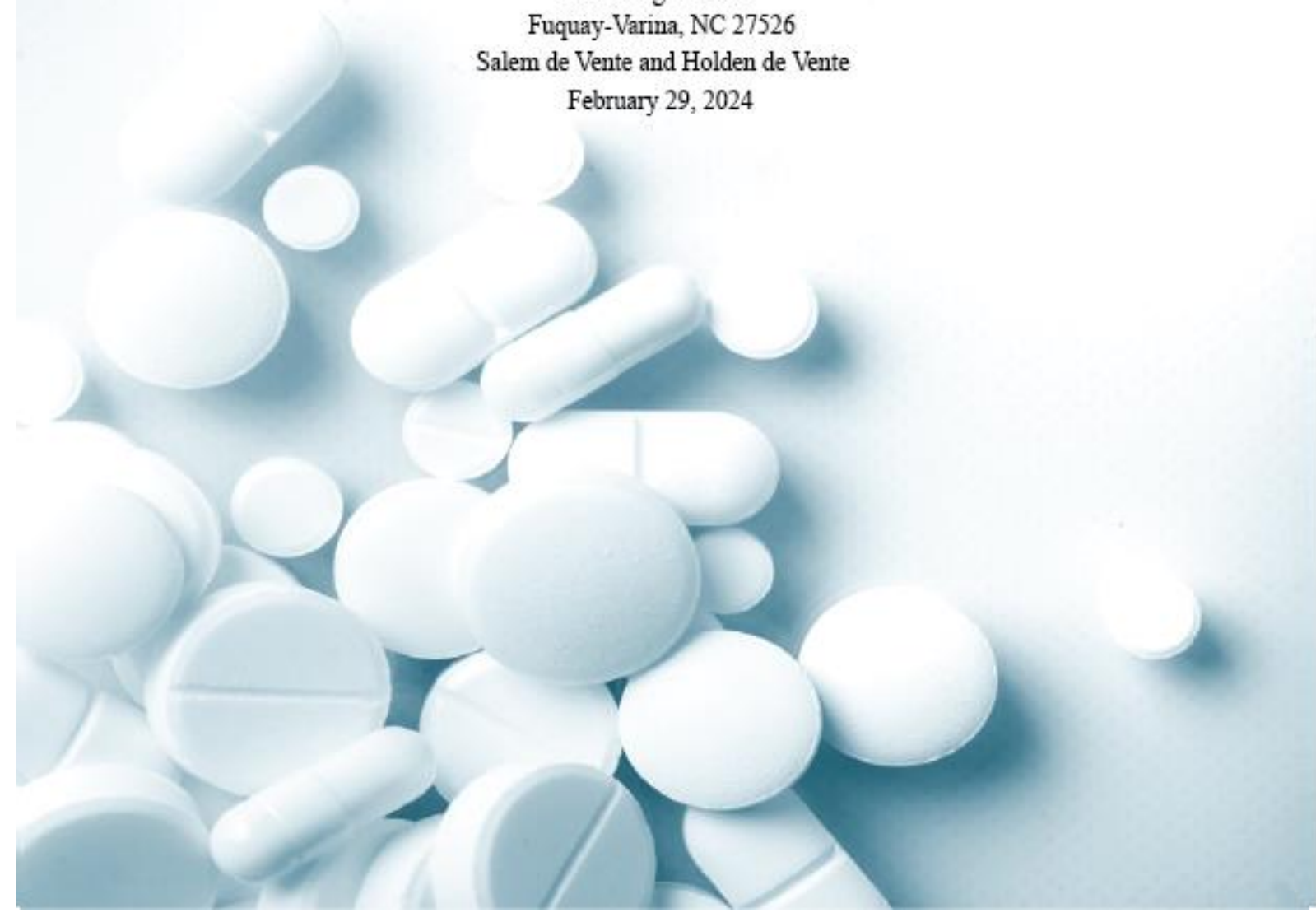


The logo is a light blue pill shape with a white horizontal line down the center. The text "Rx Scanning" is written in a bold, dark blue font. The "Rx" is positioned on the left side of the pill, and "Scanning" is on the right side.

# **R<sub>x</sub> Scanning**

## **Your Lifeline for Locating Prescriptions**

Innovation Plan  
Fuquay-Varina High School  
201 Bengal Drive  
Fuquay-Varina, NC 27526  
Salem de Vente and Holden de Vente  
February 29, 2024



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# I. EXECUTIVE SUMMARY

## Product Overview



**RxScanning** is an extensive drug inventory platform that utilizes geolocation to find nearby in-stock prescription medications at all major retail pharmacies. Furthermore, it notifies patients when a non-controlled drug is available should it be temporarily out-of-stock. Additionally, RxScanning conducts an analysis of drug supply trends within the pharmaceutical industry.

## Problem



**Locating Medications:** Patients are facing challenges when trying to locate medications in constrained supply which can significantly impact their overall health. Existing methods for locating medications are time-consuming, involving tasks such as contacting physicians, pharmacists, and the FDA, or painstakingly searching through various individual available websites.

**Healthcare Personnel Shortage:** Providers and pharmacists must invest valuable time in searching for alternative solutions for out-of-stock medications when they have limited resources due to staffing shortages. Interruptions in medication access can result in compromised health, uncontrolled pain management, treatment and procedure delays, and potentially critical medical emergencies for patients.

**Drug Shortage:** In 2023, the U.S. declared the drug shortage a public and national security risk.

## Customer Segment



**Primary Clientele:** Patients with acute and chronic illnesses taking medications.  
**Secondary Clientele:** Healthcare personnel including physicians and pharmacists.  
**Tertiary Clientele:** The billion-dollar US Electronic Health Record industry.  
**Quaternary Clientele:** Changes in drug supply can be a guide for the FDA.

## Unique Value Proposition



**RxScanning** is the pioneering comprehensive drug inventory app that simplifies drug ordering and availability tracking. It provides EHR-integrated alerts for ordering providers, geolocation-based patient refills with notifications, and valuable FDA insight for future drug shortage prevention.

## Solution



**RxScanning** is the essential pharmaceutical inventory platform. It swiftly locates medications in nearby retail pharmacies, sends real-time stock alerts, and provides valuable supply insight. It seamlessly integrates with EHR for instant availability updates for providers. It is powered by SQLite and GoeIP2 for the backend and designed with JavaScript for the MVP. Costumers have the option to select from three distinct apps: Web, iPhone, and Android.

## Investments



RxScanning is valued at over \$15 million. The company is requesting \$500,000 for 2 years of marketing, development, and maintenance funding. The company will apply for an FDA BAA grant. Awarded amounts range from \$250,000- \$2 million. The remaining needed capital will be raised in return for a 10% share of RxScanning.

## II. PROBLEM

RxScanning addresses the following 3 problems:



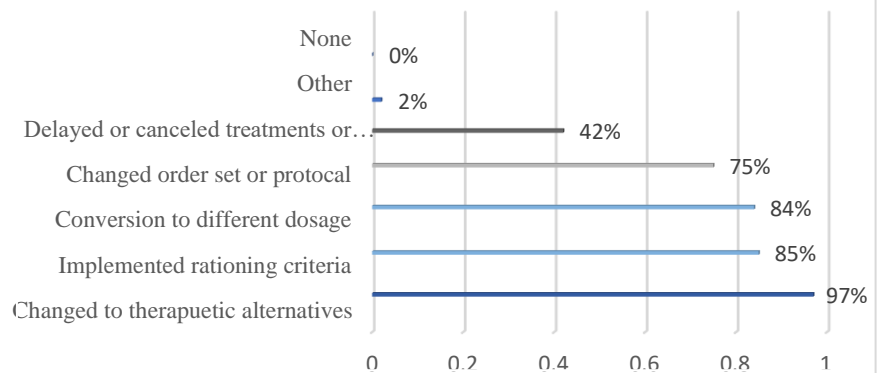
**A. Locating Medications:** Patients are facing challenges when attempting to obtain their prescriptions from local pharmacies. Ninety percent of these hard-to-find medications are generic drugs. The current methods for tracking down out of stock drugs involves reaching out to local pharmacies, consulting physicians for potential leads, navigating individual pharmacy websites where applicable, or resorting to calling the FDA. The FDA will provide the patient with the phone number of the drug manufacturer. All these existing approaches are impractical and time intensive.

### B. Overworked Healthcare

**Personnel:** There has been an ongoing shortage of primary care physicians, nurses, and pharmacists. It is predicted that by 2026 there will be 3.2 million healthcare workers in shortage. They are allocating their valuable time seeking alternative resources and treatments when drugs are unavailable. This time could be more effectively utilized on other essential patient care. Disruptions in administering medications can lead to poor health, delayed treatments or procedures, and adverse events for their patients.

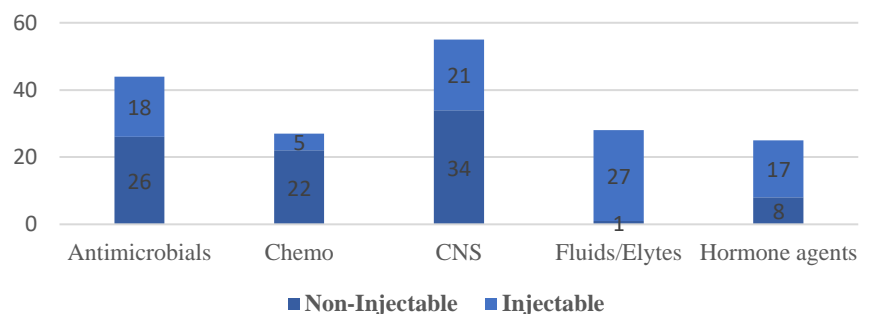
**C. Drug Shortage:** Drug shortages have increased by 30% from 2021-2022. Sixty-five percent of these are the nation's most prescribed medications. In 2023, the United States Senate Committee and Homeland Security declared the drug shortage as a public health and national security risk.

Clinical Management Strategies (n=1,019)



Ashp.com/drug-shortages

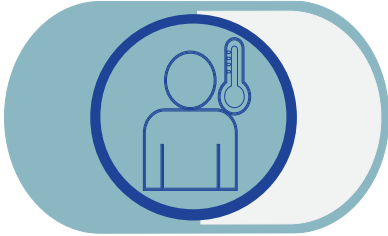
National Drug Shortages  
Active Shortages Top 5 Drug Classes  
Active Shortages September 30, 2023



University of Utah Drug Information Service

### III. CUSTOMER SEGMENT

#### Primary Clientele



**Patients:** RxScanning holds immense value for the 131 million patients dealing with acute illnesses or chronic medical conditions who rely on prescribed medications. This encompasses patients who are particularly vulnerable to the effects of drug shortages, including those undergoing treatments such as antimicrobial therapy, chemotherapy, central nervous system (CNS) medications, fluids/electrolytes, and hormone agents.

#### Secondary Clientele



**Healthcare Personnel:** RxScanning would find utility among diverse healthcare professionals, including physicians, pharmacists, nurses, and pharmacy technicians, all of whom are currently facing shortages. RxScanning simplifies the process of locating medications and can provide crucial information to providers when an alternative dosage or drug is needed. Currently, most pharmacies spend up to 10 hours per week managing drug shortages. By shouldering this responsibility, RxScanning would lighten the workload for medical personnel, enabling them to concentrate on other aspects of patient care.

#### Tertiary Clientele



**Electronic Health Records (EHR):** RxScanning will establish a strategic partnership with Electronic Health Records (EHR) systems, which rely on electronic prescriptions (e-scripts). When a healthcare provider creates an e-script order, RxScanning will promptly trigger an alert if the selected pharmacy is out of stock for the prescribed medication. This capability is particularly crucial for the timely delivery of medications like Tamiflu, which is essential for treating influenza and must be administered within three days of symptom onset. RxScanning's integration would be advantageous for a wide range of healthcare providers.

#### Quaternary Clientele



**FDA:** Frequently, the FDA becomes aware of drug shortages only after they have already arisen, and these shortages are continuously evolving. In the year 2022, there were 295 medications facing supply constraints. RxScanning aims to collaborate with the FDA to proactively track medications trending towards a reduced supply. With this information, the FDA could expedite applications for new manufacturers, release stockpiles, inform wholesale distributors to seek additional suppliers, or redirect manufacturing resources. It's worth noting that currently, 90% of medication in the US are distributed by just three wholesale drug manufacturers.

## IV. UNIQUE VALUE PROPOSITION

### Your Lifeline for Locating Prescriptions

**RxScanning** is the pioneering comprehensive drug inventory app that simplifies drug ordering and availability tracking. It provides EHR-integrated alerts for ordering providers, geolocation-based patient refills, and valuable FDA insight for future drug shortage prevention.



## V. SOLUTION

### A. Key Features:

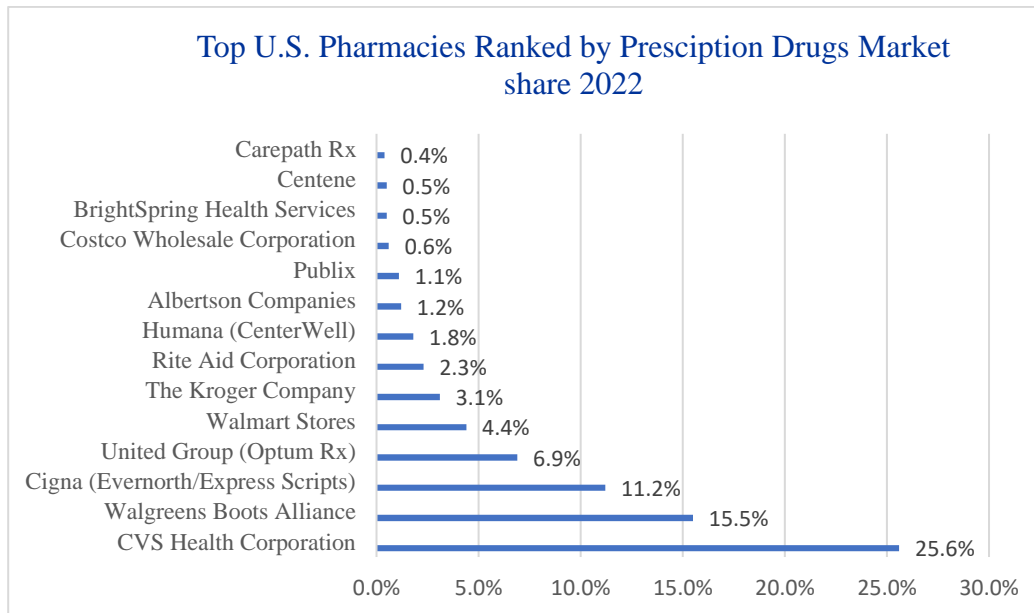
- 1. Comprehensive Geolocation Database:** RxScanning stands as the singular, all-encompassing drug inventory platform, conducting searches for over 70,000 distinct medications and their availability at all leading retail pharmacies, employing advanced geolocation technology. Furthermore, RxScanning provides user-friendly accessibility through web, iPhone, and Android applications.
- 2. Real-Time Stock Alerts:** Patients can effortlessly find their medications in stock and receive timely refill notifications, eliminating the need to reach out to their healthcare provider or pharmacist. RxScanning's integration with Electronic Health Records (EHR) enables providers to receive instant, real-time notifications of medication availability when prescribing through e-scripts. This streamlined process grants providers additional time to focus on addressing other critical patient needs.
- 3. Analyzes Drug Trends:** RxScanning uses algorithms to monitor changes in drug supply. Drug supply data can be relayed to the FDA to help mitigate pending drug shortages by releasing stockpiles, expediting manufacture applications, or redirecting medication distribution.

**B. Development:** RxScanning collaborated with Andy Bartolo, a computer science PhD student at Stanford University. He provided a comprehensive blueprint for the development and ongoing maintenance of the drug inventory platform.

- 1. MVP Phase:** The MVP, or Minimal Viable Product, serves as a prototype for unit testing and will be initially presented to retail pharmacies. It comprises two backend databases: GeoIP2, a geolocation database, and SQLite, specialized for application logic encompassing drug quantity, user data, passwords, and emails. The MVP's web application frontend is coded in JavaScript. Development of the MVP takes 2 months with 2 developers, and the basic frontend requires an extra 2-3 weeks.



2. **Access to Retail Pharmacy API:** RxScanning seamlessly integrates with the API (Application Programming Interface) of retail pharmacies, establishing a vital link between the two systems. Within a pharmacy's API lies essential data concerning drug stock and availability. In discussions with Mandie Williford, the former Director of Pharmacy for the State of North Carolina, it was revealed that the majority of medication stocks are automatically populated into the pharmacy database by wholesale drug distributors. A limited number of medications are manually entered by individual pharmacies. RxScanning specifically targets the 15 major non-mail-order pharmacies that collectively represent 75% of the prescription drug market.



<https://www.statista.com/statistics/report-content/statistic/734171>

3. **General Release:** Upon the completion of the three frontend applications, RxScanning will become accessible to the public. These user-friendly applications, available on the web, iPhone, and Android, streamline consumer drug queries, boasting tailored interfaces created using React. The full-scale release necessitates the collaboration of six developers to craft these three applications, which may take additional months for development. Users have the option to sign up for alerts or notifying them when a medication becomes available at their selected pharmacy.

**Special Note:** Customers have access exclusively to the availability of **non-controlled** medications, while prescribing providers are granted access to all medications, including controlled ones. This differentiation ensures the safeguarding of retail pharmacy staff.

4. **Expansion:** RxScanning will partner with major Electronic Health Records (EHR) companies in the U.S., utilizing e-scripts for digital prescriptions. It will provide real-time alerts to prescribing providers if a medication is unavailable when they create an e-script. This enables providers to swiftly decide on alternative pharmacies, medication or dosage adjustments, rationing, or treatment postponements. They can also ensure timely medication administration when time-sensitive treatment is required.

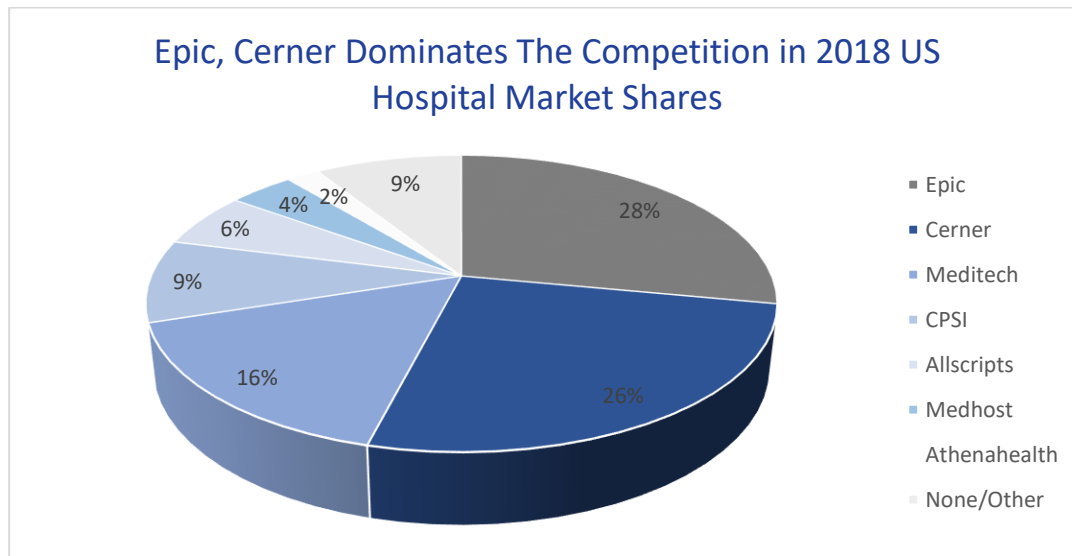
## VI. CONCLUSION

**Overview:** RxScanning empowers patients to take charge of their healthcare in the complex pharmaceutical landscape. This groundbreaking and all-encompassing medication database not only enhances patient well-being but also yields critical insights for addressing future drug shortages.

**A. Finance:** RxScanning is poised for a valuation exceeding \$15 million. Initial revenue will be generated through targeted advertising within the applications, such as promoting weight loss products and services to users searching for medications like Wegovy. This advertising model, based on 1% of the 131 million patients at a 0.1% click rate, would yield an annual revenue of \$50,000.

The primary revenue driver, however, comes from integration with Electronic Health Records (EHR), a billion-dollar industry. With over 1.4 million prescribing providers in the U.S., of which 98% use EHR, RxScanning would charge EHR companies \$25 per provider annually for access. Capturing 10% of these providers translates to \$3 million, while a 50% adoption rate would amount to \$15 million.

To support marketing, development, and maintenance for two years, RxScanning seeks \$500,000 in capital. Additionally, RxScanning plans to secure funding through grants, including potential FDA BAA grants ranging from \$250,000 to \$2 million. Any remaining capital requirements would be raised in exchange for a 10% ownership stake in RxScanning.



*Methodology: Data is based on market analysis of 5,447 acute care hospitals.*

*Source: KLAS Research, "US Hospitals EMR Market Share 2029 Report," 2019*

**B. Marketing:** RxScanning's marketing strategy encompasses a multifaceted approach, including featured articles in prominent medical journals, speaking engagements at key medical and pharmaceutical conferences, distribution of informative brochures in retail pharmacies, and strategic advertising partnerships with platforms like GoodRx.





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## VIII. APPENDIX

### Income Statement

Revenue	06/2024-09/2024	09/2024-09	09/25-09/2026
Advertising	0	50,000	50,000
EHR (0/10%/50%)	0	3,453,000	17,000,000
Revenue Total	0	3,503,000	17,050,000
<b>Overhead</b>			
Backend Personnel	80,000	26,000	16,000
FrontEnd Personnel	10,000	48,000	8,000
Support Personnel	0	100,000	100,000
Advertising Personnel	12,500	50,000	50,000
Office Personnel	7,200	21,000	21,000
Rent	9,000	36,000	36,000
Legal Fees	5,000	50,000	24,000
Professional Supplies	3,000	12,000	12,000
Furniture/Equipment	15,000	12,000	12,000
Insurance	120	1,440	1,440
Overhead Total	141,820	356,440	280,440
Operating Profit	-141,820	3,146,560	16,769,560
VC Profit 10%	0	314,000	1,676,596

\*\*\*EHR Based off 98% of the 1,400,000 prescribing providers who utilize EHR. Annual fee per provider is \$25. Rates shown at 0%, 10%, and 50% enrollment with RxScanning.

**Interviews:**

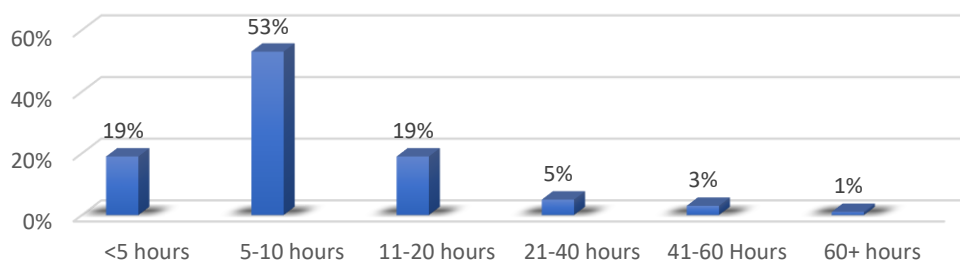
Andy Bartelo, PhD graduate student at Stanford University

Amanda Williford, PhD Former Director of Pharmacy for North Carolina

Jason de Vente, MD Primary Care Physician

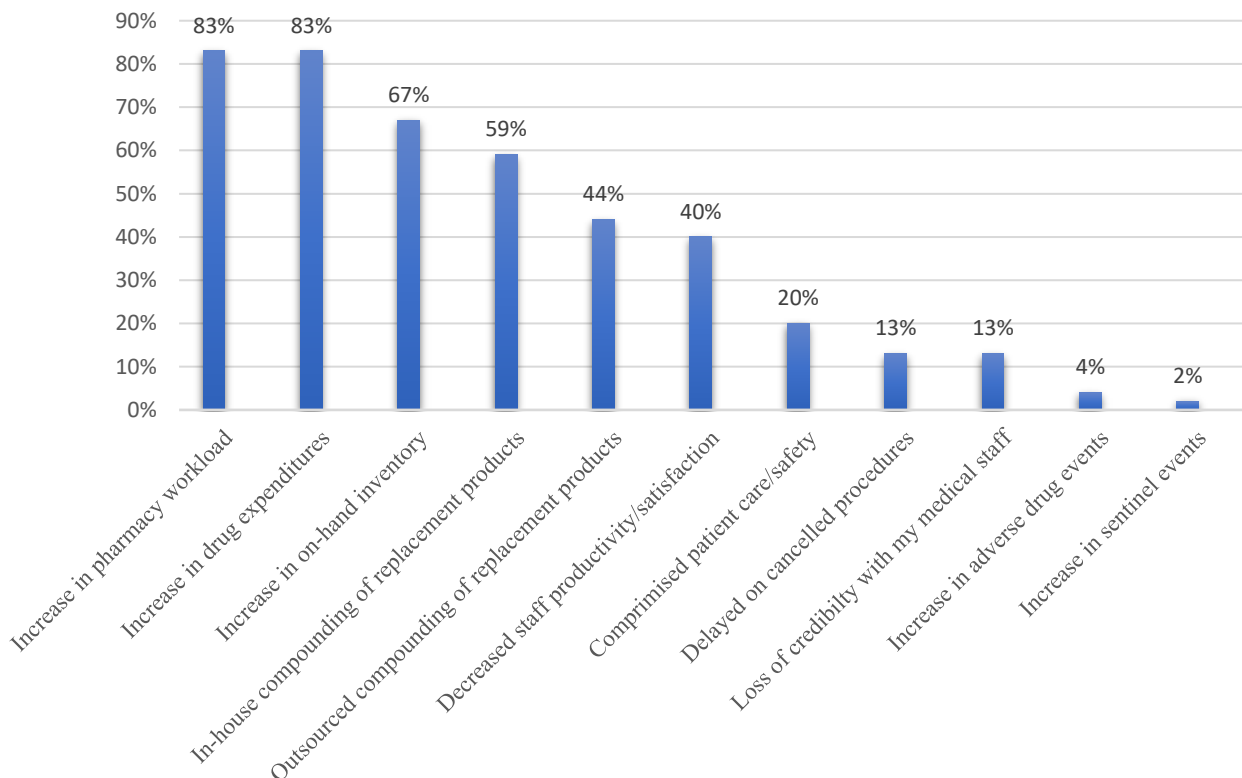
Linda Henderson MBA, MPH

### Pharmacy Hours Dedicated to Shortage Management



<http://www.pppmag.com/article/2666>

### Impact of Shortage



<http://www.pppmag.com/article/2666>