# Price and Availability of Essential Medicines in the Boston Area: A survey using WHO/HAI methods


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# Abstract

*Background:*
Two quantitative surveys, completed in 2014 and 2015 by Boston University students, evaluated both the price and availability of essential medicines in the Boston area. In 2016, the quantitative survey was repeated using the same methods. In order to understand the differences between chain and independent pharmacies, qualitative survey interviews were conducted with independent pharmacy owners or managers as an additional component.

*Methods:*
A total of 15 independent pharmacies were selected for the qualitative survey using a random sampling method. Interviews on specific topics were completed by student pairs. Once the qualitative data was collected, additional quantitative data on medicine availability and pricing were obtained from both independent and geographically matched chain pharmacies using the WHO/HAI methodology.

*Results:*
The qualitative interviews with independent pharmacies highlighted their patient-centered approach. They focused on ensuring customer satisfaction and providing a different pattern of service based on long-term interaction. Additionally, independent pharmacies provided a complementary role to chain pharmacies in that they provide unique services to customers that chain pharmacies do not offer.

Availability for prescription and over the counter medicines was higher in chain pharmacies than in independent pharmacies. Overall, prescription medicines had a 78.2% availability in chain pharmacies as compared to 69.7% availability in independent pharmacies. Over the counter medications (OTC) had a 79.8% availability at chain pharmacies compared to 84.8% at independents. Matched paired analysis for over the counter medicines showed a difference in median price ratios (MPRs) between originator brand and lowest priced generic, values being 23.70 and 10.28 respectively for the independent pharmacies. The matched pair analysis of prescription medicine prices showed a greater difference in the median price ratios of medicines

in both chain and independent pharmacies. In chain pharmacies, the median price ratio of originator brand was 157.67 and 41.65 for generic medicines across 13 matched pair pharmacies. In contrast, the median price ratios of originator brand and lowest priced generic in independent pharmacies were 153.60 and 17.59 respectively across four pairs of matched pharmacies.

*Conclusion:*
The study showed major differences between chain and independent pharmacies in relation to the services provided, the availability of medicines, and the prices of the medicines sold. Through the quantitative portion we found availability was higher in chain pharmacies. However, prices for prescription medicines were lower in independent pharmacies in regards to generic medicines.

# Introduction

There are many factors that come into play when patients choose between independent and chain pharmacies to purchase medicines. Two of the main considerations are interpersonal relationships and the difference in cost. In 2014 and 2015, students from the Boston University School of Public Health undertook a survey of Boston area pharmacies, including big box stores, measuring availability and prices of essential medicines (Sharma, Rorden, Ewen, & Laing, 2016) (Health Action International, 2016). This survey has been repeated in 2016, using pharmacies randomly sampled within the confines of Route 128 in Massachusetts, with the addition of qualitative interviews of independent pharmacy owners and managers. A different sample of pharmacies was surveyed from the 2014 and 2015 surveys, though some pharmacies from this study might have been included in previous surveys. This paper presents the information collected through the qualitative and quantitative evaluation of the independent pharmacies and their geographically closest matched chain pharmacy. The report has been broken down by method and section to highlight the results and to discuss the findings. Our objectives are to show the service, availability, and pricing differences that distinguish independent, chain, and big-box pharmacies.

# Background

The right to health has been a hallmark principle of international health organizations, but a right to health means nothing without access to essential medicines. Access to essential medicines is critical to ensuring optimal health outcomes for populations. Therefore, for a medicine to be accessible it must be both affordable and available. The Lancet Commission on Essential Medicines Policies released their 2016 report on November 8th, 2016. The Commission authored a publication titled 'Essential medicines for universal health coverage (Wirtz et al., 2016). The underlying principle is that "essential medicines policies are crucial to promoting health and achieving sustainable development" targeting a goal to ensure access for all by 2030 (Hill & Kieny, 2016). The commission explains, "the lack of medicine pricing information makes it difficult for consumers—both individuals and health systems—to make informed decisions about purchasing medicines." The first recommendation on making essential medicines affordable is to maintain a database of information concerning price and availability in the public and private sector. Our survey is limited to the private sector, which encompasses independent and chain pharmacies. The commission reports that affordability and pricing of essential medicines is the "major challenge" facing access to medicines, which reinforces the importance of our survey.

Since the first WHO/HAI pricing manual (WHO & HAI, 2008) was published in 2003, 100 price and availability surveys were performed using the methodology. These surveys uncovered information highlighting problems with access to medicine. One example is a survey that investigated price, availability, and affordability of essential medicines in 36 developing and middle income countries (Cameron et al., 2008). The survey found that generic medicine availability in the public sector was between 29.4% and 54.4%. In addition, median government procurement prices were 1.11, although, the public paid 9- 25 times the international reference price. The authors assessed that low procurement prices do not necessarily mean lower prices for the public. For acute and chronic illness, drug markups were up 380% and 552%, for wholesale

and retail respectively. The authors conclude that policies to increase availability and affordability, like generic promotion, as well as the development of alternative financing mechanisms are imperative to improve access.

The international reference prices referenced above are developed by Management Sciences for Health in their annual International Drug Price Indicator Guide (MSH & WHO, 2014). The MSH price guide has been annually published since 1986.

Consumer Reports performs pricing and availability surveys in the United States as well. Their findings, which correspond with the literature, note that expensive drug prices are affecting the overall health of more than a third of Americans (Consumer Reports, 2016). They go on to report that pricing is unregulated and the lack of available and affordable generic drugs can result in 'massive' price increases. In a July 2016 report, they found that 'prices vary widely from store to store' (Consumer Reports, 2016). For example, the price of the antidepressant Cymbalta ranged from $43 at Costco to $220 at Walgreens. The medicines Actos, Lipitor, Plavix and Singulair also had wide price disparities among pharmacies. Researchers concluded that the variation in pricing has less to do with getting more revenue from consumers, and more to do with getting additional benefits  from third parties like insurance companies or Pharmacy Benefit Managers. Below are the results of the survey.

Table 1. Consumer Report Survey Results (Consumer Reports, 2016)

| RETAILER | Generic Actos, 30 mg (pioglitazone) | Generic Cymbalta, 20 mg (duloxetine) | Generic Lipitor, 20 mg (atorvastatin) | Generic Plavix, 75 mg (clopidogrel) | Generic Singulair, 10 mg (montelukast) | TOTAL PRICE |
|---|---|---|---|---|---|---|
| | PRICE [1] | | | | | |
| HealthWarehouse.com | $14 | $35 | $11 | $9 | $15 | $83 |
| Costco [2] | $18 | $44 | $18 | $16 | $21 | $117 |
| Independents [3] | $25 ($11-$345) | $49 ($26-$222) | $19 ($8-$177) | $17 ($7-$236) | $25 ($8-$200) | $136 ($90-$1,068) |
| Sam's Club [2] | $96* | $11** | $30 | $29 | $27 | $193 |
| Target | $66 | $160 | $30 | $30 | $31 | $317 |
| Walmart | $140 | $118 | $30 | $30 | $35 | $352 |
| Kmart | $180 | $220 | $73 | $30 | $56 | $558 |
| Grocery Stores [3] | $140 ($10-$349) | $182 ($4-$274) | $66 ($11-$180) | $90 ($10-$161) | $83 ($12-$200) | $561 ($72-$957) |
| Walgreens | $167 | $220 | $64 | $65 | $87 | $603 |
| Rite Aid | $255 | $170 | $127 | $130 | $144 | $827 |
| CVS | $235 | $191 | $146 | $150 | $133 | $855 |

[1] For walk-in stores, average price for one-month supply. [2] Nonmember, nondiscounted prices. With a Sam's Club membership, prices could be up to 40 percent less, and some drugs are free for members in certain states. [3] Prices in parentheses are the range across sampled stores.

*Free for Sam's Club members.

**Some Sam's Club stores also quoted prices as high as $167.

*2014 Evaluating Availability and Price of Essential Medicines in the Boston Area*

In 2014, a price and availability of essential medicines survey (Sharma & Rorden & Ewen & Laing, 2016) was undertaken in Boston with a team under the direction of professor Dr. Richard Laing. Using the WHO/HAI methodology, the team surveyed "availability and undiscounted price data for both originator brand (OB) and lowest price generic" from 17 private pharmacies.

The survey examined 25 essential medicines, 14 prescription and 11 over the counter (OTC). This resulted in a few important findings. First, that the availability of OB medicines was lower compared to generics. Second, that medicines (both prescription and OTC) were priced higher than the international reference price (IRP). Shown here in Table 2 from the report, the availability is depicted in percentage for both prescription and OTC medicines in chains, independents, and overall.

Table 2: 2014 Availability of Essential Medicines (Sharma, et al., 2016)

Table 2
Mean percentage availability of surveyed medicines in retail pharmacies

| | Prescription medicines | | Over-the-counter medicines | |
|---|---|---|---|---|
| | Originator Brand % (number of pharmacies) | Generic % (number of pharmacies) | Originator Brand % (number of pharmacies) | Generic % (number of pharmacies) |
| Chain | 52.7 % (*n*=8) | 78.6 % (*n*=8) | 80.9 % (*n*=10) | 94.5 % (*n*=10) |
| Independent | 28.6 % (*n*=6) | 76.6 % (*n*=6) | 63.6 % (*n*=7) | 72.7 % (*n*=7) |
| Overall | 42.3 % (*n*=14) | 78.6 % (*n*=14) | 73.8 % (*n*=17) | 85.6 % (*n*=17) |

The lowest price generic (LPG) and OB OTC medicines were priced 11.53 and 21.33 times the IRP. Overall, the LPG and OB prescription medicine price ratios were 38.03 and 158.14 times the IRP. However, the article did discuss that assessing the actual prices paid by consumers was not possible given that fact that different insurances cover different amounts, and various discounts were offered in different circumstances. The prices reported were for undiscounted out-of-pocket payments without consideration for insurance.

Demonstrated in Table 3 and 4, pricing in the 2014 survey was consistently lower in independent pharmacies for both prescription and OTC medicines. This was consistent with the Consumer Report's findings.

Table 3: 2014 Median Price Ratios for Over the Counter Essential Medicines (Sharma et al., 2016)

| 3(a). All Medicines analysis | | | | | | |
|---|---|---|---|---|---|---|
| | Overall | | Chain Pharmacies | | Independent Pharmacies | |
| | Originator Brand (medicines = 9) | Lowest Price Generic (medicines = 11) | Originator Brand (medicines = 9) | Lowest Price Generic (medicines = 11) | Originator Brand (medicines = 9) | Lowest Price Generic (medicines = 9) |
| Median MPR | 21.33 | 11.53 | 20.81 | 11.53 | 17.98 | 9.43 |
| Minimum, Maximum MPR | 11.41, 41.24 | 2.68, 29.42 | 11.41, 143.13 | 2.68, 112.08 | 11.69, 37.27 | 2.55, 31.58 |
| 3(b). Matched pair analysis | | | | | | |
| | Originator Brand | Lowest Price Generic | Originator Brand | Lowest Price Generic | Originator Brand | Lowest Price Generic |
| | OB-LPG pairs = 9 | | OB-LPG pairs = 9 | | OB-LPG pairs = 8 | |
| Median MPR | 21.33 | 14.56 | 20.81 | 15.81 | 17.81 | 9.50 |
| Minimum, Maximum MPR | 11.41, 41.24 | 5.40, 29.42 | 11.41, 143.13 | 5.79, 112.08 | 11.69, 35.15 | 3.55, 31.58 |

Table 4: 2014 Median Price Ratios for Prescription Essential Medicines (Sharma et al., 2016)

| 4(a). All Medicines analysis | | | | | | |
|---|---|---|---|---|---|---|
| | Overall | | Chain Pharmacies | | Independent Pharmacies | |
| | Originator Brand (medicines = 10) | Lowest Price Generic (medicines = 13) | Originator Brand (medicines = 8) | Lowest Price Generic (medicines = 12) | Originator Brand (medicines = 3) | Lowest Price Generic (medicines = 10) |
| Median MPR | 158.14 | 38.03 | 180.29 | 39.54 | 188.56 | 31.28 |
| Minimum, Maximum MPR | 16.43, 655.09 | 12.52, 155.46 | 29.29, 663.30 | 19.15, 168.73 | 29.52, 655.09 | 5.37, 122.38 |
| 4(b). Matched pair analysis | | | | | | |
| | Overall | | Chain Pharmacies | | | |
| | Originator Brand | Lowest Price Generic | Originator Brand | Lowest Price Generic | | |
| | OB-LPG pairs = 10 | | OB-LPG pairs = 8 | | | |
| Median MPR | 158.14 | 35.15 | 180.29 | 39.54 | | |
| Minimum, Maximum MPR | 16.43, 655.09 | 12.52, 98.57 | 29.29, 663.30 | 28.73, 115.79 | | |

In addition to the independent and chain pharmacies, big-box stores were also surveyed in 2014. Table 5 shows there were significantly lower MPRs at Walmart/Sam's Club, Target, and Hannaford compared to independent and chain pharmacies. Inclusion was low at Walmart/Sam's Club and in the Target $4/$10 program.

Table 5: 2014 Big Box Inclusion and Price Ratios for Essential Generic Medicines (Sharma et al., 2016)

**Table 5** Inclusion and price ratio of studied medicines in the pharmacy discount program

| Type of Medicine | Walmart/Sam's Club | | Target Prescription Saver | | Target $4/$10 | | Hannaford | |
|---|---|---|---|---|---|---|---|---|
| | Inclusion (%)[a] | Price Ratio [median (min, max)][b] | Inclusion (%)[a] | Price Ratio [median (min, max)][b] | Inclusion (%)[a] | Price Ratio [median (min, max)][b] | Inclusion (%)[a] | Price Ratio [median (min, max)][b] |
| Acute $n = 12$[c] | 50.0 % | 4.4 (3.3, 18.8) | 100.0 % | 16.1 (3.3, 70.7) | 50.0 % | 4.8 (3.3, 18.8) | 100.0 % | 16.3 (3.3, 74.3) |
| Chronic $n = 14$[c] | 35.7 % | 5.4 (3.3, 16.8) | 100.0 % | 15.0 (2.9, 81.3) | 35.7 % | 6.7 (3.3, 15.2) | 92.9 % | 5.4 (3.3, 70.1) |
| Overall Inclusion and Price Ratios [Median (min, max)] $n = 26$ | 42.3 % | 4.4 (3.3, 18.8) | 100.0 % | 13.9 (2.9, 81.3) | 42.3 % | 4.4 (3.3, 18.8) | 96.2 % | 13.3 (1.4, 74.3) |

[a]Inclusion refers to the percentage of total surveyed medicines offered by a given pharmacy discount program
[b]Compares median of the calculated price ratios to the MSH median unit reference price
[c]*n* refers to the total number of medicines surveyed for acute and chronic medicines, respectively

*2015 Price & Availability of Essential Medicines in the Boston Area*

In 2015, another team led by Dr. Richard Laing, surveyed a similar set of pharmacies with the stated goal of repeating the 2014 study (Alsuwaidi & Chivukula & Hashey & Lee & McKean & Noble & Nyein & Parekh & Poulsen & Shobiye & Shonukan, 2015). The team, using the WHO/HAI methodology, surveyed availability and undiscounted price data for OB and generic essential medicines. The number of medicines surveyed was increased to 29 (18 prescription and 11 OTC) and the number of pharmacies visited increased to 19.

The team found that the overall availability of OTC medicines was higher than prescription medicines, with chain pharmacies having a higher OTC medicine availability than independent pharmacies. In addition, with respect to OTC medicines, the study found that LPG were more available than OB medicines. In terms of pricing, the MPRs of OB and LPG were 20.64 and

11.59 times the IRPs. This corroborates the 2014 survey where the numbers were 21.33 and 11.53.

The 2015 study also found that generics of the prescription medicines surveyed were substantially more available than originator brands. In addition, LPGs were cheaper than OB medicines. The MPRs of OB and LPG were 164.64 and 41.26. This again corroborates the 2014 survey where the numbers were 158.14 and 38.03.

Below is Table 6 from the 2015 survey which shows the availability of OTC and prescription medicines in chains, independents, and overall. Generic availability was much higher compared to OB for prescription medicines in both chains and independents. The OTC medicine generics were nearly equally available compared to OB in chains, but generics were far more available compared to OB in independents.

Table 6: 2015 Mean Availability for Essential Medicines (Alsuwaidi et al., 2015)

| Table 2. Mean availability of surveyed medicines in retail pharmacies | | | | | | |
|---|---|---|---|---|---|---|
| | Prescription medicines | | | Over-the-counter medicines | | |
| | Originator Brand % (number of pharmacies) | Generic % (number of pharmacies) | All medicines % (Originator Brand plus Generic) | Originator Brand % (number of pharmacies) | Generic % (number of pharmacies) | All medicines % (Originator Brand plus Generic) |
| Chain | 34.2% (n=13) SD 27.1% | 57.3% (n=13) SD 43.4% | 76.9% (n=13) SD 35.3% | 84.7% (n=15) SD 17.8% | 83.3% (n=15) SD 25.4% | 87.9% (n=15) SD 17.7% |
| Independent | 15.3% (n=4) SD 25.2% | 48.6% (n=4) SD 44.6% | 61.1% (n=4) SD 33.2% | 37.5% (n=4) SD 21.2% | 72.5% (n=4) SD 29.9% | 77.3% (n=4) SD 16.7% |
| Overall | 29.7% (n=17) | 55.2% (n=17) | 42.48% (n=17) | 74.7% (n=19) | 81.8% (n=19) | 69.77% (n=19) |

Again, the 2015 survey evaluated big-box stores. These stores were shown to have substantially lower MPRs when compared to chain and independent pharmacies, as is evident by table 7. It is important to note that the sample size was consistently low again.

Table 7: 2015 Big Box Inclusion and Price Ratios for Essential Medicines (Alsuwaidi et al., 2016)

**Table 6: Inclusion and price ratio of prescription medicines in pharmacy discount programs at warehouse, big box, grocery and chain retail stores**

| Name | Costco.com | | HealthWarehouse.com | | Walmart.com | | Target.com | | Target Rx Club | |
|---|---|---|---|---|---|---|---|---|---|---|
| Value (30d/90d) | Free shipping | | Lowest prices (CR, 2015) | | $4/$10 list | | $4/$10 list | | $4/$10 list | |
| Group: | Warehouse (members) | | Warehouse (all) | | Big Box (all) | | Big Box (all) | | Big Box (members) | |
| Additional costs | $55/yr (Full store) | | Shipping costs | | -- | | -- | | $10/yr/family (Rx only) | |
| Type of Medicine | Inclusion (%)* | Price Ratio [median (min, max)]** | Inclusion (%) | Price Ratio [median (min, max)] | Inclusion (%) | Price Ratio [median (min, max)] | Inclusion (%) | Price Ratio [median (min, max)] | Inclusion (%) | Price Ratio [median (min, max)] |
| Acute n=7# | 57.1 | 19.1 [5.4, 64.1] | 57.1 | 16.5 [5.4, 49.3] | 28.6 | 4.5 [4.3, 4.7] | 28.6 | 4.5 [4.3, 4.7] | 57.1 | 13.1 [4.3, 84.8] |
| Chronic n=10# | 40.0 | 16.3 [8.4, 39.6] | 90.0 | 36.4 [3.2, 79.2] | 20.0 | 8.4 [3.9, 12.9] | 20.0 | 8.4 [3.9, 12.9] | 50.0 | 15.5 [3.9, 42.3] |
| Overall n=17 | 47.1 | 16.3 [5.4, 64.1] | 76.5 | 18.3 [3.2, 79.2] | 23.5 | 4.5 [3.9, 12.9] | 23.5 | 4.5 [3.9, 12.9] | 52.9 | 15.5 [3.9, 84.8] |

The 2014 and 2015 surveys both showed that chain pharmacies generally had better availability and highest prices compared to independent pharmacies. The lowest prices were found in Big Box pharmacies and in special schemes in supermarket or mail order pharmacies.

# Methods

In this section, the methods for our 2016 survey will be summarized. First, the sampling method will be described in detail, then the qualitative section will be outlined, and finally, the quantitative methods will be discussed.

## Sampling:

The initial sampling unit for the purpose of our survey was intended to be 13 independent pharmacies that were matched with the geographically nearest chain pharmacies within Route 128, which surrounds Boston. The study population included independent pharmacies registered with the Massachusetts Health and Human Services department through the Health Care Safety and Quality License Verification Site (Commonwealth of Massachusetts: Health and Human Services, 2007).

In order to select for independent pharmacies within Route 128, exclusion criteria were developed for the pharmacies listed in the registry. To begin, only pharmacies registered as retail pharmacies with the Massachusetts State Department under Health and Human Services were included. Then, all pharmacies were excluded with zip codes outside of Route 128. If a zip code overlapped with the area demarcated by Route 128, it was initially included on the list. Once the zip codes were identified, all chain pharmacies were removed. This was followed by the removal of all specialty, veterinary, compounding, and facility pharmacies. After all of these criteria were selected, a sample of 45 independent retail pharmacies was identified and the sample selection process began.

To identify the pharmacies indicated for our study population, we used a probability sampling method. Specifically, we used a simple random sampling of our selected independent retail pharmacies. A lottery method was used to choose individual pharmacies from the sample, which was generated by Excel through the method explained above. To begin the selection process the independent retail pharmacies were numbered from 1- 45. Using a random number generator, identified at https://www.random.org/, 13 pharmacies were selected out of the 45 independent pharmacies. When generating the random number, if the same number occurred twice, we generated a new one. In addition, if it was discovered that a pharmacy was no longer in existence, was not actually an independent pharmacy, or was outside of Route 128, a new random number was generated to provide another option.

Of note, one of the randomly selected independent pharmacies was found to be outside of Route 128. Additionally, two of the other pharmacies selected were discovered to be compounding pharmacies and were all replaced after the misclassification was identified. Ultimately, we had to fill in the sample with extra pharmacies, so the final sample population was 42 independent pharmacies (Annex 1). Of those 42, 15 separate independent pharmacies were identified and contacted to participate in various aspects of the study. Once all of the independent pharmacies were identified, we found the closest chain pharmacies, using Google Maps, to serve as a comparison.

## Qualitative Methods:

In order to prepare students a sample in-class interview was conducted to demonstrate proper interview questioning techniques. The subject, Todd Brown, is a pharmacist and serves as the Executive Director for the Massachusetts Independent Pharmacy Association. After observing this interview, the qualitative interview process began. Students were assigned to one independent pharmacy, and were encouraged to worked in pairs. When working in pairs, one student wrote down quotes and notes on the interview while the other asked questions. Interview

questions are based on the themes discussed in class. A list of introductory questions is listed in Annex 3.

A letter from Dr. Richard Laing, the class instructor, was sent to each of the independent pharmacies regarding the interview process. Students then contacted the pharmacist and scheduled an interview with either the pharmacy owner or manager. If the pharmacist was not available or refused to participate, a new pharmacy was randomly generated. The students were required to visit the independent pharmacies and conduct the interview while taking notes. Some students also recorded the interviews for future reference after proper consent was given.

At one point it was necessary to increase the sample because some staff at the selected sample pharmacies refused to take part. Ultimately, two students still could not schedule an interview with the newly sampled pharmacists. These pharmacies were left out of this report.

After the interviews were conducted, students compiled a report of direct quotes to answer the questions listed in Annex 3. A class compilation of quotes was then made with only "quotable quotes", or quotes that were deemed to be the most interesting or relevant in each subject or topic area. These quotations are attached to this report as Annex 4. It is important to note the interviews were not transcribed, and that textual analysis using Computer Assisted Text Analysis has not been conducted. A summary and selection of these "quotable quotes" has been produced and is included in the Results section of this report.

## Quantitative Methods:

The same sampling method described above was used for the quantitative data collection in the selected thirteen independent and thirteen chain pharmacies. The data collection instruments

used were the worksheets developed for the WHO/HAI survey method. These data worksheets were used to survey prescription and over the counter (OTC) medicines with respect to availability of the originator brand and their lowest priced generic of each survey medicine. The medicines surveyed were selected from the WHO/HAI list of essential medicines that focuses primarily on off patent generic medicines. The medicines picked for this survey were the same as those previously studied in 2015 by Alsuwaidi, et al. The reference prices used in this report were from the MSH 2014 International Drug Price Indicator Guide (MSH, 2014). These were the same reference prices used for the above mentioned 2015 survey. Of note, there was not an originator brand medicine for hydrocortisone.

Training was provided to students on critical aspects of data collection such as effective communication skills, how to calculate the unit prices, and the different names of medicines. Prior to conducting the survey, official letters were sent out to pharmacies by Dr. Richard Laing and Mr. Todd Brown from the Massachusetts Independent Pharmacists Association informing the pharmacy managers and owners about the quantitative part of the survey.

Similar to the previously described qualitative data collection process, students visited the pharmacies in pairs. If the target pack size selected for data collection was not available, the closest larger amount to the recommended pack size was included. The prices of these packs were recorded, and the unit price was calculated. To improve the quality of the data collected, one student read off medicine prices from each pack, while the other student recorded data onto the printed worksheet.

In order to ensure the completeness of data collected, students paid multiple visits to some of the pharmacies to which they were assigned. In several cases, students had to collect data for OTC and prescription medicines separately due to busy hours at the pharmacy and unavailability of staff members. Consequently, two pharmacy owners insisted on keeping the forms and filling them out themselves, which is a limitation of this study.

*Final*

## Data Collection for medicine prices:

### Qualitative:

Data collectors asked a set of questions to collect descriptive and qualitative data on the pharmacies. The survey included the following six topics: personal, history of the pharmacy, approach to business, pricing, differences from the chain pharmacies, and challenges. Questions in the 'personal' section covered educational, personal, and family background information. Questions on the pharmacy history included starting of individual pharmacy, catchment population, and reason for location. We also asked questions on the approach to business cover staffing, procurement, patient records, and special services, such as prevention services, language support, services for disability, products other than drugs, and individualized services. There were questions on pricing that included the owners attitude towards patients who could not afford medication and patients' attitudes towards generics. Questions on the difference between independent pharmacies and chain pharmacies focused on different services provided by the independent pharmacies. Finally, questions on challenges asked about how independent pharmacies attract and keep customs, as well as their secret to success.

Data was then collected from the pharmacy staff or the owner, based on their schedule and availability. All descriptive and qualitative data were compiled into a doc file by topic, and the data was analyzed within each topic to identify common themes and keywords. The descriptive information provided by data collectors were not included.

### Quantitative:

As described above, Medicine Price Data Collection forms were used to collect information on the prices of medicines in both the independent and chain pharmacies. Two separate forms were

provided to collect price information: an OTC medicine form and a prescription medicines form. Both forms listed the specific medicines under study. Recommended pack sizes of the listed medicines and the brand name and manufacturer of the originator product was also provided. The detailed information on the form enabled the standardization of data collection in the sample pharmacies. For each medicine listed, information was collected on the price of the pack found, and the pack size found for both the originator brand and the LPG. The unit price of the medicines was defined as price per cap/tab or price per vial. These unit prices were calculated manually using the equation shown below. In each facility in our sample, the data collectors requested for the medicine price list for the prescription medicines and used this information to fill in the form with the respective information. The OTC medicine prices were recorded by the data collectors after they browsed the shelves in the facilities and collected the prices of the available medicines on the list.

$$\text{Unit Price} = \frac{\text{Price of package of medicine found}}{\text{Pack size of medicine found}}$$

## Quantitative Analysis:

Before data analysis, we assessed completeness and internal consistency of the data by entering it into the workbook on a shared Google Spreadsheet twice as recommended by WHO/HAI. The 'Double Entry' method was used for identifying variations between the two sets of data. We also manually inspected all data in the workbook to ensure we recorded the correct value. Any differences in the double entries were flagged, checked against the data collected form, and corrected. All data analysis was done using the WHO/HAI Excel workbooks for OTC and prescription medicines.

All prices obtained for medicine packs were converted to unit prices then compared to the international reference price (MSH 2014). We calculated the median price ratio (MPR), as shown below, instead of the actual prices obtained from the pharmacies in order to have a standard number to compare between different pharmacies.

$$\text{Median Price Ratio: } \frac{\text{Local Unit Price}}{\text{International Reference Unit Price}}$$

To start we went over individual purchase prices and medicine availability. We also analyzed within-sector prices and availability by comparing prices within independent pharmacies. A similar analysis was completed for chain pharmacies. Patient prices were compared between independent and chain pharmacies in our cross-sector analysis. Finally, using summary measures we compared prices between independent and chain pharmacies. The summary measures were calculated using the workbook provided and are listed below:

- Mean percent availability
- Standard deviation for mean percent availability
- Median of the of the MPRs calculated for each medicine
- 25th percentile MPR
- 75th percentile MPR
- Minimum MPR
- Maximum MPR

Finally, we compared the availability using the mean percent availability of medicines and the median of the MPRs for medicines. Initial analysis included all products. However, the paired analysis included only matched pharmacy pairs in which the originators and the generic were both available.

# Results

## Qualitative Analysis:

The themes that emerged from the qualitative interviews conducted with independent pharmacists have been outlined below. A comprehensive compilation of quotes is included in Annex 3.

### Personal characteristics:

***Background***

Even though all of the pharmacists had similar educational experiences, their journeys towards working as independent pharmacists were varied as shown below:

*" I was with CVS for almost 20 years as a pharmacist. Got sick of that. Didn't realize at the time how much I hated it."*

*"Back then, I know pharmacy had a shortage and there was a demand for pharmacists... Pharmacy back then was crazy. They didn't have any pharmacists so I picked it up."*

***Training and Experience***

Most pharmacists had experience working for chains and some expressed their dissatisfaction for the way chain pharmacies function:

*"I did not like working for a chain pharmacy, there was very little contact with the patients. It was high production you know, type and fill as fast as you possibly could. Move them in and move them out and I didn't care for that style."*

Additional comments contrasted working in independent and chain pharmacies:

*"As a pharmacy student, I worked in CVS and hospital as well, enjoyed both but understood quickly the way of corporation. Corporation is a lot more demanding and everything is ruled by numbers, and everything is ruled by time. So how fast and how much can you produce. There is very little time for actual customers."*

### *Family Background in Pharmacy*

Some pharmacists had practical reasons for their careers as pharmacists:

*"What's led me here was first the necessity for a job, but what's kept me here is the relaxed atmosphere, doing what I love to do still… without the stresses of the chain."*

Several mentioned that family members were also pharmacists:

*"I actually got into this because my uncle was a pharmacist. I wanted to go to med school he was like you should go to pharmacy school. Then you can pay your way through med school. After 6 years of pharmacy school, I was like, I'm not going back to school."*

## History of Independent Pharmacy

### *Beginning of Pharmacy*

The length of time that the pharmacies had been open ranged from six months to 60 years:

*"When the previous owner passed away, he passed -about in '07, and his family tried to keep it going – they finally gave up in 2012 and they sold to CVS at this time the records got transferred over there, so S came in and put a pharmacy there but it was starting fresh- as if starting from day one."*

Additional insight:

*"This pharmacy started probably about 60 years ago just across the street actually, and it moved twice. I bought it 31 years ago and was there for 20 years and moved down here 11 years ago."*

### *Catchment Population*

The patient population was characterized quite differently among the pharmacies. Some named elderly populations as their target patient population:

*"And sometimes for generations, I've taken care of grandparents and now the grandkids, some of the kids work for me. I've known their families since before they were born!"*

*"The vast majority of our patients are elderly and they enjoy working with us because we are there for them immediately and we are able to answer their questions."*

Others considered geographic location:

*"There's about 52,000 people in --- ... our geographic area is a little bit bigger because of the services we provide. I do a lot of medication management for people, putting pills in pill minders. We do delivery service, which is huge."*

One pharmacist provided insight into servicing smaller number of patients:

*"A small chain has a goal to serve a smaller population at a higher quality whereas big box stores have the goal of filling the fastest at a higher volume."*

Additionally:

*"The reasons why [the head pharmacist] wanted to be located here was: 1. this area had nothing and 2. to get to other pharmacies [from this area], you needed to take a bus. So this space was available."*

***Social Orientation***

*"Right now, we average about 100 prescriptions a day. We have a technician and 2 pharmacists. That is good enough for that volume."*

*"We have our own way of doing things, we take time to talk to our patients, it's not always about the production."*

## Approach to Business

This domain encompassed several themes in the ways that business models in independent pharmacies are designed.

### *Staffing Relationships*

All pharmacists mentioned their commitment to their staff as a major consideration in their business model.

*"A large role of the pharmacist in pharmacies catering with human beings is dealing with insurance. In veterinary pharmacies, there is almost no involvement with insurance so it's set up differently (An all cash business)."*

*"The relationship between the staff is extremely positive- we have known each other for so long so we [create a homey environment]. We have two pharmacists and two technicians."*

### *Procurement Practices*

Some mention of procurement practices:

*"If you order before the cutoff time in the morning, they deliver by afternoon. We basically have like 4 vendors right now. You have a main one and the other ones are like, just in case."*

*"I have 2 or 3 companies. I compare their prices and buy from who has the best price. If you want my business, you need to give me a better price. We do a lot of price shopping, price comparing with major distributors."*

### *Assisted Living*

*"We do assisted livings...we go in and package the medication in a special, we have different types of packaging"*

***Deliveries***

One common thread was offering delivery services as major distinguishing factor for independent pharmacies:

*"Our biggest demographic is gerontology, you know the older population. So that's pretty much who we cater to because we do a lot of deliveries to them. You know, they can't get out so we do a lot of deliveries to the facilities plus we have home deliveries also."*

*"The biggest services: Free delivery. We do pre-packed medication for the elderly. We also have home health care products. "*

A perspective from a newly opened pharmacy:

*We're still a new place so we say yes to delivery anywhere"*

One pharmacy went beyond the call of duty to ensure patient needs were addressed:

*"What we do as a specialty is the medicine on time program. It's more of a medication management for the folks who are really having trouble. We get calls from the doctor, or the nurse, or the family they say ok, my dad is having trouble with his medication, he has 27 bottles on his counter one's from 1987 and ones from last week and it's empty, one has m&ms in it and all his pills are in Dixie cups. So we'll go out to the house gather everything up, gather all the information, get a list from his doctor, what should he be on, and we'll package it in that packaging."*

***Additional Services Provided***

All of the pharmacies offered unique services that distinguished them from their competition:

*"If someone comes in with their prescription bottle and it's Friday afternoon of a holiday weekend and they're out of their medication, we don't hand the bottle back and say you need to call your doctor for a refill, A. we call doctors for refills, B. I'm not letting them go 3 days without their blood pressure medication, I'm gonna make sure they've got medication through the weekend, you know we do things like that."*

***NCDs***

Non-communicable diseases emerged as a topic of conversation among few pharmacists. According to one pharmacist:

*"You have to try to get people to understand that treatment and cure are two different things, and cure doesn't happen very often."*

***Supported Languages and Software***

Some pharmacies offered translation software in their business:

*"I actually have a translation program on my phone. I haven't had to use it but it's there if I have to."*

*"Our pharmacy software has a great translator which is accessible to patients who speak different languages."*

One pharmacy mentioned that between all of its employees they could communicate with patients who spoke Spanish, Arabic, Chinese, Vietnamese, and Amharic.

## Pricing:

In regards to affordability of medicines, pharmacists had the following comments regarding medical prescriptions and over the counter medicines:

***Medical Prescriptions***

*"We offer comprehensive customer service unlike our competitors. Things like delivery, flu shots, competitive pricing...a lot of people are unaware that chains stores often have inconsistent pricing. We call the CVS down the street and the one in Back Bay and there's a price difference by 20% for one particular drug."*

***Over the Counter***

*"Over the counter medications are bought from the wholesaler and then it is marked up based on what the wholesaler recommends or based on what we think is fair."*

Two pharmacists offered unique responses on how they assist patients whose main obstacle is affordability:

*"If a patient cannot afford a medication- "We would probably contact the doctor and have a discussion with the doctor about the patient's' inability to pay- it would be a tough situation."*

*"[If it is a medication that is a one-time thing then we would be willing to work with the patient on making payments later on]."*

***Patient attitudes towards generics***

Responses regarding generic medicines were varied. Some alluded to changing attitudes towards generics:

*"For the most part people are fine with it, which has changed significantly over the last 30 or 40 years...People are actually very accepting at this point of generics."*

*"Attitudes towards generics have shifted towards a more positive light in recent years."*

*"A lot of times, customers are more particular about the manufacturer of their generic product as opposed to the fact they are getting a brand name."*

Others distinguished attitudes about generics among different age brackets:

*"Younger customers tend to go for the generics but the older folks prefer brand name. It's hard to challenge perceptions of the older community."*

Several pharmacists commented on their role in educating patients about generics:

*"I usually don't keep brand names ahead of time. I'm just like everyone else trying to manage the household budget."*

*"Patients don't think generic is same effective as original, and the pharmacist's job is to help them understand this. takes time to explain this to patients."*

***Managing patients who cannot afford medication***

A distinguishing factor for independent pharmacies was their commitment to ensuring their patients access the medicine they need:

*"We do have an in house charge account, we'll send them a bill every month and cross our fingers that they pay it"*

*"Basically try and find something that they can afford"*

Some pharmacists reached out to primary care providers:

*"I'll come out and say to somebody your prescription is $400 this is ridiculous. We need to talk to the doctor and have them order something you can afford"*

*"Contact the doctors to see what alternative is possible."*

Two pharmacists elaborated on their commitment to their customers:

*"We don't let anyone walk out without their medicine. I will call them and say, you do have a balance, you need to be aware. You'd be surprised. Most of them will pull a couple dollars here and there to pay, but I have had my share of people who've run out."*

*"We try to help patients as much as possible. Like I said, we try to find the cheaper price for them within our scope. Let's say we give them the price we paid to purchase the medicine."*

***Provision of other resources and services***

Several comments were made regarding the unique relationship between some independent pharmacists and their customers:

*"As far as going to the chains and then coming here we've had the situation where someone just hasn't gotten an acceptable answer so they're trying another pharmacy to see if someone will tell them in English"*

Additional comment:

*"If someone walks in we can focus on them, and if it takes two of us to focus on them then fine. We get the one-on-one feel. Not the rushed feel like we're trying to get you out the door. Here it's obvious the owner of the business is standing right next to me most of the time."*

One pharmacist observed that some customers prefer speaking with the owner of the business:

*"People also love that there is no phone chain and that they are immediately connected with a person when they call. The customers also know that the owner is here so they ask for her constantly."*

## Challenges facing Independent Pharmacies:

In regards to potential challenges or obstacles, a range of responses were given:

*"First of all my store is 80% pharmacy, 20% front store although my front store takes up the majority of my floor space. "*

A present challenge for one pharmacy:

*"Our biggest challenges now is recruitment. How do we advertise and let people know that we are here? We did not want a huge influx in the beginning because we were not ready for it. But now we are ready for it and hoping for that influx of patients?"*

One pharmacist's response to future challenges:

*"Future challenges include the competition with corporate pharmacies...Insurance companies definitely favors the big chain stores."*

***Ensuring customer loyalty***

Several pharmacists discussed retainability of customers as a current challenge:

*"Basically customer service."*

*"Our good customer service keeps people coming back. We know our customers names and their prescriptions a lot of times."*

***Present challenges***

Several pharmacists identified insurance companies and PBMs as potential challenges:

*"When I say insurance companies, I'm really talking about the Pharmacy Benefit Managers, the PBMs. The insurance companies contract with the PBMs and I contract with them. I don't contract with Blue Cross Blue Shield; I contract with Express Script. Most people don't know the way it works."*

*Final*

*"The PBMs are running us out of the market."*

*"The biggest challenge that I think I've ever had with this pharmacy is really the insurance."*

*"We spend a lot of time everyday fighting with the insurers trying to get them to cover it, trying to get the doctor to do the paperwork so they can get it covered."*

*"Challenge: reimbursement right now is extremely slow. Third parties have cut reimbursement terribly, and they have four weeks to pay. I pay my wholesaler every week."*

***Challenges regarding mail-order services***

*"The biggest problem is mail order because mail order also does therapeutic substitutions without necessarily contacting the patient or informing the patient ... what is this stuff what are they giving me, can you tell me what's going on? And they can't necessarily get an answer all the time from mail order."*

***Competing with Chain Pharmacies***

*"Off the top of my head, if you're thinking competition with chains, I'm not worried about chains."*

*"They [chain pharmacies] send people to me because I do things they don't do."*

*" Competing with chains is not even a question...If you are sure of who you are as a person, then there is no competition."*

***Personal success factors***

All of the pharmacists interviewed offered some insight about their personal successes with patients:

*"You can take the time to talk to them."*

*"When they come in, we do a patient profile and if they have to get their prescriptions transferred from another pharmacy, we handle that as well so that we make it easy for them."*

*"We're taking care of people. That's what we do."*

*"The quality of customer service we deliver is unmatched by our competitors and I think our customers know that."*

Comments on connecting with patients:

*"The working here is more meaningful. I felt I actually reach people. I make changes and help people understand the medications."*

*"A lot of our customers have our personal phone numbers too. You don't have to just call the pharmacy. You can talk to us personally. That is how convenient it is."*

*"We're service oriented, customer friendly, we try to help our customers as much as we can."*

Most pharmacists were happy to share their personal drivers:

*"You have to believe in what you do, which is a curse."*

*"Success basically for me, you have to provide best service."*

*"Keep employees happy and work as a family."*

## Quantitative:

Out of the 25 pharmacies sampled, data was collected for prescription medicine data from independent and 13 chain pharmacies (Total= 23 pharmacies). In addition, over the counter data was obtained from 9 independent and 14 chain pharmacies (Total= 23 pharmacies).

Availability:

Table 8: Mean Availability of surveyed medicines in retail pharmacies

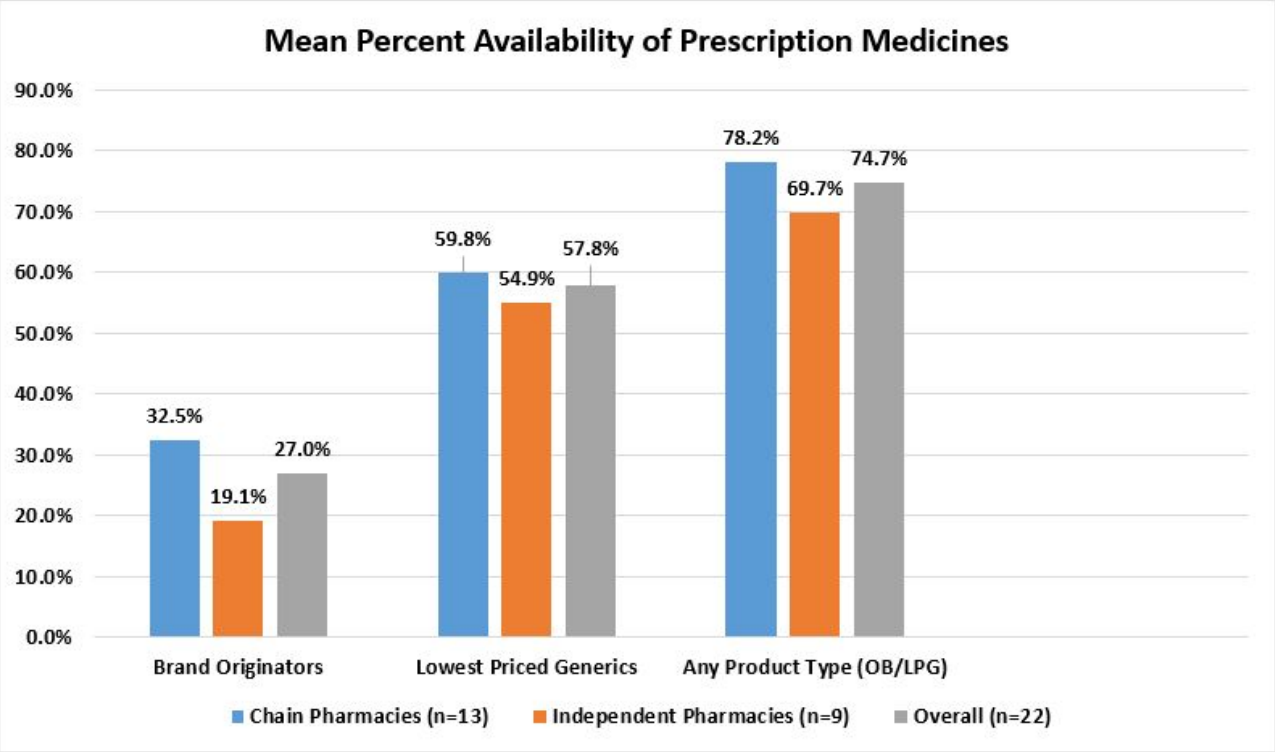
| **Mean Availability of Surveyed Medicines in Retail Pharmacies** | | | | | | |
|---|---|---|---|---|---|---|
| | **Prescription Medicines** | | | **Over the Counter Medicines** | | |
| | **Originator Brand %** (number of pharmacies) | **Generic %** (number of pharmacies) | **All types of Medicines %** (number of pharmacies) | **Originator Brand %** (number of pharmacies) | **Generic %** (number of pharmacies) | **All types of Medicines %** (number of pharmacies) |
| **Chain** | **32.5% (n=13) SD 31.5%** | **59.8% (n=13) SD 40.7%** | **78.2% (n=13) SD 27.3%** | **63.6% (n=14) SD 30.9%** | **78.6% (n=14) SD 16.9%** | **79.8% (n=14) SD 15.2%** |
| **Independent** | **19.1% (n=9) SD 30.4 %** | **54.9% (n=9) SD 37.2%** | **69.7% (n=9) SD 25.5%** | **54.5% (n=9) SD 33.1%** | **76.8% (n=9) SD 24.1%** | **84.8% (n=9) SD 17.4%** |
| **Overall** | **27.0% (n=22) SD 30.8%** | **57.8% (n=22) SD 38.8%** | **74.7% (n=22) SD 25.8%** | **60.5% (n=23) SD 29.4%** | **77.9% (n=23) SD 17.1%** | **81.8% (n=23) SD 13.8%** |

*Note:All types of medicines refers to either originator OR generic medicine availability.*

Table 8 summarizes the availability of over-the counter (OTC) and prescription medicines, stratified by originator brand (OB) and generic equivalents, in chain and independent pharmacies. In general, the overall availability of OTC medicines was higher than the prescription medicines. The OB medicines were less available (prescription: 27.0% ; OTC: 60.5%) as compared to the generic equivalents (prescription: 57.8%; OTC: 77.9%). Similarly, the overall generic availability was higher than originator products, both in the chain and independent pharmacies. As seen in the Table 8, there were large disparities between OB and generic availability in both strata. The All types of medicines category had the highest availability since generic versions for salbutamol inhalants and insulins were not stocked.

*Prescription Medicines Availability*

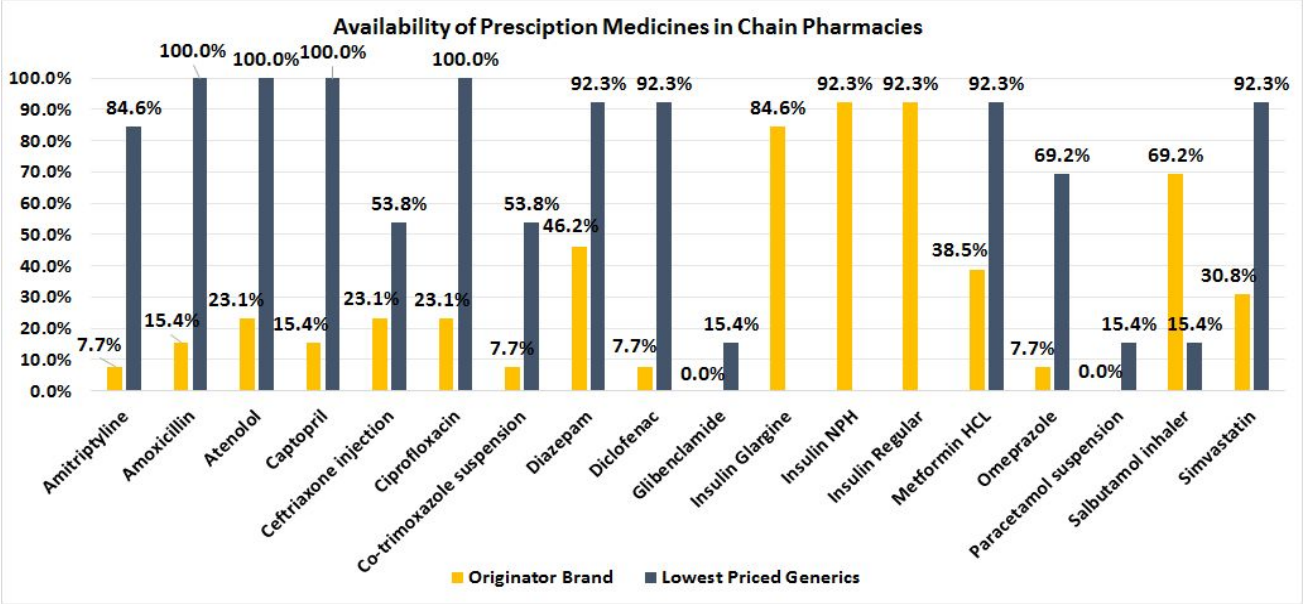
Figure 1: Mean Percent Availability of Prescription Medicines in the Pharmacies




*Final*

As described above, figure 1 shows that the chain pharmacies had higher availabilities for both OBs (32.5%) and generic medicines (59.8%) as compared to independent pharmacies, which had 19.1% availability of OB and 54.9% for generics. Moreover, was seen that the availability of any type of prescription medicine (OB or generic) was higher in chain pharmacies (78.2%) as compared to independent pharmacies (69.7%). Overall, the results showed that in both types of pharmacies the lowest priced generics had higher availability than OBs.

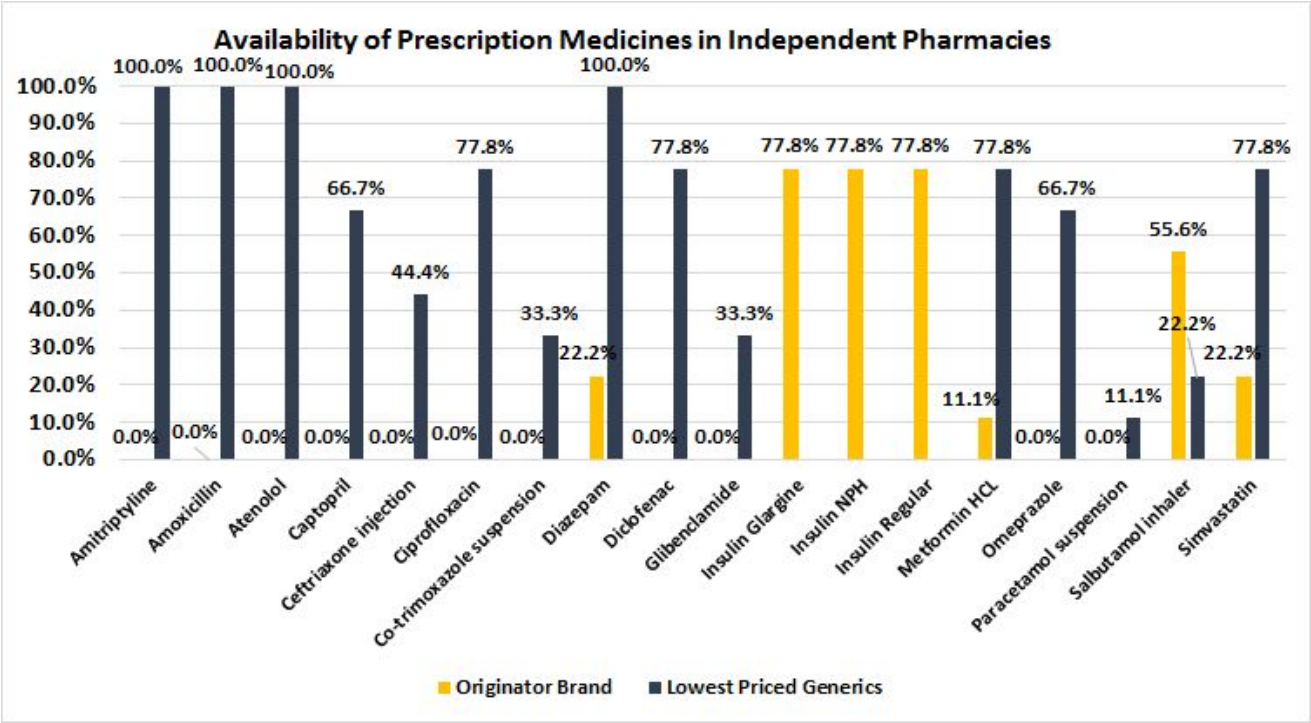
Figure 2: Availability of Prescription Medicines in Chain Pharmacies




*Note: Insulin in the United States is provided by originator companies.*

Out of the 18 prescription medicines shown in Figure 2, Amoxicillin, Captopril, Atenolol, and Ciprofloxacin had the highest availability of generics in the chain pharmacies (100% availability). Glibenclamide, Paracetamol Suspension, and Salbutamol Inhalers had the lowest availability for generics. When it comes to originator brands, all three types of insulin had the highest availability in the chain pharmacies, whereas Amitriptyline, Co-trimoxazole suspension, Amoxicillin, Diclofenac, and Omeprazole had the lowest availability (all 7.7%).

Figure 3: Availability of Prescription Medicines in Independent Pharmacies

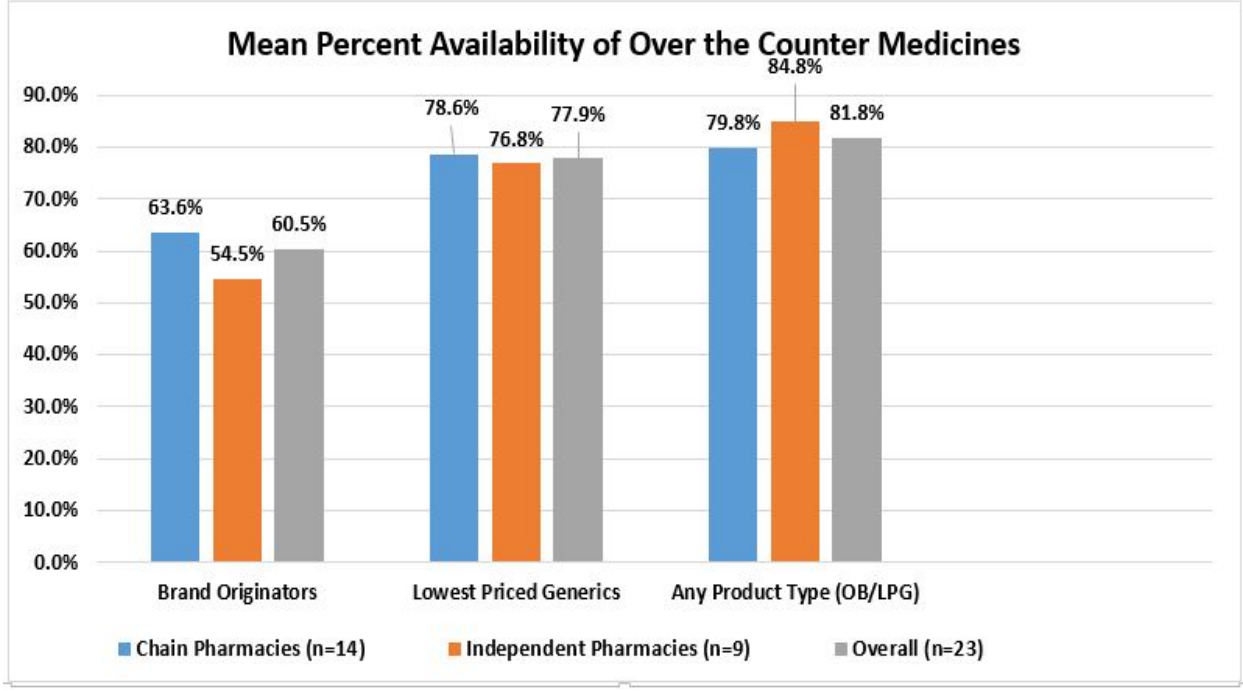



*Note: Insulin in the United States is provided by originator companies.*

Independent pharmacies had very few originator brands for prescription drugs. The three types of insulin had the highest availability (77.8%), and the lowest availability was shown for Diazepam (22.2%), Metformin HCL (11.1%), and Simvastatin (22.2%). There was 100% availability for the generic versions of Amitriptyline, Amoxicillin, Atenolol, and Diazepam.

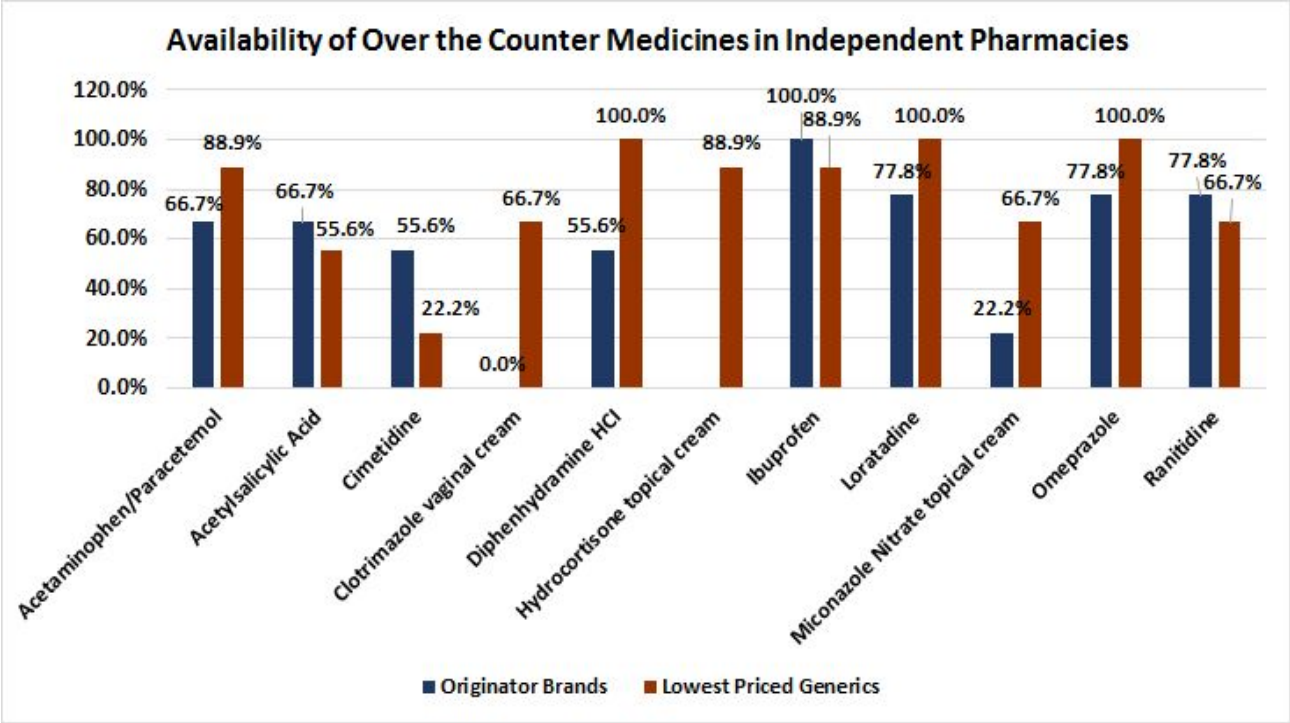
*Over the Counter Medicines Availability*

Figure 4: Availability of Over the Counter Medicines in the Pharmacies



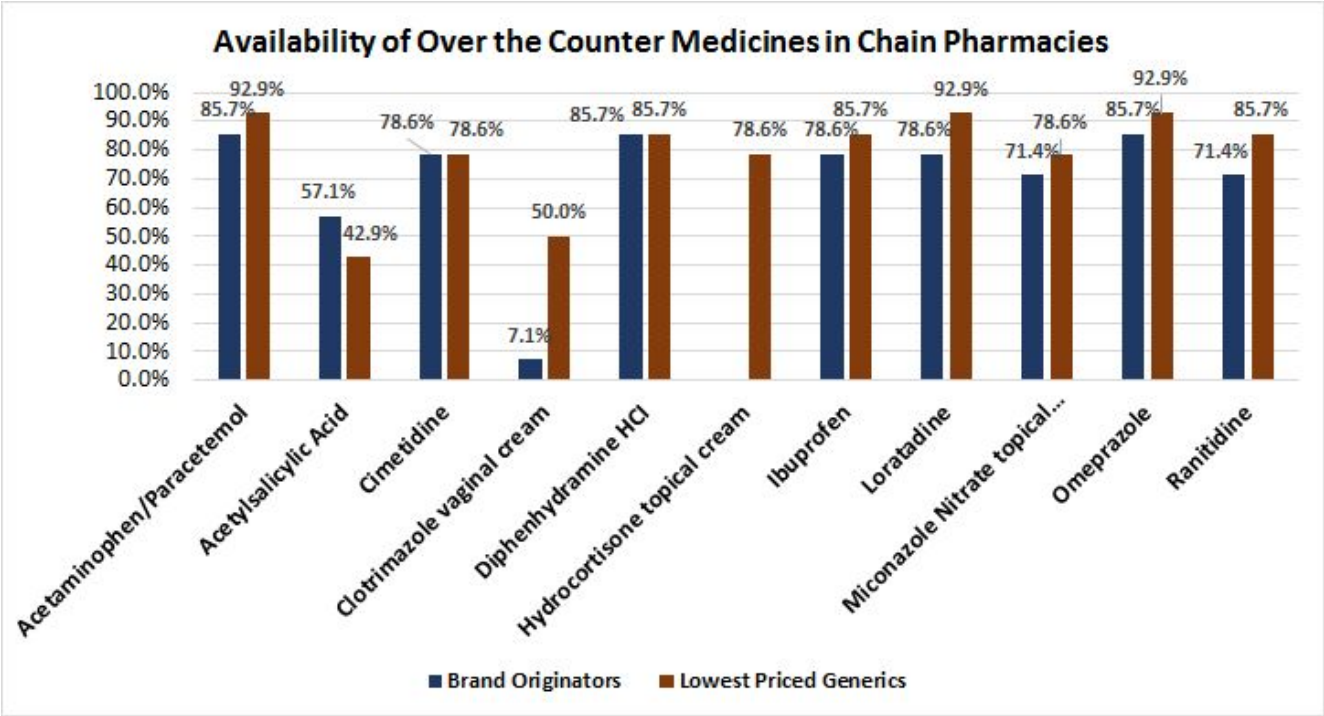

Availability of OTC generics was higher than originators. Chain pharmacies had a higher availability than independent pharmacies, although the difference was only slight for generics (78.6% chain pharmacies, 76.8% independent pharmacies).

Figure 5: Availability of Over the Counter Medicines in Independent Pharmacies




At independent pharmacies, Diphenhydramine HCL, Loratadine, and Omeprazole had the highest availability within the generics' category (100% availability), while Cimetidine had the lowest availability (22.2%). For originator brands, Ibuprofen had the highest availability (100%) and Miconazole Nitrate topical cream had the lowest availability (22.2%).

Figure 6: Availability of OTC Medicines in Chain Pharmacies




The chain pharmacies had the highest generic medicine availability for Acetaminophen/ Paracetamol, Loratadine, and Omeprazole (all 92.9%). For OB medicines they had 85.7% availability for Acetaminophen/ Paracetamol, Diphenhydramine HCl, and Omeprazole. Clotrimazole vaginal cream also had the lowest OB availability (7.1%), whereas generic Acetylsalicylic acid had the lowest availability (42.9%).

Table 9: Median Price Ratios of Originator Brands and Lowest Priced Generics with respect to Over the Counter Medicines in retail pharmacies

| Summary of Median Price Ratios (MPR) of the surveyed over the Counter medicines in retail pharmacies | | | | | | |
|---|---|---|---|---|---|---|
| All Medicines Analysis | | | | | | |
| | Overall (n=23) | | Chain Pharmacies (n=14) | | Independent Pharmacies (n=9) | |
| | Originator Brand (medicines=11) | Lowest Priced Generics (medicines=11) | Originator Brand (medicines=11) | Lowest Priced Generics (medicines=11) | Originator Brand (medicines=11) | Lowest Priced Generics (medicines=11) |
| Median MPR | 17.00 | 9.61 | 18.83 | 12.0 | 23.70 | 10.25 |
| Minimum, Maximum MPR | 5.51, 176.81 | 3.54, 44.82 | 10.44, 176.81 | 3.51, 142.75 | 13.56,38.61 | 3.08,33.33 |
| 25th Percentile 75th Percentile | 13.05,31.39 | 7.99,21.90 | 14.04, 33.13 | 8.15,21.90 | 16.25,30.37 | 7.06,15.98 |
| | | | | | | |
| Matched Pair Analysis of Over the Counter medicines in retail pharmacies | | | | | | |
| | Overall | | Chain Pharmacies | | Independent Pharmacies | |
| | Originator Brand | Lowest Priced Generics | Originator Brand | Lowest Priced Generics | Originator Brand | Lowest Priced Generics |
| | OB-LPG pairs=11 | | OB-LPG pairs=10 | | OB-LPG pairs=9 | |
| Median MPR | 17.00 | 9.61 | 18.83 | 12.04 | 23.70 | 10.28 |
| Minimum, Maximum MPR | 5.51,176.81 | 3.54, 44.82 | 10.44,176.81 | 5.98,142.75 | 13.56, 38.61 | 6.50,33.33 |
| 25th Percentile 75th Percentile | 13.05,31.39 | 7.99,21.90 | 14.04, 33.13 | 9.25,23.96 | 16.25,30.37 | 10.17,16.76 |

The median Median Price Ratio (MPR) of the lowest priced generics was lower in independent pharmacies (10.25) as compared to the chain pharmacies (12.0). On the contrary, the MPR for originator brand over the counter medicines was higher in independent pharmacies (23.70) as compared to chain pharmacies (18.83).

The matched pair analysis shows that originator brands available in chain pharmacies had an MPR of 18.83 and 23.70 in independent pharmacies similar to the previous analysis. Similarly,

the matched pair analysis showed that the MPR of generics in chain pharmacies was 12.04 and 10.28 in independent pharmacies.

Table 10: Median Price Ratios of Prescription medicines in retail pharmacies

| Summary of Median Price Ratios (MPR) of the surveyed Prescription medicines in retail pharmacies | | | | | | |
|---|---|---|---|---|---|---|
| All Medicines Analysis | | | | | | |
| | Overall (n=22) | | Chain Pharmacies (n=13) | | Independent Pharmacies (n=9) | |
| | Originator Brand (medicines=15) | Lowest Priced Generics (medicines=15) | Originator Brand (medicines=15) | Lowest Priced Generics (medicines=15) | Originator Brand (medicines=15) | Lowest Priced Generics (medicines=15) |
| Median MPR | 134.17 | 41.67 | 134.17 | 41.65 | 72.98 | 30.57 |
| Minimum, Maximum MPR | 16.67, 696.12 | 12.57, 132.22 | 16.67, 696.12 | 18.33, 132.56 | 18.79, 572.44 | 2.64, 224.07 |
| 25th Percentile, 75th Percentile | 55.12,258.70 | 29.85,68.81 | 52.46,258.70 | 31.86,66.31 | 21.15,171.53 | 15.25,64.09 |
| | | | | | | |
| Matched Pair Analysis of Prescription medicines in retail pharmacies | | | | | | |
| | Overall | | Chain Pharmacies | | Independent Pharmacies | |
| | Originator Brand | Lowest Priced Generics | Originator Brand | Lowest Priced Generics | Originator Brand | Lowest Priced Generics |
| | OB-LPG pairs=13 | | OB-LPG pairs=13 | | OB-LPG pairs=4 | |
| Median MPR | 157.67 | 31.51 | 157.67 | 41.65 | 153.60 | 17.59 |
| Minimum, Maximum MPR | 16.67, 696.12 | 12.57, 132.22 | 16.67, 696.12 | 18.33, 132.56 | 28.21, 572.44 | 2.64, 26.62 |
| 25th Percentile, 75th Percentile | 114.58,274.0 | 28.63,67.12 | 114.58,274.0 | 31.40,65.72 | 95.37,285.20 | 8.07,25.62 |

The difference in MPR, shown in Table 10, among branded originals in chain pharmacies and independent pharmacies was large (134.17 chain and 72.98 independent). However, the MPR difference in generics was smaller (41.65 chain and 30.57 independent). In a matched pair analysis, the originator brand had a median MPR of 157.67 in chain pharmacies, while the generic had a median MPR of 41.65. Due to low availability of medicines in independents,

paired analysis was only completed for 4 matched pairs. This showed the median MPR for originator brand was 153.60 and 17.59 for the generic medicines.

Figure 7: Differences in the Median Price Ratios of Prescription Medicines in Chain Pharmacies

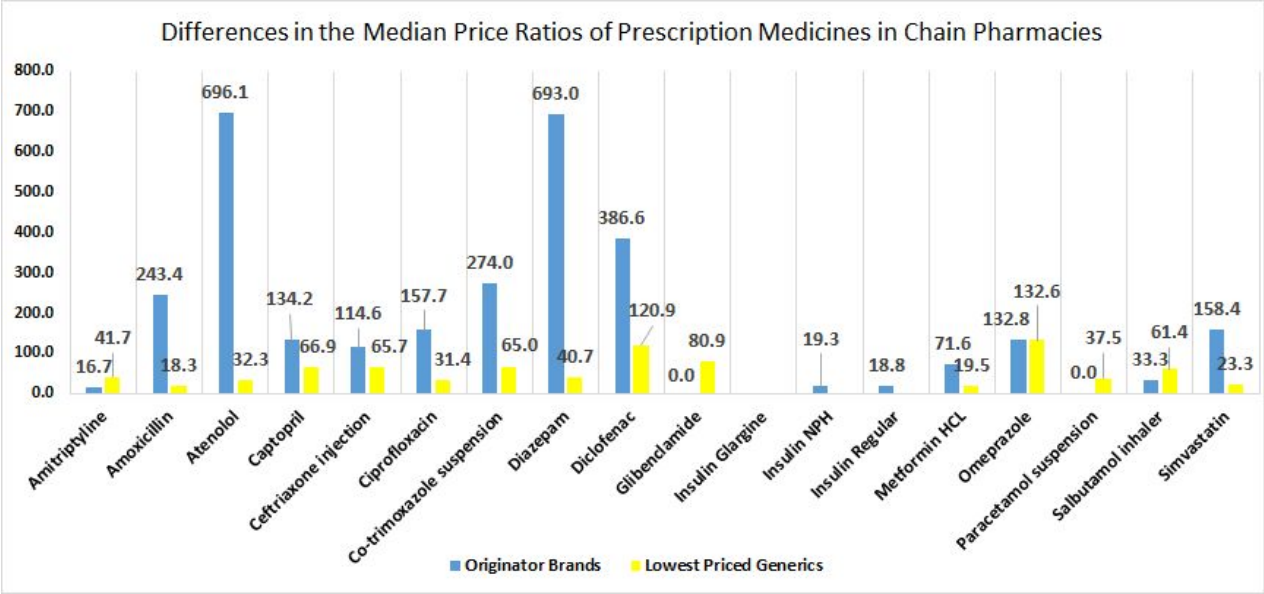
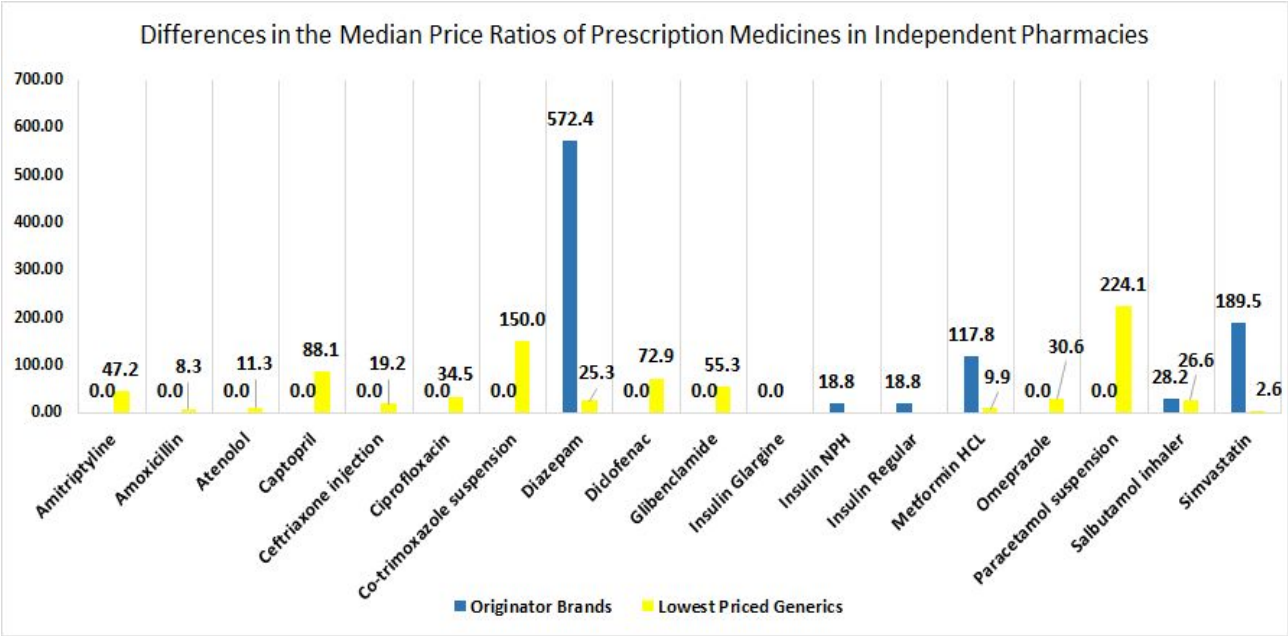



Figure 8: Differences in the Median Price Ratios of Prescription Medicines in Independent Pharmacies



As shown in Figure 8, there was a higher difference in median MPR for the medicines Atenolol, Diazepam, and Diclofenac in chain pharmacies because of high MPR of originator brands of these medicines (Atenolol: 696.1 , Diazepam: 693 and Diclofenac: 386.6). However, there was a very small difference in the MPR's for Omeprazole in chain pharmacies (OB:132.8 and Generic: 132.6). Figure 8 shows the difference in the median price ratios in independent pharmacies. Here Diazepam had the highest difference in MPR (OB:572.4 and Generic: 25.3). The least difference in the MPR was seen for Salbutamol inhalers (OB: 28.2 Generic: 26.6).

Figure 9: Differences in the Median Price Ratios of OTC Medicines in Independent Pharmacies

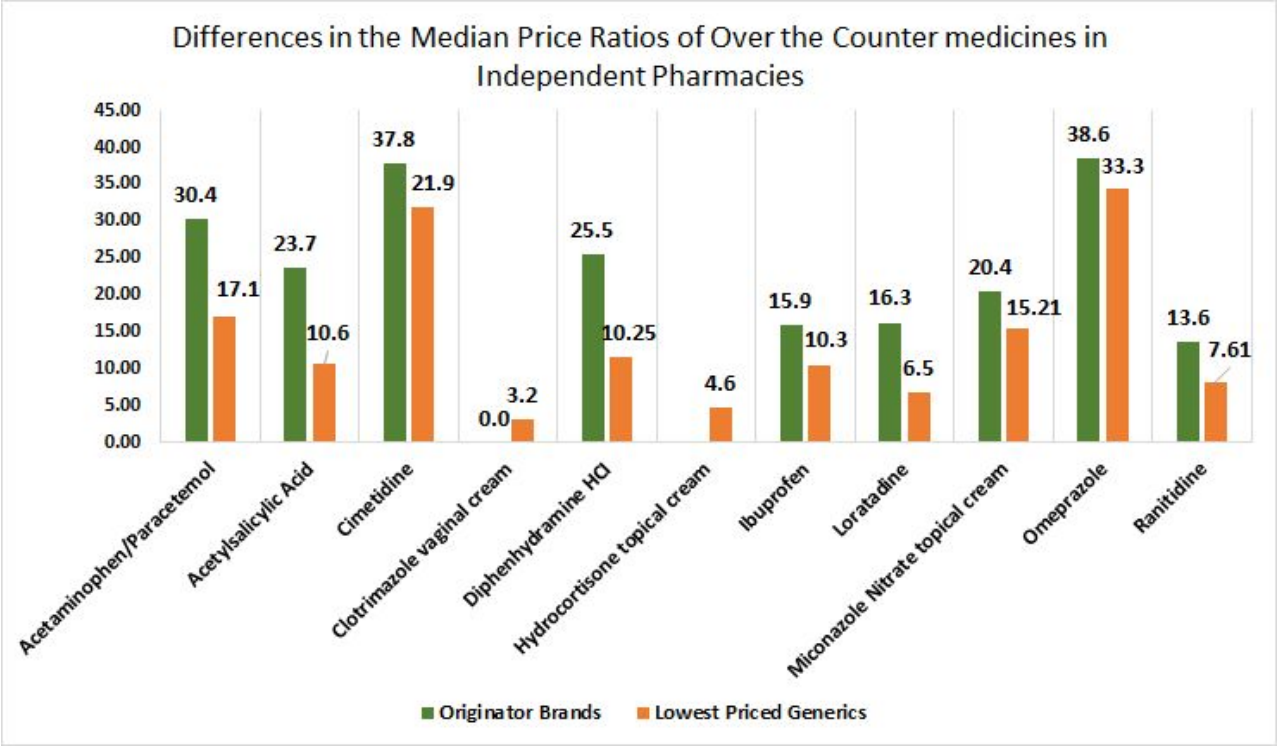
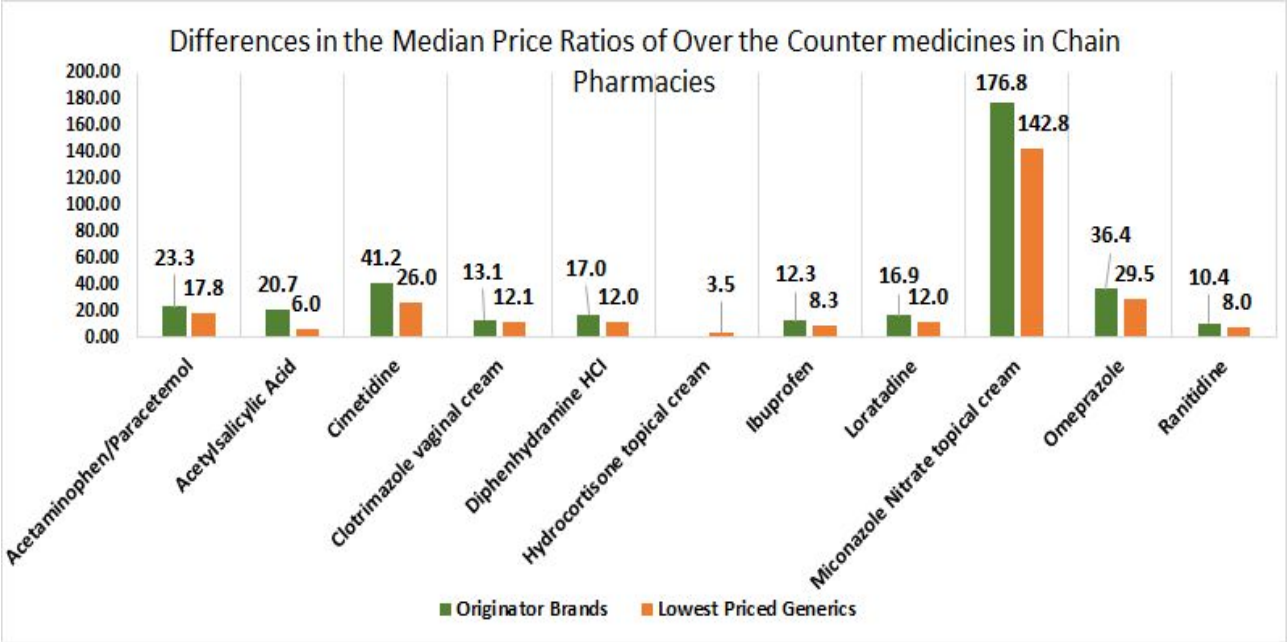


Figure 10: Differences in the Median Price Ratios of OTC Medicines in Chain Pharmacies




In independent pharmacies, Diphenhydramine HCL had the largest difference (25.5 OB, 10.25 LPG). In the chain pharmacies, the MPR for Miconazole Nitrate topical cream had the most difference between originator brand and generics (176.8 OB, 142.8 LPG). The least difference in MPR was seen for clotrimazole vaginal cream in chain pharmacies ( 13.1 OB, 12.1 LPG).

## Survey of Big Box, Grocery, Online, and Supplemental Retail Pharmacy Purchase Schemes:

In addition to analysing prices in independent and chain pharmacies, a price survey of the same medicines in big box stores was completed.

**Big box**

Pharmacy discount programs

Inclusion: Pharmacy discount programs at warehouse, big box, grocery, online and chain retail stores were surveyed to determine pricing and availability of selected essential prescription medicines in this study. Eight discount programs namely Costco Rx Club, Walmart.com, Health Warehouse, Target.com, Hannaford Rx Club, Osco Rx Club, Walgreens Rx Club, and CVS Rx Club were included. Prices of twelve essential prescription medicines, both acute and chronic medicines were collected. The median supplier prices were obtained from the MSH website for the selected twelve essential prescription medicines (Table 11). The price ratios were calculated using the collected online individual drug unit price and the MSH reference price.

Table 11: Selected Essential Medicines with correlating MSH Reference Price

| Table 1 Sl. no | Selected Essential Prescription Medicines | MSH Reference Price Units (2014) |
|---|---|---|
| 1. | Amitriptyline 25 mg cap/tab | 0.0072 |
| 2. | Amoxicillin 500 mg cap/tab | 0.0311 |
| 3. | Atenolol 50 mg cap/tab | 0.0103 |
| 4. | Captopril 25 mg cap/tab | 0.0139 |
| 5. | Ciprofloxacin 500 mg cap/tab | 0.043 |
| 6. | Diazepam 5 mg cap/tab | 0.0086 |
| 7. | Diclofenac 50 mg cap/tab | 0.0067 |
| 8. | Insulin NPH 100 iu/ml vial | 0.8833 |
| 9. | Insulin Regular 100 iu/ml vial | 0.8834 |
| 10. | Metformin HCL 500 mg cap/tab | 0.0169 |
| 11. | Omeprazole 20 mg cap/tab | 0.018 |
| 12. | Simvastatin 20 mg cap/tab | 0.0531 |

Table 12 summarizes the medicine inclusion, median price ratios, minimum and maximum price ratios in each Pharmacy discount program store.

Table 12: Inclusion and price ratios of prescription medicines in the big box survey

| Table 2:Inclusion and price ratio of prescription medicines in pharmacy discount programs at warehouse, big box, grocery and chain retail stores | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| **Name** | **Costco.com** | | **HealthWarehouse.com** | | **Walmart.com** | | **Target.com** | | **Hannaford Rx Club** | |
| **Group:** | Warehouse (members) | | Warehouse (all) | | Big Box (all) | | Big Box (all) | | Grocery (members) | |
| **Type of Medicine** | Inclusion (%)* | Price Ratio [median (min, max)** | Inclusion (%) | Price Ratio [median (min, max)] | Inclusion (%) | Price Ratio [median (min, max)] | Inclusion (%) | Price Ratio [median (min, max)] | Inclusion (%) | Price Ratio [median (min, max)] |
| **Acute** n=4# | 100 | 12.39 [2.84, 62.1] | 100 | 8.69 [4.82, 53.7] | 50.0 | 4.41 [4.1, 4.6] | 50.0 | 4.41 [4.1, 4.6] | 75.0 | 3.72 [3.53, 76.4] |
| **Chronic** n=8# | 25.0 | 3.94 [2.56, 5.32] | 100 | 29.6 [1.69, 96.2] | 37.5 | 12.62 (3.9, 18.05) | 50.0 | 8.68 (3.9, 18.05) | 37.5 | 4.73 [2.07, 10.67] |
| **Overall** n=12 | 50.00 | 4.50 [2.56, 62.1] | 100 | 19.06 [1.69, 96.2] | 41.6 | 4.69 [3.9, 18.05] | 50.0 | 4.69 [3.9, 18.05] | 50.0 | 3.72 [2.07, 10.67] |

Table 12: continued

| ***Table Continued*** | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| **Name** | **Osco Rx Club: my RxCare** | | **Walgreens Rx Club** | | **CVS Rx Club** | | **Overall Summary** | |
| **Group:** | Grocery (members) | | Chain (members) | | Chain (members) | | **Mean Inclusion (mean %)** | **Median of Price Ratios [min, max]** |
| **Type of Medicine** | Inclusion (%) | Price Ratio [median (min, max)] | Inclusion (%) | Price Ratio [median (min, max)] | Inclusion (%) | Price Ratio [median (min, max)] | | |
| **Acute** n=4# | 75.0 | 3.86 [3.53, 9.85] | 100 | 10.93 [1.86, 37.3] | 100 | 14.32 [6.35, 43.61] | **81.2** | **5.58 (1.86,76.4)** |
| **Chronic** n=8# | 37.5 | 3.9 [2.07, 10.67 | 75.0 | 12.87 [4.1, 65.79] | 75.0 | 12.98 [3.28, 77.6] | **54.6** | **10.67 (1.69,96.2)** |
| **Overall** n=12 | 50.0 | 3.8 [2.07, 10.67 | 83.3 | 8.58 [1.86, 65.79] | 83.3 | 13.63 [3.28, 77.6] | **63.5** | **8.33 (1.69,96.82)** |

*Final*

Results show that the overall inclusion percentage of studied medicines was variable, ranging from 41.6% (Walmart.com); big box discount lists to 83.3% (Walgreens and CVS chain pharmacies), and 100% (HealthWarehouse.com online warehouse). Overall, medicines for acute conditions (n=4) were marginally more available than medicines for chronic conditions (n=8), with a mean inclusion of 81.2% compared to 54.6%, respectively. Only three of big box and discount programs had higher chronic medicine inclusion rates than acute. These were HealthWarehouse.com online warehouse, CVS and Walgreens Rx chain savings club.

Table 13 and 14 summarize the specific acute (n=4) and chronic (n=8) medicine price ratios for the big box, warehouse, grocery, and chain discount programs compared to the median price ratios for lowest priced generics across the private chain and independent retail pharmacies in the Greater Boston area within Route 128. For all of the medicines, the median price ratios were greater at the private chain and independent retail pharmacies compared to the pharmacy discount programs.

Table 13: Acute Medicine Price Ratios Sampled at Big Box Stores

| *Table 3:ACUTE medicine price ratios sampled at Big Box, Warehouse, Grocery, and Chain Discount Programs* | | | | |
|---|---|---|---|---|
| | **Amoxicillin 500 mg** | **Ciprofloxacin 500 mg** | **Diclofenac 50 mg** | **Omeprazole 20 mg** |
| **Boston 2016 Survey (independent and Chain** | 12.67 | 31.40 | 120.9 | 132.2 |
| **Costco.com** | 3.69 | 2.84 | 62.08 | 21.1 |
| **HealthWarehouse.com** | 4.82 | 9.06 | 53.73 | 8.33 |
| **Walmart.com Generics** | 4.18 | 4.65 | | |
| **Target.com Generics** | 4.18 | 4.65 | | |
| **Hannaford Rx Club** | 3.53 | 3.72 | 76.4 | |
| **Osco Rx Club** | 3.53 | 3.86 | 9.85 | |
| **Walgreens Rx Club** | 3.53 | 1.86 | 37.31 | 18.33 |
| **CVS Rx Club** | 6.35 | 12.67 | 43.61 | 15.97 |
| **Median of Big Box/Discount** | 4.18 | 4.65 | 53.73 | 18.33 |
| **Lowest median price ratio** | 3.53 | 1.86 | 9.85 | 8.33 |
| **Highest median price ratio** | 6.35 | 12.67 | 62.08 | 21.1 |

Table 14: Chronic Medicine Price Ratios Sampled at Big Box Stores

| *Table 4:CHRONIC medicine price ratios sampled at Big Box, Warehouse, Grocery, and Chain Discount Programs* | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | **Amitriptyline 25 mg** | **Atenolol 50 mg** | **Captopril 25 mg** | **Diazepam 5 mg** | **Insulin NPH 100 iu/ml** | **Insulin Regular 100 iu/ml** | **Metformin HCL 500 mg** | **Simvastatin 20 mg cap/tab** |
| **Boston 2016 Survey (independent and Chain)** | 41.67 | 28.39 | 67.12 | 31.51 | - | - | 19.29 | 20.60 |
| **Costco.com** | | | | | | | 5.32 | 2.56 |
| **HealthWarehouse.com** | 66.9 | 6.79 | 53.95 | 29.06 | 96.22 | 30.17 | 2.95 | 1.69 |
| **Walmart.com Generics** | 18.05 | 12.62 | | | | | 3.9 | |
| **Target.com Generics** | 18.05 | 12.62 | 4.74 | | | | 3.9 | |
| **Hannaford Rx Club** | | 10.67 | | | | | 4.73 | 2.07 |
| **Osco Rx Club** | | 10.67 | | | | | 3.9 | 2.07 |
| **Walgreens Rx Club** | 15.07 | 10.67 | | | 65.79 | 65.79 | 6.5 | 4.14 |
| **CVS Rx Club** | 44.88 | 11.38 | 77.69 | 14.59 | | | 6.69 | 3.28 |
| **Median of Big Box/Discount** | **18.05** | **10.67** | **53.95** | **21.82** | **81.0** | **47.98** | **3.9** | **2.07** |
| **Lowest median price ratio** | 15.07 | 6.79 | 4.74 | 14.59 | 65.79 | 30.17 | 2.95 | 1.69 |
| **Highest median price ratio** | 66.9 | 12.62 | 77.69 | 29.06 | 96.22 | 65.79 | 6.69 | 4.14 |

*Prices*:

Across all medicines, HealthWarehouse.com and CVS Rx club had the highest MPR among all the discount programs at 19.06 [1.69 to 96.2] and 13.63 [3.28 to 77.6], whereas Hannaford Rx club and Osco Rx Club discount program had the lowest MPR of the programs at 3.72 [2.07 to 10.67] and 3.8 [2.07 to 10.67) respectively. The next lowest median price ratio of 4.69 was found at Walmart.com and Target.com.

Table 15 shows the lowest price ratio of each prescription medicine, and the price in the discount program, for 2015 and 2016. Health Warehouse.com discount program had the lowest price ratios for the greatest number of the prescription medicines this year. Osco and Hannaford

Discount programs had the lowest price ratio for prescription medicines surveyed in the previous year. Overall, there were ten medicines that declined and two that increased in price ratios for the selected essential prescription medicines surveyed in the year 2016 when compared to the year 2015.

Table 15: Comparison of Lowest Price Ratio data of Prescription Medicines at Big Box Stores

**Table 5: Comparison of Lowest Price Ratio data of prescription medicines in pharmacy discount programs at warehouse, big box, grocery and chain retail stores in the year 2015 and 2016**

| Name of the medicine | Year- 2015 | | | Year- 2016 | | | Change |
|---|---|---|---|---|---|---|---|
| | No. of Chains surveyed N=9 | Lowest Price Ratio | Big Box store | No. of Chains surveyed N=8 | Lowest Price Ratio | Manufacturer-Big Box store | |
| Amitriptyline 25 mg cap/tab | 5 | 18.5 | CVS Rx club | 5 | 15.27 | Walgreens Rx Club | Decline |
| Amoxicillin 500 mg cap/tab | 9 | 4.3 | Osco,Ha-naford, Target, Walmart | 8 | 3.53 | Osco Hannaford Walgreens Rx Club | Decline |
| Atenolol 50 mg cap/tab | 9 | 11.7 | Health Warehouse | 7 | 6.79 | Health Warehouse | Decline |
| Captopril 25 mg cap/tab | 3 | 18 | Target.com | 3 | 4.74 | Target.com | Decline |
| Ciprofloxacin 500 mg cap/tab | 9 | 4.6 | Osco | 8 | 1.86 | Walgreens Rx Club | Decline |
| Diazepam 5 mg cap/tab | 3 | 12.7 | Hannaford | 2 | 14.5 | CVS | Increase |
| Diclofenac 50 mg cap/tab | 6 | 9.9 | Osco | 6 | 9.85 | Osco Rx Club | Decline |
| Insulin NPH 100 iu/ml vial | 3 | 72.4 | Walgreens | 2 | 65.79 | Walgreens Rx Club | Decline |
| Insulin Regular 100 iu/ml vial | 2 | 72.4 | Walgreens | 2 | 30.17 | Health Warehouse | Decline |
| Metformin HCL 500 mg cap/tab | 9 | 2.6 | Hannaford | 8 | 2.95 | Health Warehouse | Increase |
| Omeprazole 20 mg cap/tab | 5 | 7.4 | Osco | 4 | 8.33 | Health Warehouse | Decline |
| Simvastatin 20 mg cap/tab | 4 | 2.5 | Hannaford, Osco | 6 | 1.69 | Health warehouse | Decline |

# Discussion

## Overview:

After professional staff and hospital care costs, most health expenditure is incurred from medicine purchases (CMS, 2015). Recent discussions about health care financing have focused on medicine prices, availability and affordability, and these topics have even made it into the United States presidential debates. Earlier in the year, consumer reports conducted a survey which revealed that medicine prices in chain pharmacies are consistently higher priced than in the individually-owned independent pharmacies (Consumer Reports, 2016). Our study measured and compared medicine prices and availability between independent pharmacies and chain stores in the Greater Boston area. We also explored the differences in the business structure, motivations, and unique service delivery patterns among independent pharmacies in the area.

## Literature:

The WHO/HAI methodology, having been used more than a hundred times since 2003 in countries all over the world, has been effective in measuring price and availability data in various settings. Surveys completed by Boston University School of Public Health students in 2014 and 2015 have shown results that are consistent with our current data. Pricing in independent pharmacies for both OTC (LPG and OB) and prescription (LPG and OB) medicines was lower compared to chain pharmacies. Availability was similar for generic OTC and prescription drugs in both chain and independent pharmacies. OB, OTC, and prescription drugs were lower priced in independent pharmacies compared to chains. When juxtaposed with data from Consumer Reports we see substantial variation of price and availability for OTC and prescription drugs depending on location. This non-uniformity exposes the problem with the lack of medication price regulation or transparency in the United States.

### Qualitative:

Since Computer Assisted Text Analysis was not used when analysing the interviews undertaken, students needed to identify "quotable quotes" from their notes during the interviews or to obtain them by listening to recordings. While subjective this allowed students to identify the most interesting comments preventing an overload on unimportant trends.

### Quantitative:

The WHO/HAI methodology was used to gather information on the availability and price of the originator brands and their lowest priced generic equivalents. This method has been widely used in more than 60 countries and in more than 100 surveys.

## Qualitative Results:

### *Key findings:*

Our qualitative results were indicative of attitudes, behaviors, and practices occurring among independent pharmacies in the Boston area. Many pharmacists joined the field due to job security and higher demand for pharmacists, and worked their way into independent pharmacies. Independent pharmacists were found to prefer independent pharmacies because they are able to spend more time and effort serving their patients. The pharmacies had varied histories ranging from opening as recently as six months ago to being open for 60 years. Many independent pharmacies had been in the same building that had passed through various owners. Our results indicate independent pharmacies tend to serve fewer people, but provide a wider variety of services including medication management, home delivery, and counseling. Some pharmacies serve mostly elderly populations and have focused on supplying medicines to assisted living

facilities. Our interviews informed us that the approach to business in independent pharmacists is different compared to chain pharmacies. Many aim to build comfortable environments as they are important in developing and maintaining staff customer relationships. In addition, in order to keep prices competitive, pharmacists used a variety of procurement practices. Some use only one vendor while others had several so they could compare and obtain the best offers.

Overall, some of the biggest differences between independent and chain pharmacies are the supplementary services provided. For example, many offer delivery, particularly to elderly populations or assisted living facilities. Independent pharmacists seem to go above and beyond for their patients in counseling, customer service, and in providing them with medications. In addition, we found that independent pharmacies price competitively based on what they pay wholesalers and what insurance reimburses. Some pharmacies even take into consideration what patients can afford. Pharmacists indicated that overall, customers are open to using generic medicines, although sometimes elderly patients are still a bit resistant. However, many pharmacists recognize their role in improving patient attitudes toward generics. Other challenges include PBMs, insurance and reimbursement, and mail order services. Overall, independent pharmacists seem to care about their customers in a way that makes the customers feel valued and appreciated, which sets them apart from chain pharmacies.

### *A Note on Refusals:*

There were five independent pharmacists who refused to participate in the survey and they gave the following reasons:

- Two pharmacy managers refused to participate as they felt that their pharmacies did not qualify for the purposes of our survey.
- Another pharmacist chose not to participate and cited a busy schedule and full load of work as reasons why they could not participate in the survey.
- Two other pharmacists were non-responsive.

## New independent pharmacies v. Older independent pharmacies:

New independent pharmacies (been in business for ≤ 1 year) were included in our sample. During the interviews, the representatives from these new pharmacies revealed that these facilities differ in some of their approaches to business (staffing), and the challenges that have been encountered (attracting customers) as compared to pharmacies that have been in business for a longer period of time (been in business for > 1 year). However, there were some similarities between the new independent and the older independent pharmacies.

Based on the interviews, the staff in a pharmacy includes both pharmacists and pharmacy technicians. The representative from the new independent pharmacies revealed that new independent pharmacies tend to have fewer people on staff (≤4 staff) as compared to the older pharmacies (approximately 5- 35 people). Although these pharmacies are new, the representatives explained that they need at least 2 pharmacists to help manage the facility. The older independent pharmacies tended to have more pharmacists because both fulltime and part-time pharmacists were included in the count of staff members. Although the new independent pharmacy representatives revealed that they receive help from part-time pharmacists, it was evident from the interviews that that the pharmacists on staff were more likely to be full-time professionals in these new facilities.

Another interesting finding about new independent pharmacies is the challenge of attracting customers. The representatives for the new independent pharmacies explained that they hardly attract walk-in customers because many of the facilities have not been in business for a long period of time. Most of the customers for these new pharmacies were more likely to be people from the local neighborhood. The representatives explained that they mainly rely on referrals or "word of mouth" to build their clientele. Furthermore, advertisement of the pharmacies and the

services that they would offer was championed as a method for beginning to attract customers in these new facilities. In contrast, pharmacies that had been in business for a longer period of time were more likely to have established their customer base and therefore noted that attracting customers was not a challenge.

Both the newer and older independent pharmacies in the sample were more likely to attract the elderly as customers. This is not surprising since some of them specifically noted that they cater to assisted-living facilities and nursing homes. Furthermore, almost all of the pharmacies in our sample listed delivery as a service provided within their facilities. Moreover, most of the representatives in the independent pharmacies emphasized the importance of patient-centered care and taking the time to offer the needed attention for each patient. The similarities across all independent pharmacies reveal that these facilities function to distribute medicines while emphasizing individualized care for each customer.

*Compounding*

Two out of the 15 sampled independent pharmacies were compounding centers. According to the FDA, "Compounding is a practice in which a licensed pharmacist, a licensed physician, or, in the case of an outsourcing facility, a person under the supervision of a licensed pharmacist, combines, mixes, or alters ingredients of a drug to create a medication tailored to the needs of an individual patient" (FDA: Center for Drug Evaluation and Research, 2016). Since compounding centers create their own medicines by buying raw materials and not procuring packaged medicines, they have been excluded from the analysis.

Out of these two compounding centers, one pharmacy owner was interviewed. Following are excerpts from that interview:

*"I try to keep my compounded products financially low, some of them that costs $200 in the chain pharmacies, I try to make them for $70."*

*Final*

*"Compounds are hardly covered by the insurance. Like almost 80% not covered."*

*"I am usually the last option. In another words, I am not the 'go-to guy'. So patients go see the doctor, get the prescription to CVS, Walgreens, or RiteAid. If they did not get any satisfaction for their problem; or the doctor will call me up for a problem and ask for a solution, so I will suggest a solution to the physician."*

# Quantitative Results:

## Over the Counter Medicines:

For originator brands of over the counter medicines, independent pharmacies had a lower availability at an average of 54.5%, than chains which had 63.6% availability. Chains also had a slightly higher average availability of generic OTC medicines compared to independents, with the percentages being 78.6% and 76.8% respectively. In practice, there is no substantial difference in availability of OTC drugs between chain and independent pharmacies.

The pricing data shows that contrary to the results from the prescription medicine survey, overall price ratios for OTC medications were not substantially different when comparing chains and independents.

## Prescription Medicines:

Prescription medicine availability overall was higher in chain pharmacies than independent pharmacies. When stratified, we see that OB availability was 32.5% for chains and 19.1% for independents. For generics, chains had 59.8% availability while independents had 54.9%. Originator brand availability in independents was very low. However, during the qualitative portion we discovered that the independent pharmacists would order OB medications upon patient requests. Availability calculations only concern what was in the store at the time of data collection. Higher in-store availability is not necessarily better, if patients can wait to obtain their

medications. These higher availability figures in the chain pharmacies reflect their marketing practices. While independent pharmacies can obtain these potentially more expensive medicines, they choose to stock the lower priced generics which they would be actively marketing. What must be examined further is the availability in conjunction with factors such as to how popular a certain medication is or how quickly that medication can be procured by that pharmacy. Lower availability for drugs that are never utilized can actually indicate a more efficient pharmacy. In addition, depending on the shelf life of a medication, a less utilized medication might sit for some time before being purchased. Because medications can be procured in as short as two hours and maximum within 24 hours, intentional low stocking is an efficient economic strategy.

Pricing is where independent pharmacies generally outperformed chain pharmacies. The MPRs, which were calculated by dividing the price of the medication by the IRP, for prescription OB and LPG medications for chain pharmacies were 134.17 and 41.65. The MPRs for prescription OB and LPG medications for independents were 72.98 and 30.57 respectively. The OB MPR for independent pharmacies was about half that of the chains. The MPR for generics in independents, while not as substantially different, was still lower priced. The big-box stores, as found in the previous 2014 and 2015 surveys, had the lowest MPRs for a limited range of products. Some of these pharmacies suffered from low inclusion rates, but Health Warehouse, which is a mail order pharmacy, does not seem to have that issue, making it an alternative for someone who has a high deductible insurance, a high co-pay, or no insurance at all.

These MPR discrepancies require further research. Perhaps an examination of supply chains, business overhead, or degrees to which insurance companies cover costs would illuminate reasons or motivations for the price disparities. Regardless, the non-uniformity in pricing exposes the problem of a lack of drug price regulation and transparency in the United States. Whereas other developed countries have a regulated pharmaceutical system that is generally in place to protect the consumer, the United States forbids its biggest purchaser, Medicare, from negotiating the price it pays for medications. If negotiation were possible, it could reverberate

through the supply chain and drive prices down. In December 2016, Senator Bernard Sanders (I-VT) proposed an amendment to the 21st Century Cures Act, which would have allowed importing of prescription drugs from other countries and for Medicare to negotiate its prices. Senate Republicans voted against the move, even as the current President-elect gave tepid support throughout his campaign. Setting drug price caps, or other such pricing regulation, could encourage more uniform pricing. Such options are upstream fixes that require both political motivation and de-fragmentation of the American healthcare system. Downstream fixes that address the immediate concerns of consumers include the development of a local drug price database and on-going tracking of prices and availability. This would allow consumers to be aware of where they will get the best price and better inform their choices in a free-market.

### Big box/ Discount programs:

Our survey results show that different suppliers have different MPRs depending on the number of essential medicines that are available. It is necessary to look into all the discount programs to identify the medicines at the lowest price. For example, Health Warehouse had the highest MPRs for the 100% inclusion rate of the sampled medicines. However, as seen in Table 12, five out of twelve medicines for which multiple suppliers existed, Health Warehouse had the lowest prices. Consumers must look into individual medicine prices from multiple sources (Warehouse, big box, grocery, online and chain retail stores) in order to obtain the best possible price for themselves.

## Strengths & Limitations:

A major strength of this study is the use of the WHO/HAI methodology, which is standardized and comprehensive. In particular, this study benefited from the researcher's ability to compare methods and results from almost identical previous studies. Lastly, the simple random sampling method was reliable and adaptable for our purposes, and will be easily replicable for others.

There are some limitations of this study. The first is that the sampling method was somewhat imperfect as it was challenging to determine which pharmacies were valid, and which were no longer in service. The original sample selection included compounding pharmacies, which were later excluded. Additionally, the sample size was somewhat small, however this was simply for logistical convenience as there were thirteen students in the class. Another limitation was the use of a specific list of medicines without considerations for different strengths or therapeutic alternatives. In particular, this list did not necessarily include the most common medicines sold at these pharmacies. Additionally, two pharmacies refused to participate unless they were able to fill out the pricing survey by themselves with the collectors picking it up the next day. While this was agreed upon, it is possible that this data was less accurate than others.

Another limitation is that our data tracked medicine prices paid out-of-pocket. This does not give an accurate portrayal of what the consumer may actually pay, as the majority use insurance, rebates, or other discounts they apply toward medicines. An additional limitation is the lack of qualitative data for chain pharmacies. Moving forward, it may be worthwhile to interview pharmacy managers at chain stores in a similar manner to provide a comparison. Overall, we found most independent pharmacy managers were willing to help and answer questions, but managers at chain stores may be less willing. Lastly, these results apply only to the Boston area, and may not represent prices and availability in other cities and states. The pricing was not compared to overall inflation in prices in the Boston area, which may provide a point of comparison. One final comment is that increased availability does not necessarily imply better business practices and better access to medicines. This speaks to the nature of chain pharmacies in their efforts to have a quick turnaround time. However, it may be more economically efficient to have fewer items on the shelves as they will not be losing out on stock.

# Future Perspectives:

## Monitoring medicine prices and availability:

Medicine price data can help determine to what extent medicine prices are inhibiting access to medicines in a region or country (HAI, 2008). Regularly collecting data on medicine availability and prices can improve the transparency of medicine pricing for many groups of people, ranging from policy-makers to consumers. With an abundant amount of data on medicine prices over time, price trends can assist with price-setting policies and regulatory interventions (HAI, 2008). Additionally, data on medicine price trends can serve as a resource for healthcare providers, purchasers, and the general public when determining medicine selection. Health Action International and the WHO provide a very detailed methodology for designing a medicine price monitoring system in the 2nd edition of *Measuring medicine prices, availability, affordability, and price components*. In this document, HAI recommends things to consider when creating this system, such as sources for reference pricing, which prices to monitor, the differences between procurement price, private sector patient price, and public sector patient price (HAI, 2008). This data is essential for determining policy options.

## Policy options:

Pharmaceutical policy can guide governmental interventions for high priced medicines. Government regulations on pharmaceuticals are necessary, since leaving pharmaceutical pricing to economic forces would leave the most vulnerable people paying the most for medicines (MSH, 2011). According to Management Sciences for Health and the World Health Organization, there are a few general approaches the government can take to intervene with pharmaceutical pricing: 1) the government should establish an essential medicines list, 2) the government should develop policies that encourage purchasing of low-priced, quality generic medicines, 3) the government should encourage the entry of generic products into the market,

and 4) if generic competition is weak, governments can consider regulating prices or requiring compulsory licenses (MSH, 2011).

There are two main points where governments can effectively implement price controls - prices from the manufacturer and add-on costs in the supply chain (MSH, 2011). Policies for lowering pharmaceutical pricing would be most effective if they are implemented in the two aforementioned realms of the pharmaceutical pricing process. Designing an effective yet sustainable policy intervention can be tedious, but there are resources to help in the policy design phase such as ROMA (Rapid Outcome Mapping Approach). This guide, created by the Overseas Development Institute (ODI) by the Research and Policy in Development Team (RAPID) was intended for policy makers who want to establish sustainable policy change. HAI also provides a table in the survey manual that summarizes various pricing interventions at various levels of the medicine pricing process, which can be seen in Annex 2, although these may not be relevant to every country. Additionally, HAI provides free access to numerous policy briefs through their website (http://haiweb.org/publications-page/) that can be used when deciding on policy responses. Using these resources and understanding the pricing process can be useful in communication of pharmaceutical prices and advocate for reasonable government interventions.

## Advocacy and Communication:

Conducting a medicine pricing survey is only useful when the data can be used as evidence to implement change. Change can be brought about most effectively through advocacy and communication over a lengthy period of time (HAI, 2008). As mentioned in the HAI medicine pricing survey, effective advocates "work to inform decision-makers, to persuade them, sometimes to support them and create support for their policies and, occasionally, to shame them into action" (HAI, 2008). Advocacy requires convincing evidence to be distributed to the right key stakeholders in medicine pricing, one of these key stakeholders being the consumer. Consumer Reports has published numerous articles that explain the causes for high drug prices to

the general public (Consumer reports, 2016). The topics range from ideal Medicare drug plans to the pharmacies that are selling medicines for the lowest price. Consumer Reports also publishes articles on the various loopholes pharmaceutical companies use to keep the price of a medicine high. With this free access to pharmaceutical knowledge, Consumer Reports has managed to create more educated consumers who would be eager to advocate for access to medicines. Other health and patient advocacy groups such as Public Citizen and American Diabetes Association are also calling for action to increase access to medicines by lowering prices (NY Times, September 27th, 2016). Some patient advocacy groups are hesitant to undermine pharmaceutical companies, though, since they receive revenue from the very pharmaceutical company that they need to challenge (NY Times, September 27th, 2016). This dilutes the patient movement for access to medicines since pharmaceutical companies are financial supporters of many patient advocacy groups. For advocacy to be effective, it needs to be done through a group that is independent of the pharmaceutical sector, such as Consumer Reports and Public Citizen.

# Conclusion:

This report investigates the difference between independent and chain pharmacies within the Boston area using the WHO/HAI methodology. Both qualitative and quantitative analyses were undertaken. This study found that availability tends to be better in chain pharmacies than in independent pharmacies. Prices for OTC and prescription drugs are cheaper in independent pharmacies. Independent pharmacies also offer a variety of services that are not often offered in chain pharmacies.

Consumers may find it beneficial to explore different pharmacy options as they may not be getting the most affordable medicines or the services they need. This analysis can provide consumers data that can assist consumers when deciding to purchase medicines from independent pharmacies, chain pharmacies, and big box stores. Price transparency is important for consumers as well as policy makers because it empowers them to make the most meaningful decisions for themselves and their constituents.

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# Annex 1: Final Independent Pharmacy Sample

| ID Number | Independent Pharmacy Name |
|---|---|
| 1 | 610 Tremont Drug Co |
| 2 | Allens Pharmacy |
| 3 | Baxter Pharmacy |
| 4 | Belmont Pharmacy |
| 5 | Bravo Pharmacy |
| 6 | Brighton Pharmacy |
| 7 | Brown's Rexall Drug |
| 8 | Central Pharmacy |
| 9 | City Drug |
| 10 | Conleys Drug Store, Inc. |
| 11 | Dedham Pharmacy & Medical Supply |
| 12 | Flag Pharmacy |
| 13 | Fox's Drug Store |
| 14 | Galaxy Pharmacy |
| 15 | Gary Drug Company |
| 16 | Green Cross Pharmacy |
| 17 | Green Street Pharmacy |
| 18 | Health First Pharmacy |
| 19 | High Pharmacy Inc |
| 20 | Home Care Pharmacy |
| 21 | Inman Pharmacy Inc |
| 22 | Maida Pharmacy Inc |
| 23 | Margolis Pharmacy |
| 24 | Maxim Pharmacy |
| 25 | Melvin Pharmacy |
| 26 | Pelham Community  Pharmacy Inc |
| 27 | Prime Pharmacy |
| 28 | Richmond Pharmacy |
| 29 | Rogers Pharmacy Inc |
| 30 | Samuels Pharmacy |
| 31 | Seaside Pharmacy |
| 32 | Skenderian Apothecary |
| 33 | Smith Drug |
| 34 | Tai Tung Pharmacy Inc |
| 35 | The Medicine Shoppe 0500 |
| 36 | The Medicine Store |
| 37 | Theatre Pharmacy Inc |
| 38 | Village Pharmacy |
| 39 | Village Pharmacy Of Marblehead |
| 40 | Whittier Health Pharmacy, Inc. |
| 41 | Winchester Pharmacy |
| 42 | Woodmark Pharmacy of Massachusetts |

Annex 2: Regulating price as part of an integrated medicines policy

**Table 11.1 Regulating price as part of an integrated medicines policy**

| Component of medicines policy | Examples of actions to influence price, availability and/or affordability |
|---|---|
| 1. Selection of essential medicines | ▪ Formulation/updating of essential medicines lists and institutional formularies<br>▪ Development and use of Standard Treatment Guideline<br>▪ Development of quality-assured therapeutic substitution policy<br>▪ Requiring the inclusion of medicines on the national EML in health insurance reimbursement lists with minimal co-pay |
| 2. Procurement/purchasing | ▪ Competitive procurement with price transparency<br>▪ Use of pharmacoeconomics or international price comparisons as guidelines for fixing prices of originator products<br>▪ Pooled procurement with other national buyers, such as hospitals or health authorities<br>▪ Examination of purchasing practices in other sectors to ensure best practice<br>▪ For single-source products, pressure for differential prices and exploration of possible parallel importation and the use of TRIPS flexibilities to stimulate generic competition (seek the advice of an intellectual property expert, review the experiences of countries that have implemented TRIPS flexibilities, and/or consult the *Guidelines for price discounts of single-source pharmaceuticals* (5).<br>▪ Assurance of transparent and quality price monitoring and public information |
| 3. Distribution system | ▪ Analysis of efficiency, transparency, competitiveness and intervention to correct, e.g. by contracting to private and not-for-profit logistics and security organizations with target-setting and performance-monitoring<br>▪ Monitoring and regulation/control of mark-ups with fixed fees and regressive margins |
| 4. Generic competition | ▪ Assurance of effective quality assurance capability and promotion of generic substitution at all levels<br>▪ Promotion of generic acceptance by professionals, patients and the general community<br>▪ Prequalification of generic manufacturers and publication of the quality assurance of such manufacturers<br>▪ Fast-tracking of regulatory approval of generic medicines |
| 5. Prescribing and dispensing | ▪ Assurance that consumers, the private sector and NGOs are informed about and involved with generic and therapeutic substitution, where allowed<br>▪ Building of incentives to prescribe and dispense generic medicines<br>▪ Encouragement of separation of prescribing and dispensing, including banning dispensing doctors<br>▪ Assurance of unbiased consumer medicine information<br>▪ Assurance that promotion of products by pharmaceutical companies is strictly regulated according to WHO Ethical Criteria and prevention of direct-to-consumer advertising of prescription medicines<br>▪ Monitoring of prescribing and dispensing practices, using WHO Drug Use Indicators |
| 6. Financing | ▪ Encouragement of pooled and prepaid financing of medicines, e.g. through employment-based or social insurance schemes<br>▪ Support of community-based insurance initiatives focused on improved access to essential medicines<br>▪ Assurance of exemptions or differential fee systems to protect access by indigent and disadvantaged groups<br>▪ Monitoring of prices and access; for example, routine monitoring of medicine prices and availability is under way in Kenya and Uganda[a]<br>▪ Assurance that health insurance schemes use limited formularies, based on cost-effective therapeutic guidelines |

[a] http://www.haiafrica.org/

## Annex 3. Interview Guide

| The following questions were used as initial points of conversation. |
| --- |
| 1. What is your professional background?<br>2. What training have you had?<br>3. What is your family background in pharmaceuticals?<br>4. How did this pharmacy start?<br>5. What is the catchment population?<br>6. What are the reasons for this location?<br>7. What is your approach to business?<br>8. What languages do you support?<br>9. What is your product range?<br>10. How are the patient records managed?<br>11. How do you deal with pricing?<br>12. What are patient attitudes toward generics?<br>13. How do you manage patients that cannot afford medications?<br>14. What are the differences from the chain pharmacies?<br>15. What are present and future challenges?<br>16. What is your involvement in MIPA? |

## Annex 4. Detailed Direct Quotes

1. **PERSONAL**

**Background:**

- " I was with CVS for almost 20 years as a pharmacist. Got sick of that. Didn't realize at the time how much I hated it."
- "I've been here for 3 years and business is still going pretty well so they're expanding all the time."
- "Basically I did not have a lot of family support about going to college ...it wasn't done, especially girls. So I decided that A. I was going to college but I had to get a degree where I would get a job when I got out and pharmacy, people always get sick, and, you know, it was a decent amount of illness in my family ... so I knew the corner drugstore very very well. You know, it was kind of second nature to me."
- "People are always going to get sick, i'll always have a job."
- "I worked at a pharmacy in Brighton. It was not only an independent pharmacy, but it also serviced nursing homes."
- "Back then, I know pharmacy had a shortage and there was a demand for pharmacists. Just like when I decided which major to go in school, I did a little research first to see how the market was. What job was available for the future. Pharmacy back then was crazy. They didn't have any pharmacists so I picked it up."
- "Pharmacy Manager at this place since the last 4 years. Completed pharm D from the North Eastern University. Did my first 3 courses of pharmacy at the Roxbury Community College and then transferred the credits at North Eastern."

**Training/ Experience:**

- "Went to school, grew up in CT, as a 16-year-old I got a job in the local mom and pop pharmacy just like this one… just loved the whole retail atmosphere, a little different every day, people coming in, helping them out the best I could."
- "I was one of I think 20 women in my class; 20 women and 158 men."

- “I did not like working for a chain pharmacy, there was very little contact with the patients. It was high production you know, type and fill as fast as you possibly could. Move them in and move them out and I didn't care for that style.”
- “Eventually I went to work for a small independent store out in Concord, Massachusetts, worked for that gentleman for almost 10 years at which point one of my old classmates wanted to go home and have babies, you know, she had owned her own store for a number of years ... so she hired me to manage her pharmacy and you know to take care of the day to day running of the store ... and I worked for her for seven years.”
- “During that time period I decided if I was going to work that hard I was going to work for myself ... and I bought this (store).”
- “I went to Connecticut University for my training.”
- “I worked for chain pharmacies before. Basically, I worked for CVS, Walgreens and others. I wanted to provide better services for the neighborhood, treat the customer better, help them better. That is why I decided to open a pharmacy. I worked for CVS for like 6 years, Walgreens for 9 years. I started here just a few months ago. It depends on the individual. For me, I like business.”
- “I went to Northeastern university. I graduated in 1980 **.** I actually did my externship at a chain pharmacy in Maine.”
- “ I used to work for a biotech company.”
- “As a pharmacy student, I worked in CVS and hospital as well, enjoyed both but understood quickly the way of corporation. Corporation is a lot more demanding and everything is ruled by numbers, and everything is ruled by time. So how fast and how much can you produce. There is very little time for actual customers.”

**Family background:**

- “What’s led me here was first the necessity for a job, but what’s kept me here is the relaxed atmosphere, doing what I love to do still… without the stresses of the chain.”
- “I inherited the pharmacy from my dad...it’s a family business.”

- “I actually got into this because my uncle was a pharmacist. I wanted to go to med school he was like you should go to pharmacy school. Then you can pay your way through med school. After 6 years of pharmacy school, I was like, I’m not going back to school.”

2. **HISTORY OF PHARMACY**

**Starting story:**

- “Different names, but it goes back a ways, KT drug used to be one of these corners over here around the rotary and this used to be something else but it was still a pharmacy, people still come in and say the ice cream counter used to be right there this is where I’d come in to get my soda, and one guy came in a while ago and said if you came in on a Sunday and asked for a number 13 the guy behind the counter would go down in the basement and get be booze.”
- “Technically in 2012 when the previous owner passed away, he passed -about in ’07, and his family tried to keep it going – they finally gave up in 2012 and they sold to CVS at this time the records got transferred over there, so S came in and put a pharmacy there but it was starting fresh- as if starting from day one.”
- “S and S opened this place in January of 2015 and by July they were already, business was booming enough that they were looking to take on a pharmacist.”
- “ Been a drugstore for 100 years.”
- “ And was thoroughly impressed that a woman was going to run her store.”
- “It's always been a family run business.”
- “When I bought the store, cardinal financed my purchase of the store. They don't do that anymore.”
- “We’ve been around since 1934, serving the beacon hill and back bay community..and west end too.”
- “This pharmacy started probably about 60 years ago just across the street actually, and it moved twice. I bought it 31 years ago and was there for 20 years and moved down here 11 years ago.”
- “Pharmacy started in 2008, and is located in the building which has the clinic.”

**Catchment population**

- "There's about 52,000 people in Wakefield ... our geographic area is a little bit bigger because of the services we provide. I do a lot of medication management for people, putting pills in pill minders. We do delivery service, which is huge."
- "This area actually has a large elderly population, a lot of the housing stock was built T after world war 2... and they're still here."
- "And sometimes for generations, I've taken care of grandparents and now the grandkids, some of the kids work for me. I've known their families since before they were born!"
- "The majority of our clientele is English speaking."
- "Our biggest demographic is gerontology, you know the older population. So that's pretty much who we cater to because we do a lot of deliveries to them. You know, they can't get out so we do a lot of deliveries to the facilities plus we have home deliveries also."
- "Mainly people living in the area, clinic patients, lower income patients,homeless people, people who got incarcerated."

**Reasons for the location:**

- "The reasons why [the head pharmacist] wanted to be located here was: 1.this area had nothing and 2. to get to other pharmacies [from this area], you needed to take a bus. So this space was available."

**Social orientation of pharmacy when it started:**

- "There would be four generations of her family ... so there's a lot of continuity"
- "It started with family, mostly Italian families and then as time went on, it changed a little bit…a new generation [started to come], a new group of people that were not Italian."

3. **APPROACH TO BUSINESS**

**Staffing/ role of pharmacist**

- "All 5 pharmacists are all immunizers, so the flu shots, pneumonia shots, and the shingles shots, all the basic immunizations"
- "Our business model is different than most chain pharmacies. We like to keep the pharmacist to pharm tech ratio 3-4 : 1 (pharmacist to pharm tech)."
- "I have 2 full time pharmacies including me. One part-time pharmacist that works about 6 times a week. 2 other full time employees that are not pharmacies. One does billing and

the other does a little bit of everything. So I have 6 other part timers who work anywhere from 10 to 30 hours a week."

- "I have a partner here. To run the pharmacy, it is very hard to run on your own. You have to be here 7 days a week. That is impossible. I need at least a partner so we can help each other. We also have part-time pharmacists who help."
- "Right now, we average about 100 prescriptions a day. We have a technician and 2 pharmacists. That is good enough for that volume."
- "We have our own way of doing things, we take time to talk to our patients , it's not always about the production."
- "Staffing: 35 registered pharmacists. We also offer training to the new pharmacists and get them certified by the Massachusetts Board."
- "A large role of the pharmacist in pharmacies catering with human beings is dealing with insurance. In veterinary pharmacies, there is almost no involvement with insurance so it's set up differently (An all cash business)."
- "A lot of the customers that we had at the pharmacy at dedham center are the same customers that we have today. They recognize me as the pharmacy student who used to work there and now i am the pharmacist."
- "I feel like with most independent pharmacists, their parents owned the pharmacy and then they got into it and took over the business."
- "The relationship between the staff is extremely positive- we have known each other for so long so we [create a homey environment]. We have two pharmacists and two technicians."
- "The biggest services: Free delivery. We do pre-packed medication for the elderly. We also have home health care products. People also love that there is no phone chain and that they are immediately connected with a person when they call. The customers also know that the owner is here so they ask for her constantly."
- "The vast majority of our patients are elderly and they enjoy working with us because we are there for them immediately and we are able to answer their questions."

- “A lot of the patients have heard about us from word of mouth- we get very few people that just walk into the pharmacy from the street.”
- “When they come in, we do a patient profile and if they have to get their prescriptions transferred from another pharmacy, we handle that as well so that we make it easy for them.”
- “The free delivery brings in a huge proportion of our clients so it is a positive financial benefit.”
- “Because we do delivery within such a small geographic area, the amount of gas is really small.”
- “A lot of the deliveries are going to assisted living facilities or one building, it makes the cost more bearable.”
- “A small chain has a goal to serve a smaller population at a higher quality whereas big box stores have the goal of filling the fastest at a higher volume.”
- “We are not trained to vaccinate yet.”
- “Our pharmacy software has a great translator which is accessible to patients who speak different languages.”
- “The working here is more meaningful. I felt I actually reach people. I make changes and help people understand the medications.”

**Procurement**

- “If we don’t have it right away- I mean if they need it for that day, all you can really do is call a pharmacy, pick up a phone and start calling. We get deliveries 6 days a week.”
- “Our wholesaler is AmerisourceBergen.”
- “ Cardinal health is my wholesaler.”
- “We have vendors so you contract with them on the software and you can order basically anything from them and they deliver daily. And they also deliver basically twice a day but we only get them to deliver once a day unless we need something for emergency.”
- “If you order before the cutoff time in the morning, they deliver by afternoon. We basically have like 4 vendors right now. You have a main one and the other ones are like, just in case.”

- "I have 2 or 3 companies. I compare their prices and buy from who has the best price. If you want my business, you need to give me a better price. We do a lot of price shopping, price comparing with major distributors."

**Services provided including prevention:**

- "90% of our people are outside, we do assisted livings is the biggest population all around, Arlington, Woburn, KT, Wilmington- kind of like a nursing home, but different rules. We go in and package the medication in a special, we have different types of packaging" "what they mostly get is if they get 12 pills in the morning we get out a morning card they says here's October 7th, here's your 12 pills- take those."
- "We deliver, and we also do regular old fashion delivery in a bottle to wherever. We're still a new place so we say yes to delivery anywhere. No charge for delivery or the packaging. We're still young, only 3 and a half years in, so we want to grow the business."
- "What we do as a specialty is the medicine on time program. It's more of a medication management for the folks who are really having trouble. We get calls from the doctor, or the nurse, or the family they say ok, my dad is having trouble with his medication, he has 27 bottles on his counter one's from 1987 and ones from last week and it's empty, one has m&ms in it and all his pills are in Dixie cups. So we'll go out to the house gather everything up, gather all the information, get a list from his doctor, what should he be on, and we'll package it in that packaging."
- "Any individuals, we'd set up an appointment and usually one of our pharmacists or one of our techs would go out and meet with them and find out exactly what meds they're on, talking with the doctor, get the scripts from the doctor or whatever pharmacy they're using and package them up in the 30 day blisters. No charge for the delivery, no charge for the packaging, we pull the insurance company, the appointment is free."
- "If someone comes in with their prescription bottle and it's Friday afternoon of a holiday weekend and they're out of their medication, we don't hand the bottle back and say you need to call your doctor for a refill, A. we call doctors for refills, B. I'm not letting them

go 3 days without their blood pressure medication, I'm gonna make sure they've got medication through the weekend, you know we do things like that."

- "The medication management is a huge part of my business - we have about 400 patients and we set up their medication ... some of these people are in their own homes; some are in assisted living facilities ... and part of that is making sure the patients have the adequate refills to make sure the pill minders are filled in a timely fashion"
- "(In response to being asked about counseling) Whatever they need to get them to take their pills. That does not mean handing them a sheet of paper. For the most part I don't even do printouts, it's more talking to the patient."
- "You have to realize that they're a human being. I have a lot of mental health clients that will frequently (say) 'I want to take these so that I can then get off of these meds. My goal is to get off of the meds' and I try and explain to them ' if you're diabetic you would be trying to get off your insulin, if you had high blood pressure you don't take high blood pressure pills for 30 days and have your blood pressure cured. It's *treatment*. You have to try to get people to understand that treatment and cure are two different things, and cure doesn't happen very often."
- "If somebody comes in with a question, I'd rather have them get more information than they were looking for, from somebody who's just so overworked and overturned that they can't take the time to talk to somebody."
- "We don't provide preventive services (BP measurements etc). it's something I wanted to do. I just didn't have room. The model pharmacy was twice this size but I didn't have space."

**How many languages do you support?**

- "I'm sorry to say we don't support any other languages. The demographic is changing. Again, a lot of far eastern Asian population but I guess it's so many different languages."
- "We have some Spanish people, but I don't have anybody that speaks Spanish. It doesn't seem to be a big issue. Somehow we manage to communicate."

- "I actually have a translation program on my phone. I haven't had to use it but it's there if I have to."
- "Basically, Vietnamese is the one, but from the software, I have like 4 language translation. If they need like special language translation, when we put in the directions, it translates to the language they prefer."
- "Right now we have Dataskin, and you can add like different languages to the software."
- Languages spoken :Many, including Spanish, Arabic, Chinese, Vietnamese, Amharic.

**Any services for the disability?**

- "We have canes, not crutches…we have the wrist supplies, hernia supplies, knee braces, or if they need a commode we can provide a commode."

**What is your product range?**

- All sorts, the same variety that you'd see at a CVS, just on a smaller scale, ideally we're got anywhere from kids with ear aches who need amoxicillin to older patients with high blood pressure."
- "We used to have Italian cards for the Italian families here…we also provide American cards. We used to provide perfumes from Italy. Right now, not too much, we are not able to get it. Maybe I was more younger back then, more energetic."

**Patient records ?**

- "We always have records, we have a computer that has all of the patient records…I don't share any."
- "We enter their name, their address, their phone numbers, whatever medication we fill…they remain in the computer on the hard drive."
- "Nobody gets our records unless, for whatever reason, the patient signs that they would like to have a record sent to the lawyer or whatever…only, you know, their authorization. This is something of confidentiality, we don't share."
- "If they get all their medications here, the software tracks if there is any drug interaction, other therapies so we know. If it is billed through the insurance, we still can see. Anything else, we cannot see."

**Other**

- "I employ 14 people. When I came here 23 years ago, there were 3 part time employees."

- "One of them actually went on to become a pharmacist."
- "I think I at least took an accounting course and I took an elective marketing course ... unfortunately you learn a lot of it by the seat of your pants."
- "When I was in school I never planned on doing this (owning her own pharmacy)."
- "If they get all their medications here, the software tracks if there is any drug interaction, other therapies so we know. If it is billed through the insurance, we still can see. Anything else, we cannot see."

4. **PRICING**

**How do you deal with pricing ?**

- "from what I understand we have a buying group so they help us being competitive with the chain across the street so we don't have to get on the phone"
- "we know how much the drug costs, but as far as knowing how much this insurance is getting paid versus the other one is done fortunately by this buying group"
- "I have a perfect example, we had a woman come in the other day, she brought her CVS label from last month so we transferred it over and refilled it and was $22.46 for her inhaler with her insurance for them and it was $22.21 with us."
- "The insurance companies set the prices. The Boston market in pharmacy is about 90% third party payer ... the third parties set what they're going to reimburse."
- "We offer comprehensive customer service unlike our competitors. Things like delivery, flu shots, competitive pricing...a lot of people are unaware that chains stores often have inconsistent pricing. We call the CVS down the street and the one in Back Bay and there's a price difference by 20% for one particular drug."
- "Use the suggested retail price and contract with the best wholesalers."
- "All the prescription medication[s] are bought from a wholesaler and are sold at a specific price with a certain AWP. That automatically gets built into the insurance when we put something through. Then the insurance companies reimburse a certain cost."
- "Pricing is not determined by us."
- "Over the counter medications are bought from the wholesaler and then it is marked up based on what the wholesaler recommends or based on what we think is fair."

- “The vast majority of patients get generics.”
- “Attitudes towards generics have shifted towards a more positive light in recent years.”
- “A lot of times, customers are more particular about the manufacturer of their generic product as opposed to the fact they are getting a brand name.”
- “There are a few people that still get brand name products but it is rare.”
- “The [staff] supports the use of generics for the main reason that it is cost saving for the patient.”
- If a patient cannot afford a medication- “We would probably contact the doctor and have a discussion with the doctor about the patient's’ inability to pay- it would be a tough situation.”
- “[If it is a medication that is a one-time thing then we would be willing to work with the patient on making payments later on].”

**Patient attitude to generics**

- “you’ll always have some people and you don’t want to come out and say you’re misinformed because it does just have to do with patents, but every once in awhile, you do get someone that says I tried brand, it bothered my stomach. That’s not unusual, different filler, different active ingredient, but a lot of times it’s in any age range, but some people will say don’t give me the generic, you can try your best legally, but say you can call their doctor and get a script for the brand name”
- “For the most part people are fine with it, which has changed significantly over the last 30 or 40 years. There used to be huge resistance to it. Elderly will sometimes oh no I can't take those I have to have the brand name. Price differences will now tend to sway them. People are actually very accepting at this point of generics.”
- “And some of that is also education. People didn't know and all they heard was 'cheaper'.”
- “Younger customers tend to go for the generics but the older folks prefer brand name. It’s hard to challenge perceptions of the older community.”
- “The bulk of my customer base is the older community through retention throughout the years, we face a challenge with the other’s perceptions of the CVS down the street...there

is more brand recognition and it is usually associated with being the cheaper alternative when us when in fact we are often more competitive in pricing of the top OTC drugs, the oddball drugs perhaps maybe more expensive though."

- "I'd have to say 95% of the time, its generics if it is available. There is that 5% of people who will only take branded."
- "I usually don't keep brand names ahead of time. I'm just like everyone else trying to manage the household budget."
- "Why order it a month before I need it if I can use that money to buy other things in the meantime."
- "Patients don't think generic is same effective as original, and the pharmacist's job is to help them understand this. takes time to explain this to patients."

**How do you manage patients who can't afford medicines ?**

- "We do have an in house charge account, we'll send them a bill every month and cross our fingers that they pay it"
- "if you have a drug not covered by insurance, run it through the triple A to see if they can get something"
- "Look for some sort of coupon, some kind of ... Medicare if you have somebody whose income is low enough and they qualify, they can get subsidies through Medicare"
- "The Medicare patients aren't so much the issue with not being able to afford their medication, it's much more the lower-middle class working poor. They make just enough money that they don't qualify for help, and they don't make enough money to afford what they need"
- "Massachusetts has finally allowed coupons. Some of the brand-name drug manufacturers will have coupons ... we were the last state to allow those
- "Basically try and find something that they can afford"
- "I'll come out and say to somebody your prescription is $400 this is ridiculous. We need to talk to the doctor and have them order something you can afford"
- "It happens all the time. We let people set up a house account."

- “What’s that Popeye thing? Remember Wimpy, who liked the hamburgers? If I could have two hamburgers on Monday, I’ll pay you on Wednesday.”
- “It helps them manage their money. Sometimes they don’t have money. Sometimes the mass Medicaid program, Mass Health, there’s actually a directive that says if they can’t afford the medicine, you can’t refuse the medicine. They are still responsible for the copay but you can’t refuse to give them the medicine.”
- “We don’t let anyone walk out without their medicine. I will call them and say, you do have a balance, you need to be aware. You’d be surprised. Most of them will pull a couple dollars here and there to pay, but I have had my share of people who’ve run out.”
- “I have registers. I do the bills once a month.”
- “I keep a little too much in my head”
- “We try to help patients as much as possible. Like I said, we try to find the cheaper price for them within our scope. Let’s say we give them the price we paid to purchase the medicine.”
- “You can decide if you want to make profit from the drug. We try to help them as much as possible.”
- “We can also show them solutions. If they have no insurance, maybe they can get free care from a hospital pharmacy. Always, we have solutions.”
- “It is a unique 340B pharmacy approved by the federal government which helps underserved population get medicines at a discounted price.
- “They will try to find a way to make sure patients get what they need.”
- “Patients without insurance or outcome: he said they try their best to accommodate patients with cheapest drugs. Contact the doctors to see what alternative is possible.”

5. **DIFFERENCES FROM CHAIN PHARMACIES**

**Range of goods sold apart from medicines**

- “In the basement, we have walkers and other products our customers don’t see that but we do get people coming in asking about those products.”

**Do they provide other resources/services ?**

(For instance : groceries , photographs , gas refills others)

*Final*

- “As far as going to the chains and then coming here we've had the situation where someone just hasn't gotten an acceptable answer so they're trying another pharmacy to see if someone will tell them in English.”
- “My staff is pretty well versed with this, they can come up and talk to somebody ... this might help, this probably isn't going to help.”
- “It's not just the pharmacist, it's people, they're comfortable coming and discussing stuff.”
- “Having product like this available for people and telling them how to use it or what to use, you know, is a big help.”
- “People will buy merchandise in a chain far quicker than they'll buy it here assuming that the chains are cheaper. They’re not, we price shop them, we know they're not. But people think they are, it's perception.”
- “Because we face the external challenges that we have no control over, we try and carry products that our customers want. We have beauty care, vitamins, magazines, greeting cards, stationery…”
- “The biggest difference is time. At chain pharmacies, you basically work your hours and the workload is too much because chain pharmacies have everything on budget. But here like, it is your own time so if the customer has questions, I can pay attention more. Even off hours, you can spend your time on them.”
- “A lot of our customers have our personal phone numbers too. You don’t have to just call the pharmacy. You can talk to us personally. That is how convenient it is.”
- “We tend to know most of our patients. That is why you ask if they have any questions. If they need emergencies, you can just come in and get the medications off-hours.”
- “We’re service oriented, customer friendly, we try to help our customers as much as we can.”
- “It’s easier to work for an independent that a chain.”
- “I know what it’s like having 3 bosses looking over my shoulder and it’s not fun.”

- "I know all my customers. I can tell you what all my customers have (medicines). If you were my customer, I would say, "how are you doing David? How's your family doing?" They don't do that."
- "No, because we we believe to give more time to talk to the patient about the medications and other problems. It's all about patient care."
- "A independent pharmacy has a goal to serve a smaller population at a higher quality whereas big box stores have the goal of filling the fastest at a higher volume."

**Others**

- "different types of packaging, some come in a 30 day so we go out once and month, some come in a weekly so we go out once a week"
- "we deliver, and we also do regular old fashion delivery in a bottle to wherever. We're still a new place so we say yes to delivery anywhere. No charge for delivery or the packaging. We're still young, only 3 and a half years in, so we want to grow the business"
- "Not only the free delivery, I think you can see it's a more relaxed atmosphere. You know the people will come in and say this was so much easier than across the street."
- "If someone walks in we can focus on them, and if it takes two of us to focus on them then fine. We get the one on one feel. Not the rushed feel like we're trying to get you out the door. Here it's obvious the owner of the business is standing right next to me most of the time. He's just as dependent on that person walking in as I am. You don't get that across the street. You appreciate them that much more."

6. **CHALLENGES**

**How do you attract patients**

- "Unfortunately sometimes we get the horror story of 'someone was really rude to me, somebody was really nasty to me, somebody made me feel bad, somebody didn't take my problems seriously' it sends out a red flag that this patient is somebody who needs to be treated with gloves. They've already had a bad experience we need to make sure they don't have one here, no matter what we have to do to prevent it."
- "Basically customer service "

- "I've actually never done any advertising "
- "Be there and they'll come "
- "First of all my store is 80% pharmacy, 20% front store although my front store takes up the majority of my floor space. "
- "Our first biggest challenge has been contracting with insurance companies. They are very slow in getting all the paperwork set up and so that was completely frustrating."
- "Because as a new pharmacy we are transferring prescriptions from other pharmacies, we have gotten a significant amount of resistance from those pharmacies. They put us on hold forever and it kind of becomes this war of attrition- they are very rude to us.
- We never know if we are going to get a positive reaction, negative reaction and so that has been challenging."
- "When transferring prescriptions, sometimes they put us on hold and call the patient and question them why they are transferring which puts them in an awkward situation."
- "Our biggest challenges now is recruitment. How do we advertise and let people know that we are here? We did not want a huge influx in the beginning because we were not ready for it. But now we are ready for it and hoping for that influx of patients?"
- "Future challenges include the competition with corporate pharmacies. They have the money to change the rules, to do whatever they want. They can create all sorts of problems for small business. Insurance companies definitely favors the big chain stores."
- "One of the things about the ACA where pharmacists have to do medication therapy management for patients and that system favors big chain stores."

**How do you keep patients**

- "That's one of the other advantages, not dealing with ya, they have to, I don't. I don't have to put up with this."
- "Your corporate structure is such that you have to deal with it. I'm not gonna subject my employees to it "
- "Our good customer service keeps people coming back. We know our customers names and their prescriptions a lot of times."

- “By just giving good service. We used to have [advertisements] in the past…but not anymore. I have people coming when they were living here [in North End], when they were young, then they get married, then they have children, so they come from where they are, like Somerville, Medford, they still come.”
- “Everybody that went there [to CVS] came back because they were dissatisfied with the service.”

**Past challenges**

- “Usually is someone is coming in and saying they don’t have insurance you know it’s a narcotic they’ve giving you and they’re trying to pull a fast one on you”
- “My inventory is huge. That's another challenge - chains have warehouses ... with me, my money is sitting on the shelf. I don't get paid for it until it goes out the door.”
- “Challenge: reimbursement right now is extremely low. Third parties have cut reimbursement terribly, and they have four weeks to pay. I pay my wholesaler every week.”
- “Inventory control is a full-time job all by itself.”
- “We had an armed robbery, it was a long time ago .. it was a very inept kid and fortunately no one got hurt ... and (the robber) wound up leaving with nothing. ”

**Present challenges**

- “The PBM’s are running us out of the market. They keep reimbursing us lower and lower and we have to alternate our business model. Sometimes I pull extra hours instead of having the other pharmacists come in.”
- “The biggest challenge that I think I’ve ever had with this pharmacy is really the insurance. You know, the ongoing every day fights with the insurance companies. Because, you know, I will advocate for you, and for you, for your medicines. Let’s get those medicines covered. Why aren’t those medicines covered? Why is someone at the insurance company dictating why this medicine is or isn’t covered when n the doctor is

prescribing it. Doctor wants the patient to have it but you refuse to pay for it. So that's the biggest challenge."

- "We spend a lot of time everyday fighting with the insurers trying to get them to cover it, trying to get the doctor to do the paperwork so they can get it covered."
- "Insurance companies all have their own formularies. They randomly pick and choose drugs in a category to cover based on really reasons that you and I would really think would be right. They base it on how much money they can get back as rebates or kickbacks from the manufacturers. No matter what anyone tells you, the insurance company doesn't care how you feel. they want their money. That's unfortunate that we've let them get in that position".
- "When I say insurance companies, I'm really talking about the Pharmacy Benefit Managers, the PBMs. The insurance companies contract with the PBMs and I contract with them. I don't contract with Blue Cross Blue Shield; I contract with Express Script. Most people don't know the way it works."
- "There is a increase in customers. Hence the need to update the system regularly and able to accommodate the information. Everyday here, I see new patients coming."

**Future challenges**

(Mail order , big box stores like costco, walmart)

- "The biggest problem is mail order because mail order also does therapeutic substitutions without necessarily contacting the patient or informing the patient ... what is this stuff what are they giving me, can you tell me what's going on? And they can't necessarily get an answer all the time from mail order."
- "Off the top of my head, if you're thinking competition with chains, I'm not worried about chains."
- "They [chain pharmacies] send people to me because I do things they don't do." AO
- " The biggest challenge is balancing the money that goes into gathering medicines and the money that goes out. The rest is not - serving patients is easy if you love what you do."

- " Competing with chains is not even a question...If you are sure of who you are as a person, then there is no competition, you become comfortable with the knowledge that you are doing the best you can."

7. **SECRETS TO SUCCESS**

**Personal**

- "Early on I'll tell you what they did which was a smart move, we had a woman here who worked at this building for almost 50 years and they brought her on and she knew everybody who not only walk in the pharmacy, but most of the town… people came for her"
- "You can take the time to talk to them."
- "There's a certain kind of pharmacist that I want to work for me."
- "This isn't a job, this is a profession. And that's the way that someone who works here needs to view this."
- "We're taking care of people. That's what we do."
- "Any person here will go above and beyond for any person that comes into this store."
- "We've gone as far as going to Farmland to get milk or juice if we know somebody's in a situation."
- "The quality of customer service we deliver is unmatched by our competitors and i think our customers know that."
- "Believing in what I do. That s probably gotta be the number 1 thing. Provide the best service, believe in the product. I think that's the secret to success."
- "You have to believe in what you do, which is a curse. I have a thousand people in my head. I go home and night and I go, "that person wanted me to order that thing for them and I forgot". It wakes me up at night."
- "Success basically for me , you have to provide best service. Will help your patient come back all the time. You have goals, you plan ahead. That is how you measure success. You just cannot wait for the customer to come in."
- "Customer service is important"

*Final*

- “Keep employees happy and work as a family.”
- “Accommodate patients first and make them happy so they come back.”
- “In a neighborhood where they know everyone’s names. So that kind of attachment present.”
- “ Competing with chains is not even a question...If you are sure of who you are as a person, then there is no competition, you become comfortable with the knowledge that you are doing the best you can.”

**Organizational**

- “People will go to the 24 hour CVS pharmacy; I will never be 24 hours. It will be hard to get that kind of customer. At some point, the person will come to my store because it will be hard for them to get it (what they need) elsewhere.”
- “Basically, we have like adverts on newspapers. We have websites, a radio station focused on that particular Vietnamese population. We advertise on magazines. We go to doctor's office and tell them what we do and that we exist here.”

**Community links**

- “They work with the chamber of commerce so there are some advertisements out, couple of golf tournaments they sponsored, and every once in awhile, S will give talks at the senior center.”
- “S was a member of the chamber of commerce.”
- “I belong to the local rotary club; I support whatever group walks in here.”
- “I'm a corporator of the local bank across the street.”
- “I'm actually a trustee (of MCPHS). I'm the first -- to be vice chair.”
- “I was also president of the state pharmacy association.”
- “I’m a member of the Beacon Hill Civic Association but I’m not actively involved in anything else.”
- “Basically, we have like adverts on newspapers. We have websites, a radio station focused on that particular Vietnamese population. We advertise on magazines. We go to doctor's office and tell them what we do and that we exist here.”
- “We have been part of little health fairs”

*Final*

## 8. ROLE OF MIPA

- "I got something about a CE coming up that I'm going to go to, but I don't know how active S is. At least checked out the website every once in awhile."
- "MIPA is the child of the Boston association of Boston association of retail drugs. There was an association that I was the first woman president of. I was the first woman president of what is now MIPA."
- "My philosophies are significantly different than a lot of the people in power, so I just kind of do my thing and they can do theirs."
- "I'm actively involved in MIPA and I attend the monthly meetings. I missed the last meeting."
- "I'm a member. We promote new pharmacies to think about opening up more independent pharmacies."
- "Usually, if anybody comes in and asks us to be at an event, we do it. So far we haven't had any. What we do is go to like a nursing home or a building with a population there. We talk to the manager if we can be there and present and have like a presentation about a disease, drug. That is what we do."