensure a safe working environment for pharmacy staff and appropriate medication access for patients;
3. Document any corrective action taken, steps taken toward corrective action as of the time of inspection, or justification for inaction, which documentation shall be maintained on site or produced for inspection by the board within 48 hours of request; and
4. Communicate corrective action taken or justification for inaction to the PIC or reporting pharmacist on duty.

FORMS (18VAC110-20)

[Application for a Pharmacy Permit \(rev. 1/2024\)](#)

[Application for a Nonresident Pharmacy Registration \(rev. 1/2024\)](#)

[Application for a Nonresident Wholesale Distributor Registration \(rev. 4/2024\)](#)

[Application for Registration as Nonresident Manufacturer \(rev. 10/2020\)](#)

[Application for a Nonresident Third-Party Logistics Provider Registration \(rev. 4/2024\)](#)

[Application for Registration as a Nonresident Warehouser \(rev. 10/2020\)](#)

[Application for a Nonresident Outsourcing Facility Registration \(rev. 10/2020\)](#)

[Application for an Outsourcing Facility Permit \(rev. 10/2020\)](#)

[Application for a Medical Equipment Supplier Permit \(rev. 10/2020\)](#)

[Application for a Permit as a Restricted Manufacturer \(rev. 10/2020\)](#)

[Application for a Permit as a Nonrestricted Manufacturer \(rev. 10/2020\)](#)

[Application for a Wholesale Distributor Permit \(rev. 4/2024\)](#)

[Application for a Permit as a Warehouser \(rev. 10/2020\)](#)

[Application for a Permit as a Third-Party Logistics Provider \(rev. 4/2024\)](#)

[Application for Registration as a Nonresident Medical Equipment Supplier \(rev. 10/2020\)](#)

[Application for a Controlled Substances Registration Certificate \(rev. 8/2024\)](#)

[Closing of a Pharmacy \(rev. 5/2018\)](#)

[Application for Approval of an Innovative \(Pilot\) Program \(rev. 8/2023\)](#)

[Registration for a Pharmacy to be a Collection Site for Donated Drugs \(rev. 5/2018\)](#)

[Application for Approval of a Repackaging Training Program \(rev. 10/2020\)](#)

[Registration for a Facility to be an Authorized Collector for Drug Disposal \(rev. 5/2018\)](#)

[Application for Reinspection of a Facility \(rev. 3/2023\)](#)

[Notification of Distribution Cessation due to Suspicious Orders \(rev. 5/2018\)](#)

[Staffing Requests or Concerns Form \(eff. 9/2023\)](#)

Staffing Requests or Concerns

Pursuant to [18VAC110-20-113](#), staffing requests or concerns shall be communicated by the PIC or pharmacist on duty to the permit holder using this form. Under no circumstances shall a good faith report of staffing concerns by the PIC, pharmacist on duty, or notification of such issues by pharmacy personnel to the PIC or pharmacist on duty result in workplace discipline against the reporting staff member.

Permit holders shall review completed staffing reports, respond to reporting staff member to acknowledge receipt of the staffing request or concern, resolve any issues listed in a timely manner to ensure a safe working environment for pharmacy staff and appropriate medication access for patients, document, and inform reporting pharmacist of corrective action taken, steps taken toward corrective action, or justification for inaction.

Provide form to immediate supervisor of PIC or pharmacist on duty. Maintain copy of form and any relevant attachments in pharmacy for three years and produce for inspection by board.

Name of Pharmacy		Permit Number	
Street Address		Area Code and Telephone Number	
City	State	Zip Code	
Name of Reporting Pharmacist (Type or Print)		Date	
Summary of Staffing Request and/or Reporting of Staffing Concern, Include Date and Time of Relevant Concern (<i>Provide attachment if extra space needed.</i>)			
Corrective action taken, steps taken toward corrective action, or justification for inaction to be documented by permit holder (<i>Provide attachment if extra space needed.</i>)			



Agency Department of Health Professions

Board Board of Pharmacy

Chapter Regulations Governing the Practice of Pharmacy [18 VAC 110 - 20]

Action: Pharmacy working conditions

Proposed Stage

Action 6081 / Stage 10213

[Edit Stage](#) [Withdraw Stage](#) [Go to RIS Project](#)

Documents

Proposed Text	10/31/2024 9:37 am	Sync Text with RIS
Agency Background Document	12/11/2023	Upload / Replace
ORM Economic Review Form	12/18/2023 (modified 8/29/2024)	Upload / Replace
Attorney General Certification	4/18/2024	
DPB Economic Impact Analysis	5/16/2024	
Agency Response to EIA	6/2/2024	Upload / Replace
Governor's Review Memo	10/17/2024	
Registrar Transmittal	10/18/2024	

Status

Governor's Review Needed By	9/17/2024
Changes to Text	The proposed text has changed from that of the emergency stage .
Incorporation by Reference	No
Attorney General Review	Submitted to OAG: 12/18/2023 Review Completed: 4/18/2024 Result: Certified
DPB Review	Submitted on 4/24/2024 Economist: Oscar Ozfidan Policy Analyst: Cari Corr Review Completed: 5/30/2024
Secretary Review	Secretary of Health and Human Resources Review Completed: 8/29/2024
Governor's Review	ORM Review: ORM Approved 10/17/2024 Governor Review Completed: 10/17/2024 Result: Approved
Virginia Registrar	Submitted on 10/18/2024

	<u>The Virginia Register of Regulations</u> Publication Date: 11/18/2024  <u>Volume: 41 Issue: 7</u>
Public Hearings	<u>12/17/2024 9:06 AM</u>
Comment Period	Ended 1/17/2025 0 comments

Contact Information	
Name / Title:	Caroline Juran, RPh / <i>Executive Director</i>
Address:	9960 Mayland Drive Suite 300 Richmond, VA 23233-1463
Email Address:	<u>caroline.juran@dhp.virginia.gov</u>
Telephone:	(804)367-4456 FAX: (804)527-4472 TDD: ()-

This person is the primary contact for this chapter.

This stage was created by Erin Barrett on 12/06/2023 at 4:10pm

This stage was last edited by Erin Barrett on 04/29/2024 at 4:17pm

VIRGINIA ACTS OF ASSEMBLY -- 2022 SESSION

CHAPTER 628

An Act to direct the Board of Pharmacy to adopt regulations related to work environment requirements for pharmacy personnel.

[H 1324]

Approved April 11, 2022

Be it enacted by the General Assembly of Virginia:

1. *§ 1. That the Board of Pharmacy shall adopt regulations related to work environment requirements for pharmacy personnel that protect the health, safety, and welfare of patients. Such regulations shall include provisions (i) addressing sufficient pharmacy staffing to prevent fatigue, distraction, or other conditions that interfere with a pharmacist's ability to practice with competence and safety; (ii) stating standards for uninterrupted rest periods and meal breaks for pharmacy personnel; (iii) stating standards that ensure adequate time for pharmacists to complete professional duties and responsibilities, including drug utilization reviews, immunization administration, patient counseling, and verification of prescription accuracy; and (iv) limiting external factors such as productivity or production quotas to the extent that such factors interfere with the ability to provide appropriate professional services to the public.*
2. **That the Board of Pharmacy shall promulgate regulations to implement the provisions of this act to be effective within 280 days of its enactment.**

Excerpts from NABP Model State Pharmacy Act and Model Rules of the National Association of Boards of Pharmacy, August 2024

Section 3. Personnel.

- (2) Pharmacy Labor Standards/Shift Lengths and Breaks
- (a) A pharmacy licensed under this Act shall not require a pharmacist, pharmacist intern, certified pharmacy technician, or certified pharmacy technician candidate to work longer than 12 continuous hours in any 24-hour period, inclusive of the breaks required under subsection (b).
 - (b) A pharmacist who works 6 continuous hours or longer per day shall be allowed to take, at a minimum, one 30-minute, uninterrupted meal break and one 15-minute break during that 6-hour period. If such pharmacist is required to work 12 continuous hours in any 24-hour period, at a minimum, the pharmacist qualifies for an additional 15-minute break.
 - (c) A pharmacy may, but is not required to, close when a pharmacist is allowed to take a break under subsection (b). If the pharmacy does not close, the pharmacist shall either remain within the pharmacy or within the establishment in which the pharmacy is located in order to be available for emergencies. In addition, the following applies:
 - (i) certified pharmacy technicians, certified pharmacy technician candidates, and pharmacist interns authorized by the pharmacist on duty may continue to perform duties as allowed under this Act;
 - (ii) no duties reserved to pharmacists and pharmacist interns under this Act, or that require the professional judgment of a pharmacist, may be performed by certified pharmacy technicians or certified pharmacy technician candidates;
 - (iii) only prescription drug orders that have received final verification may be dispensed while the pharmacist is on break, except those prescription drug orders that require patient counseling by a pharmacist, including all new prescription drug orders and those refilled prescription drug orders for which a pharmacist has determined that counseling is necessary and/or is conducted pursuant to counseling laws and/or rules;¹ and
 - (iv) a pharmacist using their professional judgment may waive subsections (a) and (b).
- (3) If any action of the pharmacy is deemed to contribute to or cause a violation of any provision of this Section, the board may hold the owner and/or pharmacy permit holder responsible and/or absolve the pharmacist-in-charge from the responsibility of that action.

¹ The pharmacy shall have policies and procedures to ensure that the patient is provided an opportunity to receive patient counseling.

Section 502. Grounds, Penalties, and Reinstatement.²

- (1) The board of pharmacy may deny, refuse to issue or renew, or may revoke, summarily suspend, suspend, place on probation, censure, reprimand, issue a warning against, or issue a cease and desist order against, the licenses or the registration of, or assess a fine/civil penalty or costs/administrative costs against any person pursuant to the procedures set forth in Section 503 herein below, upon one or more of the following grounds:

(o) Requiring pharmacy personnel to meet production and/or performance metrics and/or quotas that negatively impact patient safety;³

Section 7. Continuous Quality Improvement Program.

- (1) Continuous Quality Improvement Program
 - (a) Compliance with this Section may be considered by the board as a mitigating factor in the investigation and evaluation of a quality-related event (QRE).
 - (b) Each pharmacy shall establish a continuous quality improvement (CQI) program for the purpose of detecting, documenting, assessing, and preventing QREs. At a minimum, a CQI program shall include provisions to:
 - (i) designate an individual or individuals responsible for implementing, maintaining, and monitoring the CQI program;
 - (ii) initiate documentation of QREs as soon as possible, but no more than three (3) days, after determining their occurrence;
 - (iii) analyze data collected in response to QREs to assess causes and any contributing factors such as staffing levels, workflow, and technological support;
 - (iv) use the findings of the analysis to formulate an appropriate response and develop pharmacy systems and workflow processes designed to prevent QREs and increase good outcomes for patients.

For those persons utilizing a drug formulary, a periodic review of such formulary shall be undertaken to ensure that appropriate drugs are being offered/selected in the best interest of patients.
 - (c) As a component of its CQI program, each pharmacy shall ensure that periodic meetings are held, at least annually, by staff members of the pharmacy to consider the effects on the quality of the pharmacy system due to staffing levels, workflow, and technological support. Such meetings shall review data showing evidence of the quality of care for patients served by the pharmacy and shall develop plans for improvements in the system of pharmacy practice so as to increase good outcomes for patients.
 - (d) Appropriately blinded incidents of QREs shall be reported to a nationally recognized error reporting program designated by the board.

² The penalties provided in Section 502 give the board wide latitude to make the disciplinary action fit the offense. The "reasonable intervals" in 502(3) would be determined by the board.

³ This is not intended to include performance metrics that may be related to the ability and competency of pharmacy personnel.

- (e) **Quality Self-Audit**
Each Pharmacy shall conduct a quality self-audit at least quarterly to determine whether the occurrence of QREs has decreased and whether there has been compliance with preventative procedures, and to develop a plan for improved adherence with the CQI program in the future. Each pharmacy shall conduct a quality self-audit upon change of pharmacist-in-charge to familiarize that person with the pharmacy's CQI program.
- (f) **Protection from Discovery⁴**
All information, communications, or data maintained as a component of a pharmacy CQI program are privileged and confidential and not subject to discovery in civil litigation.⁵ This shall not prevent review of a pharmacy's CQI program, and records maintained as part of a system by the board, pursuant to subpoena, as necessary to protect the public health and safety. All information, communications, or data furnished to any peer review committee, and any findings, conclusions, or recommendations resulting from the proceedings of such committee, board, or entity are privileged. The records and proceedings of any peer review committee are confidential and shall be used by such committee, and the members thereof, only in the exercise of the proper functions of the committee and shall not be public records nor be available for court subpoena or for discovery proceedings. The disclosure of confidential, privileged peer review committee information during advocacy, or as a report to the board of pharmacy, or to the affected pharmacist or pharmacy auxiliary personnel under review, does not constitute a waiver of either confidentiality or privilege.
- (g) **Compliance with Subpoena**
All persons shall comply fully with a subpoena issued by the board for documents or information as otherwise authorized by law. The disclosure of documents or information under subpoena does not constitute a waiver of the privilege associated with a CQI program. Failure to comply with the subpoena is grounds for disciplinary action against the person by the appropriate licensing board.

⁴ Boards of pharmacy may have more or less authority to inspect CQI records, depending on state law. When authorizing the implementation of CQI Programs the extent of authority needed to obtain these materials must be determined.

⁵ States should continue efforts to develop and implement requirements for CQI programs in pharmacies recognizing that CQI programs enhance patient safety and operate most effectively when privilege of discovery laws or rules protecting CQI data and information are enacted and included as a component of CQI.



Virginia Department of

Health Professions

Known monetary penalties for pharmacy working conditions

Date	Sanction	Date	Sanction
8/26/2022	\$40,000.00	5/3/2024	\$75,000.00
10/21/2022	\$10,000.00	5/17/2024	\$75,000.00
11/22/2022	\$30,000.00	6/26/2024	\$40,000.00
3/20/2023	\$10,000.00	6/26/2024	\$20,000.00
8/30/2023	\$10,000.00	10/25/2024	\$35,000.00
10/27/2023	\$40,000.00	1/21/2025*	\$200,000.00
2/9/2024	\$30,000.00	3/10/2025	\$15,000.00
5/3/2024	\$40,000.00		

* Formal was held March 17, 2022

www.dhp.virginia.gov

1



Virginia Department of

Health Professions

Working Conditions

- Anecdotally, complaints appear to be decreasing.
- Staff/inspectors continue to educate on Staffing Requests or Concerns Form.
- Anecdotally, inspectors have not observed many executed forms in pharmacies.

www.dhp.virginia.gov

2

Agenda Topic: Overview of inspection program

Included in agenda packet:

- Background information and stats provided by Beth O'Halloran



Virginia Department of
Health Professions

Virginia Board of Pharmacy

Overview of Inspection Program

April 25, 2025

Beth O'Halloran, RPh
Deputy Executive Director



Inspector Staff

Pharmacist Inspectors (PI)

Victoria McGhee

Srini Peddi

Amber Darr

Maria Damico (Part-time)

Emily Buss

Gaynell Smith-Gray (Part-time)

Amanda Richardson

Katrina Trelease

Senior Inspectors (SI)

Wendy Ashworth

Mary Church

Kevin Wolfe

Dwayne Cromer



Inspector Staffing

- Staff turnover of 3 full time SIs, 2 full time PIs and 2 part-time PIs over the last two years.
 - In general, hiring replacement staff can be anywhere from 3 to 6 months.
 - In general, training time for new inspectors can be anywhere from 3 months to 6 months



Inspection Stats from 2024

- Total number of inspections performed (all categories of licensure, e.g., wholesale distributors, MES, CSR., etc.)
 - Routine – 923
 - Remodel – 286
 - Change of Location – 56
 - New – 368
 - Reinspection - 65



Inspection Stats from 2024

- Average time to perform routine pharmacy inspection
 - No compounding performed – 3.5 hours (~\$746)
 - Non-sterile only – 4.5 hours (~\$958)
 - Sterile only or both sterile and non-sterile – 15 hours (~\$3195)
 - In 2023 prior to enforcement of USP revisions, this was 11.76 hours – cost of \$2,504 per inspection

Sterile Compounding Inspections

- NABP Blueprint state
 - 2015 NABP developed a Multistate Pharmacy Inspection Blueprint to be used for compounding inspections.
 - Agree to utilize the “universal” inspection form and perform a routine inspection report every 18 months for any sterile compounding pharmacy in Virginia that ships out of state.
 - In November 2023, the revised Universal inspection form began being utilized – subsequently increased the time to perform inspection.

Sterile Compounding Inspections

- 153 Virginia pharmacies performing sterile compounding
 - 27 of them ship out of state (as of 3/26/25)
- Change implemented in March 2025 – use Universal inspection form if shipping out of state, use abbreviated sterile inspection form if not shipping out of state.
 - Reduced inspection report from 47 pages to 22.
 - Expected to save an average of 3 to 4 hours – cost savings of approximately \$745 per inspection.



Frequency of Inspections

- Routine inspection frequency:

3-year cycle:

- Medical Equipment Suppliers
- Researchers (CSR)
- Government Official (CSR)
- Animal Shelters
- Analytic Laboratory
- Drug Dispensing Devices
- Teaching Institution
- Crisis Stabilization Unit
- Alternate Delivery Site

2-year cycle:

- Pharmacies
- Wholesale Distributors
- Warehouseurs
- Physician's Dispensing Permits and Limited Use Dispensing Permits
- Third Party Logistics Providers
- EMS agencies
- Ambulatory Surgery Centers
- Outpatient Clinics
- Hospitals (CSR – no on-site pharmacy)



Frequency of Inspections

- Previously all newly issued permits and registrations for facilities were given a 1-year return date for a routine inspection
 - Some permits and registrations may not become operational for several months after initial inspection
 - Not many records to review
- Change implemented in March 2025 – decision made to eliminate the 1-year return routine inspection and designate the return on the facility's regular inspection cycle and, a pharmacy performing sterile compounding, to return after 18 months.
 - Anticipated to reduce backlogs and costs.



Use of Virtual Inspections

- Used mostly for remodel inspections when there has been no physical structural change to the facility but there has been a change to the alarm system.
- Also used for some new facility inspections – recently EMS agencies obtaining their CSR.
 - Saves time and money on travel for inspector and Board.
 - May reduce time of inspection since photos and documentation are received prior to the inspection.



Use of Virtual Inspections

- Change implemented in September 2024 - Pharmacies who have remodel for changes to alarm panel or communication line are completed via desk audit.
 - Pharmacy inspector receives documentation from the licensee of alarm signals and method of communication for both primary and back-up alarm.
 - Completes report without travel to pharmacy and without taking up much of the licensee's time.



Public Resources ▾

Practitioner Resources ▾

Applicant Resources ▾

About the Board ▾

[DHP Home \(/\)](#) > [Boards \(/Boards/\)](#) > [Pharmacy \(/Boards/Pharmacy/\)](#) > [Practitioner Resources \(/Boards/Pharmacy/PractitionerResources/\)](#) > Forms and Applications

Forms and Applications

Please select a profession or category from the dropdown to view related forms.

Inspection Forms

Inspection Forms

[Pharmacy Routine Inspection Report](#)

(</media/dhpweb/docs/pharmacy/forms/Inspection/PharmacyRoutineInspection.pdf>).

[Pharmacy Inspection - New - Change of Location - Remodel](#)

(</media/dhpweb/docs/pharmacy/forms/Inspection/PharmacyNewChangeRemodel.pdf>).

[Medical Equipment Supplier Inspection Report](#)

(</media/dhpweb/docs/pharmacy/forms/Inspection/MESInspection.pdf>).

[Controlled Substance Registration Inspection Report](#)

(</media/dhpweb/docs/pharmacy/forms/Inspection/CSRInspectionReport.pdf>).

[Inspection Report](#)

(/media/dhpweb/docs/pharmacy/forms/Inspection/InspectionReport_WDWH3PLRMNRM.pdf).

for Wholesale Distributor - Warehouser - Third Party Logistics Provider - Restricted
and Non-restricted Manufacturer

[Practitioners Selling Controlled Substances Inspection Report](#)

(</media/dhpweb/docs/pharmacy/forms/Inspection/PractSellingControlledSubstancesInspection.pdf>).

Virginia Board of Pharmacy

Email: pharmbd@dhp.virginia.gov (<mailto:pharmbd@dhp.virginia.gov>)

Caroline D. Juran, Executive Director

Cheryl L Garvin, RPh, Chairman

Agenda Topic: Overview of innovative pilot programs

Included in agenda packet:

- Background information and stats provided by Dr. Ellen Shinaberry

Virginia Board of Pharmacy

Overview of Innovative Pilot Programs

April 25, 2025

Ellen B. Shinaberry, RPh, PharmD
Deputy Executive Director

Authorization

§ 54.1-3307.2. Approval of innovative programs.

A. Any person who proposes to use a process or procedure related to the dispensing of drugs or devices or to the practice of pharmacy not specifically authorized by Chapter 33 (§ 54.1-3300 et seq.) of this title or by a regulation of the Board of Pharmacy may apply to the Board for approval to use such process or procedure. The application under this section may only include new processes or procedures, within the current scope of the practice of pharmacy, that relate to the form or format of prescriptions, the manner of transmitting prescriptions or prescription information, the manner of required recordkeeping, the use of unlicensed ancillary personnel in the dispensing process, and the use of new technologies in the dispensing process. The authority granted the Board under this section shall not authorize expansion of the current scope of practice for pharmacists and shall not interfere with the requirement that pharmacists only dispense drugs in accordance with instructions from a prescriber, as defined in § 54.1-3401.

Requirements

An application filed with the Board must address:

- * Safety to the public regarding the new process or procedure
- * Any potential benefits to the public
- * Promotion of scientific or technical advances
- * Compliance with prescriber's instructions for a drug dispensed
- * Impact on the potential for drug diversion
- * Maintain the integrity of & public confidence in the profession of pharmacy
- * Impact on cost to the public & within the healthcare industry
- * Monitoring for any negative outcomes or problems
- * Reporting outcomes to the Board.

Approval Process

- Informal Conference Committee – two board members
- Quarterly meetings
- Application and supporting documentation
- Terms and Conditions

Current Active Programs

- 12 Pilot Programs
- 415 participating facilities
- Typically, a 3-year expiration
- Orders/Consent orders on License Lookup

Innovative Programs

- Omnicare: Tech Barcode Scan
- HCA Hospital System: Pharmacist Central Distribution
- Carilion: Central Pharmacy Distribution
- Walgreens Pharmacies: Central Fill
- Brightview: Remote Pharmacist Verification
- Strive Pharmacy: Remote Supervision
- Mosaic Pharmacy: Technology-enabled Remote Pharmacy Technician

Innovative Programs

- Akina Pharmacy: Remote Data Entry Pilot
- CVS Pharmacies: Air Support
- Various OTC in SW VA: Proof Remote Verification of TH Doses in an OTP

Approved in 2025:

- Sentara Rockingham Medical Center: ED Starter Pack Dispensing
- Riverside Shore Memorial Hospital: Use of a Technology-Assisted Workflow System for Remote Validation of Sterile Compounding
- CVS Pharmacies: Expansion from original 17 pharmacies to 117 pharmacies

Agenda Topic: Pharmacist licensure trends

Included in agenda packet:

- Background information and stats provided by Ryan Logan
- 2024 Pharmacist Healthcare Workforce Survey Report



Virginia Department of
Health Professions

Virginia Board of Pharmacy Education Forum

Review of Pharmacist Licensure Trends

April 25, 2025

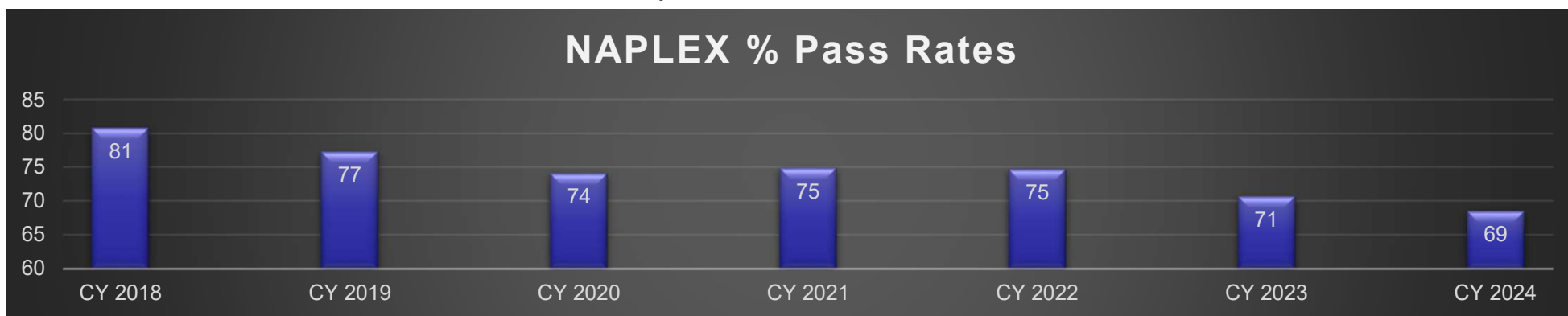
Ryan Logan, Pharmacist
Deputy Executive Director



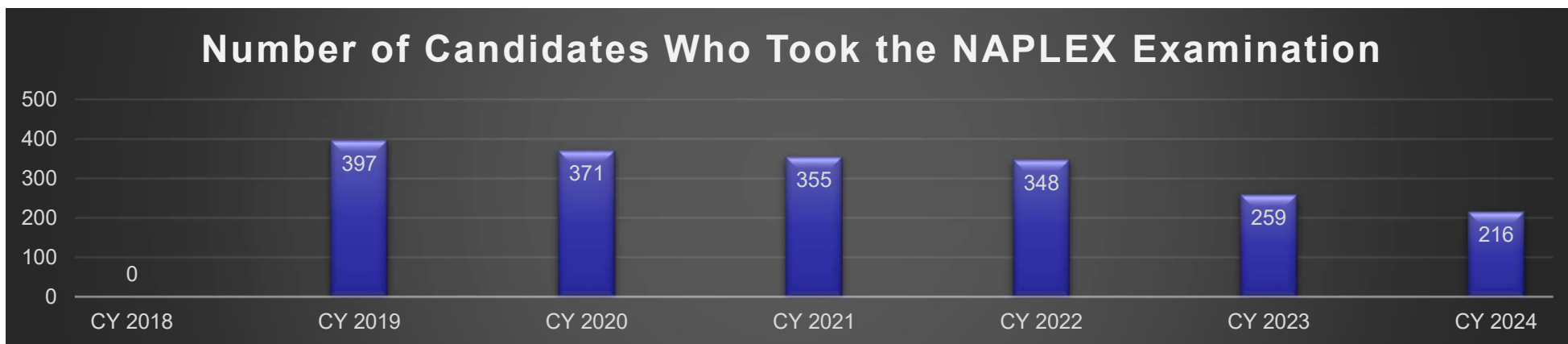
Pharmacist Licensure Trends

Pharmacist Licensure Trends

- North American Pharmacist Licensure Examination (NAPLEX) pass rates on all attempts for in-state graduates of ACPE-accredited institutions for the calendar years of 2018 to 2024

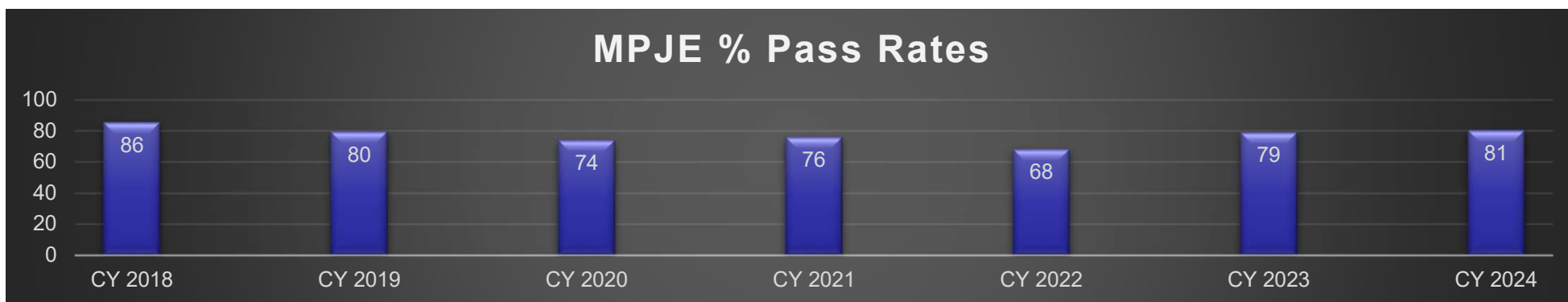


- Number of Candidates Who Took the NAPLEX for in-state graduates of ACPE-accredited institutions for the calendar years of 2018 to 2024

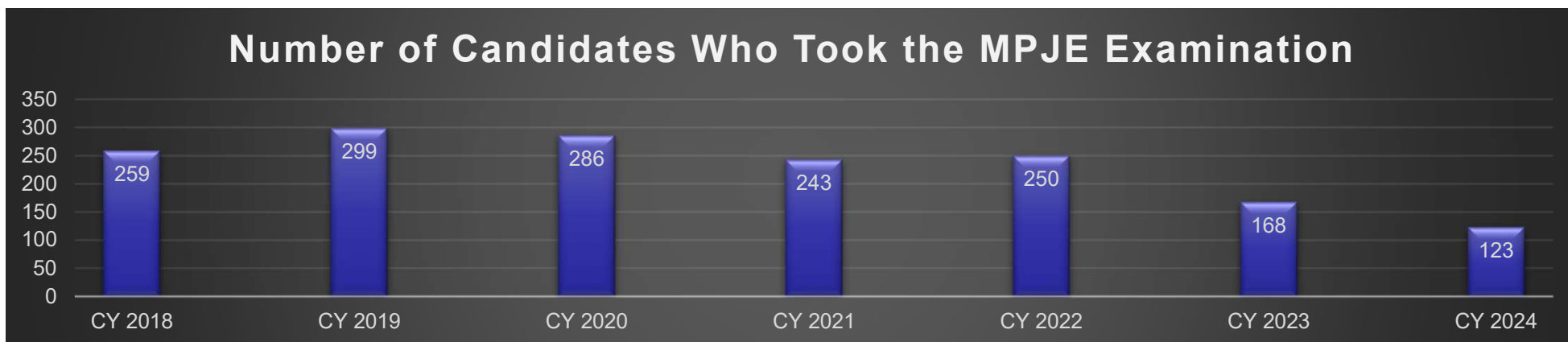


Pharmacist Licensure Trends

- North American Pharmacist Licensure Examination (NAPLEX) pass rates on all attempts for in-state graduates of ACPE-accredited institutions for the calendar years of 2018 to 2024

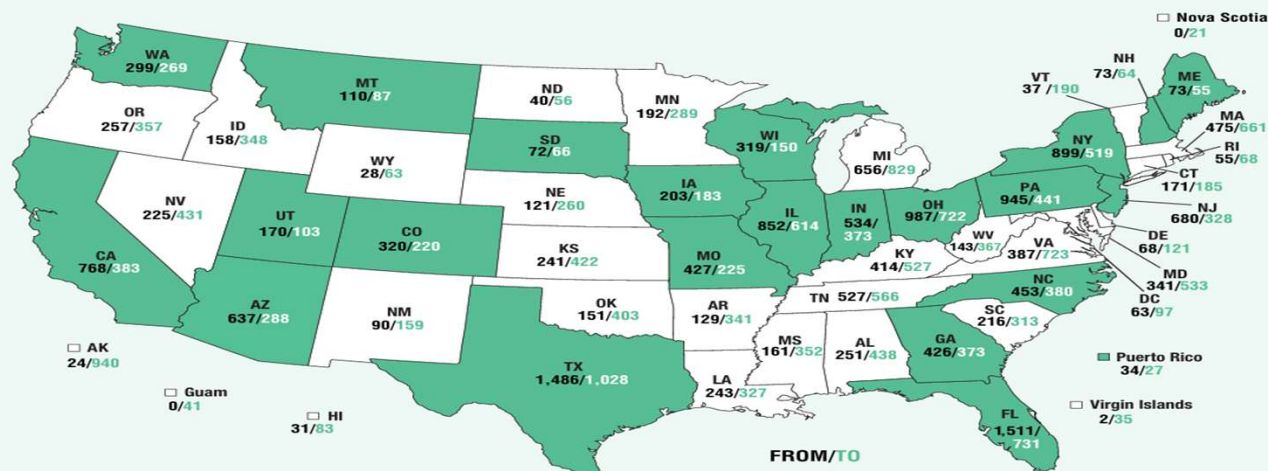


- Number of Candidates Who Took the MPJE for in-state graduates of ACPE-accredited institutions for the calendar years of 2018 to 2024



Pharmacist Licensure Trends

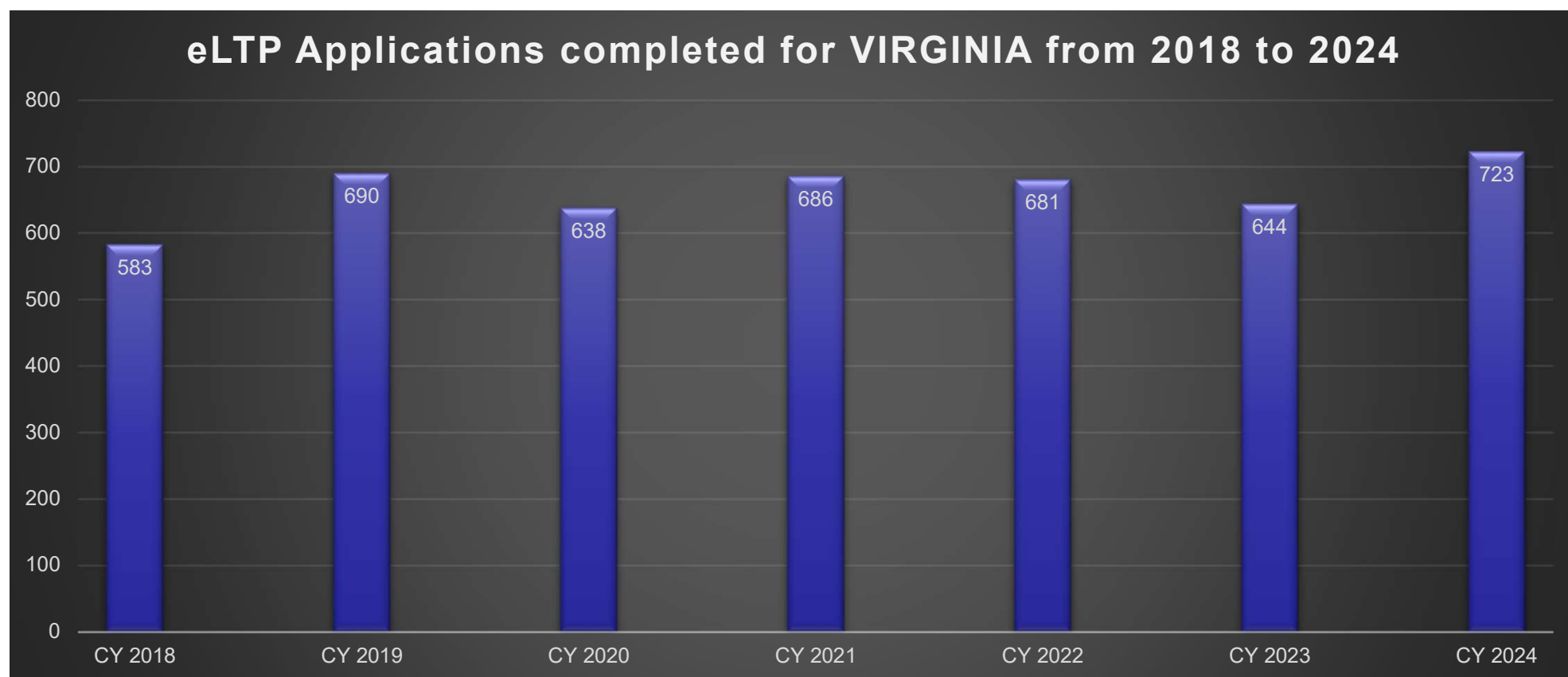
**eLTP Received More Than 13,000 State
Licensure Transfer Applications in 2024**



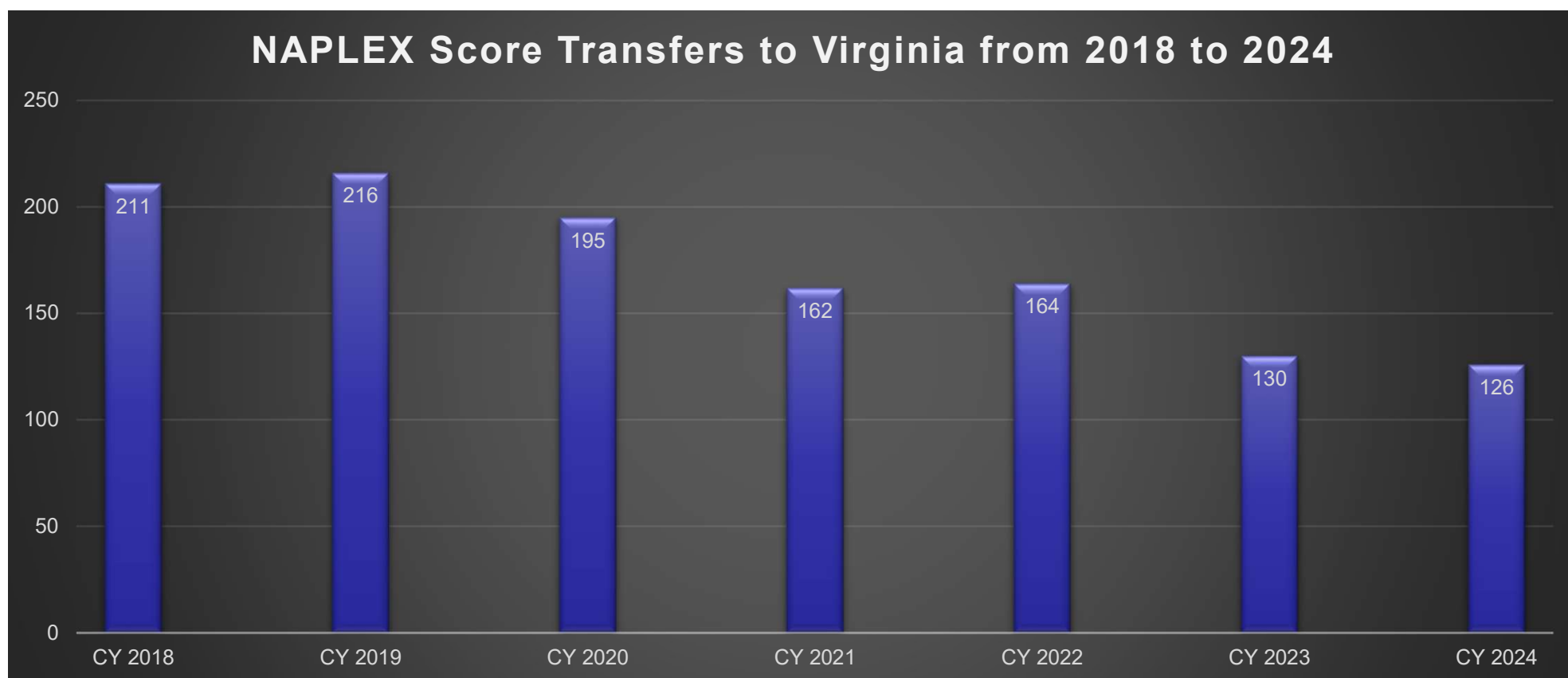
Shaded areas denote states where the number of applications for transfer from the state is greater than the number of applications requesting transfer to the state.

- A total of 13,485 licensure transfer applications were submitted through NABP's Electronic Licensure Transfer Program® (eLTP) in 2024.
- Out of the 13,485 eLTP applications submitted to NABP, 1,110 were related to transfers to or from the state of Virginia.
- Virginia had a total number of 723 requests submitted in 2024 to transfer licensure to the jurisdiction.
- NABP identified Virginia as one of the states with the highest number of licensure transfer requests to the state in 2024.
- Data from NABP also revealed that Virginia had a total number of 387 request submitted in 2024 to transfer licensure from the state.

Pharmacist Licensure Trends



Pharmacist Licensure Trends





Pharmacist Licensure Trends

- **Uniform Multistate Pharmacy Jurisprudence Examination**

- The uniform version of the MPJE is a national standardized pharmacy jurisprudence examination that will focus on assessing knowledge of pharmacy laws and regulations that are applicable across participating jurisdictions.
 - The uniform version of the MPJE is expected to launch in June of 2026.
 - An additional tool that boards can leverage to assess candidates' knowledge of pharmacy law.
 - The current MPJE will remain a valuable, state-specific exam.
 - State boards of pharmacy will have the option to use the state-specific MPJE as a critical component of the licensure process.
 - Pharmacists who pass the uniform MPJE will still be held responsible for adhering to state-specific laws, even if they are not addressed on the exam.
 - State boards retain the authority to grant licensure and enact rules for compliance with their regulations.
 - The uniform MPJE is a unique tool that will address the need to allow practice in multiple participating jurisdictions.
 - In 2026, graduates and pharmacists seeking licensure in states that adopt the uniform MPJE will only be required to take and pass one law exam, reducing the overall cost, regulatory burden, and time to licensure.

Virginia's Pharmacist Workforce: 2024

Healthcare Workforce Data Center

February 2025

Virginia Department of Health Professions
Healthcare Workforce Data Center
Perimeter Center
9960 Mayland Drive, Suite 300
Henrico, VA 23233
804-597-4213, 804-527-4466 (fax)
E-mail: HWDC@dhp.virginia.gov

Follow us on Tumblr: www.vahwdc.tumblr.com

Get a copy of this report from:

<http://www.dhp.virginia.gov/PublicResources/HealthcareWorkforceDataCenter/ProfessionReports/>

15,672 Pharmacists voluntarily participated in this survey. Without their effort, the work of the center would not be possible. The Department of Health Professions, the Healthcare Workforce Data Center, and the Board of Pharmacy express our sincerest appreciation for their ongoing cooperation.

Thank You!

Virginia Department of Health Professions

Arne W. Owens, MS
Director

Healthcare Workforce Data Center Staff:

Yetty Shobo, PhD
Director

Barbara Hodgdon, PhD
Deputy Director

Rajana Siva, MBA
Data Analyst

Christopher Coyle, BS
Research Assistant

The Board of Pharmacy

Chair

Cheryl L. Garvin, *RPh*
Leesburg

Vice-Chairman

Ling Yuan, *PharmD*
Glen Allen

Members

Shannon Dowdy, *PharmD*
Henrico

Michelle E. Hoffer, *JD*
Richmond

Kelly Hasty Kale, *RPh*
Williamsburg

S. Lawrence Kocot, *JD*
Alexandria

Wendy C. Nash, *PharmD*
Valentines

Kristopher S. Ratliff, *DPh*
Marion

Patricia Lynn Richards-Spruill, *RPh*
Suffolk

Derek Webb, *PharmD*
Abingdon

Executive Director

Caroline D. Juran, *RPh*

Contents

Results in Brief.....	2
Summary of Trends	2
Survey Response Rates	3
The Workforce.....	4
Demographics.....	5
Background	6
Education	8
Credentials	9
Services and Disease Management.....	10
Current Employment Situation	11
Employment Quality.....	12
Labor Market.....	13
Work Site Distribution	14
Establishment Type	15
Time Allocation	17
Retirement & Future Plans	18
Full-Time Equivalency Units.....	20
Maps	21
Virginia Performs Regions	21
Area Health Education Center Regions	22
Workforce Investment Areas	23
Health Services Areas	24
Planning District	25
Appendix	25
Weights	26

The Pharmacist Workforce: At a Glance:

The Workforce

Licensees:	16,940
Virginia's Workforce:	9,068
FTEs:	7,435

Background

Rural Childhood:	31%
HS Degree in VA:	47%
Prof. Degree in VA:	48%

Current Employment

Employed in Prof.:	92%
Hold 1 Full-time Job:	74%
Satisfied?:	90%

Survey Response Rate

All Licensees:	93%
Renewing Practitioners:	98%

Education

Baccalaureate:	25%
Pharm.D./Professional:	75%

Job Turnover

Switched Jobs in 2022:	5%
Employed over 2 yrs.:	61%

Demographics

Female:	69%
Diversity Index:	56%
Median Age:	45

Finances

Median Inc.: \$130k-\$140k
Health Benefits: 63%
Under 40 w/ Ed debt: 68%

Primary Roles

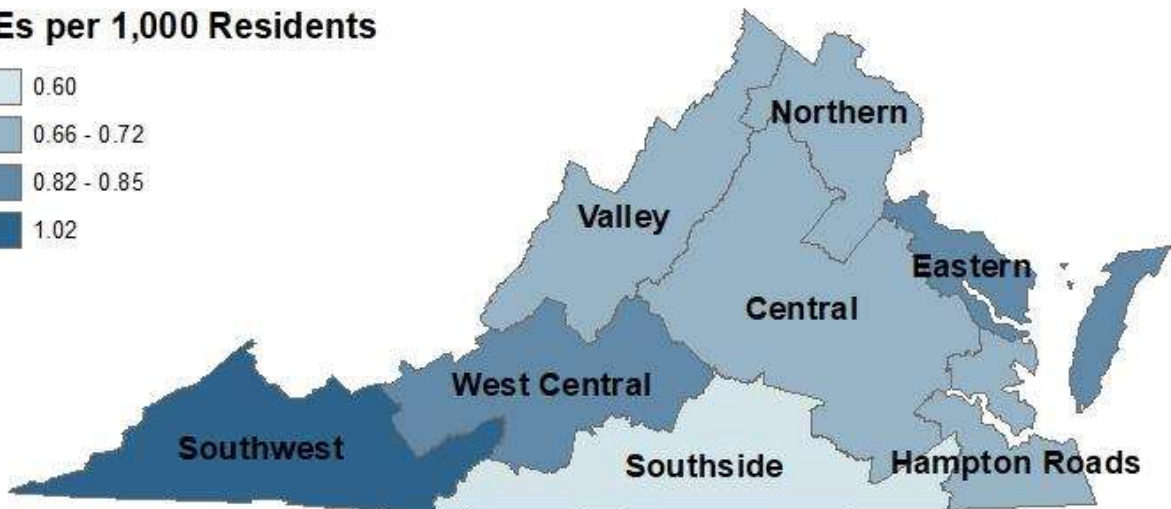
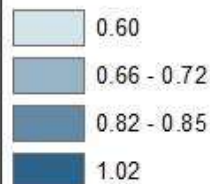
Patient Care:	74%
Administration:	8%
Education:	1%

Source: Va. Healthcare Workforce Data Center

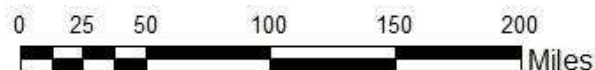
Full Time Equivalency Units Provided by Pharmacists per 1,000 Residents by Virginia Performs Regions

Source: Va Healthcare Workforce Data Center

FTEs per 1,000 Residents



Annual Estimates of the Resident Population: July 1, 2023
Source: U.S. Census Bureau, Population Division



Results in Brief

A total of 15,672 pharmacists voluntarily took part in the 2023 Pharmacist Workforce Survey. The Virginia Department of Health Professions' Healthcare Workforce Data Center (HWDC) administers the survey during the license renewal process, which takes place every December for pharmacists. These survey respondents represent 93% of the 16,940 pharmacists who are licensed in the state and 98% of renewing practitioners. The HWDC estimates that the 9,068 pharmacists in the Virginia's workforce during the survey period provided 7,435 full-time equivalency units (FTE).

The majority of Virginia's pharmacists are female, and the median age among those in the workforce is 45. Almost one-third of pharmacists grew up in a rural area, and close to one-quarter of these professionals currently work in non-metro areas of the state. Overall, 10% of Virginia's pharmacists work in a non-metro area. 75% of Virginia's pharmacist workforce have earned a doctorate or other professional degree as their highest educational attainment. Further, 40% of pharmacists currently carry educational debt. Nearly seven out of ten of those under the age of 40 carry education debt. The median debt for those pharmacists with educational debt is between \$120,000 and \$140,000.

More than nine out of every ten pharmacists are currently employed in the profession, with 74% holding one full-time position. Over the past year, 1% of pharmacists were involuntarily unemployed, while another 2% were underemployed. The typical pharmacist earned between \$130,000 and \$140,000 in 2024. Around 90% of all pharmacists are satisfied with their current employment situation, including 48% who indicated that they are "very satisfied".

About 90% of all pharmacists work in the private sector, including 61% who work at a for-profit organization. Hospital health systems were the most common working establishment type for Virginia's pharmacist workforce, employing 25% of all professionals. Large chain pharmacies (i.e., pharmacies with more than 11 stores) also were common employers. About 47% of pharmacists expect to retire by the age of 65 and 7% of the current workforce expect to retire in the next two years. Half of the current workforce expect to retire by 2049.

Summary of Trends

The total number of licensed pharmacists has grown by 33% since 2013. Of these, the number working in the state workforce has also increased by approximately 15%. Additionally, there has been a 9% increase in FTE provided in state by pharmacists between 2013 and 2024.

The diversity index of Virginia's pharmacists increased from 47% in 2013 to 56% in 2024. The percentage of pharmacists who are female also increased, from 62% in 2013 to 69% in 2024. Median age has been relatively stable between 44 and 45 years since 2013. The percent under age 40, increased slightly from 37% in 2013 to 38% in 2023, and has decreased to 37% in 2024.

Educational attainment, specifically those who reported a PharmD, continues to increase in the pharmacist workforce, from 51% in 2013 to 75% in 2024. The percent reporting educational debt has also increased from 35% in 2013 to 40% in 2024. Median educational debt also increased from \$90K-\$100K in 2013 to \$140K-\$160K in 2024.

Around 92% of pharmacists reported being employed in the profession, compared to 93% in 2013. Median income increased from \$110K-\$120K in 2013 to \$130K-\$140K in 2024. Job satisfaction has decreased from 93% in 2013 to 90% in 2024. Pharmacists intending to retire within 10 years increased from 22% in 2013 to 26% in 2024. Regarding future plans, only 5% intended to increase patient care hours in 2024 compared to 12% in 2013.

A Closer Look:

Licensee Counts		
License Status	#	%
Renewing Practitioners	15,483	91%
New Licensees	758	4%
Non-Renewals	699	4%
All Licensees	16,940	100%

Source: Va. Healthcare Workforce Data Center

HWDC surveys tend to achieve very high response rates. 98% of renewing pharmacists submitted a survey. These represent 93% of pharmacists who held a license at some point in 2023.

Response Rates			
Statistic	Non Respondents	Respondent	Response Rate
By Age			
Under 30	94	548	85%
30 to 34	190	1,934	91%
35 to 39	181	2,796	94%
40 to 44	180	2,490	93%
45 to 49	117	1,944	94%
50 to 54	101	1,823	95%
55 to 59	110	1,596	94%
60 and Over	295	2,541	90%
Total	1,268	15,672	93%
New Licenses			
Issued in 2024	243	515	68%
Metro Status			
Non-Metro	80	1,053	93%
Metro	553	8,374	94%
Not in Virginia	636	6,245	91%

Source: Va. Healthcare Workforce Data Center

At a Glance:

Licensed Pharmacists

Number:	16,940
New:	4%
Not Renewed:	4%

Survey Response Rates

All Licensees:	93%
Renewing Practitioners:	98%

Source: Va. Healthcare Workforce Data Center

Response Rates	
Completed Surveys	15,672
Response Rate, all licensees	93%
Response Rate, Renewals	98%

Source: Va. Healthcare Workforce Data Center

Definitions

- The Survey Period:** The survey was conducted in December 2024.
- Target Population:** All pharmacists who held a Virginia license at some point in 2024.
- Survey Population:** The survey was available to those who renewed their licenses online. It was not available to those who did not renew, including some pharmacists newly licensed in 2024.

At a Glance:

Workforce

Pharmacist Workforce: 9,068
FTEs: 7,435

Utilization Ratios

Licensees in VA Workforce: 54%
Licensees per FTE: 2.28
Workers per FTE: 1.22

Source: Va. Healthcare Workforce Data Center

Virginia's Pharmacist Workforce		
Status	#	%
Worked in Virginia in Past Year	8,873	98%
Looking for Work in Virginia	195	2%
Virginia's Workforce	9,068	100%
Total FTEs	7,435	
Licensees	16,940	

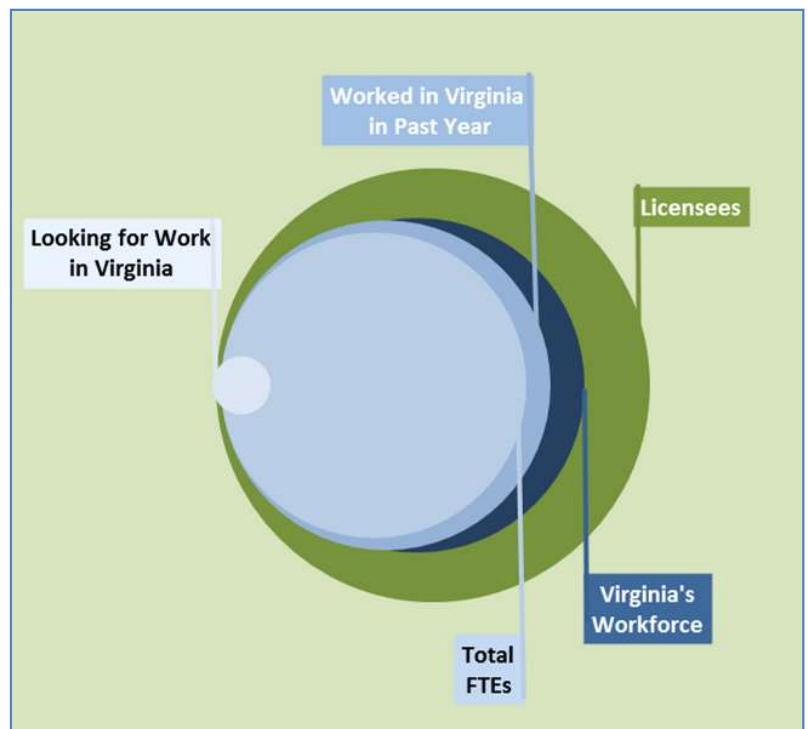
Source: Va. Healthcare Workforce Data Center

This report uses weighting to estimate the figures in this report. Unless otherwise noted, figures refer to the Virginia Workforce only. For more information on HWDC's methodology visit:

www.dhp.virginia.gov/hwdc

Definitions

- 1. Virginia's Workforce:** A licensee with a primary or secondary work site in Virginia at any time in the past year or who indicated intent to return to Virginia's workforce at any point in the future.
- 2. Full Time Equivalency Unit (FTE):** The HWDC uses 2,000 hours (40 hours for 50 weeks with 2 weeks off) as its baseline measure for FTEs.
- 3. Licensees in VA Workforce:** The proportion of licensees in Virginia's Workforce.
- 4. Licensees per FTE:** An indication of the number of licensees needed to create 1 FTE. Higher numbers indicate lower licensee participation.
- 5. Workers per FTE:** An indication of the number of workers in Virginia's workforce needed to create 1 FTE. Higher numbers indicate lower utilization of available workers.



Source: Va. Healthcare Workforce Data Center

A Closer Look:

Age & Gender						
Age	Male		Female		Total	
	#	% Male	#	% Female	#	% in Age Group
Under 30	103	24%	324	76%	427	6%
30 to 34	269	27%	737	73%	1,006	14%
35 to 39	335	30%	796	70%	1,130	16%
40 to 44	298	30%	699	70%	997	14%
45 to 49	227	29%	551	71%	778	11%
50 to 54	203	27%	546	73%	749	11%
55 to 59	242	33%	490	67%	731	11%
60 +	513	45%	621	55%	1,134	16%
Total	2,190	32%	4,763	69%	6,953	100%

Source: Va. Healthcare Workforce Data Center

Race & Ethnicity					
Race/ Ethnicity	Virginia*	Pharmacists		Pharmacists Under 40	
	%	#	%	#	%
White	59%	4,276	61%	1,433	56%
Black	19%	878	13%	312	12%
Asian	7%	1,402	20%	623	24%
Other Race	0%	119	2%	46	2%
Two or more races	3%	151	2%	69	3%
Hispanic	11%	132	2%	64	3%
Total	100%	6,958	100%	2,547	100%

** Population data in this chart is from the U.S. Census, Annual Estimates of the Resident Population by Sex, Race, and Hispanic Origin for the United States, States, and Counties: July 1, 2023.

Source: Va. Healthcare Workforce Data Center

37% of pharmacists are under the age of 40, and 72% of these professionals are female. In addition, pharmacists who are under the age of 40 have a diversity index of 61%, slightly higher than Virginia's population.

At a Glance:

Gender

% Female: 69%

% Under 40 Female: 72%

Age

Median Age: 45

% Under 40: 37%

% 55+: 27%

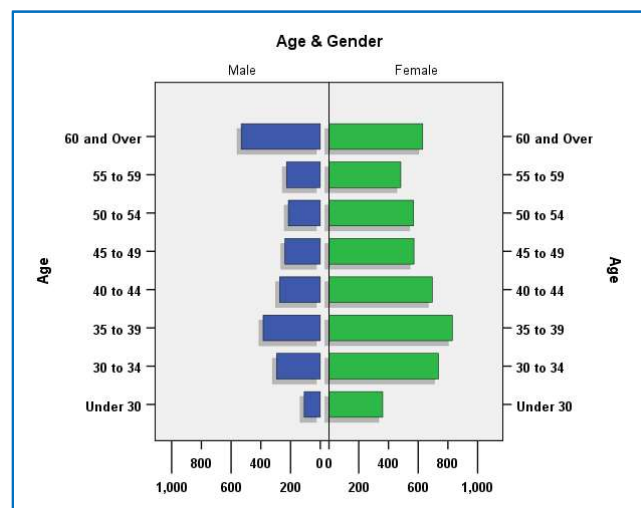
Diversity

Diversity Index: 56%

Under 40 Div. Index: 61%

Source: Va. Healthcare Workforce Data Center

In a chance encounter between two pharmacists, there is a 56% chance that they would be of a different race/ethnicity (a measure known as the Diversity Index). For Virginia's population as a whole, the comparable number is 60%.



Source: Va. Healthcare Workforce Data Center

At a Glance:

Childhood

Urban Childhood: 17%
Rural Childhood: 31%

Virginia Background

HS in Virginia: 47%
Prof. Education in VA: 48%
HS/Prof. Educ. in VA: 57%

Location Choice

% Rural to Non-Metro: 22%
% Urban/Suburban to Non-Metro: 5%

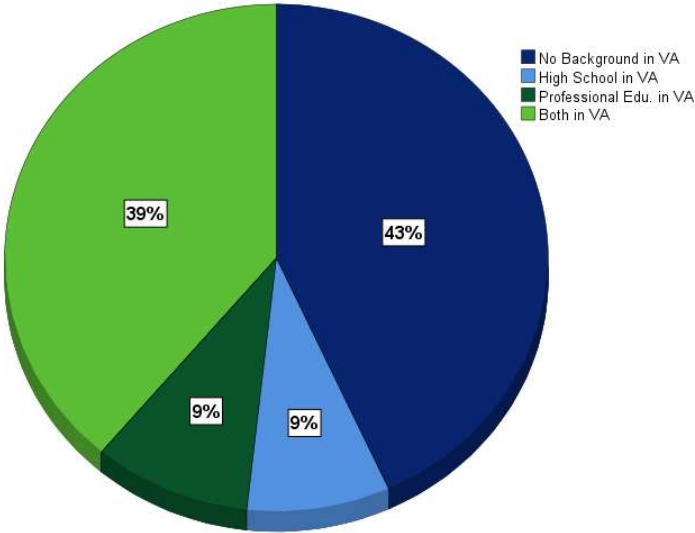
Source: Va. Healthcare Workforce Data Center

A Closer Look:

Primary Location: USDA Rural Urban Continuum		Rural Status of Childhood Location		
Code	Description	Rural	Suburban	Urban
Metro Counties				
1	Metro, 1 million+	20%	59%	20%
2	Metro, 250,000 to 1 million	52%	41%	7%
3	Metro, 250,000 or less	41%	45%	14%
Non-Metro Counties				
4	Urban pop 20,000+, metro adjacent	52%	35%	13%
6	Urban pop, 5,000-19,999, metro adjacent	59%	28%	14%
7	Urban pop, 5,000-19,999, non adjacent	91%	7%	2%
8	Rural, metro adjacent	58%	39%	3%
9	Rural, non adjacent	72%	19%	10%
Overall		31%	52%	17%

Source: Va. Healthcare Workforce Data Center

Educational Background in Virginia



Source: Va. Healthcare Workforce Data Center

31% of pharmacists grew up in self-described rural areas, and 22% of these professionals currently work in non-metro counties. Overall, 10% of Virginia’s pharmacist workforce currently work in non-metro counties.

Top Ten States for Pharmacy Recruitment

Rank	All Pharmacists			
	High School	#	Professional School	#
1	Virginia	3,206	Virginia	3,229
2	Outside U.S./Canada	868	Pennsylvania	434
3	Pennsylvania	388	Outside U.S./Canada	338
4	New York	287	North Carolina	329
5	Maryland	228	New York	228
6	North Carolina	197	Maryland	220
7	West Virginia	182	West Virginia	180
8	New Jersey	131	Massachusetts	179
9	Florida	121	Washington, D.C.	164
10	Ohio	120	Tennessee	146

Source: Va. Healthcare Workforce Data Center

47% of Virginia's pharmacists received their high school degree in Virginia, and 48% received their initial professional degree in the state.

Among pharmacists who have been licensed in the past five years, 39% received their high school degree in Virginia, and 41% received their initial professional degree in the state.

Rank	Licensed in the Past 5 Years			
	High School	#	Professional School	#
1	Virginia	566	Virginia	588
2	Outside U.S./Canada	223	North Carolina	102
3	Pennsylvania	70	Outside U.S./Canada	95
4	Maryland	63	Pennsylvania	84
5	North Carolina	60	Maryland	61
6	New York	42	Tennessee	60
7	Florida	41	West Virginia	46
8	West Virginia	39	Florida	44
9	Texas	28	New York	39
10	Ohio	24	South Carolina	32

Source: Va. Healthcare Workforce Data Center

46% of Virginia's licensed pharmacists did not participate in Virginia's workforce in 2024. 92% of these professionals worked at some point in the past year, including 84% who currently work as pharmacists.

At a Glance:

Not in VA Workforce

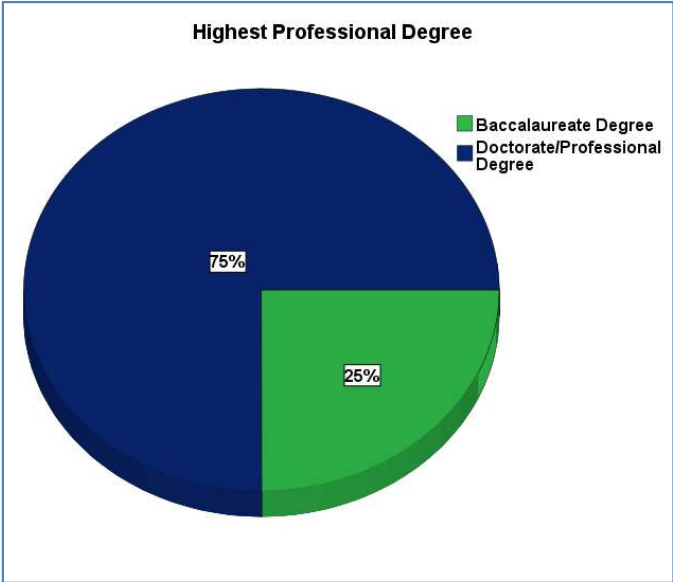
Total:	7,871
% of Licensees:	46%
Federal/Military:	8%
VA Border State/DC:	16%

Source: Va. Healthcare Workforce Data Center

A Closer Look:

Highest Professional Degree		
Degree	#	%
B.S. Pharmacy	1,653	25%
Pharm.D.	4,963	75%
Total	6,615	100%

Source: Va. Healthcare Workforce Data Center



Source: Va. Healthcare Workforce Data Center

At a Glance:

Education

B.S. Pharmacy:	25%
Pharm.D.:	75%

Educational Debt

Carry debt:	40%
Under age 40 w/ debt:	68%
Median debt:	\$140k-\$160k

Source: Va. Healthcare Workforce Data Center

75% of pharmacists hold a Doctorate in Pharmacy as their highest professional degree, while all remaining professionals have earned a Bachelor's degree in Pharmacy.

40% of pharmacists currently have educational debt, including 68% of those under the age of 40. For those with educational debt, the median debt is between \$110,000 and \$140,000. Among those under the age of 40 with debt, median is \$140,000 to \$180,000.

Educational Debt				
Amount Carried	All Pharmacists		Pharmacists Under 40	
	#	%	#	%
None	3,137	60%	586	32%
\$30,000 or less	223	4%	76	4%
\$30,001-\$49,999	169	3%	58	3%
\$50,000-\$69,999	154	3%	71	4%
\$70,001-\$89,999	144	3%	66	4%
\$90,000-109,999	152	3%	84	5%
\$110,000-\$139,999	186	4%	131	7%
\$140,000-\$179,999	290	6%	216	12%
\$180,000-\$219,999	289	6%	214	12%
\$220,000-\$259,999	202	4%	156	8%
\$260,000-\$299,999	106	2%	81	4%
\$300,000 or more	165	3%	116	6%
Total	5,217	100%	1,855	100%

Source: Va. Healthcare Workforce Data Center

A Closer Look:

At a Glance:

Top Specialties

Immunization:	14%
Community Pharmacy:	8%
Ambulatory Care:	4%

Top Board Certifications

BPS - Pharmacotherapy:	6%
BPS - Ambulatory Care:	1%
BCGP - Geriatrics:	1%

Top Residencies (PGY1)

Pharmacy Practice (Post 1993):	12%
Community Pharmacy:	5%
Pharmacy Practice (Pre 1993):	2%

Source: Va. Healthcare Workforce Data Center

PGY1		
Residency	#	%
Pharmacy Practice (Post 1993)	1117	12%
Community Pharmacy	431	5%
Pharmacy Practice (Pre 1993)	208	2%
Managed Care Pharmacy	36	<1%
Total	1,792	20%
PGY2		
Ambulatory Care	111	1%
Critical Care	70	1%
Internal Medicine/Cardiology	54	1%
Oncology	41	<1%
Pediatrics	37	<1%
Health-system Pharmacy Administration	36	<1%
Infectious Disease	35	<1%
Drug Information	28	<1%
Pharmacotherapy	28	<1%
Psychiatry	27	<1%
Geriatrics	22	<1%
Emergency Medicine	21	<1%
Solid Organ Transplant	17	<1%
Other	140	2%
At Least One	667	7%

Source: Va. Healthcare Workforce Data Center

Board Certifications		
Certification	#	%
BPS-Pharmacotherapy	534	6%
BPS-Ambulatory Care	105	1%
BCGP-Geriatrics	73	1%
BPS-Oncology	57	1%
BPS- Psychiatric	23	<1%
BPS-Nuclear Pharmacy	13	<1%
BPS- Nutrition	13	<1%
ABAT-Applied Toxicology	4	<1%
Other Board Certification	278	3%
At Least One Certification	994	11%

Source: Va. Healthcare Workforce Data Center

11% of pharmacists hold a board certification, including 6% who hold a certification in Pharmacotherapy. 32% also have a self-designated specialty area, including 14% who have a specialization in immunization.

At a Glance:

Top Services

Immunization:	27%
Medication Management:	25%
Compounding:	17%

Disease Management

Anticoagulation:	40%
Diabetes:	40%

Source: Va. Healthcare Workforce Data Center

A Closer Look:

Disease Management in Collaborative Practice

	#	%
Anticoagulation	298	40%
Diabetes	293	40%
Hypertension	264	36%
Hypercholesterolemia	234	32%
Tobacco Cessation	174	24%
Asthma	147	20%
Travel Medications	87	12%
At least one	425	64%

Source: Va. Healthcare Workforce Data Center

64% of the 406 pharmacists with a collaborative practice agreement were involved in providing at least one disease management service; anticoagulation and diabetes were the most commonly reported by 40% of those with the agreement. 24% of pharmacists in the state workforce also utilized at least one of the listed statewide protocols.

Services Provided

Services	Primary		Secondary	
	#	%	#	%
Primary Service, Immunization	2,477	27%	2,477	27%
Primary Service, Medication Therapy Management	2,231	25%	285	3%
Primary Service, Compounding	1,582	17%	176	2%
Primary Service, Central Filling	1,103	12%	159	2%
Primary Service, Remote Order Processing	992	11%	116	1%
Primary Service, Collaborative Practice Agreement	666	7%	73	1%
At Least One	4,174	46%	2,734	30%

Source: Va. Healthcare Workforce Data Center

Statewide Protocols

	#	%
Immunization	1,779	20%
Naloxone	1,543	17%
Coronavirus Testing	1,124	12%
Hormonal Contraception	532	6%
Epinephrine	374	4%
Lowering Out-of-Pocket Expenses	345	4%
Emergency Contraception	305	3%
Prenatal Vitamins	188	2%
HIV Pre-Exposure Prophylaxis	109	1%
Tuberculin Skin Testing	47	1%
HIV Post-Exposure Prophylaxis	25	0%
At Least One	2,170	24%

Source: Va. Healthcare Workforce Data Center

At a Glance:

Employment

Employed in Profession: 92%
Involuntarily Unemployed: <1%

Positions Held

1 Full-time: 74%
2 or More Positions: 9%

Weekly Hours:

40 to 49: 54%
60 or more: 4%
Less than 30: 12%

Source: Va. Healthcare Workforce Data Center

A Closer Look:

Current Work Status		
Status	#	%
Employed, capacity unknown	8	<1%
Employed in a pharmacy-related capacity	6,124	92%
Employed, NOT in a pharmacy-related capacity	264	4%
Not working, reason unknown	0	0%
Involuntarily unemployed	26	<1%
Voluntarily unemployed	153	2%
Retired	99	2%
Total	6,674	100%

Source: Va. Healthcare Workforce Data Center

92% of Virginia's pharmacists are currently employed in the profession, and less than 1% of all pharmacy professionals are involuntarily unemployed at the survey period. 74% of the state's pharmacist workforce have one full-time job, while 9% of pharmacists have multiple positions. 54% of pharmacists work between 40 and 49 hours per week, while 4% of pharmacy professionals work at least 60 hours per week.

Current Positions		
Positions	#	%
No Positions	278	4%
One Part-Time Position	833	13%
Two Part-Time Positions	128	2%
One Full-Time Position	4,799	74%
One Full-Time Position & One Part-Time Position	432	7%
Two Full-Time Positions	14	0%
More than Two Positions	35	1%
Total	6,519	100%

Source: Va. Healthcare Workforce Data Center

Current Weekly Hours		
Hours	#	%
0 hours	278	4%
1 to 9 hours	171	3%
10 to 19 hours	214	3%
20 to 29 hours	393	6%
30 to 39 hours	1,279	20%
40 to 49 hours	3,474	54%
50 to 59 hours	411	6%
60 to 69 hours	138	2%
70 to 79 hours	61	1%
80 or more hours	42	1%
Total	6,461	100%

Source: Va. Healthcare Workforce Data Center

A Closer Look:

Income		
Annual Income	#	%
Volunteer Work Only	40	1%
\$50,000 or less	281	6%
\$50,001-\$60,000	111	2%
\$60,001-\$70,000	83	2%
\$70,001-\$80,000	79	2%
\$80,001-\$90,000	104	2%
\$90,001-\$100,000	138	3%
\$100,001-\$110,000	296	6%
\$110,001-\$120,000	338	7%
\$120,001-\$130,000	589	12%
\$130,001-\$140,000	550	12%
\$140,001-\$150,000	607	13%
More than \$150,000	1,497	32%
Total	4,713	100%

Source: Va. Healthcare Workforce Data Center

At a Glance:

Annual Income

Median Income: \$130k-140k

Benefits

Employer Retirement: 69%

Employer Health Insurance: 68%

Satisfaction

Satisfied: 90%

Very Satisfied: 48%

Source: Va. Healthcare Workforce Data Center

Job Satisfaction		
Level	#	%
Very Satisfied	3,081	48%
Somewhat Satisfied	2,676	42%
Somewhat Dissatisfied	495	8%
Very Dissatisfied	175	3%
Total	6,427	100%

Source: Va. Healthcare Workforce Data Center

The typical pharmacist earned between \$130,000 and \$140,000 in 2024. Among pharmacists who received either an hourly wage or a salary as compensation at their primary work location, 68% received health insurance and 69% also had access to a retirement plan.

Employer-Sponsored Benefits			
Benefit	#	%	% of Wage/Salary Employees
Paid Vacation Leave	4,421	72%	77%
Retirement	3,909	64%	69%
Health Insurance	3,885	63%	68%
Dental Insurance	3,767	62%	66%
Paid Sick Leave	3,261	53%	57%
Group Life Insurance	2,674	44%	48%
Signing/Retention Bonus	617	10%	11%
Received At Least One Benefit	4,691	77%	82%

*From any employer at time of survey.

Source: Va. Healthcare Workforce Data Center

A Closer Look:

Underemployment in Past Year		
In the past year did you . . . ?	#	%
Experience Involuntary Unemployment?	76	1%
Experience Voluntary Unemployment?	205	2%
Work Part-time or temporary positions, but would have preferred a full-time/permanent position?	139	2%
Work two or more positions at the same time?	715	8%
Switch employers or practices?	409	5%
Experienced at least 1	1,312	14%

Source: Va. Healthcare Workforce Data Center

1% of Virginia’s pharmacists experienced involuntary unemployment at some point in 2024. By comparison, Virginia’s average monthly unemployment rate was 2.9%.¹

Location Tenure				
Tenure	Primary		Secondary	
	#	%	#	%
Not Currently Working at this Location	109	2%	56	7%
Less than 6 Months	479	8%	101	12%
6 Months to 1 Year	513	8%	95	12%
1 to 2 Years	1,338	22%	153	19%
3 to 5 Years	1,336	22%	150	18%
6 to 10 Years	900	15%	106	13%
More than 10 Years	1,513	24%	160	19%
Subtotal	6,187	100%	822	100%
Did not have location	262		8,217	
Item Missing	2,619		30	
Total	9,068		9,068	

Source: Va. Healthcare Workforce Data Center

Half of all pharmacists receive a salary or commission at their primary work location, while 44% receive an hourly wage.

At a Glance:

Unemployment Experience

Involuntarily Unemployed: 1%
Underemployed: 2%

Stability

Switched: 5%
New Location: 19%
Over 2 years: 61%
Over 2 yrs, 2nd location: 51%

Employment Type

Salary or Wage: 94%

Source: Va. Healthcare Workforce Data Center

61% of pharmacists have worked at their primary location for more than 2 years—the job tenure normally required to get a conventional mortgage loan.

Employment Type		
Primary Work Site	#	%
Salary/ Commission	2,469	50%
Hourly Wage	2,198	44%
By Contract	50	1%
Business/ Practice Income	226	5%
Unpaid	43	1%
Subtotal	4,986	100%

Source: Va. Healthcare Workforce Data Center

¹ As reported by the U.S. Bureau of Labor Statistics. The non-seasonally adjusted monthly unemployment rate fluctuated between a low of 2.3% and a high of 3.5%. The unemployment rate from December 2024 was still preliminary at the time of publication.

At a Glance:

Concentration

Top Region:	27%
Top 3 Regions:	72%
Lowest Region:	1%

Locations

2 or more (2023):	9%
2 or more (Now*):	12%

Source: Va. Healthcare Workforce Data Center

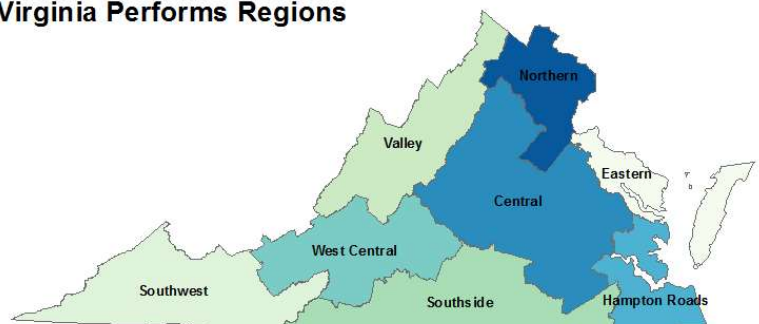
Over half of all pharmacists in the state work in either Northern Virginia or Central Virginia.

A Closer Look:

Regional Distribution of Work Locations				
Virginia Performs Region	Primary Location		Secondary Location	
	#	%	#	%
Central	1,659	27%	163	20%
Eastern	86	1%	22	3%
Hampton Roads	1,087	18%	152	18%
Northern	1,679	27%	188	23%
Southside	190	3%	27	3%
Southwest	357	6%	55	7%
Valley	339	5%	42	5%
West Central	679	11%	103	12%
Virginia Border State/DC	51	1%	25	3%
Other US State	37	1%	52	6%
Outside of the US	0	0%	0	0%
Total	6,164	100%	829	100%
Item Missing	2,641		23	

Source: Va. Healthcare Workforce Data Center

Virginia Performs Regions



Over the past year, 9% of Virginia's pharmacists worked at multiple locations.

Number of Work Locations				
Locations	Work Locations in 2023		Work Locations Now*	
	#	%	#	%
0	261	3%	267	4%
1	7,957	88%	5,340	84%
2	524	6%	485	8%
3	192	2%	182	3%
4	25	<1%	11	<1%
5	18	<1%	15	<1%
6 or More	91	1%	67	1%
Total	9,068	100%	6,366	100%

*At the time of survey completion, December 2023.

Source: Va. Healthcare Workforce Data Center

A Closer Look:

Sector	Location Sector			
	Primary Location		Secondary Location	
	#	%	#	%
For-Profit	3,466	61%	536	71%
Non-Profit	1,663	29%	174	23%
State/Local Government	201	4%	17	2%
Veterans Administration	161	3%	7	1%
U.S. Military	100	2%	8	1%
Other Federal Gov't	98	2%	13	2%
Total	5,689	100%	755	100%
Did not have location	262		8,217	
Item Missing	3,118		98	

Source: Va. Healthcare Workforce Data Center

At a Glance: (Primary Locations)

Sector

For Profit:	61%
Federal:	6%

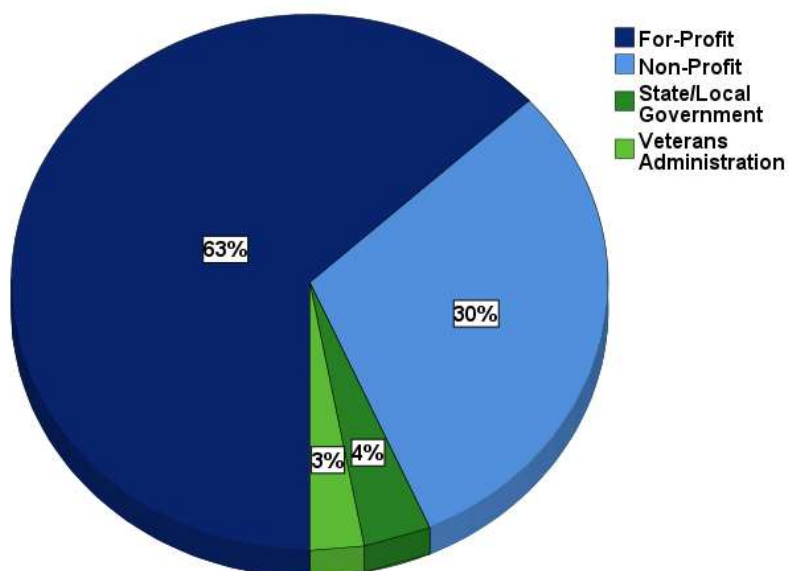
Top Establishments

Hospital/Health System: (Inpatient)	26%
Large Chain Pharmacy: (11+ Stores)	24%
Independent Pharmacy: (1-4 Stores)	9%

Source: Va. Healthcare Workforce Data Center

9% of all pharmacists work in the private sector, including 61% who work at a for-profit company. Another 6% of pharmacists work for the federal government, while 4% work for a state or local government.

Sector, Primary Work Site



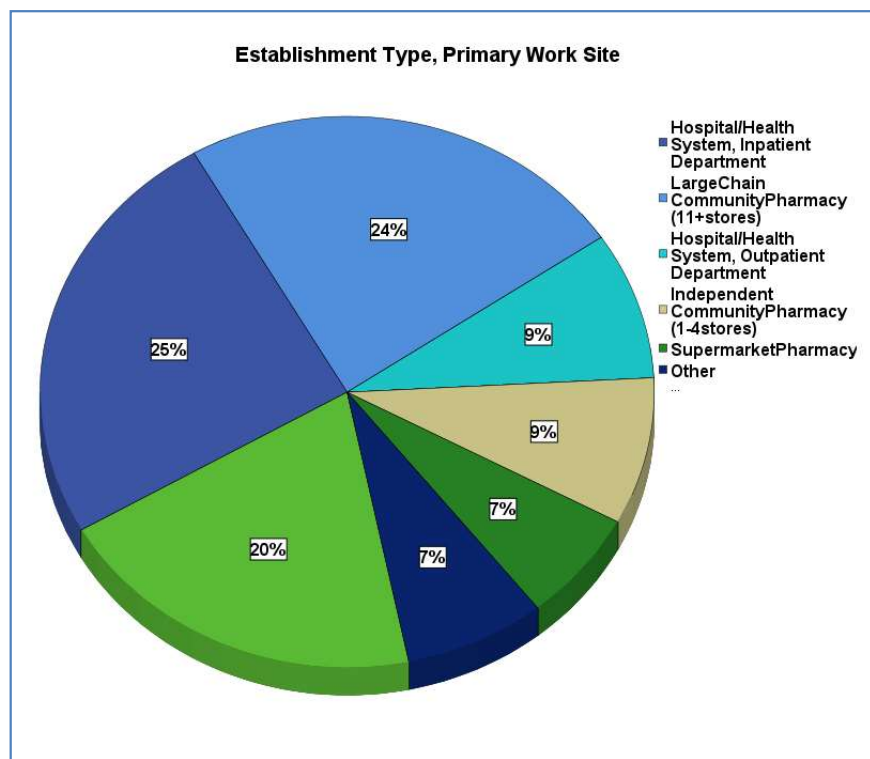
Source: Va. Healthcare Workforce Data Center

Top Location Types				
Establishment Type	Primary Location		Secondary Location	
	#	%	#	%
Hospital/Health System, Inpatient Department	1,403	25%	138	19%
Large Chain Community Pharmacy	1,336	24%	208	28%
Hospital/Health System, Outpatient Department	485	9%	30	4%
Independent Community Pharmacy	484	9%	91	12%
Supermarket Pharmacy	366	7%	47	6%
Clinic-Based Pharmacy	237	4%	45	6%
Mass Merchandiser (i.e., Big Box Store)	177	3%	33	4%
Benefit Administration	176	3%	8	1%
Nursing Home/Long-Term Care	156	3%	24	3%
Academic Institution	122	2%	24	3%
Mail Service Pharmacy	83	1%	10	1%
Home Health/Infusion	69	1%	4	1%
Manufacturer	51	1%	4	1%
Small Chain Community Pharmacy	36	1%	8	1%
Wholesale Distributor	8	0%	0	0%
Other	417	7%	68	9%
Total	5,606	100%	742	100%
Did Not Have a Location	262		8,217	

Hospital, health system, inpatient department is the most common establishment type in Virginia, employing a quarter of the state's pharmacist workforce.

Source: Va. Healthcare Workforce Data Center

Large chain community pharmacies of more than 10 stores were the most common establishment type among pharmacists who had a secondary work location.



Source: Va. Healthcare Workforce Data Center

At a Glance: (Primary Locations)

Typical Time Allocation

Patient Care: 80%-89%
Administration: 1%-9%

Roles

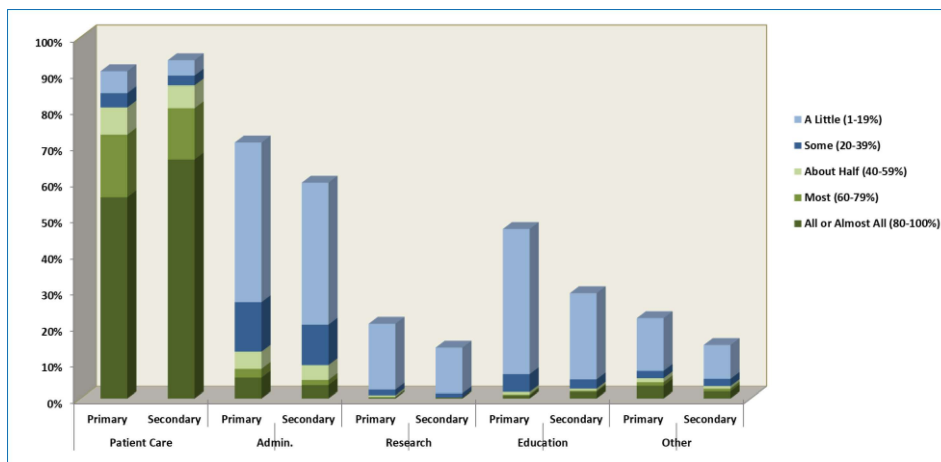
Patient Care: 74%
Administration: 8%
Education: 1%

Patient Care Pharmacists

Median Admin Time: 1%-9%
Ave. Admin Time: 1%-9%

Source: Va. Healthcare Workforce Data Center

A Closer Look:



Source: Va. Healthcare Workforce Data Center

A typical pharmacist spends most of her time in patient care activities. In fact, almost three-quarters of pharmacists fill a patient care role, defined as spending at least 60% of their time in that activity.

Time Allocation										
Time Spent	Patient Care		Admin.		Research		Education		Other	
	Pri. Site	Sec. Site	Pri. Site	Sec. Site	Pri. Site	Sec. Site	Pri. Site	Sec. Site	Pri. Site	Sec. Site
All or Almost All (80-100%)	57%	69%	6%	4%	0%	1%	1%	2%	3%	2%
Most (60-79%)	17%	12%	3%	2%	0%	0%	0%	0%	1%	0%
About Half (40-59%)	7%	4%	4%	3%	0%	0%	1%	1%	1%	1%
Some (20-39%)	4%	3%	13%	9%	2%	1%	5%	2%	2%	2%
A Little (1-20%)	6%	3%	45%	43%	19%	12%	40%	27%	15%	11%
None (0%)	9%	9%	30%	40%	79%	85%	54%	68%	78%	85%

Source: Va. Healthcare Workforce Data Center

A Closer Look:

Retirement Expectations				
Expected Retirement Age	All		Over 50	
	#	%	#	%
Under age 50	188	4%	-	-
50 to 54	206	4%	0	0%
55 to 59	573	12%	142	8%
60 to 64	1,381	28%	533	28%
65 to 69	1,724	35%	732	39%
70 to 74	455	9%	234	12%
75 to 79	149	3%	103	5%
80 or over	62	1%	34	2%
I do not intend to retire	221	4%	98	5%
Total	4,958	100%	1,876	100%

Source: Va. Healthcare Workforce Data Center

At a Glance:

Retirement Expectations

All Pharmacists

Under 65: 47%

Under 60: 20%

Pharmacists 50 and over

Under 65: 36%

Under 60: 8%

Time until Retirement

Within 2 years: 7%

Within 10 years: 26%

Half the workforce: By 2049

Source: Va. Healthcare Workforce Data Center

47% of Virginia’s pharmacists expect to retire before the age of 65, while 17% plan on working until at least age 70. Among pharmacists who are age 50 and over, 36% still plan on retiring by age 65, while 24% expect to work until at least age 70.

Within the next two years, 2% of Virginia’s pharmacists plan on leaving the profession and 2% expect to leave the state. Meanwhile, 6% of pharmacists expect to pursue additional educational opportunities, and 5% plan on increasing the number of hours that they devote to patients.

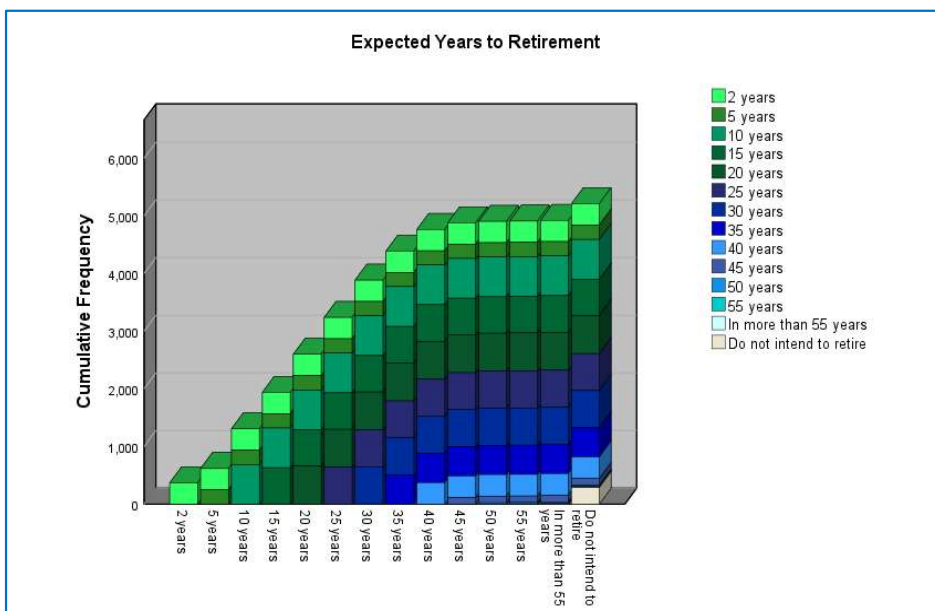
Future Plans		
2 Year Plans:	#	%
Decrease Participation		
Leave Profession	165	2%
Leave Virginia	183	2%
Decrease Patient Care Hours	269	3%
Decrease Teaching Hours	31	<1%
Increase Participation		
Increase Patient Care Hours	457	5%
Increase Teaching Hours	304	3%
Pursue Additional Education	565	6%
Return to Virginia’s Workforce	88	1%

Source: Va. Healthcare Workforce Data Center

By comparing retirement expectation to age, we can estimate the maximum years to retirement for pharmacists. Only 7% of pharmacists plan on retiring in the next two years, while 26% plan on retiring in the next ten years. More than half of the current pharmacist workforce is expected to retire by 2049.

Time to Retirement			
Expect to retire within. . .	#	%	Cumulative %
2 years	363	7%	7%
5 years	242	5%	12%
10 years	671	14%	26%
15 years	579	12%	37%
20 years	628	13%	50%
25 years	645	13%	63%
30 years	605	12%	75%
35 years	484	10%	85%
40 years	344	7%	92%
45 years	124	3%	94%
50 years	26	1%	95%
55 years	12	0%	95%
In more than 55 years	15	0%	96%
Do not intend to retire	221	4%	100%
Total	4,958	100%	

Source: Va. Healthcare Workforce Data Center



Using these estimates, retirement will begin to reach 10% of the current workforce starting in 2034. Retirement will peak at 13% of the current workforce around 2044 before declining to under 10% of the current workforce again around 2064.

Source: Va. Healthcare Workforce Data Center

At a Glance:

FTEs

Total: 7,435
FTEs/1,000 Residents²: 0.853
Average: 0.84

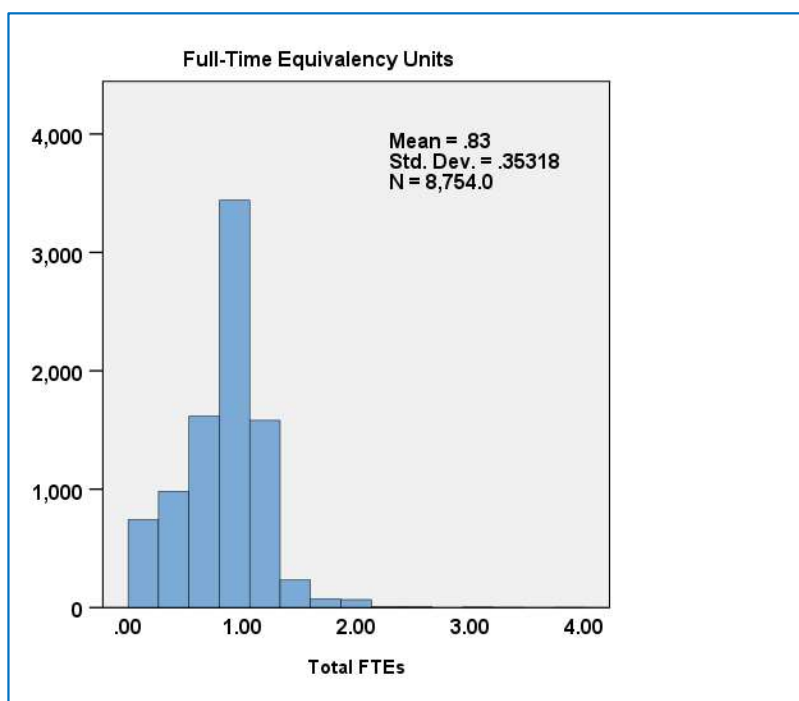
Age & Gender Effect

Age, Partial Eta³: Small
Gender, Partial Eta³: Negligible

Partial Eta³ Explained:
Partial Eta³ is a statistical measure of effect size.

Source: Va. Healthcare Workforce Data Center

A Closer Look:

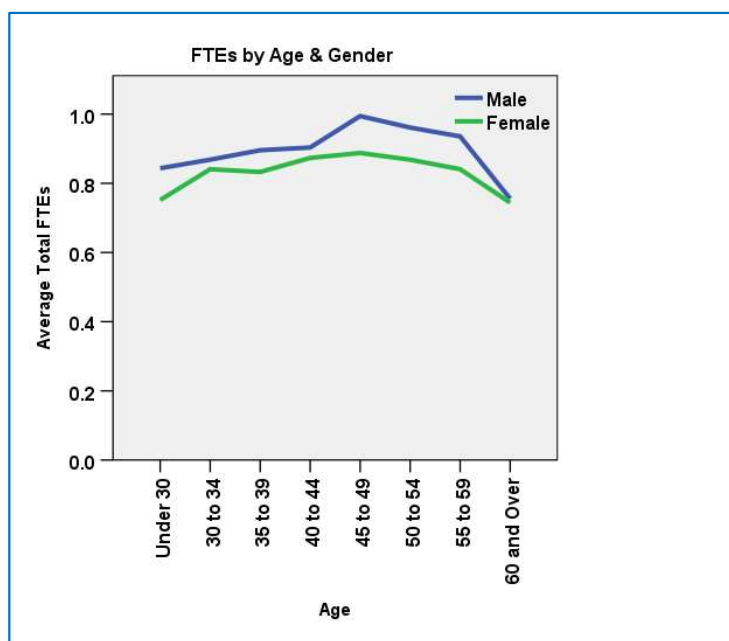


Source: Va. Healthcare Workforce Data Center

The typical pharmacist provided 0.85 FTEs in 2024, or about 34 hours per week for 52 weeks. Although FTEs appear to vary by both age and gender, statistical tests did not verify that a difference exists.³

Full-Time Equivalency Units		
	Average	Median
Under 30	0.72	0.71
30 to 34	0.83	0.84
35 to 39	0.86	0.85
40 to 44	0.85	0.78
45 to 49	0.90	0.88
50 to 54	0.91	0.88
55 to 59	0.92	0.99
60 and Over	0.74	0.67
Gender		
Male	0.89	0.98
Female	0.84	0.92

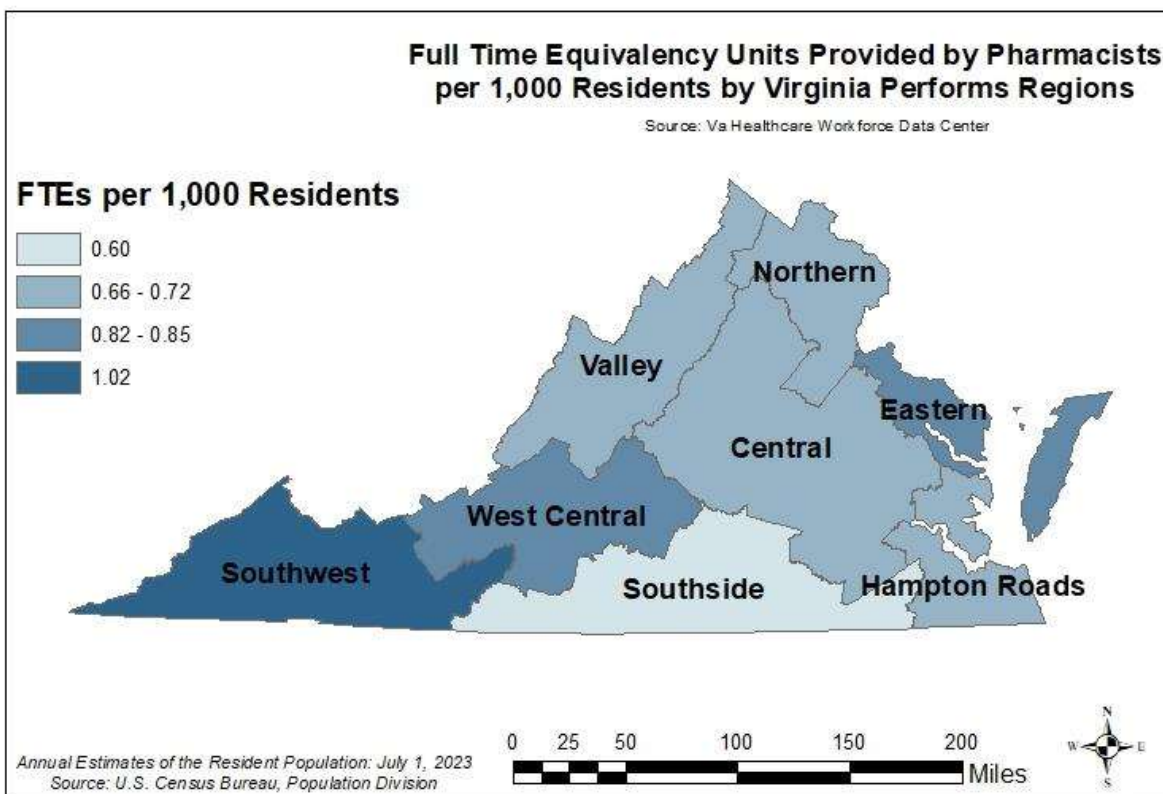
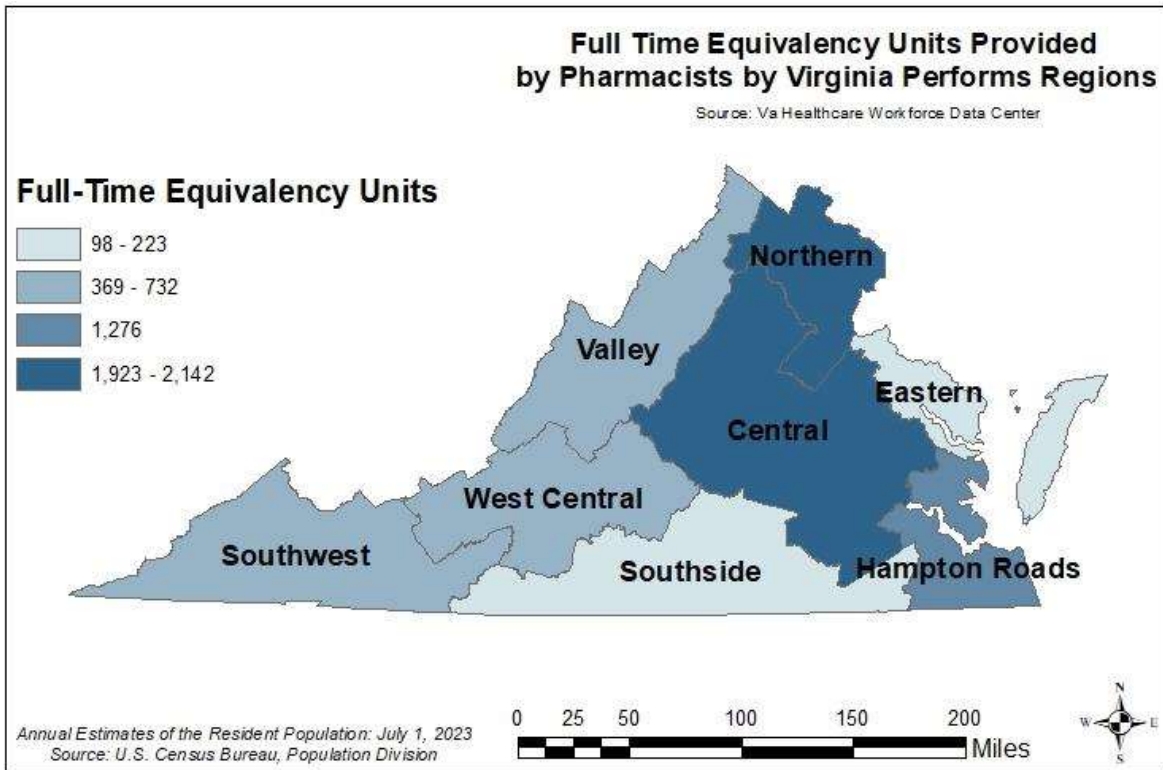
Source: Va. Healthcare Workforce Data Center



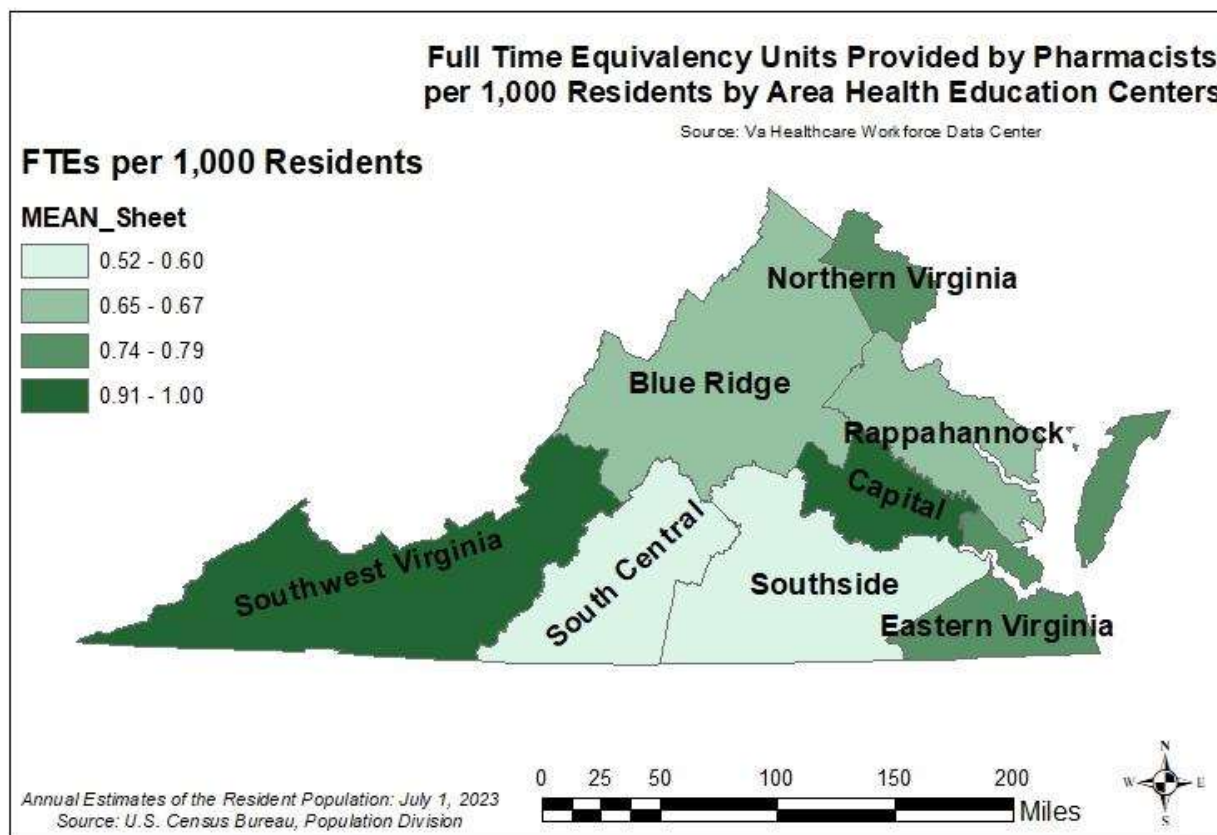
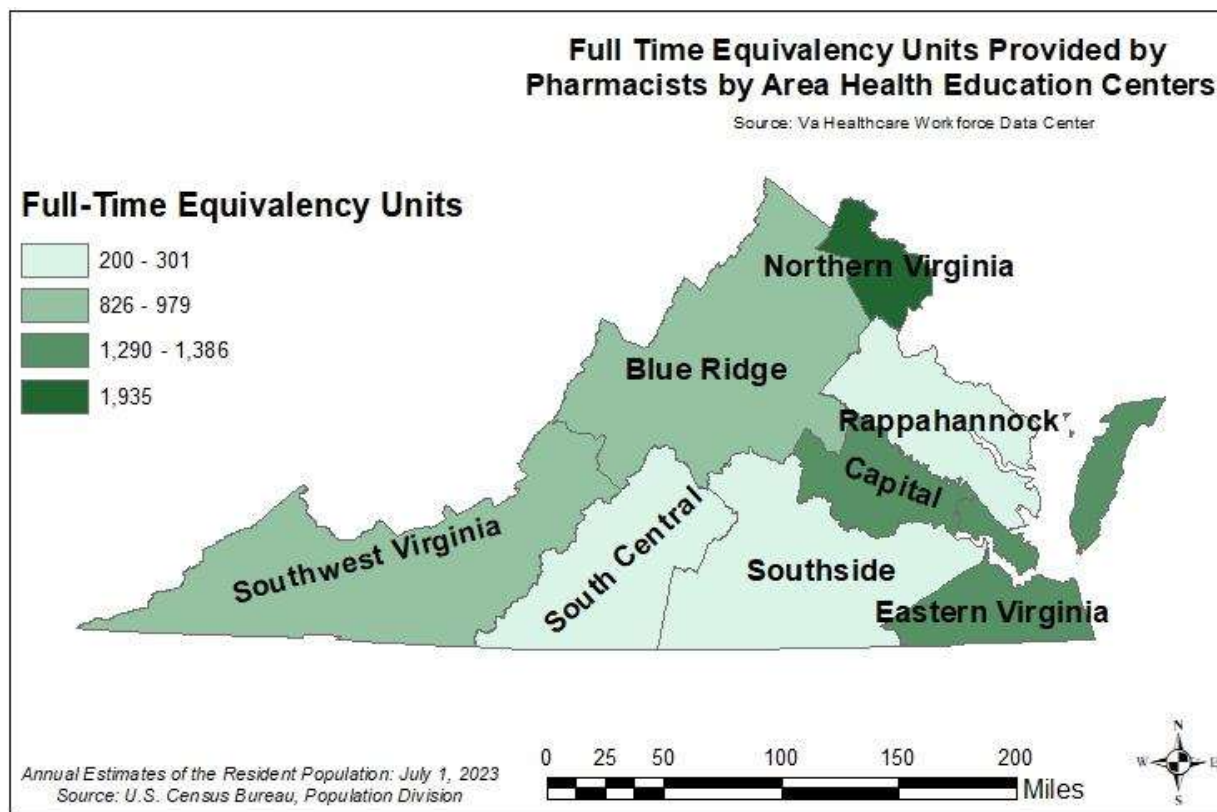
Source: Va. Healthcare Workforce Data Center

² Number of residents in 2023 was used as the denominator.

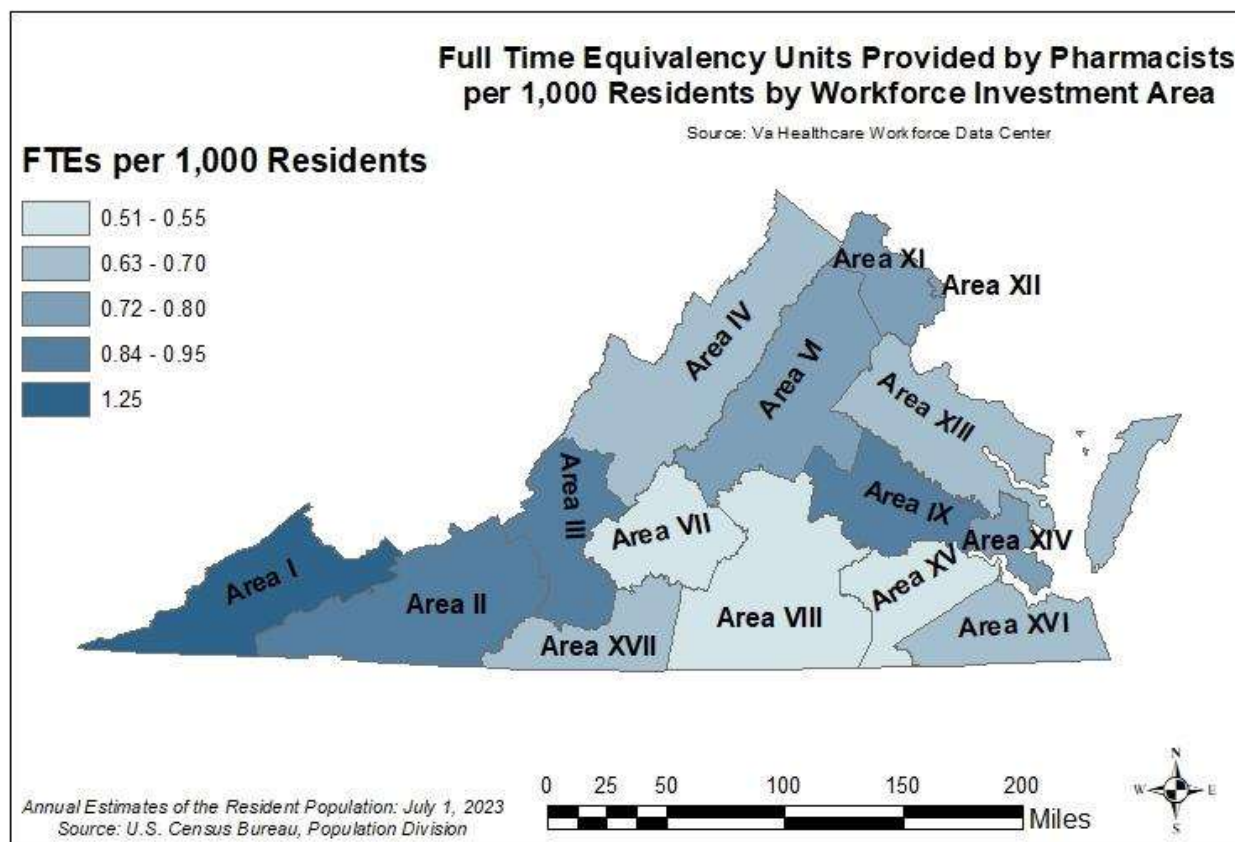
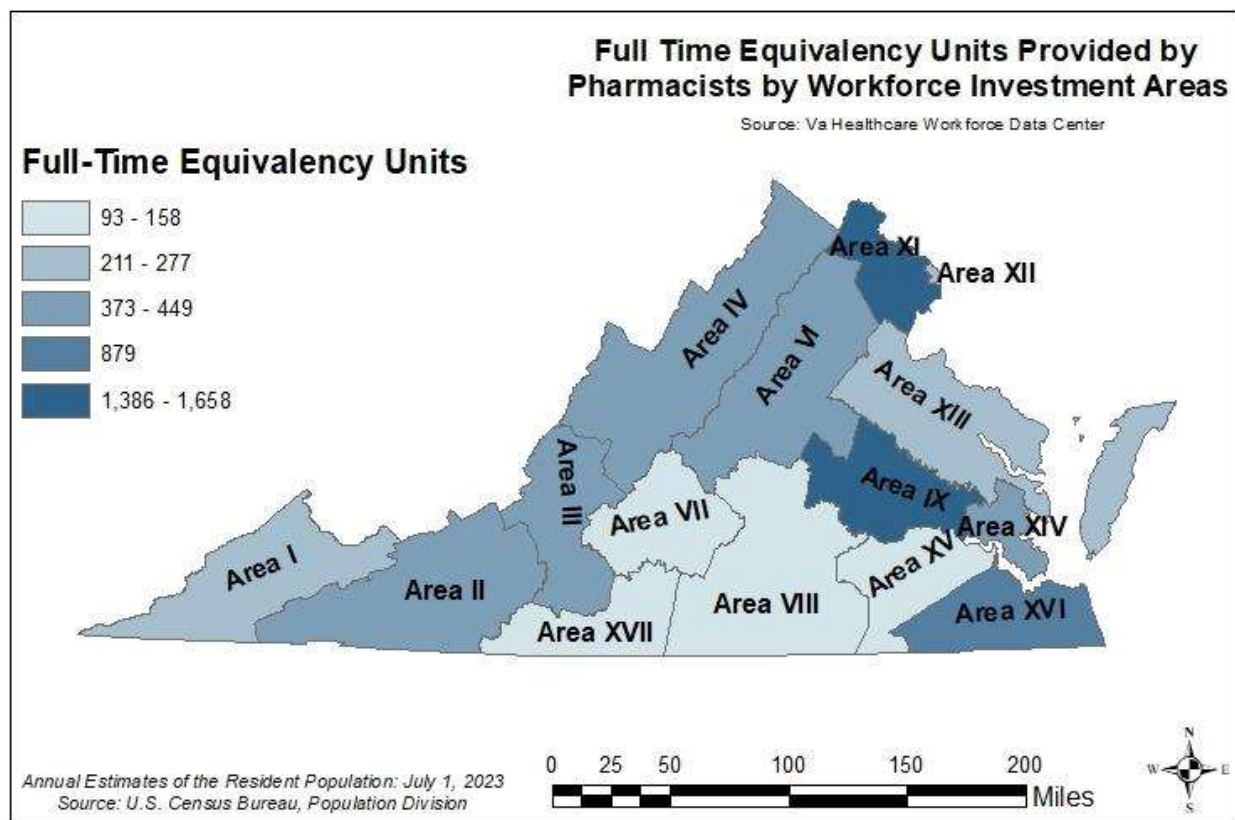
³ Due to assumption violations in Mixed between-within ANOVA (Levene's Test & Interaction effect are significant).



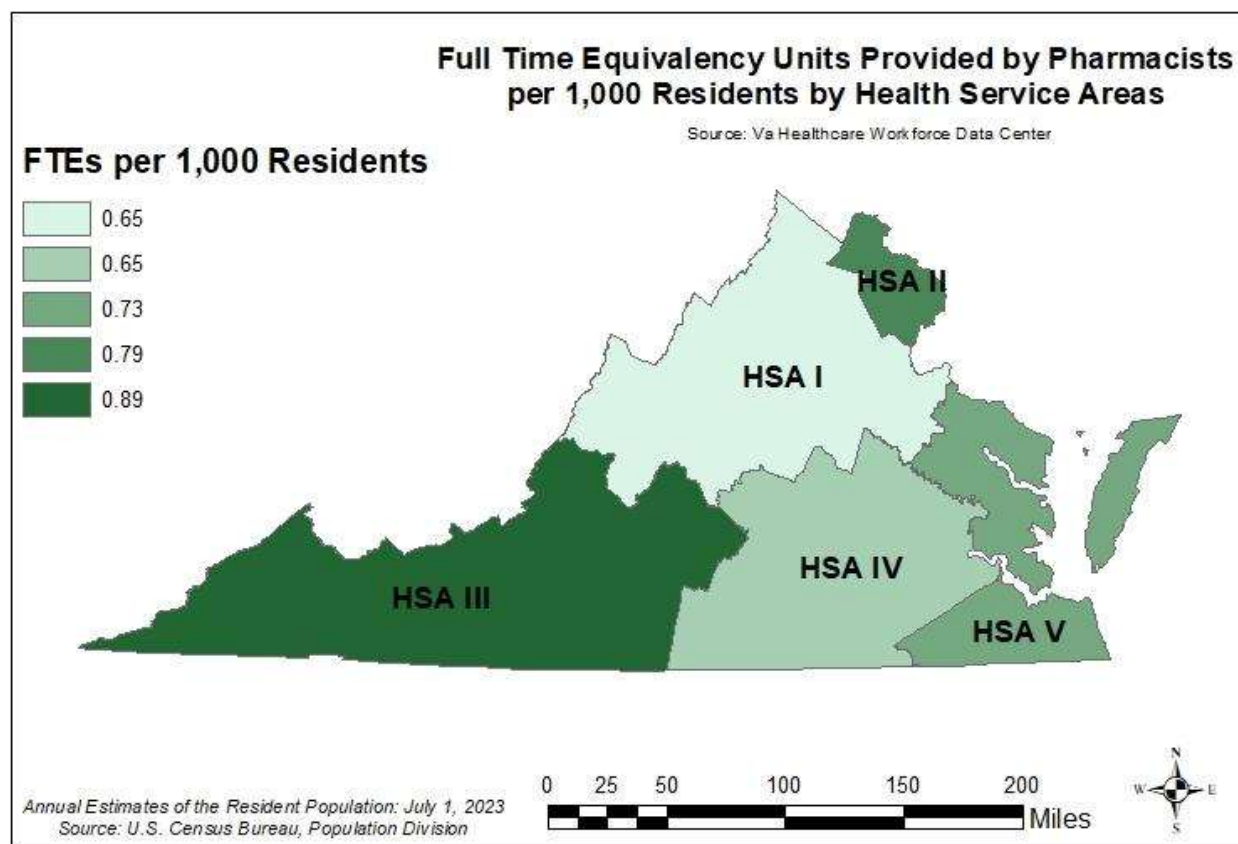
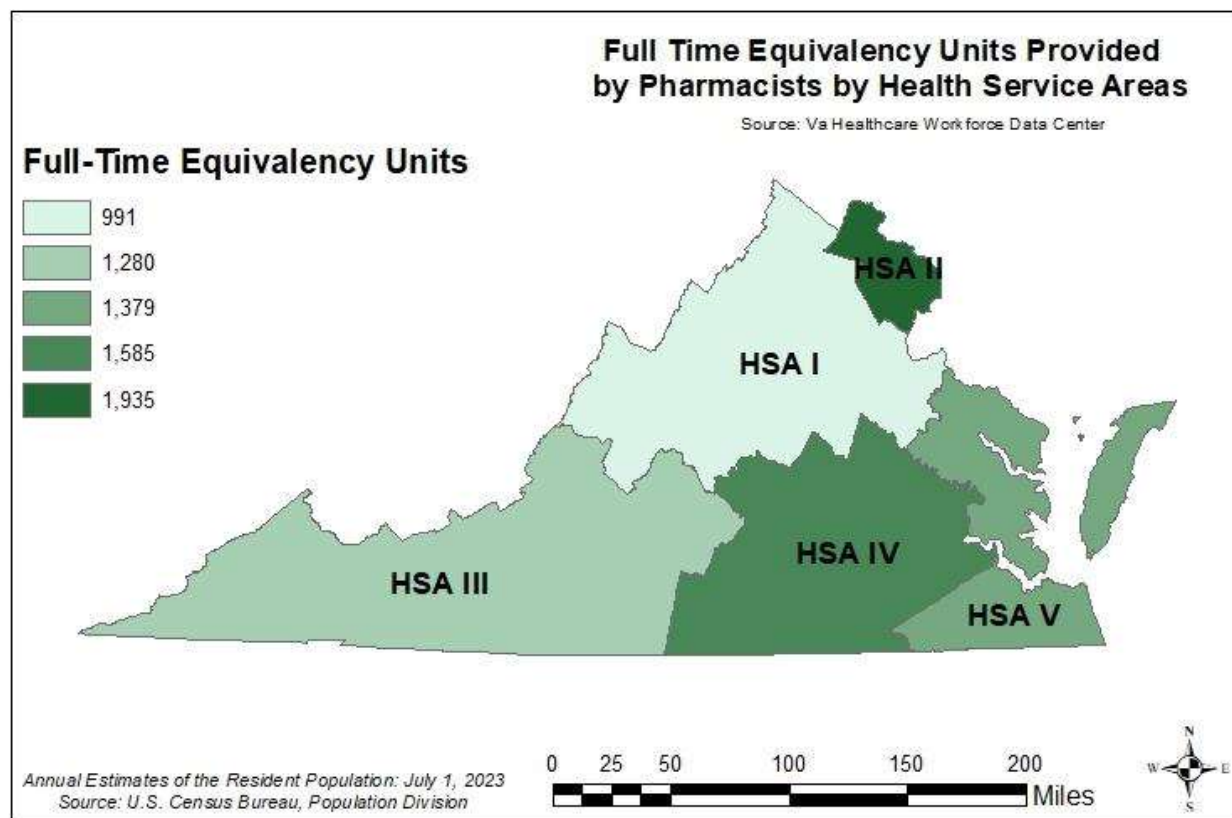
*Virginia performs regions are utilized across the state of Virginia by multiples stakeholders and state agencies.



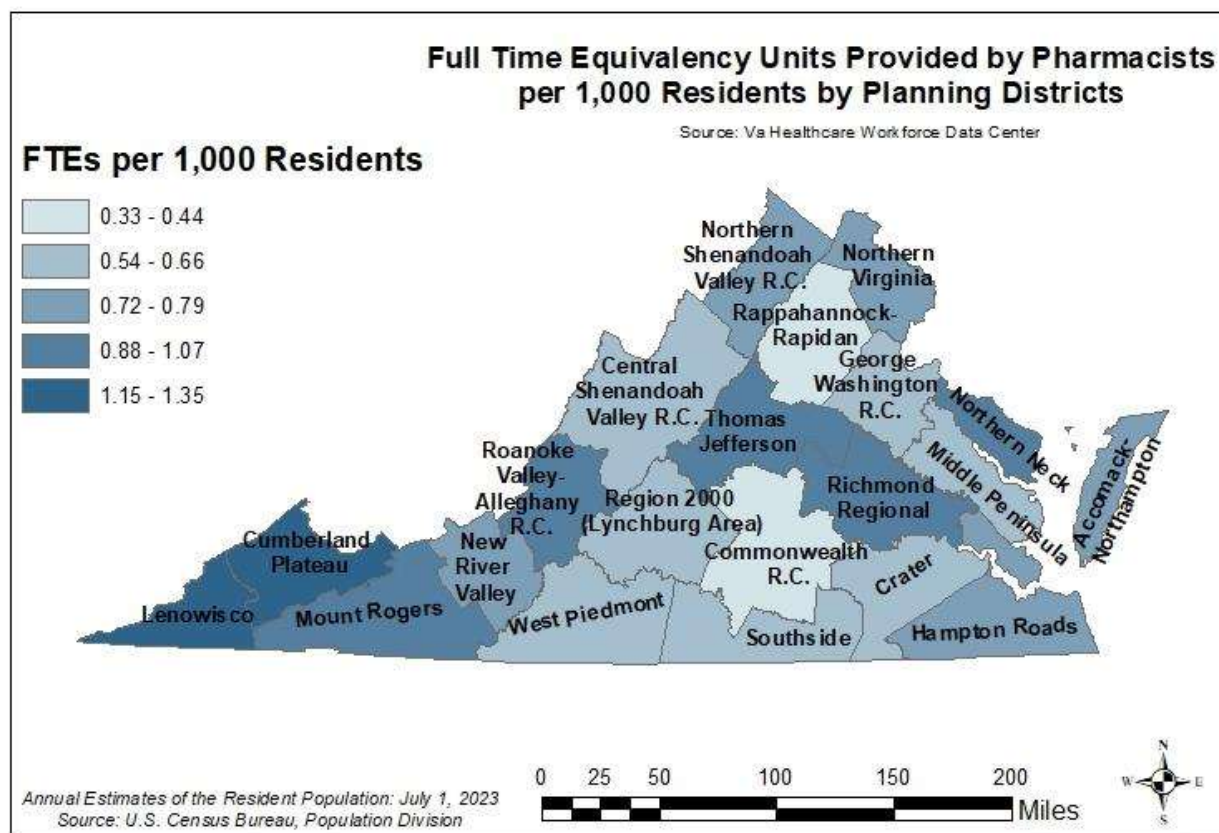
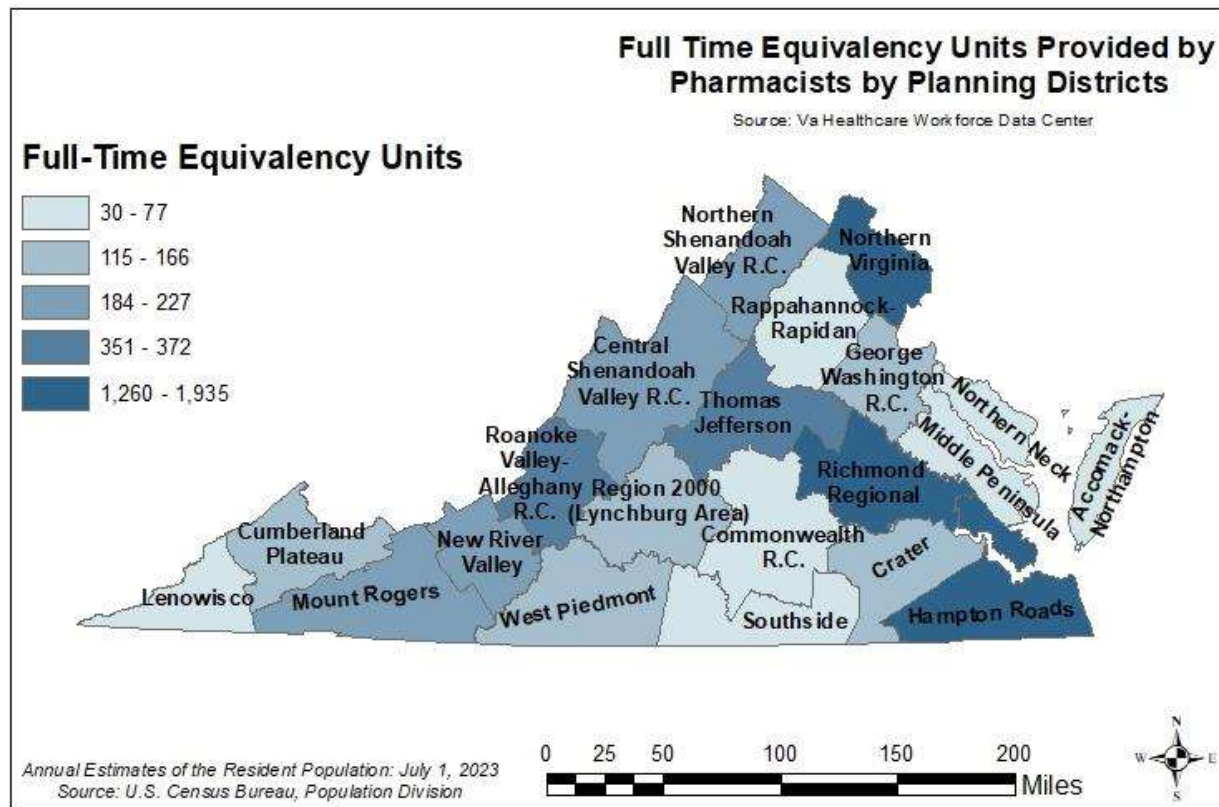
*The Virginia Area Health Education Center regions are utilized by the Virginia Department of Health to assess primary care access.



*Workforce Investment Areas are utilized by the Virginia Department of Workforce Development and Advancement.



*Health Services Areas are utilized by the Virginia Department of Health and Virginia's Department to Medical Assistance Services to identify areas with a low concentration of healthcare professionals.



*Planning Districts are used by the Virginia Department of Housing and Community Development to assist local and state government collaboration.

Appendix

Weights

Rural Status	Location Weight			Total Weight	
	#	Rate	Weight	Min	Max
Metro, 1 million+	6,846	93.76%	1.0665	1.0413	1.1559
Metro, 250,000 to 1 million	927	93.64%	1.0680	1.0427	1.1574
Metro, 250,000 or less	1,154	94.19%	1.0616	1.0365	1.1506
Urban pop 20,000+, Metro adj	122	91.80%	1.0893	1.0635	1.1805
Urban pop 20,000+, nonadj	0	NA	NA	NA	NA
Urban pop, 2,500-19,999, Metro adj	349	93.41%	1.0706	1.0452	1.1602
Urban pop, 2,500-19,999, nonadj	293	93.17%	1.0733	1.0479	1.1632
Rural, Metro adj	240	92.08%	1.0860	1.0603	1.1770
Rural, nonadj	129	93.80%	1.0661	1.0409	1.1554
Virginia border state/DC	2,973	91.46%	1.0934	1.0676	1.1850
Other US State	3,908	90.23%	1.1083	1.0821	1.2012

Source: Va. Healthcare Workforce Data Center

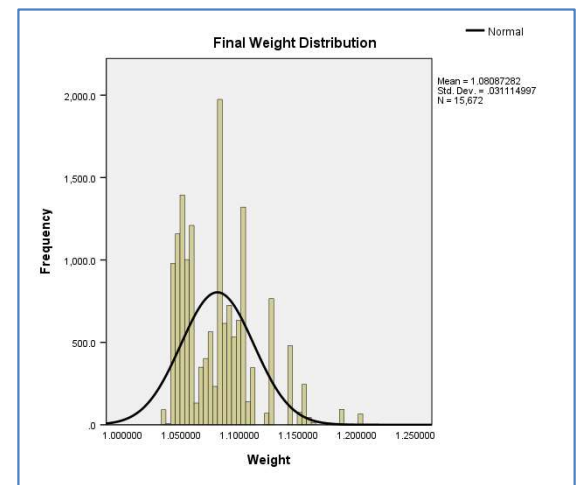
See the Methods section on the HWDC website for details on HWDC Methods:

www.dhp.virginia.gov/hwdc/

Final weights are calculated by multiplying the two weights and the overall response rate:

$$\text{Age Weight} \times \text{Rural Weight} \times \text{Response Rate} = \text{Final Weight.}$$

Overall Response Rate: 0.92515



Source: Va. Healthcare Workforce Data Center

Age	Age Weight			Total Weight	
	#	Rate	Weight	Min	Max
Under 30	642	85.36%	1.1715	1.1506	1.2012
30 to 34	2,124	91.05%	1.0982	1.0786	1.1260
35 to 39	2,977	93.92%	1.0647	1.0457	1.0917
40 to 44	2,670	93.26%	1.0723	1.0531	1.0994
45 to 49	2,061	94.32%	1.0602	1.0412	1.0870
50 to 54	1,924	94.75%	1.0554	1.0365	1.0821
55 to 59	1,706	93.55%	1.0689	1.0498	1.0960
60 and Over	2,836	89.60%	1.1161	1.0961	1.1444

Source: Va. Healthcare Workforce Data Center

Agenda Topic: Pharmacy technician trainee and pharmacy technician registration trends

Included in agenda packet:

- Background information and stats provided by Ryan Logan
- 2024 Pharmacy Technician Healthcare Workforce Survey Report



Virginia Department of
Health Professions

Virginia Board of Pharmacy Education Forum

Review of Pharmacy Technician Registration Trends

April 25, 2025

Ryan Logan, Pharmacist
Deputy Executive Director



Pharmacy Technician and Pharmacy Technician Trainee Registration Trends

Pharmacy Technician Trainee Registration Trends

- As of July 1, 2025, to be registered as a pharmacy technician, a person shall submit:
 1. An application and fee specified in regulation of the Board;
 2. Evidence that he has successfully completed a training program that is
 - I. An accredited training program, including an accredited training program operated through the Department of Education's Career and Technical Education program or approved by the Board; or
 - II. Recognized by the Pharmacy Technician Certification Board or the National Healthcareer Association; or
 - III. Operated through a federal agency or branch of the military; and
 3. Evidence that he has successfully passed a national certification examination administered by the Pharmacy Technician Certification Board or the National Healthcareer Association

Pharmacy Technicians

- **Approximately 73 online/distance learning PTCB-recognized training programs and an additional 55 programs located in Virginia.**



Pharmacy Technician Registration Trends

Pharmacy Technician Current Total License Count



Pharmacy Technician New License Count



Pharmacy Technician Trainee Registration Trends

Pharmacy Technician Trainee Current Total License Count



Pharmacy Technician Trainee New License Count



Pharmacy Technician Trainee Registration Trends

		Year Registered for Trainee							
		2021		2022		2023		2024	
Year of Pharmtech license	Had pharmtech license before trainee date	41	1%	25	1%	29	1%	12	0%
	2021	395	8%		0%		0%		0%
	2022	632	13%	218	5%		0%		0%
	2023	485	10%	385	9%	64	2%		0%
	2024	112	2%	566	13%	414	10%	89	2%
	2025	9	0%	65	1%	131	3%	55	1%
	No license yet	3,249	66%	3,519	80%	3,771	94%	3,674	96%
	Total	4,914		4,406		4,024		3,830	

Virginia's Pharmacy Technician Workforce: 2024

Healthcare Workforce Data Center

January 2025

Virginia Department of Health Professions
Healthcare Workforce Data Center
Perimeter Center
9960 Mayland Drive, Suite 300
Henrico, VA 23233
804-597-4213, 804-527-4434 (fax)
E-mail: HWDC@dhp.virginia.gov

Follow us on Tumblr: www.vahwdc.tumblr.com

Get a copy of this report from:

<https://www.dhp.virginia.gov/PublicResources/HealthcareWorkforceDataCenter/ProfessionReports/>

More than 11,000 Pharmacy Technicians voluntarily participated in this survey. Without their efforts, the work of the center would not be possible. The Department of Health Professions, the Healthcare Workforce Data Center, and the Board of Pharmacy express our sincerest appreciation for their ongoing cooperation.

Thank You!

Virginia Department of Health Professions

Arne W. Owens, MS
Director

Healthcare Workforce Data Center Staff:

Yetty Shobo, PhD
Director

Barbara Hodgdon, PhD
Deputy Director

Rajana Siva, MBA
Data Analyst

Christopher Coyle, BA
Research Assistant

The Board of Pharmacy

Chair

Cheryl L. Garvin, *RPh*
Leesburg

Vice-Chair

Ling Yuan, *PharmD*
Glen Allen

Members

Shannon Dowdy, *PharmD*
Henrico

Michelle E. Hoffer, *JD*
Richmond

Kelly Hasty Kale, *RPh*
Williamsburg

S. Lawrence Kocot, *JD*
Alexandria

Wendy C. Nash, *PharmD*
Valentines

Kristopher S. Ratliff, *DPh*
Marion

Patricia Lynn Richards-Spruill, *RPh*
Suffolk

Derek Webb, *PharmD*
Abingdon

Executive Director

Caroline D. Juran, *RPh*
Richmond

Contents

Results in Brief.....	2
Summary of Trends	2
Survey Response Rates	3
The Workforce.....	4
Demographics.....	5
Background	6
Education	8
Credentials	9
Current Employment Situation	10
Employment Quality.....	11
2024 Labor Market	12
Work Site Distribution	13
Establishment Type	14
Languages.....	16
Time Allocation	17
Retirement & Future Plans	18
Full-Time Equivalency Units.....	20
Maps	21
Virginia Performs Regions	21
Area Health Education Center Regions	22
Workforce Investment Areas	23
Health Services Areas	24
Planning Districts.....	25
Appendix	26
Weights	26

The Pharmacy Technician Workforce At a Glance:

The Workforce

Registrants:	13,948
Virginia's Workforce:	12,793
FTEs:	10,010
Trainees*:	8,016

Background

Rural Childhood:	40%
HS Degree in VA:	74%
% Work Non-Metro:	13%

Current Employment

Employed in Prof.:	83%
Hold 1 Full-Time Job:	70%
Satisfied?:	91%

Survey Response Rate

All Registrants:	
Renewing Practitioners:	99%

Education

80%	High School/GED:
Associate Degree:	20%

Job Turnover

56%	Switched Jobs:	4%
Employed Over 2 Yrs.:	54%	

Demographics

Female:	85%
Diversity Index:	62%
Median Age:	37

Finances

Median Income:	\$35k-\$40k
Health Insurance:	60%
Under 40 w/ Ed. Debt:	46%

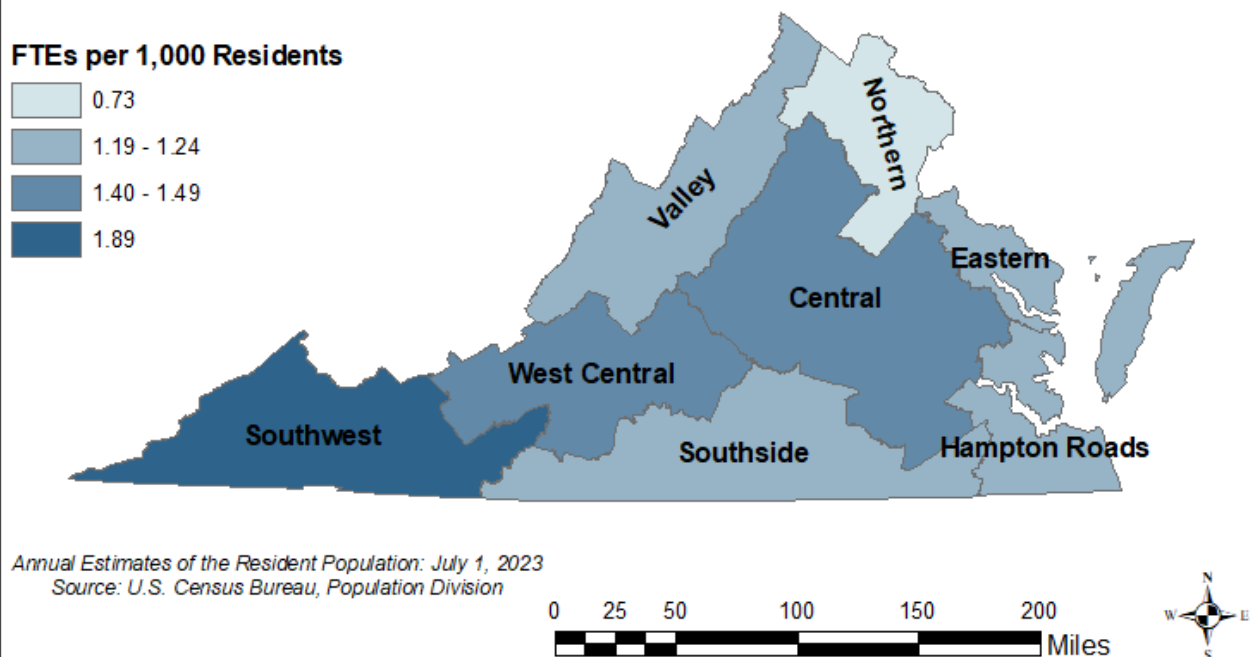
Primary Roles

Medication Disp.:	56%
Administration:	6%
Supervision:	2%

Source: Va. Healthcare Workforce Data Center

Full-Time Equivalency Units Provided by Pharmacy Technicians per 1,000 Residents by Virginia Performs Region

Source: Va Healthcare Workforce Data Center



*The survey was not available to Pharmacy Technician Trainees.

Results in Brief

This report contains the results of the 2024 Pharmacy Technician Workforce survey. A total of 11,116 pharmacy technicians voluntarily participated in this survey. The Virginia Department of Health Professions' Healthcare Workforce Data Center (HWDC) administers the survey during the registration renewal process, which takes place every December for pharmacy technicians. These survey respondents represent 80% of the 13,948 pharmacy technicians who are registered in the state and 99% of renewing practitioners. Additionally, there were 8,016 pharmacy technician trainees registered with the department of health professions, which represents a 73% increase since 2021.

The HWDC estimates that 12,793 pharmacy technicians participated in Virginia's workforce during the survey period, which is defined as those who worked at least a portion of the year in the state or who live in the state and intend to return to work in the profession at some point in the future. Virginia's pharmacy technician workforce provided 10,010 "full-time equivalency units," which the HWDC defines simply as working 2,000 hours per year.

Among all pharmacy technicians, 85% are female. In addition, the median age of this workforce is 37. In a random encounter between two pharmacy technicians, there is a 62% chance that they would be of different races or ethnicities, a measure known as the diversity index. For those pharmacy technicians who are under the age of 40, this diversity index increases to 66%. The comparable diversity index for Virginia's overall population is 60%. Two out of every five pharmacy technicians grew up in a rural area, and 27% of pharmacy technicians who grew up in a rural area currently work in a non-metro area of Virginia. In total, 13% of all pharmacy technicians work in a non-metro area.

Among all pharmacy technicians, 83% are currently employed in the profession, 70% hold one full-time position, and 50% work between 40 and 49 hours per week. Nearly three out of every four pharmacy technicians are employed in the for-profit sector, while another 18% of pharmacy technicians work in the non-profit sector. The median annual income for pharmacy technicians is between \$35,000 and \$40,000, and 90% receive this income as an hourly wage. More than nine out of every ten pharmacy technicians indicated that they are satisfied with their current work situation, including 50% who indicated that they are "very satisfied."

Summary of Trends

In this section, all statistics for the current year are compared to the 2014 pharmacy technician workforce. The number of registered pharmacy technicians has decreased by 5% (13,948 vs. 14,686). The size of Virginia's pharmacy technician workforce has fallen by 7% (12,793 vs. 13,783), while the number of FTEs provided by this workforce has fallen by 5% (10,010 vs. 10,487). Renewing pharmacy technicians are more likely to respond to the survey (99% vs. 95%).

The percentage of pharmacy technicians who are female has increased (85% vs. 84%), and the median age of this workforce has risen as well (37 vs. 34). At the same time, the diversity index of this workforce has increased (62% vs. 58%), a trend that has also occurred among those professionals who are under the age of 40 (66% vs. 62%). The percentage of pharmacy technicians who grew up in a rural area has declined slightly (40% vs. 41%), and pharmacy technicians who grew up in a rural area are also slightly less likely to work in a non-metro area (27% vs. 28%). In total, the percentage of all pharmacy technicians who work in a non-metro county has fallen (13% vs. 14%). Pharmacy technicians are relatively more likely to hold a baccalaureate degree (20% vs. 17%) as their highest professional degree than a high school degree/GED (56% vs. 59%). Although pharmacy technicians are less likely to hold education debt (36% vs. 39%), the median outstanding balance among those with education debt has increased (\$18k-\$20k vs. \$12k-\$14k).

Pharmacy technicians are more likely to work in the profession (83% vs. 78%), hold one full-time position (70% vs. 62%), and work between 40 and 49 hours per week (50% vs. 40%). In addition, pharmacy technicians are more likely to work for an employer that requires a national certification as a condition for employment (65% vs. 41%). At the same time, pharmacy technicians are also more likely to have received a pay raise after having earned a national certification (45% vs. 35%). Pharmacy technicians are relatively more likely to work in the non-profit sector (18% vs. 13%) than in the for-profit sector (72% vs. 76%). The median annual income of pharmacy technicians has increased (\$35k-\$40k vs. \$20k-\$25k). Pharmacy technicians are more likely to indicate that they are satisfied with their current work situation (91% vs. 89%), including those who indicated that they are "very satisfied" (50% vs. 46%).

A Closer Look:

Registrant Counts		
Registration Status	#	%
Renewing Practitioners	10,647	76%
New Registrants	1,675	12%
Non-Renewals	1,626	12%
All Registrants	13,948	100%

Source: Va. Healthcare Workforce Data Center

HWDC surveys tend to achieve very high response rates. Among all renewing pharmacy technicians, 99% submitted a survey. These represent 80% of the 13,948 pharmacy technicians who were registered at some point in 2024.

Definitions

- 1. **The Survey Period:** The survey was conducted in December 2024.
- 2. **Target Population:** All professionals who held a Virginia registration at some point in 2024.
- 3. **Survey Population:** The survey was available to those who renewed their registration online. It was not available to those who did not renew, including some professionals newly registered in 2024.

Response Rates			
Statistic	Non Respondents	Respondents	Response Rate
By Age			
Under 30	1,279	2,668	68%
30 to 34	416	1,644	80%
35 to 39	330	1,597	83%
40 to 44	224	1,343	86%
45 to 49	152	1,096	88%
50 to 54	149	983	87%
55 to 59	97	788	89%
60 and Over	185	997	84%
Total	2,832	11,116	80%
New Registrations			
Issued in 2024	1,116	559	33%
Metro Status			
Non-Metro	330	1,608	83%
Metro	1,995	8,690	81%
Not in Virginia	507	818	62%

Source: Va. Healthcare Workforce Data Center

Response Rates	
Completed Surveys	11,116
Response Rate, All Registrants	80%
Response Rate, Renewals	99%

Source: Va. Healthcare Workforce Data Center

At a Glance:

Registered Pharmacy Tech.

Number: 13,948
New: 12%
Not Renewed: 12%

Survey Response Rates

All Registrants: 80%
Renewing Practitioners: 99%

Source: Va. Healthcare Workforce Data Center

At a Glance:

Workforce

Pharmacy Tech. Workforce: 12,793
FTEs: 10,010

Utilization Ratios

Registrants in VA Workforce: 92%
Registrants per FTE: 1.39
Workers per FTE: 1.28

Source: Va. Healthcare Workforce Data Center

Definitions

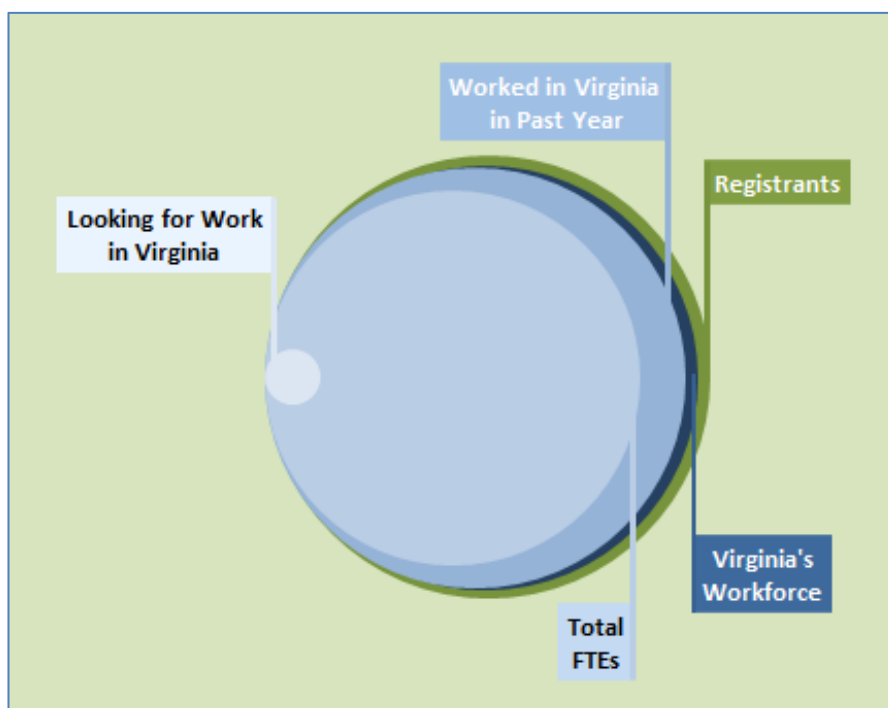
1. **Virginia's Workforce:** A registrant with a primary or secondary work site in Virginia at any time in the past year or who indicated intent to return to Virginia's workforce at any point in the future.
2. **Full-Time Equivalency Unit (FTE):** The HWDC uses 2,000 (40 hours for 50 weeks) as its baseline measure for FTEs.
3. **Registrants in VA Workforce:** The proportion of registrants in Virginia's Workforce.
4. **Registrants per FTE:** An indication of the number of registrants needed to create 1 FTE. Higher numbers indicate lower registrant participation.
5. **Workers per FTE:** An indication of the number of workers in Virginia's workforce needed to create 1 FTE. Higher numbers indicate lower utilization of available workers.

Pharmacy Tech. Workforce

Status	#	%
Worked in Virginia in Past Year	12,567	98%
Looking for Work in Virginia	227	2%
Virginia's Workforce	12,793	100%
Total FTEs	10,010	
Registrants	13,948	

Source: Va. Healthcare Workforce Data Center

Weighting is used to estimate the figures in this report. Unless otherwise noted, figures refer to the Virginia workforce only. For more information on the HWDC's methodology, visit: <https://www.dhp.virginia.gov/PublicResources/HealthcareWorkforceDataCenter/>



Source: Va. Healthcare Workforce Data Center

A Closer Look:

Age & Gender						
Age	Male		Female		Total	
	#	% Male	#	% Female	#	% in Age Group
Under 30	563	17%	2,738	83%	3,302	31%
30 to 34	244	16%	1,313	84%	1,557	15%
35 to 39	194	14%	1,217	86%	1,411	13%
40 to 44	162	15%	946	85%	1,108	11%
45 to 49	130	15%	758	85%	888	8%
50 to 54	80	10%	752	90%	832	8%
55 to 59	79	13%	541	87%	621	6%
60 and Over	109	13%	718	87%	827	8%
Total	1,562	15%	8,984	85%	10,546	100%

Source: Va. Healthcare Workforce Data Center

Race & Ethnicity					
Race/ Ethnicity	Virginia*	Pharmacy Tech.		Pharmacy Tech. Under 40	
	%	#	%	#	%
White	59%	5,949	56%	3,286	52%
Black	19%	2,381	22%	1,463	23%
Asian	7%	971	9%	555	9%
Other Race	0%	157	1%	84	1%
Two or More Races	3%	438	4%	344	5%
Hispanic	11%	747	7%	590	9%
Total	100%	10,643	100%	6,322	100%

*Population data in this chart is from the U.S. Census, Annual Estimates of the Resident Population by Sex, Race, and Hispanic Origin for the United States, States, and Counties: July 1, 2023.

Source: Va. Healthcare Workforce Data Center

Among the 59% of pharmacy technicians who are under the age of 40, 84% are female. In addition, the diversity index among pharmacy technicians who are under the age of 40 is 66%.

At a Glance:

Gender

% Female: 85%

% Under 40 Female: 84%

Age

Median Age: 37

% Under 40: 59%

% 55 and Over: 14%

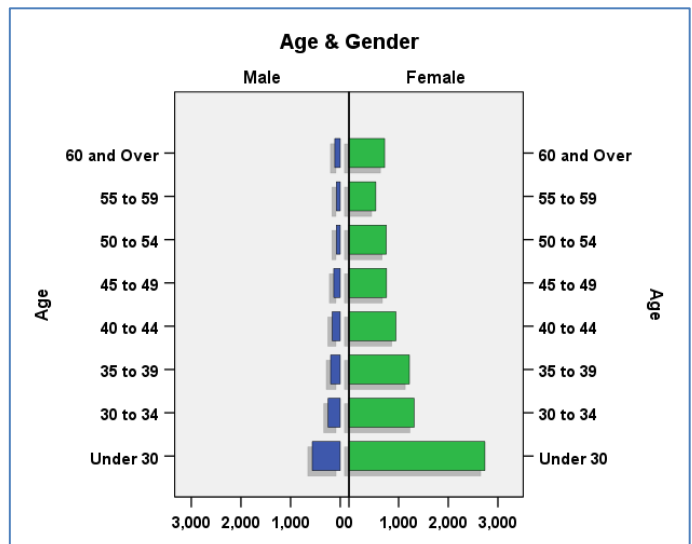
Diversity

Diversity Index: 62%

Under 40 Div. Index: 66%

Source: Va. Healthcare Workforce Data Center

In a chance encounter between two professionals, there is a 62% chance that they would be of different races or ethnicities (a measure known as the diversity index). For Virginia's overall population, the comparable diversity index is 60%.



Source: Va. Healthcare Workforce Data Center

At a Glance:

Childhood

Urban Childhood: 19%
Rural Childhood: 40%

Virginia Background

HS in Virginia: 74%
HS in VA, Past 5 Years: 72%

Location Choice

% Work Non-Metro: 13%
% Rural to Non-Metro: 27%
% Urban/Suburban to Non-Metro: 4%

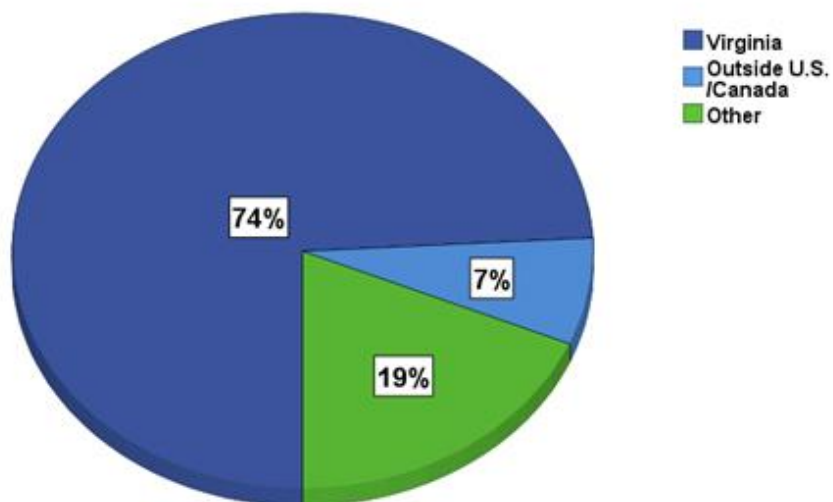
Source: Va. Healthcare Workforce Data Center

A Closer Look:

Primary Location: USDA Rural Urban Continuum		Rural Status of Childhood Location		
Code	Description	Rural	Suburban	Urban
Metro Counties				
1	Metro, 1 Million+	24%	51%	25%
2	Metro, 250,000 to 1 Million	57%	30%	13%
3	Metro, 250,000 or Less	64%	27%	9%
Non-Metro Counties				
4	Urban, Pop. 20,000+, Metro Adjacent	63%	25%	12%
6	Urban, Pop. 2,500-19,999, Metro Adjacent	80%	17%	4%
7	Urban, Pop. 2,500-19,999, Non-Adjacent	93%	3%	4%
8	Rural, Metro Adjacent	89%	9%	3%
9	Rural, Non-Adjacent	70%	22%	9%
Overall		40%	41%	19%

Source: Va. Healthcare Workforce Data Center

High School Location



Source: Va. Healthcare Workforce Data Center

Among all pharmacy technicians, 40% grew up in a self-described rural area, and 27% of pharmacy technicians who grew up in a rural area currently work in a non-metro county. In total, 13% of all pharmacy technicians are employed in a non-metro area of the state.

Top Ten States for Pharmacy Technician Recruitment

Rank	High School Location			
	All Pharmacy Technicians	#	Registered in the Past Five Years	#
1	Virginia	7,710	Virginia	2,926
2	Outside U.S./Canada	757	Outside U.S./Canada	272
3	Maryland	196	Maryland	110
4	North Carolina	179	North Carolina	81
5	New York	157	Florida	69
6	Florida	132	New York	59
7	West Virginia	129	California	47
8	California	108	West Virginia	46
9	Pennsylvania	93	Tennessee	36
10	New Jersey	90	Pennsylvania	34

Source: Va. Healthcare Workforce Data Center

Among all pharmacy technicians, 74% received their high school diploma in Virginia. Among those pharmacy technicians who obtained their initial registration in the past five years, 72% received their high school degree in the state.

In total, 8% of Virginia's registered pharmacy technicians did not participate in the state's workforce in 2024. However, 87% of these professionals worked at some point in the past year, including 68% who currently work as pharmacy technicians.

At a Glance:

Not in VA Workforce

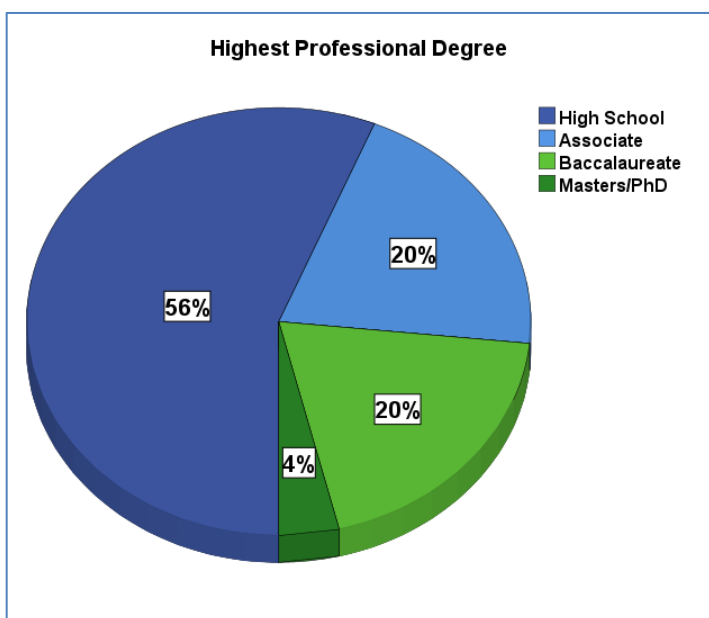
Total:	1,150
% of Registrants:	8%
Federal/Military:	6%
VA Border State/DC:	28%

Source: Va. Healthcare Workforce Data Center

A Closer Look:

Highest Professional Degree		
Degree	#	%
High School/GED	5,766	56%
Associate	2,095	20%
Baccalaureate	2,002	20%
Masters	357	3%
PhD	39	0%
Total	10,259	100%

Source: Va. Healthcare Workforce Data Center



Source: Va. Healthcare Workforce Data Center

More than one-third of all pharmacy technicians currently carry education debt, including 45% of those pharmacy technicians who are under the age of 40. For those pharmacy technicians with education debt, the median outstanding balance is between \$18,000 and \$20,000.

At a Glance:

Education

High School/GED: 56%
Associate Degree: 20%

Education Debt

Carry Debt: 36%
Under Age 40 w/ Debt: 45%
Median Debt: \$18k-\$20k

Source: Va. Healthcare Workforce Data Center

Among all pharmacy technicians, 56% hold either a high school degree or a GED as their highest professional degree.

Education Debt

Amount Carried	All Pharm. Tech.		Pharm. Tech. Under 40	
	#	%	#	%
None	4,949	64%	2,532	55%
Less than \$10,000	842	11%	634	14%
\$10,000-\$19,999	628	8%	483	11%
\$20,000-\$29,999	417	5%	304	7%
\$30,000 or More	892	12%	614	13%
Total	7,728	100%	4,567	100%

Source: Va. Healthcare Workforce Data Center

At a Glance:

Top Certifications

PTCB:	64%
ExCPT:	11%
Total w/ Cert.:	75%

National Certifications

Required:	65%
Pay Raise w/ Cert.:	45%

Source: Va. Healthcare Workforce Data Center

A Closer Look:

Professional Certifications		
Certification	#	% of Workforce
Pharmacy Technician Certification Board (PTCB)	8,191	64%
Exam for Certification of Pharmacy Technicians (ExCPT)	1,457	11%
Total with Certification	9,648	75%

Source: Va. Healthcare Workforce Data Center

Three out of every four of Virginia's pharmacy technicians hold a professional certification, including 64% who hold a Pharmacy Technician Certification Board (PTCB) credential.

Among all pharmacy technicians, 65% work for an employer that requires a national certification as a condition of employment. In addition, 45% of pharmacy technicians have received an increase in pay after having obtained a national certification.

National Certifications		
Required for Employment?	#	%
Yes	6,572	65%
No	3,592	35%
Pay Raise with Certification?	#	%
Yes	4,276	45%
No	4,887	51%
No Certification Held	384	4%

Source: Va. Healthcare Workforce Data Center

At a Glance:

Employment

Employed in Profession: 83%
Involuntarily Unemployed: 1%

Positions Held

1 Full-Time: 70%
2 or More Positions: 9%

Weekly Hours:

40 to 49: 50%
60 or More: 3%
Less than 30: 15%

Source: Va. Healthcare Workforce Data Center

A Closer Look:

Current Work Status		
Status	#	%
Employed, Capacity Unknown	16	< 1%
Employed in a Pharmacy Technician-Related Capacity	8,530	83%
Employed, NOT in a Pharmacy Technician-Related Capacity	1,375	13%
Not Working, Reason Unknown	0	0%
Involuntarily Unemployed	57	1%
Voluntarily Unemployed	244	2%
Retired	62	1%
Total	10,283	100%

Source: Va. Healthcare Workforce Data Center

Among all pharmacy technicians, 83% are currently employed in the profession, 70% hold one full-time job, and 50% work between 40 and 49 hours per week.

Current Positions		
Positions	#	%
No Positions	363	4%
One Part-Time Position	1,797	18%
Two Part-Time Positions	159	2%
One Full-Time Position	7,089	70%
One Full-Time Position & One Part-Time Position	661	7%
Two Full-Time Positions	24	0%
More than Two Positions	16	0%
Total	10,109	100%

Source: Va. Healthcare Workforce Data Center

Current Weekly Hours		
Hours	#	%
0 Hours	363	4%
1 to 9 Hours	277	3%
10 to 19 Hours	418	4%
20 to 29 Hours	734	7%
30 to 39 Hours	2,489	25%
40 to 49 Hours	4,889	50%
50 to 59 Hours	342	3%
60 to 69 Hours	80	1%
70 to 79 Hours	81	1%
80 or More Hours	156	2%
Total	9,829	100%

Source: Va. Healthcare Workforce Data Center

A Closer Look:

Annual Income		
Income Level	#	%
Volunteer Work Only	74	2%
Less than \$15,000	416	9%
\$15,000-\$19,999	194	4%
\$20,000-\$24,999	289	7%
\$25,000-\$29,999	281	6%
\$30,000-\$34,999	524	12%
\$35,000-\$39,999	561	13%
\$40,000-\$44,999	677	15%
\$45,000-\$49,999	493	11%
\$50,000-\$69,999	749	17%
\$70,000 or More	215	5%
Total	4,474	100%

Source: Va. Healthcare Workforce Data Center

At a Glance:

Annual Income

Median Income: \$35k-\$40k

Benefits

Health Insurance: 60%

Retirement: 57%

Satisfaction

Satisfied: 91%

Very Satisfied: 50%

Source: Va. Healthcare Workforce Data Center

Job Satisfaction		
Level	#	%
Very Satisfied	5,021	50%
Somewhat Satisfied	4,105	41%
Somewhat Dissatisfied	677	7%
Very Dissatisfied	254	3%
Total	10,056	100%

Source: Va. Healthcare Workforce Data Center

The typical pharmacy technician earns between \$35,000 and \$40,000 per year. In addition, 77% of all pharmacy technicians receive at least one employer-sponsored benefit, including 60% who have access to health insurance.

Employer-Sponsored Benefits			
Benefit	#	%	% of Wage/Salary Employees
Paid Leave	5,409	63%	61%
Health Insurance	5,132	60%	58%
Dental Insurance	4,970	58%	56%
Retirement	4,847	57%	55%
Group Life Insurance	2,925	34%	33%
Signing/Retention Bonus	763	9%	9%
At Least One Benefit	6,587	77%	74%

*From any employer at time of survey.

Source: Va. Healthcare Workforce Data Center

A Closer Look:

Employment Instability in the Past Year		
In The Past Year, Did You . . . ?	#	%
Experience Involuntary Unemployment?	104	1%
Experience Voluntary Unemployment?	357	3%
Work Part-Time or Temporary Positions, but Would Have Preferred a Full-Time/Permanent Position?	313	2%
Work Two or More Positions at the Same Time?	1,160	9%
Switch Employers or Practices?	557	4%
Experience At Least One?	2,089	16%

Source: Va. Healthcare Workforce Data Center

Only 1% of pharmacy technicians were involuntarily unemployed at some point in the past year. By comparison, Virginia's average monthly unemployment rate was 2.9%.¹

Location Tenure				
Tenure	Primary		Secondary	
	#	%	#	%
Not Currently Working at This Location	190	2%	176	11%
Less than 6 Months	796	8%	181	11%
6 Months to 1 Year	964	10%	164	10%
1 to 2 Years	2,355	25%	339	21%
3 to 5 Years	2,434	26%	355	22%
6 to 10 Years	1,225	13%	160	10%
More than 10 Years	1,473	16%	205	13%
Subtotal	9,437	100%	1,580	100%
Did Not Have Location	589		11,001	
Item Missing	2,767		213	
Total	12,793		12,793	

Source: Va. Healthcare Workforce Data Center

Nine out of every ten pharmacy technicians receive an hourly wage at their primary work location.

At a Glance:

Unemployment Experience

Involuntarily Unemployed: 1%
Underemployed: 2%

Turnover & Tenure

Switched Jobs: 4%
New Location: 22%
Over 2 Years: 54%
Over 2 Yrs., 2nd Location: 46%

Employment Type

Hourly Wage: 90%
Salary/Commission: 9%

Source: Va. Healthcare Workforce Data Center

More than half of all pharmacy technicians have worked at their primary work location for more than two years.

Employment Type		
Primary Work Site	#	%
Salary/Commission	745	9%
Hourly Wage	7,368	90%
By Contract/Per Diem	39	0%
Business/Practice Income	12	0%
Unpaid	38	0%
Subtotal	8,202	100%

Source: Va. Healthcare Workforce Data Center

¹ As reported by the U.S. Bureau of Labor Statistics. The non-seasonally adjusted monthly unemployment rate fluctuated between a low of 2.3% and a high of 3.5%. At the time of publication, the unemployment rate from November 2024 was still preliminary, and the unemployment rate from December 2024 had not yet been released.

At a Glance:

Concentration

Top Region:	24%
Top 3 Regions:	69%
Lowest Region:	2%

Locations

2 or More (Past Year):	18%
2 or More (Now*):	15%

Source: Va. Healthcare Workforce Data Center

More than two-thirds of all pharmacy technicians work in Central Virginia, Northern Virginia, and Hampton Roads.

A Closer Look:

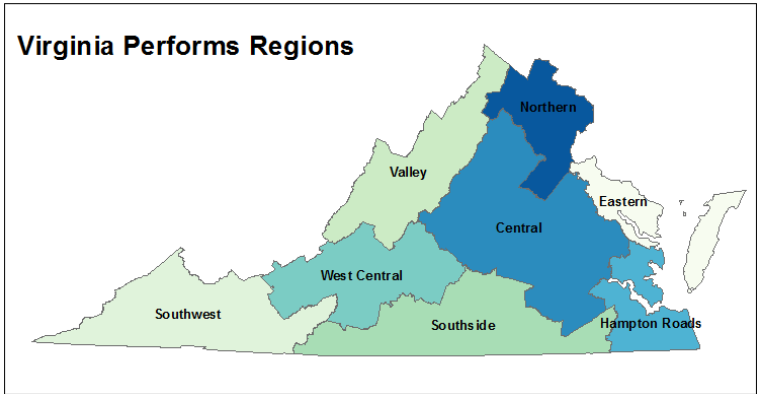
Regional Distribution of Work Locations				
Virginia Performs Region	Primary Location		Secondary Location	
	#	%	#	%
Central	2,234	24%	385	23%
Eastern	178	2%	32	2%
Hampton Roads	2,040	22%	386	23%
Northern	2,143	23%	374	22%
Southside	379	4%	53	3%
Southwest	684	7%	87	5%
Valley	578	6%	99	6%
West Central	1,067	11%	204	12%
Virginia Border State/D.C.	12	0%	24	1%
Other U.S. State	22	0%	48	3%
Outside of the U.S.	2	0%	3	0%
Total	9,339	100%	1,695	100%
Item Missing	2,865		98	

Source: Va. Healthcare Workforce Data Center

Number of Work Locations				
Locations	Work Locations in Past Year		Work Locations Now*	
	#	%	#	%
0	227	2%	361	4%
1	7,639	79%	7,848	81%
2	1,200	13%	989	10%
3	464	5%	382	4%
4	41	0%	20	0%
5	20	0%	14	0%
6 or More	47	1%	22	0%
Total	9,637	100%	9,637	100%

*At the time of survey completion, December 2024.

Source: Va. Healthcare Workforce Data Center



Source: Va. Healthcare Workforce Data Center

Among all pharmacy technicians, 15% currently have multiple work locations, while 18% have had multiple work locations over the past year.

A Closer Look:

Location Sector				
Sector	Primary Location		Secondary Location	
	#	%	#	%
For-Profit	6,304	72%	1,079	75%
Non-Profit	1,546	18%	230	16%
State/Local Government	590	7%	77	5%
Veterans Administration	72	1%	10	1%
U.S. Military	166	2%	29	2%
Other Federal Gov't	103	1%	15	1%
Total	8,781	100%	1,440	100%
Did Not Have Location	589		11,001	
Item Missing	3,423		352	

Source: Va. Healthcare Workforce Data Center

At a Glance: (Primary Locations)

Sector

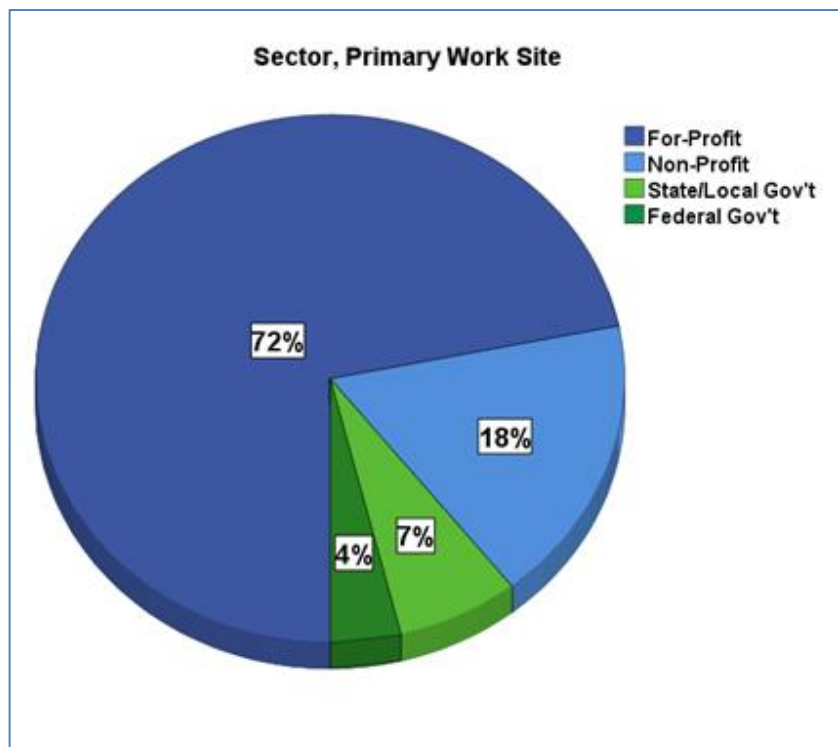
For-Profit:	72%
Federal:	4%

Top Establishments

Large Chain Pharmacy: (11+ Stores)	30%
Hospital/Health System: (Inpatient)	16%
Independent Community Pharmacy (1-4 Stores):	9%

Source: Va. Healthcare Workforce Data Center

Nine out of every ten pharmacy technicians work in the private sector, including 72% who work in the for-profit sector. Another 7% of pharmacy technicians work for a state or local government.



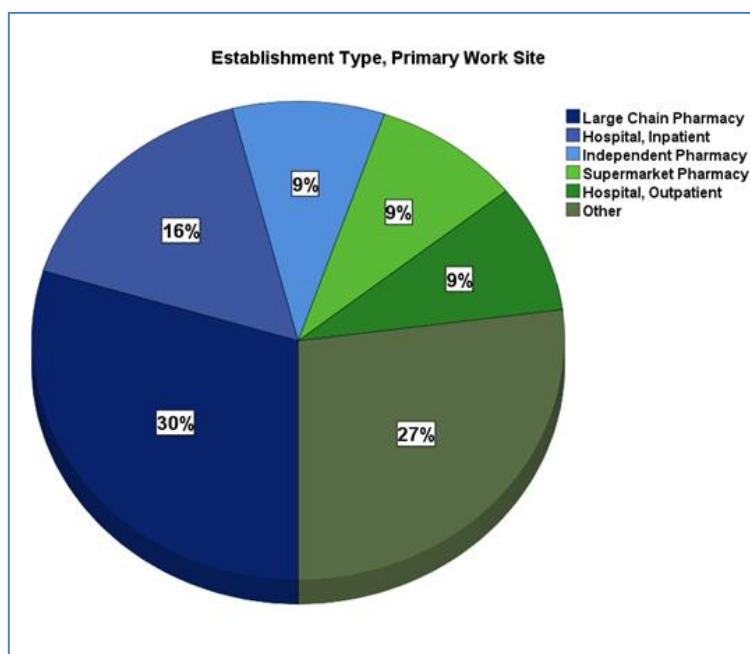
Source: Va. Healthcare Workforce Data Center

Location Type				
Establishment Type	Primary Location		Secondary Location	
	#	%	#	%
Large Chain Community Pharmacy (11+ Stores)	2,598	30%	459	33%
Hospital/Health System, Inpatient Department	1,426	16%	178	13%
Independent Community Pharmacy (1-4 Stores)	807	9%	132	10%
Supermarket Pharmacy	787	9%	122	9%
Hospital/Health System, Outpatient Department	758	9%	88	6%
Mass Merchandiser (i.e., Big Box Store)	316	4%	41	3%
Nursing Home/Long-Term Care	293	3%	44	3%
Clinic-Based Pharmacy	286	3%	41	3%
Pharmacy Benefit Administration (e.g., PBM, Managed Care)	253	3%	23	2%
Mail Service Pharmacy	189	2%	12	1%
Small Chain Community Pharmacy (5-10 Stores)	123	1%	34	2%
Home Health/Infusion	113	1%	17	1%
Academic Institution	80	1%	31	2%
Wholesale Distributor	35	0%	6	0%
Manufacturer	32	0%	6	0%
Other	647	7%	155	11%
Total	8,743	100%	1,389	100%
Did Not Have Location	589		11,001	

Source: Va. Healthcare Workforce Data Center

Three out of every ten pharmacy technicians in Virginia work in a large chain community pharmacy, while another 16% work in the inpatient department of a hospital.

For pharmacy technicians who also have a secondary work location, 33% work in a large chain community pharmacy, while 13% work in the inpatient department of a hospital.



Source: Va. Healthcare Workforce Data Center

At a Glance: (Primary Locations)

Languages Offered

Spanish:	17%
Arabic:	8%
Vietnamese:	7%

Means of Communication

Virtual Translation:	40%
Other Staff Member:	32%
Respondent:	32%

Source: Va. Healthcare Workforce Data Center

A Closer Look:

Languages Offered		
Language	#	% of Workforce
Spanish	2,202	17%
Arabic	1,002	8%
Vietnamese	953	7%
Chinese	906	7%
Korean	888	7%
French	884	7%
Hindi	881	7%
Tagalog/Filipino	836	7%
Persian	699	5%
Urdu	695	5%
Amharic, Somali, or Other Afro-Asiatic Languages	589	5%
Pashto	573	4%
Others	411	3%
At Least One Language	3,017	24%

Source: Va. Healthcare Workforce Data Center

Nearly one out of every five pharmacy technicians are employed at a primary work location that offers Spanish language services for patients.

Means of Language Communication

Provision	#	% of Workforce with Language Services
Virtual Translation Service	1,205	40%
Other Staff Member is Proficient	959	32%
Respondent is Proficient	955	32%
Onsite Translation Service	655	22%
Other	174	6%

Source: Va. Healthcare Workforce Data Center

Two out of every five pharmacy technicians who are employed at a primary work location that offers language services for patients provide it by means of a virtual translation service.

At a Glance: (Primary Locations)

Typical Time Allocation

Medication Disp.: 70%-79%
Administration: 10%-19%
Teaching: 1%-9%

Roles

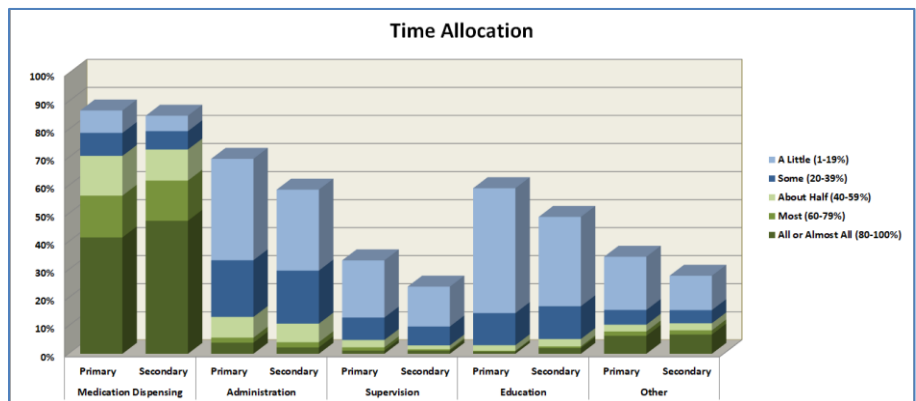
Medication Disp.: 56%
Administration: 6%
Supervision: 2%
Education: 1%

Patient Care Pharm. Tech.

Median Admin. Time: 1%-9%
Avg. Admin. Time: 10%-19%

Source: Va. Healthcare Workforce Data Center

A Closer Look:



Source: Va. Healthcare Workforce Data Center

More than half of all pharmacy technicians fill a medication dispensing and customer service role, defined as spending 60% or more of their time in that activity.

Time Allocation										
Time Spent	Medication Disp.		Admin.		Supervision		Education		Other	
	Pri. Site	Sec. Site	Pri. Site	Sec. Site	Pri. Site	Sec. Site	Pri. Site	Sec. Site	Pri. Site	Sec. Site
All or Almost All (80-100%)	41%	47%	4%	2%	1%	1%	1%	2%	6%	7%
Most (60-79%)	15%	14%	2%	2%	1%	0%	0%	1%	2%	1%
About Half (40-59%)	14%	11%	7%	7%	3%	1%	2%	3%	2%	3%
Some (20-39%)	8%	7%	20%	19%	8%	7%	11%	12%	5%	5%
A Little (1-19%)	8%	5%	36%	29%	20%	14%	45%	32%	19%	12%
None (0%)	13%	15%	30%	41%	67%	76%	41%	51%	65%	72%

Source: Va. Healthcare Workforce Data Center

A Closer Look:

Retirement Expectations				
Expected Retirement Age	All		50 and Over	
	#	%	#	%
Under Age 50	1,728	23%	-	-
50 to 54	356	5%	22	1%
55 to 59	463	6%	92	6%
60 to 64	1,150	15%	346	21%
65 to 69	1,999	27%	677	42%
70 to 74	574	8%	242	15%
75 to 79	164	2%	68	4%
80 and Over	93	1%	26	2%
I Do Not Intend to Retire	986	13%	148	9%
Total	7,514	100%	1,621	100%

Source: Va. Healthcare Workforce Data Center

At a Glance:

Retirement Expectations

All Pharmacy Technicians	
Under 65:	49%
Under 60:	34%
Pharm. Tech. 50 and Over	
Under 65:	28%
Under 60:	7%

Time Until Retirement

Within 2 Years:	5%
Within 10 Years:	14%
Half the Workforce:	By 2054

Source: Va. Healthcare Workforce Data Center

Nearly half of all pharmacy technicians expect to retire by the age of 65. Among pharmacy technicians who are age 50 and over, 28% expect to retire by the age of 65.

Within the next two years, 18% of all pharmacy technicians expect to pursue additional educational opportunities, and 6% expect to increase their patient care hours.

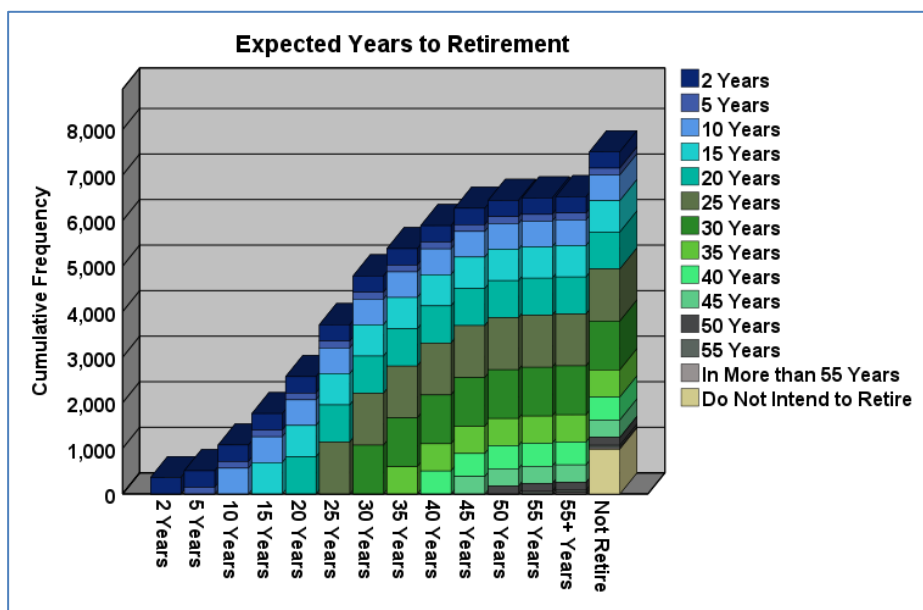
Future Plans		
Two-Year Plans:	#	%
Decrease Participation		
Leave Profession	979	8%
Leave Virginia	412	3%
Decrease Patient Care Hours	232	2%
Decrease Teaching Hours	122	1%
Increase Participation		
Increase Patient Care Hours	802	6%
Increase Teaching Hours	626	5%
Pursue Additional Education	2,262	18%
Return to the Workforce	118	1%

Source: Va. Healthcare Workforce Data Center

By comparing retirement expectation to age, we can estimate the maximum years to retirement for pharmacy technicians. While 5% of pharmacy technicians expect to retire in the next two years, 14% expect to retire within the next ten years. Half of the current workforce expect to retire by 2054.

Time to Retirement			
Expect to Retire Within. . .	#	%	Cumulative %
2 Years	360	5%	5%
5 Years	148	2%	7%
10 Years	565	8%	14%
15 Years	689	9%	23%
20 Years	813	11%	34%
25 Years	1,142	15%	49%
30 Years	1,072	14%	64%
35 Years	596	8%	72%
40 Years	505	7%	78%
45 Years	382	5%	83%
50 Years	174	2%	86%
55 Years	53	1%	86%
In More than 55 Years	28	0%	87%
Do Not Intend to Retire	986	13%	100%
Total	7,514	100%	

Source: Va. Healthcare Workforce Data Center



Source: Va. Healthcare Workforce Data Center

Using these estimates, retirement will begin to reach 10% of the current workforce every five years by 2044. Retirement will peak at 15% of the current workforce around 2049 before declining to below 10% of the current workforce again around 2059.

At a Glance:

FTEs

Total: 10,010
FTEs/1,000 Residents²: 1.148
Average: 0.82

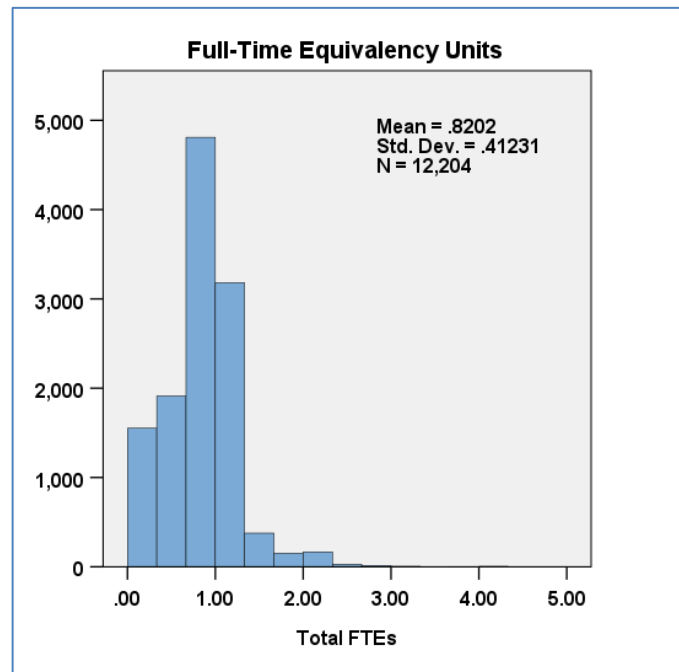
Age & Gender Effect

Age, *Partial Eta*²: Small
Gender, *Partial Eta*²: None

*Partial Eta*² Explained:
*Partial Eta*² is a statistical
measure of effect size.

Source: Va. Healthcare Workforce Data Center

A Closer Look:

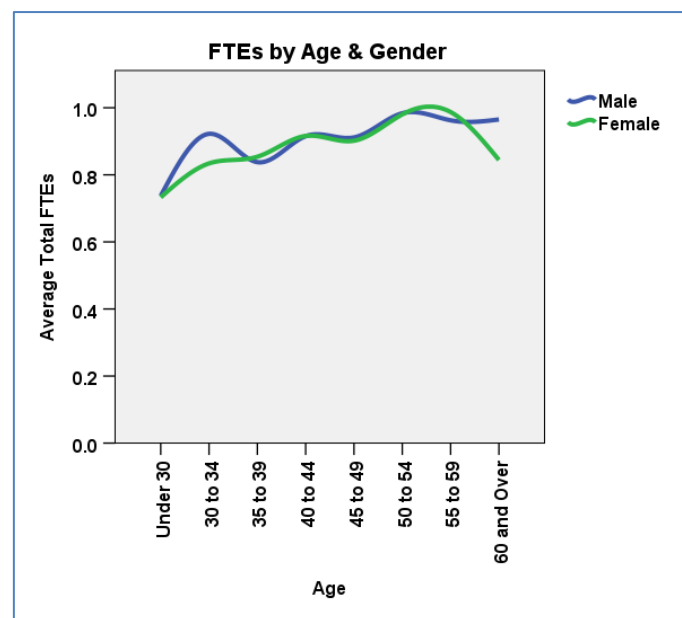


Source: Va. Healthcare Workforce Data Center

The typical pharmacy technician provided 0.84 FTEs in 2024, or approximately 34 hours per week for 50 weeks. Although FTEs appear to vary by age, statistical tests did not verify that a difference exists.³

Full-Time Equivalency Units		
	Average	Median
Age		
Under 30	0.73	0.68
30 to 34	0.82	0.83
35 to 39	0.77	0.83
40 to 44	0.90	0.84
45 to 49	0.85	0.84
50 to 54	0.95	0.94
55 to 59	0.92	0.91
60 and Over	0.89	0.99
Gender		
Male	0.85	0.93
Female	0.84	0.93

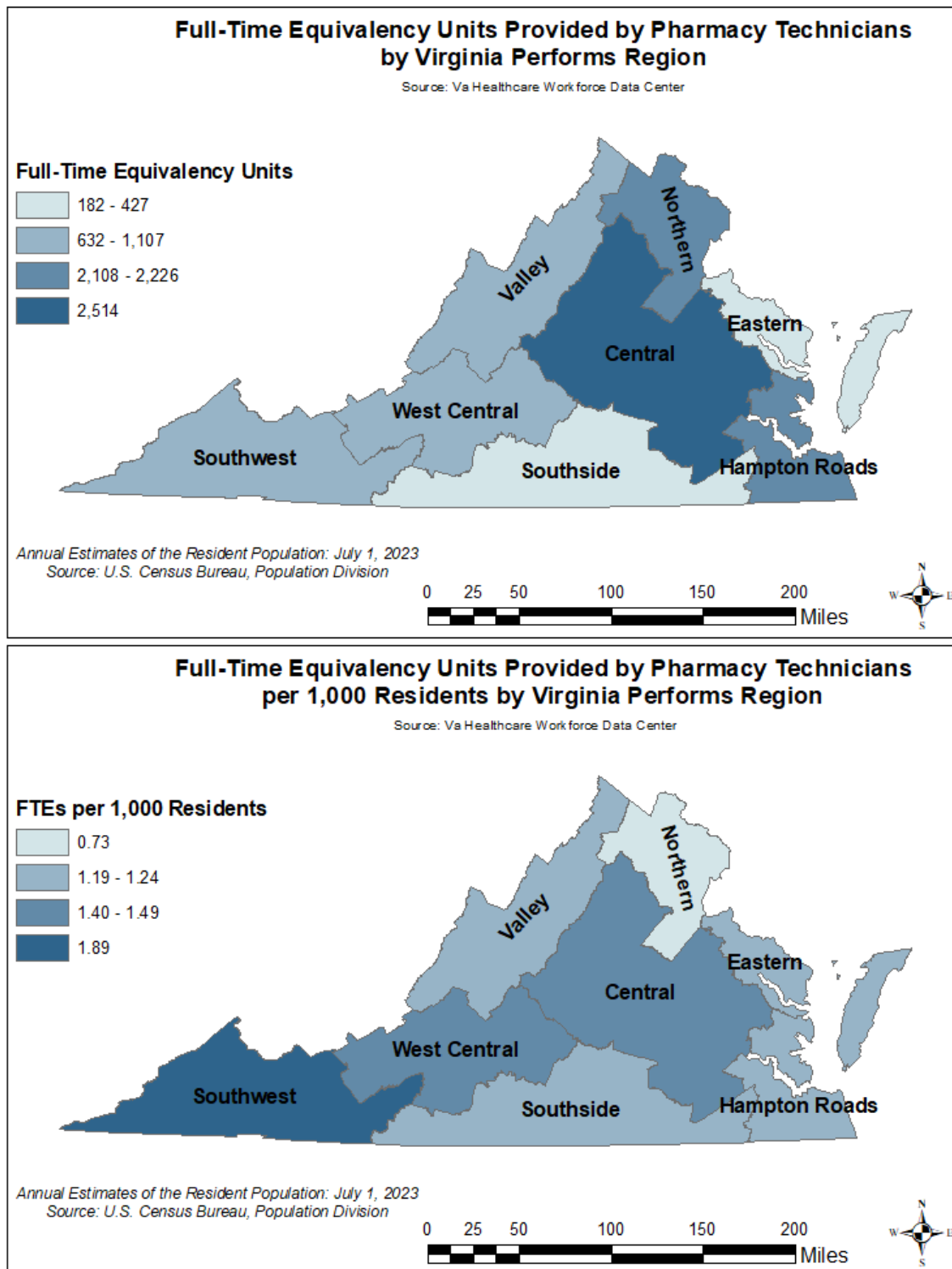
Source: Va. Healthcare Workforce Data Center



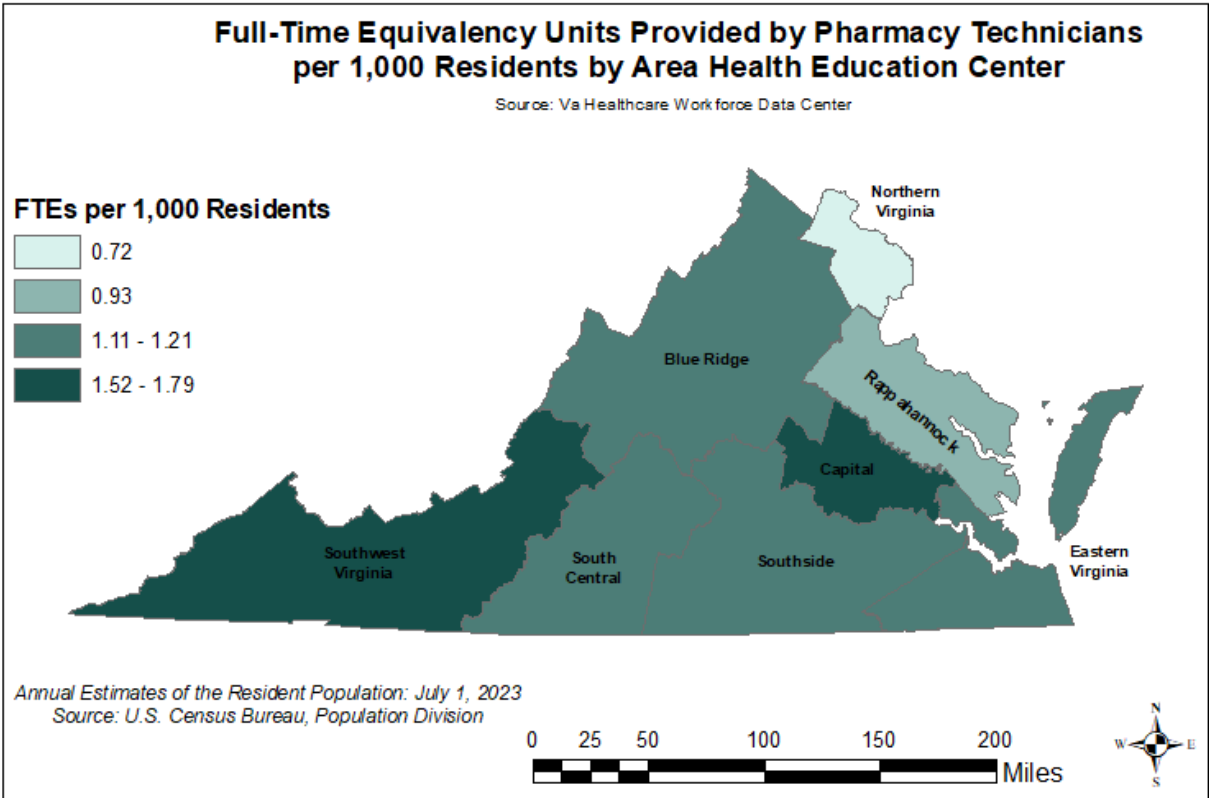
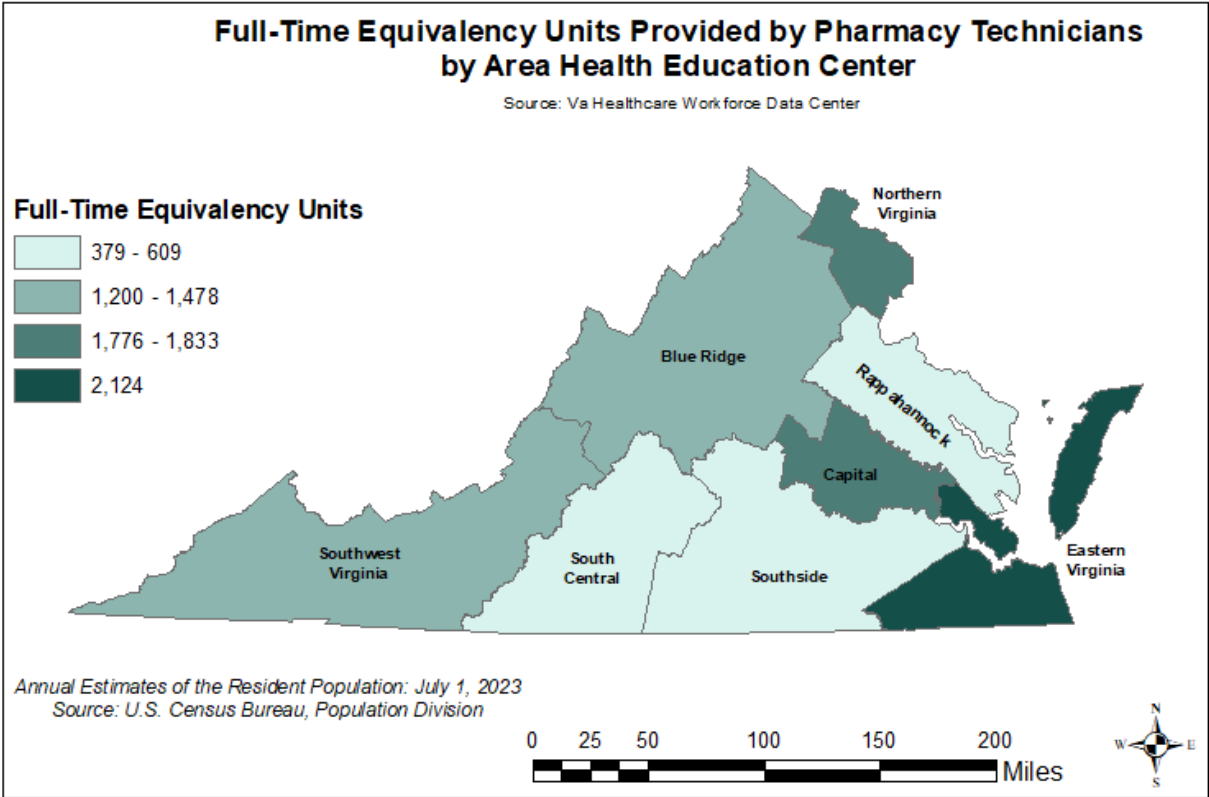
Source: Va. Healthcare Workforce Data Center

² Number of residents in 2023 was used as the denominator.

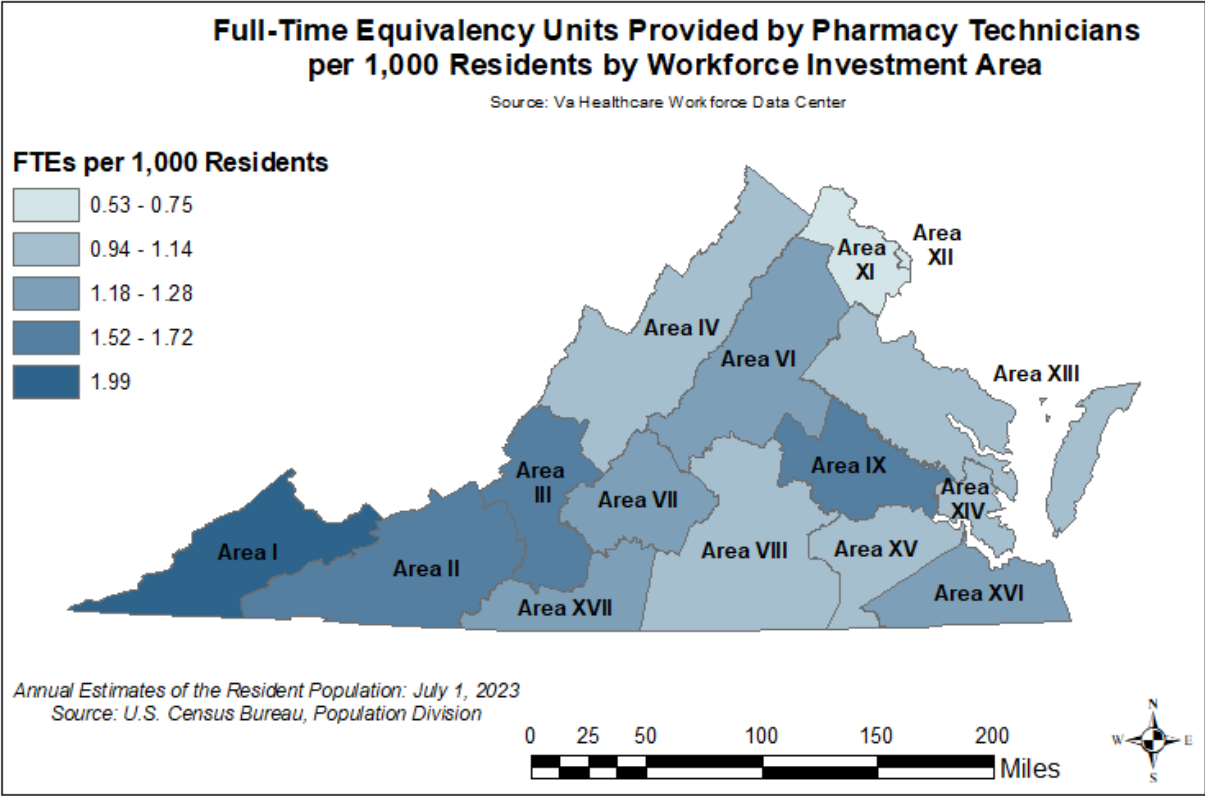
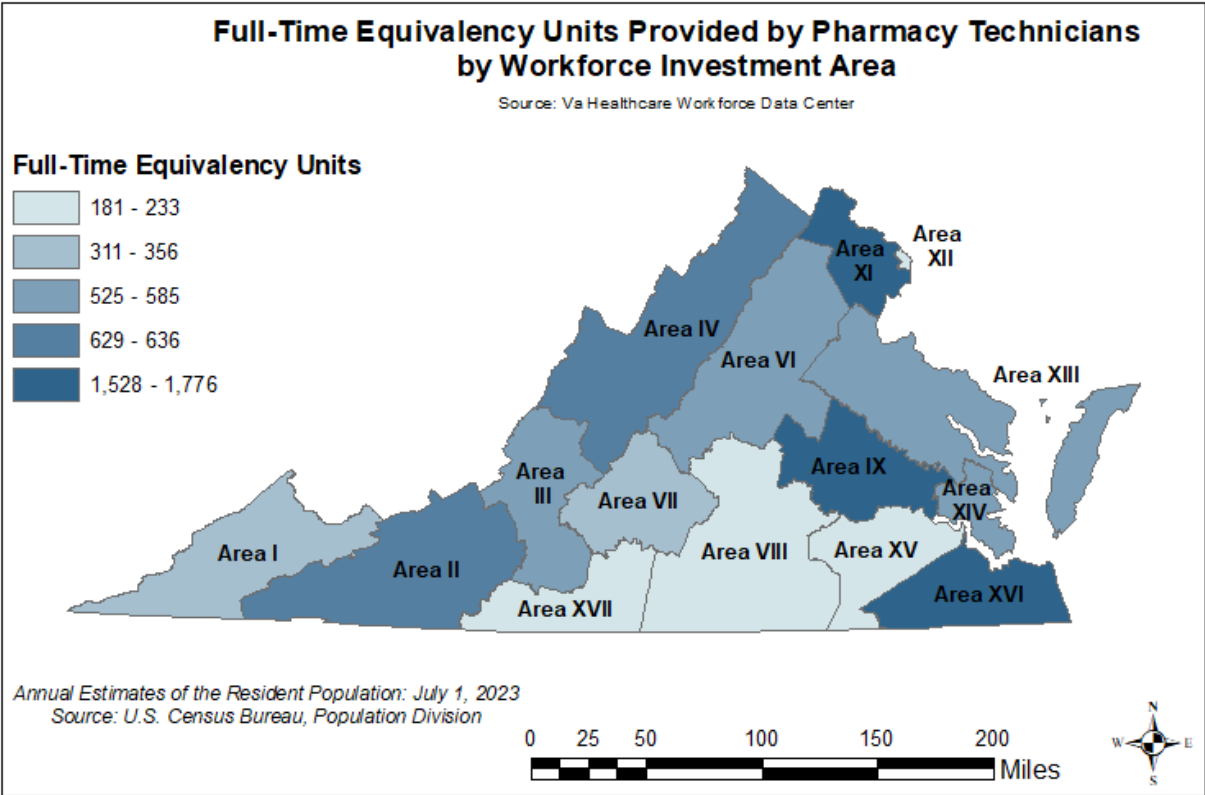
³ Due to assumption violations in Mixed between-within ANOVA (Levene's Test was significant).



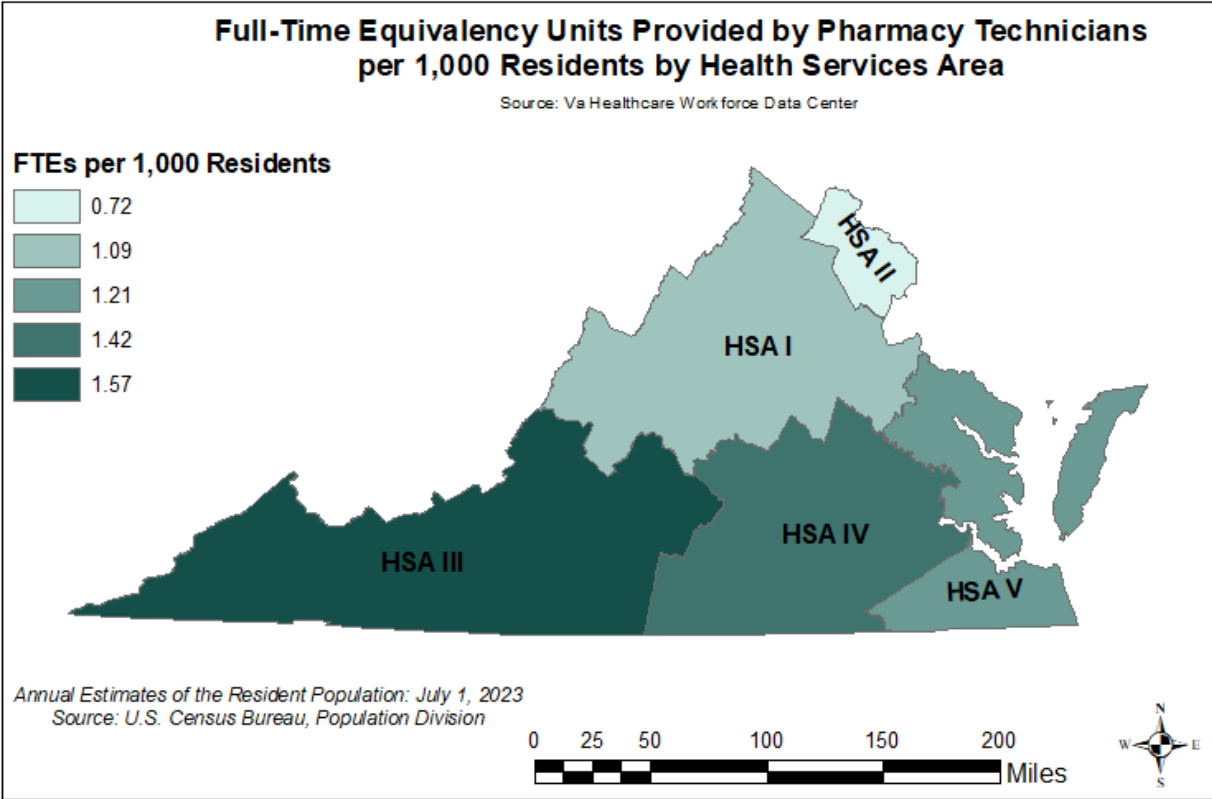
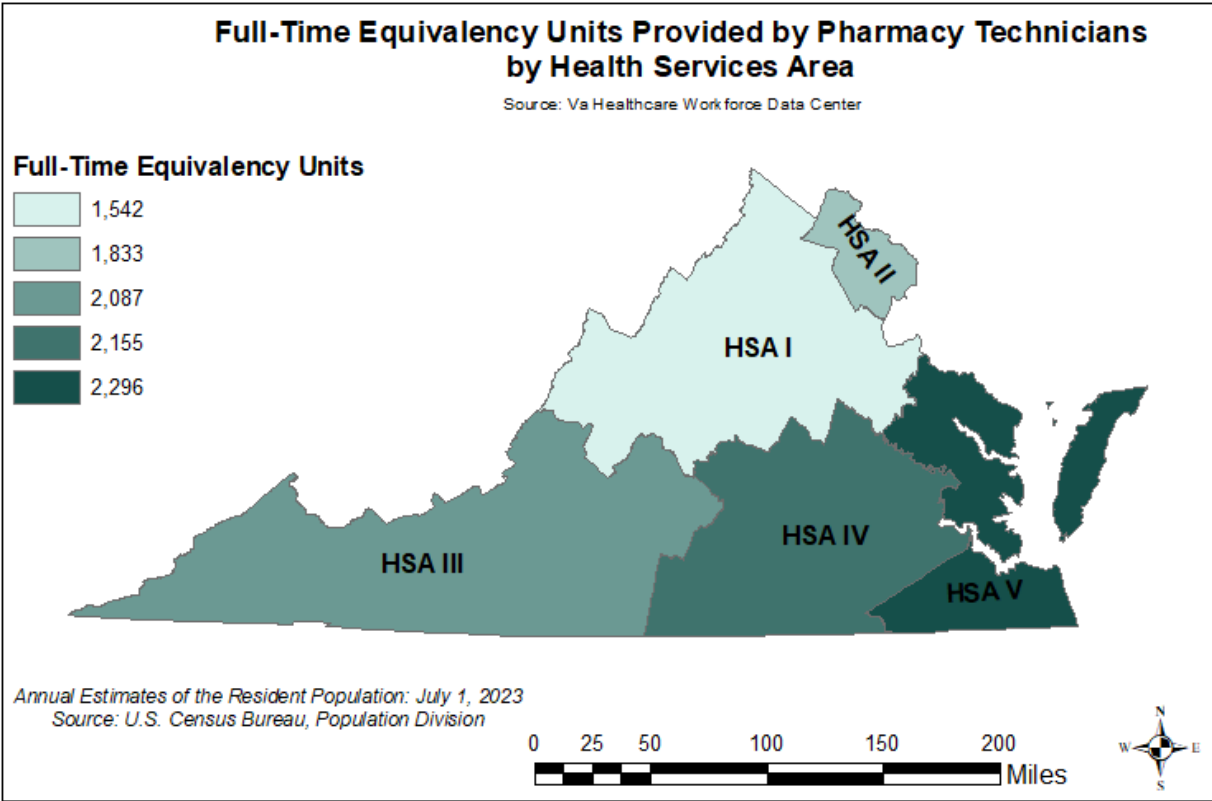
*Virginia performs regions are utilized across the state of Virginia by multiples stakeholders and state agencies.



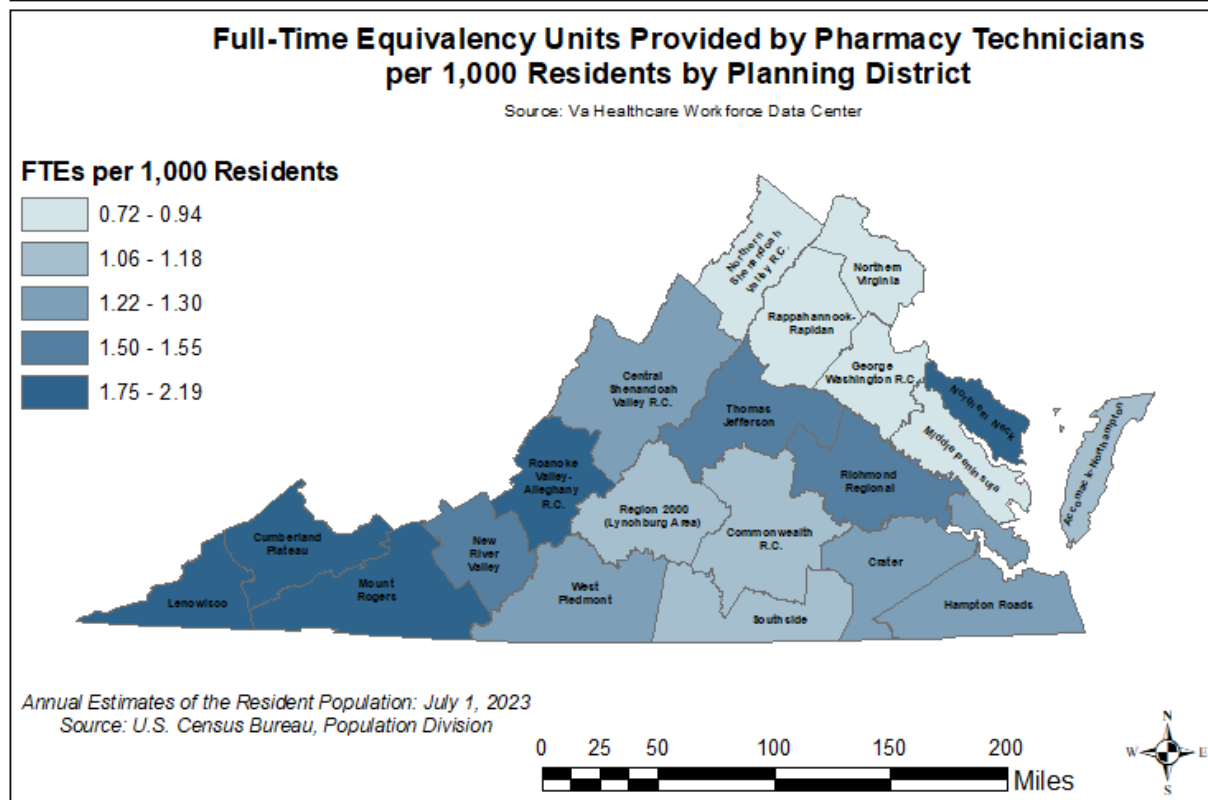
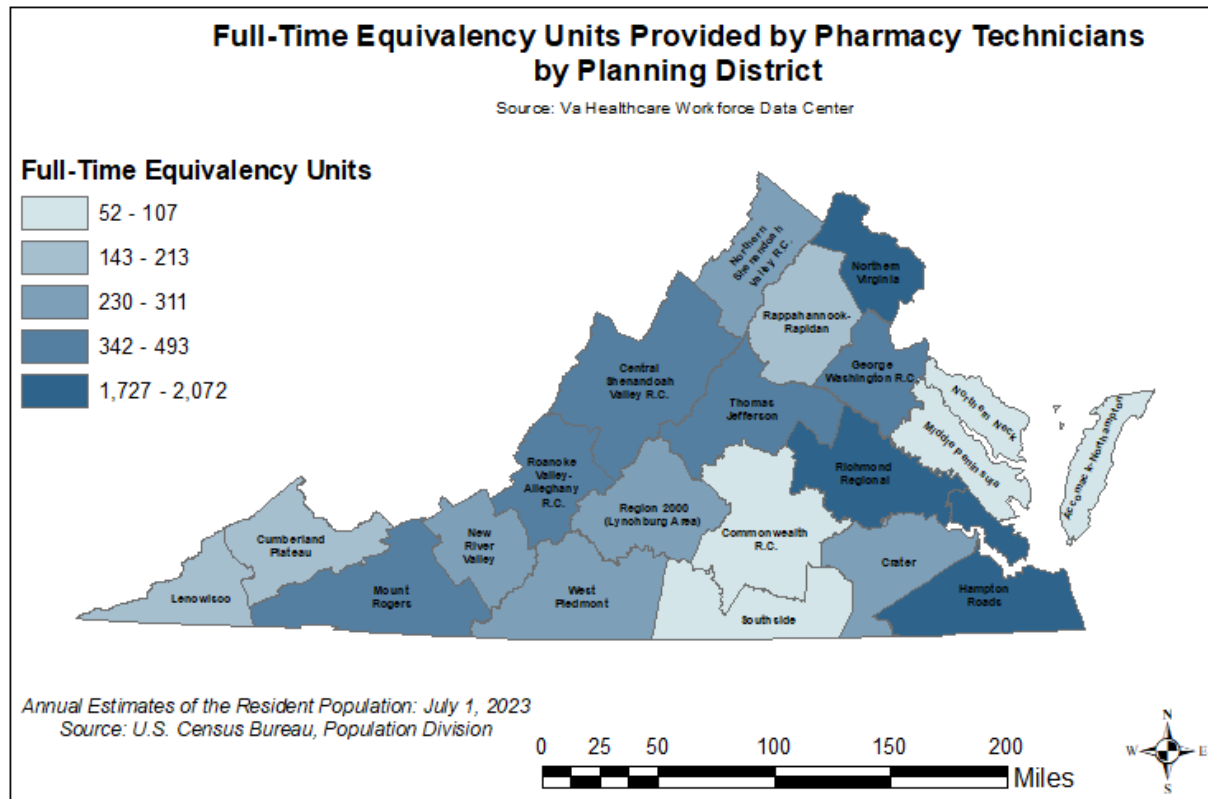
*The Virginia Area Health Education Centers regions are utilized by the Virginia Department of Health to assess primary care access.



*Workforce Investment Areas are utilized by the Virginia Department of Workforce Development and Advancement.



*Health Services Areas are utilized by the Virginia Department of Health and Virginia’s Department to Medical Assistance Services to identify areas with a low concentration of healthcare professionals.



*Planning Districts are used by the Virginia Department of Housing and Community Development to assist local and state government collaboration.

Appendix

Weights

Rural Status	Location Weight			Total Weight	
	#	Rate	Weight	Min.	Max.
Metro, 1 Million+	8,201	80.98%	1.235	1.105	1.456
Metro, 250,000 to 1 Million	1,232	83.52%	1.197	1.072	1.412
Metro, 250,000 or Less	1,252	81.47%	1.227	1.099	1.447
Urban, Pop. 20,000+, Metro Adj.	293	85.32%	1.172	1.049	1.382
Urban, Pop. 20,000+, Non-Adj.	0	NA	NA	NA	NA
Urban, Pop. 2,500-19,999, Metro Adj.	670	83.43%	1.199	1.073	1.413
Urban, Pop. 2,500-19,999, Non-Adj.	477	81.76%	1.223	1.095	1.442
Rural, Metro Adj.	309	80.58%	1.241	1.111	1.463
Rural, Non-Adj.	189	84.66%	1.181	1.057	1.393
Virginia Border State/D.C.	845	65.33%	1.531	1.370	1.805
Other U.S. State	480	55.42%	1.805	1.615	2.128

Source: Va. Healthcare Workforce Data Center

Age	Age Weight			Total Weight	
	#	Rate	Weight	Min.	Max.
Under 30	3,947	67.60%	1.479	1.382	2.128
30 to 34	2,060	79.81%	1.253	1.170	1.802
35 to 39	1,927	82.87%	1.207	1.127	1.735
40 to 44	1,567	85.71%	1.167	1.090	1.678
45 to 49	1,248	87.82%	1.139	1.064	1.638
50 to 54	1,132	86.84%	1.152	1.076	1.656
55 to 59	885	89.04%	1.123	1.049	1.615
60 and Over	1,182	84.35%	1.186	1.107	1.705

Source: Va. Healthcare Workforce Data Center

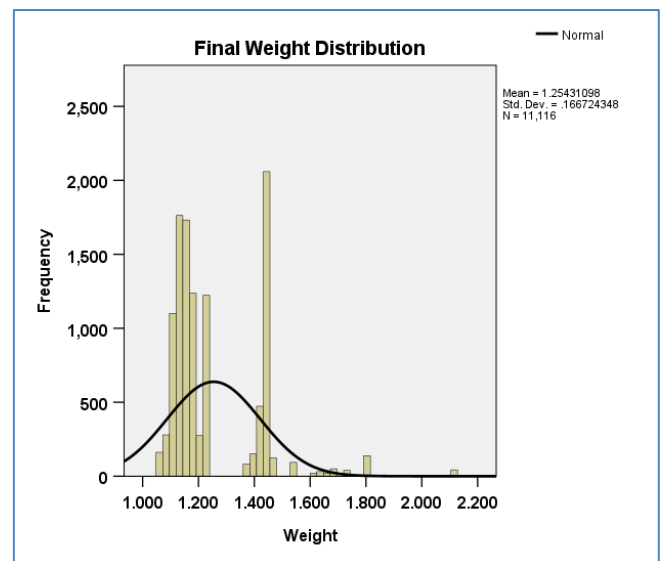
See the Methods section on the HWDC website for details on HWDC methods:

<https://www.dhp.virginia.gov/PublicResources/HealthcareWorkforceDataCenter/>

Final weights are calculated by multiplying the two weights and the overall response rate:

Age Weight x Rural Weight x Response Rate =
Final Weight.

Overall Response Rate: 0.796960



Source: Va. Healthcare Workforce Data Center

Agenda Topic: Participation in collaborative practice agreements and statewide protocols

Included in agenda packet:

- Excerpt from 2024 Pharmacist Healthcare Workforce Survey Report regarding participation in collaborative practice agreements and statewide protocols

Note: Per DMAS, there are approximately 1200 pharmacist enrollments as of 4/12/25 to receive provider reimbursement for clinical services provided by the pharmacist under statewide protocols. Some of these pharmacists may be enrolled at multiple pharmacies.

Statewide protocols may be accessed on the board's website at <https://www.dhp.virginia.gov/Boards/Pharmacy/PractitionerResources/StatewideProtocols/>

The 2024 Pharmacist Healthcare Workforce Survey Report did not include all approved statewide protocols. The 2025 survey will be revised to include all protocols.

At a Glance:

Top Services

Immunization:	27%
Medication Management:	25%
Compounding:	17%

Disease Management

Anticoagulation:	40%
Diabetes:	40%

Source: Va. Healthcare Workforce Data Center

A Closer Look:

Disease Management in Collaborative Practice

	#	%
Anticoagulation	298	40%
Diabetes	293	40%
Hypertension	264	36%
Hypercholesterolemia	234	32%
Tobacco Cessation	174	24%
Asthma	147	20%
Travel Medications	87	12%
At least one	425	64%

Source: Va. Healthcare Workforce Data Center

64% of the 406 pharmacists with a collaborative practice agreement were involved in providing at least one disease management service; anticoagulation and diabetes were the most commonly reported by 40% of those with the agreement. 24% of pharmacists in the state workforce also utilized at least one of the listed statewide protocols.

Services Provided

Services	Primary		Secondary	
	#	%	#	%
Primary Service, Immunization	2,477	27%	2,477	27%
Primary Service, Medication Therapy Management	2,231	25%	285	3%
Primary Service, Compounding	1,582	17%	176	2%
Primary Service, Central Filling	1,103	12%	159	2%
Primary Service, Remote Order Processing	992	11%	116	1%
Primary Service, Collaborative Practice Agreement	666	7%	73	1%
At Least One	4,174	46%	2,734	30%

Source: Va. Healthcare Workforce Data Center

Statewide Protocols

	#	%
Immunization	1,779	20%
Naloxone	1,543	17%
Coronavirus Testing	1,124	12%
Hormonal Contraception	532	6%
Epinephrine	374	4%
Lowering Out-of-Pocket Expenses	345	4%
Emergency Contraception	305	3%
Prenatal Vitamins	188	2%
HIV Pre-Exposure Prophylaxis	109	1%
Tuberculin Skin Testing	47	1%
HIV Post-Exposure Prophylaxis	25	0%
At Least One	2,170	24%

Source: Va. Healthcare Workforce Data Center

Agenda Topic: Overview of process for handling theft/loss reports

Included in agenda packet:

- Background information and stats provided by Ryan Logan



Virginia Department of
Health Professions

Virginia Board of Pharmacy Education Forum

Review of Theft or Loss Reporting

April 25, 2025

Ryan Logan, Pharmacist
Deputy Executive Director



Theft or Loss Reporting

- **Drug Control Act §54.1-3404**
 - Requires registrant or licensee to report the theft or loss of controlled substances to the Board
- **Title 21 Code of Federal Regulations (CFR) §1301.74**
 - Requires registrant to notify the DEA in writing, of any theft or significant loss of any controlled substances within one business day of discovery of the theft or loss
- **As of April 17, 2025, the Board has received approximate 191 notifications or DEA Form 106's**
- **Who may report a theft or loss**
 - Pharmacies
 - Controlled Substances Registrants
 - Wholesale distributors
 - Other facilities
- **Types of theft or loss notices**
 - Initial notification
 - Follow up notification
 - Final follow up notification
 - DEA 106 theft or loss reports



Theft or Loss Reporting

- Procedure for Processing a reported theft or loss
 - Notification or DEA Form 106 received by Board
 - Received via mail, email and fax
 - Transferred to licensing specialist
 - Licensing specialist processes notification or DEA Form 106
 - Review notification or DEA Form 106
 - I. Review all notifications or DEA Form 106's submitted to the Board
 - II. Update tracking spreadsheet
 - III. Identify facilities with 3 or more thefts or losses within the past 24 months
 - IV. Track and confirm compliance with 54.1-3404 (E)
 - Save document(s) to facility file in MLO
 - I. Documents for facilities not licensed by Board of Pharmacy (BOP) are named and filed by year received
 - Forward all notifications or DEA Form 106's to Deputy Executive Director for review



Theft or Loss Reporting

- Procedure for Processing a reported theft or loss
 - Notification or DEA Form 106 received by Deputy
 - Forwarded by licensing specialist
 - Deputy review and follow up on notification or DEA Form 106
 - Review notification or DEA Form 106
 - I. Review and take action (if required) on all notifications or DEA Form 106's submitted to the Board
 - A. Number of thefts or losses
 - B. Type of theft or loss
 - C. List of controlled substances
 - D. Quantity of each drug
 - E. Description of how the theft or loss occurred
 - F. Corrective action taken
 - II. Forward the notification or DEA Form 106 submitted to the BOP for diversion involving other Boards to enfcomplaints@dhp.virginia.gov and the general email inbox of the appropriate Board
 - III. Review previous notifications or DEA Form 106's for facilities that submitted 3 or more thefts or losses within the past 24 months and follow up on any issues/concerns identified.
 - IV. Follow up on facilities not in compliance with 54.1-3404 (E)
 - V. If required, submit a request to the Deputy Executive Director for Discipline to send an EAR to Enforcement to initiate an investigation

Agenda Topic: Bylaws of the Virginia Board of Pharmacy

Included in agenda packet:

- Guidance Document 110-12

Note: The order of business and establishment of meeting agendas are referenced in Article III.

BYLAWS OF THE VIRGINIA BOARD OF PHARMACY

ARTICLE I: GENERAL

The organizational year for the Board shall be from July 1st through June 30th. At the last meeting before July 1, the Board shall elect from its members, a chairman and a vice chairman. The term of office shall be one year and shall begin on July 1. A person shall not serve as chairman or vice chairman for more than two consecutive terms.

For purposes of these Bylaws, the Board schedules full board meetings four times a year, with the right to change the dates, schedule additional meetings as needed, or cancel any board meeting, with the exception that one meeting shall take place annually. Board members shall attend all board meetings in person, unless prevented by illness or similar unavoidable cause. A majority of the members of the Board shall constitute a quorum for the transaction of business. The current edition of *Robert's Rules of Order*, revised, shall apply unless overruled by law, regulation, or these bylaws, or when otherwise agreed.

ARTICLE II: OFFICERS OF THE BOARD

- A. The officers of the Board shall be the chairman and the vice chairman.
- B. The chairman presides at all meetings and formal administrative hearings in accordance with parliamentary rules and the Administrative Process Act, and requires adherence of same on the part of the board members. The chairman shall appoint all committees unless otherwise ordered by the Board.
- C. The vice chairman shall act as chairman in the absence of the chairman.
- D. In the absence, or inability to serve, of both the chairman and vice chairman, the chairman shall appoint another board member to preside at the meeting and/or formal administrative hearing.
- E. The executive director shall be the custodian of all Board records and all papers of value. She/he shall preserve a correct list of all applicants and licensees. She/he shall manage the correspondence of the Board and shall perform all such other duties as naturally pertain to this position.

ARTICLE III: ORDER OF BUSINESS MEETINGS

The order of business shall be as follows:

- 1. Call to order with statement made for the record of how many board members are present and that it constitutes a quorum.
- 2. Approval of Agenda
- 3. Public comment received
- 4. Approval of Minutes
- 5. The remainder of the agenda shall be established by the executive director in consultation with the chairman.

ARTICLE IV: COMMITTEES

A. There shall be the following standing committees:

Special Conference Committees

Inspection Special Conference Committee

Item Review Committee

Regulation Committee

Pilot Committees

1. **Special Conference Committees.** These committees shall consist of two board members who shall review information regarding alleged violations of the pharmacy laws and regulations and determine if probable cause exists to proceed with possible disciplinary action. A special conference committee may also review information regarding a non-routine applicant for whom there may be cause to deny or restrict and may issue a final Order to grant or deny the application or to issue a license, registration or permit with terms and conditions. The special conference committees shall meet as necessary to adjudicate cases in a timely manner in accordance with agency standards for case resolution. The chairman may designate board members as alternates on these committees in the event one of the standing committee members is unable to attend for all or part of a scheduled conference date. The chairman shall appoint committees as needed to expedite the adjudication of cases.
2. **Item Review Committee.** This committee shall consist of at least six pharmacists, to include one board member and the executive director, holding current and unrestricted licenses to practice pharmacy in the Commonwealth of Virginia. The Item Review Committee shall meet as required for the purpose of approving content to assembly the Virginia Multistate Pharmacy Jurisprudence Examination (MPJE) form(s) which shall be accomplished through writing, reviewing, and selecting items for the VA MPJE item pool.
3. **Regulation Committee.** This committee shall consist of five Board members. The Board delegates to the Regulation Committee the authority to consider and respond to petitions for rulemaking. This committee is responsible for the development of proposals for new regulations or amendments to existing regulations with all required accompanying documentation; the development of proposals for legislative initiatives of the Board; the drafting of Board responses to public comment as required in conjunction with rulemaking; conducting the required review of all existing regulations as required by the Board's Public Participation Guidelines and any Executive Order of the Governor, and any other required tasks related to regulations. In accordance with the Administrative Process Act, any proposed draft regulation and response to public comment shall be reviewed and approved by the full Board prior to publication.
4. **Pilot Committees.** These committees shall consist of two board members who review applications for approval of innovative programs and any matters related to such programs.

B. Ad Hoc Committees.

The chairman shall also name such other committees as may be deemed necessary.

C. A majority of a committee shall constitute a quorum and the act of a majority of the members present at a meeting at which a quorum is present shall constitute the act of the committee.

ARTICLE V: GENERAL DELEGATION OF AUTHORITY

The Board delegates the following functions:

1. The Board delegates to Board staff the authority to issue and renew licenses, permits, registrations and certificates where minimum qualifications have been met.
2. The Board delegates to the executive director the authority to reinstate licenses, permits, registrations and certificates when the reinstatement is due to the lapse of the license, permit, registration or certificate and not due to Board disciplinary action.
3. The Board delegates to Board staff the authority to develop and approve any and all forms used in the daily operations of Board business, to include, but not be limited to, licensure applications, renewal forms and documents used in the disciplinary process.
4. The Board delegates to the Department of Health Professions' inspectors the authority to issue summaries of inspection deficiencies upon completion of an inspection, and the Board delegates to the executive director the authority to issue letters regarding reported deficiencies to the facilities or licensee.
5. The Board delegates to the executive director the authority to sign as entered any Order or Consent Order resulting from the disciplinary process or other administrative proceeding.
6. The Board delegates to the executive director, who may consult with a special conference committee member, the authority to provide guidance to the agency's Enforcement Division in situations wherein a complaint is of questionable jurisdiction and an investigation may not be necessary.
7. The Board delegates to the executive director, in consultation with the chairman, the review and approval of applications for special or limited use pharmacy permits. If the executive director and chairman do not reach consensus regarding the issuance of a permit, or if the requested waivers are unusual or different from those routinely approved, the review and approval may be referred to an informal conference committee.
8. The Board delegates to the executive director, in consultation with the chairman, the review and approval, in accordance with regulations, for exceptions to the notice requirements for pharmacies going out of business and for exceptions to notice requirements for pharmacies changing hours of business for more than one week. Should the executive director and the chairman not reach consensus, or if the request for exception is unusual or questionable, the review and approval may be referred to a special conference committee.
9. The Board delegates to the executive director the authority to grant extensions for continuing education on a one-time basis upon written request of the licensee prior to the renewal date in accordance with regulations. Approval of any request for an extension where the licensee must show good cause or approval of any request for an exemption is delegated to the executive director in consultation with the chairman. Should the executive director and chairman not reach agreement, the matter shall be referred to a special conference committee.
10. The Board delegates to the chairman, the authority to represent the Board in instances where Board "consultation" or "review" may be requested, but where a vote of the Board is not required and a meeting is not feasible.
11. The Board delegates the approval of continuing education programs to the executive director in consultation with one member of the Board.
12. The Board delegates the convening of a quorum of the Board by telephone conference call, for the purpose of considering the summary suspension of a license in accordance with § 54.1-2408.1, to the executive director or deputy executive director. The Board delegates the convening of a meeting by telephone conference call, for the purpose of considering settlement proposals in accordance with § 54.1-2400 (13), to the executive director or deputy executive director. The Board delegates the determination of probable cause for disciplinary action to a special conference committee of the Board, wherein the committee may offer a confidential consent

agreement, offer a pre-hearing consent order, cause the scheduling of an informal conference, request additional information, or close the case. The Board further delegates the determination of probable cause, for the purpose of offering a confidential consent agreement or a pre-hearing consent order or for scheduling an informal conference in accordance with established Board guidelines, to the executive director or deputy executive director.

13. The Board delegates to the chairman, or the vice chairman in his absence, the approval of waivers in declared disasters or states of emergency in accordance with § 54.1-3307.3.
14. The Board delegates to the executive director, in accordance with § 54.1-3434.1(A)(2), the authority to accept an inspection report or other documentation for a non-resident pharmacy from an entity that may not be listed on the Board's guidance document, or to request an inspection by an agent of the Board.
15. The Board delegates to the executive director the authority to grant an accommodation of additional testing time, up to a maximum of double time, to candidates for Board required examinations pursuant to the Americans with Disabilities Act provided the candidate provides documentation that supports such an accommodation as required by Board regulation or guidance document. Any other requests for accommodation beyond additional testing time shall be reviewed by the Board at the next available Board meeting.
16. The Board delegates to the executive director, in consultation with the chairman, the authority to review and approve applications for limited-use practitioner of the healing arts to sell controlled substances licenses. A waiver of the square footage requirement for the controlled substances selling and storage area may be provided. Additionally, a waiver of the security system may be provided when storing and selling multiple strengths and formulations of no more than five different topical Schedule VI drugs intended for cosmetic use.
17. The Board delegates to the executive director, in consultation with the chairman, the ability to approve or deny a request for an exception to the two-year pharmacist eligibility requirement to serve as the pharmacist-in-charge, with the ability for the applicant to request an informal conference if denied.

ARTICLE VI: AMENDMENTS

Amendments to these Bylaws may be proposed by a board member or staff personnel by presenting the amendment in writing to all Board members prior to any scheduled meeting of the Board. Upon favorable vote of at least two-thirds of the Board members present at said meeting, such proposed amendment shall be adopted. If notice is given to the Board members at the previously held board meeting, a favorable vote of a majority of the Board members present at the current board meeting is required to adopt the amendment.

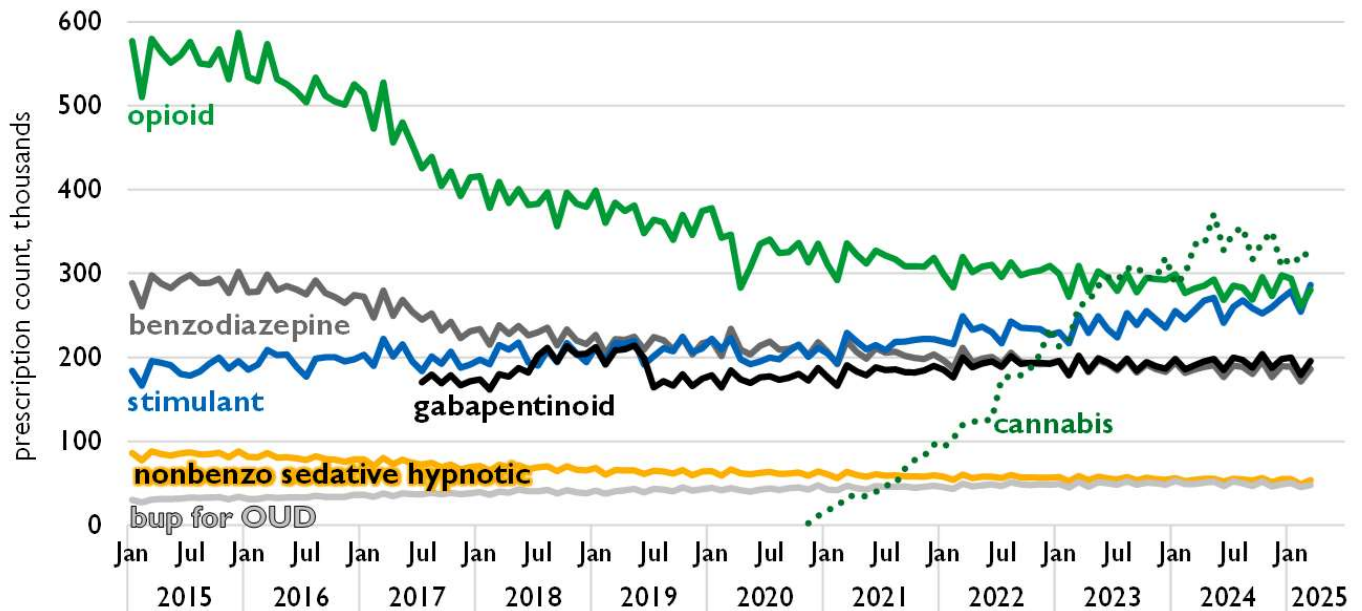
Effective Date: July 1, 1997
Latest revision: September 9, 2020

Agenda Topic: Increase of stimulant prescriptions

Included in agenda packet:

- Trend in PMP data
- Joint FDA-DEA letter regarding shortages, 8/1/2023
- DEA letter regarding quota allocation process, 11/1/23
- DOJ press release regarding Cerebral, updated 11/4/24
- DOJ case regarding Done Global, Adderall Distribution, updated 2/27/25
- Federal Register notice regarding Third Temporary Extension of COVID-19 Telemedicine Flexibilities for Prescription of Controlled Medications through 12/31/25
- DEA announcement regarding three new telemedicine rules, 1/16/25
- § 54.1-3420.3 of the Code of Virginia
- JAMA, Prescription Stimulant Use, Misuse, and Use Disorder Among US Adults Aged 18 to 64 Years, 3/19/25
- NIH, Risks Associated With Undiagnosed ADHD and/or Autism: A Mixed-Method Systematic Review
- Safe.Pharmacy buying safely online resources

Prescriptions dispensed by drug class, 2015-2025Q1





August 1, 2023

Dear Americans,

As leaders of the U.S. Food and Drug Administration (FDA) and the Drug Enforcement Administration (DEA), we recognize the important role that prescription stimulants play in the treatment of conditions such as attention-deficit/hyperactivity disorder (ADHD), binge eating disorder, and uncontrollable episodes of deep sleep (narcolepsy). The lack of availability of certain medications in recent months has been understandably frustrating for patients and their families.

Given the interest related to access to these medications, we want to provide an update on the ongoing actions being taken to resolve the shortages of prescription stimulant medications. In addition, we want to acknowledge important issues that will need to be addressed through longer-term coordination by a variety of entities involved in this effort. This is not a problem that the FDA and DEA can solve on our own. We are urging all stakeholders to work together to resolve these shortages as quickly as possible.

The FDA and DEA do not manufacture drugs and cannot require a pharmaceutical company to make a drug, make more of a drug, or change the distribution of a drug. That said, we are working closely with numerous manufacturers, agencies, and others in the supply chain to understand, prevent, and reduce the impact of these shortages.

The current shortage of stimulant medications is the result of many factors. It began last fall due to a manufacturing delay experienced by one drug maker. While this delay has since resolved, we are continuing to experience its effects in combination with record-high prescription rates of stimulant medications. Data show that, from 2012 to 2021, overall dispensing of stimulants (including amphetamine products and other stimulants) increased by 45.5 percent in the United States. According to a U.S. Centers for Disease Control and Prevention report, particularly during 2020–2021, when virtual prescribing was permitted on a widespread basis during the COVID-19 Public Health Emergency, the percentages in certain age groups grew by more than 10 percent. We are calling on key stakeholders, including manufacturers, distributors, pharmacies, and payors, to do all they can to ensure access for patients when a medication is appropriately prescribed. We want to make sure those who need stimulant medications have access. However, it is also an appropriate time to take a closer look at how we can best ensure these drugs are being prescribed thoughtfully and responsibly.

Stimulants are controlled substances with a high potential for abuse, which can lead to addiction and overdose. Therefore, there are limits (also known as quotas) set by DEA for how much of these drugs can be produced. However, for amphetamine medications, in 2022, manufacturers did not produce the full amount that these limits permitted them to make. Based on DEA's internal analysis of inventory, manufacturing, and sales data submitted by manufacturers of amphetamine products, manufacturers only sold approximately 70 percent of their allotted quota

for the year, and there were approximately 1 billion more doses that they could have produced but did not make or ship. Data for 2023 so far show a similar trend.

We (DEA and the FDA) have called on manufacturers to confirm they are working to increase production to meet their allotted quota amount. If any individual manufacturer does not wish to increase production, we have asked that manufacturer to relinquish their remaining 2023 quota allotment. This would allow DEA to redistribute that allotment to manufacturers that will increase production. DEA is also committed to reviewing and improving our quota process.

The FDA is asking professional groups and healthcare providers to accelerate efforts to support appropriate diagnosis and treatment of ADHD, such as further development of additional clinical guidelines for ADHD in adults. In recognition of this need, FDA [awarded a grant](#) to the National Academies of Sciences, Engineering, and Medicine (NASEM) to support a scientific meeting on ADHD in adults and considerations for diagnosis and treatment. FDA also recognizes that further research is needed into the diagnosis and treatment of ADHD and believes that research can help inform the development of alternative treatments and an understanding of the behavioral and societal issues leading to [widespread misuse](#) of these medications in certain groups.

FDA has already taken steps to support the development of alternative treatment options. In 2020, for instance, FDA permitted marketing of a [game-based digital therapeutic](#) to improve attention function in children with ADHD. This device offers a non-drug option for improving symptoms associated with ADHD in children. There are also non-stimulant medications approved to treat ADHD, including one approved in 2021. Additionally, to address continuing concerns of misuse, addiction and overdose of prescription stimulants, the FDA recently issued a [drug safety communication](#) and required updates to the labeling to standardize prescribing information and clearly inform patients, caregivers and healthcare professionals of these risks.

FDA and DEA will continue to do all we can to prevent stimulant drug shortages, limit their impact, and resolve them as quickly as possible. We will consider additional actions to prevent non-medical use and identify efforts to better understand and strengthen the supply chain. We also hope that we can all work together to assure that those who need stimulant medications can get them based on the best clinical knowledge about when they are effective, and avoid them when there is no indication for their use.

We will continue to work together and with all of you to mitigate this drug shortage and provide up to date information.

Sincerely,



Robert M. Califf, M.D.
Commissioner of Food and Drugs
U.S. Food and Drug Administration



Anne M. Milgram
Administrator
Drug Enforcement Administration



U.S. Department of Justice
Drug Enforcement Administration

Office of the Administrator

Springfield, VA 22152

November 1, 2023

Dear Americans:

On August 1, 2023, I wrote to you with FDA Commissioner Robert Califf to address the lack of availability of certain prescription stimulant medications. As we said then, the U.S. Food and Drug Administration (FDA) and the Drug Enforcement Administration (DEA) recognize the important role that prescription stimulants play in the treatment of conditions such as attention-deficit/hyperactivity disorder (ADHD), binge eating disorder, and narcolepsy. I am writing to you now to provide an update on actions DEA has taken, and is taking, to address shortages in prescription stimulant medications and prevent such shortages from occurring in the future.

As a reminder, DEA does not manufacture drugs and cannot require a pharmaceutical company to make a drug, make more of a drug, or change the distribution of a drug. That said, we regularly engage with manufacturers about their production of drugs, and we set limits (called quotas) for how much of these drugs can be produced.

For amphetamine medications, like Adderall, our data showed that in 2022, manufacturers did not produce the full amount that these limits permitted them to make—resulting in a shortfall of 1 billion doses that could have been produced but were not made or shipped—and the data for 2023 has shown a similar trend. DEA has been in communication with the relevant manufacturers, and 17 out of 18 manufacturers have informed us that they will use their allotted quota amounts and increase production of stimulant medications. Those manufacturers are currently in the process of providing us with information on how long it will take for those stimulant medications to hit pharmacy shelves.

DEA is also actively making changes to our quota allocation process. On August 28, 2023, we changed our quota regulations to reduce the amount of a drug that manufacturers must keep in inventory and to make it easier for manufacturers to voluntarily relinquish their quota allotments in case they are not able to produce a drug. Earlier today, we announced steps we will take to increase manufacturer transparency and receive better real-time data on the status of drug production going forward. These changes include:

- Requiring drug manufacturers to submit their anticipated production timelines for medications to DEA in advance of receiving their quota allotments;
- Requiring drug manufacturers to apply for quota allotments on a quarterly (instead of yearly) basis, so that we are able to provide quota allotments to manufacturers that have demonstrated they are using them to actually make and sell medications for current use;

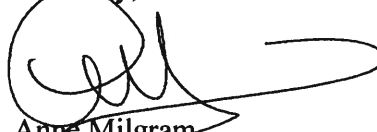
- Requiring monthly, digital reporting from manufacturers and distributors on the amount of drugs being produced and shipped; and
- Specifying whether a manufacturer's quota allotment is for domestic production or export production, so that we can track how much of a drug is available to Americans.

These changes are designed to help us see shortages coming and adjust more quickly over the long run. We are also taking steps to reduce the burden on patients. On July 27, 2023, we revised DEA regulations to allow patients to transfer electronic prescriptions from one pharmacy to another without going back to their doctor.

As we said in our prior letter, there are still important issues that will need to be addressed through longer-term coordination by DEA, FDA, drug manufacturers, and other stakeholders to resolve these issues in the long term. DEA is committed to ensuring that patients who need stimulant medications have access to them and to ensuring that these drugs are being prescribed thoughtfully and responsibly, and we will continue working with our partners inside and outside of government to do so.

DEA remains committed to ensuring that all Americans can access appropriately prescribed medications. DEA will continue to do all we can to prevent drug shortages, limit their impact, and resolve them as quickly as possible.

Sincerely,



Anne Milgram
Administrator



PRESS RELEASE

Telehealth Company Cerebral Agrees to Pay Over \$3.6 Million in Connection with Business Practices that Encouraged the Unauthorized Distribution of Controlled Substances

Monday, November 4, 2024

For Immediate Release

U.S. Attorney's Office, Eastern District of
New York

Non-Prosecution Agreement Resolves Investigation of the Company's Efforts to Increase Prescriptions of Adderall and Other Controlled Substances via Telemedicine

Breon Peace, the United States Attorney for the Eastern District of New York, and Anne Millgram, Administrator of the U.S. Drug Enforcement Administration (DEA), announced today that the online mental healthcare company Cerebral, Inc. (Cerebral) has entered into a non-prosecution agreement (NPA) with the U.S. Attorney's Office for the Eastern District of New York (the Office), and has agreed to pay more than \$3.6 million for engaging in practices that encouraged the unauthorized distribution of controlled substances from 2019 to 2022. An additional fine against Cerebral has been deferred in light of the company's current financial condition.

Under the terms of the NPA, Cerebral agreed to forfeit \$3,652,000 to the United States. The NPA requires Cerebral to continue to cooperate with and provide information to the United States for at least the 30-month term of the agreement. The NPA also requires Cerebral to pay a fine of \$2,922,000, which the Office has determined that Cerebral does not currently have the ability to pay; as a result, it will be deferred for the term of the NPA, and waived at the expiration of the NPA if Cerebral is in compliance with the NPA and unless the Office determines that Cerebral's financial performance has changed such that payment of all or a portion of the fine would be warranted. In the event that Cerebral violates the NPA, the Office may prosecute Cerebral for any of the conduct that gave rise to the NPA and any newly discovered criminal activity.

"People seeking care for their mental health conditions should receive high-quality care that is not motivated or driven by greed," stated United States Attorney Peace. "Cerebral sought to increase its bottom line by increasing the prescription of drugs, including controlled substances that can be highly addictive and dangerous. Since my Office's investigation came to Cerebral's attention, the company has cooperated fully and taken significant steps to remediate the institutional failures that allowed this situation to occur in the first place. This resolution ensures that Cerebral will be financially accountable for its unacceptable conduct and serves as a reminder to the healthcare industry that my Office is committed to ensuring patient safety and protecting the public from business practices like those of Cerebral."

"Today's settlement holds Cerebral responsible for their failure to protect patients from the harms caused by the unnecessary or overprescribing of potentially-addictive ADHD medications," said DEA Administrator Anne Milgram. "Cerebral's exploitation of telemedicine flexibilities deceived patients who were legitimately seeking medical care, putting them at risk in exchange for profit. DEA remains committed to telemedicine accessibility that supports the health of all patients while also ensuring that telemedicine companies and practitioners prioritize patient health and safety above all else."

Cerebral's Operations

Cerebral is an online mental health company that operates primarily as a direct-to-consumer business. Since October 2019, Cerebral has promoted or sold subscription services offering online health care treatment, including mental health treatment and medication management services, through its online platforms, to hundreds of thousands of patients struggling with depression, anxiety and other mental health issues. Cerebral generated revenue by offering tiered monthly subscription plans to its patients. Certain of Cerebral's subscription plans offered patients the ability to obtain medication from Cerebral's treatment providers.

Attention-Deficit/Hyperactivity Disorder (ADHD) was one of the mental health conditions Cerebral offered treatment for. Cerebral first launched its ADHD line of service in or around February 2021 and began offering ADHD treatment services to the public across the United

States, rolling services out on a state-by-state basis. Cerebral's ADHD services were perceived to be a profitable line of business with the potential to increase patient retention at the company.

Beginning in October 2020, Cerebral expanded its medication offerings to include controlled substances. In addition, beginning in February 2021, Cerebral permitted its treatment providers to prescribe stimulant medication, such as Adderall, to its patients. Prescription stimulants, such as Adderall, are Schedule II drugs under the Controlled Substances Act.

Cerebral's Prescription Practices

Between February 2021 and October 2022, Cerebral instituted internal measures to increase the prescriptions of medications with the goal of boosting patient retention and, by extension, Cerebral's revenue.

Cerebral monitored the rates at which its providers prescribed medications, including controlled substances, primarily through two metrics which measured: (1) the number of drug prescriptions issued to patients who enrolled in a medication management subscription plan after their first 30-minute telehealth visit (the Initial Visit Rx Rate); and (2) the number of stimulant prescriptions prescribed to patients diagnosed with ADHD who had no comorbidities (the ADHD Stimulant Rx Metric). Cerebral did not consult with any members of its clinical advisory board — which included multiple experts in the fields of psychology and psychiatry — prior to implementing targeted campaigns to improve both metrics.

Between May 2021 and May 2022, Cerebral sought to increase the Initial Visit Rx Rate to 95%. Cerebral recognized inherent problems with the Initial Visit Rx Rate, including the fact that the metric did not take into account whether patients were diagnosed with conditions where drug prescriptions were clinically appropriate, and that the 95% target goal was not based on any established data or benchmark in medical or scientific literature. Cerebral also recognized that there were a variety of legitimate reasons why its treatment providers would not prescribe drugs to patients immediately after the patient's first visit, and that the Initial Visit Rx Rate could perversely incentivize its treatment providers into prescribing medication that was not necessary. Nonetheless, the company reviewed treatment providers' performance using the Initial Visit Rx Rate and engaged in coordinated efforts to increase the Initial Visit Rx Rate, including by implementing a bonus structure that awarded bonuses to supervisory individuals if they increased the Initial Visit Rx metric among their supervisees; and conducting regular reviews of providers' individual Initial Visit Rx Rate. Despite the Company's efforts to increase its performance on the Initial Visit Rx metric, it did not improve after December 2021. Cerebral ceased using the Initial Visit metric in or about May 2022, after Cerebral's former Chief Executive Officer was terminated.

Beginning in at least October 2021, Cerebral also took initiatives to measure the percentage of controlled substances prescriptions issued to patients who had been diagnosed with ADHD without comorbidities. Cerebral subsequently developed an internal plan to increase the ADHD Stimulant Rx Metric to 100% or “near 100%” and regularly audited its providers’ ADHD prescription practices. Cerebral also considered disciplinary measures, such as issuing “flags” and “strikes,” for individuals who the company considered to be underperformers for this metric. Cerebral instituted these measures despite the fact that certain of its treatment providers had expressed concerns to Cerebral’s management about drug diversion risks with ADHD patients. Cerebral ceased all use of the ADHD Stimulant Rx Metric by October 2022.

In addition to the above tactics, Cerebral also provided financial payments that incentivized its providers to issue stimulant medication for ADHD patients. Specifically, prior to May 2022, Cerebral paid its providers an additional \$10 to conduct required pre-prescription checks of Prescription Drug Monitoring Programs (PDMP)/Prescription Monitoring Program (PMP) databases. Cerebral did not compensate its providers for conducting PDMP/PMP checks for patients with any other medical diagnoses or patient needs.

Cerebral’s Diversion Risks

According to Cerebral’s admissions, Cerebral also did not maintain effective controls against drug diversion, even when risks of drug diversion were elevated to or acknowledged by its management. For example, Cerebral had thousands of duplicate patient accounts (i.e., multiple accounts that belonged to the same individual) that were not fully addressed internally until at least early 2022. As a result of the failure to timely identify and remove duplicate accounts, at least one patient was able to obtain stimulant prescriptions from multiple providers at Cerebral, even after having been previously flagged as having misused stimulants. As another example, prior to 2022, Cerebral also permitted drug-seeking patients who were not prescribed controlled substances in the first instance to seek reassignment to different providers.

The Non-Prosecution Agreement

Cerebral has agreed to forfeit \$3,652,000 to the United States, which represent the amount of proceeds that could be reasonably attributed to the monthly increase in ADHD revenue generated by patients who were diagnosed with ADHD and subsequently prescribed stimulant prescriptions. Cerebral has also agreed to pay a fine of \$2,922,000, which the Office has determined that Cerebral does not currently have the ability to pay; as detailed above, it will be deferred for the term of the NPA.

The Office reached this resolution with Cerebral after carefully weighing all of the factors relevant to the appropriate corporate resolution. The NPA recognizes that, although Cerebral’s serious misconduct was reported to the Office before Cerebral self-disclosed it, Cerebral voluntarily took a number of substantial remedial measures beginning in May 2022 to mitigate

and correct the effects of the practices described above, including terminating its former Chief Executive Officer, stopping all use of the prescription metrics described above, and improving its compliance measures. In October 2022, Cerebral voluntarily stopped prescribing controlled substances to all of its patients, and has agreed not to prescribe controlled substances in the future. Cerebral also has no prior criminal history in the United States. Furthermore, Cerebral has cooperated extensively with the Office in its investigation, including through detailed disclosures, and has agreed to continue to cooperate fully with the Office.

The agreement announced today is the result of an investigation conducted by the Drug Enforcement Administration, New York Division, Buffalo Diversion Group, Tactical Diversion Squad. The government's case is being handled by the Office's International Narcotics and Money Laundering Section and Business and Securities Fraud Section. Assistant United States Attorneys Genny Ngai, Gillian Kassner and Miranda Gonzalez are in charge of the prosecution, with the assistance of the Office's former Paralegal Specialists Sophia Cronin, Riley Martinez and Jordi Martinez.

The Defendant:

CEREBRAL, INC.
Claymont, Delaware

[cerebral_agreement.pdf](#)

Contact

John Marzulli
Danielle Blustein Hass
U.S. Attorney's Office
(718) 254-6323

Updated November 4, 2024

Topics

PRESCRIPTION DRUGS

HEALTH CARE FRAUD

Component

[USAO - New York, Eastern](#)



Official websites use .gov

A **.gov** website belongs to an official government organization in the United States.



Secure .gov websites use HTTPS

A **lock** (🔒) or **https://** means you've safely connected to the .gov website. Share sensitive information only on official, secure websites.

[En Español](#) [Contact Us](#) [Quick Links](#)



U.S. Immigration
and Customs
Enforcement



Call [1-866-DHS-2-ICE](tel:1-866-DHS-2-ICE)

[Report Crime](#)

[ICE](#) > [NEWSROOM](#)



Archived Content

In an effort to keep ICE.gov current, the archive contains content from a previous administration or is otherwise outdated. This information is archived and not reflective of current practice.

JUNE 14, 2024 • • LAW ENFORCEMENT

Founder/CEO and Clinical President of Digital Health Company Arrested for \$100M Adderall Distribution, Health Care Fraud Scheme

HSI New York task force investigation leads to Justice Department's first criminal drug distribution prosecutions related to a digital health company that distributed controlled substances via telemedicine

NEW YORK — The founder and CEO of a California-based digital health company and its clinical president were [arrested](#) June 13 in connection with their alleged participation in a scheme to distribute Adderall over the internet, conspiring to commit health

care fraud in connection with the submission of false and fraudulent claims for reimbursement for Adderall and other stimulants, and obstructing justice.

Special agents with Homeland Security Investigations New York's Organized Crime Drug Enforcement Task Force Strike Force, in coordination with law enforcement partners, arrested Ruthia He, the founder and CEO of Done Global Inc., in Los Angeles, and David Brody, the clinical president of Done Health P.C., in San Rafael, California.

“Healthcare fraud is not a victimless crime. It levies a tremendous cost on our nation’s healthcare systems and economy,” said HSI Executive Associate Director Katrina W. Berger. “Today’s announcement should serve as a reminder that it is only a matter of time before anyone engaging in fraudulent activity is caught and brought to justice.”

According to the investigation, He and Brody allegedly conspired with others to provide easy access to Adderall and other stimulants in exchange for payment of a monthly subscription fee. The investigation found that the conspiracy’s purpose was for the defendants to unlawfully enrich themselves by, among other things, by increasing monthly subscription revenue and thus increasing the value of the company. The company allegedly arranged for the prescription of over 40 million pills of Adderall and other stimulants and obtained over \$100 million in revenue.

He and Brody allegedly obtained subscribers by targeting drug seekers and spending tens of millions of dollars on deceptive advertisements on social media networks. They also allegedly intentionally structured the Done platform to facilitate access to Adderall and other stimulants, including by limiting the information available to Done prescribers, instructing Done prescribers to prescribe Adderall and other stimulants even if the Done member did not qualify, and mandating that initial encounters would be under 30 minutes. To maximize profits, He allegedly put in a place an “auto-refill” function that allowed Done subscribers to elect to have a message requesting a refill be auto-generated every month. He wrote that Done sought to “use the comp structure to dis-encourage follow-up” medical care by refusing to pay Done prescribers for any medical visits, telemedicine consultation, or time spent caring for patients after an initial consultation, and instead paying solely based on the number of patients who received prescriptions.

“The individuals charged today allegedly disregarded the first rule of medical care — do no harm — in order to maximize profits, and there is no place for such fraud in our healthcare system,” said Secretary of Homeland Security Alejandro N. Mayorkas. “The indictment levied against these individuals sends a clear message: The Department of Homeland Security, our Homeland Security Investigations personnel, and our partners across the federal government will hold accountable those providers and prescribers who prey on their patients.”

“As alleged, these defendants exploited the COVID-19 pandemic to develop and carry out a \$100 million scheme to defraud taxpayers and provide easy access to Adderall and other stimulants for no legitimate medical purpose,” said U.S. Attorney General Merrick B. Garland. “Those seeking to profit from addiction by illegally distributing controlled substances over the internet should know that they cannot hide their crimes and that the Justice Department will hold them accountable.”

If convicted, He and Brody each face a maximum penalty of 20 years in prison on the conspiracy to distribute controlled substances and distribution of controlled substances counts.

This case is being investigated by HSI, the DEA, the U.S. Department of Health and Human Services’ Office of Inspector General, and IRS Criminal Investigation.

Updated: 02/27/2025

MEDIA INQUIRIES

For media inquiries about ICE activities, operations, or policies, contact the ICE Office of Public Affairs at ICEMedia@ice.dhs.gov.

About Us

Combating Transnational Crime

Immigration Enforcement

Newsroom

U.S. Immigration and Customs Enforcement

















[ICE Contact Center](#)

141



DEPARTMENT OF JUSTICE

Drug Enforcement Administration

21 CFR Part 1307

[Docket No. DEA-407]

RIN 1117-AB40, 1117-AB78, and 1117-ZA06

DEPARTMENT OF HEALTH AND HUMAN SERVICES

42 CFR Part 12

Third Temporary Extension of COVID-19 Telemedicine Flexibilities for Prescription of Controlled Medications

AGENCY: Drug Enforcement Administration, Department of Justice; Substance Abuse and
Mental Health Services Administration, Department of Health and Human Services.

ACTION: Temporary rule.

SUMMARY: The Drug Enforcement Administration (DEA) in concert with the Department of
Health and Human Services (HHS) is issuing a third extension of telemedicine flexibilities for
the prescribing of controlled medications, through December 31, 2025.

DATES: This rule is effective January 1, 2025, through December 31, 2025.

FOR FURTHER INFORMATION CONTACT: Heather E. Achbach, Diversion Control
Division, Drug Enforcement Administration; Mailing Address: 8701 Morrisette Drive,
Springfield, VA 22152, Telephone: (571) 776-3882.

SUPPLEMENTARY INFORMATION:

I. Background

Overview

Under the Ryan Haight Online Pharmacy Consumer Protection Act of 2008 (the Ryan
Haight Act), a prescribing practitioner – subject to certain exceptions – may prescribe controlled
medications to a patient only after conducting an in-person evaluation of that patient. In

response to the COVID-19 Public Health Emergency (COVID-19 PHE), as declared by the Secretary (the Secretary) of the Department of Health and Human Services (HHS) on January 31, 2020, pursuant to the authority under section 319 of the Public Health Service Act (42 U.S.C. 247), the Drug Enforcement Administration (DEA) granted temporary exceptions to the Ryan Haight Act and DEA's implementing regulations under 21 U.S.C. 802(54)(D).

In order to prevent lapses in care, these exceptions allowed for the prescribing of controlled medications via telemedicine encounters even when the prescribing practitioner had not conducted an in-person medical evaluation of the patient. These telemedicine flexibilities authorized practitioners to prescribe schedule II-V controlled medications via audio-video telemedicine encounters, including schedule III-V narcotic controlled medications approved by the Food and Drug Administration (FDA) for maintenance and withdrawal management treatment of opioid use disorder via audio-only telemedicine encounters, provided that such prescriptions otherwise comply with the requirements outlined in DEA guidance documents, DEA regulations, and applicable Federal and State law. DEA granted those temporary exceptions to the Ryan Haight Act and DEA's implementing regulations via two letters published in March 2020:

- A March 25, 2020 "Dear Registrant" letter signed by William T. McDermott, DEA's then-Assistant Administrator, Diversion Control Division (the McDermott Letter);¹ and
- A March 31, 2020 "Dear Registrant" letter signed by Thomas W. Prevoznik, DEA's then-Deputy Assistant Administrator, Diversion Control Division (the Prevoznik Letter).²

¹ William T. McDermott, DEA Dear Registrant letter, Drug Enforcement Administration (March 25, 2020), [https://www.deadiversion.usdoj.gov/GDP/\(DEA-DC-018\)\(DEA067\)%20DEA%20state%20reciprocity%20\(final\)\(Signed\).pdf](https://www.deadiversion.usdoj.gov/GDP/(DEA-DC-018)(DEA067)%20DEA%20state%20reciprocity%20(final)(Signed).pdf).

² Thomas W. Prevoznik, DEA Dear Registrant letter, Drug Enforcement Administration (March 31, 2020), [https://www.deadiversion.usdoj.gov/GDP/\(DEA-DC-022\)\(DEA068\)%20DEA%20SAMHSA%20buprenorphine%20telemedicine%20%20\(Final\)%20+Esign.pdf](https://www.deadiversion.usdoj.gov/GDP/(DEA-DC-022)(DEA068)%20DEA%20SAMHSA%20buprenorphine%20telemedicine%20%20(Final)%20+Esign.pdf).

On March 1, 2023, DEA, in concert with HHS, promulgated two notices of proposed rulemaking (NPRMs) in the Federal Register – “Telemedicine Prescribing of Controlled Substances When the Practitioner and the Patient Have Not Had a Prior In-Person Medical Evaluation”³ (the General Telemedicine NPRM) and “Expansion of Induction of Buprenorphine via Telemedicine Encounter”⁴ (the Buprenorphine NPRM) – which proposed to expand patient access to prescriptions for controlled medications via telemedicine encounters relative to the pre-COVID-19 PHE landscape. The purpose of the two proposed rules was to make permanent some of the telemedicine flexibilities established during the COVID-19 PHE in order to facilitate patient access to controlled medications via telemedicine when consistent with public health and safety, while maintaining effective controls against diversion. The comment period for these two NPRMs closed on March 31, 2023. Those NPRMs generated a total of 38,369 public comments – 35,454 comments on the General Telemedicine NPRM and 2,915 comments on the Buprenorphine NPRM. Many of those comments requested changes of varying degrees to the proposed regulations in the two March 2023 NPRMs.

On May 10, 2023 DEA, jointly with HHS (with the Substance Abuse and Mental Health Services Administration (SAMHSA) acting on behalf of HHS), issued the first temporary extension (First Temporary Rule), which extended the full set of telemedicine flexibilities regarding the prescribing of controlled medications, as had been in place under the COVID-19 PHE, through November 11, 2023.⁵ The First Temporary Rule also provided a one-year grace period, through November 11, 2024, to any practitioner-patient telemedicine relationships that had been or would be established on or before November 11, 2023. In other words, under the First Temporary Rule, if a patient and a practitioner had established a telemedicine relationship

³ 88 FR 12875 (Mar. 1, 2023).

⁴ 88 FR 12890 (Mar. 1, 2023).

⁵ Temporary Extension of COVID-19 Telemedicine Flexibilities for Prescription of Controlled Medications, 88 FR 30037 (May 10, 2023).

on or before November 11, 2023, the same telemedicine flexibilities that had governed the relationship to that point would continue to apply through November 11, 2024.

On August 7, 2023, DEA announced that it would host Telemedicine Listening Sessions on September 12 and 13, 2023, in order to receive additional input concerning the practice of telemedicine with regards to prescribing controlled medications and potential safeguards that could effectively prevent and detect diversion of controlled substances prescribed via telemedicine. On October 10, 2023, DEA, jointly with HHS, issued a second temporary extension (Second Temporary Rule) extending the full set of telemedicine flexibilities regarding prescription of controlled medications as were in place during the COVID-19 PHE, through December 31, 2024.⁶ This extension authorized all DEA-registered practitioners to prescribe schedule II-V controlled medications via telemedicine through December 31, 2024, whether or not the patient and practitioner established a telemedicine relationship on or before November 11, 2023. In other words, the grace period provided in the First Temporary Rule was effectively subsumed by this Second Temporary Rule, which continued the extension of the current flexibilities for all practitioner-patient relationships – not just those established on or before November 11, 2023 – until the end of 2024.

On June 13 and 27, 2024, DEA held virtual Tribal Consultations with numerous Tribal governments and organizations in order to elicit further comment from interested Tribal parties regarding the prescribing of controlled medications via telemedicine and its impact on Tribal persons. Additionally, in June 2024, DEA transmitted a new draft telemedicine NPRM to the Office of Management and Budget (OMB) for review under Executive Order (E.O.) 12866. Since then, DEA has also attended several meetings with interested parties coordinated by OMB pursuant to E.O. 12866, which have provided interested parties with the opportunity to provide further views to OMB.

⁶ Second Temporary Extension of COVID-19 Telemedicine Flexibilities for Prescription of Controlled Medications, 88 FR 69879 (October 10, 2023).

With the deadline of December 31, 2024, granted by the Second Temporary Rule quickly approaching, DEA, jointly with HHS, is now issuing a third temporary extension (Third Temporary Rule) to ensure a smooth transition for patients and practitioners that have come to rely on the availability of telemedicine for controlled medication prescriptions. This additional time will allow DEA (and also HHS, for rules that must be issued jointly) to promulgate proposed and final regulations that are consistent with public health and safety, and that also effectively mitigate the risk of possible diversion. Furthermore, this Third Temporary Rule will allow adequate time for providers to come into compliance with any new standards or safeguards eventually adopted in a final set of regulations. DEA remains committed to carefully evaluating the comments received in response to the prior NPRMs, as well as the information and perspectives presented at the Telemedicine Listening Sessions, the Tribal Consultations, and the E.O. 12866 meetings.

II. Legal Authority

The Ryan Haight Act amended the Controlled Substances Act (CSA) to generally require that the dispensing of controlled medications by means of the Internet be predicated on a valid prescription involving at least one in-person medical evaluation.⁷ At the same time, it also established excepted categories of telemedicine pursuant to which a practitioner may prescribe controlled medications for a patient despite never having evaluated that patient in person, provided that, among other things, such practice is in accordance with applicable Federal and State laws.⁸

One of these categories authorizes the Attorney General and the Secretary to jointly promulgate rules that would allow practitioners to prescribe medications for patients via telemedicine without having had an in-person evaluation when such telemedicine practice is in

⁷ 21 U.S.C. 829(e).

⁸ 21 U.S.C. 802(54)(A) – (G). The Attorney General has delegated his rulemaking authority under this provision to the Administrator of DEA via 28 CFR 0.100. The Secretary delegated his rulemaking authority under 21 U.S.C. 802(54)(G) to the Assistant Secretary for Mental Health and Substance Use within the Substance Abuse and Mental Health Services Administration on May 4, 2023.

accordance with applicable Federal and State laws, uses an approved telecommunications system, and is “conducted under . . . circumstances that the[y have] . . . determined to be consistent with effective controls against diversion and otherwise consistent with the public health and safety.”⁹

Pursuant to this authority, DEA, jointly with HHS, is hereby promulgating this Third Temporary Rule specifying certain circumstances under which practitioners may prescribe controlled medications, for the time period described above, to patients whom the practitioner has never evaluated in person. This Third Temporary Rule, like the First and Second Temporary Rules, covers the portions of the March 2023 NPRMs related to extensions of the telemedicine flexibilities in place during the COVID-19 PHE, and it extends, through December 31, 2025, the telemedicine flexibilities that have been in place since March 2020 for prescribing controlled medications via the practice of telemedicine.

As noted previously, DEA and, for rules that must be issued jointly, HHS anticipate implementing a final set of regulations that are consistent with the public health and safety and that also effectively mitigate the risk of possible diversion. However, given the impending expiration of the flexibilities provided in the Second Temporary Rule and the additional consideration of the input received during the Telemedicine Listening Sessions, the Tribal Consultations, and the E.O. 12866 meetings, DEA, jointly with HHS, has elected to again extend those flexibilities to maintain access to care during a limited window of time as the agencies consider the appropriate pathway forward.

As explained further below, because this is an extension of limited duration of flexibilities that existed during the COVID-19 PHE, DEA and HHS have determined that this Third Temporary Rule is consistent “with effective controls against diversion and otherwise consistent with the public health and safety” as required under 21 U.S.C. 802(54)(G). Thus, DEA, jointly with HHS, is promulgating this temporary rule pursuant to 21 U.S.C. 802(54)(G).

⁹ 21 U.S.C. 802(54)(G).

HHS has advised DEA that no additional rulemaking by HHS is necessary as it pertains to the promulgation of these provisions pursuant to 21 U.S.C. 802(54)(G).

III. Purpose and Need for Regulatory Changes

The purpose of this rulemaking is to further extend, for a limited period of time, the telemedicine flexibilities that existed during the COVID-19 PHE in order to:

- Prevent a reduction in access to care for patients who do not yet have an existing telemedicine relationship with their practitioners pending promulgation of a final rule or rules addressing telemedicine more generally;
- For relationships established both during the COVID-19 PHE and those established during the prior extensions, prevent backlogs with respect to in-person medical evaluations in the months shortly before and after the expiration of the telemedicine flexibilities and ensure the availability of telemedicine for practitioners and patients who have come to rely on it;
- Address the urgent public health need for continued access to buprenorphine as medication for opioid use disorder in the context of the continuing opioid public health crisis;
- Allow patients, practitioners, pharmacists, service providers, and other stakeholders sufficient time to prepare for the implementation of any future regulations that apply to prescribing of controlled medications via telemedicine;
- Enable DEA to continue considering the presentations made at the Telemedicine Listening Sessions, the Tribal Consultations, and the E.O. 12866 meetings;
- Enable DEA, with HHS for rules that must be issued jointly, to conduct a thorough evaluation of regulatory alternatives in order to promulgate regulations that most effectively expand access to telemedicine encounters in a manner that is consistent with the public health and safety, while also effectively mitigating against the risk of possible diversion; and
- Avoid incentivizing the investment necessary to develop new telemedicine companies that might encourage or enable problematic prescribing practices by limiting the third extension of flexibilities to a short, time-limited period.

IV. Summary of Third Temporary Rule Changes

This Third Temporary Rule amends portions of 21 CFR 1307.41 and 42 CFR 12.1 through December 31, 2025.

Paragraph (a) is amended to state that the authorization granted in the amended paragraph (c) expires at the end of December 31, 2025, instead of December 31, 2024.

Current paragraph (b) is deleted.

Current paragraph (c) is redesignated as paragraph (b) and is amended to reflect that current paragraph (d) has been deleted and to extend the COVID-19 telemedicine prescribing flexibilities through December 31, 2025, provided all the conditions listed in current paragraph (e) are met.

Current paragraph (d) is deleted.

Current paragraph (e) is redesignated as paragraph (c) and is amended to reflect that current paragraphs (b) and (d) have been deleted.

DEA and HHS are using the revise and republish instruction to reflect these changes as parts of newly redesignated paragraph (c) are not changing.

V. Regulatory Analyses

Administrative Procedure Act

DEA and HHS are issuing this rule without prior notice and an opportunity to comment pursuant to the Administrative Procedure Act's (APA's) "good cause" exception. In certain circumstances, agencies may forgo notice-and-comment rulemaking when a rulemaking is published in the Federal Register and the agency "for good cause finds . . . that notice and public procedure thereon are impracticable, unnecessary, or contrary to the public interest."¹⁰

As discussed earlier, DEA, jointly with HHS, is publishing this third temporary extension of certain exceptions to existing DEA regulations, granted in March 2020 as a result of the COVID-19 PHE, in order to prevent reduced access to care for patients that do not yet have an

¹⁰ 5 U.S.C. 553(b)(B).

existing telemedicine relationship with their practitioners pending promulgation of a final rule or rules addressing telemedicine more generally. It would be impracticable for DEA and HHS to publish a notice of proposed rulemaking; await, review, and respond to new comments; and issue a rule in the time remaining before the second extension expires on December 31, 2024. Further, the reduction in access to care that patients would experience if the existing telemedicine flexibilities ended on December 31, 2024 would be contrary to the public interest, as it could lead to potential patient harm – due to an inability to access appropriate care – in some instances.

As noted above, in March 2023, DEA received 38,369 comments on two proposed rules regarding the flexibilities that would be extended by this rule. DEA considered those comments in publishing the First Temporary Rule and Second Temporary Rule.¹¹ Moreover, any final rule or rules that DEA and, for rules that must be issued jointly, HHS promulgate addressing telemedicine more generally would reflect viewpoints and information from comments received in response to the proposed rules, the Telemedicine Listening Sessions, the Tribal Consultations, the E.O. 12866 meetings, and any further comments that may be collected during additional rounds of public comment. Because DEA and, for rules that must be issued jointly, HHS continue to consider information that was provided in those comments and presentations, and that may be provided in the near future before issuing a final set of regulations, further opportunity for public comment on these flexibilities at this time would serve little, if any, purpose.

For these reasons, each of which individually constitutes good cause, DEA, jointly with HHS, finds that notice and public comment on this rule are impracticable, unnecessary, and contrary to the public interest.

Executive Orders 12866 (Regulatory Planning and Review), 13563 (Improving Regulation and Regulatory Review), and 14094 (Modernizing Regulatory Review).

¹¹ 88 FR 30037 (May 10, 2023) and 88 FR 69879 (October 10, 2023).

This Third Temporary Rule was developed in accordance with the principles of E.O. 12866, as amended by E.O. 14094 and E.O. 13563. E.O. 12866 directs agencies to assess all costs and benefits of available regulatory alternatives and, if regulation is necessary, to select regulatory approaches that maximize net benefits (including potential economic, environmental, public health, and safety effects; distributive impacts; and equity). E.O. 13563 is supplemental to and reaffirms the principles, structures, and definitions governing regulatory review established in E.O. 12866.

The economic, interagency, budgetary, legal, and policy implications of this temporary rule have been examined, and DEA has determined that it is a significant regulatory action under E.O. 12866, but not a Section 3(f)(1) significant regulatory action. Accordingly, this rule has been submitted to OMB for review.

DEA, jointly with HHS, is publishing this Third Temporary Rule to further extend certain exceptions DEA granted to its existing regulations in March 2020 as a result of the COVID-19 PHE in order to avoid a lapse of care for patients. The additional extension of the COVID-19 flexibilities until December 31, 2025, is necessary to thoroughly consider the presentations made at the Telemedicine Listening Sessions, the Tribal Consultations, the E.O. 12866 meetings, as well as the comments made to the proposed rules set forth in the March 2023 NPRMs.

Without this Third Temporary Rule, the COVID-19 PHE telemedicine flexibilities are scheduled to expire on December 31, 2024. This rule extends the expiration of those flexibilities through December 31, 2025. Because this rule does not create or remove any regulatory requirements, DEA and HHS estimate that there is no cost associated with this Third Temporary Rule. However, DEA and HHS believe this extension creates a benefit in the form of cost savings to prescribers and patients and reduced transfer payments to the Federal Government, similar to those described in the General Telemedicine NPRM. However, DEA is unable to quantify the cost savings and reduction in transfer payments.

The Third Temporary Rule meets the applicable standards set forth in sections 3(a) and 3(b)(2) of E.O. 12988 to eliminate drafting errors and ambiguity, minimize litigation, provide a clear legal standard for affected conduct, and promote simplification and burden reduction.

Executive Order 13132, Federalism

This Third Temporary Rule does not have federalism implications warranting the application of E.O. 13132. The rule does not have substantial direct effects on the States, on the relationship between the national government and the States, or the distribution of power and responsibilities among the various levels of government.

Executive Order 13175, Consultation and Coordination with Indian Tribal Governments

This Third Temporary Rule does not have substantial direct effects on the Tribes, on the relationship between the national government and the Tribes, or the distribution of power and responsibilities between the Federal Government and Indian Tribes. However, DEA has determined that there is a reasonable basis that the March 2023 NPRMs may have Tribal implications, consistent with the definition in E.O. 13175. As such, DEA engaged in virtual consultations with numerous Tribal governments and organizations on June 13 and 27, 2024. DEA plans to incorporate the concerns raised during those virtual consultations when a final set of regulations is promulgated.

Regulatory Flexibility Act

The Administrator, in accordance with the Regulatory Flexibility Act (5 U.S.C. 601–612) (RFA), has reviewed this Third Temporary Rule and by approving it certifies that it will not have a significant economic impact on a substantial number of small entities. This Third Temporary Rule, as discussed above, merely extends for a limited time the status quo with respect to the current flexibilities allowed during the COVID-19 PHE, in order to avoid lapses in coverage for patients.

Without this Third Temporary Rule, the COVID-19 PHE telemedicine flexibilities would expire on December 31, 2024. While this Third Temporary Rule does not create or remove any

regulatory requirements, this Third Temporary Rule extends the expiration of those flexibilities through December 31, 2025. DEA and HHS believe this extension creates a benefit in the form of cost savings to prescribers and patients and reduced transfer payments to the Federal Government.

In accordance with the RFA, DEA will be evaluating the impact on small entities at the time the final rule or rules are issued as part of these rulemakings.

Unfunded Mandates Reform Act of 1995

The estimated annual impact of this rule is minimal. Thus, DEA has determined in accordance with the Unfunded Mandates Reform Act of 1995 (UMRA) (2 U.S.C. 1501 et seq.) that this action would not result in any federal mandate that may result in the expenditure by State, local, and tribal governments, in the aggregate, or by the private sector, of \$100,000,000 or more (adjusted for inflation) in any one year. Therefore, neither a Small Government Agency Plan nor any other action is required under provisions of UMRA.

Congressional Review Act

This temporary rule is not a major rule as defined by Subtitle E of the Small Business Regulatory Enforcement Fairness Act of 1996 (known as the Congressional Review Act or CRA).¹² However, pursuant to the CRA, DEA is submitting a copy of this temporary rule to both Houses of Congress and to the Comptroller General.

Paperwork Reduction Act of 1995

This temporary rule will not impose a new collection or modify an existing collection of information under the Paperwork Reduction Act of 1995 (44 U.S.C. 3501–3521). Also, this temporary rule does not impose recordkeeping or reporting requirements on State or local governments, individuals, businesses, or other organizations. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless it displays a valid OMB control number.

¹² 5 U.S.C. 804(2).

List of Subjects

DEPARTMENT OF JUSTICE

Drug Enforcement Administration

21 CFR Part 1307

Administrative practice and procedure, Drug traffic control, Prescription drugs.

DEPARTMENT OF HEALTH AND HUMAN SERVICES

42 CFR Part 12

Administrative practice and procedure, Drug traffic control, Prescription drugs.

DRUG ENFORCEMENT ADMINISTRATION

For the reasons set out above, the Drug Enforcement Administration amends 21 CFR part 1307 as follows:

PART 1307—MISCELLANEOUS

1. The authority citation for part 1307 continues to read as follows:

Authority: 21 U.S.C. 821, 822(d), 871(b), unless otherwise noted.

2. Revise and republish § 1307.41 to read as follows:

§ 1307.41 Temporary extension of certain COVID-19 telemedicine flexibilities for prescription of controlled medications.

(a) This section is in effect until the end of the day December 31, 2025. The authorization granted in paragraph (b) of this section expires at the end of December 31, 2025.

(b) During the period May 12, 2023, through December 31, 2025, a DEA-registered practitioner is authorized to prescribe schedule II-V controlled substances via telemedicine, as defined in 21 CFR 1300.04(i), to a patient without having conducted an in-person medical evaluation of the patient if all of the conditions listed in paragraph (c) of this section are met.

(c) A practitioner is only authorized to issue prescriptions for controlled substances pursuant to paragraph (b) of this section if all of the following conditions are met:

(1) The prescription is issued for a legitimate medical purpose by a practitioner acting in the usual course of professional practice;

(2) The prescription is issued pursuant to a communication between a practitioner and a patient using an interactive telecommunications system referred to in 42 CFR 410.78(a)(3);

(3) The practitioner is:

(i) Authorized under their registration under 21 CFR 1301.13(e)(1)(iv) to prescribe the basic class of controlled substance specified on the prescription; or

(ii) Exempt from obtaining a registration to dispense controlled substances under 21 U.S.C. 822(d); and

(4) The prescription is consistent with all other requirements of 21 CFR part 1306.

DEPARTMENT OF HEALTH AND HUMAN SERVICES

For the reasons set out above, the Department of Health and Human Services amends 42 CFR part 12 as follows:

PART 12 — TELEMEDICINE FLEXIBILITIES

1. The authority citation for part 12 continues to read as follows:

Authority: 21 U.S.C. 802(54)(G).

2. Revise and republish § 12.1 to read as follows:

§ 12.1 Temporary extension of certain COVID-19 telemedicine flexibilities for prescription of controlled medications.

(a) This section is in effect until the end of the day December 31, 2025. The authorization granted in paragraph (b) of this section expires at the end of December 31, 2025.

(b) During the period May 12, 2023, through December 31, 2025, a Drug Enforcement Administration (DEA)-registered practitioner is authorized to prescribe schedule II-V controlled substances via telemedicine, as defined in 21 CFR 1300.04(i), to a patient without having conducted an in-person medical evaluation of the patient if all of the conditions listed in paragraph (c) of this section are met.

(c) A practitioner is only authorized to issue prescriptions for controlled substances pursuant to paragraph (b) of this section if all of the following conditions are met:

1) The prescription is issued for a legitimate medical purpose by a practitioner acting in the usual course of professional practice;

(2) The prescription is issued pursuant to a communication between a practitioner and a patient using an interactive telecommunications system referred to in 42 CFR 410.78(a)(3);

(3) The practitioner is:

(i) Authorized under their registration under 21 CFR 1301.13(e)(1)(iv) to prescribe the basic class of controlled substance specified on the prescription; or

(ii) Exempt from obtaining a registration to dispense controlled substances under 21 U.S.C. 822(d); and

(4) The prescription is consistent with all other requirements of 21 CFR part 1306.

Signing Authority

This document of the Drug Enforcement Administration and the Department of Health and Human Services was signed on November 14, 2024, by DEA Administrator Anne Milgram and the HHS Assistant Secretary for Mental Health and Substance Use. Those documents with the original signatures and dates are maintained by DEA. For administrative purposes only, and in compliance with requirements of the Office of the Federal Register, the undersigned DEA Federal Register Liaison Officer has been authorized to sign and submit the document in electronic format for publication, as an official document of DEA. This administrative process in no way alters the legal effect of this document upon publication in the Federal Register.

Heather Achbach,
Federal Register Liaison Officer,
Drug Enforcement Administration

Miriam E. Delphin-Rittmon,
Assistant Secretary for Mental Health and Substance Use,
Department of Health and Human Services.

[FR Doc. 2024-27018 Filed: 11/15/2024 4:15 pm; Publication Date: 11/19/2024]



Drug Enforcement Administration

@DEAHQ

DEA Announces Three New Telemedicine Rules that Continue to Open

Access to Telehealth Treatment while Protecting Patients

January 16, 2025

For Immediate Release

Contact: DEA Public Affairs

Phone Number: (202) 307-7977

WASHINGTON – The U.S. Drug Enforcement Administration is announcing three new rules to make permanent some temporary telemedicine flexibilities established during the COVID-19 public health emergency while also establishing new patient protections.

In developing these rules, DEA has focused on the patient to ensure telemedicine is accessible for medical care. Importantly, these rules do not apply to telemedicine visits in which a patient has already been seen in-person by a medical provider. Once a patient has had an in-person visit with a medical provider, the medical provider may prescribe any medications through telemedicine indefinitely. Also, if a telemedicine visit does not involve a patient being prescribed medications, then the telemedicine rules do not apply. Patients can always have telemedicine visits with medical providers. These rules only apply if a patient has never been seen in-person by the medical provider and the patient is being prescribed controlled medication.

“DEA’s goal is to provide telehealth access for needed medications while ensuring patient safety and preventing the diversion of medications into the illicit drug market,” said DEA Administrator Anne Milgram. “We understand the difficulties some patients have accessing medical providers in-person, and we want to ease this burden while also providing safeguards to keep patients safe. These rules also mark a significant step forward for patient safety by requiring online telemedicine platforms to register with DEA and taking steps to establish a nationwide Prescription Drug Monitoring Program (PDMP).”

Expansion of Buprenorphine Treatment via Telemedicine Encounter

This rule provides patients with remote access to buprenorphine, the medicine used to treat opioid use disorder. This change allows a patient to receive a 6-month supply of buprenorphine through a telephone consultation with a provider. Further prescriptions of buprenorphine will require an in-person visit to a medical provider.

For more information: Federal Register :: Public Inspection: Expansion of Buprenorphine Treatment via Telemedicine Encounter

Special Registrations for Telemedicine and Limited State Telemedicine Registrations

This proposed rule would establish special registrations that will permit a patient to receive prescribed medications through telemedicine visits without ever having an in-person medical evaluation from a medical provider. The special registration is available to medical providers who treat patients for whom they will prescribe Schedule III-V controlled substances. An Advanced Telemedicine Prescribing Registration is available for Schedule II medications when the medical practitioner is board certified in one of the following specialties: psychiatrists; hospice care physicians; physicians rendering treatment at long term care facilities, and pediatricians for the prescribing of medications identified as the most addictive and prone to diversion to the illegal drug market. This regulation allows

specialized medical providers to issue telemedicine prescriptions for Schedule II-V medications.

DEA is seeking public comment on additional medical specialists that should be authorized to issue Schedule II medications. Public comments will also be requested on additional patient protections for the prescribing of Schedule II medications by telemedicine, including whether the special registrant should be physically located in the same state as the patient being prescribed schedule II medications; whether to limit schedule II medications by telemedicine to medical practitioners whose practice is limited to less than 50% of prescriptions by telemedicine; and the appropriate duration needed for the rules' provisions to be enacted.

For the first time online platforms that facilitate connections between patients and medical providers that result in the prescription of medications will be required to register with DEA. This is critical as DEA has found some unscrupulous medical providers on online platforms have used flexible telemedicine rules to put profit ahead of the well-being of patients.

The special registration rule will also require the establishment of a national PDMP to help the health industry protect against abuse and the diversion of controlled substances into the illegal drug market. A national PDMP will provide pharmacists and medical practitioners with visibility of a patient's prescribed medication history.

For more information: Federal Register ::
Public Inspection: Special Registrations for
Telemedicine and Limited State
Telemedicine Registrations

Continuity of Care via Telemedicine for Veterans Affairs Patients

An additional rule was done in consultation with the U.S. Department of Veterans Affairs (VA). It exempts VA practitioners from Special Registrations requirements. Once a patient has received an in-person medical examination from a VA medical practitioner, the provider-patient relationship is extended to all VA practitioners engaging in telemedicine with the patient.

For more information: Federal Register ::
Public Inspection: Continuity of Care via
Telemedicine for Veterans Affairs Patients

The new rules were developed in consultation with the U.S. Department of Health and Human Services and after significant input from the public. DEA received input during public listening sessions that were hosted by DEA in September 2023. Healthcare practitioners, experts, advocates, and patients shared their experiences and recommendations. DEA also carefully reviewed and considered the more than 38,000 comments from the public in response to the original draft rule that was proposed on March 1, 2023. As a result of the comments and listening session, DEA has now made significant revisions to the draft rules.

These rules are a result of the temporary rules to prescribe medications via telemedicine that were adopted during the COVID-19 public health emergency. A third temporary extension of COVID-19 Telemedicine Flexibilities last year extended the temporary rule until December 2025.

###

###

Code of Virginia
Title 54.1. Professions and Occupations
Chapter 34. Drug Control Act

§ 54.1-3420.3. Prohibition on refusing to fill prescription from telemedicine provider.

A. A pharmacy shall not implement or enforce a policy that prevents a pharmacist from dispensing a prescription solely on the basis of the prescriber's use of a telemedicine platform to provide services.

B. A pharmacist shall not prioritize dispensing a prescription from a prescriber who does not use telemedicine over dispensing a prescription from a prescriber who does use telemedicine solely on the basis of the prescriber's use of a telemedicine platform to provide services.

2023, c. [368](#).

Prescription Stimulant Use, Misuse, and Use Disorder Among US Adults Aged 18 to 64 Years

Beth Han, MD, PhD, MPH; Christopher M. Jones, PharmD, DrPH, MPH; Nora D. Volkow, MD; S. Michaela Rikard, PhD; Deborah Dowell, MD, MPH; Emily B. Einstein, PhD; Gery P. Guy, PhD, MPH; Naomi Tomoyasu, PhD; Jean Ko, PhD; Grant Baldwin, PhD; Yngvild Olsen, MD, MPH; Wilson M. Compton, MD, MPE

[+ Supplemental content](#)

IMPORTANCE Stimulants are increasingly prescribed for US adults. Whether such prescribing is associated with misuse and prescription stimulant use disorder (PSUD) is less understood.

OBJECTIVES To examine (1) sex- and age-specific trends in the number of persons dispensed stimulants and trends in dispensed prescription stimulants by prescriber specialty in 2019 through 2022; (2) prevalence of misuse and PSUD by use of prescription amphetamine-type stimulants (hereafter referred to as *amphetamines*) and methylphenidate; and (3) PSUD prevalence and sociodemographic and behavioral health correlates among persons using prescription stimulants with and without prescription stimulant misuse.

DESIGN, SETTING, AND PARTICIPANTS This cross-sectional survey study used the 2019-2022 IQVIA Total Patient Tracker and National Prescription Audit New to Brand databases and the 2021-2022 National Surveys on Drug Use and Health (NSDUH) (community-dwelling 18- to 64-year-old individuals). Data analysis was performed from March to April 2024.

EXPOSURE Past-year use of prescription stimulants.

MAIN OUTCOMES AND MEASURES PSUD using *DSM-5* criteria.

RESULTS Of the sampled 83 762 adults aged 18 to 64 years, 33.8% (unweighted) were aged 18 to 25 years, 53.0% (unweighted) were aged 26 to 49 years, and 56.0% (unweighted) were women. Among those using prescription stimulants, 25.3% (95% CI, 23.8%-26.8%) reported misuse, and 9.0% (95% CI, 8.0%-10.0%) had PSUD. Among those with PSUD, 72.9% (95% CI, 68.3%-77.6%) solely used their own prescribed stimulants, 87.1% (95% CI, 82.3%-90.8%) used amphetamines, 42.5% (95% CI, 36.6%-48.5%) reported no misuse, and 63.6% (95% CI, 56.8%-69.8%) had mild PSUD. Individuals using amphetamines, compared with those using methylphenidate, had higher prevalence ratios of misuse (3.1 [95% CI, 2.2-4.3]) and PSUD (2.2 [95% CI, 1.3-3.8]). The largest increase in the number of individuals dispensed prescription stimulants was among women aged 35 to 64 years, from 1.2 million in quarter 1 of 2019 to 1.7 million in quarter 4 of 2022 (average quarterly percentage change, 2.6% [95% CI, 2.1%-3.1%]). The prevalence of prescription stimulant misuse was lower among women aged 35 to 64 years using these medications (13.7% [95% CI, 11.1%-16.8%]) than other sex- and age-specific subgroups (ranging from 22.0% [95% CI, 17.9%-26.7%] for men aged 35-64 years to 36.8% [95% CI, 32.6%-41.2%] for women aged 18-25 years).

CONCLUSIONS AND RELEVANCE High prevalence of prescription stimulant misuse and PSUD (regardless of misuse status) suggests the importance of ensuring clinically appropriate use and of screening for and treating PSUD among all adults prescribed stimulants, especially those using amphetamines. Findings may suggest potential progress in addressing the mental health care gap for middle-aged women and the need for evidence-based clinical guidance and training on benefits and risks of prescription stimulants for adults.

Author Affiliations: National Institute on Drug Abuse, National Institutes of Health, Bethesda, Maryland (Han, Volkow, Einstein, Compton); Substance Abuse and Mental Health Services Administration, Rockville, Maryland (Jones, Tomoyasu, Olsen); Centers for Disease Control and Prevention, Atlanta, Georgia (Rikard, Dowell, Guy, Ko, Baldwin).

Corresponding Author: Wilson M. Compton, MD, MPE, National Institute on Drug Abuse, National Institutes of Health, 3WFN Room 09D18, MSC 6025, 301 N Stonestreet Ave, Bethesda, MD 20892 (wcompton@nida.nih.gov).

JAMA Psychiatry. doi:10.1001/jamapsychiatry.2025.0054
Published online March 19, 2025.

New prescriptions of stimulants (eg, amphetamine-type stimulants, methylphenidate), controlled medications most commonly used to treat attention-deficit/hyperactivity disorder (ADHD), were increasingly dispensed to US adults from April 2020 through March 2022.¹ With these increases, concerns emerged, including the lack of clinical practice guidelines for adult ADHD,²⁻⁵ adult ADHD misdiagnosis,⁶ overdiagnosis,⁷⁻⁹ overprescribing,⁹ psychosis associated with high-dose prescription amphetamines,¹⁰ prescription stimulant misuse or diversion,¹¹⁻¹³ and prescription stimulant use disorder (PSUD).¹¹⁻¹³ However, research also demonstrates protective effects of appropriate ADHD pharmacotherapy on mood disorder, suicidality, substance use disorders (SUDs), criminality, accidents or injuries, and mortality.^{2,3} Balancing risks and benefits remains a clinical challenge.

PSUD, defined as prescription stimulant use leading to clinically significant impairment or distress as measured by *DSM-5* criteria,^{14,15} is associated with cocaine, methamphetamine, opioid, and other substance use, SUDs,^{12,13} overdoses,¹⁶ and premature mortality.¹⁷ Importantly, if people have trouble accessing prescription stimulants, they may seek them illicitly. Counterfeit pills may contain unexpected substances (eg, fentanyl), increasing overdose risk.¹⁸⁻²⁰

While it is essential to maintain appropriate access to prescription stimulants for their well-documented clinical benefits, examining prescription stimulant use, misuse, and PSUD among adults can help inform clinical, policy, and regulatory actions. For US adults aged 18 to 64 years, we examined the following: (1) sex- and age-specific trends in the numbers of persons dispensed stimulants and trends in the numbers of dispensed prescription stimulants by prescriber specialty from 2019 through 2022; (2) prevalence of misuse and PSUD by use of prescription amphetamine-type stimulants (hereafter referred to as *amphetamines*) and methylphenidate; (3) PSUD prevalence and sociodemographic and behavioral health correlates among persons using prescription stimulants with and without prescription stimulant misuse; and (4) main motivations for and sources of misused prescription stimulants by misuse frequency and PSUD.

Methods

Data Sources

Data on dispensed prescription stimulants were analyzed from the 2019-2022 IQVIA Total Patient Tracker and National Prescription Audit New to Brand databases.¹⁹ These all-payer pharmaceutical databases capture 93% of outpatient prescriptions dispensed in US retail pharmacies (including mail-order prescriptions).²¹

We examined nationally representative data from 83 762 US civilian, noninstitutionalized adults aged 18 to 64 years who participated in the 2021-2022 National Surveys on Drug Use and Health (NSDUH).²²⁻²⁵ For the first time, the 2021-2022 NSDUH assessed PSUD in respondents reporting prescription stimulant use (not just respondents reporting misuse).²²⁻²⁵

The NSDUH data collection protocol was approved by the institutional review board at the Research Triangle Institute

Key Points

Question As stimulants are increasingly prescribed, what is the prevalence of prescription stimulant use, prescription stimulant misuse, and prescription stimulant use disorder (PSUD) among adults aged 18 to 64 years in the US?

Findings Among 18- to 64-year-old US adults using prescription stimulants, 25.3% reported misuse, and 9.0% had PSUD. Among those with PSUD, 72.9% solely used their own prescribed stimulants, 87.1% used amphetamines, 42.5% reported no misuse, and 63.6% had mild PSUD. The prevalence of misuse was 3.1 times higher and the prevalence of PSUD was 2.2 times higher among those using prescription amphetamines than among those using methylphenidate.

Meaning Regardless of prescription stimulant misuse status, screening for and treating PSUD are needed for US adults aged 18 to 64 years using prescription stimulants, especially those receiving prescription amphetamines.

International. NSDUH used multimode (in-person and online) data collection. Each participant provided informed consent.^{24,25} The mean NSDUH weighted interview response rate for adults was 47.5%.²³⁻²⁵ This study followed the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) reporting guidelines for cross-sectional studies. Data analysis was performed from March to April 2024.

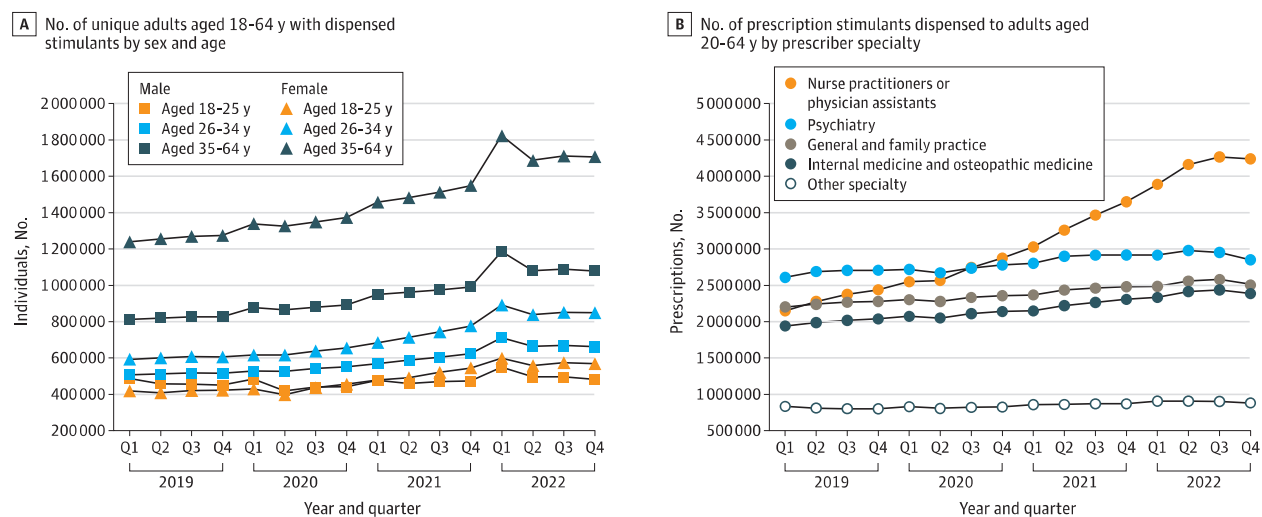
Measures

Prescription stimulant use included using one's own prescription as directed by a physician or misuse. NSDUH classified prescription stimulant misuse when respondents endorsed any of the following statements describing their use at any time in the past year: (1) "without a prescription of my own"; (2) "in greater amounts than prescribed"; (3) "more often than prescribed"; (4) "longer than prescribed"; or (5) "in some other way a doctor did not direct me to use."²²⁻²⁵ Using *DSM-5* diagnostic criteria, past-year PSUD was examined among respondents using prescription stimulants regardless of their misuse status.²²⁻²⁵ Similarly, NSDUH assessed prescription opioid, tranquilizer, and sedative use, misuse, and use disorders. For respondents reporting past-year prescription stimulant misuse, NSDUH asked about motivations for and sources of the most recently misused prescription stimulants and past-month misuse frequency.

NSDUH examined past-year major depressive episode and alcohol and other specific drug use disorders based on *DSM-5* criteria and past-month nicotine dependence using the Nicotine Dependence Syndrome Scale and the Fagerstrom Test for Nicotine Dependence.²²⁻²⁵ NSDUH assessed sociodemographic characteristics, health status (eg, self-rated health, emergency department visits), suicidal ideation, and COVID-19 impacts on mental health, medical, and addiction care (eg, moved to telehealth from in-person mental health appointments, lack of mental health care).

Statistical Analysis

Joinpoint Regression Program version 4.8.01 (National Cancer Institute)²⁶ was used to test for significant changes in num-

Figure 1. Dispensed Prescription Stimulants Among US Adults Aged 64 Years and Younger

A, Number of unique individuals aged 18 to 64 years with dispensed stimulants by sex and age. The data source was the IQVIA Total Patient Tracker database. B, Number of prescription stimulants dispensed to adults aged 20 to 64 years by prescriber specialty. The data source was the IQVIA National Prescription Audit New to Brand database with predetermined age groups; hence, data were

examined for individuals aged 20 to 64 years rather than 18 to 64 years. Psychiatry includes psychiatry, psychology, and geriatric psychiatry; general and family practice includes general practice, family practice, and geriatrics; and internal medicine and osteopathic medicine includes internal medicine, osteopathic medicine, and pediatrics. Q indicates quarter.

bers of persons dispensed stimulants by sex and age and of dispensed prescription stimulants by prescriber specialty during quarter 1 (Q1) of 2019 through Q4 2022. We estimated the prevalence of PSUD by sociodemographic characteristics, overall health status, behavioral health status, and COVID-19 impacts within and across misuse status among individuals aged 18 to 64 years with past-year prescription stimulant use. Bivariable logistic regression analyses²⁷ were conducted to examine whether characteristics varied by misuse status and differences in main motivations for and sources of misused prescription stimulants by misuse frequency and PSUD. NSDUH analyses used SUDAAN software release 11.0.3 (RTI International) to account for NSDUH's complex sample design and sample weights. For each analysis, $P < .05$ (2-tailed) was considered statistically significant.

Results

Trends in Number of Unique Individuals Dispensed Stimulant Prescriptions From IQVIA Total Patient Tracker

Significant increases in the number of unique individuals dispensed prescription stimulants were found among all examined sex- and age-specific subgroups during Q1 2019 through Q4 2022 (average quarterly percentage change [AQPC] ranged from 1.8% [95% CI, 1.5%-2.1%] to 2.6% [95% CI, 2.1%-3.1%]), except among men aged 18 to 25 years, which increased from Q2 2020 through Q4 2022 (AQPC, 1.5% [95% CI, 0.7%-5.1%]) (Figure 1A; eTables 1 and 2 in Supplement 1). The largest increase was among women aged 35 to 64 years, from 1.2 million in Q1 2019 to 1.7 million in Q4 2022 (AQPC, 2.6%; 95% CI, 2.1%-3.1%).

Trends in Number of Stimulant Prescriptions Dispensed by Prescriber Specialty From IQVIA National Prescription Audit New to Brand Data

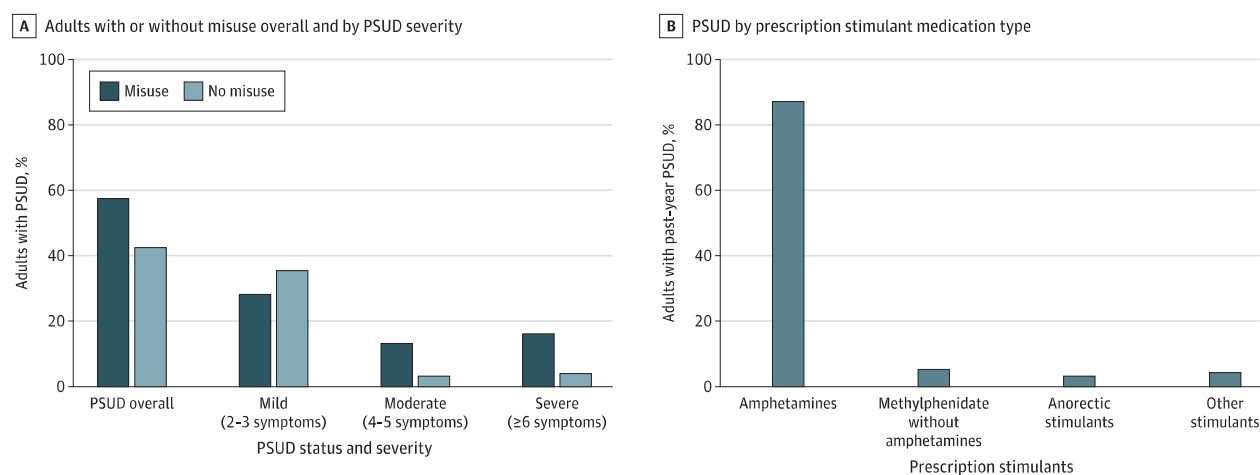
Among individuals aged 20 to 64 years from Q1 2019 to Q4 2022, the number of prescription stimulants dispensed increased across all examined prescriber specialties (AQPC ranged from 0.6% [95% CI, 0.2%-1.0%] to 5.0% [95% CI, 4.7%-5.2%]) (Figure 1B; eTables 3 and 4 in Supplement 1). Stimulant prescriptions from nurse practitioners or physician assistants increased the most (110.0%, from 2.1 million to 4.4 million), followed by internal or osteopathic medicine physicians (26.5%, from 1.9 million to 2.4 million), general or family practice physicians (16.2%, from 2.2 million to 2.5 million), and psychiatrists (10.3%, from 2.6 million to 2.9 million).

Prescription Stimulant Use, Misuse, and PSUD From NSDUH Data

Of the sampled 83 762 adults aged 18 to 64 years, 33.8% (unweighted) were aged 18 to 25 years, 53.0% (unweighted) were aged 26 to 49 years, and 56.0% (unweighted) were women. Among those surveyed in 2021-2022, 7.5% (95% CI, 7.1%-7.8%) reported prescription stimulant use in the past year. Among adults using prescription stimulants, 80.9% (95% CI, 79.5%-82.2%) reported solely using their own prescribed stimulants, 25.3% (95% CI, 23.8%-26.8%) reported prescription stimulant misuse, and 9.0% (95% CI, 8.0%-10.0%) had PSUD. Among adults reporting solely using their own prescribed stimulants, 8.3% (95% CI, 7.1%-9.6%) reported misuse, and 7.8% (95% CI, 6.8%-8.8%) had PSUD.

Among those reporting prescription stimulant use without misuse, 5.1% (95% CI, 4.3%-6.0%) had PSUD. Among those reporting prescription stimulant use with misuse, 70.6% (95%

Figure 2. Prescription Stimulant Use Disorder (PSUD) Overall and by Amphetamines and Methylphenidate Among US Adults Aged 18 to 64 Years



A, Proportions of individuals with and without prescription stimulant misuse overall and by PSUD severity. B, Proportions of PSUD by prescription stimulant medication type. The data sources were the 2021-2022 National Surveys on Drug Use and Health.

CI, 67.3%-73.9%) used stimulants without their own prescription at least once, and 20.4% (95% CI, 17.3%-24.0%) had PSUD.

The prevalence of 8 (of 11) *DSM-5* PSUD individual symptoms was higher among those reporting misuse than those reporting no misuse (eTable 5 in Supplement 1). Prevalence of the symptom of “spending a great deal of time obtaining, using prescription stimulants, or recovering from their effects”¹⁴ did not vary by prescription stimulant misuse status. *DSM-5* PSUD withdrawal and tolerance criteria do not apply to individuals reporting no prescription stimulant misuse.

Among individuals with PSUD, 72.9% (95% CI, 68.3%-77.6%) solely used their own prescribed stimulants, 42.5% (95% CI, 36.6%-48.5%) reported no prescription stimulant misuse, and 63.6% (95% CI, 56.8%-69.8%) had mild PSUD (Figure 2A). Moreover, PSUD prevalence was 2.9 times higher (prevalence ratio [PR], 2.9 [95% CI, 2.2-3.9]) among those solely misusing their own prescribed stimulants (PSUD, 38.6% [95% CI, 29.4%-48.8%]) than those misusing prescription stimulants without their own prescription (PSUD, 13.1% [95% CI, 10.6%-16.1%]).

Amphetamine and Methylphenidate Use, Misuse, and PSUD From NSDUH Data

The prevalence of prescription stimulant misuse was 3.1 times higher (PR, 3.1 [95% CI, 2.2-4.3]) among those using amphetamine-type medications (31.5% [95% CI, 29.5%-33.5%]) than those using methylphenidate (10.2% [95% CI, 6.9%-13.6%]) (Table 1). PSUD prevalence was 2.2 times higher (PR, 2.2 [95% CI, 1.3-3.8]) among individuals using amphetamines (11.2% [95% CI, 9.8%-12.7%]) than those using methylphenidate (5.1% [95% CI, 3.0%-8.4%]). Among adults with past-year PSUD (Figure 2B), 87.1% (95% CI, 82.3%-90.8%) reported using amphetamines; 5.3% (95% CI, 3.0%-9.1%) reported using methylphenidate without amphetamine use.

Prescription Stimulant Misuse and PSUD by Sociodemographic Characteristics, Overall Health, and Behavioral Health Status From NSDUH Data

The prevalence of prescription stimulant misuse was lower among women aged 35 to 64 years using these medications (13.7% [95% CI, 11.1%-16.8%]) than all other examined sex- and age-specific counterparts (ranging from 22.0% [95% CI, 17.9%-26.7%] for men aged 35-64 years to 36.8% [95% CI, 32.6%-41.2%] for women aged 18-25 years) (Table 2). Increased prevalence of prescription stimulant misuse was also associated with being never married; annual family income less than \$75 000; major depressive episode; suicidal ideation; nicotine dependence; alcohol, cannabis, cocaine, methamphetamine, and heroin use or use disorders; and prescription opioid, sedative, or tranquilizer misuse or use disorders (Table 2 and Table 3). For example, among adults using prescription stimulants and cocaine, 63.6% (95% CI, 57.0%-69.6%) reported prescription stimulant misuse.

Within each category of examined sociodemographic characteristics (except for men aged 18-25 years and non-Hispanic Black adults) and within most categories of health and behavioral health status measures, past-year PSUD prevalence was 1.7 to 11.2 times higher among those reporting misuse vs not reporting misuse (PRs ranged from 1.7 [95% CI, 1.1-2.7] for women aged 18-25 years to 11.2 [95% CI, 5.2-24.2] for individuals who used prescription sedatives or tranquilizers without misuse and use disorder) (Table 2 and Table 3). Among adults without prescription stimulant misuse, PSUD prevalence was lower among women aged 35 to 64 years (2.9% [95% CI, 1.9%-4.3%]) than other sex- and age-specific subgroups (ranging from 5.6% [95% CI, 3.8%-8.2%] for women aged 26-34 years to 10.5% [95% CI, 7.6%-14.5%] for women aged 18-25 years), except men aged 35 to 64 years (3.2% [95% CI, 1.6%-6.2%]). Among adults with misuse,

Table 1. Past-Year Prevalence of Prescription Stimulant Misuse and Use Disorder by Specific Prescription Stimulant Products and Misuse Status Among US Adults Aged 18 to 64 Years With Past-Year Use of Prescription Stimulants^a

Group	Prevalence of misuse, weighted % (95% CI)	Prevalence of PSUD			Prevalence ratio (95% CI) ^b
		Weighted % (95% CI)			
		With use	With misuse	Without misuse	
Individuals reporting amphetamine use					
Sample size, No.	5305	5305	1794	3511	NA
Overall	31.5 (29.5-33.5)	11.2 (9.8-12.7)	21.1 (17.6-24.6)	6.6 (5.3-7.8)	3.2 (2.5-4.1)
Sex and age, y					
Female					
18-25	40.8 (36.0-45.8) ^c	14.4 (11.3-18.2) ^c	18.4 (13.2-25.1) ^c	11.7 (8.2-16.5) ^c	1.6 (0.9-2.6)
26-34	31.4 (26.5-36.8) ^c	11.7 (8.7-15.5)	20.5 (12.5-31.9)	7.7 (5.1-11.3)	2.7 (1.3-5.3)
35-64 ^d	19.8 (15.3-25.2)	9.2 (6.8-12.5)	31.0 (21.3-42.7)	3.9 (2.4-6.2)	8.0 (4.5-14.3)
Male					
18-25	41.2 (36.6-45.9) ^c	11.8 (8.8-15.5)	14.0 (9.1-21.0) ^c	10.2 (6.8-14.9) ^c	1.4 (0.8-2.5)
26-34	40.4 (34.5-46.5) ^c	12.3 (8.7-17.2)	19.6 (12.6-29.1)	7.4 (4.6-11.9)	2.6 (1.4-5.0)
35-64	24.8 (19.2-31.4)	9.3 (5.9-14.4)	25.6 (15.6-39.0)	3.9 (1.8-8.2)	6.5 (3.1-13.7)
Individuals reporting methylphenidate use without amphetamine use					
Sample size, No.	687	687	93	594	NA
Overall	10.2 (6.9-13.6)	5.1 (3.0-8.4)	5.2 (1.2-9.2) ^e	5.1 (2.2-7.9)	1.0 (0.4-2.5)
Sex ^f					
Female ^d	11.1 (7.4-16.5)	4.5 (2.2-8.9)	NA	4.6 (2.0-9.6)	NA
Male	9.1 (5.7-14.2)	5.8 (3.1-10.8)	NA	5.7 (2.7-11.4)	NA
Age, y ^f					
18-25	15.4 (9.3-24.5)	9.0 (4.9-16.2)	NA	9.3 (4.7-17.6)	NA
26-34	7.2 (3.5-14.1)	4.1 (0.6-6.0)	NA	2.0 (0.6-6.5)	NA
35-64 ^d	8.6 (4.7-15.0)	4.1 (1.8-9.2)	NA	4.1 (1.7-9.5)	NA

Abbreviations: NA, not applicable; PSUD, prescription stimulant use disorder.

^a The data sources were the 2021-2022 National Surveys on Drug Use and Health.

^b For each prevalence ratio, the reference group is the group of adults reporting prescription stimulant use without misuse.

^c Estimates were statistically significantly different from the corresponding estimate of the reference group ($P < .05$).

^d Reference group for comparison of weighted prevalence.

^e Caution is needed in interpreting the estimate due to low statistical precision.

^f Due to limited sample sizes, we present estimates by sex and age separately for those reporting methylphenidate use without amphetamine use. Moreover, sex- and age-specific prevalence estimates of PSUD were suppressed among adults with methylphenidate misuse without amphetamine use due to a limited sample size of each examined group.

PSUD prevalence was higher among women aged 35 to 64 years (30.3% [95% CI, 22.1%-40.0%]) than men aged 18 to 25 years (14.0% [95% CI, 9.3%-20.6%]), men aged 26 to 34 years (17.7% [95% CI, 11.2%-26.6%]), and women aged 18 to 25 years (17.9% [95% CI, 13.1%-24.1%]). For adults using prescription stimulants without reporting misuse, higher PSUD prevalence was found among adults with prescription sedative or tranquilizer use disorder (41.0% [95% CI, 27.5%-56.1%]), heroin use or use disorder (18.6% [95% CI, 6.4%-43.2%]), and prescription opioid use disorder (14.8% [95% CI, 9.7%-22.0%]). For adults misusing prescription stimulants, higher PSUD prevalence was found among adults with prescription sedative or tranquilizer use disorder (60.1% [95% CI, 44.6%-73.9%]) and prescription opioid use disorder (67.4% [95% CI, 55.5%-77.5%]).

Prescription Stimulant Misuse and PSUD by COVID-19 Impacts From NSDUH Data

During the COVID-19 pandemic (eTable 6 in Supplement 1), prescription stimulant misuse prevalence was lower among those who moved from in-person mental health or medical appointments to telehealth (22.5% [95% CI, 20.3%-24.8%]) and 21.2% [95% CI, 18.7%-23.9%], respectively) than those who kept in-person appointments (27.1% [95% CI, 23.7%-30.7%]) and 27.4% [95% CI, 24.2%-30.8%], respectively). Within each category of examined measures, individuals reporting misuse, compared

with those not reporting misuse, had a past-year PSUD prevalence ranging from 2.6 times higher (PR, 2.6 [95% CI, 1.3-5.2]) for those reporting that lack of addiction care caused moderate to severe impacts on health) to 5.5 times higher (PR, 5.5 [95% CI, 3.1-10.0]) for those whose addiction care moved to telehealth). Moving in-person mental health or medical appointments to telehealth during the COVID-19 pandemic was associated with higher PSUD prevalence than maintaining in-person appointments for those with misuse (mental health: 30.5% [95% CI, 24.1%-37.9%] vs 16.3% [95% CI, 10.6%-24.1%]; medical care: 26.3% [95% CI, 20.7%-32.7%] vs 18.5% [95% CI, 13.3%-25.1%]) and those without misuse (mental health: 6.8% [95% CI, 5.3%-8.6%] vs 3.3% [95% CI, 2.3%-4.6%]; medical care: 6.1% [95% CI, 4.8%-7.9%] vs 4.2% [95% CI, 3.2%-5.5%]).

Motivations for and Sources of Prescription Stimulant Misuse From NSDUH Data

Among people reporting past-year prescription stimulant misuse, 68.2% reported no misuse in the past month (eTable 7 in Supplement 1). Among adults reporting prescription stimulant misuse, main motivations and sources of misused stimulants varied by misuse frequency and PSUD. More than 62% of adults reported that their most recent misuse was to help concentrate or stay alert. Compared with those with past-year misuse without past-month misuse, those with 6 or more days of past-month misuse were more likely to buy

Table 2. Past-Year Prevalence of Prescription Stimulant Misuse and Use Disorder by Sociodemographic Characteristics and Prescription Stimulant Misuse Status Among US Adults Aged 18 to 64 Years With Past-Year Use of Prescription Stimulants^a

Sociodemographic characteristic	Prevalence of misuse, weighted % (95% CI) (n = 7229)	Prevalence of PSUD		
		Weighted % (95% CI)		
		With misuse (n = 2004)	Without misuse (n = 5225)	Prevalence ratio (95% CI) ^b
Year				
2021	26.8 (24.0-29.9)	19.6 (15.1-25.0)	5.1 (3.8-6.7)	3.9 (2.7-5.4)
2022 ^c	24.0 (22.1-25.9)	21.2 (17.6-25.3)	5.2 (4.1-6.5)	4.1 (3.0-5.7)
Sex and age, y				
Female				
18-25	36.8 (32.6-41.2) ^d	17.9 (13.1-24.1) ^d	10.5 (7.6-14.5) ^d	1.7 (1.1-2.7)
26-34	25.0 (21.1-29.5) ^d	20.1 (12.3-31.0)	5.6 (3.8-8.2) ^d	3.6 (1.8-7.0)
35-64 ^c	13.7 (11.1-16.8)	30.3 (22.1-40.0)	2.9 (1.9-4.3)	10.4 (6.0-18.2)
Male				
18-25	36.1 (31.9-40.5) ^d	14.0 (9.3-20.6) ^d	9.7 (6.6-14.0) ^d	1.4 (0.8-2.6)
26-34	36.3 (31.5-41.4) ^d	17.7 (11.2-26.6) ^d	6.1 (3.9-9.5) ^d	2.9 (1.5-5.4)
35-64	22.0 (17.9-26.7) ^d	23.3 (14.3-35.6)	3.2 (1.6-6.2)	7.4 (3.5-15.7)
Race and ethnicity ^e				
Hispanic	25.6 (20.9-30.9)	23.3 (15.1-34.2)	6.7 (4.2-10.7)	3.5 (1.9-6.4)
Non-Hispanic Black	19.2 (14.1-25.6)	8.0 (2.4-23.7)	2.9 (1.6-5.5)	2.7 (0.7-9.9)
Non-Hispanic other	26.9 (20.2-34.8)	23.1 (12.0-39.8)	6.8 (3.3-13.6)	3.4 (1.2-9.9)
Non-Hispanic White ^c	25.7 (24.1-27.5)	20.6 (17.4-24.2)	4.9 (4.0-6.0)	4.2 (3.2-5.5)
Education				
<High school	21.2 (16.4-27.1)	22.6 (12.9-36.6)	7.9 (3.9-15.3)	2.9 (1.2-6.7)
High school	27.2 (22.2-32.8)	25.5 (18.5-34.0) ^d	5.1 (3.6-7.4)	5.0 (3.0-8.2)
Some college or associate degree	24.9 (22.0-28.1)	23.8 (18.0-30.7) ^d	5.0 (3.9-6.5)	4.7 (3.0-6.8)
College graduate ^c	25.3 (22.5-28.3)	13.3 (10.1-17.3)	4.7 (3.3-6.8)	2.8 (1.8-4.4)
Health insurance				
Private only ^c	25.6 (23.7-25.6)	15.7 (12.3-19.7)	4.7 (3.8-5.8)	3.3 (2.4-4.7)
Uninsured	31.5 (24.6-39.2)	22.9 (13.3-36.5)	5.4 (3.2-9.2)	4.2 (2.1-8.7)
Medicaid	24.1 (21.2-27.3)	29.6 (21.2-39.5) ^d	6.4 (4.8-8.5)	4.6 (3.1-6.9)
Other	20.4 (14.9-27.3)	27.3 (13.8-46.7)	3.9 (1.8-8.4)	7.1 (2.6-19.4)
Marital status				
Married ^c	16.8 (14.1-19.9)	20.8 (13.5-30.7)	3.9 (2.7-5.6)	5.3 (3.1-9.2)
Divorced or separated	21.3 (16.3-27.3)	29.1 (19.7-40.9)	2.7 (1.4-5.1)	10.9 (5.3-22.5)
Never married	32.7 (30.4-35.1) ^d	18.9 (15.4-23.0)	7.2 (5.9-8.9) ^d	2.6 (1.9-3.6)
Employment status				
Full-time ^c	26.9 (24.5-29.5)	18.2 (14.5-22.5)	4.4 (3.4-5.7)	4.1 (3.0-5.8)
Part-time	30.1 (25.8-34.8)	22.0 (16.1-29.4)	6.4 (3.8-10.8)	3.4 (1.9-6.1)
Unemployed	30.3 (23.9-37.5)	32.6 (20.9-47.1) ^d	7.2 (4.2-11.9)	4.6 (2.2-9.3)
Disabled	9.0 (4.6-16.9) ^d	21.4 (10.6-38.6)	3.9 (2.5-6.1)	5.5 (2.3-12.9)
Other	21.6 (18.5-25.0) ^d	20.3 (12.2-32.0)	6.3 (4.0-10.0)	3.2 (1.7-6.2)
Family income, \$				
<20 000	27.5 (23.4-32.1) ^d	18.0 (12.6-25.0)	5.4 (4.2-7.0)	3.3 (2.2-5.0)
20 000-49 999	26.8 (23.4-30.5) ^d	25.8 (18.0-35.5) ^d	7.2 (5.2-9.8) ^d	3.6 (2.4-5.4)
50 000-74 999	29.5 (24.8-34.7) ^d	24.1 (15.9-34.6)	5.4 (3.4-8.3)	4.5 (2.4-8.4)
≥75 000 ^c	22.1 (20.0-24.4)	16.2 (12.0-21.5)	3.8 (2.8-5.1)	4.3 (2.8-6.4)
Metropolitan statistical area				
Large ^c	26.2 (23.8-28.7)	17.7 (13.1-23.5)	5.5 (4.2-7.3)	3.2 (2.1-4.8)
Small	21.6 (17.4-26.6)	25.2 (17.5-34.9)	4.1 (2.1-6.5)	6.1 (3.6-10.4)
Nonmetropolitan	25.2 (22.8-27.8)	23.6 (18.3-29.9)	4.8 (3.7-6.3)	4.9 (3.3-7.2)

Abbreviation: PSUD, prescription stimulant use disorder.

^a The data sources were the 2021-2022 National Surveys on Drug Use and Health.

^b For each prevalence ratio, the reference group is the group of adults reporting prescription stimulant use without misuse.

^c Reference group for comparison of weighted prevalence.

^d Estimates were statistically significantly different from the corresponding estimate of the reference group ($P < .05$).

^e Race and ethnicity were the National Surveys on Drug Use and Health respondent's self-classification of racial and ethnic origin based on the classifications developed by the US Census Bureau. Non-Hispanic other includes non-Hispanic adult with more than 1 race, American Indian or Alaska Native, Asian, or Native Hawaiian or Other Pacific Islander.

Table 3. Past-Year Prevalence of Prescription Stimulant Misuse and Use Disorder by Health and Behavioral Health Status and Prescription Stimulant Misuse Status Among US Adults Aged 18 to 64 Years With Past-Year Use of Prescription Stimulants^a

Health or behavioral health status	Prevalence of misuse, weighted % (95% CI) (n = 7229)	Prevalence of PSUD		Prevalence ratio (95% CI) ^b
		Weighted % (95% CI)		
		With misuse (n = 2004)	Without misuse (n = 5225)	
Health status				
Self-rated health				
Excellent ^c	26.2 (22.2-30.7)	5.4 (2.8-10.3)	5.7 (3.6-8.8)	1.0 (0.5-2.0)
Very good	27.1 (24.1-30.4)	15.6 (12.8-20.4) ^d	4.6 (3.3-6.4)	3.4 (2.2-5.3)
Good	26.5 (23.6-29.8)	25.8 (19.8-32.8) ^d	5.5 (4.0-7.5)	4.7 (2.9-7.4)
Fair or poor	18.5 (14.4-23.4) ^d	36.8 (24.3-51.5) ^d	4.9 (3.1-7.7)	7.5 (4.4-12.9)
Past-year emergency department visit				
0 ^c	25.5 (23.4-27.6)	17.2 (13.8-21.3)	4.7 (3.8-5.7)	3.7 (2.8-4.9)
1-2	25.3 (22.2-28.8)	25.7 (19.6-33.0) ^d	5.9 (4.2-8.3)	4.3 (2.7-6.9)
≥3	25.4 (18.1-34.4)	34.6 (19.4-53.7) ^d	3.4 (1.8-6.4)	10.1 (4.5-22.3)
Mental health				
Past-year major depressive episode				
Yes	28.7 (26.0-31.5) ^d	32.7 (25.8-40.4) ^d	9.4 (7.2-12.2) ^d	3.5 (2.4-5.1)
No ^c	24.7 (23.1-26.5)	15.7 (12.7-19.3)	3.9 (3.1-5.0)	4.0 (2.9-5.6)
Past-year suicidal ideation				
Yes	31.4 (26.9-36.4) ^d	35.3 (27.0-44.6) ^d	8.7 (6.2-12.2) ^d	4.0 (2.6-6.3)
No ^c	24.4 (22.7-26.0)	17.5 (14.4-21.0)	4.6 (3.8-5.6)	3.8 (2.9-4.9)
Substance use				
Past-month nicotine dependence				
Yes	32.7 (26.7-39.4) ^d	26.8 (20.5-34.2) ^d	7.1 (4.5-11.1)	3.8 (2.1-6.7)
No ^c	23.9 (22.2-25.7)	18.8 (15.9-22.2)	4.8 (3.9-5.8)	3.9 (3.0-5.1)
Past-year alcohol use and use disorder				
Use disorder	48.0 (44.7-51.4) ^d	23.0 (18.3-28.5)	7.5 (5.6-10.1)	3.1 (2.0-4.6)
Use, no disorder	19.8 (18.0-21.8) ^d	15.8 (11.7-21.0) ^d	3.6 (2.9-4.4) ^d	4.4 (3.2-6.2)
No use ^c	12.8 (9.9-16.5)	29.2 (15.7-47.6)	7.4 (5.3-10.4)	3.9 (1.9-8.2)
Past-year cannabis use and use disorder				
Use disorder	46.8 (43.6-50.0) ^d	23.7 (18.2-30.4)	12.4 (8.9-16.9) ^d	1.9 (1.3-2.9)
Use, no disorder	33.1 (29.8-36.6) ^d	11.8 (8.4-16.3) ^d	4.0 (3.1-5.2)	2.9 (2.0-4.4)
No use ^c	13.0 (11.0-15.3)	28.0 (20.6-36.9)	3.9 (2.9-5.2)	7.1 (4.9-10.5)
Past-year cocaine use and use disorder				
Use or use disorder	63.6 (57.0-69.6) ^d	22.0 (16.2-29.2)	12.1 (7.1-19.9) ^d	1.8 (0.9-3.5)
No use ^c	20.6 (19.0-22.3)	19.8 (15.9-24.4)	4.7 (3.9-5.8)	4.2 (3.1-5.8)
Past-year methamphetamine use and use disorder				
Use or use disorder	54.8 (44.8-64.4) ^d	25.4 (16.4-37.1)	11.0 (4.9-23.0)	2.3 (0.9-5.7)
No use ^c	23.6 (22.1-25.2)	20.9 (16.1-26.7)	4.9 (4.1-5.8)	4.2 (3.1-5.7)
Past-year heroin use and use disorder				
Use or use disorder	51.3 (34.1-68.3) ^d	56.5 (34.8-76.0) ^d	18.6 (6.4-43.2) ^d	3.0 (0.97-9.6)
No use ^c	24.9 (23.4-26.5)	19.2 (16.1-22.8)	5.0 (4.2-6.0)	3.9 (3.0-5.0)

(continued)

Table 3. Past-Year Prevalence of Prescription Stimulant Misuse and Use Disorder by Health and Behavioral Health Status and Prescription Stimulant Misuse Status Among US Adults Aged 18 to 64 Years With Past-Year Use of Prescription Stimulants^a (continued)

Health or behavioral health status	Prevalence of misuse, weighted % (95% CI) (n = 7229)	Prevalence of PSUD		
		Weighted % (95% CI)		Prevalence ratio (95% CI) ^b
		With misuse (n = 2004)	Without misuse (n = 5225)	
Past-year prescription sedative or tranquilizer use, misuse, or use disorder				
Use disorder	50.5 (42.2-58.7) ^d	60.1 (44.6-73.9) ^d	41.0 (27.5-56.1) ^d	1.5 (0.9-2.3)
Misuse, no disorder	64.7 (59.0-70.0) ^d	16.9 (11.8-23.7)	7.5 (4.4-12.5)	2.3 (1.2-4.3)
Use, no misuse, no disorder	13.1 (10.7-15.8) ^d	25.5 (15.6-39.0) ^d	2.3 (1.5-3.5) ^d	11.2 (5.2-24.4)
No use ^c	24.7 (22.7-26.8)	14.2 (10.7-18.6)	4.8 (3.9-5.9)	2.9 (2.1-4.2)
Past-year prescription opioid use, misuse, or use disorder				
Use disorder	40.9 (33.3-49.0) ^d	67.4 (55.5-77.5) ^d	14.8 (9.7-22.0) ^d	4.6 (2.8-7.4)
Misuse, no disorder	55.3 (46.5-63.8) ^d	13.6 (9.0-19.8)	3.1 (1.3-7.0)	4.4 (1.7-11.1)
Use, no misuse, no disorder	14.3 (12.1-16.9) ^d	12.7 (7.6-20.3)	3.8 (2.4-6.2)	3.3 (1.8-5.9)
No use ^c	25.0 (22.9-27.2)	15.2 (11.8-19.5)	5.2 (4.2-6.4)	2.9 (2.1-4.1)

^a The data sources were the 2021-2022 National Surveys on Drug Use and Health.

^b For each prevalence ratio, the reference group is the group of adults reporting prescription stimulant use without misuse.

^c Reference group for comparison of weighted prevalence.

^d Estimates were statistically significantly different from the corresponding estimate of the reference group ($P < .05$).

or steal prescription stimulants from family or relatives (21.1% vs 39.6%, respectively). Compared with those without PSUD, those with PSUD were more likely to get prescription stimulants from physicians (15.4% vs 38.5%, respectively) and less likely to get them from family or relatives for free (51.5% vs 23.4%, respectively).

Discussion

We found that past-year prescription stimulant misuse and PSUD were common among US adults aged 18 to 64 years using prescription stimulants in 2021-2022, with 25.3% reporting misuse and 9.0% having PSUD. Moreover, the number of unique persons dispensed prescription stimulants increased among all examined sex- and age-specific subgroups, as did the number of prescription stimulants dispensed from retail pharmacies across all examined prescriber specialties in the US. Our results suggest that increasing numbers of adults are at risk for prescription stimulant misuse and PSUD. Most adults reported solely using their own prescription stimulants, highlighting an opportunity to screen for and treat PSUD among all adults prescribed stimulants.

Historically, public health efforts and clinical attention have focused on prevention of and screening for medication misuse to prevent PSUD and other harms,¹² as stimulant misuse is consistently associated with PSUD.¹¹⁻¹³ Among individuals aged 18 to 64 years reporting prescription stimulant use without misuse, 5.1% had PSUD compared with 20.4% among those reporting misuse. Among people reporting past-year prescription stimulant misuse, most of them reported no misuse in the past month, potentially due to social stigma associated with misuse. Importantly, among those with PSUD, two-fifths did not report misuse in the past year, 72.9% solely used prescrip-

tion stimulants that were prescribed to them, and PSUD prevalence was 2.9 times higher among those solely misusing their own prescribed stimulants (38.6%) than those misusing prescription stimulants without their own prescription (13.1%). As the number of adults with prescription stimulant use increases, adults with PSUD without reporting misuse, who could have benefited from PSUD interventions, may have been overlooked and left untreated. Results underscore the importance of universal precautions¹³ to assess PSUD among patients for whom stimulants are prescribed, regardless of misuse status.

Notably, we found that although the largest increase in the number of individuals dispensed prescription stimulants was among women aged 35 to 64 years, prevalence of prescription stimulant misuse was lower among women aged 35 to 64 years using these medications than all other examined sex- and age-specific subgroups. Additionally, among adults without prescription stimulant misuse, PSUD prevalence was lower among women aged 35 to 64 years than most other sex- and age-specific subgroups. Given that ADHD has been historically underdiagnosed and undertreated among middle-aged women,⁵ our results may suggest potential progress in addressing the mental health care gap for this population and a need to address potential misuse and PSUD.

Using nationally representative data, this study compared misuse and PSUD prevalence related to amphetamines vs methylphenidate. We found that prevalence of prescription stimulant misuse was more than 3 times higher among adults aged 18 to 64 years using amphetamine-type medications than using methylphenidate, and PSUD prevalence was more than 2 times higher for those using amphetamines than using methylphenidate. Although these differences are consistent with the stronger efficacy of amphetamines than methylphenidate to stimulate the dopamine reward system,²⁸ re-

search is needed to determine if and how pharmacological differences drive these outcomes.

We found that individuals aged 18 to 64 years who moved in-person mental health or medical appointments to telehealth during the COVID-19 pandemic were less likely to report misuse, yet more than one-fifth reported misusing prescription stimulants. Compared with adults maintaining in-person appointments, higher prevalence of PSUD was found for adults reporting prescription stimulant misuse and for adults reporting no misuse who shifted in-person mental health or medical appointments to telehealth. Due to improved outcomes from appropriate stimulant treatments for ADHD, it is important to maintain telehealth flexibilities to help with care management when needed.^{18,29,30} However, high prevalence of prescription stimulant misuse and PSUD suggests that efforts are warranted to ensure clinically appropriate prescribing and management of stimulant use via telehealth.

Our results underscore the importance of developing and implementing clinical practice guidelines for adult ADHD^{5,31} and strengthening evidence-based clinician training programs on adult ADHD diagnosis and multimodal care. Moreover, our findings highlight the need for prevention and intervention of prescription stimulant misuse, diversion, or PSUD regardless of misuse status and the reasons for prescribing stimulants. We observed increases in stimulant prescriptions prescribed by clinicians from various training and practice backgrounds. Efforts are needed to bolster clinician training and experience for appropriate adult ADHD diagnosis and care, due to its complexity, comorbidity, heterogeneity,^{5,32,33} and limited training on multimodal ADHD care^{5,13,32-34} and PSUD prevention and intervention strategies.³⁴

In 2022, only 7.2% of individuals aged 18 to 64 years with moderate to severe PSUD reported receiving outpatient treatment for their PSUD (B.H., E.B.E., W.M.C., unpublished data, March 2024). Untreated PSUD, other related substance use, and SUDs undermine successful treatments of ADHD³⁵ and can lead to overdoses,¹⁶ premature mortality,¹⁷ and other harms. Given that ADHD is the most common diagnosis for which stimulants are prescribed, accurate ADHD diagnosis and appropriate prescribing and care management could be associated with improved functional outcomes,^{2,36} decreased morbidity and mortality,³ reduced inappropriate prescribing,⁸ mitigation of adverse effects (eg, cardiovascular diseases³⁷), and decreased prescription stimulant diversion, misuse, and PSUD. Additionally, PSUD in most individuals aged 18 to 64 years was classified as mild by *DSM-5* criteria. Research is needed on optimal care strategies for adults with co-occurring ADHD and mild PSUD.

We found that among adults reporting prescription stimulant misuse along with prescription sedative, tranquilizer, or opioid (eg, benzodiazepine) use disorder, 60% to 67% had PSUD. Moreover, among adults with prescription stimulant misuse and PSUD, almost two-fifths reported receiving their most recently misused prescription stimulants from physicians, suggesting the need to strengthen care coordination and use of tools, such as prescription drug monitoring programs (PDMPs), to provide clinicians with information on prior receipt of controlled medications. A recent study reported that expansive PDMP use mandates, requiring prescribers and dispensers to check PDMPs

when prescribing or dispensing targeted controlled medications in Schedule II to V, were associated with declines in prescription stimulant quantity,³⁸ although effectiveness in reducing fatal and nonfatal overdoses was less clear.³⁹

Limitations

This study has several limitations. First, the cross-sectional nature of NSDUH data precludes drawing causal relationships. Second, NSDUH is self-reported and subject to recall and social desirability bias. Third, this study may underestimate prevalence of prescription stimulant misuse and PSUD because NSDUH excluded unhoused adults not living in shelters and institutionalized populations (eg, incarcerated populations) who may have higher rates of PSUD than the general population.⁴⁰ Fourth, neither IQVIA nor NSDUH data have information on ADHD diagnoses and whether prescription stimulants for adults were clinically appropriate. Fifth, potentially due to social stigma associated with misuse, some adults might not report misuse even when not taking stimulants as prescribed, resulting in misclassification and underestimated prescription stimulant misuse and misuse frequency.

Sixth, research is needed to understand the sensitivity and specificity of *DSM-5* PSUD classified in the NSDUH. According to a recent study, nearly three-quarters of adults taking ADHD medications reported that drug shortages hampered their ability to get treatment in 2023.¹⁸ We found that prevalence of reporting the *DSM-5* PSUD symptom of “spending a great deal of time obtaining, using prescription stimulants, or recovering from their effects”^{14,23-25} did not vary by misuse status. Although we could not estimate differences in prevalence of spending a great deal of time obtaining prescription stimulants because NSDUH did not specify it, our results may reflect medication access issues related to prescription stimulant shortages. Similarly, during gaps in care, patients could experience a “strong urge to use,”^{14,23-25} which is a craving criterion for PSUD. PSUD prevalence may be overestimated among patients experiencing these situations. However, PSUD prevalence could also be underestimated among adults with misuse who did not report it because 2 *DSM-5* PSUD criteria (withdrawal and tolerance) were not applied to individuals reporting no prescription stimulant misuse. It is important to continue monitoring prescription stimulant prescribing trends, quality of care provided, and outcomes among those prescribed stimulants, including prescription stimulant misuse, PSUD, and treatment for PSUD.

Conclusions

Although access to prescription stimulants is essential to addressing important clinical needs of patients with ADHD,^{2,3,5} we found that among US adults aged 18 to 64 years using prescription stimulants, one-fourth reported misuse, and nearly one-tenth had PSUD. Among those with PSUD, more than two-fifths reported no prescription stimulant misuse, almost 90% used amphetamine-type medications, and nearly three-fourths reported only using their own prescribed stimulants. Although research is needed to examine sensitivity and speci-

ficity of DSM-5 PSUD classified in the NSDUH, given increases in all examined sex- and age-specific subgroups dispensed prescription stimulants, increasing US populations may be at risk for prescription stimulant misuse and PSUD. Our results may highlight the need for evidence-based clinical

practice guidelines and clinician training programs for adult ADHD and prescription stimulant treatment, use of clinical tools (eg, PDMPs), and screening for and treating PSUD among adults prescribed stimulants regardless of misuse status and the reasons for prescription stimulant use.

ARTICLE INFORMATION

Accepted for Publication: December 23, 2024.

Published Online: March 19, 2025.

doi:10.1001/jamapsychiatry.2025.0054

Author Contributions: Drs Han and Rikard had full access to all of the data in the study and take responsibility for the integrity of the data and the accuracy of the data analysis.

Concept and design: Han, Jones, Volkow, Einstein, Tomoyasu, Baldwin, Compton.

Acquisition, analysis, or interpretation of data: Han, Volkow, Rikard, Dowell, Guy, Ko, Baldwin, Olsen, Compton.

Drafting of the manuscript: Han, Volkow, Baldwin, Compton.

Critical review of the manuscript for important intellectual content: All authors.

Statistical analysis: Han, Volkow, Rikard, Ko.

Administrative, technical, or material support: Jones, Volkow, Ko, Olsen, Compton.

Supervision: Jones, Volkow, Einstein, Tomoyasu, Compton.

Conflict of Interest Disclosures: Dr Compton reported long-term stock holdings in General Electric Co, 3M Companies, and Pfizer Inc outside the submitted work. No other disclosures were reported.

Funding/Support: This study was sponsored by the National Institute on Drug Abuse of the National Institutes of Health, the Substance Abuse and Mental Health Services Administration, and the Centers for Disease Control and Prevention.

Role of the Funder/Sponsor: The sponsors supported the authors, who were responsible for preparation, review, and approval of the manuscript and the decision to submit the manuscript for publication. The sponsor had no role in the design and conduct of the study; collection, management, analysis, and interpretation of the data; preparation, review, or approval of the manuscript; or decision to submit the manuscript for publication. The sponsors reviewed and approved the manuscript.

Disclaimer: The findings and conclusions of this study are those of the authors and do not necessarily reflect the views of the National Institute on Drug Abuse of the National Institutes of Health, the Substance Abuse and Mental Health Services Administration, the Centers for Disease Control and Prevention, and the US Department of Health and Human Services.

Data Sharing Statement: See Supplement 2.

REFERENCES

- Chai G, Xu J, Goyal S, et al. Trends in incident prescriptions for behavioral health medications in the US, 2018-2022. *JAMA Psychiatry*. 2024;81(4):396-405. doi:10.1001/jamapsychiatry.2023.5045
- Boland H, DiSalvo M, Fried R, et al. A literature review and meta-analysis on the effects of ADHD medications on functional outcomes. *J Psychiatr Res*. 2020;123:21-30. doi:10.1016/j.jpsychires.2020.01.006
- Li L, Zhu N, Zhang L, et al. ADHD pharmacotherapy and mortality in individuals with ADHD. *JAMA*. 2024;331(10):850-860. doi:10.1001/jama.2024.0851
- Danielson ML, Bohm MK, Newsome K, et al. Trends in stimulant prescription fills among commercially insured children and adults—United States, 2016-2021. *MMWR Morb Mortal Wkly Rep*. 2023;72(13):327-332. doi:10.15585/mmwr.mm7213a1
- National Academies of Sciences, Engineering, and Medicine. *Adult Attention-Deficit/Hyperactivity Disorder: Diagnosis, Treatment, and Implications for Drug Development: Proceedings of a Workshop*. National Academies Press; 2024.
- Forbes MK, Neo B, Nezami OM, et al. Elemental psychopathology: distilling constituent symptoms and patterns of repetition in the diagnostic criteria of the DSM-5. *Psychol Med*. 2024;54(5):886-894. doi:10.1017/S0033291723002544
- Harrison AG, Edwards MJ. The ability of self-report methods to accurately diagnose attention deficit hyperactivity disorder: a systematic review. *J Atten Disord*. 2023;27(12):1343-1359. doi:10.1177/10870547231177470
- Anbarasan D, Kitchin M, Adler LA. Screening for adult ADHD. *Curr Psychiatry Rep*. 2020;22(12):72. doi:10.1007/s11920-020-01194-9
- Moustafa Y, Chauhan M, Rummans TA. Attention-deficit/hyperactivity disorder overdiagnosis and overprescriptions: medicalization of distractions. *Mayo Clin Proc*. 2022;97(7):1339-1344. doi:10.1016/j.mayocp.2022.02.026
- Moran LV, Skinner JP, Shinn AK, et al. Risk of incident psychosis and mania with prescription amphetamines. *Am J Psychiatry*. 2024;181(10):901-909. doi:10.1176/appi.ajp.20230329
- Ramachandran S, Dertien D, Bentley SI. Prevalence of ADHD symptom malingering, nonmedical use, and drug diversion among college-enrolled adults with a prescription for stimulant medications. *J Addict Dis*. 2020;38(2):176-185. doi:10.1080/10550887.2020.1732762
- Compton WM, Han B, Blanco C, Johnson K, Jones CM. Prevalence and correlates of prescription stimulant use, misuse, use disorders, and motivations for misuse among adults in the United States. *Am J Psychiatry*. 2018;175(8):741-755. doi:10.1176/appi.ajp.2018.17091048
- Modesto-Lowe V, Chaplin M, Sinha S, Woodard K. Universal precautions to reduce stimulant misuse in treating adult ADHD. *Cleve Clin J Med*. 2015;82(8):506-512. doi:10.3949/ccjm.82a.14131
- American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders*. 5th ed. American Psychiatric Association; 2013.
- Hasin DS, O'Brien CP, Auriacombe M, et al. DSM-5 criteria for substance use disorders: recommendations and rationale. *Am J Psychiatry*. 2013;170(8):834-851. doi:10.1176/appi.ajp.2013.12060782
- Macmadu A, Banks AJ, Hallowell BD, et al. Receipt of prescription psychostimulants and stimulant-involved fatal overdose: a population-based case-control study. *Subst Use Misuse*. 2023;58(9):1163-1167. doi:10.1080/10826084.2023.2212037
- Westover AN, Nakonezny PA, Halm EA, Adinoff B. Risk of amphetamine use disorder and mortality among incident users of prescribed stimulant medications in the Veterans Administration. *Addiction*. 2018;113(5):857-867. doi:10.1111/add.14122
- Staley BS, Robinson LR, Claussen AH, et al. Attention-deficit/hyperactivity disorder diagnosis, treatment, and telehealth use in adults—National Center for Health Statistics Rapid Surveys System, United States, October-November 2023. *MMWR Morb Mortal Wkly Rep*. 2024;73(40):890-895. doi:10.15585/mmwr.mm7340a1
- O'Donnell J, Tanz LJ, Miller KD, et al. Drug overdose deaths with evidence of counterfeit pill use—United States, July 2019-December 2021. *MMWR Morb Mortal Wkly Rep*. 2023;72(35):949-956. doi:10.15585/mmwr.mm7235a3
- US Drug Enforcement Administration. Public safety alert: DEA issues warning about illegal online pharmacies. Accessed October 16, 2024. <https://www.dea.gov/alert/dea-issues-warning-about-illegal-online-pharmacies>
- IQVIA. US national data: National Prescription Audit (NPA). <https://www.iqvia.com/insights/the-iqvia-institute/available-iqvia-data>. Accessed April 10, 2024.
- Substance Abuse and Mental Health Services Administration. 2022 NSDUH detailed tables. Accessed April 10, 2024. <https://www.samhsa.gov/data/report/2022-nsduh-detailed-tables>
- Substance Abuse and Mental Health Services Administration. National Survey on Drug Use and Health (NSDUH). Accessed April 26, 2023. <https://www.samhsa.gov/data/data-we-collect/nsduh-national-survey-drug-use-and-health>
- Substance Abuse and Mental Health Services Administration. NSDUH 2021 methodological resource book. 2022. Accessed May 11, 2024. <https://www.samhsa.gov/data/report/nsduh-2021-methodological-resource-book-mrb>
- Substance Abuse and Mental Health Services Administration. NSDUH 2022 methodological resource book. Accessed May 11, 2024. <https://www.samhsa.gov/data/report/nsduh-2022-methodological-resource-book-mrb>
- National Cancer Institute. Joinpoint trend analysis software, version 4.8.01. Accessed May 14, 2024. <https://surveillance.cancer.gov/joinpoint/>

27. Bieler GS, Brown GG, Williams RL, Brogan DJ. Estimating model-adjusted risks, risk differences, and risk ratios from complex survey data. *Am J Epidemiol*. 2010;171(5):618-623. doi:10.1093/aje/kwp440
28. Schiffer WK, Volkow ND, Fowler JS, Alexoff DL, Logan J, Dewey SL. Therapeutic doses of amphetamine or methylphenidate differentially increase synaptic and extracellular dopamine. *Synapse*. 2006;59(4):243-251. doi:10.1002/syn.20235
29. Spencer T, Noyes E, Biederman J. Telemedicine in the management of ADHD: literature review of telemedicine in ADHD. *J Atten Disord*. 2020;24(1):3-9. doi:10.1177/1087054719859081
30. Children and Adults With Attention-Deficit/Hyperactivity Disorder. Telemedicine changes for ADHD following end of health emergency. Accessed June 21, 2024. <https://chadd.org/adhd-weekly/telemedicine-changes-for-adhd-following-end-of-health-emergency/>
31. American Professional Society of ADHD and Related Disorders. The first U.S. guidelines for adult ADHD to be released by the American Professional Society of ADHD and Related Disorders. Accessed May 31, 2024. <https://apsard.org/wp-content/uploads/2022/08/APSARD-Adult-ADHD-Guidelines-Press-Release.pdf>
32. Volkow ND, Swanson JM. Clinical practice: adult attention deficit-hyperactivity disorder. *N Engl J Med*. 2013;369(20):1935-1944. doi:10.1056/NEJMc1212625
33. Weibel S, Menard O, Ionita A, et al. Practical considerations for the evaluation and management of attention deficit hyperactivity disorder (ADHD) in adults. *Encephale*. 2020;46(1):30-40. doi:10.1016/j.encep.2019.06.005
34. Molina BSG, Kipp HL, Joseph HM, et al. Stimulant diversion risk among college students treated for ADHD: primary care provider prevention training. *Acad Pediatr*. 2020;20(1):119-127. doi:10.1016/j.acap.2019.06.002
35. Arria AM, DuPont RL. Prescription stimulant use and misuse: implications for responsible prescribing practices. *Am J Psychiatry*. 2018;175(8):707-708. doi:10.1176/appi.ajp.2018.18050596
36. Isfandnia F, El Masri S, Radua J, Rubia K. The effects of chronic administration of stimulant and non-stimulant medications on executive functions in ADHD: A systematic review and meta-analysis. *Neurosci Biobehav Rev*. 2024;162:105703. doi:10.1016/j.neubiorev.2024.105703
37. Zhang L, Li L, Andell P, et al. Attention-deficit/hyperactivity disorder medications and long-term risk of cardiovascular diseases. *JAMA Psychiatry*. 2024;81(2):178-187. doi:10.1001/jamapsychiatry.2023.4294
38. Gunadi C, Shi Y. Prescription drug monitoring programs use mandates and prescription stimulant and depressant quantities. *BMC Public Health*. 2023;23(1):1326. doi:10.1186/s12889-023-16256-9
39. Judd D, King CR, Galke C. The opioid epidemic: a review of the contributing factors, negative consequences, and best practices. *Cureus*. 2023;15(7):e41621. doi:10.7759/cureus.41621
40. Compton WM, Dawson D, Duffy SQ, Grant BF. The effect of inmate populations on estimates of DSM-IV alcohol and drug use disorders in the United States. *Am J Psychiatry*. 2010;167(4):473-474. doi:10.1176/appi.ajp.2009.09081087

Risks Associated With Undiagnosed ADHD and/or Autism: A Mixed-Method Systematic Review

Journal of Attention Disorders

2023, Vol. 27(12) 1393–1410

© The Author(s) 2023



Article reuse guidelines:

sagepub.com/journals-permissions

DOI: 10.1177/10870547231176862

journals.sagepub.com/home/jad



Blandine French¹, David Daley², Madeleine Groom¹,
and Sarah Cassidy¹

Abstract

Background: The two most prevalent neurodevelopmental disorders—Attention Deficit Hyperactivity Disorder (ADHD) and Autism (ASD)—(ASD/ADHD) strongly impact individuals' functions. This is worsened when individuals are undiagnosed and risks such as increased imprisonments, depression or drug misuse are often observed. This systematic review synthesizes the risks associated with late/undiagnosed ASD/ADHD. **Methods:** Four databases were searched (Medline, Scopus, PsychInfor, and Embase). Published studies exploring the impact of undiagnosed ASD/ADHD were included. Exclusion criteria included, lack of diagnosis status, studies not solely on ASD or ADHD, gray literature and studies not in English. The findings were summarize through a narrative synthesis. **Results:** Seventeen studies were identified, 14 on ADHD and three on ASD. The narrative synthesis identified three main themes: (1) Health, (2) Offending behavior, and (3) Day-to-day impact. The risks highlighted a significant impact on mental wellbeing and social interactions, higher risks of substance abuse, accidents and offending behavior as well as lower levels of income and education. **Discussion:** The findings suggest that undiagnosed ASD/ADHD is linked to many risks and negative outcomes affecting individuals, their families, and the wider society. The restricted number of studies on ASD are a limitation to the generalization of these findings Implications for research and practice are discussed, highlighting the importance of screening and acknowledging the possibility of ASD/ADHD in many settings such as psychiatric and forensic. (*J. of Att. Dis.* XXXX; XX(X) XX-XX)

Keywords

ADHD, autism, ASD, systematic review, undiagnosed, undetected

Introduction

Neurodevelopmental disorders including Attention Deficit hyperactivity disorder (ADHD), autism (ASD), dyspraxia and tic disorders, affect around 6% to 8% of the adult population (Fayyad et al., 2017; Gillberg & Soderstrom, 2003; Lai et al., 2014). They are associated with significant long-term effects and impair many cognitive and behavioral functions (Charman et al., 2011; Rubia, 2018; Stoodley, 2016). The pathway to care for neurodevelopmental disorders is not always straightforward. In the UK for example, commissioning decisions on services vary across the country (Hurt et al., 2019; Wright et al., 2015) and neurodevelopmental disorders are currently underdiagnosed in the UK (Ginsberg, Quintero et al., 2014; Hayes et al., 2018). The most common neurodevelopmental conditions, ADHD and ASD, affect 5% and 1% of the adult population respectively (Brugha et al., 2016; McLeod et al., 2007). ASD is a lifelong condition resulting in

difficulties in social and communication skills, adapting to change, restricted interests, and sensory hypersensitivity (APA, 2013). ADHD is categorized by symptoms of impulsivity, hyperactivity and inattention and can lead to considerable daily impairment, affecting social behavior, schoolwork and family life (Danckaerts et al., 2010; Faraone et al., 2021). It is estimated that millions of adults and children with ASD and/or ADHD are currently undiagnosed in the UK (Hertz-Picciotto & Delwiche, 2009; Lai & Baron-Cohen, 2015;

¹University of Nottingham, UK

²Nottingham Trent University, UK

Corresponding Author:

Blandine French, Academic Unit of Mental Health & Clinical Neurosciences, School of Medicine, Institute of Mental Health, University of Nottingham, Yang Fujiya room B15, Jubilee Campus, Nottingham NG81BB, UK.

Email: blandine.french@nottingham.ac.uk

Lamberg, 2003) and this issue prevails around the world. In Denmark for instance, over half of the children surveyed in a national birth cohort who reported ADHD behavior at age 7 were not diagnosed at follow up many years later (Madsen et al., 2018).

Individuals with ASD and/or ADHD (henceforth ASD/ADHD) report difficulties in obtaining appropriate support, diagnosis, and treatment for difficulties associated with their conditions (Camm-Crosbie et al., 2019; Hayes et al., 2018; Sayal et al., 2018). This leads to poorer outcomes for the individual and their families, such as significant academic underachievement and educational problems (Arnold et al., 2020; Barry et al., 2002; Estes et al., 2011), increased prevalence of depression and anxiety (Howlin & Magiati, 2017; Stewart et al., 2006), higher rates of offending behavior and imprisonment (Haskins & Silva, 2006; Robertson & McGillivray, 2015; Young & Thome, 2011), divorce (Anastopoulos et al., 2009), driving accidents (Daly et al., 2014; Groom et al., 2015; Ulzen et al., 2018), unemployment (Halleland et al., 2019; Hedley et al., 2017; Howlin & Magiati, 2017), suicidal thoughts and behaviors (Cassidy et al., 2022; James et al., 2004) and other mental health issues (Able et al., 2007; Ómarsdóttir et al., 2021). Undiagnosed adults with ADHD are more likely to present with difficulties at work (Asherson et al., 2012), substance abuse (Asherson et al., 2012; Folgar et al., 2018) or increased medical incidents and injuries (Asherson et al., 2012; Kittel-Schneider et al., 2019; Swensen et al., 2004). In the case of substance abuse, it has been hypothesized that individuals with undiagnosed or untreated ADHD may use illicit psychostimulants as a form of self-medication (Gudjonsson et al., 2012; Wilens et al., 2007). Undiagnosed parental ADHD can also strongly impact quality of parenting and increase chaotic home life (Chronis-Tuscano et al., 2008). Undiagnosed ASD in adults has been linked to higher rates of psychiatric conditions (C. Nylander et al., 2018), social problems (Bishop-Fitzpatrick et al., 2018), increased vulnerability to sexual abuse in women (Bargiela et al., 2016), chronic pain (Bursch et al., 2004), and suicidal behaviors (Richards et al., 2019).

These considerable risks are attenuated when ASD/ADHD are diagnosed, as diagnosis facilitates access to care or support (DuPaul et al., 2011). For instance, Swedish population-based data suggest that drug treatment of ADHD may reduce criminality, serious traffic accidents, and suicide rates (Chang et al., 2012; Lichtenstein et al., 2012). Hence, early diagnosis and intervention are of utmost importance in improving some of the long-term outcomes for adults living with these conditions.

There are multiple reasons why many children and adults are still undiagnosed. Socio-economic factors often play a role in recognition of ASD/ADHD. The gender perception gap in how these conditions are expressed and impact males and females for instance can bias recognition, as girls are often missed (Lai & Baron-Cohen, 2015; McCrossin, 2022;

Quinn & Wigal, 2004; Russell et al., 2011). Additionally, cultural biases also impact the diagnostic process with people from ethnic minority groups (Coker et al., 2016; Coll et al., 1996) and individuals from lower socio-economic backgrounds often missed (Guthrie et al., 2019; Hodgkinson et al., 2017). Diagnosis may also fail to be given due to favorable personal or environmental conditions (e.g., high child IQ, compliant behavior or learned coping strategies) which might mitigate the impairments of the disorders (Ratey et al., 1992). Additionally, lack of training on these conditions and the presence of misconceptions and skepticism from health-care professionals and teachers often creates barriers in accessing care (French et al., 2019; Malik-Soni et al., 2022; Olety, 2012; Senarath, 2019). A lack of clear understanding of ASD/ADHD and the importance of receiving a diagnosis and treatment exists amongst parents, teachers, healthcare providers (Hamed et al., 2015) as well as negative attitudes of the community (Bisset et al., 2022; Dickter et al., 2020). Strong partnership between these members of the community could start improving access to care (Hamed et al., 2015). Health services for adults with ASD/ADHD also remain scarce and underfunded, often failing to provide support (Camm-Crosbie et al., 2019; Frith & Mira, 1992; Murphy et al., 2016). Additionally, ASD/ADHD may be mistaken for other mental health conditions or are missed in the presence of comorbid disorders (Au-Yeung et al., 2019; Ginsberg, Beusterien et al., 2014; Haskins & Silva, 2006). Finally, lack of diagnosis may be more prevalent in adulthood. Some individuals with ASD/ADHD may not display symptoms of impairment until later in life when environmental circumstances change, particularly if they had moderate symptoms and adequate social/family supports earlier in life. Therefore, although symptoms might have existed during childhood, impairment might only appear for the first time during adulthood (Lewis, 2018). Moreover, adults may have acquired adaptive behaviors or strategies that help them mask symptoms and impairments in day-to-day settings or make considerable adjustments at great personal cost to mitigate the impact of their symptoms (Bradley et al., 2021; Kosaka et al., 2019; Lewis, 2018), making ASD/ADHD harder to spot.

While there is a wealth of knowledge regarding how ASD/ADHD impacts the lives of individuals, little is known about the traits of adults with ASD/ADHD who are undiagnosed or about the human costs incurred by the disorder among these people. This systematic review identifies and synthesizes the risks associated with late/undiagnosed ASD/ADHD reported in the published literature. No synthesis of these risks has been conducted to date and these novel findings may help to inform future research and policy development.

Methods

This review was written in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-analysis

Protocols (PRISMA-P) guidelines (Moher et al., 2015). A protocol for this review is registered with the International Prospective Register of Systematic Reviews (PROSPERO; 355458).

Search Strategy

Four databases (PsycInfo, Embase, Scopus, Medline) were searched. PROSPERO was checked for ongoing or already published systematic reviews on the subject. A full search strategy for Medline (MEDLINE In-Process & Non-Indexed Citations and OVID MEDLINE 1946 to present-Ovid) is detailed in Supplemental Material as an example and included terms such as: Attention Deficit Disorder with Hyperactivity/(ADHD or ADDH or “attention deficit disorder*” or “attention deficit hyperactivity disorder*” or “hyperkinetic disorder*”), exp Autism Spectrum Disorder/(autis* or ASD or ASC or asperger*). Adaptation of the MEDLINE search strategies was made for the other databases according to their own search criteria. The search was performed on the 5th of December 2022, date limits were not imposed. While hand searching was not a strong component of our planned search strategy, the reference lists of all papers that meet the inclusion criteria were hand searched to check for any additional studies.

Inclusion Criteria

Type of Studies. Quantitative and qualitative studies were included. The qualitative component of this review considered qualitative studies of any design exploring the impacts, effects or risks associated with undiagnosed ADHD/ASD (including, but not limited to ethnography, phenomenology and grounded theory studies). The quantitative component of this review included quantitative studies of experimental and observational designs (including, but not limited to cohort studies, cross-sectional surveys, Randomized controlled trials). Mixed method studies were also included, relevant qualitative and quantitative components extracted separately. Studies published in peer-reviewed publications were solely considered.

Type of Population. This review covers studies examining individuals (adults and children) who have not yet received a diagnosis of ASD/ADHD but show traits/symptoms of these disorders on validated screening and assessment tools (such as the adult ADHD self report scale—ASRS or Autism Diagnostic Observation Schedule—ADOS). If studies included multiple groups such as diagnosed and undiagnosed individuals, undiagnosed findings were extracted and reported separately. Studies where individuals are on the care pathway to get a diagnosis as well as studies looking into untreated/unsupported ADHD/ASD were included if the reason for lack of treatment was due to lack of diagnosis.

Type of Phenomenon of Interest. This review is examining the impact of not receiving a diagnosis of ADHD/ASD when symptoms of ASD/ADHD are present and meet diagnostic or screening criteria. Within the context of this study, impacts are defined as any consequence from having these conditions in daily life and include consequences to the individuals, their environment (such as job, schools, friendships), their families and any others impacted. This definition and concept of impact vary between each study therefore this review looked at broader concepts such as risks, effects, or consequences. This review considered studies focusing on ADHD/ASD throughout the lifespan and therefore included studies of children, adolescents, and adults.

Context. This review was conducted in any setting and took an international perspective. The period of the review was not restricted, covering all publications from inception up to the 5th of December 2022.

Exclusion Criteria

Unpublished and gray literature were excluded. Studies were also excluded if they did not specify the status of diagnosis examined or focusing on diagnosed individuals and studies that do not mention the terms “Attention Deficit Hyperactivity Disorder,” “Autistic,” “ADHD,” “Autism” or “ASD.” Case studies and studies on genetics, medication and scale development were excluded as well as studies not published in English. Studies that did not separate findings from undiagnosed and diagnosed groups were also excluded.

Study Selection

Following the search, all identified citations were uploaded into a reference manager software (Zotero). Two of the review authors independently screened the titles and abstracts for assessment against the search inclusion criteria (BF and DD). Full reports were obtained for all titles that appear to meet the inclusion criteria. The same two review authors screened and assessed the full text reports in detail against the inclusion criteria. Disagreement on selected studies were resolved through discussion and/or presented to a third reviewer (SC). Studies that do not meet the inclusion criteria were excluded and a record of reasons for excluding studies can be found in Supplemental Material S1. The study selection process is presented in Figure 1.

Data Extraction and Outcomes

Data Extraction. The lead reviewer (BF) extracted qualitative and quantitative data from the included studies using a standardized data extraction tool (Peters et al., 2015). The

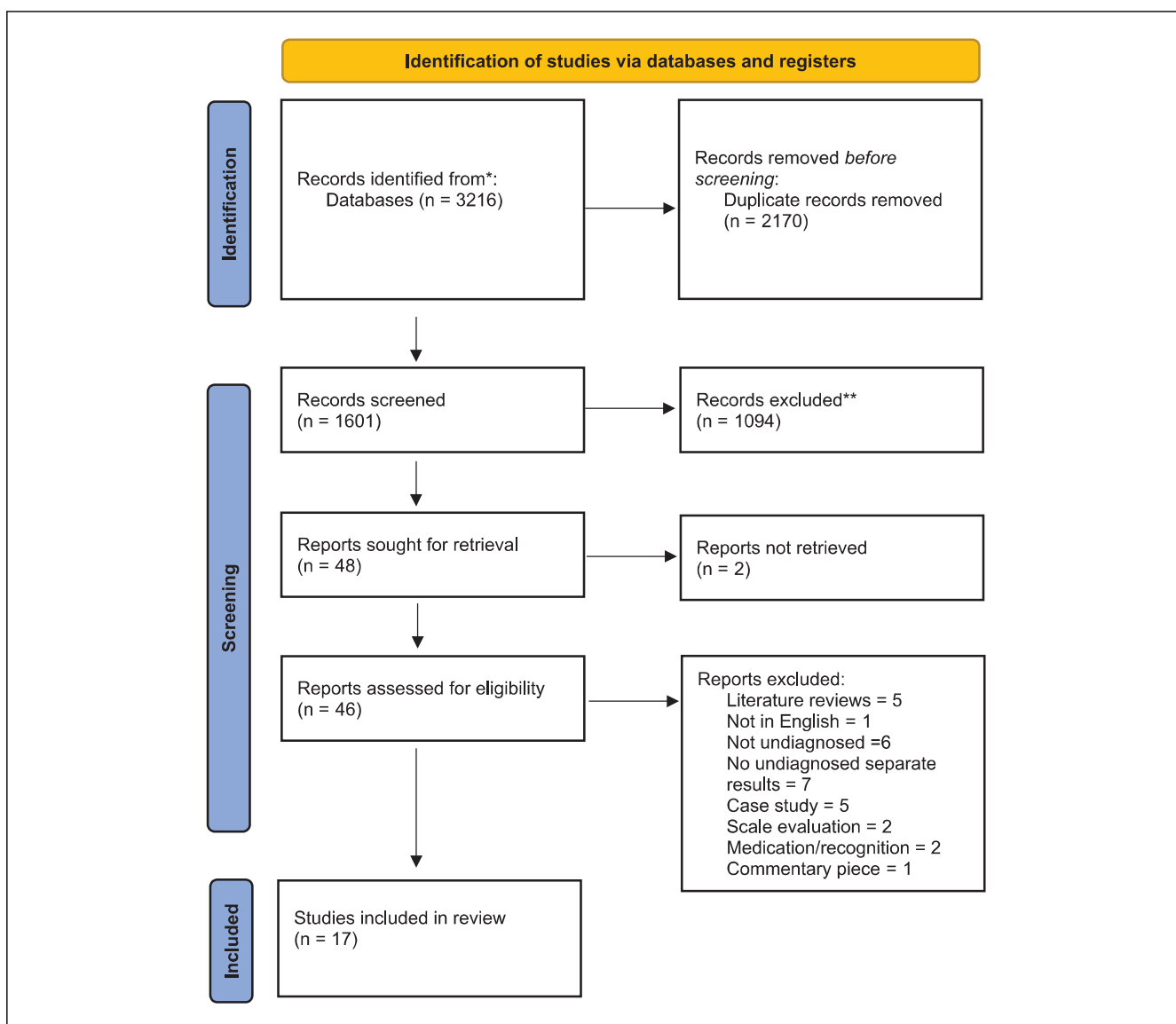


Figure 1. Study selection flow diagram.

*Consider, if feasible to do so, reporting the number of records identified from each database or register searched (rather than the total number across all databases/registers).

**If automation tools were used, indicate how many records were excluded by a human and how many were excluded by automation tools.

Source. Page et al. (2021).

For more information, visit: <http://www.prisma-statement.org/>.

data extracted included specific details about the criteria detailed above, aiming to answer the review's primary objective.

Outcomes. The main outcome is the synthesis of risks associated with having undiagnosed ADHD/ASD. Multiple types of factors reported in the selected studies were evaluated such as societal factors (divorce, imprisonment etc.) and health factors (suicide, drug abuse, etc.). These factors were grouped into themes within the synthesis phase.

Data Synthesis

Due to the mixed-method nature of this review, a segregated synthesis is proposed where two distinct analyses of qualitative and quantitative evidence were made prior to conducting a mixed-methods synthesis (Sandelowski et al., 2013).

A meta-synthesis summarized the qualitative findings. This aggregation or synthesis of findings generated a set of statements representing the aggregation and categorizing them based on similarity in meaning. The findings were

presented in narrative form. As statistical pooling was not possible for quantitative data, the findings were presented in a narrative form including tables and figures. The two analyses were then aggregated and combined in the form of qualitative themes (Pearson et al., 2015). Two reviewers conducted the syntheses in sequential order, one reviewer developing the synthesis (BF) and the second checking the findings (DD).

Assessment of Methodological Quality

Following mixed methods reviews guidelines (Pearson et al., 2015), the process was separated between qualitative and quantitative studies. Two review authors (BF and DD) critically appraised all selected studies for methodological quality using standardized quality appraisal tool (JBI tool Porritt et al., 2014). Any disagreement between reviewers was resolved through discussion and/or a third reviewer (SC). The results are reported in the main study table (Table 1). Study quality did not affect inclusion within the report with all studies going through the data extraction and synthesis process.

Results

The studies included in this review give an international view of the topic discussed with studies from nine different countries (six from the United States (Able et al., 2007; Hill et al., 2021; Levin et al., 1998; Maxson et al., 2009; McAweeney et al., 2010; Wood et al., 2021), two each from Australia (Aggarwal & Angus, 2015; Kaye et al., 2013), United Kingdom (Huntley et al., 2012; Stagg & Belcher, 2019) and Japan (Naya et al., 2021; Okumura et al., 2021) and one each from Czech Republic and Hungary (Bitter et al., 2019), the Netherlands (Buitelaar & Ferdinand, 2016), India (Kumar et al., 2018), Lithuania (Kuzmickaitė et al., 2019) and Germany (Luderer et al., 2020). Three studies looked at the risks associated with having undiagnosed ASD (Aggarwal & Angus, 2015; Hill et al., 2021; Stagg & Belcher, 2019) while 14 focused on undiagnosed ADHD. The studies explored a wide range of populations: three studies looked at undiagnosed children, two at young adults and students, three at the general adult population while nine looked at a specific adult population (for instance adults with alcohol dependence, or adults in prison).

The findings were synthesized with three main themes of risks associated with undiagnosed ASD/ADHD. The results are presented for ADHD, first, by focusing on the three themes and, then, for ASD, in a single paragraph, due to limited number of studies retrieved.

- Physical and mental Health
- Offending behavior
- Day-to-day impact

Physical and Mental Health

Undiagnosed ASD/ADHD was most strongly linked to health concerns, principally mental health but also physical health.

Mental Health and Wellbeing. Undiagnosed ADHD strongly impacts mental wellbeing with over half of the 17 studies, mentioning a link to poor mental health. Nine studies highlighted the impact of undiagnosed ADHD on long term mental health (Able et al., 2007; Bitter et al., 2019; Buitelaar & Ferdinand, 2016; Huntley et al., 2012; Kaye et al., 2013; Kuzmickaitė et al., 2019; Naya et al., 2021; Okumura et al., 2021; Wood et al., 2021). The studies demonstrated that in adults, undiagnosed ADHD led to higher rates of depression (Able et al., 2007; Huntley et al., 2012; Wood et al., 2021), lower rates of quality of life (Able et al., 2007), higher rates of suicide attempts (Huntley et al., 2012), greater emotional difficulties (Able et al., 2007) and anxiety (Kuzmickaitė et al., 2019; Wood et al., 2021). For instance, in a study of psychiatric inpatients, almost 10% of the patients had undiagnosed ADHD; twice the rate in the general population (Bitter et al., 2019). These patients were also more likely to use psychiatric services, have a psychiatric diagnosis, and were more likely to die by suicide. Adults with undiagnosed ADHD were more likely to have received care for mental health (Buitelaar & Ferdinand, 2016; Kaye et al., 2013) as well as more likely to be diagnosed and treated for comorbid psychiatric diagnoses (Kuzmickaitė et al., 2019; Naya et al., 2021). These findings also translate to children. In a sample of 10 to 12 years old, Okumura et al. (2021) demonstrated that undiagnosed ADHD was significantly associated with lower self-esteem, higher depression, higher emotional symptoms and higher risks of self-harm.

Physical Health. Three studies demonstrated a link between undiagnosed ADHD and physical health (Kuzmickaitė et al., 2019; Maxson et al., 2009; Naya et al., 2021). Kuzmickaitė et al. (2019) showed that a group of young male prisoners with undiagnosed ADHD had higher rates of sleep disorders. Similarly, Naya et al. (2021) found that adults with undiagnosed ADHD had more sleep problems, more hospitalizations and doctors' visits, and more physical comorbidities. In a study of children admitted to emergency services for injuries, versus children admitted for appendicitis, the injured group was over three times more likely to have undiagnosed ADHD (Maxson et al., 2009).

Offending Behavior

Offending behavior was a common theme associated with undiagnosed ADHD, including imprisonment, crimes, substance abuse and antisocial behavior.

Table 1. Included Studies Characteristics.

Reference	Country	Population of interest and sample size	Method used for diagnosis/screening	Quality rating	Synopsis of findings	Themes
<i>Autism</i>						
Aggarwal and Angus (2015)	Australia	Young people aged 15–25 ($n = 31$ undiagnosed)	ASD assessment: Autism Diagnostic Observation Schedule (ADOS), interviews with parents, review by psychiatrist and two clinicians	High	Adolescents getting referred for an ASD diagnosis presented with: Depression Anxiety Primary psychotic symptoms	Health
Hill et al. (2021)	United States	Children aged 8 ($n = 243$ newly diagnosed)	Surveillance data including screening and abstracting health and/or education records and a systematic review of all records by trained clinicians.	High	Children newly diagnosed compared to already diagnosed children with autism Children newly diagnosed were: More likely to be female More likely to be aggressive and argumentative Less likely to have presented with difficulties at an early age Interviews conducted with older adults who had recently received a diagnosis Participants reported always having been different and having social and relationship concerns	Offending behavior
Stagg and Belcher (2019)	United Kingdom	Older adults aged 52–54 ($n = 9$ newly diagnosed)	Interviews conducted post diagnosis	High		Day to Day impact
<i>ADHD</i>						
Able et al. (2007)	United States	Adults ($n = 752$ undiagnosed)	Screening through telephone survey, using the Adult ADHD Self Report Scale (ASRS)	High	Comparison between an undiagnosed, diagnosed and control group. The undiagnosed group demonstrated higher rates of: Depression Drinking Lower educational attainment Greater emotional and interpersonal difficulties. Lower quality of life	Health Offending behavior Day to Day impact
Bitter et al. (2019)	Czech republic and Hungary	Psychiatric adults inpatients ($n = 708$ undiagnosed)	Screening through ASRS plus clinical interviews	High	The study aimed to estimate the prevalence of undiagnosed ADHD in adults in psychiatric services 9.27% of patients were undiagnosed with ADHD and met diagnostic criteria As well as having psychiatric disorders, this group was more likely to commit suicide	Health

(continued)

Table 1. (continued)

Reference	Country	Population of interest and sample size	Method used for diagnosis/screening	Quality rating	Synopsis of findings	Themes
Buitelaar and Ferdinand (2016)	Netherlands	Criminal male adults aged 18 to 51 ($n = 59$ undiagnosed)	DSM IV self-report questionnaire plus clinical interview. Questionnaire was completed by patients and parents/partners	High	The study aimed to assess if adults with ADHD in a forensic sample had received a diagnosis 59 out of 106 adults had ADHD but had not received a diagnosis A high proportion of criminal adults have undiagnosed ADHD Adults newly diagnosed were More likely to be older More likely to have an inattentive subtype More likely to have received care for mental health 12% of substance used disorder patients had undiagnosed ADHD Those individuals had Higher impairments across several domains of daily life (work, money management, education, social interactions, driving and relationships) Higher rates of substance abuse and alcohol consumption Higher rates of suicide attempts and depression	Health Offending behavior
Huntley et al. (2012)	United Kingdom	Alcohol and drug adult inpatients ($n = 226$)	DSM IV self-report questionnaire plus clinical interviews	High	Higher rates of substance abuse and alcohol consumption Higher rates of suicide attempts and depression This study aimed to estimate the prevalence of undiagnosed ADHD amongst drug users 35% of the participants screened positive for adult ADHD but had not received a diagnosis. This group had: Earlier initiation of substance use Higher frequency of substance use Greater likelihood of dependence and of having received previous treatment Fewer years of education Earlier initiation of tobacco use Higher rates of mental health diagnosis 62% of the group met diagnostic criteria for ADHD High rate of alcohol misuse in undiagnosed ADHD The group also had: Higher chances of smoking Fewer years of education	Health Offending behavior Day to Day impact
Kaye et al. (2013)	Australia	Illicit psychostimulant adult users ($n = 269$)	Screening through ASRS and structured interviews	Moderate	Higher rates of substance abuse and alcohol consumption Higher rates of suicide attempts and depression This study aimed to estimate the prevalence of undiagnosed ADHD amongst drug users 35% of the participants screened positive for adult ADHD but had not received a diagnosis. This group had: Earlier initiation of substance use Higher frequency of substance use Greater likelihood of dependence and of having received previous treatment Fewer years of education Earlier initiation of tobacco use Higher rates of mental health diagnosis 62% of the group met diagnostic criteria for ADHD High rate of alcohol misuse in undiagnosed ADHD The group also had: Higher chances of smoking Fewer years of education	Offending behavior Day to Day impact
Kumar et al. (2018)	India	Alcohol dependant male adults aged 18–60 ($n = 50$)	Screening through ASRS diagnosis was confirmed by (DSM-5) criteria for adult ADHD and confirmed cases were subjected to ADHD-Rating Scale-IV (ADHD-RS-IV) to assess the severity of symptoms.	High	Higher rates of substance abuse and alcohol consumption Higher rates of suicide attempts and depression This study aimed to estimate the prevalence of undiagnosed ADHD amongst drug users 35% of the participants screened positive for adult ADHD but had not received a diagnosis. This group had: Earlier initiation of substance use Higher frequency of substance use Greater likelihood of dependence and of having received previous treatment Fewer years of education Earlier initiation of tobacco use Higher rates of mental health diagnosis 62% of the group met diagnostic criteria for ADHD High rate of alcohol misuse in undiagnosed ADHD The group also had: Higher chances of smoking Fewer years of education	Offending behavior Day to Day impact

(continued)

Table 1. (continued)

Reference	Country	Population of interest and sample size	Method used for diagnosis/screening	Quality rating	Synopsis of findings	Themes
Kuzmickaitė et al. (2019)	Lithuania	Young adult male prisoners ($n = 100$)	Screening through ASRS and the Wender Utah Rating Scale (WURS).	High	17% of the prisoners met ADHD diagnosis criteria and had not received a previous diagnosis This group had: More substance misuse More psychiatric diagnoses and psychopharmacological treatments Higher sleep disorder Higher phobic anxiety	Health Offending behavior
Levin et al. (1998)	United states	Cocaine adult users ($n = 281$)	Interviews with two trained interviewers. PRS was used, a modification of the Conners' Teacher's Rating Scale and Abbreviated Scale	Moderate	12% of the sample met diagnostic criteria for ADHD without previous diagnosis Aside for regularly misusing drugs, those participants were more likely to have: A history of conduct and antisocial disorder Fewer years of education Lower yearly income	Offending behavior
Ludrer et al. (2020)	Germany	Alcohol-dependant adults ($n = 415$)	Diagnostic Interview for ADHD in Adults (DIVA) conducted by two medical doctors	High	20.5% of inpatients with alcohol dependence met ADHD diagnostic criteria and had not received a diagnosis This groups was: More likely to use illicit substances More likely to have earlier alcohol dependence and more severe	Offending behavior Day to Day impact
Maxson et al. (2009)	United States	Children admitted to hospital aged 6–12 ($n = 200$)	Screening through the NICHQ Vanderbilt Attention-Deficit/Hyperactivity Disorder Parent Rating Scale (VADPRS)	High	The study looked at the prevalence of ADHD between two groups of children admitted to hospital. One with specific injury mechanisms and one with appendicitis. The injured patient group was 3.25 times more likely to screen positive for ADHD Among the patients who screened positive for ADHD 66% had not received a diagnosis	Health
McAweeney et al. (2010)	United States	Adults with substance abuse ($n = 87$)	Screening through ASRS	High	43.68% of adults admitted to a public funded 28-day residential treatment program screened positive for ADHD without previous diagnosis	Offending behavior

(continued)

Table 1. (continued)

Reference	Country	Population of interest and sample size	Method used for diagnosis/screening	Quality rating	Synopsis of findings	Themes
Naya et al. (2021)	Japan	Adults (<i>n</i> = 9,643)	Screening through ASRS	High	Of the total sample 539 screened positive for ADHD but had not received a diagnosis This group was: Less likely to be married Less likely to have completed university Lower household income More absenteeism at work and more activity impairment at work More hospitalizations and doctors visits More likely to be alcoholics The undiagnosed group reported: Higher coexistence of mental comorbidities More sleep problems More physical comorbidities	Health Offending behavior Day to Day impact
Okumura et al. (2021)	Japan	Children aged 10–12 (<i>n</i> = 2,945)	ADHD symptoms were assessed using the parent-rated five-item Strengths and Difficulties Questionnaire (SDQ)-hyperactivity/inattention subscale	High	Of the sample 91 children screened positive for ADHD and had not received a diagnosis The presence of undiagnosed ADHD was significantly associated with: Worse psychosocial functioning Lower self-esteem Higher depression Higher emotional symptoms and conduct problems Higher peer relationship problems Higher risk of self-harm	Health Offending behavior Day to Day impact
Wood et al. (2021)	United states	Young adults college students (<i>n</i> = 38 undiagnosed)	Screening through the Barkley Adult ADHD Rating Scale-IV (BAARS-IV)	High	This study compared the psychological profile of students with an ADHD diagnosis, control without ADHD and students without a diagnosis with above-threshold ADHD symptoms The group of undiagnosed ADHD but with high traits had: Higher rates of anxiety and depression Higher rates of impairments and procrastination	Health Day to Day impact

Substance Abuse. Substance abuse is one of the main reported impacts of undiagnosed ADHD with nine studies highlighting this link (Able et al., 2007; Huntley et al., 2012; Kaye et al., 2013; Kumar et al., 2018; Kuzmickaitė et al., 2019; Levin et al., 1998; Luderer et al., 2020; McAweeney et al., 2010; Naya et al., 2021), including alcohol, drug and tobacco use. Undiagnosed ADHD was strongly related to alcohol problems (Able et al., 2007; Huntley et al., 2012; Kumar et al., 2018; Luderer et al., 2020; Naya et al., 2021). Luderer et al. (2020) showed that 20% of inpatients with alcohol dependence met ADHD diagnostic criteria and had never received a diagnosis. This group was also more likely to use illicit substances and have earlier and more severe alcohol dependence. Drug abuse was also strongly prevalent (Huntley et al., 2012; Kaye et al., 2013; Kuzmickaitė et al., 2019; Levin et al., 1998; Luderer et al., 2020; McAweeney et al., 2010). McAweeney et al. (2010) found that 43% of adults admitted to a residential substance abuse program had undiagnosed ADHD. In an Australian sample of illicit psychostimulant users, 35% of participants screened positive for ADHD but had not received a diagnosis (Kaye et al., 2013). This group also had earlier initiation and higher frequency of substance use as well as greater likelihood of dependence. Tobacco was also linked to undiagnosed ADHD (Kumar et al., 2018), with earlier initiation of tobacco use compared with control and diagnosed group (Kaye et al., 2013).

Crime, Prison, and Antisocial Behavior. Two studies demonstrated a link between undiagnosed ADHD and criminal behavior leading to imprisonment (Buitelaar & Ferdinand, 2016; Kuzmickaitė et al., 2019). In a forensic sample of adult males, over half of the sample of criminal adults had undiagnosed ADHD (Buitelaar & Ferdinand, 2016). In a Lithuanian prison sample of young male adults, 17% of the prisoners met ADHD diagnostic criteria but had not received a diagnosis (Kuzmickaitė et al., 2019). Undiagnosed ADHD was also linked to conduct and antisocial disorder (Levin et al., 1998) and conduct problems (Okumura et al., 2021).

Day-to-Day Impact

Finally, undiagnosed ADHD had broader impacts on day-to-day activities such as driving, education, work and relationships. Many studies highlighted the impact undiagnosed ADHD had on education and working life with a consistent finding of fewer years of education (Able et al., 2007; Huntley et al., 2012; Kaye et al., 2013; Kumar et al., 2018; Levin et al., 1998; Naya et al., 2021) and lower yearly income (Levin et al., 1998; Naya et al., 2021). Higher rates of functional impairments (such as relationships, self-care, money management, social interactions) and procrastination were also observed (Wood et al., 2021). Naya et al. (2021) showed that adults with undiagnosed ADHD were

less likely to have completed University, had lower household income, had more absenteeism at work and were more impaired in work-related activities. Additionally, undiagnosed adults with ADHD had more difficulties with money management and were more prone to careless driving (Huntley et al., 2012). Undiagnosed ADHD led to greater social and relationship difficulties. Higher rate of impairments in social interactions and relationship were observed (Huntley et al., 2012) with greater interpersonal difficulties (Able et al., 2007).

ASD

Only three studies were identified on ASD. These studies covered topics from the three key themes discussed above and related more specifically to mental health, social difficulties and aggressive behavior.

Similarly to the studies on ADHD, in an ASD referral clinic, adolescents with undiagnosed ASD presented with higher rates of depression, anxiety and psychotic symptoms (Aggarwal & Angus, 2015), the most common presentation being depressive symptoms.

Undiagnosed ASD was also linked to feeling like you are different. A group of late diagnosed older adults explained that living with undiagnosed ASD created social and relationship concerns (Stagg & Belcher, 2019). This group also received treatment for anxiety and depression throughout most of their lives. Finally, a review of health records showed that children with undiagnosed ASD were more likely to be aggressive, argumentative and have behavioral difficulties at an early age (Hill et al., 2021).

Discussion

This review highlights many impacts and risks associated with ASD/ADHD, impacting the individuals but also healthcare, social, and forensic systems. These risks have been aggregated into three key themes encompassing health related risks, the links to offending behaviors and the impacts on daily activities. The most prominent finding across studies related to the impact of a lack of diagnosis on mental health, substance abuse and education/work. While these themes were linked to both conditions, it is important to note that so few studies had been published on undiagnosed ASD that, with only three studies on ASD, we cannot generalize our findings across ASD and this discussion will primarily focus on ADHD.

The health risks related both to mental and physical health. Physical health comorbidities were reported less than mental health and mainly linked to increased visits to healthcare professionals or services and increased injury and accidents. This finding is significant as unintentional injury is the leading cause of mortality among children between the ages of 1 and 14 years in the United States

(Runyan et al., 2005). Numerous studies have shown that children and adults with ADHD have a higher frequency of injuries compared to controls (Adeyemo et al., 2014; Brunkhorst-Kanaan et al., 2021) and children are more likely to sustain severe injuries (DiScala et al., 1998). Therefore, it is important to highlight that a significant proportion of children accessing emergency services could be at risk of ADHD, but undiagnosed, and children with a frequent history of accidents or presentation at emergency services could benefit from being screened for ADHD.

The mental health risks linked with ADHD were the most recurrent finding across studies. Even studies not directly looking at mental health outcomes, consistently found negative impacts of lack of diagnosis on mental health (e.g., through medical record screening). The most common mental health reported difficulties were depression and anxiety but also included psychiatric inpatient admissions and suicidality. These mirror previous findings on the impact of lack of diagnosis on mental health (Able et al., 2007; Howlin & Magiati, 2017). In a recent review of an Icelandic ADHD clinic, Ómarsdóttir et al. (2021) found that adults referred to an ADHD clinic more often met diagnostic criteria for dysthymia, agoraphobia and generalized anxiety, and were more likely to be diagnosed with two or more comorbid disorders prior to their ADHD diagnosis. A national American survey also demonstrated that untreated adult ADHD was highly comorbid with many other DSM-IV disorders and substantial impairment (Kessler et al., 2006). Previous studies have also highlighted correlations between suicidal ideations and ADHD symptomology (mainly undiagnosed - Huemer et al., 2016; James et al., 2004). While there was only limited evidence of mental health risks in ASD in the current study, previous studies have also reported a strong link between undiagnosed ASD, suicidality and psychiatric disorders (Cassidy & Rodgers, 2017; L. Nylander & Gillberg, 2001) as well as with depression and anxiety (Stewart et al., 2006). These studies were not included in the review as they did not meet inclusion criteria (the results between undiagnosed and diagnosed not being separated). Mental health clinicians should routinely consider ASD/ADHD in patients experiencing these difficulties.

Offending behaviors including imprisonment, aggression, criminality, and substance abuse were also a key theme from this review. These results reflect findings from many studies which have shown that high rates of prisoners have undiagnosed/untreated ADHD (Appelbaum, 2008; Ginsberg et al., 2013). ADHD is highly prevalent in prison, in comparison to prevalence rates in the general population. A recent meta-analysis of 42 studies indicated a fivefold higher prevalence of ADHD in young forensic populations (30.1%) and adult ADHD in UK prisoners is 10 times higher (26.2%) than the general population (Young et al., 2015). Additionally, untreated ADHD has been associated

with poorer social function outcomes, highlighting the importance of treatment (Harpin et al., 2016). Our analyses also highlighted the relationship to substance abuse, with over half of the studies mentioning some form of substance misuse. Substance abuse included alcohol, drug and tobacco abuse. Previous studies have shown that the estimated prevalence of ADHD amongst adults with substance use disorders is over 20% (van Emmerik-van Oortmerssen et al., 2012). In our studies looking at undiagnosed ADHD, the numbers were much higher ranging from 20% (Luderer et al., 2020), 35% (Kaye et al., 2013) to 43% (McAweeney et al., 2010), suggesting that lack of diagnosis may further increase risk of substance abuse amongst those with ADHD symptoms. Plausible explanations for this could be the self-medication of ADHD symptoms with drugs or alcohol, or ADHD-related impairments in social functioning that can cause social marginalization, leading to involvement in more “deviant” behaviors like drug use (Kollins, 2007). Kaye et al. (2013) demonstrated that the strongest predictors of substance abuse in those undiagnosed were an earlier onset of tobacco use and a greater extent of past polydrug use. ADHD in adults with substance use disorder has been shown to have a negative impact on treatment efficacy and treatment retention (Wilens & Morrison, 2011) and is associated with a more severe course of substance use (Moura et al., 2013), highlighting the importance of having an ADHD diagnosis in substance abuse treatment. Additionally, long-term treatment of ADHD medication such as methylphenidate has been shown to reduce risks of substance misuse (Krinzinger et al., 2019). Routinely considering undiagnosed ADHD in substance abuse clinics as well as prison healthcare settings is therefore of utmost importance.

The day-to-day impact of undiagnosed ASD/ADHD included many risks across different settings. These encompassed social difficulties and difficulties in relationships, difficulties with money, education and work as well as driving. Undiagnosed ADHD was consistently linked to lower income and lower educational attainment. While this impact was not researched directly in any of the studies, six studies demonstrated this as a key additional finding through demographic questionnaires. While these findings mirror current knowledge on the relationship between ADHD and lower educational outcomes (Daley & Birchwood, 2010; Gordon & Fabiano, 2019), our review adds that in a comparison between groups of adults who were either undiagnosed, diagnosed or whose symptoms were controlled by treatment, educational outcomes were worse for the undiagnosed group than the other two groups (Able et al., 2007). Early diagnosis is of utmost importance for improving educational outcomes, most specifically as treated ADHD shows better academic outcomes in comparison to untreated ADHD (Arnold et al., 2020). The impact of lack of diagnosis on relationships and interpersonal difficulties was demonstrated for both ASD/

ADHD groups. The feeling of “being an alien, being different” (Able et al., 2007; Stagg & Belcher, 2019) echoes many studies with implications for psychological and psychosocial functioning (Okumura et al., 2021). Peer relationships are often difficult for children and adults with ASD/ADHD (Gardner & Gerdes, 2015; Wood-Downie et al., 2021) and many learn to mask and develop strategies to facilitate social interactions (Miller et al., 2021; Young, 2005). Receiving a diagnosis in adulthood carries many positive consequences, in part being able to explain this feeling of “being different” (Hansson Halleröd et al., 2015). Our findings support previous studies (Harpin et al., 2016) which have shown that a lack of diagnosis creates worse social impairment for ASD/ADHD individuals. Finally, our results highlights the relationship between ADHD and driving. ADHD has been linked to more risky driving behavior (Thompson et al., 2007) and more driving accidents (Fischer et al., 2007), and our study demonstrates the impact of this when ADHD remains undiagnosed.

This review demonstrates that the risks associated with undiagnosed ASD/ADHD are significant, greatly impairing and need to be taken seriously. While the rates of ASD/ADHD diagnosis has increased in the past decade (Kooij et al., 2019; Russell et al., 2022) and the awareness of these conditions has changed and improved, many millions of individuals remain undiagnosed. Many studies have highlighted the benefits of early diagnosis and early treatment in reducing some of the mental health harms from undiagnosed ASD/ADHD (Koegel et al., 2014; Krinzinger et al., 2019), reinforcing the importance of early identification. This review highlights how damaging this lack of diagnosis can be and the impact it has on many aspects of life, principally on mental wellbeing and the likelihood of substance abuse.

Strength and Limitations

This review contains some strength and limitations. To the authors’ knowledge, this is the only review that has attempted to establish the specific risks and impacts arising from a lack of ASD/ADHD diagnosis. This review included all studies looking specifically at this topic, regardless of age group and the limited number of included studies suggest that this is an under-researched or difficult to study topic. The main limitation of this review is the small number of studies on ASD. Despite the similarity of topics between the ASD studies and the ADHD studies, with only three included studies on ASD, it is not possible to generalize or indeed differentiate the findings across disorders. While most studies conducted a thorough assessment of ASD/ADHD as part of their methodology (including but not limited to interviews and questionnaires), a few relied solely on screening questionnaires. While these may give a strong inclination of individuals having ASD/ADHD, they are limiting as no official diagnosis process was performed. Similarly, our search criteria aimed to specifically identify

groups of “undetected,” “undiagnosed” and “unrecognized” ASD/ADHD. Studies which might have used different terminology would not have been captured by our search or identified in our review of titles, abstract or keywords. This was intentional to limit the number of non-relevant studies or studies where undiagnosed ASD/ADHD was not a key focus, however this may explain the limited number of ASD relevant studies, as many studies tended to assess autistic traits across a whole population, rather than identify a specific group of undiagnosed autistic people. Additionally, a few studies on undiagnosed ASD were excluded due to a lack of separate report of the findings which prevented us to draw conclusions on this population.

Recommendations

A few recommendations can be made from this review, both on the clinical and research impacts of the findings. Understanding the psychosocial burden of undiagnosed ASD/ADHD will help teachers, clinicians, and policy makers pay more attention to the consequences of under-diagnosis of these conditions. Due to the high rate of undiagnosed ADHD in specific healthcare services such as emergency services (for accidents and injuries), psychiatric services (for mental health related risks) and forensic services (for substance misuse and prisons), it would be advisable that healthcare professionals in these settings regularly screen for potential ADHD, using standardized screening measures such as the adult ADHD self-report scale (ASRS- Kessler et al., 2005) or the Conners’ adult ADHD rating scale (CAARS-Conners et al., 1999). ASD/ADHD presented with strong relationships with mental health issues such as depression and anxiety and clinicians working in psychiatric settings should routinely consider screening for these conditions in children and adults regardless of the reason for referral. In cases of no childhood ASD/ADHD identification, clinicians should carefully assess impairment, psychiatric history, and substance use before treating potential adults with ADHD. Future research should also focus more on understanding the impacts of undiagnosed ASD/ADHD. With only three studies on ASD and fourteen on ADHD, this topic is highly under-researched. More specifically, as many ASD studies historically have looked at traits of ASD in the population, we suggest that future ASD research should look more specifically at undiagnosed ASD to address the lack of knowledge around the risks associated with it. As we have established the worsen impacts of lack of diagnosis, more research should focus on studying this particular group.

Acknowledgments

We would like to acknowledge the great support of Naomi Thorpe, Senior Information Specialist, Library & Knowledge Services, Nottinghamshire Healthcare NHS Foundation Trust in helping to develop the search strategy.

Authors Contributions

BF wrote the manuscript. BF and SC were the main reviewers for the study selection and the main investigators for data extraction, critical appraisal, and synthesis. DD and MG were final reviewers of the process and mitigated cases of disagreements. All authors contributed to the manuscript.

Declaration of Conflicting Interests

The author(s) declared the following potential conflicts of interest with respect to the research, authorship, and/or publication of this article: Prof Daley reports grants, personal fees and non-financial support from Takeda, personal fees and non-financial support from Medice, personal fees and non-financial support from Eli Lilly. Dr French reports personal fees and nonfinancial support from Takeda and Medice. Dr Groom and Dr Cassidy reports no conflicts of interest.

Funding

The author(s) disclosed receipt of the following financial support for the research, authorship, and/or publication of this article: Funding for this study was provided by ESRC New Investigator Grant ES/X000141/1. ESRC had no role in the study design, collection, analysis or interpretation of the data, writing the manuscript, or the decision to submit the paper for publication.

Systematic Review Registration

This review is registered with the International Prospective Register of Systematic Reviews (PROSPERO) (355458).

ORCID iD

Blandine French  <https://orcid.org/0000-0002-9395-5919>

Supplemental Material

Supplemental material for this article is available online.

References

- Able, S. L., Johnston, J. A., Adler, L. A., & Swindle, R. W. (2007). Functional and psychosocial impairment in adults with undiagnosed ADHD. *Psychological Medicine*, 37(1), 97–107. <https://doi.org/10.1017/S0033291706008713>
- Adeyemo, B. O., Biederman, J., Zafonte, R., Kagan, E., Spencer, T. J., Uchida, M., Kenworthy, T., Spencer, A. E., & Faraone, S. V. (2014). Mild traumatic brain injury and ADHD: A systematic review of the literature and meta-analysis. *Journal of Attention Disorders*, 18(7), 576–584. <https://doi.org/10.1177/1087054714543371>
- Aggarwal, S., & Angus, B. (2015). Misdiagnosis versus missed diagnosis: Diagnosing autism spectrum disorder in adolescents. *Australasian Psychiatry*, 23(2), 120–123. <https://doi.org/10.1177/1039856214568214>
- American Psychiatric Association. (2013). *Diagnostic and statistical manual of mental disorders* (5th ed.). <https://doi.org/10.1176/appi>
- Anastopoulos, A. D., Sommer, J. L., & Schatz, N. K. (2009). ADHD and family functioning. *Current Attention Disorders Reports*, 1(4), 167–170. <https://doi.org/10.1007/s12618-009-0023-2>
- Appelbaum, K. L. (2008). Assessment and treatment of correctional inmates with ADHD. *American Journal of Psychiatry*, 165(12), 1520–1524. <https://doi.org/10.1176/appi.ajp.2008.08060849>
- Arnold, L. E., Hodgkins, P., Kahle, J., Madhoo, M., & Kewley, G. (2020). Long-term outcomes of ADHD: Academic Achievement and Performance. *Journal of Attention Disorders*, 24(1), 73–85. <https://doi.org/10.1177/1087054714566076>
- Asherson, P., Akehurst, R., Kooij, J. J., Huss, M., Beusterien, K., Sasané, R., Gholizadeh, S., & Hodgkins, P. (2012). Under diagnosis of adult ADHD: Cultural influences and Societal Burden. *Journal of Attention Disorders*, 16(5 Suppl), 20S–38S. <https://doi.org/10.1177/1087054711435360>
- Au-Yeung, S. K., Bradley, L., Robertson, A. E., Shaw, R., Baron-Cohen, S., & Cassidy, S. (2019). Experience of mental health diagnosis and perceived misdiagnosis in autistic, possibly autistic and non-autistic adults. *Autism*, 23(6), 1508–1518. <https://doi.org/10.1177/1362361318818167>
- Bargiela, S., Steward, R., & Mandy, W. (2016). The experiences of late-diagnosed women with autism spectrum conditions: An investigation of the female autism phenotype. *Journal of Autism and Developmental Disorders*, 46(10), 3281–3294. <https://doi.org/10.1007/s10803-016-2872-8>
- Barry, T. D., Lyman, R. D., & Klinger, L. G. (2002). Academic underachievement and attention-Deficit/hyperactivity disorder: The negative impact of symptom severity on school performance. *Journal of School Psychology*, 40(3), 259–283. [https://doi.org/10.1016/s0022-4405\(02\)00100-0](https://doi.org/10.1016/s0022-4405(02)00100-0)
- Bishop-Fitzpatrick, L., Mazefsky, C. A., & Eack, S. M. (2018). The combined impact of social support and perceived stress on quality of life in adults with autism spectrum disorder and without intellectual disability. *Autism*, 22(6), 703–711. <https://doi.org/10.1177/1362361317703090>
- Bisset, M., Winter, L., Middeldorp, C. M., Coghill, D., Zendarski, N., Bellgrove, M. A., & Sciberras, E. (2022). Recent attitudes toward ADHD in the broader community: A Systematic Review. *Journal of Attention Disorders*, 26(4), 537–548. <https://doi.org/10.1177/10870547211003671>
- Bitter, I., Mohr, P., Balogh, L., Látalová, K., Kakuszi, B., Stopková, P., Zmeškalová-Jelenová, D., Pulay, A., & Czobor, P. (2019). ADHD: A hidden comorbidity in adult psychiatric patients. *Attention Deficit and Hyperactivity Disorders*, 11(1), 83–89. <https://doi.org/10.1007/s12402-019-00285-9>
- Bradley, L., Shaw, R., Baron-Cohen, S., & Cassidy, S. (2021). Autistic Adults' experiences of camouflaging and its perceived impact on Mental Health. *Autism in adulthood*, 3(4), 320–329. <https://doi.org/10.1089/aut.2020.0071>
- Brugha, T. S., Spiers, N., Bankart, J., Cooper, S.-A., McManus, S., Scott, F. J., Smith, J., & Tyrer, F. (2016). Epidemiology of autism in adults across age groups and ability levels. *The British Journal of Psychiatry*, 209(6), 498–503. <https://doi.org/10.1192/bjp.bp.115.174649>
- Brunkhorst-Kanaan, N., Libutzki, B., Reif, A., Larsson, H., McNeill, R. V., & Kittel-Schneider, S. (2021). ADHD and accidents over the life span – A systematic review. *Neuroscience and Biobehavioral Reviews*, 125, 582–591. <https://doi.org/10.1016/j.neubiorev.2021.02.002>

- Buitelaar, N. J., & Ferdinand, R. F. (2016). ADHD undetected in criminal adults. *Journal of Attention Disorders*, 20(3), 270–278. <https://doi.org/10.1177/1087054712466916>
- Bursch, B., Ingman, K., Vitti, L., Hyman, P., & Zeltzer, L. K. (2004). Chronic pain in individuals with previously undiagnosed autistic spectrum disorders. *Journal of Pain*, 5(5), 290–295. <https://doi.org/10.1016/j.jpain.2004.04.004>
- Camm-Crosbie, L., Bradley, L., Shaw, R., Baron-Cohen, S., & Cassidy, S. (2019). People like me don't get support': Autistic adults' experiences of support and treatment for mental health difficulties, self-injury and suicidality. *Autism*, 23(6), 1431–1441. <https://doi.org/10.1177/1362361318816053>
- Cassidy, S., Au-Yeung, S., Robertson, A., Cogger-Ward, H., Richards, G., Allison, C., Bradley, L., Kenny, R., O'Connor, R., Mosse, D., Rodgers, J., & Baron-Cohen, S. (2022). Autism and autistic traits in those who died by suicide in England. *The British Journal of Psychiatry*, 221(5), 683–691. <https://doi.org/10.1192/bjp.2022.21>
- Cassidy, S., & Rodgers, J. (2017). Understanding and prevention of suicide in autism. *The Lancet Psychiatry*, 4(6), e11. [https://doi.org/10.1016/S2215-0366\(17\)30162-1](https://doi.org/10.1016/S2215-0366(17)30162-1)
- Chang, Z., Lichtenstein, P., & Larsson, H. (2012). The effects of childhood ADHD symptoms on early-onset substance use: A Swedish Twin Study. *Journal of Abnormal Child Psychology*, 40(3), 425–435. <https://doi.org/10.1007/s10802-011-9575-6>
- Charman, T., Jones, C. R., Pickles, A., Simonoff, E., Baird, G., & Happé, F. (2011). Defining the cognitive phenotype of autism. *Brain Research*, 1380, 10–21. <https://doi.org/10.1016/j.brainres.2010.10.075>
- Chronis-Tuscano, A., Raggi, V. L., Clarke, T. L., Rooney, M. E., Diaz, Y., & Pian, J. (2008). Associations between maternal attention-deficit/hyperactivity disorder symptoms and parenting. *Journal of Abnormal Child Psychology*, 36(8), 1237–1250. <https://doi.org/10.1007/s10802-008-9246-4>
- Coker, T. R., Elliott, M. N., Toomey, S. L., Schwebel, D. C., Cuccaro, P., Tortolero Emery, S., Davies, S. L., Visser, S. N., & Schuster, M. A. (2016). Racial and ethnic disparities in ADHD diagnosis and treatment. *Pediatrics*, 138(3), e20160407. <https://doi.org/10.1542/peds.2016-0407>
- Coll, C. G., Crnic, K., Lamberty, G., Wasik, B. H., Jenkins, R., Garcia, H. V., & McAdoo, H. P. (1996). An integrative model for the Study of developmental competencies in minority children. *Child Development*, 67(5), 1891–1914. <https://doi.org/10.1111/j.1467-8624.1996.tb01834.x>
- Conners, C. K., Erhardt, D., Epstein, J. N., Parker, J. D. A., Sitarenios, G., & Sparrow, E. (1999). Self-ratings of ADHD symptoms in adults I: Factor structure and normative data. *Journal of Attention Disorders*, 3(3), 141–151. <https://doi.org/10.1177/108705479900300303>
- Daley, D., & Birchwood, J. (2010). ADHD and academic performance: Why does ADHD impact on academic performance and what can be done to support ADHD children in the classroom? *Child Care Health and Development*, 36(4), 455–464. <https://doi.org/10.1111/j.1365-2214.2009.01046.x>
- Daly, B. P., Nicholls, E. G., Patrick, K. E., Brinckman, D. D., & Schultheis, M. T. (2014). Driving behaviors in adults with autism spectrum disorders. *Journal of Autism and Developmental Disorders*, 44, 3119–3128. <https://doi.org/10.1007/s10803-014-2166-y>
- Danckaerts, M., Sonuga-Barke, E. J., Banaschewski, T., Buitelaar, J., Döpfner, M., Hollis, C., Santosh, P., Rothenberger, A., Sergeant, J., Steinhausen, H.-C., Taylor, E., Zuddas, A., & Coghill, D. (2010). The quality of life of children with attention deficit/hyperactivity disorder: A systematic review. *European Child & Adolescent Psychiatry*, 19(2), 83–105. <https://doi.org/10.1007/s00787-009-0046-3>
- Dickter, C. L., Burk, J. A., Zeman, J. L., & Taylor, S. C. (2020). Implicit and explicit attitudes toward autistic adults. *Autism in adulthood*, 2(2), 144–151. <https://doi.org/10.1089/aut.2019.0023>
- DiScala, C., Lescohier, I., Barthel, M., & Li, G. (1998). Injuries to children with attention deficit hyperactivity disorder. *Pediatrics*, 102(6), 1415–1421. <https://doi.org/10.1542/peds.102.6.1415>
- DuPaul, G. J., Weyandt, L. L., & Janusis, G. M. (2011). ADHD in the classroom: Effective intervention strategies. *Theory Into Practice*, 50(1), 35–42. <https://doi.org/10.1080/00405841.2011.534935>
- Estes, A., Rivera, V., Bryan, M., Cali, P., & Dawson, G. (2011). Discrepancies between academic achievement and intellectual ability in higher-functioning school-aged children with autism spectrum disorder. *Journal of Autism and Developmental Disorders*, 41, 1044–1052. <https://doi.org/10.1007/s10803-010-1127-3>
- Faraone, S. V., Banaschewski, T., Coghill, D., Zheng, Y., Biederman, J., Bellgrove, M. A., Newcorn, J. H., Gignac, M., Al Saud, N. M., Manor, I., Rohde, L. A., Yang, L., Cortese, S., Almagor, D., Stein, M. A., Albatti, T. H., Aljoudi, H. F., Alqahtani, M. M. J., Asherson, P., . . . Wang, Y. (2021). The World Federation of ADHD International Consensus Statement: 208 Evidence-based conclusions about the disorder. *Neuroscience and Biobehavioral Reviews*, 128, 789–818. <https://doi.org/10.1016/j.neubiorev.2021.01.022>
- Fayyad, J., Sampson, N. A., Hwang, I., Adamowski, T., Aguilar-Gaxiola, S., Al-Hamzawi, A., Andrade, L. H. S. G., Borges, G., de Girolamo, G., Florescu, S., Gureje, O., Haro, J. M., Hu, C., Karam, E. G., Lee, S., Navarro-Mateu, F., O'Neill, S., Pennell, B.-E., Piazza, M., . . . Kessler, R. C.; on behalf of the WHO World Mental Health Survey Collaborators. (2017). The descriptive epidemiology of DSM-IV adult ADHD in the World Health Organization World Mental Health Surveys. *ADHD Attention Deficit and Hyperactivity Disorders*, 9(1), 47–65. <https://doi.org/10.1007/s12402-016-0208-3>
- Fischer, M., Barkley, R. A., Smallish, L., & Fletcher, K. (2007). Hyperactive children as young adults: Driving abilities, safe driving behavior, and adverse driving outcomes. *Accident Analysis and Prevention*, 39(1), 94–105. <https://doi.org/10.1016/j.aap.2006.06.008>
- Folgar, M. I., Golpe, S., Requeijo, M. O., Ayesta, J. A., & Salgado, P. G. (2018). Tobacco use and self-esteem in adolescents with and without attention deficit disorder with hyperactivity (ADHD): Proposals for better prevention. *Revista Espanola de Drogodependencias*, 43(4), 69–82.
- French, B., Sayal, K., & Daley, D. (2019). Barriers and facilitators to understanding of ADHD in primary care: A mixed-method systematic review. *European Child & Adolescent Psychiatry*, 28, 1037–1064. <https://doi.org/10.1007/s00787-018-1256-3>

- Frith, U., & Mira, M. (1992). Autism and Asperger syndrome. *Focus on Autistic Behavior*, 7(3), 13–15. <https://doi.org/10.1177/108835769200700302>
- Gardner, D. M., & Gerdes, A. C. (2015). A review of peer relationships and friendships in youth with ADHD. *Journal of Attention Disorders*, 19(10), 844–855. <https://doi.org/10.1177/1087054713501552>
- Gillberg, C., & Soderstrom, H. (2003). Learning disability. *Lancet*, 362(9386), 811–821. [https://doi.org/10.1016/s0140-6736\(03\)14275-4](https://doi.org/10.1016/s0140-6736(03)14275-4)
- Ginsberg, Y., Beusterien, K. M., Amos, K., Jousselin, C., & Asherson, P. (2014). The unmet needs of all adults with ADHD are not the same: A focus on Europe. *Expert Review of Neurotherapeutics*, 14(7), 799–812. <https://doi.org/10.1586/14737175.2014.926220>
- Ginsberg, Y., Långström, N., Larsson, H., & Lichtenstein, P. (2013). ADHD and criminality: Could treatment benefit prisoners with ADHD who are at higher risk of reoffending? *Expert Review of Neurotherapeutics*, 13, 345–348. <https://doi.org/10.1586/ern.13.22>
- Ginsberg, Y., Quintero, J., Anand, E., Casillas, M., & Upadhyaya, H. P. (2014). Underdiagnosis of attention-deficit/hyperactivity disorder in Adult Patients: A review of the literature. *The Primary Care Companion for CNS Disorders*, 16(3), PCC.13r01600. <https://doi.org/10.4088/PCC.13r01600>
- Gordon, C. T., & Fabiano, G. A. (2019). The transition of youth with ADHD into the workforce: Review and future directions. *Clinical Child and Family Psychology Review*, 22(3), 316–347. <https://doi.org/10.1007/s10567-019-00274-4>
- Groom, M. J., van Loon, E., Daley, D., Chapman, P., & Hollis, C. (2015). Driving behaviour in adults with attention deficit/hyperactivity disorder. *BMC Psychiatry*, 15(1), 175. <https://doi.org/10.1186/s12888-015-0566-y>
- Gudjonsson, G. H., Sigurdsson, J. F., Sigfusdottir, I. D., & Young, S. (2012). An epidemiological study of ADHD symptoms among young persons and the relationship with cigarette smoking, alcohol consumption and illicit drug use. *Journal of Child Psychology and Psychiatry*, 53(3), 304–312. <https://doi.org/10.1111/j.1469-7610.2011.02489.x>
- Guthrie, W., Wallis, K., Bennett, A., Brooks, E., Dudley, J., Gerdes, M., Pandey, J., Levy, S. E., Schultz, R. T., & Miller, J. S. (2019). Accuracy of autism screening in a large pediatric network. *Pediatrics*, 144(4), e20183963. <https://doi.org/10.1542/peds.2018-3963>
- Halleland, H. B., Sørensen, L., Posserud, M.-B., Haavik, J., & Lundervold, A. J. (2019). Occupational status is compromised in adults with ADHD and psychometrically defined executive function deficits. *Journal of Attention Disorders*, 23(1), 76–86. <https://doi.org/10.1177/1087054714564622>
- Hamed, A. M., Kauer, A. J., & Stevens, H. E. (2015). Why the diagnosis of attention deficit hyperactivity disorder matters. *Frontiers in Psychiatry*, 6, 168. <https://doi.org/10.3389/fpsy.2015.00168>
- Hansson Halleröd, S. L., Anckarsäter, H., Råstam, M., & Hansson Scherman, M. (2015). Experienced consequences of being diagnosed with ADHD as an adult - a qualitative study. *BMC Psychiatry*, 15(1), 31. <https://doi.org/10.1186/s12888-015-0410-4>
- Harpin, V., Mazzone, L., Raynaud, J. P., Kahle, J., & Hodgkins, P. (2016). Long-term outcomes of ADHD: A systematic review of self-esteem and social function. *Journal of Attention Disorders*, 20(4), 295–305. <https://doi.org/10.1177/1087054713486516>
- Haskins, B. G., & Silva, J. A. (2006). Asperger's disorder and criminal behavior: Forensic-psychiatric considerations. *The Journal of the American Academy of Psychiatry and the Law*, 34(3), 374–384.
- Hayes, J., Ford, T., Rafeeqe, H., & Russell, G. (2018). Clinical practice guidelines for diagnosis of autism spectrum disorder in adults and children in the UK: A narrative review. *BMC Psychiatry*, 18(1), 222. <https://doi.org/10.1186/s12888-018-1800-1>
- Hedley, D., Uljarević, M., & Hedley, D. F. E. (2017). Employment and living with autism: Personal, social and Economic Impact. In S. Halder & L. C. Assaf (Eds.), *Inclusion, disability and Culture* (pp. 295–311). Springer International Publishing.
- Hertz-Picciotto, I., & Delwiche, L. (2009). The rise in autism and the role of age at diagnosis. *Epidemiology*, 20(1), 84–90. <https://doi.org/10.1097/EDE.0b013e3181902d15>
- Hill, T. L., White, T. C., Anthony, B. J., Reaven, J., Harris, B., Reyes, N., & Anthony, L. G. (2021). Disparities in autism spectrum disorder diagnoses among 8-year-old children in Colorado: Who are we missing? *Autism*, 25(1), 102–113. <https://doi.org/10.1177/1362361320950058>
- Hodgkinson, S., Godoy, L., Beers, L. S., & Lewin, A. (2017). Improving mental health access for Low-Income children and families in the Primary Care Setting. *Pediatrics*, 139(1), e20151175. <https://doi.org/10.1542/peds.2015-1175>
- Howlin, P., & Magiati, I. (2017). Autism spectrum disorder: Outcomes in adulthood. *Current Opinion in Psychiatry*, 30, 69–76. <https://doi.org/10.1097/YCO.0000000000000308>
- Huemer, J., Riegler, A., Vökl-Kernstock, S., Wascher, A., Lesch, O. M., Walter, H., & Skala, K. (2016). The influence of reported ADHD and substance abuse on suicidal ideation in a non-clinical sample of young men. *Neuropsychiatrie*, 30(3), 131–137. <https://doi.org/10.1007/s40211-016-0198-6>
- Huntley, Z., Maltezos, S., Williams, C., Morinan, A., Hammon, A., Ball, D., Marshall, E. J., Keaney, F., Young, S., Bolton, P., Glaser, K., Howe-Forbes, R., Kuntsi, J., Xenitidis, K., Murphy, D., & Asherson, P. J. (2012). Rates of undiagnosed attention deficit hyperactivity disorder in London drug and alcohol detoxification units. *BMC Psychiatry*, 12(1), 223. <https://doi.org/10.1186/1471-244X-12-223>
- Hurt, L., Langley, K., North, K., Southern, A., Copeland, L., Gillard, J., & Williams, S. (2019). Understanding and improving the care pathway for children with autism. *International Journal of Health Care Quality Assurance*, 32(1), 208–223. <https://doi.org/10.1108/IJHCQA-08-2017-0153>
- James, A., Lai, F. H., & Dahl, C. (2004). Attention deficit hyperactivity disorder and suicide: A review of possible associations. *Acta Psychiatrica Scandinavica*, 110(6), 408–415. <https://doi.org/10.1111/j.1600-0447.2004.00384.x>
- Kaye, S., Darke, S., & Torok, M. (2013). Attention deficit hyperactivity disorder (ADHD) among illicit psychostimulant users: A hidden disorder? *Addiction*, 108(5), 923–931. <https://doi.org/10.1111/add.12086>

- Kessler, R. C., Adler, L., Ames, M., Demler, O., Faraone, S., Hiripi, E., Howes, M. J., Jin, R., Secnik, K., Spencer, T., Ustun, T. B., & Walters, E. E. (2005). The World Health Organization adult ADHD self-report scale (ASRS): A short screening scale for use in the general population. *Psychological Medicine*, 35(2), 245–256. <https://doi.org/10.1017/s0033291704002892>
- Kessler, R. C., Adler, L., Barkley, R., Biederman, J., Conners, C. K., Demler, O., Faraone, S. V., Greenhill, L. L., Howes, M. J., Secnik, K., Spencer, T., Ustun, T. B., Walters, E. E., & Zaslavsky, A. M. (2006). The prevalence and correlates of adult ADHD in the United States: Results from the National Comorbidity Survey Replication. *American Journal of Psychiatry*, 163(4), 716–723. <https://doi.org/10.1176/ajp.2006.163.4.716>
- Kittel-Schneider, S., Wolff, S., Queiser, K., Wessendorf, L., Meier, A. M., Verdenhalven, M., Brunkhorst-Kanaan, N., Grimm, O., McNeill, R., Grabow, S., Reimertz, C., Nau, C., Klos, M., & Reif, A. (2019). Prevalence of ADHD in accident victims: Results of the PRADA Study. *Journal of Clinical Medicine*, 8(10), 1643–1653. <https://doi.org/10.3390/jcm8101643> Article 10.
- Koegel, L. K., Koegel, R. L., Ashbaugh, K., & Bradshaw, J. (2014). The importance of early identification and intervention for children with or at risk for autism spectrum disorders. *International Journal of Speech-Language Pathology*, 16(1), 50–56. <https://doi.org/10.3109/17549507.2013.861511>
- Kollins, S. H. (2007). Abuse liability of medications used to treat attention-deficit/hyperactivity disorder (ADHD). *American Journal on Addictions*, 16(s1), 35–44. <https://doi.org/10.1080/10550490601082775>
- Kooij, J. J. S., Bijlenga, D., Salerno, L., Jaeschke, R., Bitter, I., Balázs, J., Thome, J., Dom, G., Kasper, S., Nunes Filipe, C., Stes, S., Mohr, P., Leppämäki, S., Casas, M., Bobes, J., McCarthy, J. M., Richarte, V., Kjemis Philipsen, A., Pehlivanidis, A., . . . Asherson, P. (2019). Updated European consensus statement on diagnosis and treatment of adult ADHD. *European Psychiatry*, 56(1), 14–34. <https://doi.org/10.1016/j.eurpsy.2018.11.001>
- Kosaka, H., Fujioka, T., & Jung, M. (2019). Symptoms in individuals with adult-onset ADHD are masked during childhood. *European Archives of Psychiatry and Clinical Neuroscience*, 269(6), 753–755. <https://doi.org/10.1007/s00406-018-0893-3>
- Krinzinger, H., Hall, C. L., Groom, M. J., Ansari, M. T., Banaschewski, T., Buitelaar, J. K., Carucci, S., Coghill, D., Danckaerts, M., Dittmann, R. W., Falissard, B., Garas, P., Inglis, S. K., Kovshoff, H., Kochhar, P., McCarthy, S., Nagy, P., Neubert, A., Roberts, S., . . . Liddle, E. B. (2019). Neurological and psychiatric adverse effects of long-term methylphenidate treatment in ADHD: A map of the current evidence. *Neuroscience and Biobehavioral Reviews*, 107, 945–968. <https://doi.org/10.1016/j.neubiorev.2019.09.023>
- Kumar, S., Chate, S., Patil, N. M., Tekkalaki, B., & Patil, S. (2018). Prevalence of undiagnosed and untreated attention deficit hyperactivity disorder in men with alcohol dependence – A case-control study. *Archives of Psychiatry and Psychotherapy*, 20, 26–32. <https://doi.org/10.12740/app/80833>
- Kuzmickaitė, J., Leskauskas, D., & Gylytė, O. (2019). ADHD-related mental health issues of young adult male prisoners in Pravieniškės Correction House-Open Colony (Lithuania). *American Journal of Men's Health*, 13(4), 1557988319870974. <https://doi.org/10.1177/1557988319870974>
- Lai, M.-C., & Baron-Cohen, S. (2015). Identifying the lost generation of adults with autism spectrum conditions. *The Lancet Psychiatry*, 2(11), 1013–1027. [https://doi.org/10.1016/S2215-0366\(15\)00277-1](https://doi.org/10.1016/S2215-0366(15)00277-1)
- Lai, M.-C., Lombardo, M. V., & Baron-Cohen, S. (2014). Autism. *Lancet*, 383(9920), 896–910. [https://doi.org/10.1016/s0140-6736\(13\)61539-1](https://doi.org/10.1016/s0140-6736(13)61539-1)
- Lamberg, L. (2003). ADHD often undiagnosed in adults: Appropriate treatment may benefit work, family, social life. *The Journal of the American Medical Association*, 290(12), 1565–1567. <https://doi.org/10.1001/jama.290.12.1565>
- Levin, F. R., Evans, S. M., & Kleber, H. D. (1998). Prevalence of adult attention-deficit hyperactivity disorder among cocaine abusers seeking treatment. *Drug and Alcohol Dependence*, 52(1), 15–25. [https://doi.org/10.1016/s0376-8716\(98\)00049-0](https://doi.org/10.1016/s0376-8716(98)00049-0)
- Lewis, L. F. (2018). Identifying autism spectrum disorder in undiagnosed adults. *The Nurse Practitioner*, 43(9), 14–18. <https://doi.org/10.1097/01.NPR.0000544285.02331.2c>
- Lichtenstein, P., Halldner, L., Zetterqvist, J., Sjölander, A., Serlachius, E., Fazel, S., Långström, N., & Larsson, H. (2012). Medication for attention deficit-hyperactivity disorder and criminality. *New England Journal of Medicine*, 367(21), 2006–2014. <https://doi.org/10.1056/NEJMoa1203241>
- Luderer, M., Sick, C., Kaplan-Wickel, N., Reinhard, I., Richter, A., Kiefer, F., & Weber, T. (2020). Prevalence estimates of ADHD in a sample of inpatients with alcohol dependence. *Journal of Attention Disorders*, 24(14), 2072–2083. <https://doi.org/10.1177/1087054717750272>
- Madsen, K. B., Ravn, M. H., Arnfred, J., Olsen, J., Rask, C. U., & Obel, C. (2018). Characteristics of undiagnosed children with parent-reported ADHD behaviour. *European Child & Adolescent Psychiatry*, 27(2), 149–158. <https://doi.org/10.1007/s00787-017-1029-4>
- Malik-Soni, N., Shaker, A., Luck, H., Mullin, A. E., Wiley, R. E., Lewis, M. E. S., Fuentes, J., & Frazier, T. W. (2022). Tackling healthcare access barriers for individuals with autism from diagnosis to adulthood. *Pediatric Research*, 91(5), 1028–1035. <https://doi.org/10.1038/s41390-021-01465-y>
- Maxson, R. T., Lawson, K. A., Pop, R., Yuma-Guerrero, P., & Johnson, K. M. K. (2009). Screening for attention-deficit/hyperactivity disorder in a select sample of injured and uninjured pediatric patients. *Journal of Pediatric Surgery*, 44(4), 743–748. <https://doi.org/10.1016/j.jpedsurg.2008.08.003>
- McAweeney, M., Rogers, N. L., Huddleston, C., Moore, D., & Gentile, J. P. (2010). Symptom prevalence of ADHD in a community residential substance abuse treatment program. *Journal of Attention Disorders*, 13(6), 601–608. <https://doi.org/10.1177/1087054708329973>
- McCossin, R. (2022). Finding the true number of females with autistic spectrum disorder by estimating the biases in initial recognition and clinical diagnosis. *Children*, 9(2), 2. <https://doi.org/10.3390/children9020272>
- McLeod, J. D., Fettes, D. L., Jensen, P. S., Pescosolido, B. A., & Martin, J. K. (2007). Public Knowledge, beliefs, and treatment preferences concerning attention-deficit hyperactivity disorder. *Psychiatric Services*, 58(5), 626–631. <https://doi.org/10.1176/ps.2007.58.5.626>

- Miller, D., Rees, J., & Pearson, A. (2021). Masking is life”: Experiences of masking in autistic and nonautistic adults. *Autism in adulthood*, 3(4), 330–338. <https://doi.org/10.1089/aut.2020.0083>
- Moher, D., Shamseer, L., Clarke, M., Ghersi, D., Liberati, A., Petticrew, M., Shekelle, P., & Stewart, L. A.; PRISMA-P Group. (2015). Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Systematic Reviews*, 4(1), 1. <https://doi.org/10.1186/2046-4053-4-1>
- Moura, H. F., Faller, S., Benzano, D., Szobot, C., von Diemen, L., Stolf, A. R., Souza-Formigoni, M. L., Cruz, M. S., Brasiliano, S., Pechansky, F., & Kessler, F. H. (2013). The effects of ADHD in adult substance abusers. *Journal of Addictive Diseases*, 32(3), 252–262. <https://doi.org/10.1080/10550887.2013.824359>
- Murphy, C. M., Wilson, C. E., Robertson, D. M., Ecker, C., Daly, E. M., Hammond, N., Galanopoulos, A., Dud, I., Murphy, D. G., & McAlonan, G. M. (2016). Autism spectrum disorder in adults: Diagnosis, management, and health services development. *Neuropsychiatric Disease and Treatment*, 12, 1669–1686. <https://doi.org/10.2147/NDT.S65455>
- Naya, N., Tsuji, T., Nishigaki, N., Sakai, C., Chen, Y., Jung, S., & Kosaka, H. (2021). The burden of undiagnosed adults with attention-deficit/hyperactivity disorder symptoms in Japan: A cross-sectional study. *Cureus*, 13(11), e19615. <https://doi.org/10.7759/cureus.19615>
- Nylander, C., Lindström, K., Khalifa, N., & Fernell, E. (2018). Previously undiagnosed attention-deficit/hyperactivity disorder associated with poor metabolic control in adolescents with type 1 diabetes. *Pediatric Diabetes*, 19(4), 816–822. <https://doi.org/10.1111/pedi.12651>
- Nylander, L., & Gillberg, C. (2001). Screening for autism spectrum disorders in adult psychiatric out-patients: A preliminary report. *Acta Psychiatrica Scandinavica*, 103(6), 428–434. <https://doi.org/10.1034/j.1600-0447.2001.00175.x>
- Okumura, Y., Yamasaki, S., Ando, S., Usami, M., Endo, K., Hiraiwa-Hasegawa, M., Kasai, K., & Nishida, A. (2021). Psychosocial burden of undiagnosed persistent ADHD symptoms in 12-Year-Old children: A population-based birth cohort study. *Journal of Attention Disorders*, 25(5), 636–645. <https://doi.org/10.1177/1087054719837746>
- Oley, S. (2012). P-313 - identification and management of attention deficit hyperactivity disorders: A survey of specialist camhs staff perceptions, knowledge and training needs in United Kingdom. *European Psychiatry*, 27(Suppl. 1), 1. [https://doi.org/10.1016/s0924-9338\(12\)74480-2](https://doi.org/10.1016/s0924-9338(12)74480-2)
- Ómarsdóttir, B. S., Kjartansdóttir, S. H., Magnússon, P., Ólafsdóttir, H., & Sigurðsson, J. F. (2021). Adults referred to a national ADHD clinic in Iceland: Clinical characteristics and follow-up status. *Nordic Journal of Psychiatry*, 75(8), 559–567. <https://doi.org/10.1080/08039488.2021.1904287>
- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., . . . Moher, D. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ*, 372, 71. <https://doi.org/10.1136/bmj.n71>
- Pearson, A., White, H., Bath-Hextall, F., Salmond, S., Apostolo, J., & Kirkpatrick, P. (2015). A mixed-methods approach to systematic reviews. *International Journal of Evidence-Based Healthcare*, 13(3), 121–131. <https://doi.org/10.1097/xeb.0000000000000052>
- Peters, M. D. J., Godfrey, C. M., McInerney, P., Soares, C. B., Khalil, H., & Parker, D. (2015). *The Joanna Briggs Institute reviewers' manual 2015: Methodology for JBI scoping reviews*. <https://bdpi.usp.br/item/002775594>
- Porritt, K., Gomersall, J., & Lockwood, C. (2014). Systematic reviews, step by step. *Systematic Reviews*, 114(6), 6.
- Quinn, P., & Wigal, S. (2004). Perceptions of girls and ADHD: Results from a national survey. *MedGenMed: Medscape General Medicine*, 6(2), 2.
- Ratey, J. J., Greenberg, M. S., Bemporad, J. R., & Lindem, K. J. (1992). Unrecognized attention-deficit hyperactivity disorder in adults presenting for outpatient psychotherapy. *Journal of Child and Adolescent Psychopharmacology*, 2(4), 267–275. <https://doi.org/10.1089/cap.1992.2.267>
- Richards, G., Kenny, R., Griffiths, S., Allison, C., Mosse, D., Holt, R., O'Connor, R. C., Cassidy, S., & Baron-Cohen, S. (2019). Autistic traits in adults who have attempted suicide. *Molecular Autism*, 10(1), 26. <https://doi.org/10.1186/s13229-019-0274-4>
- Robertson, C. E., & McGillivray, J. A. (2015). Autism behind bars: A review of the research literature and discussion of key issues. *The Journal of Forensic Psychiatry & Psychology*, 26(6), 719–736. <https://doi.org/10.1080/14789949.2015.1062994>
- Rubia, K. (2018). Cognitive neuroscience of attention deficit hyperactivity disorder (ADHD) and its clinical translation. *Frontiers in Human Neuroscience*, 12, 100. <https://doi.org/10.3389/fnhum.2018.00100>
- Runyan, C. W., Casteel, C., Perks, D., Black, C., Marshall, S. W., Johnson, R. M., Coyne-Beasley, T., Waller, A. E., & Viswanathan, S. (2005). Unintentional injuries in the home in the United States Part I: Mortality. *American Journal of Preventive Medicine*, 28(1), 73–79. <https://doi.org/10.1016/j.amepre.2004.09.010>
- Russell, G., Stapley, S., Newlove-Delgado, T., Salmon, A., White, R., Warren, F., Pearson, A., & Ford, T. (2022). Time trends in autism diagnosis over 20 years: A UK population-based cohort study. *Journal of Child Psychology and Psychiatry*, 63(6), 674–682. <https://doi.org/10.1111/jcpp.13505>
- Russell, G., Steer, C., & Golding, J. (2011). Social and demographic factors that influence the diagnosis of autistic spectrum disorders. *Social Psychiatry and Psychiatric Epidemiology*, 46(12), 1283–1293.
- Sandelowski, M., Leeman, J., Knafl, K., & Crandell, J. L. (2013). Text-in-context: A method for extracting findings in mixed-methods mixed research synthesis studies. *Journal of Advanced Nursing*, 69(6), 1428–1437. <https://doi.org/10.1111/jan.12000>
- Sayal, K., Prasad, V., Daley, D., Ford, T., & Coghill, D. (2018). ADHD in children and young people: Prevalence, care pathways, and service provision. *The Lancet Psychiatry*, 5(2), 175–186. [https://doi.org/10.1016/s2215-0366\(17\)30167-0](https://doi.org/10.1016/s2215-0366(17)30167-0)

- Senarath, S. (2019). Teacher awareness, teaching confidence and facilitation of learning for children with special educational Needs (SEN) in an Inclusive Classroom. *Education*, 8(1), 82–94.
- Stagg, S. D., & Belcher, H. (2019). Living with autism without knowing: Receiving a diagnosis in later life. *Health Psychology and Behavioral Medicine*, 7(1), 348–361. <https://doi.org/10.1080/21642850.2019.1684920>
- Stewart, M. E., Barnard, L., Pearson, J., Hasan, R., & O'Brien, G. (2006). Presentation of depression in autism and Asperger syndrome: A review. *Autism*, 10(1), 103–116. <https://doi.org/10.1177/13623613060062013>
- Stoodley, C. J. (2016). The cerebellum and neurodevelopmental disorders. *Cerebellum*, 15(1), 34–37. <https://doi.org/10.1007/s12311-015-0715-3>
- Swensen, A., Birnbaum, H. G., Ben Hamadi, R., Greenberg, P., Cremieux, P.-Y., & Secnik, K. (2004). Incidence and costs of accidents among attention-deficit/hyperactivity disorder patients. *Journal of Adolescent Health*, 35(4), 346.e1–346.e9. <https://doi.org/10.1016/j.jadohealth.2003.12.003>
- Thompson, A. L., Molina, B. S. G., Pelham, W., & Gnagy, E. M. (2007). Risky driving in adolescents and young adults with childhood ADHD. *Journal of Pediatric Psychology*, 32(7), 745–759. <https://doi.org/10.1093/jpepsy/jsm002>
- Ulzen, T. P., Higginbotham, J. C., Donnir, G., Jerome, L., & Segal, A. (2018). Undiagnosed attention deficit/hyperactivity disorder (ADHD) among unionized drivers in Ghana: Public health and policy implications. *Accident Analysis and Prevention*, 114, 12–16. <https://doi.org/10.1016/j.aap.2017.07.015>
- van Emmerik-van Oortmerssen, K., van de Glind, G., van Den Brink, W., Smit, F., Crunelle, C. L., Swets, M., & Schoevers, R. A. (2012). Prevalence of attention-deficit hyperactivity disorder in substance use disorder patients: A meta-analysis and meta-regression analysis. *Drug and Alcohol Dependence*, 122(1–2), 11–19. <https://doi.org/10.1016/j.drugalcdep.2011.12.007>
- Wilens, T. E., Adamson, J., Sgambati, S., Whitley, J., Santry, A., Monuteaux, M. C., & Biederman, J. (2007). Do individuals with ADHD self-medicate with cigarettes and substances of abuse? Results from a controlled family study of ADHD. *American Journal on Addictions*, 16(s1), 14–23. <https://doi.org/10.1080/10550490601082742>
- Wilens, T. E., & Morrison, N. R. (2011). The intersection of attention-deficit/hyperactivity disorder and substance abuse. *Current Opinion in Psychiatry*, 24(4), 280–285. <https://doi.org/10.1097/YCO.0b013e328345c956>
- Wood-Downie, H., Wong, B., Kovshoff, H., Cortese, S., & Hadwin, J. A. (2021). Research review: A systematic review and meta-analysis of sex/gender differences in social interaction and communication in autistic and nonautistic children and adolescents. *Journal of Child Psychology and Psychiatry*, 62(8), 922–936. <https://doi.org/10.1111/jcpp.13337>
- Wood, W. L. M., Lewandowski, L. J., & Lovett, B. J. (2021). Profiles of diagnosed and undiagnosed college students meeting ADHD symptom criteria. *Journal of Attention Disorders*, 25(5), 646–656. <https://doi.org/10.1177/1087054718824991>
- Wright, N., Moldavsky, M., Schneider, J., Chakrabarti, I., Coates, J., Daley, D., Kochhar, P., Mills, J., Sorour, W., & Sayal, K. (2015). Practitioner review: Pathways to care for ADHD - a systematic review of barriers and facilitators. *Journal of Child Psychology and Psychiatry*, 56(6), 598–617. <https://doi.org/10.1111/jcpp.12398>
- Young, S. (2005). Coping strategies used by adults with ADHD. *Personality and Individual Differences*, 38(4), 809–816. <https://doi.org/10.1016/j.paid.2004.06.005>
- Young, S., Moss, D., Sedgwick, O., Fridman, M., & Hodgkins, P. (2015). A meta-analysis of the prevalence of attention deficit hyperactivity disorder in incarcerated populations. *Psychological Medicine*, 45(2), 247–258. <https://doi.org/10.1017/S0033291714000762>
- Young, S., & Thome, J. (2011). ADHD and offenders. *The World Journal of Biological Psychiatry*, 12(sup1), 124–128. <https://doi.org/10.3109/15622975.2011.600319>

Author Biographies

Blandine French is a Senior Research Fellow and holds an Economic and Social Research Council, UK funded Postdoctoral Scholarship at the University of Nottingham exploring the impact and cost of undiagnosed ADHD and Autism. As an adult with lived experience of ADHD and an academic she is passionate about improving access to care for individuals with ADHD and Autism.

David Daley is Professor of Psychological Intervention and Knowledge Exchange, and Head of Applied Psychological Practice in the School of Social Science at Nottingham Trent University, UK. He has devoted much of his career to the early identification and treatment of ADHD.

Madeleine Groom is Associate Professor of Applied Developmental Cognitive Neuroscience in the School of Medicine and Institute of Mental Health, University of Nottingham, UK. Maddie's research seeks to understand the causal mechanisms of neurodevelopmental disorders with a particular interest in the co-occurrence between ADHD, Autism and Tourette Syndrome.

Sarah Cassidy is an Associate Professor in the School of Psychology, University of Nottingham, UK. She leads a meaningful and impactful research program to better understand, assess, treat, and prevent mental health problems, self-harm, and suicide in partnership with autistic people and those who support them.

[Skip to content](#)

- [English](#)
- [Español](#)
- [Français](#)

NABP®

National Association of
Boards of Pharmacy



- [Buy Safely](#)
- [Drug Disposal](#) 
 - [Drug Donation](#)
- [Safe Use](#) 
 - [How Pharmacists Help Patients](#)
- [Prevent Misuse](#)
- [Resources](#) 
 - [Blog](#)
 - [Buy Safely Education Kit](#)
- [About](#)

Verify Before You Buy



Verify Before You Buy

Avoid fraudulent and unsafe prescription medication by purchasing from legitimate sites. Enter a website URL to verify its safety.

WEBSITE URL

example.com

Buy Safely



Safe Online Pharmacies

It is essential to stay informed about safe ways to buy medication. Buying prescription medicine online or through social media may *seem* to cost less, but it can put you, or your loved ones, at risk. Make sure a website is legitimate to safely order prescription drugs and medicine online.



NABP has identified more than 40,000 websites that fail to comply with NABP patient safety and pharmacy practice standards, or applicable laws.



Nearly 95% of websites offering prescription-only drugs online operate illegally.



96% of illegal online pharmacies reviewed by NABP did not require a valid prescription for the sale of prescription-only medicine.



24% of Americans who have used an online pharmacy have been exposed to harmful, counterfeit, or substandard medication, according to [ASOP](#).

An infographic with a purple background. At the top, it says "Before You Buy, **Verify**". Below this, it states: "Buying medicine online may seem to cost less, but buying from the wrong site can put you, or your loved ones, at risk." It then features a section titled "Use NABP's Safe Site Search Tool to Purchase Medication from Legitimate Websites" with a warning: "Beware of websites and social media platforms selling fake and unsafe prescription medication. Our search tool can help to protect you when ordering medications online. You simply type in the web address to check whether the site is verified or not recommended." A list of requirements for safe, verified online pharmacies is provided: "Be licensed by regulators", "Accept only valid prescriptions", "Comply with drug and professional practice laws", "Provide readily accessible contact information for patient care inquiries", and "Comply with privacy laws and ensure patient confidentiality". At the bottom, it says: "To check if a website is safe, visit [safe.pharmacybuyverify.org](#) using the QR code. National Association of Boards of Pharmacy®" and includes a QR code.

Purchase Medication From Legitimate Websites

Safe, verified online pharmacies meet the following requirements:

- Are licensed by regulators in the jurisdiction in which they are located, as well as regulators in the patient's jurisdiction
- Accept only valid prescriptions
- Comply with applicable drug laws and professional practice laws
- Provide readily accessible contact information for patient care inquiries
- Comply with privacy laws and ensure patient confidentiality

View Flyer



Check the Safe Site Search Tool: Verify Before You Buy

To protect yourself when ordering medications online, use [NABP's Safe Site Search Tool](#). You can check whether a website is accredited by NABP or not recommended by searching for the web address. Review a list of the current websites that have been accredited by us; [download an Excel list](#) to learn more.

Another way to find an accredited website is to look for *.pharmacy* at the end of the web address. When a website ends in *.pharmacy*, it has been accredited by NABP. Unlike logos, the *.pharmacy* domain cannot be faked or forged.

For those interested in applying for a .pharmacy domain, visit our [main website](#).

NABP's Not Recommended List

NABP identifies a website as Not Recommended when, upon review, it appears to be out of compliance with NABP patient safety and pharmacy practice standards, or applicable law. Some Not Recommended websites do not sell drugs directly. Instead, they refer patients to websites that operate in violation of NABP patient safety and pharmacy practice standards or applicable law.

Not Recommended websites commonly facilitate:

- the sale of prescription-only medicine without requiring a valid prescription.
- the sale of medicine that has not been approved or authorized for sale in the patient's jurisdiction.
- the practice of pharmacy without required licensure in all relevant jurisdictions.

If a website you visited is suspicious, but is not currently listed as Not Recommended, report it.

Report a Suspicious Site

If you believe your website is mistakenly included on the Not Recommended List, email RogueRx@nabp.pharmacy to request information about NABP's appeals process.

Warning Signs to Spot an Unsafe Online Pharmacy

You may be able to avoid purchasing medication from an illegitimate pharmacy by knowing what to look for. Unsafe online pharmacies can be identified if they:

- are not licensed by your state board of pharmacy;
- lack a licensed pharmacist to address your questions;
- provide medicines different from your usual pharmacy or in damaged packaging;
- offer discounts that seem too good to be true or “bonus pills”;
- only accept cryptocurrency or peer-to-peer payment methods;
- charge for products you never ordered or received;
- lack clear written protections for your personal and financial information; or
- sell your information to other websites.

Review our [common questions](#) about finding accredited sites to learn more about how you can keep yourself safe.



Resources for Safely Buying Online

Use these resources when you purchase medication online:

- Verify you are buying your medication from a legitimate website with the [Safe Site Search Tool](#).
- Report adverse effects caused by any medicine to [FDA's MedWatch program](#).



Risks of Buying From an Unverified Website

- Receiving bogus medication that fails to treat your medical condition
- Receiving pills with dangerous fillers, such as drywall and rat poison
- Buying drugs that have not been authorized for sale by your country's medicine agency
- Falling victim to fraud and identity theft
- Exposing your computer to malware

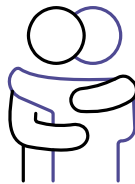
Some illegal online pharmacies pretend to be based in Canada to give the illusion of more stringent regulations and safer drugs, but they may be based in countries without the regulatory safeguards found in the US and Canada. Read more in [NABP's RogueRx Activity Report](#).

Other online drug sellers sell deadly pills laced with fentanyl. These dangerous medications are often sold through social media platforms and target adolescents and young adults. In 2023, [Drug Enforcement Administration](#) seized more than 86 million fentanyl pills, which exceeds the prior year's total of 59.6 million fentanyl-laced fake pills. The 2022 seizures are equivalent to more than 397 million lethal doses of fentanyl. Fentanyl-laced pills have been found in every state and are linked to numerous deaths throughout the US. According to [DEA](#), fentanyl is up to 50 times more powerful than heroin. A dose of only 2 milligrams, the size of 2 grains of salt, is fatal for most people. Learn more about the threats illegal drugs pose in DEA's [National Drug Threat Assessment](#).

Rogue Online Pharmacies Can Be Deadly



Learn more about Charlie's story from [Song for Charlie](#), a family-run nonprofit charity dedicated to raising awareness about the emerging dangers of self-medication and casual drug use in the [fentanyl era](#).



Talk To Your Teen About Buying Medication Online

With the popularity of social media, there is increased access to illegal drugs. Parents and caregivers should be aware of how they can spread the message and teach young adults about medication safety.

- **Avoid lecturing your teen.** Reassure your teen that they can be honest and open with any questions.
- **Consider media messages.** Talk about what your teen sees and hears on social media, television, movies, and songs.

- **Discuss reasons to not use drugs.** Talk to your teen about the harmful effects drugs can have on their body and life.

Additional Resources:

- **DEA:** [Resources for Parents and Caregivers](#)
- **Mayo Clinic:** [Help Your Teen Avoid Drugs](#)
- **National Institute of Health (NIH):** [Drug Use Resources for Parents and Educators](#)

Educational Resources



Spread the word in your community about buying medication safely online with our [Verify Before You Buy education kit](#). Find resources including:

- sample social media posts
- flyers
- images
- educational information

Common Questions About Finding Accredited Websites

Q: Why is a pharmacy not included in the list of Accredited Healthcare Merchants?

A: Only pharmacies that have achieved NABP’s Healthcare Merchant Accreditation are included on the list.

Q: I am located in the United States. Are there any Canadian pharmacies I should purchase from?

A: Currently, no Canadian pharmacy is licensed in the US. For that reason, no Canadian pharmacy that offers shipping to the US is NABP-accredited. To protect patients from harm, each US state requires that resident and non-resident pharmacies obtain pharmacy licenses. Without a valid license, it is difficult (if not impossible) for state regulators to directly inspect or investigate claims of patient harm; this is especially true when the activity is coming from outside the regulator’s jurisdiction.

Q: How does NABP review pharmacy websites?

A: NABP reviews pharmacies based on our criteria which, among other things, require compliance with applicable laws such as appropriate licensure and adherence to pharmacy practice standards. Learn more about [Healthcare Merchant Accreditation](#).

Q: What should I do If I find a suspicious website that is not on the Not Recommended List?

If a website you visit is suspicious, but is not currently listed on the Not Recommended List, [report it](#).

Subscribe to our newsletter

[✉ Contact Us](#) [✕ Twitter](#) [f Facebook](#) [@ Instagram](#)

Copyright © 2025 National Association of Boards of Pharmacy ® (NABP®). [Terms of Use](#)