

THE ARDUOUSNESS OF NAVIGATING THE DRUG FACTS LABEL AND ASSESSING  
ITS QUALITY WHILE SHOPPING OTC DRUGS ONLINE.

By

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## ABSTRACT

There is a growing trend among consumers to seek accessible, safe, and effective alternative treatment choices. The Over-The-Counter medicine business is expanding because of people looking for over-the-counter treatments for common conditions including headaches, colds, and allergies. As a result, generic over-the-counter medications are becoming more widely available and may be found for a lot less money than their name-brand equivalents. The over-the-counter medicine business is anticipated to continue expanding at a fast rate. The market is expected to grow at a compound annual growth rate (CAGR) of 6.4% from 2020 to 2025, reaching \$239.1 billion. The over-the-counter medicine business presents an appealing prospect for new players due to its potential for expansion. Over-The-Counter medications are now freely accessible to consumers through e-commerce websites like Amazon.com or even through food delivery services like UberEats or exclusive Quick Commerce companies like Instacart.com making it easier than ever to use these goods. Strict guidelines for labeling and promotion must also be followed by Over-The-Counter medications. Businesses are required to give precise and understandable information about their products, including usage, possible adverse effects, and dosage guidelines. Businesses should think carefully about how their labels and advertising affect customers. Information that is misleading or unclear may have detrimental effects on the customer as well as the business. This study focuses on comparing the differences between E-Commerce and Q-Commerce channel(s) when a consumer tries to purchase an Over-The-Counter medication to see how arduous it is to find information pertaining to the Drug Facts Label as regulated by the Food and Drug Administration (FDA) and the results show that E-Commerce performs better than Q-Commerce in many areas but still has a lot of areas where improvements are needed.

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Yours Sincerely,

Shashank Neralla.



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## **LIST OF ABBREVIATIONS**

FTC – Federal Trade Commission

FDA – Food and Drug Administration

U.S. – United States

OTC – Over-The- Counter

E- Commerce – Electronic Commerce

Q- Commerce – Quick Commerce

FPLA – Fair Packaging and Labeling Act

PDP – Principal Display Panel

MSU – Michigan State University

ADR – Adverse Drug Reaction

NSAID – Non-Steroidal Anti-inflammatory Drugs

SKU – Stock Keeping Unit

UX – User Experience

UI – User Interface

URL – Uniform Resource Locator

## **1. Introduction:**

The Federal Trade Commission (FTC) is an independent, bipartisan agency of the U.S. government tasked with protecting consumers and ensuring a strong competitive market. The mission of the FTC is to “protect the public from deceptive or unfair business practices and from unfair methods of competition through law enforcement, advocacy, research and education.” (FTC US Gov, n.d.) As such, information dictated by the FTC is intended to facilitate value comparisons of products (i.e. price per unit dose) or enable consumers to identify product equivalents (e.g. store brands). The Fair Packaging and Labeling Act (FPLA) Act, enacted in 1967, directs the Federal Trade Commission and the Food and Drug Administration to issue regulations requiring the labeling of all "consumer commodities" to disclose net contents, commodity identity, and the name and place of business of the product's manufacturer, packer, or distributor. The Act permits new requirements to avoid consumer fraud (or to promote value comparisons) regarding component descriptions, slack fill of packaging, use of "cents-off" or reduced-price labels, or characterization of package sizes. Harmonizing with these requirements, The National Institute of Standards and Technology's Office of Weights and Measures, within the U.S. Department of Commerce, focuses on promoting consistency in state and federal regulation of weights and measures to the maximum degree possible. Many of the labeling requirements mandated for with the intention of facilitating fair commerce are placed on products' Principal Display Panels defined as, “the part of the label most likely to be displayed at retail” and have defined content, formatting, and placement of information. (FTC FPLA, n.d.) In the United States, information present on the labeling of over-the-counter medications (OTCs) is primarily regulated by the Food and Drug Administration (FDA). In contrast to the FTC, the US Food and Drug Administration's (FDA) mission is to “protect the public health by ensuring the

safety, efficacy and security of human and veterinary drugs, biological products, and medical devices; and by ensuring the safety of our nation's food supply, cosmetics and products that emit radiation.”( FDA Mission Statement, n.d.) For Over-The-Counter(OTC) products, medications that do not require the oversight of a doctor to select, obtain or administer, labeling becomes particularly important since these processes are left to the consumer. Consumers involved in self-selection must apply information (many times from the labeling) to their personal health situation to make correct decisions about whether or not it is appropriate for them to use a drug product as well as how to safely and accurately administer the medication (<https://www.fda.gov/regulatory-information/search-fda-guidance-documents/self-selection-studies-nonprescription-drug-products>, 2013). Most of the information that is determined as necessary for safe and effective use is presented with standardized content and formatting the form of a Drug Facts Label (DFL) located on the product packaging. Both the content and formatting of required information is dictated by regulations promulgated by the FDA (21 CFR 201.60) through authority that has been granted under the Federal Food, Drug and Cosmetic Act (FFDCA).

## **2. Research Hypothesis:**

We hypothesized that online retailers emphasize information that is dictated by the FTC, focusing on value comparisons, as opposed to that required by the FDA, which emphasizes information critical to safe and effective product use (i.e., required within the DFL). Specifically, that the content of information required in the DFL would be comparatively poor and that it would be more arduous to find than information typically associated with the Principal Display Panel or other information typically used to make price or product comparisons.

### **3. Background:**

The proportion of online sales in global revenue of the OTC market is expected to increase steadily, with larger portions of OTC sales coming from online retailers as time goes by. As evidence, online sales were 10% of the OTC market in 2017 as compared to projections of 37% 2025. (Hubner, 2022). Considering this trend and in support of the aforementioned objectives, an assessment was done in 2021 by Haoyang Wang at MSU to see how challenging it is for consumers to locate information that is outside the DFL as compared to that which is required by the FDA to be present on the DFL using products for sale at online retailers. An unpublished benchmarking study conducted by master's student Haoyang Wang (School of Packaging at MSU (Michigan State University)) in 2021 hypothesized that the online retailers primarily prioritize promotional information about drugs and that it was arduous to find the vital information such as DFL, warnings etc. (Wang2021). Herein, we adapt Wang's methodology to investigate the study objective. Sales information was utilized to inform sample selection. Specifically, Statista data suggested the OTC category pain relief had the highest percentage increase in OTC purchases in the United (Statista 2021 June15 OTC Sales Growth Category, 2021) as per the chart shown below on Figure 1 (Statista 2021 June15 OTC Sales Growth Category, 2021). The OTC drugs that were sampled were Aleve, Tylenol, Advil & Private label brands. These brands were chosen since they comprised the largest sales (USD) in the internal analgesic category according to Statista's data- Figure 2. (Drug Store News. (August 25, 2019). Leading internal analgesic tablet brands in the United States in 2019, based on sales (in million U.S. dollars)\* [Graph]. In Statista. Retrieved August 24, 2023, from <https://www.statista.com/statistics/194510/leading-u>).

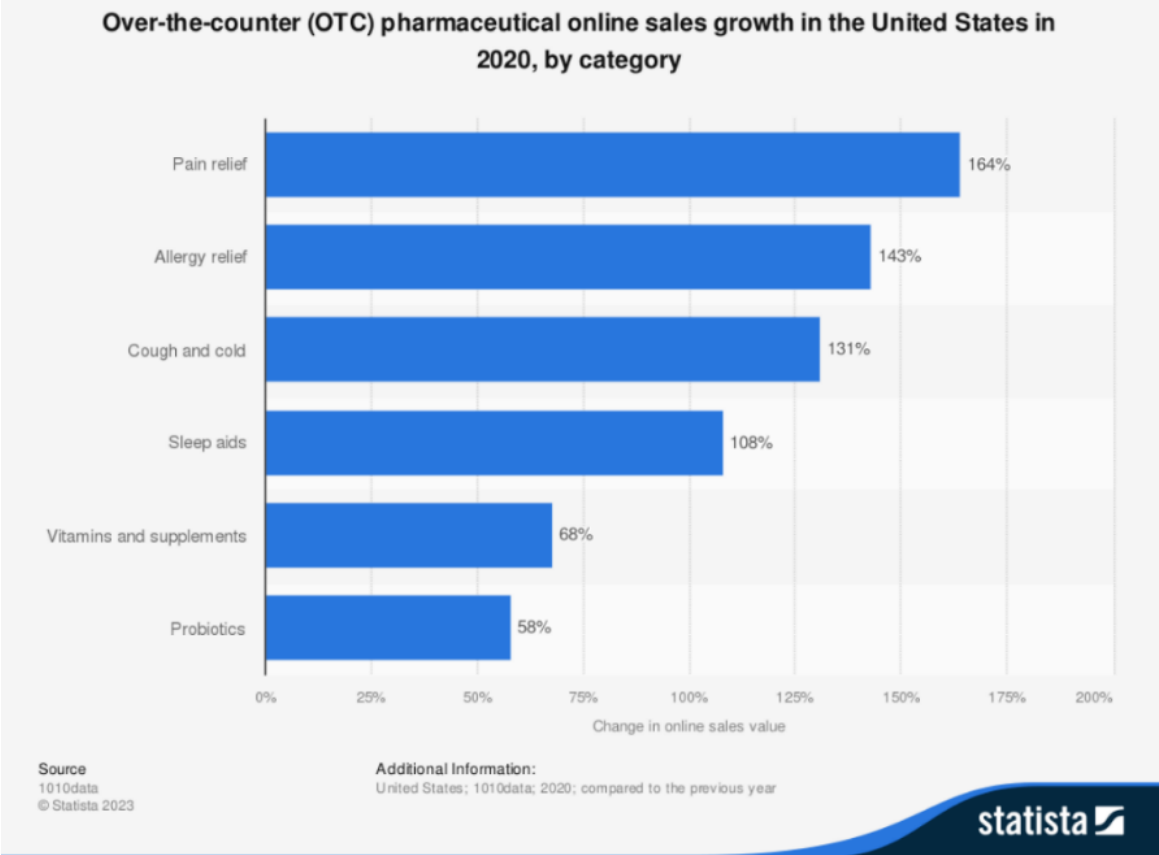


Figure 1 shows the chart of the OTC Pharmaceutical online sales growth in the U.S. in 2020, by category. Reprinted with written permission from Statista.

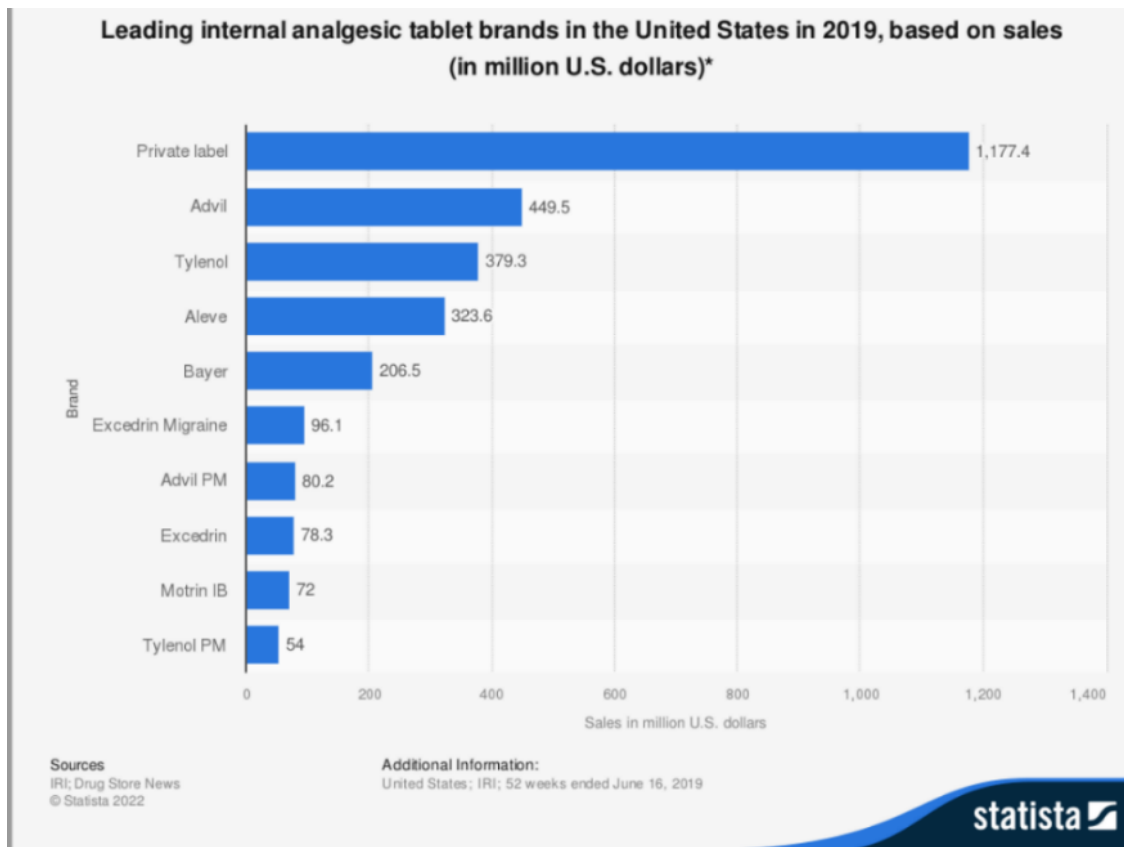


Figure 2 shows the chart of the Leading Internal Analgesic Tablet brands in the U.S. in 2019, based on sales data, reprinted with written permission from Statista.

Selected websites for sampling were comprised of both E-Commerce mass merchants, online stores with pharmacy segments, and Q-Commerce merchants, companies that interface with retailers using “quick commerce delivery services” (e.g. Instacart.com). The mass merchants selected in the E-Commerce segment were: Amazon.com, Walmart.com, Target.com, Costco.com. Walgreens.com and CVS.com in the Pharma retailer/ Pharmacy segment. All of these were also tested in Q- Commerce with the exception of Amazon.com, who does not connect to Q Commerce outlets as they utilize their own shipping channels. Stores were selected based on the online OTC sales data from 2020 OTCs (See Figure 3). (1010data. (June 15, 2021).



Over-the-counter (OTC) pharmaceutical online sales growth in the United States in 2020, by leading merchant [Graph]., 2021).

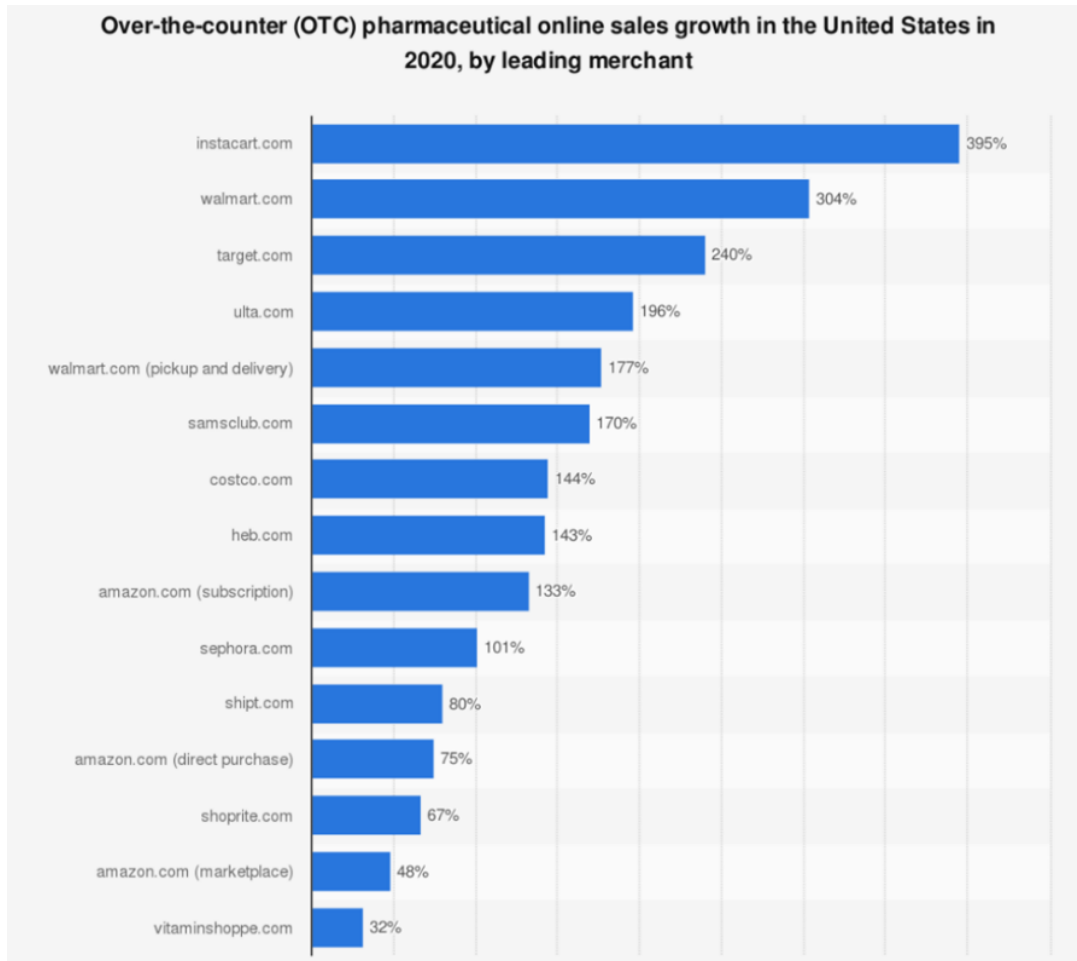


Figure 3 shows the chart of the OTC Pharmaceutical online sales growth in the U. S. in 2020. Reprinted with written permission from Statista.

Similarly, the top online stores in the pharmacy segment as of 2022 are Walgreens.com, CVS.com & riteaid.com as shown in figure 4 (ecommerceDB.com. (June 30, 2023). Top online stores in the pharmacy segment in the United States in 2022, by e-commerce net sales (in million U.S. dollar) [Graph], 2023)



Figure 4 shows the chart of the Top Online stores in Pharmacy segment in the U.S. in 2022, by e-commerce net sales. Reprinted with written permission from Statista.

Data was collected between May 2023 to July 2023 to assess the following: quality of DFL and the availability of the required information as per FDA’s labelling guidelines; difficulty in obtaining such information (e.g. number of times a person had to scroll to find the DFL in textual format/positioning of DFL in a range of thumbnails); readability of DFL, accessibility requirements (as defined by the Baymard Institute (<https://baymard.com/blog/accessibility-benchmark-launch#images>, 2021)). The information required in the DFL is critical in many steps during self-medication, including selection of appropriate products made during purchase decisions. Yet there is not a specific standard set by the FDA (Food and Drug Administration) (Food and Drug Administration) or the FTC for the sale of OTC via online channels. The FDA has set rules pertaining to the labeling information that needs to be on the OTC Product’s

Packaging (FDA, 21 CFR Part 201 Subpart C, 1976), but it was found that it does not govern the sale of OTC drugs in the country and anyone with a valid license from a state pharmacy board can sell OTC drugs (Sara Koblitz, Attorney , Serra Schlanger, Attorney , Karla Palmer, Attorney (Hyman, Phelps & McNamara, P.C.)) The Federal Trade Commission (FTC) governs the competition of sale between two parties and makes sure that the consumer doesn't get scammed or cheated with respect to the prices of the product being sold. (FTC/Enforcement).

As per the guidelines provided by FDA , a DFL should contain the following sections: *Drug Facts, title, Active Ingredient(s), Purpose, Use(s), Warnings, Directions, Other information, Inactive ingredients, Question/comments(optional)* as defined by FDA in the labeling guidelines (see Figure 5). (FDA, 21 CFR Part 201 Subpart C, 1976) The warning section can be illustrative of why the DFL is important when selecting a product for use (Michelle Llamas, n.d.). Warnings provide information related to side effects or drug interactions that can occur and describe who should not use the drug. They tell you when to stop using the drug and when to consult your doctor and/or pharmacist. (Michelle Llamas, n.d.).

<b>Drug Facts</b>	
<b>Active ingredient (in each tablet)</b>	<b>Purpose</b>
Chlorpheniramine maleate 2 mg.....	Antihistamine
<b>Uses</b> temporarily relieves these symptoms due to hay fever or other upper respiratory allergies: ■ sneezing ■ runny nose ■ itchy, watery eyes ■ itchy throat	
<b>Warnings</b>	
<b>Ask a doctor before use if you have</b>	
■ glaucoma ■ a breathing problem such as emphysema or chronic bronchitis	
■ trouble urinating due to an enlarged prostate gland	
<b>Ask a doctor or pharmacist before use if you are taking tranquilizers or sedatives</b>	
<b>When using this product</b>	
■ you may get drowsy ■ avoid alcoholic drinks	
■ alcohol, sedatives, and tranquilizers may increase drowsiness	
■ be careful when driving a motor vehicle or operating machinery	
■ excitability may occur, especially in children	
If pregnant or breast-feeding, ask a health professional before use.	
Keep out of reach of children. In case of overdose, get medical help or contact a Poison Control Center right away.	
<b>Directions</b>	
adults and children 12 years and over	take 2 tablets every 4 to 6 hours; not more than 12 tablets in 24 hours
children 6 years to under 12 years	take 1 tablet every 4 to 6 hours; not more than 6 tablets in 24 hours
children under 6 years	ask a doctor

<b>Drug Facts (continued)</b>	
<b>Other information</b> ■ store at 20-25°C (68-77°F) ■ protect from excessive moisture	
<b>Inactive ingredients</b> D&C yellow no. 10, lactose, magnesium stearate, microcrystalline cellulose, pregelatinized starch	

Figure 5 shows a sample Drug Facts Label. (21 CFR 201.66).

This section (the DFL) is available to help consumers identify products that should not be used with pre-existing conditions or other medications to avoid a potential Adverse Drug reaction (ADR) or side effect. (Michelle Llamas, n.d.) Side effects, often known as adverse responses, are unfavorable consequences that may be caused by a medicine. Side effects might range from mild inconveniences like a runny nose to potentially fatal occurrences like a heart attack or liver damage. Age, usage of other medications, vitamins, or dietary supplements, or other underlying diseases or disorders (for example, diseases that weaken the immune system or impact the function of the kidneys or liver) can all influence the presentation of side effects when taking a

drug. Side effects can occur when you begin taking a new medicine or dietary supplement (for example, vitamins); discontinue a drug you have been taking for a time; or raise or reduce the dose (amount) of a drug you're taking. There are numerous avenues to learn about drug side effects and lower your chance of having one. Drug labeling is an accessible and convenient way to inform people about possible side effects and contraindications; in traditional environments it is available at the point of purchase and the point of use ,though this is not the case in online environments. Other avenues of information include consulting a learned intermediary (such as a pharmacist or doctor), or, more recently, utilizing web applications. At the time of review, once such app, available on the App Store and PlayStore was “MyRxProfile” as shown in figure 6 was identified. My RxProfile is intended to assist consumers to identify possible interactions between OTC Drugs, Vitamins & Supplements. Feedback is provided as, No Interactions, Mild Interactions, Moderate Interactions, and Severe Interactions (<https://www.myrxprofile.com/about-myrxprofile/>, n.d.).

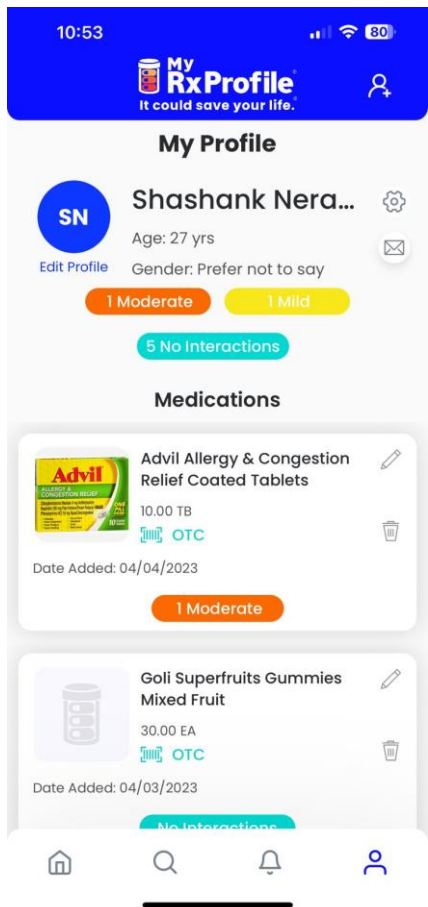


Figure 6 shows Screenshots of a sample Drug(s) Interacting with each other on the MyRxProfile App.

Taking several drugs, whether prescription or over the counter, contributes to the risk of having an Adverse Drug Reaction (ADR). Adverse drug reactions are classified into six types (with mnemonics): dose-related (Augmented), non-dose-related (Bizarre), dose-related and time-related (Chronic), time-related (Delayed), withdrawal (End of use), and failure of therapy (Failure (Edwards, I. R., & Aronson, J. K. (2000))). The number and severity of ADRs increases disproportionately as the number of drugs taken increases. Polypharmacy played a very important role in the development of drug interactions, defined as the “modulation of the pharmacologic activity of one drug by the prior or concomitant administration of another drug.

It is also defined as an interaction which occurs when the effects of one drug are changed by the presence of another drug” . (Alomar M. J. (2014). Factors affecting the development of adverse drug reactions (Review article). Saudi pharmaceutical journal : SPJ : the official publication of the Saudi Pharmaceutical Society). Research shows that many consumers exceed daily dosage recommendations for products such as acetaminophen and nonsteroidal anti-inflammatory drugs (NSAIDs) like ibuprofen and naproxen. One potential reason that patients utilize drugs differently than expected is failures in the DFL. The DFL transmits information that is vital to the safe and effective use of OTC products (at both point of sale/purchase and point of use). That said, as the point of sale evolves to include online environments, where the pharmacist available in real-world environments are no longer available, the ease of access and readability of the DFL is critical for self-selection. (Catlin, J. R., & Brass, E. P. (2018). College of Business Administration, California State University, Sacramento, CA 95819, USA, 2018).

## **4. Definitions:**

This section provides information intended to help the reader understand the methodology that was employed during this study by defining several relevant terms.

### **4.1. Number of times scrolled to find DFL in textual format:**

The webpage was set to 100% Zoom using Google Chrome as the browser to display information on a 27" LG MN60T Monitor, and the mouse used was Microsoft surface mouse. Upon entering the product name in the search bar in one of the E-commerce or Q-commerce sites mentioned earlier, and clicking the specific product of interest, the first page that appears is the Product Detail page, this page tells you about that specific item in detail, including a description of it, as well as its measurements, materials, ingredients, or installation instructions. It had to ideally tell the consumer everything there is to know about the item, so they have a better idea of what they're purchasing. This is the product detail page. If the required DFL information in textual format was in the initial location, but not displayed, the number of scrolls were counted. A "scroll" was defined as the no. of times the wheel of the mouse was turned/scrolls 180° from top to bottom to find the DFL. Page 2 is defined as the that page which completely flips and has new information as opposed to page 1. Figure 7 shows the Page 1 or the Product Detail Page of an Aleve product that was sampled during the study. (<https://www.yieldify.com/blog/product-detail-page/>, n.d.)



The screenshot shows the Amazon.com product detail page for Aleve Back & Muscle Pain Relief Naproxen Sodium Tablets - 250 Count. The page features a large product image on the left, a detailed product description and specifications on the right, and a delivery/purchase summary on the far right.

**Product Image:** The main image shows a box of Aleve Back & Muscle Pain Relief Naproxen Sodium Tablets. The box is blue and orange, with the text "ALL DAY STRONG. ALEVE BACK & MUSCLE PAIN naproxen sodium tablets, 220 mg (NSAID) Pain reliever/fever reducer". It also highlights "STRENGTH TO LAST 12 HOURS" and "250 TABLETS".

**Product Description:**

- Title:** Aleve Back & Muscle Pain Relief Naproxen Sodium Tablets - 250 Count
- Price:** \$21.54 (\$0.09 / Count)
- Rating:** 4.8 stars (5,261 ratings | 25 answered questions)
- Brand:** Aleve
- Special Feature:** Long Lasting
- Item Weight:** 0.38 Pounds
- Item Dimensions:** 3 x 2.63 x 4.89 inches
- LSWH:** (Long Lasting Pain Relief)
- Product Benefits:** Back Pain Relief

**Delivery and Purchase Summary:**

- Subscribe & Save:** \$21.34 (\$0.09 / Count) (Save 15% off list price)
- One-time purchase:** \$22.46 (\$0.09 / Count) (prime Two-Day)
- Delivery:** FREE delivery: Friday, Oct 20
- Buttons:** Add to Cart, Add to List, Add to Essentials

Figure 7 shows a screenshot of product detail page of Aleve Back & Muscle pain from Amazon.com.


Figure 8 below shows Page 2 for the sampled product, which required the mouse to be scrolled 4 times to completely refresh the information displayed.


Roll over image to zoom in


Sponsored

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**Frequently bought together**




**This item:** Aleve Back & Muscle Pain Relief Naproxen Sodium Tablets - 250 Count, 250 Count  
\$22.85 (\$0.88/Count) 



Aleve Pain Relief and Nighttime Sleep Aid, Naproxen Sodium Caplets, 120 Count  
\$24.99 (\$0.21/Count) 



Benadryl Ultratabs Antihistamine Allergy Relief Medicines, Diphenhydramine HCl Tablets f...  
\$13.98 (\$0.14/Count) 

Total price: \$61.31


Add all 3 to Cart


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**Related products from Aleve**


Sponsored




Aleve Arthritis Gelcap, Fast Acting All Day Pain Relief for Headaches, Muscle Aches, 6,930  
★★★★★ 6,930  
**Amazon's Choice**  
Naproxen Sodium  
\$22.85 (\$0.14/Count)  
  
Extra 25% off when you subscribe  
Climate Pledge Friendly





Aleve Pain Relief Naproxen Sodium Tablets, 270 Count, 1,508  
★★★★★ 1,508  
\$28.40 (\$0.11/Count)  
  
Extra 25% off when you subscribe




Aleve Pain Relief and Nighttime Sleep Aid, Naproxen Sodium Caplets, 120 Count, 2,229  
★★★★★ 2,229  
\$24.99 (\$0.21/Count)  
  
Extra 25% off when you subscribe



Aleve Individual Sealed 7 Caplet in a Packet (Box of 48 Packets), 133  
★★★★★ 133  
\$18.80 (\$0.39/Count)  




Aleve Headache Pain Tablets, Naproxen Sodium for Pain Relief - 175 Count, 175 Count, 235  
★★★★★ 235  
\$18.82 (\$0.11/Count)  
  
Extra 25% off when you subscribe

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**From the brand**

Figure 8 shows a screenshot of page 2 of promotional and related products to Aleve Back & Muscle pain from Amazon.com.

#### 4.2. Drug Facts Label in textual format:

DFLs were presented in two formats, “textual” and “graphic.” The DFL in textual format is defined as the information present in the DFL being available in a html/xml coded webpage format. The presence of the content requirements of the DFL label are “Drug Facts title, Active Ingredient(s), Purpose, Use(s), Warnings, Directions, Other information, Inactive ingredients, Question/comments(optional) as defined by FDA in the labeling guidelines, was verified (FDA, 21 CFR Part 201 Subpart C, 1976). This was assessed because there are certain E-Commerce websites that provide the DFL only for one SKU- Stock Keeping Unit, (stock-keeping unit, or SKU, is a unique code that a seller assigns to every type of item it sells).

These record-keeping units enable sellers to fulfill orders and manage inventory quickly per variant of the product (SKU Adobe, n.d.); many times the DFL was not present for all the products with differing net contents. Graphical formats of DFLs were presented in the form of an image file that was generally present in the thumbnail images; these thumbnails were analyzed for readability. The presence of DFL information in a textual format helps assist in overcoming barriers pertaining to accessibility allowing users who employ screen readers to interact with critical information about the drug as shown in Figure 9.

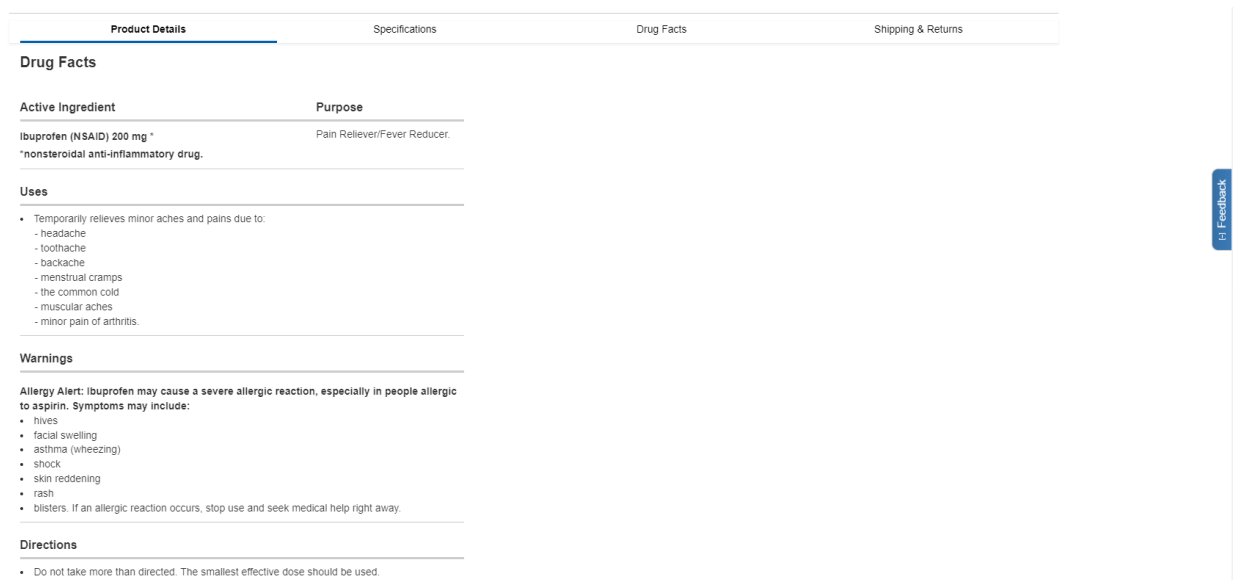


Figure 9 shows a sample screenshot of the webpage that has the Drug Facts in a Textual representation and shows the position of the scroll tab in the scroll bar from Costco.com.

*The DFL in textual format was subcategorized into two sections Completeness of information & Page Design. Completeness of information of DFL in textual format was defined as the presence of the DFL in textual format in a complete format as defined by FDA. The labeling guidelines mentioned earlier talk about the requirement of the following information on the Drug Facts Label (<https://www.fda.gov/drugs/information-consumers-and-patients-drugs/otc-drug-facts->*

label, n.d.).Based on the information required by Title 21 CFR 201, (see Table 1) we assessed the DFL information for completeness in accordance with the standard.

Table 1: Title and description based on FDA labelling guidelines.

S.No.	Title	Description
1.	Active Ingredient(s)	The product's active ingredients, including the amount in each dosage unit.
2.	Purpose	The purpose of the product.
3	Use	The uses (indications) for the product.
4.	Warnings	when the product should not be used under any circumstances, and when it is appropriate to consult with a doctor or pharmacist. This section also describes side effects that could occur and substances or activities to avoid.
5.	Dosage	when, how, and how often to take the product.
6.	Inactive ingredient(s)	The product's inactive ingredients, important information to help consumers avoid ingredients that may cause an allergic reaction.

The completeness of information was scored on the below mentioned criteria:

Table 2: Legend, Description and completeness of information which shows the scoring.

Legend	Description	Completeness of information
Poor	No information available	0
Fair	Less than 50% of required DFL info present in textual format.	1
Good	More than 50% of DFL info present in textual format.	2

Page Design of DFL in textual format was defined as the design of the webpage containing the DFL in textual format as seen in table 3. The Baymard institute, as mentioned earlier has done extensive research in this area and has proposed guidelines for the online sale of products from a user experience-based standpoint.

Table 3: Legend, Description, and page design of DFL in textual format which shows the scoring.

Legend	Description	Page design of Page Design of DFL in textual format
Poor	Design guidelines not followed set forth by Baymard institute ( see appendix 10.8)	0
Good	Design guidelines are followed as set forth by Baymard institute( see appendix 10.8)	1

#### 4.3. Drug Facts Label in graphical format:

The Baymard Institute® has done extensive research in User Experience design (UX) and has proposed guidelines as to what kind of design standards needs to be followed related to the presentation of information in graphical formats.

#### 4.4. Ease of Reading the graphical DFL:

Sufficient resolution and level of zoom is vital for all product images, but can be particularly important for images featuring text, including images of product labels such as graphic DFLs. A study performed by Baymard institute (as referenced below) found participants during testing focused on images of product labels to confirm key details for food and healthcare products, even when these details were available elsewhere on the product page, such as within the product description (e.g. a textual DFL). When sufficient closeup views are not available, or when the text on the label is unreadable due to low resolution, users cannot easily discern vital labeling

information. This may lead some to abandon a suitable product over putting forth the additional effort to find these details through other means. The Ease of Reading was defined as the Picture Quality in terms of the resolution of the image of the Drug Fact(s) Label; it was determined as legible to read if it had an option to zoom in as an additional function that aided the quality of reading. When images are of low-resolution, resulting in a pixelated or blurry zoomed view, or when the site only offers a small level of zoom — which may be done to avoid this blurry view — users are unable to get the detailed visual information they need to make an informed decision about whether a product meets their needs.

Surprisingly, according to a study conducted by Baymard, 25% of desktop benchmark sites fail to provide sufficient image resolution or level of zoom for even their most important products.

(Ensure All Product Images Have Sufficient Resolution and Level of Zoom #779,

<https://baymard.com/premium/guideline-collections/7a4utb/779>)

Table 4: Ease of reading was defined as and was reported using a scale from 0-3 as defined above.

Code	Quality	Description
0	Very Poor / Absent	DFL was not Present.
1	Poor	DFL illegible/pixelated to read even with an additional zoom function like a magnifier
2	Fair	DFL legible to read only with additional zoom function like a magnifier is utilized
3	Good	DFL was legible to read and has additional zoom option embedded.

#### **4.5. Position of the graphical DFL in the thumbnail image(s) section:**

For webpages that utilized a thumbnail depicting various information (e.g. faces of the traditional carton, ads, etc.), the Position of the Drug Facts Label in a graphical format had to be defined.

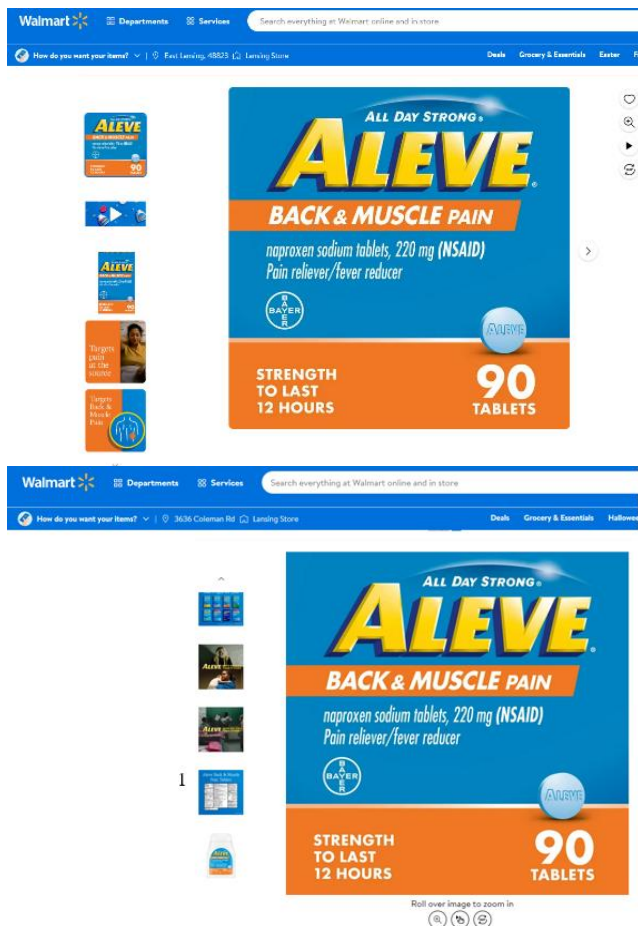


Figure 10a shows a sample screenshot of the webpage of aleve back and muscle pain 90 tablets which has 5 images and figure 10b has the Drug Facts Label “1” on the 9<sup>th</sup> position among the list of all thumbnail images from amazon.com(top to bottom).

The position of the graphical DFL was noted for each of the selected products as referenced in the background on the chosen retail websites as seen in the Fig 10b. It was the location of the graphical DFL among the list of thumbnail images that were present. For instance, if on Walmart.com, there were 10 thumbnail images specific to the Aleve Back & Muscle Pain 90 tablets SKU, and the DFL was not found on the information visible in the first page of the Product Detail Page as seen on fig 10a , we had to click the arrow near the thumbnail images multiple times until the thumbnail image containing the DFL was located. From top to bottom,

the number of thumbnail images were counted and the position of the graphical DFL was noted. which was present on the 9<sup>th</sup> image as shown, this was noted.

Table 5: Availability of DFL in PRODUCT DETAIL PAGE, No. of times clicked, No. of times scrolled, Position / Location of DFL, No. of thumbnail images, Availability of DFL across products with differing net contents in the PRODUCT DETAIL PAGE.

Availability of DFL in Product Description Page	No. of times clicked	No. of times scrolled	Position / Location of DFL	No. of thumbnail images	Availability of DFL across products with differing net contents in the Product Description Page.
Yes / No	Number	Number	Number	Number	Yes / No

When the DFL was not present in the Product Detail Page, the number of clicks or scrolls required to navigate to the DFL were recorded. These were defined as how many numbers of clicks to reach the DFL or the no. of times we had to scroll down to find the DFL. For instance, if the DFL was not present in the Product Detail Page, then we had to move the cursor around and either had to click or scroll accordingly as per the website to locate the DFL.

Table 6: Availability of graphical DFL in PRODUCT DETAIL PAGE, scoring.

Availability of graphical DFL in PRODUCT DETAIL PAGE	Scoring
Yes	1
No	0

The above table 6 shows Availability of graphical DFL in PRODUCT DETAIL PAGE meaning that if the Drug Facts Label was present or not in the Product Detail Page, its presence was captured in terms of Yes/ No and was coded as 1/0 accordingly.



Table 7: Availability of different sizes of net contents in the product detail page, scoring.

Availability of different sizes of net contents in the product detail page	Code
Yes	1
No	0

The above table 7 shows Availability of different sizes of net contents in the product detail page meaning that if multiples size of the same product was present or not in the Product Detail Page, the presence was captured in terms of Yes/ No and was coded as 1/0 accordingly.

#### **4.6. Availability of the graphical DFL across products with differing net contents:**

An observation that was made during data collection was that varying counts (of the same product) were inconsistent in the availability of a graphical DFL within a given website. As such, a column related to this factor was added to the flat file, such that one of three levels was recorded:

Table 8: Availability of DFL across products with differing net contents in the PRODUCT DETAIL PAGE, scoring.

Availability of DFL across products with differing net contents in the PRODUCT DETAIL PAGE	Scoring
Not Available	0
Available in a limited number of available net contents	1
Available in all net contents offered	2

#### **4.7. Accessibility Compliance:**

“Depending on the nature of participants’ need for accommodation, as well as the assistive technology that they have available to them (e.g., screen readers) to navigate and comprehend websites, differently abled users can have dramatically varied experiences on e-commerce sites”. Creating a site that can be readily navigated not only is vitally important to specific users, it is also legally required in many countries; not designing in ways that are accessible can create legal liabilities. Consider users who have visual impairments. Whereas users with mild-to-moderate vision impairments may be able to access site information using their browser's built-in zoom function and high-contrast mode, users with severe visual impairments may need to employ a screen reader to access and engage an E-commerce or Q- Commerce site. “ Similarly, individuals with restricted mobility or other physical limits may be unable to browse and engage with a site using a mouse and must instead rely on keyboard navigation. If sites fail to accommodate these users, many of them will be prevented from utilizing the site at all. Others may be able to struggle through and complete an order but will spend far more time doing so than people without impairments. The four components mentioned in figure 11 as per study performed by Baymard institute which aid in accessibility in an e-commerce or a q-commerce site are images, links, form fields, keyboard navigation”. (<https://baymard.com/blog/accessibility-benchmark-launch#images>, 2021).

## Up to 94% of Top-Grossing Sites Have Accessibility Issues

627 Accessibility Success Criteria (based on WCAG 2.1, AA) • 2021 • © Baymard.com/research

	Images	Links	Form Fields	Keyboard Nav
Home Depot	✗	✗	✗	✗
Argos	✗	✗	✓	✗
Crate & Barrel	✗	✗	✗	✗
Ann Taylor	✗	✗	✗	✗
John Lewis	✗	✗	✗	✗
Wayfair	✗	✗	✗	✗
Macys	✗	✗	✗	✗
Walgreens	✗	✗	✓	✗
Nordstrom	✗	✗	✗	✗
H&M	✓	✓	✓	✓
Victoria's Secret	✗	✓	✓	✗
Disney	✗	✗	✓	✗
Office Depot	✗	✗	✓	✗
Best Buy	✗	✓	✓	✓
Sears	✗	✗	✗	✗
Northern Tools	✗	✗	✗	✗
Kohls	✗	✗	✗	✗
Williams-Sonoma	✗	✗	✗	✗
Lowes	✗	✗	✗	✗
REI	✓	✓	✓	✓
Apple	✗	✓	✓	✓
ASOS	✓	✗	✓	✓
B&H Photo	✗	✗	✓	✓
Ikea	✗	✓	✓	✗
Crutchfield	✗	✓	✗	✗
Nike	✗	✗	*	✗
Sephora	✓	✗	✗	✗
Zalando	✗	✗	✗	✓
Adidas	✗	✗	✗	✓
Walmart	✓	✗	✗	✓
Target	✓	✓	✗	✓
Amazon	✗	✗	✓	✓
Staples	✗	✓	✓	✓

\*: Unable to rate

Figure 11 shows the list of websites that have accessibility issues based on the study performed by Baymard institute.

**Images** – “For users with visual impairments who rely on assistive technology, such as a screen reader, image information must be included in specialized markup (alternative text) to be read aloud to users. If this screen reader–accessible image markup is missing, irrelevant information about the image (such as the image source filename or link URL) can be read aloud to users instead, if images are not completely skipped over. For instance the graphical DFL is an image by definition and if the images in the website aren’t made accessible, then the graphical DFL cannot be easily comprehended by the user”.

**Links** – “If the visual styling of links is functionally indistinguishable from the surrounding text and background, users with visual impairments may have difficulty locating link text on the page”.

**Form Fields** – “Form fields are the building blocks of online forms. They let you collect data from people who fill up your answer sheet. Most form makers include different field types to put your title and objectives and ask various questions. For example: when filling form field such as shipping address in a webpage, those with visual impairments who use a screen reader needs to be informed about the label of the form as shipping address, if the screen reader fails to do it, then its deemed non accessible”.

**Keyboard Navigation** – “Users with disabilities who use keyboard navigation can navigate between interactive elements on a webpage by using the “**Tab**” key to move forward through the object order and “**Shift + Tab**” to move back, and then they can activate page elements using the “**Enter**” key”.

Table 9: Accessibility Compliance, scoring.

Accessibility Compliance	Code
No components present	0
1 / 4 Components present	0.25
2 / 4 Components present	0.5
3 / 4 Components present	0.75
4 / 4 Components present	1

## **5. Methodology :**

The products and the retailers that were chosen for the sampling were as follows as shown on Table 10. The same products from table 10 were also chosen in Q-Commerce on Instacart except Amazon.com. Specifics related to the complete tested sample are indicated in Table 11.

For each OTC product within each website the process depicted in figure 12 was utilized and the variables presented in Table 11 were recorded for analysis. Table 12 shows the variables that were considered in the study, short description of each variable, the data that was captured and the scoring characteristic which were used. Herein, we evaluate the hypothesis that online retailers emphasize information that is dictated by the FTC (or otherwise intended to drive purchases) as compared with information critical to safe and effective product use (i.e., that required by the FDA within the DFL). Specifically, that the quality and content of information required for the DFL is comparatively poor/missing and that it is arduous to find compared to information typically associated with the Principal Display Panel or other information used to compare products. The following methods were utilized to evaluate information presented on products (n=44) available from the websites of 7 retailers (6 in E-commerce and 1 in Q-Commerce); assessments were conducted between May 2023 to July 2023.

Table 10: Type of platform, retailer, Product name.

S.No	Type of Platform	Retailer	Product Name
1.	E-Commerce	Walmart.com	Advil Dual Action
2.			Tylenol Extra Strength
3.			Aleve Back & Muscle Pain
4.			Private Label – Equate Extra Strength
5.		Target.com	Advil Dual Action
6.			Tylenol Extra Strength
7.			Aleve Back & Muscle Pain
8.			Private Label – Up & Up Extra Strength
9.		Costco.com	Advil Ibuprofen
10.			Tylenol Extra Strength
11.			Aleve Back & Muscle Pain
12.			Private Label – Kirkland Extra Strength
13.		Amazon.com	Advil Dual Action
14.			Tylenol Extra Strength
15.			Aleve Back & Muscle Pain
16.			Private Label – Amazon Basics
17.		Walgreens.com	Advil Dual Action
18.			Tylenol Extra Strength
19.			Aleve Back & Muscle Pain
20.			Private Label – Walgreens
21.		CVS.com	Advil Dual Action
22.			Tylenol Extra Strength
23.			Aleve Back & Muscle Pain
24.			Private Label – CVS

Table 11: Type of platform, Retailer, Product SKU.

S.No.	Type of Platform	Retailer	Product SKU
1	Ecommerce	Walmart.com	Advil Dual Action 2*50 ct
2	Ecommerce	Walmart.com	Tylenol Extra Strength 24 ct
3	Ecommerce	Walmart.com	Aleve Back & Muscle Pain 90 ct
4	Ecommerce	Walmart.com	Private Label- Equate Extra Strength Acetaminophen 100 ct
5	Ecommerce	Target.com	Advil Dual Action 36ct
6	Ecommerce	Target.com	Tylenol Extra Strength 24 ct
7	Ecommerce	Target.com	Aleve Back & Muscle Pain 90 ct
8	Ecommerce	Target.com	Private Label -Up & Up Extra Strength Acetaminophen 50ct
9	Ecommerce	Costco.com	Advil Ibuprofen 2 *50ct
10	Ecommerce	Costco.com	Tylenol Extra Strength 325ct
11	Ecommerce	Costco.com	Aleve Pain reliever 320 ct
12	Ecommerce	Costco.com	Private Label - Kirkland Extra Strength Acetaminophen 2*500 ct
13	Ecommerce	Amazon.com	Advil Dual Action 50 ct, 2pack
14	Ecommerce	Amazon.com	Tylenol Extra Strength 24 ct
15	Ecommerce	Amazon.com	Aleve Back & Muscle Pain 100 ct
16	Ecommerce	Amazon.com	Private Label - Amazon Basic care - Acetaminophen 100ct
17	Ecommerce	Walgreens.com	Advil Dual Action 36 ct
18	Ecommerce	Walgreens.com	Tylenol Extra Strength 100 ct
19	Ecommerce	Walgreens.com	Aleve Back & Muscle Pain 90 ct
20	Ecommerce	Walgreens.com	Private label - Walgreens Extra Strength Acetaminophen 225 ct
21	Ecommerce	CVS.com	Advil Dual Action 36 ct
22	Ecommerce	CVS.com	Tylenol Extra Strength 24 ct
23	Ecommerce	CVS.com	Aleve Back & Muscle Pain 90 ct
24	Ecommerce	CVS.com	Private label - CVS Health Extra Strength Acetaminophen 50 ct

Table 11 (cont'd)

25	Qcommerce	Instacart-Walmart	Advil Dual Action 36ct
26	Qcommerce	Instacart-Walmart	Tylenol Extra Strength 24 ct
27	Qcommerce	Instacart-Walmart	Aleve Back & Muscle Pain 90 ct
28	Qcommerce	Instacart-Walmart	Private Label- Equate Extra Strength Acetaminophen-50 ct
29	Qcommerce	Instacart-Target	Advil Dual Action 36ct
30	Qcommerce	Instacart-Target	Tylenol Extra Strength 24 ct
31	Qcommerce	Instacart-Target	Aleve Back & Muscle Pain 90 ct
32	Qcommerce	Instacart-Target	Private Label -Up & Up Extra Strength Acetaminophen 50ct
33	Qcommerce	Instacart-Costco	Advil 360ct
34	Qcommerce	Instacart-Costco	Tylenol Extra Strength 325ct
35	Qcommerce	Instacart-Costco	Aleve 220mg caplets 320ct
36	Qcommerce	Instacart-Costco	Private label - Kirkland 1000ct
37	Qcommerce	Instacart-CVS	Advil Dual Action 36 ct
38	Qcommerce	Instacart-CVS	Tylenol Extra Strength 24 ct
39	Qcommerce	Instacart-CVS	Aleve Back & Muscle Pain 90 ct
40	Qcommerce	Instacart-CVS	Private label - CVS Health Extra Strength Acetaminophen 100 ct
41	Qcommerce	Instacart-Walgreens	Advil Dual Action 36 ct
42	Qcommerce	Instacart-Walgreens	Tylenol Extra Strength 100 ct
43	Qcommerce	Instacart-Walgreens	Aleve Back & Muscle Pain 90 ct
44	Qcommerce	Instacart-Walgreens	Private label - Walgreens Extra Strength Acetaminophen 225 ct



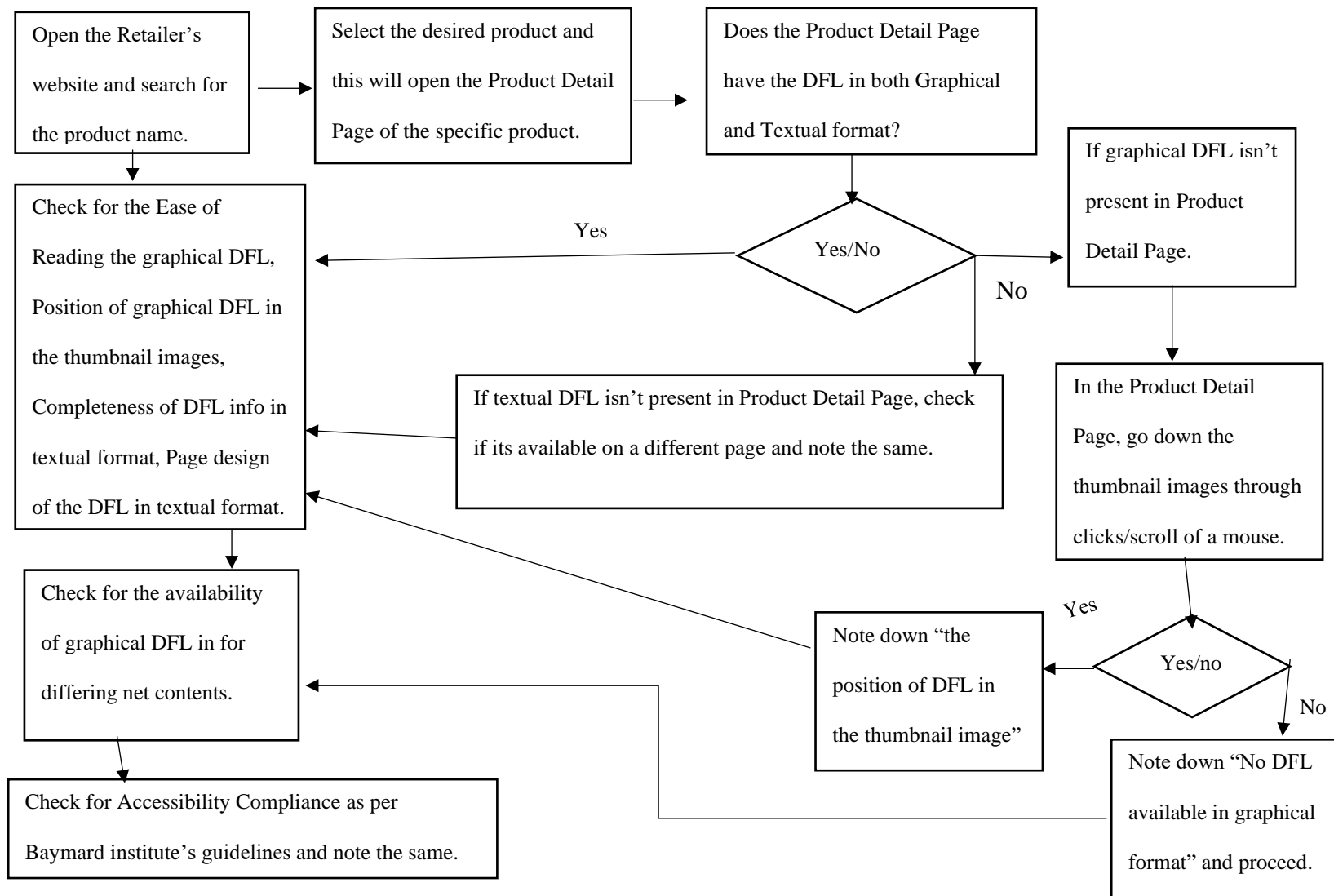


Figure 12 shows the flowchart of methodology.

Table 12: Variable, Description, Data Captured, Scoring Characteristic.

Variable(s)	Description	Data Captured	Scoring Characteristic
Count of the number of times scrolled to find the DFL in textual format.	The no. of times the wheel of the mouse had to be scrolled for the webpage to change completely to subsequent down to locate the DFL information in textual format.	Number. Ex :4 <sup>th</sup> page	As referenced in definitions
Drug Facts Label in a textual format (binary – present yes/no)	DFL completeness, and readability were assessed in accordance with Baymard institute criteria.	Presence of complete information, Page Design of Content.	Completeness of information: Poor Fair Good Page Design of Content: Poor Good
Ease of Reading the DFL in Graphical format. (Ordinal assessment of graphic resolution using a four point scale)	Guidelines from the Baymard Institute were used to assess Ease of Reading the Drug Facts Label related to Picture Quality of the Drug Fact(s) Label and legibility. Zoom functionality was also assessed that aided the quality of reading.	Resolution of the image.	Very Poor Poor Fair Good

Table 12 (cont'd)

Response Variable	Description	Data Captured	Scoring Characteristic
Availability of the DFL across products with differing net contents.	The availability of the Drug Facts labels across different sizes with respect to the count or net contents.	Not Available. Available in a few sizes. Available in all sizes	As referenced in definitions
Accessibility Compliance	The Accessibility compliance is to understand if the accessibility components were present or not on the website as per Baymard' s study.	No components present 1/4 Component present 2/4 Component present 3/4 Component present 4/4 Component present	As referenced in definitions
Position of graphical DFL in the thumbnail images: (ordinal assessment of thumbnail position of DFL)	The position of the DFL in the list of thumbnail images in the total number of thumbnail images in a specific website and if the other images were relevant in that list that helped the consumer make a purchase decision.	Availability of DFL in product detail page No. of times clicked. No. of times scrolled.	As referenced in definitions

## 6. Sample Analysis:

This is a sample analysis of how the study was performed. Retailer site is located (e.g. Amazon.com). Using the search bar, product name is entered (e.g. Tylenol). Response generally includes a window depicting multiple options which are sold by the specified brand (see Figure 13).

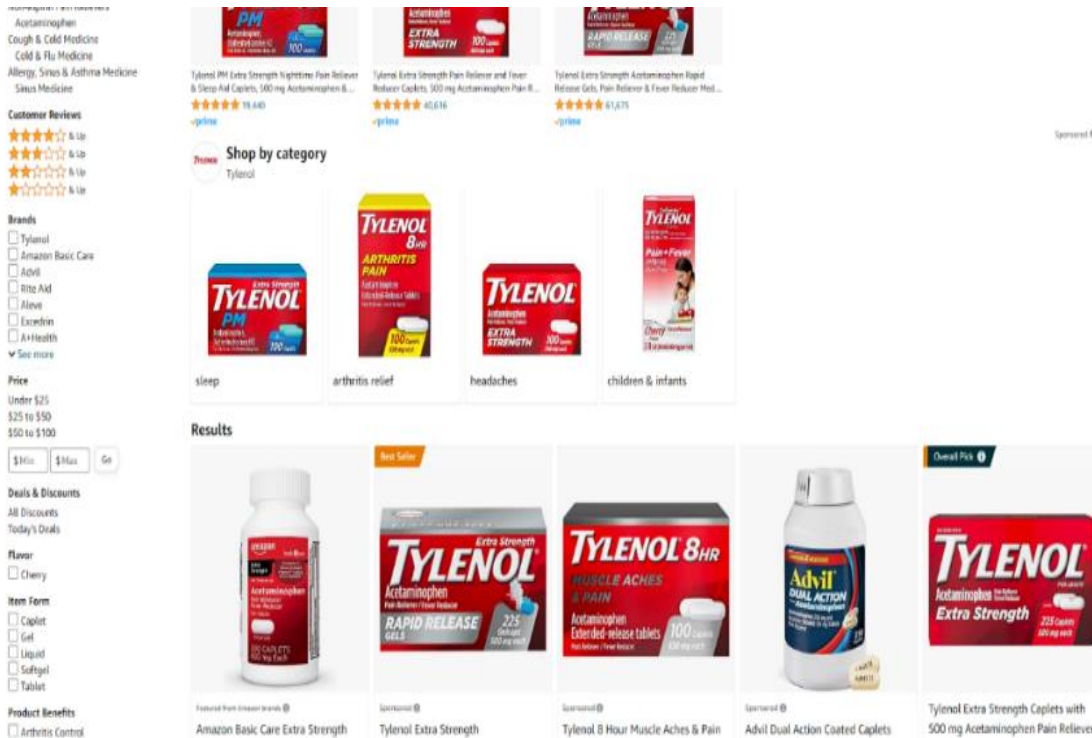


Figure 13 shows a screenshot for sample analysis of Tylenol Extra Strength 24 caplets on Amazon.com’s list of available Tylenol product’s SKUs.

Upon selecting a product, generally information specific to the particular stock keeping unit (SKU) is depicted, this first window of visual information was termed the “Product Detail Page” and served as a reference point for most of the data collected for the study. In the example provided “Tylenol Extra Strength 24 caplets” is shown in Figure 14 and this is Page 1 or the

Product Detail Page. The webpage of the browser was set to 100% Zoom and the type of monitor used and all the other settings are as mentioned in the definitions.

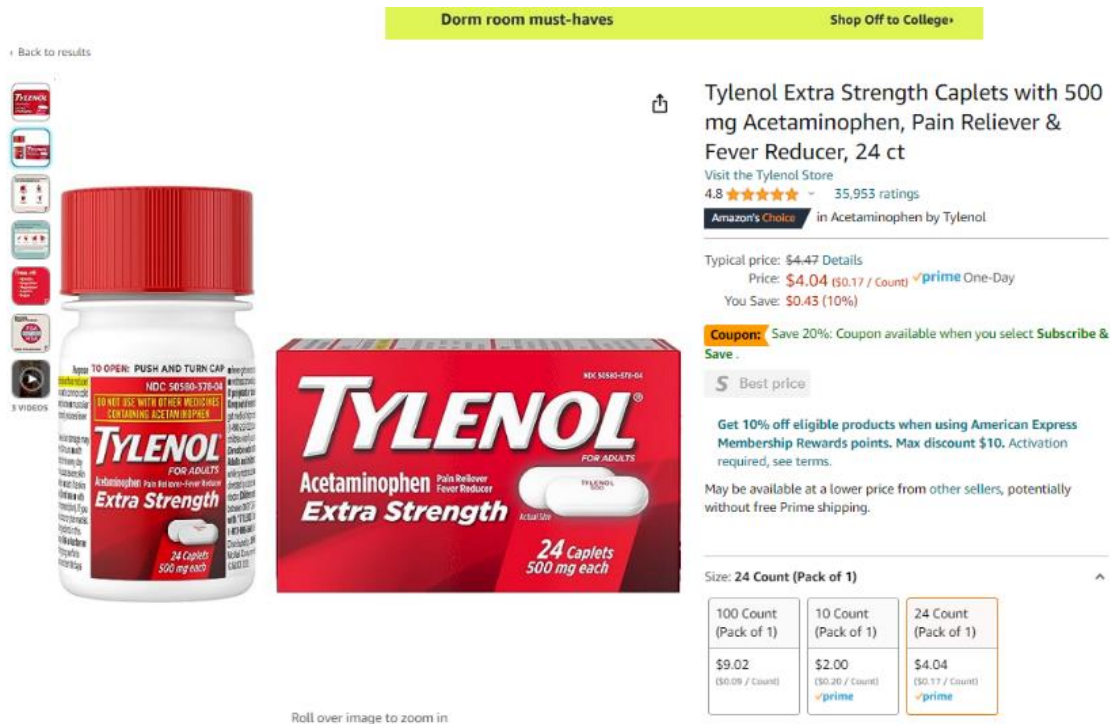


Figure 14 shows a screenshot for sample analysis of Tylenol Extra Strength 24 caplets's product detail page on Amazon.com.

Because information displayed did not represent the totality of the information depicted by that html/xml address (more information could be reached on a single address by scrolling), researchers characterized the number of mouse wheel scrolls needed to reach an entirely new set of information. Each time the mouse wheel was turned 180°, a "scroll" was counted. For this example, 4 times 180° of the mouse wheel scroll were required to reach Page 2 where the entirety of Page 1 was refreshed (See Figures 13 & 14).

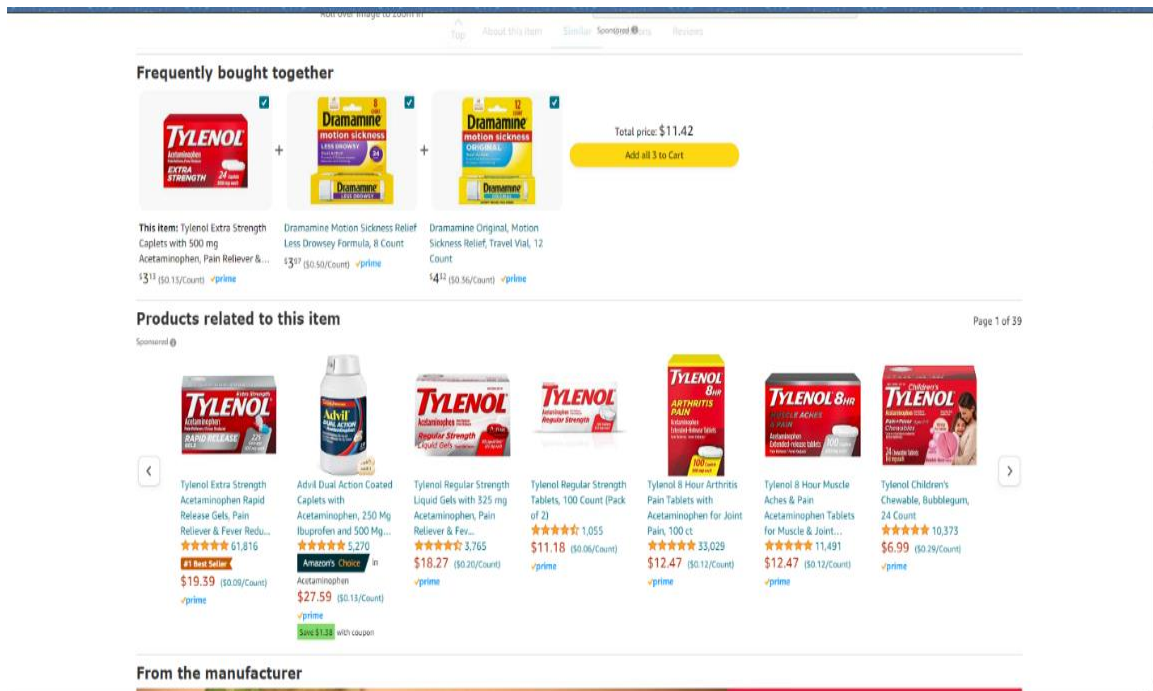


Figure 15 shows a screenshot for sample analysis of Tylenol Extra Strength 24 caplets page 2 on amazon.com.

When the textual DFL is present within the first address but not visible in the Product Detail

Page, sometimes it is available using a scrolling action; that was the case in this example.

Specifically, the DFL in a textual format under the heading “important information” was present that could be accessed by scrolling (see figure 16); this example required 14-wheel scrolls which were recorded.

Brand Name	Tylenol	Amazon Basic Care	Tylenol	Tylenol	Tylenol
Package Information	Bottle	Bottle	Bottle	Bottle	Bottle
Item Form	Caplet	Tablet	Caplet	Caplet	Caplet
Specific Uses For Product	Cold, Fever	Pain Relief	Cold, Fever	Cold, Fever	Arthritis Pain Relief, Pain Relief
Unit Count	24 Count	100 Count	6 Count	6 Count	225 Count

### Important information

#### Safety Information

**Liver warning:** This product contains acetaminophen. Severe liver damage may occur if you take More than 4,000 mg of acetaminophen in 24 hours With other drugs containing acetaminophen 3 or more alcoholic drinks every day while using this product **Allergy alert:** acetaminophen may cause severe skin reactions. Symptoms may include: Skin reddening Blisters Rash If a skin reaction occurs, stop use and seek medical help right away. Do not use With any other drug containing acetaminophen (prescription or nonprescription). If you are not sure whether a drug contains acetaminophen, ask a doctor or pharmacist. If you are allergic to acetaminophen or any of the inactive ingredients in this product Ask a doctor before use if you have liver disease. Ask a doctor or pharmacist before use if you are taking the blood thinning drug warfarin. Stop use and ask a doctor if Pain gets worse or lasts more than 10 days Fever gets worse or lasts more than 3 days New symptoms occur Redness or swelling is present These could be signs of a serious condition. If pregnant or breast-feeding, ask a health professional before use. Keep out of reach of children. **Overdose warning:** In case of overdose, get medical help or contact a Poison Control Center right away. (1-800-222-1222) Quick medical attention is critical for adults as well as for children even if you do not notice any signs or symptoms.

#### Indications

Temporarily relieves minor aches and pains due to: The common cold Headache Backache Minor pain of arthritis Toothache Muscular aches Premenstrual and menstrual cramps Temporarily reduces fever

#### Ingredients

Active ingredient (in each caplet) Purpose Acetaminophen 500 mg.....Pain reliever/fever reducer Inactive ingredients carnauba wax, croscopolone, FD&C red no. 40 aluminum lake, hypromellose, magnesium stearate, microcrystalline cellulose, polyethylene glycol, povidone, pregelatinized starch, propylene glycol, shellac glaze, sodium starch glycolate, stearic acid, titanium dioxide

#### Directions

Do not take more than directed (see overdose warning) Adults and children 12 years and over: Take 2 caplets every 6 hours while symptoms last. Do not take more than 6 caplets in 24 hours, unless directed by a doctor Do not use for more than 10 days unless directed by a doctor Children under 12 years: ask a doctor Other information: Store between 20-25°C (68-77°F) Do not use if carton is opened. Do not use if foil inner seal imprinted with "TYLENOL" is broken or missing Questions or comments? call 1-877-895-3665 (toll-free) or 215-273-8755 (collect)

#### Legal Disclaimer

Statements regarding dietary supplements have not been evaluated by the FDA and are not intended to diagnose, treat, cure, or prevent any disease or health condition.

Figure 16 shows a screenshot for sample analysis of Tylenol Extra Strength 24 caplets on page 14 on amazon.com which shows the textual DFL.

Textually formatted DFLs were assessed related to both page design and completeness of information. Specifically, the presence of all required sections (completeness of information) of the DFL was recorded on the three-point scale (see Table 2) as described in the definitions portion of this document. The textual DFL was verified for completeness of information, and it was scored as “fair” since less than 50% of DFL information was present. The page design of the textual DFL was recorded on a 2-point scale as shown on table 3 and for this example it was noted “good” since the design guidelines as proposed by Baymard institute was followed. The ease of reading the graphical DFL was the next parameter which was assessed based on the resolution of the image and additionally if a magnifier had to be used or not for legibility in reading the DFL (see definitions). In this example, the graphical DFL was not present, hence it was noted as “Very poor/absent”. The position of the Graphical DFL in the thumbnails images that were present was the next parameter that was studied and it was assessed based on if the

DFL was available or not in the Product Detail Page, if not how many times it had to be clicked or if it had to be scrolled to another page to be found, the position of the graphical DFL as to where in the thumbnail images was it present. If it was the first or the second in the list of all thumbnail images , in this case there were 7 thumbnail images that were present which were noted, if different sizes of net contents of the same product was available or not in the product detail page was checked and it was seen that the same product with differing net contents were present on the product detail page, if the different sizes of net contents had the DFL or not across different sizes ; the final parameter in this study was the accessibility compliance, this was assessed based on the availability of the different accessibility components such as Images, Links, Form-fields and Keyboard navigation as defined by Baymard Institute and in this case as per Baymard's study it was found that 2/4 components were present.



## **7. Results & Discussion:**

Basic, descriptive statistics were calculated for collected variables. Frequencies were reported to identify trends in certain cases.

### **7.1. Number of times scrolled to find the DFL in textual format:**

This variable was assessed among 6 different retailers on E-Commerce which includes Walmart.com, Target.com, Costco.com, Walgreens.com, CVS.com and Amazon.com). On each website, the products Advil Dual Action, Tylenol Extra Strength, Aleve Back & Muscle pain and that specific website's Private label pain reliever was studied, with the exception of Costco.com; in this case Advil Ibuprofen & Aleve Pain reliever were the products analyzed since Advil Dual action and Aleve Back & Muscle pain weren't sold on the platform. Similarly, the same products were also used in the Q-Commerce platform Instacart.com, with the exception being Amazon.com wasn't considered since the platform doesn't sell it. Figure 17 presents the average number of times the wheel of the mouse had to be scrolled to across E-commerce and Q-commerce retailer's websites in order to access textual DFL information. A total of 24 products were sampled in E-Commerce (six different retailers with 4 products each) and 20 products were sampled in Q-Commerce, with the exception being Amazon.com, which has 5 different retailers with 4 products each. Of those sampled, 4/24 (16.7%) products didn't have a textual DFL in E-Commerce & 5/20 products (25%) didn't have textual DFL in Q-Commerce.

The total range of the number of times scrolled to find the DFL in textual format was 12 (14 being the upper limit and 2 being the lower limit) for E- Commerce and 11(16 being the upper limit and 5 being the lower limit) for Q- Commerce. In addition to Q Commerce sites more frequently not including the textual DFL (as compared to E commerce), when the DFL was present, the mean number of scrolls was found to be 6 for E-Commerce and 11.375 for Q-Commerce. In other words, on average, it took almost twice as much scrolling to access the textual DFL in Q-commerce site as compared to E commerce sites. The median was 5 for E-Commerce and 12 for Q-Commerce.

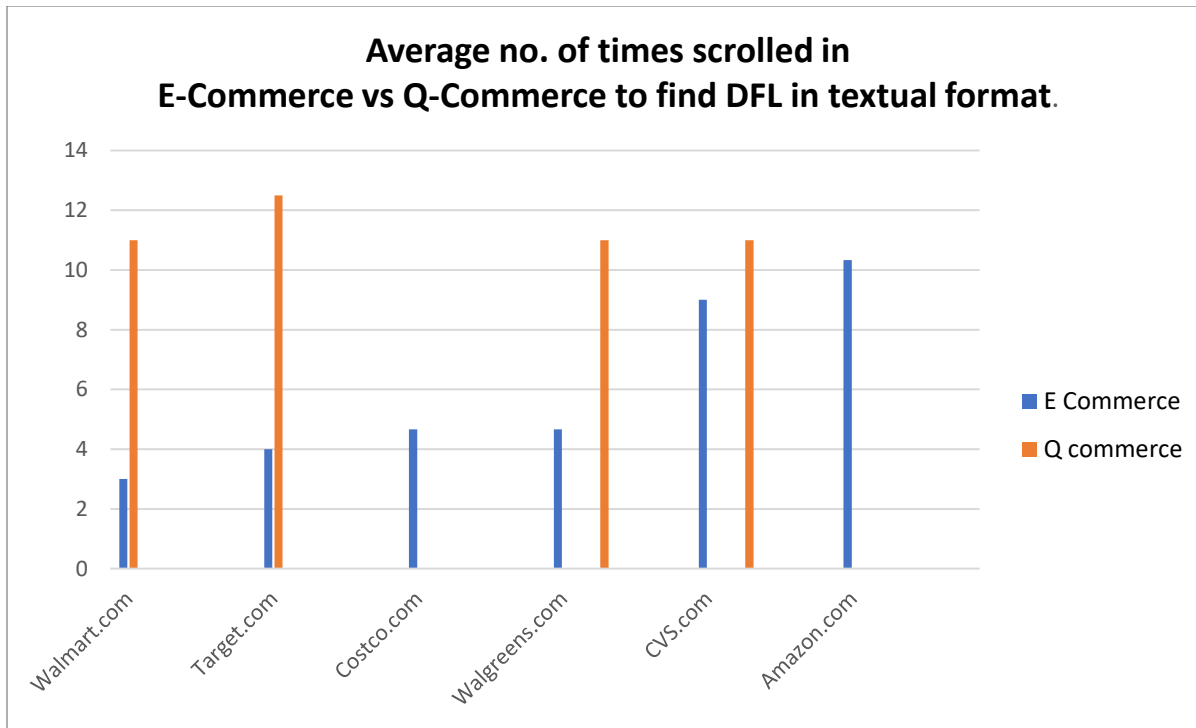


Figure 17 shows the Average no. of times scrolled in E-Commerce vs Q-Commerce to find DFL in textual format.

Costco was an interesting case (as depicted in Figure 17); specifically, when shopping at Costco using Instacart there was no DFL in a textual format, whereas the E-Commerce site did include one. This of course is specific to the SKU that is being used in the study while comparing it with E-Commerce & Q-Commerce. Figure 18 provides a more granularity related to the metric of average number of scrolls required to locate the textual DFL.

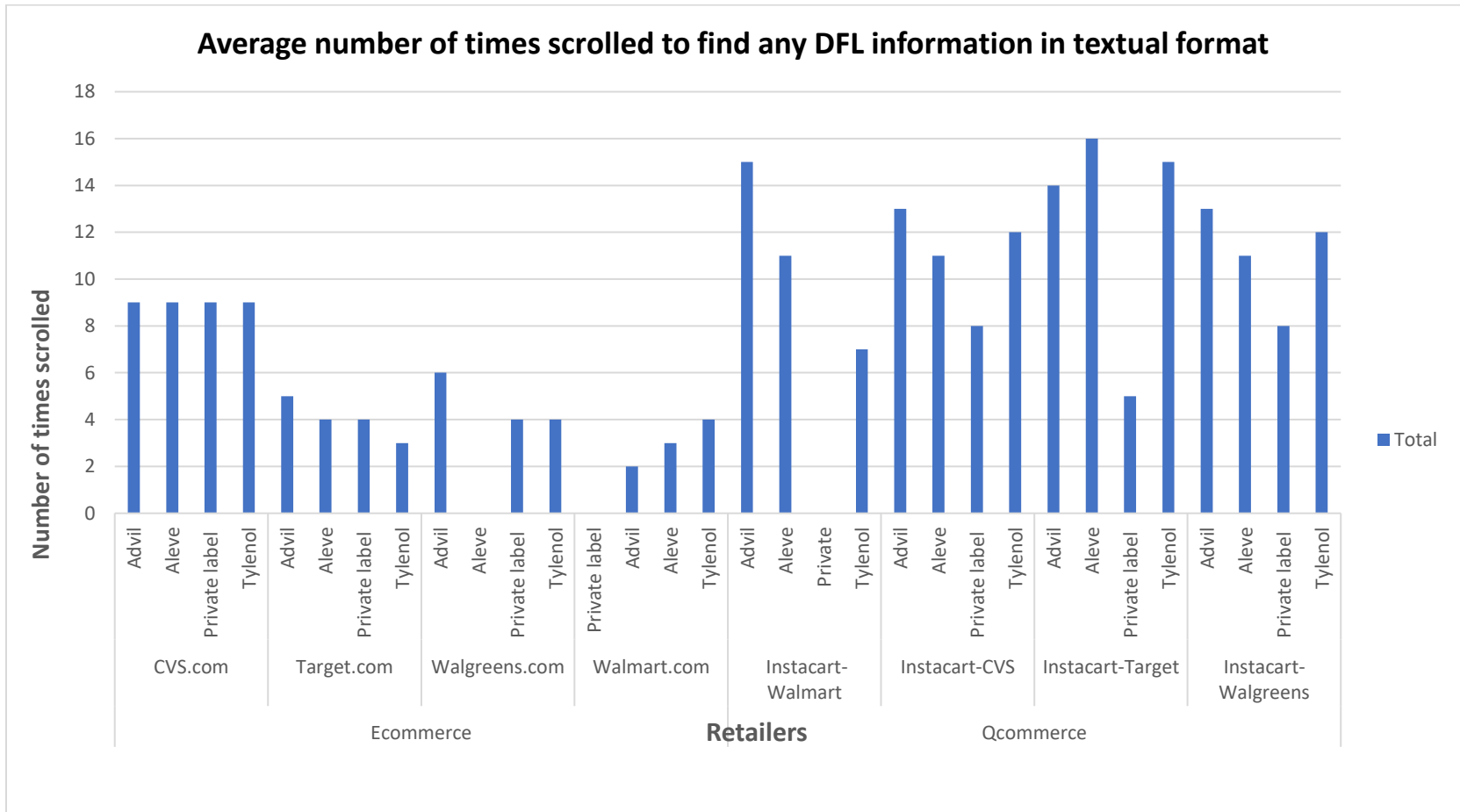


Figure 18 shows the Average number of times scrolled to find any DFL information in a textual format.

## 7.2. Drug Facts Label in a textual format:

When the DFL in textual formats were present, they were characterized in two ways:

Completeness of information & Page Design. The completeness of information sub-category pertained to the how complete the information present in the textual DFL was as when compared against the US labelling requirements (21 CFR 201.60). For product data collected in the E-Commerce segment, less than 50% of surveyed products contained complete DFL information 9/24 (37.5%), while 11/24 (45.8%) products had incomplete information and 4/24 (16.7%) products had *no information* present in the textually formatted DFL. For products that were surveyed within Q-Commerce retailers, 15/20 (75%) products had incomplete or partial information and 5/20 (25%) products had no information and not a single product had a complete DFL in the textual format. In the E-Commerce segment, 13/24 products were not found to have graphical DFL on the Product Detail Page, but by clicking/scrolling (see flowchart) 8/24 products were seen to have graphical DFL but 3/24 products had no graphical DFL and similarly 4/24 products had no textual DFL. Likewise in Q-Commerce, 9/20 products were not found to have graphical DFL in product detail page and in spite of clicks/scrolls till they weren't found, similarly 5/20 products were not found to have textual DFL. Completeness was then further rated using a 3 category scale. (Poor=0; Fair=1 and Good=2).

**7.2.1. Completeness of information:**

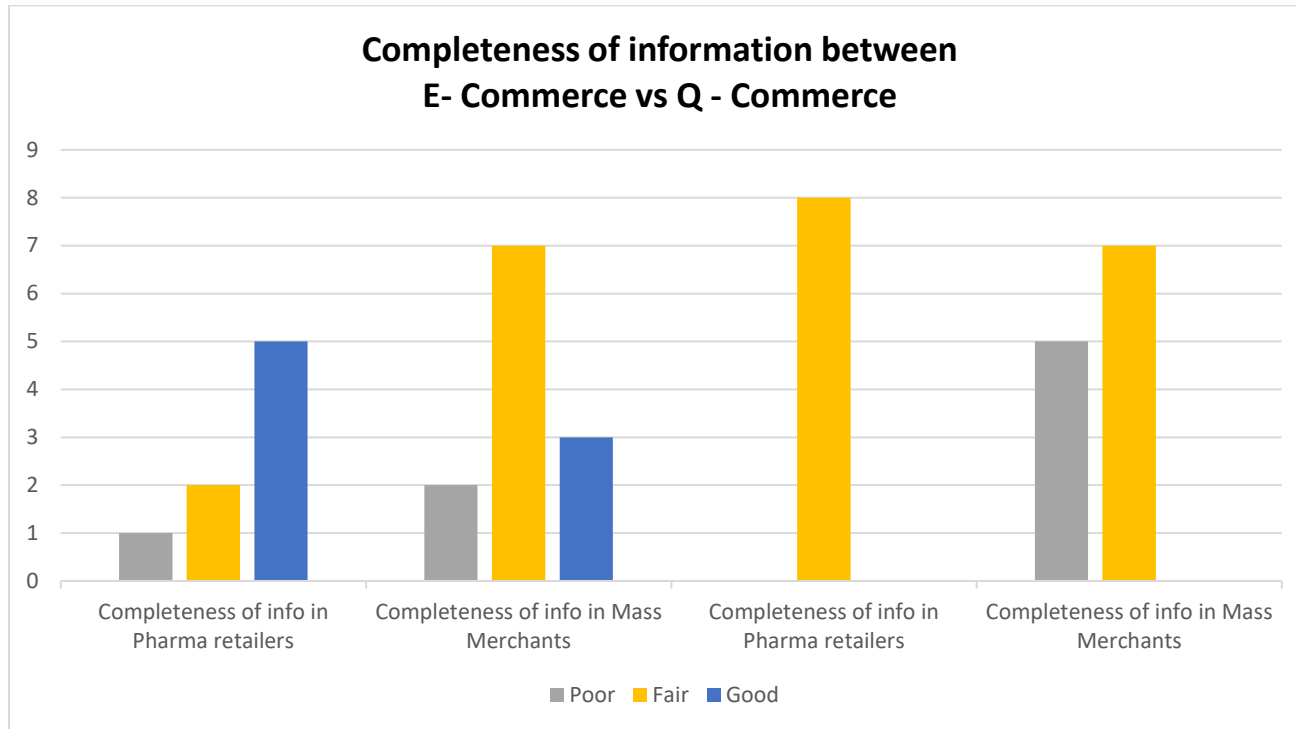


Figure 19 shows a comparison of completeness of information of pharma retailers and mass merchants between E- Commerce vs Q-Commerce.

The subcategory completeness of information was studied between Mass Merchants (Walmart.com, Costco.com, Target.com & Amazon.com) and Top Online stores in Pharmacy segment which was earlier defined (Pharma retailers – CVS.com & Walgreens.com). Figure 19 shows the frequency distribution of completeness ratings reported for DFLs in textual format. It could be construed from Figure 19 that when it comes to completeness of information in the top online stores in pharmacy segment, the retailers in E-Commerce platforms websites tend to have more comprehensive information in comparison to the same retailers in a Q-Commerce platform (e.g. Instacart.com). Both E-Commerce and Q-Commerce, have room for improvement along the “completeness of information” (previously defined). It was noticed that some mass merchants in Q-Commerce don’t have any textual DFL. In the case of Mass Merchants, 12/16 product SKUs are being considered for comparison between E-Commerce vs Q-Commerce since products from Amazon.com is not sold on Instacart. Most observations from those 12 products surveyed in Q-commerce were characterized under “poor” and “fair” category, meaning there was between little to no information available (see Definitions). Specifically, there were 5/12 counts of Poor and 7/12 counts of fair, whereas E-Commerce had 2/12 counts of Poor, 7/12 counts of fair and 3/12 counts of good which put them in the category “fair” and “good” respectively. In the Pharma retailers, E-commerce had 1/8 in “poor”, 2/8 in “fair” and 5/8 in “good” category. Q-Commerce had 8/8 in “fair” category.



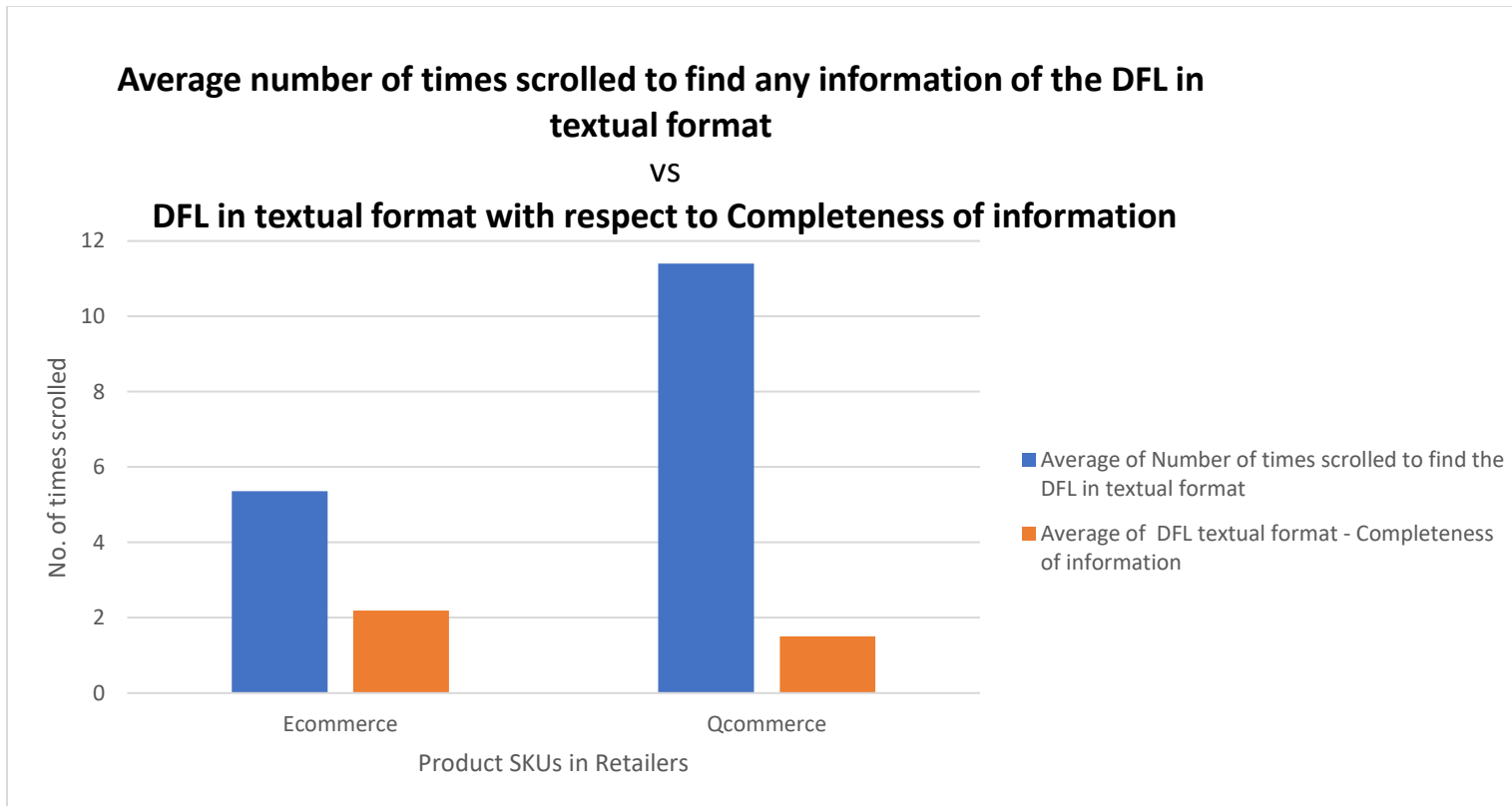


Figure 20 shows the Average number of times scrolled to find any information of the DFL in textual format vs DFL in textual format with respect to Completeness of information.

This figure 20 shows the comparison of the average number of times the wheel of the mouse was scrolled to navigate to the next page from the product detail page to find either a partial DFL or a complete DFL in textual format to finding the DFL in textual format with respect to completeness of information. It is seen that in E- Commerce the average value of no. of times scrolled to find any DFL information in textual format was 5.375 and finding the complete DFL information in a textual format was 2.187, whereas in Q- Commerce it is 11.4 and 1.5 respectively.

### **7.2.2. Page Design in textual format:**

The page design of textual DFL was assessed based on the design guidelines for a webpage as defined by WCAG as discussed by Baymard institute. Twelve out of sixteen product SKUs were assessed (Amazon products were excluded based on previous discussion), drawn from both E-Commerce and Q- Commerce sites.

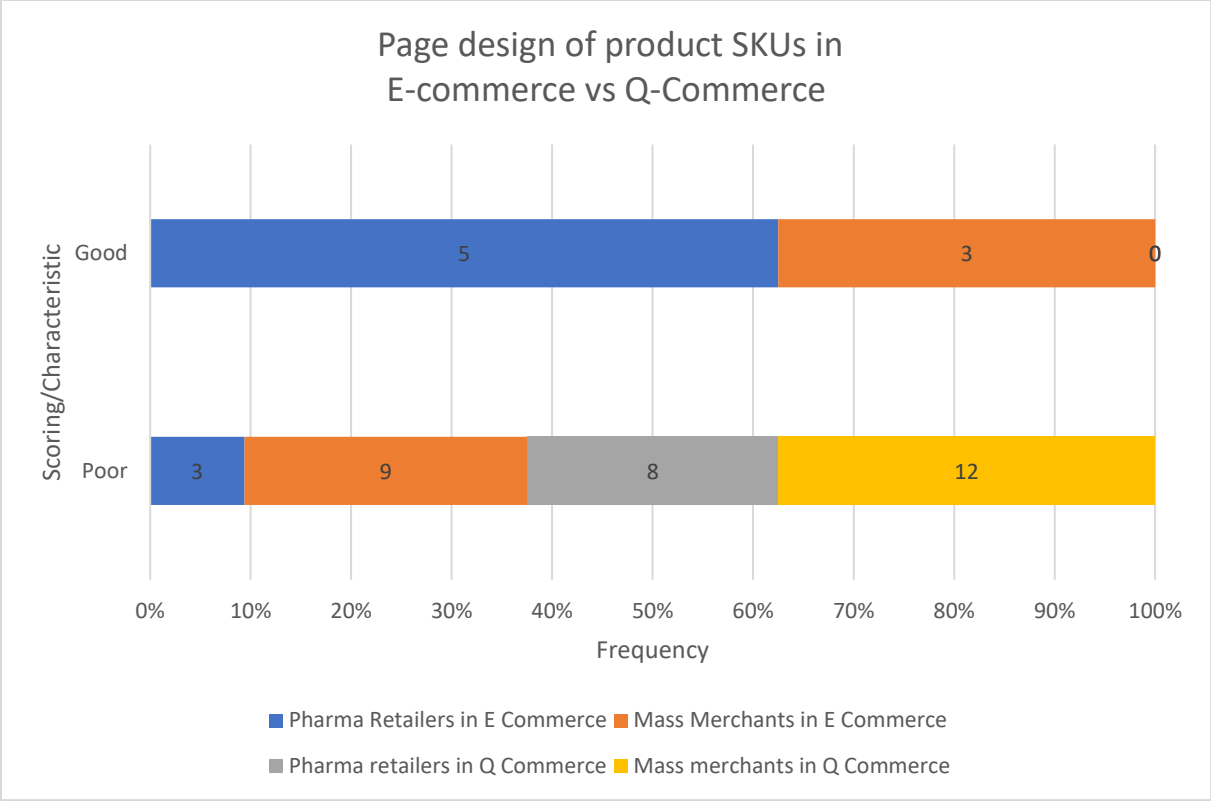


Figure 21 shows the Page design of product SKUs in E-commerce vs Q-Commerce.

Figure 21 shows the frequency distribution histogram of page design results based on the presence of a DFL in textual format. From the graph we understand that when it comes to page design in the mass merchants, the E-Commerce segment has 9/12 counts in the “Poor” category and 3/12 counts in “Good Category”, whereas in Q-Commerce segment all 12/12 counts are in the “Poor” category. The Pharma retailers in e-commerce had 3/8 (37.5%) products in the poor category whereas 5/8 (62.5%) products were in the good category. The pharma retailers in Q-Commerce 8/8 products were in the poor category. It is seen that E-Commerce follows page design guidelines better than Q-Commerce from this graph.

### 7.3. Ease of Reading the graphical DFL:

Products from Amazon.com aren't sold on Instacart.com There were a total of 12 products selected for the mass merchant's category (Walmart.com, Target.com & Costco.com– see definitions/background) and 8 products for the pharma retailers (CVS.com & Walgreens.com – see definitions/background) category. Analysis for amazon.com was done separately and not included in the comparison between e-commerce vs q-commerce , for n=4 , amazon.com had n=2/4 in the “very poor” category and n=2/4 in “good” category.

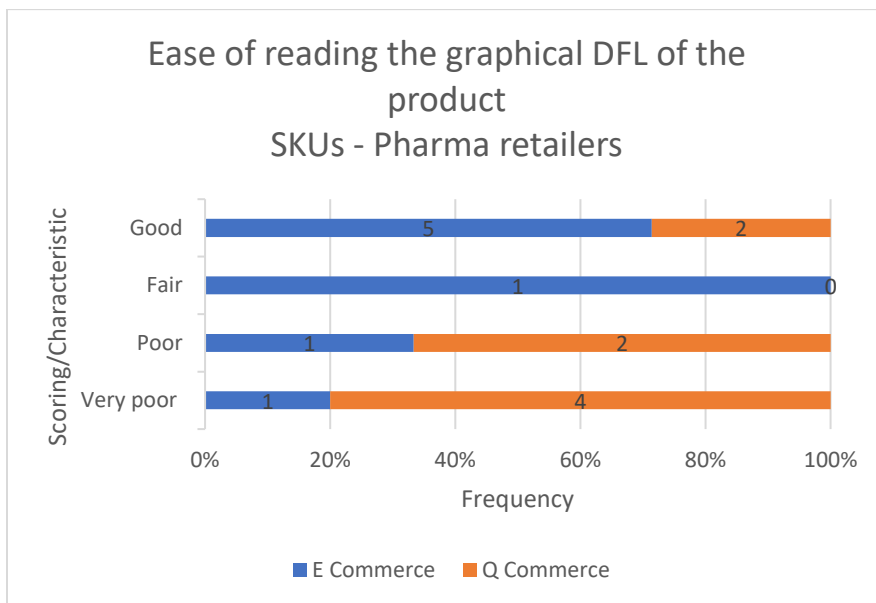


Figure 22 shows the Ease of reading the graphical DFL of the products– Pharma retailers.

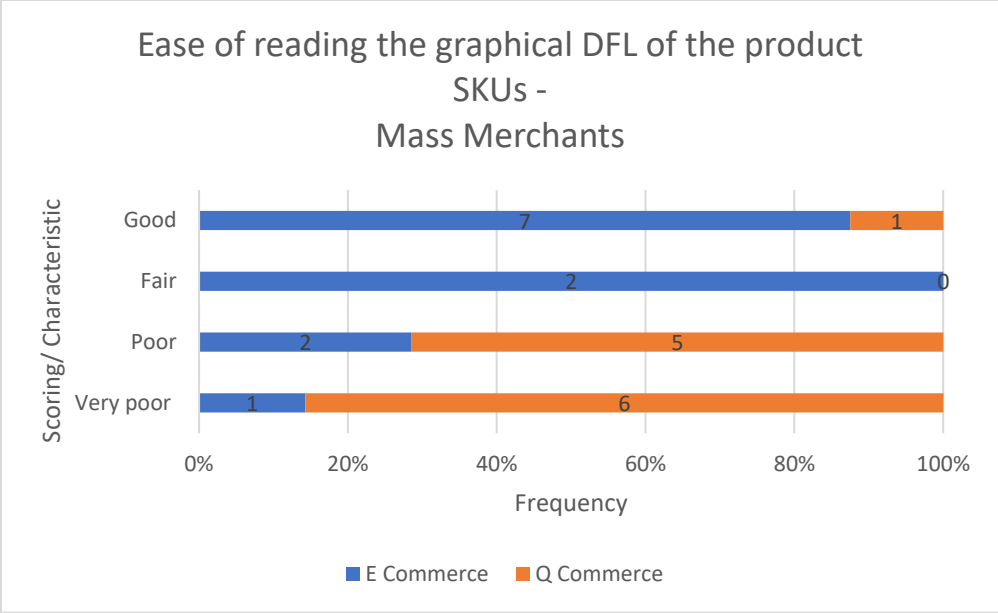


Figure 23 shows the Ease of reading the graphical DFL of the product SKUs –Mass Merchants.

Figures 22 and 23 provide frequencies related to ease of reading of graphical DFLs for both Pharma retailers (Figure 22) and Mass Merchants (Figure 23). The ease of reading the Drug Facts Label in a graphical format with respect to Pharma retailers appears to be in the "good" category in a majority when it comes to E-Commerce whereas Q-Commerce appears to be in the "very poor" category in majority. In E-Commerce, 8 products were surveyed in pharma retailers, of which 1/8 12.5% were found to be in the "very poor" category, 1/8 (12.5%) were "poor", 1/8 were "fair" (12.5%), and 5/8 were "good" (62.5%); compared with Q- Commerce where 4/8 (50%) were found to be in the "very poor" category, 2/8 (25%) were "poor", and 2/8 (25%) in the "good" category. A similar trend is also seen in the mass merchants category (Figure 23). The majority of products surveyed through E- Commerce sites were assessed to be in the "good" category in comparison to Q-Commerce .E-Commerce,12 products were surveyed for mass merchants 1/12 (8.3%) was "very poor", 2/12 (16.7%) were "poor", 2/12 (16.7%) were "fair" and 7/12 (58.3%) were "good". In Q- Commerce for the mass merchants, 6/12 were "very poor"

(50%) , 5/12 (41.7%) were “poor” , 1/12 (8.3%) was “good”. Overarching review of Figures 22 and 23 suggests that, ease of reading relating to the graphical DFL was generally better in E-Commerce sites (regardless of if they were pharma based or mass merchandizers) compared to Q-Commerce. Overall, products assessed on E-Commerce sites were at a 62.5% (5/8) and 58.3% (7/12) “good category” in pharma retailers and mass merchants respectively compared to Q-Commerce which were at 25% (2/8) and 8.3% (1/12) “good” category. The mean of the ease of reading the graphical DFL with respect to E-Commerce was found to be 2.125 whereas that of Q-Commerce was found to be 0.875. As such, graphic labels examined on E-Commerce platforms received an overall average that equated to “Fair” ease of reading compared to the trials examined on the Q-Commerce platform (0.875) which equated between “Very poor” and “Poor”. The availability of graphical DFL in the product detail page had an average of 0.5 with both E-commerce and Q-commerce. The position of graphical DFL among the thumbnail images present had a mean of 5.53 in E-commerce whereas it was 2 in Q-commerce. The average total number of thumbnail images were 9.625 in E-commerce and 6 in Q-commerce. This means that finding the graphical DFL position/location wise was easier in Q-commerce compared to E-commerce to the number of thumbnail images that were present.

#### **7.4. Position of graphical DFL in the thumbnail images:**

The graphical DFL as shown in figure 25 was only present  $n=11/20$  in e-commerce and  $n=11/20$  in q-commerce (55%) of the time on the product detail page across E-commerce and Q-commerce for all surveyed products (Amazon products were excluded based on previous discussion). As a result, in 45% of the trials, the DFL had to be located on a page outside of the product detail page, and in some cases, the information was not available at all which is discussed further. To locate the DFL in those situations where the graphical DFL was not available on the Product Detail page, scrolling and/or clicking into new html addresses was required. The number of clicks were counted, and scrolls were delineated as indicated in the Methods section. As indicated in the definitions section, to characterize the location of the graphical DFL within the thumbnails present on the Product Description Page, the number of thumbnails present within each of the respective types of commerce were counted and the position of the DFL was recorded. This resulted in a mean of 5.25 for the 5 retailers in 1 Q-Commerce site reviewed and 8.55 for the 5- E-Commerce sites/retailers. For the total products reviewed ( $n=40$ ) in the 5 e-commerce & 1 q-commerce site(s) ( $n=20$  products in Ecommerce and  $n=20$  products in Q commerce),  $n=1/20$  products (5%) did not have a DFL in any of the thumbnail images in both E-commerce and Q-Commerce. The mean number of clicks was 3.33 ( $n=20$ ) and while the mean number of scrolls was found to be 3.5 ( $n=20$ ) for trials affiliated with E-Commerce sites. It was found that if the product didn't have the DFL image on the Product Detail Page, it wasn't found to have it in any other place for Q-commerce. This gives us a unique insight into about  $n=9/20$  (45%) products in Q-Commerce not having DFL despite having an average of 5.25~5 thumbnail images.

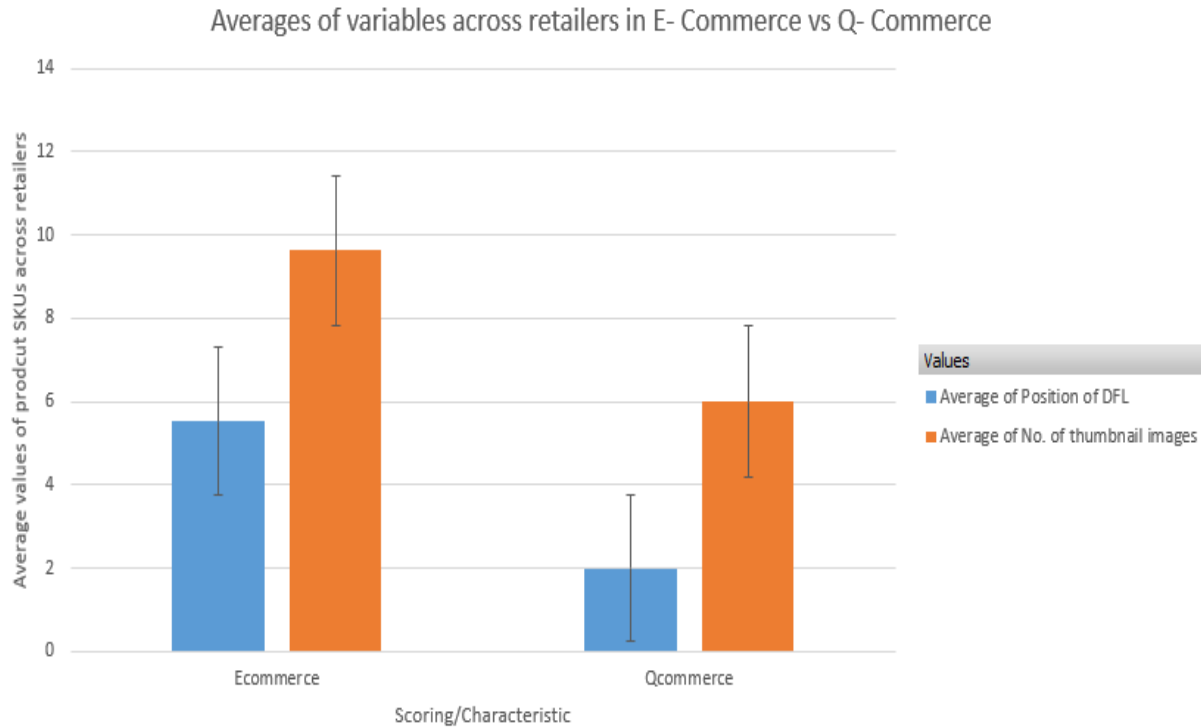


Figure 24 shows the Avg Position of DFL to Avg no.of thumbnail images across merchants in E-Commerce vs Q-commerce.

Figure 24 shows the comparison of average position or location of the DFL to the average number of thumbnail images present. The standard deviation across the products in E-commerce for n=20 was 3.54 with a standard error of 0.79 and in Q-commerce for n=20 was 0.32 and a standard error of 0.07 for the position of DFL. The standard deviation of products in E-commerce in the average number of thumbnail images was 3.99 with a standard error of 0.89 and in Q-commerce it was 3.65 with a standard error of 0.82. Table 13 shows the data of the products with differing net contents being available in the product detail page. For instance, when sampling Target.com, Advil Dual Action had an option to choose different SKU sizes through a drop-down box that provided a toggle icon to sort by net contents (i.e. numbers of pills present). The availability of a product with differing net contents on the product detail page was measured



as a binary variable in the 1/0 format (yes/no) and the availability of graphical DFL for the products with differing net contents was scored between 0-2 with 0 being graphical DFL not available, 1 being graphical DFL present across a few sizes, 2 being graphical DFL present across all sizes and Not applicable means product being sold only on one size variation.(see definitions).

Table 13: Type of platform, Retailer, Product name, Availability of products with differing net contents on PRODUCT DETAIL PAGE, Availability of DFL across products with differing net contents.

S. No .	Type of Platform	Retailer	Product Name	Availability of products with differing net contents on PDP	Availability of DFL across products with differing net contents
1	Ecommerce	Walmart.com	Advil	0	2
2		Walmart.com	Tylenol	0	2
3		Walmart.com	Aleve	0	2
4		Walmart.com	Private label	0	1
5		Target.com	Advil	1	2
6		Target.com	Tylenol	1	2
7		Target.com	Aleve	0	1
8		Target.com	Private label	1	2
9		Walgreens.com	Advil	1	2
10		Walgreens.com	Tylenol	0	2
11		Walgreens.com	Aleve	0	2

Table 13 (cont'd)

12		Walgreens.com	Private label	0	2
13		CVS.com	Advil	1	2
14		CVS.com	Tylenol	1	2
15		CVS.com	Aleve	1	2
16		CVS.com	Private label	1	1
17		Costco.com	Advil	0	2
18		Costco.com	Tylenol	0	2
19		Costco.com	Aleve	0	2
20		Costco.com	Private Label	0	-
21	Qcommerce	Instacart-Walmart	Advil	0	2
22		Instacart-Walmart	Tylenol	0	0
23		Instacart-Walmart	Aleve	0	2
24		Instacart-Walmart	Private	0	0
25		Instacart-Target	Advil	0	2
26		Instacart-Target	Tylenol	0	0
27		Instacart-Target	Aleve	0	2
28		Instacart-Target	Private label	1	0
29		Instacart-CVS	Advil	0	2
30		Instacart-CVS	Tylenol	0	0
31		Instacart-CVS	Aleve	0	2
32		Instacart-CVS	Private label	0	0
33		Instacart-Walgreens	Advil	0	2
34		Instacart-Walgreens	Tylenol	0	0
35		Instacart-Walgreens	Aleve	0	2
36		Instacart-Walgreens	Private label	0	0
37		Instacart-Costco	Advil	0	-
38		Instacart-Costco	Tylenol	0	2
39		Instacart-Costco	Aleve	0	-
40		Instacart-Costco	Private label	0	-

The availability of products with differing net contents on the product detail page had n=40 that were surveyed, of which n=20 for e-commerce and n=20 for q-commerce. In E-commerce, n=8/20 (40%) products were available with differing net contents on the product detail page of which n=7/20 (35%) products had the DFL on the product detail page for all of those available count sizes(products with differing net contents), n=9/20 (45%) products had the DFL on a different page but still were available for all the available count sizes, n=1/20 had DFL on the product detail page but were available only for a few sizes, n=2/20(10%) had DFL on the different page but were available only for a few sizes, n=1/20(5%) had only one size offering which was sold on the entire website, n=1/20 which had no DFL. In Q-commerce n=1/20 (5%) only had products with differing net contents available on the product detail page whereas 95% of the products failed to have different size offerings on the product detail page. N=9/20 (45%) products had their DFL on a different page which wasn't the product detail page for all product offerings, N=8/20 (40%) products had DFL on PRODUCT DETAIL PAGE but not on all sizes, N=3/20 (15%) had only one size offering which was sold on the entire website.



Figure 25 shows Advil dual action sold by Walmart.com. “1” Shows the position of the graphical DFL.

### 7.5. Accessibility Compliance:

Table 14 depicts the data related to accessibility compliance for all the retailers as measured using techniques proposed by the Baymard Institute (see definitions). In E-Commerce 4/6 websites were reviewed by Baymard’s study and 2/6 (CVS.com & Costco.com) websites and Instacart.com were reviewed based on the methodology (see appendix 10.8.1). The dataset (N=44) was individually verified for the presence of accessibility compliance components such as images, form fields, links & keyboard navigation for all the SKUs. It was seen that in Walgreens.com (e-commerce) 9% (4/44) had received a score of 0.25 which had only form fields which were accessible and the other three components were found non-accessible, 18% (8/44)

had received an accessibility score of 0.5, 63.63% (28/44) had received an accessibility score of 0.75 & 9% (4/44) had received an accessibility score of 1.0.

Table 14: Type of platform, retailer, components present and accessibility compliance.

S. No.	Type of Platform	Retailer	Components present	Accessibility compliance
1	E-commerce	Walmart.com	2/4	0.50
2			2/4	0.50
3			2/4	0.50
4			2/4	0.50
5		Target.com	3/4	0.75
6			3/4	0.75
7			3/4	0.75
8			3/4	0.75
9		Costco.com	3/4	0.75
10			3/4	0.75
11			3/4	0.75
12			3/4	0.75
13		Amazon.com	2/4	0.50
14			2/4	0.50
15			2/4	0.50
16			2/4	0.50
17		Walgreens.com	1/4	0.25
18			1/4	0.25
19			1/4	0.25
20			1/4	0.25
21		CVS.com	4/4	1.00
22			4/4	1.00
23			4/4	1.00
24			4/4	1.00

Table 14 (cont'd)

25	Q-commerce	Instacart-Walmart	3/4	0.75
26			3/4	0.75
27			3/4	0.75
28			3/4	0.75
29		Instacart-Target	3/4	0.75
30			3/4	0.75
31			3/4	0.75
32			3/4	0.75
33		Instacart-Costco	3/4	0.75
34			3/4	0.75
35			3/4	0.75
36			3/4	0.75
37		Instacart-CVS	3/4	0.75
38			3/4	0.75
39			3/4	0.75
40			3/4	0.75
41		Instacart-Walgreens	3/4	0.75
42			3/4	0.75
43			3/4	0.75
44			3/4	0.75

## **8. Conclusion:**

The objective of this research was to compare and analyze the arduousness in finding the DFL in online commerce environments, which are not yet subject to the explicit information requirements that are mandated for physical packages. It is vital for an OTC drug to have this information since a consumer self-selecting a drug requires information to make informed decisions (e.g. prevention of Adverse Drug Reactions (ADRs)). The average number of times a person had to scroll in E-Commerce websites to find the DFL in textual format was six scrolls; by contrast, navigating to the textual DFL in sampled Q-Commerce sites were nearly double that -11.375 scrolls.

Data that was reviewed related to the completeness of the DFL also suggested Q-Commerce sites underperformed relative to those sampled from E-Commerce. While in the E-Commerce segment, only 37.5% of surveyed products contained complete textual DFL information while 45.8% products had incomplete information and 16.7% products had no information. For products that were surveyed within Q-Commerce retailers, not a single product had DFL that included all required information, 75% products had incomplete or partial information and 25% products had no information at all in textual format. This is an indication that retailers need to start to prioritize having DFL information in textual format.

On the product detail page, the graphical DFL's availability was 55% on an average for at least one of the count sizes offered (one of the products available with differing net contents) for both E-commerce and Q-commerce. Although E-commerce had an average of 9 thumbnail images compared to Q-commerce's 6, almost 45% of the times where there were at least 5 thumbnail images present but no graphical DFL present in Q-commerce. This means that having thumbnail images corresponding to FDA labelling guidelines is recommended. The graphical DFL was

only present 55% of the times on an average on the product detail page. As a result, in 45% of the trials, the DFL had to be located on a page outside of the product detail page with a series of either clicking/scrolling /both, and in some cases, the information was not available at all. In the case of Q- Commerce if the graphical DFL wasn't available on the product detail page, it was not available anywhere else.

The intersection where less than 50% of the textual DFL and no graphical DFL was present in E-Commerce was identified to be 20.8% (n=5/24) and in Q-Commerce it was 15% (n=3/20). And there was no DFL present (in any format, i.e. graphical and textual formats ) on 10% (n=2/20) of the cases sampled in Q- Commerce. The intersection where less than 50% of textual DFL and illegible graphical were present in E- Commerce was 8.3% (n=2/24) and in Q- Commerce it was 20% (n=4/20). Both E-Commerce and Q-Commerce platforms would benefit from enhanced presence/presentation of the information; in a physical commerce environment, the DFL is always available completely, with no partial or incomplete information and formatting of text dictated in accordance with FDA labelling guidelines, and standard formatting. The policy can be as simple as making sure that the DFL be made mandatory when the seller creates the information for a product listing and without which it cannot proceed to the next step in the product listing creation process on the retailer's website.

The availability of all the required components for accessibility compliance in websites were completely available only in 9% of the cases, the recommendation is that this needs to improve drastically so that it is accessible for all consumers equally, although Q-commerce fared better than E-Commerce by 12% on an average.



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# APPENDIX

## 8.1. Amazon.com®:



Figure 26 shows the screenshot of the Landing Page of Product Detail Page of Advil Dual Action ® 2 count \*50 pack.

In Fig 26 we see that the thumbnail images don't have the Drug Facts Label present and in Fig 27, when we see the scroll bar carefully we can see that it has been scrolled down almost to the bottom from the landing page of the Product Detail Page and as per the study performed it was noted that it needs to be scrolled down to the 10<sup>th</sup> page to find the DFL in textual format of the Product and it can be seen that the information is cluttered and not really easy to read and sufficient information to make a purchase decision is not really available.

## Important information

### Safety Information

Acetaminophen liver damage warning: This product contains acetaminophen. Severe liver damage may occur if you take with other drugs containing acetaminophen, more than 6 caplets in 24 hours, which is the maximum daily amount for this product, or 3 or more alcoholic drinks every day while using this product. Acetaminophen allergy alert: may cause severe skin reactions. Symptoms may include: skin reddening, blisters, or rash. If skin reaction occurs, stop use and seek medical help right away. NSAID allergy alert: Ibuprofen may cause a severe allergic reaction, especially in people allergic to aspirin. Symptoms may include: hives, facial swelling, asthma (wheezing), shock, skin reddening, rash, or blisters. If an allergic reaction occurs, stop use and seek medical help right away. NSAID stomach bleeding warning: This product contains an NSAID, which may cause severe stomach bleeding. The chance is higher if you: are age 60 or older, have had stomach ulcers or bleeding problems, take a blood thinning (anticoagulant) or steroid drug, take other drugs containing prescription or nonprescription NSAIDs (aspirin, ibuprofen, naproxen, or others), have 3 or more alcoholic drinks every day while using this product, or take more or for a longer time than directed. Heart attack and stroke warning: NSAIDs, except aspirin, increase the risk of heart attack, heart failure, and stroke. These can be fatal. The risk is higher if you use more than directed or for longer than directed. Do not use with any other drug containing acetaminophen (prescription or nonprescription). If you are not sure whether a drug contains acetaminophen, ask a doctor or pharmacist. Do not use if you have ever had an allergic reaction to acetaminophen or any other pain reliever, or right before or after heart surgery. Ask a doctor before use if you have liver disease, stomach bleeding warning applies to you, you have problems or serious side effects from taking pain relievers, you have a history of stomach problems, such as heartburn, you have high blood pressure, heart disease, liver cirrhosis, kidney disease, asthma, or had a stroke, or you are taking a diuretic. Ask a doctor or pharmacist before use if you are under a doctor's care for any serious condition, taking aspirin for heart attack or stroke, because ibuprofen may decrease this benefit of aspirin, or taking any other drug. When using this product, take with food or milk if stomach upset occurs. Stop use and ask a doctor if you experience any of the following signs of stomach bleeding: feel faint, vomit blood, have bloody or black stools, or have stomach pain that does not get better. Stop use and ask a doctor if you have symptoms of heart problems or stroke: chest pain, trouble breathing, weakness in one part or side of body, slurred speech, or leg swelling. Stop use and ask a doctor if pain gets worse or lasts more than 10 days, redness or swelling is present in the painful area, or any new symptoms appear. If pregnant or breast-feeding, ask a health professional before use. It is especially important not to use ibuprofen during the last 3 months of pregnancy unless definitely directed to do so by a doctor because it may cause problems in the unborn child or complications during delivery. Keep out of reach of children. In case of overdose, get medical help or contact a Poison Control Center right away.

### Ingredients

Active Ingredients: (in each caplet): Acetaminophen 250 mg - Pain reliever, Ibuprofen 125 mg (NSAID†) - Pain reliever. † nonsteroidal anti-inflammatory drug; Inactive Ingredients: carnauba wax, colloidal silicon dioxide, croscarmellose sodium, ferric oxides, glyceryl dibehenate, hypromellose, pharmaceutical ink, polydextrose, polyethylene glycol, pregelatinized starch, titanium dioxide

### Directions

Do not take more than directed. Adults and children 12 years and older: Take 2 caplets every 8 hours while symptoms persist. Children under 12 years: Ask a doctor. Do not take more than 6 caplets in 24 hours, unless directed by a doctor.

### Legal Disclaimer

Satisfaction Guarantee If for any reason you are not satisfied with any GSK Consumer Healthcare product, GSK Consumer Healthcare will provide you with a reimbursement within 45 days of the date of purchase. Please note that because GSK is unable to control the quality of our products sold by unauthorized sellers, the Guarantee is not available for products purchased from unauthorized sellers due to potential quality issues outside GSK's control. Please contact GSK Consumer Healthcare directly for more information.

Statements regarding dietary supplements have not been evaluated by the FDA and are not intended to diagnose, treat, cure, or prevent any disease or health condition.

Figure 27 shows the screenshot of the DFL in textual format of Advil Dual Action® on the 10th page scrolling down on Amazon.com.

Dorm room must-haves Shop Off to College

Back to results

Roll over image to zoom in

**Tylenol Extra Strength Caplets with 500 mg Acetaminophen, Pain Reliever & Fever Reducer, 24 ct**

Visit the Tylenol Store

4.8 ★★★★★ 35,953 ratings

**Amazon's Choice** in Acetaminophen by Tylenol

---

Typical price: \$4.47 [Details](#)

Price: **\$4.04** (\$0.17 / Count) **prime** One-Day

You Save: \$0.43 (10%)

**Coupon:** Save 20%. Coupon available when you select **Subscribe & Save**.

**S** Best price

**Get 10% off eligible products when using American Express Membership Rewards points. Max discount \$10. Activation required, see terms.**

May be available at a lower price from other sellers, potentially without free Prime shipping.

---

Size: **24 Count (Pack of 1)**

100 Count (Pack of 1)	10 Count (Pack of 1)	24 Count (Pack of 1)
\$9.02 (\$0.09 / Count)	\$2.00 (\$0.20 / Count) <b>prime</b>	\$4.04 (\$0.17 / Count) <b>prime</b>

Figure 28 shows the screenshot of the Landing Page of Product Detail Page of Tylenol Extra Strength ® 24ct pack.

In Fig 28 we see that the thumbnail images highlighted don't have the Drug Facts Label present and in Fig 29, when we see the scroll bar carefully we can see that it has been scrolled down almost to the bottom from the landing page of the Product Detail Page and as per the study performed it was noted that it needs to be scrolled down to the 14<sup>th</sup> page to find the DFL in textual format of the Product and it can be seen that the information is cluttered and not really easy to read and sufficient information to make a purchase decision is not really available. (Michelle Llamas, n.d.).

Brand Name	Tylenol	Amazon Basic Care	Tylenol	Tylenol	Tylenol
Package Information	Bottle	Bottle	Bottle	Bottle	Bottle
Item Form	Caplet	Tablet	Caplet	Caplet	Caplet
Specific Uses For Product	Cold, Fever	Pain Relief	Cold, Fever	Cold, Fever	Arthritis Pain Relief, Pain Relief
Unit Count	24 Count	100 Count	6 Count	6 Count	225 Count

### Important information

#### Safety Information

**Liver warning:** This product contains acetaminophen. Severe liver damage may occur if you take More than 4,000 mg of acetaminophen in 24 hours With other drugs containing acetaminophen 3 or more alcoholic drinks every day while using this product. **Allergy alert:** acetaminophen may cause severe skin reactions. Symptoms may include: Skin reddening Blisters Rash If a skin reaction occurs, stop use and seek medical help right away. Do not use With any other drug containing acetaminophen (prescription or nonprescription). If you are not sure whether a drug contains acetaminophen, ask a doctor or pharmacist. If you are allergic to acetaminophen or any of the inactive ingredients in this product Ask a doctor before use if you have liver disease. Ask a doctor or pharmacist before use if you are taking the blood thinning drug warfarin. Stop use and ask a doctor if Pain gets worse or lasts more than 10 days Fever gets worse or lasts more than 3 days New symptoms occur Redness or swelling is present These could be signs of a serious condition. If pregnant or breast-feeding, ask a health professional before use. Keep out of reach of children. **Overdose warning:** In case of overdose, get medical help or contact a Poison Control Center right away. (1-800-222-1222) Quick medical attention is critical for adults as well as for children even if you do not notice any signs or symptoms.

#### Indications

Temporarily relieves minor aches and pains due to: The common cold Headache Backache Minor pain of arthritis Toothache Muscular aches Premenstrual and menstrual cramps Temporarily reduces fever

#### Ingredients

Active ingredient (in each caplet) Purpose Acetaminophen 500 mg Pain reliever/fever reducer Inactive ingredients carnauba wax, crospovidone, FD&C red no. 40 aluminum lake, hypromellose, magnesium stearate, microcrystalline cellulose, polyethylene glycol, povidone, pregelatinized starch, propylene glycol, shellac glaze, sodium starch glycolate, stearic acid, titanium dioxide

#### Directions

Do not take more than directed (see overdose warning) Adults and children 12 years and over: Take 2 caplets every 6 hours while symptoms last Do not take more than 6 caplets in 24 hours, unless directed by a doctor Do not use for more than 10 days unless directed by a doctor Children under 12 years: ask a doctor Other information: Store between 20-25°C (68-77°F) Do not use if carton is opened. Do not use if foil inner seal imprinted with "TYLENOL" is broken or missing Questions or comments? call 1-877-895-3665 (toll-free) or 215-273-8755 (collect)

#### Legal Disclaimer

Statements regarding dietary supplements have not been evaluated by the FDA and are not intended to diagnose, treat, cure, or prevent any disease or health condition.

Figure 29 shows the screenshot of the DFL in textual format of Tylenol Extra Strength® on the 14th page scrolling down on Amazon.com.

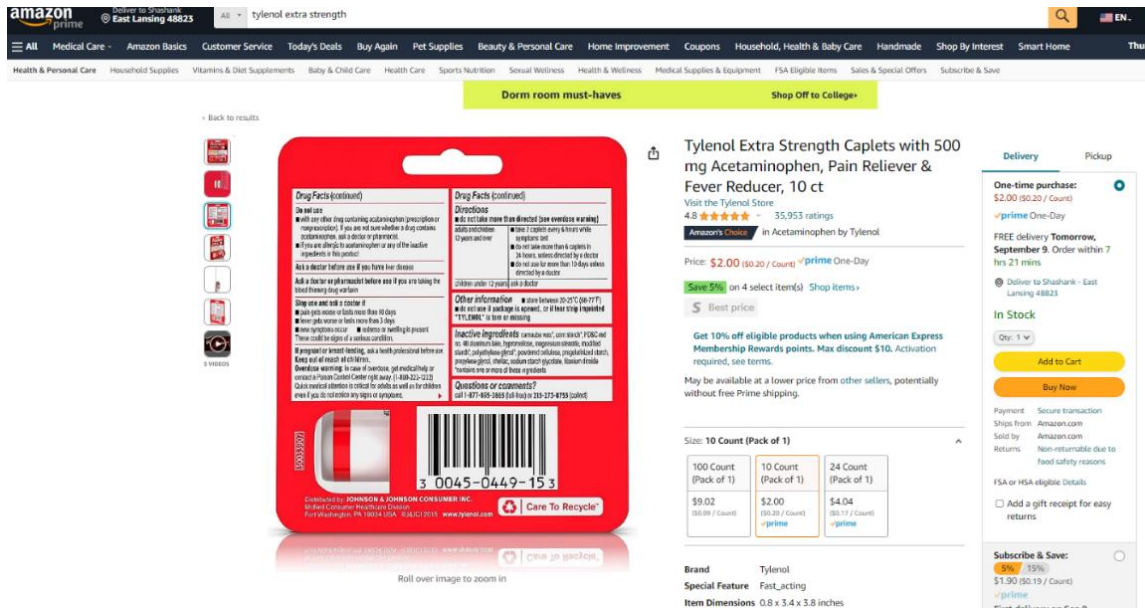


Figure 30 shows the screenshot of the Landing Page of Product Detail Page of Tylenol Extra Strength® 10ct pack.

We see that in Fig 30 that the 10 count SKU of the same product line interestingly has the Drug Fact label. This felt like a pattern and the availability of Drug Facts Label was studied on all the



products mentioned on the mentioned websites as mentioned in the Methodology. It was seen that 3<sup>rd</sup> thumbnail image was the Drug Fact Label of the said product. It was noted that the DFL was not available on all size(s) for Amazon.com.

Select from one of these alternatives



Aleve Back & Muscle Pain Relief Naproxen Sodium Tablets - 250 Count  
 ★★★★★ 5,068  
 \$22.46 (\$0.09/Count)  
 ✓prime



Amazon Basic Care Back and Muscle Pain, Naproxen Sodium Tablets 220 mg, Pain Reliever and Fever R...  
 ★★★★★ 31,059  
 \$6.11 (\$0.07/Count)  
 ✓prime



Aleve Arthritis Relief for Headache Naproxen Sodium Capsules, 220 mg, 60 Count  
 ★★★★★ 6,8  
 \$23.09 (\$0.14/Count)  
 ✓prime

Back to results



**Drug Facts**  
**Active ingredient (in each tablet)**  
 Naproxen sodium 220 mg  
 (Naproxen 220 mg) (NSAID).....Pain reliever/fever reducer  
 Nonsteroidal anti-inflammatory drug

**Uses**

- temporarily relieves minor aches and pains due to:
  - backache
  - muscular aches
  - minor pain of arthritis
  - menstrual cramps
  - headache
  - toothache
  - the common cold
  - temporarily reduces fever

**Warnings**  
**Allergy alert:** Naproxen sodium may cause a severe allergic reaction, especially in people allergic to aspirin. Symptoms may include:
 

- hives
- local swelling
- skin redness
- shock
- asthma (wheezing)
- rash
- bristlers

 If an allergic reaction occurs, stop use and seek medical help right away.  
**Stomach bleeding warning:** This product contains an NSAID, which may cause severe stomach bleeding. The chance is higher if you:
 

- are age 60 or older
- have had stomach ulcers or bleeding problems
- take a blood thinning (anticoagulant) or blood-thinning drug
- take other drugs containing prescription or nonprescription NSAIDs (aspirin, ibuprofen, naproxen, or others)
- have 3 or more alcoholic drinks every day while using this product
- take more or for a longer time than directed

**Drug Facts (continued)**  
**Heart attack and stroke warning:** NSAIDs, except aspirin, increase the risk of heart attack, heart failure, and stroke. These can be fatal. The risk is higher if you use more than directed or for longer than directed.

**Do not use**

- if you have ever had an allergic reaction to any other pain reliever/fever reducer
- right before or after heart surgery

**Ask a doctor before use if:**

- the stomach bleeding warning applies to you
- you have a history of stomach problems, such as heartburn
- you have high blood pressure, heart disease, liver cirrhosis, kidney disease, asthma, or had a stroke
- you are taking a diuretic
- you have problems or serious side effects from taking pain relievers or fever reducers

**Ask a doctor or pharmacist before use if you are:**

- under a doctor's care for any serious condition
- taking any other drug

**When using this product**

- take with food or milk if stomach upset occurs

**Stop use and ask a doctor if:**

- you experience any of the following signs of stomach bleeding:
  - feel faint
  - vomit blood
  - have bloody or black stools
- have stomach pain that does not get better
- you have symptoms of heart problems or stroke:
  - chest pain
  - trouble breathing
  - swelling in one part or side of body
  - slurred speech
  - leg swelling
- pain gets worse or lasts more than 10 days
- fever gets worse or lasts more than 3 days
- you have difficulty swallowing
- it feels like the pill is stuck in your throat
- redness or swelling is present in the painful area
- any new symptoms appear

**Drug Facts (continued)**  
 If pregnant or breast-feeding, ask a health professional before use. It is especially important not to use naproxen sodium during the last 6 months of pregnancy unless definitely directed to do so by a doctor because it may cause problems in the unborn child or complications during delivery.  
**Keep out of reach of children.** In case of overdose, get medical help or contact a Poison Control Center right away.

**Directions**

- do not take more than directed
- the smallest effective dose should be used
- drink a full glass of water with each dose

**Adults and children 12 years and older**

- take 1 tablet every 8 to 12 hours while symptoms last
- for the first dose you may take 2 tablets within the first hour
- do not exceed 2 tablets in any 8- to 12-hour period
- do not exceed 3 tablets in a 24-hour period

**Children under 12 years**

- ask a doctor

**Other information**

- each tablet contains sodium 20 mg
- store at 20-25°C (68-77°F). Avoid high humidity and excessive heat above 40°C (104°F).

**Inactive ingredients:** FD&C blue #2 lake, hypromellose, magnesium stearate, microcrystalline cellulose, polyethylene glycol, croscarmellose, iron, titanium dioxide

**Questions or comments?**  
 1-800-365-0888 (Mon-Fri 9AM-5PM EST)

Aleve Back and Muscle Pain Tablets, Fast Acting All Day Targeted Relief for Headache, Muscle, and Back Pain, Naproxen Sodium Capsules, 220 mg, 100 Count

Visit the Aleve Store  
 4.7 ★★★★★ ~ 857 ratings

Best price

- Targeted Back & Muscle Pain Relief
- Only Aleve Works at the Site of Pain All Day with Just Two Pills. Aleve is different, unlike Tylenol and Advil, each Aleve tablet has the strength to last 12 hours.\*\*
- Get fast, continuous pain relief with Aleve Back & Muscle Pain Tablets
- Aleve is an over the counter (OTC), nonsteroidal anti-inflammatory drug (NSAID) that has provided temporary relief for minor aches and pains for 25 years
- Aleve provides temporary relief of minor aches and pains due to backaches, muscular aches, headaches, minor arthritis and other joint pain, menstrual pain, toothaches, and the common cold; Aleve temporarily reduces fever
- Based on minimum labeled dosing

Consider a similar item

Amazon's Choice

Figure 31 shows the screenshot of the Landing Page of Product Detail Page of Aleve Back and Muscle Pain ® 100ct pack.

In Fig 31, it is seen that the thumbnail images of the product in the product detail page has the Drug Facts Label on the 4<sup>th</sup> position and we can see the expanded view when the mouse is hovered on it and the Ease of reading graphical DFL is Good. When scrolled down to find the DFL in textual format, it was not found. Not all count sizes were found to have the DFL.

The screenshot shows the Amazon product detail page for Amazon Basic Care Acetaminophen Extended-Release Tablets, 650 mg, 100 Count. The page features a red product box with the Amazon logo and 'basic care' branding. The product is described as '8 Hour Pain Relief' and 'Pain Reliever/Fever Reducer'. The price is listed as \$7.73 (\$0.08 / Count). There are several promotional banners, including 'Prime Savings Save 20%' and 'Get 10% off eligible products when using American Express Membership Rewards points'. The page also includes a 'Compare to Tylenol 8HR Caplets active ingredient\*\*' callout and a 'Best price' badge.

Figure 32 shows the screenshot of the Landing Page of Product Detail Page of the Private Label Brand owned by Amazon.com- Amazon Basic Care ® 100ct pack.

The screenshot shows the 'Important information' section of the Amazon product detail page. It includes the following sections:

- Safety Information:** Warnings: Liver warning: This product contains acetaminophen. Severe liver damage may occur if you take more than 6 caplets in 24 hours, which is the maximum daily amount; with other drugs containing acetaminophen; 3 or more alcoholic drinks every day while using this product. Allergy alert: Acetaminophen may cause severe skin reactions. Symptoms may include: skin reddening, blisters, rash. If a skin reaction occurs, stop use and seek medical help right away. Do not use with any other drug containing acetaminophen (prescription or nonprescription). If you are not sure whether a drug contains acetaminophen, ask a doctor or pharmacist; if you are allergic to acetaminophen or any of the inactive ingredients in this product. Ask a doctor before use if you have liver disease. Ask a doctor or pharmacist before use if you are taking the blood thinning drug warfarin. Stop use and ask a doctor if: pain gets worse or lasts more than 10 days; fever gets worse or lasts more than 3 days; new symptoms occur; redness or swelling is present. These could be signs of a serious condition. If pregnant or breast-feeding, ask a health professional before use. Keep out of reach of children. Overdose warning: In case of overdose, get medical help or contact a Poison Control Center right away (1-800-222-1222). Quick medical attention is critical for adults as well as for children even if you do not notice any signs or symptoms.
- Ingredients:** Active ingredient (in each caplet): Acetaminophen 650 mg. Inactive ingredients: carnauba wax, colloidal silicon dioxide, croscarmellose sodium, hypromellose, magnesium stearate, maltodextrin, microcrystalline cellulose, polyethylene glycol, polysorbate 80, povidone, pregelatinized starch, stearic acid, titanium dioxide
- Directions:** Directions: do not take more than directed (see overdose warning). Adults and children 12 years and over: take 2 caplets every 8 hours with water; swallow whole; do not crush, chew, split or dissolve; do not take more than 6 caplets in 24 hours; do not use for more than 10 days unless directed by a doctor. Children under 12 years: do not use.
- Legal Disclaimer:** Statements regarding dietary supplements have not been evaluated by the FDA and are not intended to diagnose, treat, cure, or prevent any disease or health condition.

To report an issue with this product, [click here](#).

Figure 33 shows the screenshot of the DFL in textual format of Amazon Basic Care ® on the 7th page scrolling down on Amazon.com.

The requirement of Accessibility compliance for Amazon.com was seen to have a success criteria of fulfilling 2/4 components such as Form fields and Keyboard Navigation as per the study performed by Baymard Institute (<https://baymard.com/blog/accessibility-benchmark-launch#images>, 2021). Similarly, the same study was performed with all the other websites mentioned in the Methodology.

## 8.2. Walmart.com :

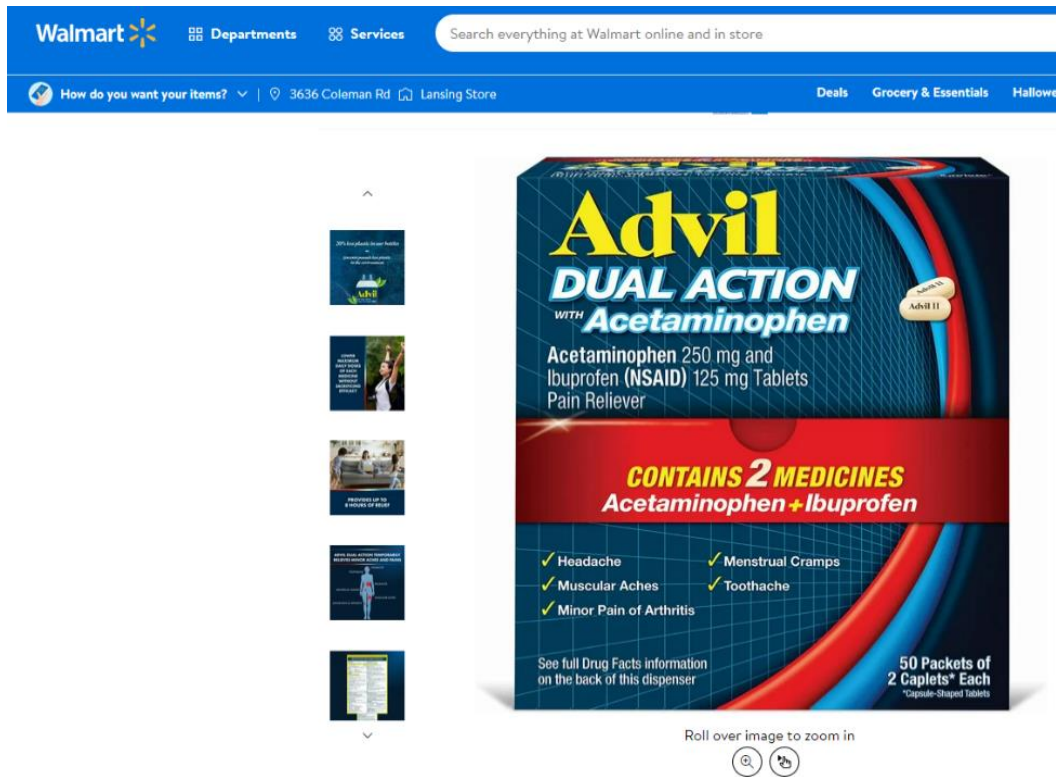


Figure 34 shows the screenshot of the Landing Page of Product Detail Page of the Advil dual action ® 2\*50ct pack.

In Fig 34, it is seen that the thumbnail images of the product in product detail page has the Drug Fact Label on the 5<sup>th</sup> position and we can see the expanded view when the mouse is hovered on it and the Ease of reading graphical DFL was found to be the Best. When scrolled down as on Fig

35 to find the DFL in textual format, it was not exactly found the way it was on the DFL and only the directions were found. All count sizes were found to have the DFL.

The screenshot shows the Walmart.com product page for Advil Dual Action. The top navigation bar includes the Walmart logo, a search bar, and user account information. The main content area is divided into sections: 'Important information', 'Ingredients', 'Directions', 'Legal Disclaimer', and 'Product Description'. A promotional banner highlights the price 'Now \$24.14' (down from \$29.97) with a 'Buy now' button. Below this, shipping and return information is provided. A CeraVe advertisement for 'NEW CeraVe Acne Foaming Cream Wash' is also visible, featuring a woman's face and the product packaging.

Figure 35 shows the screenshot of Advil Dual Action ® on the 2nd page scrolling down on Walmart.com.

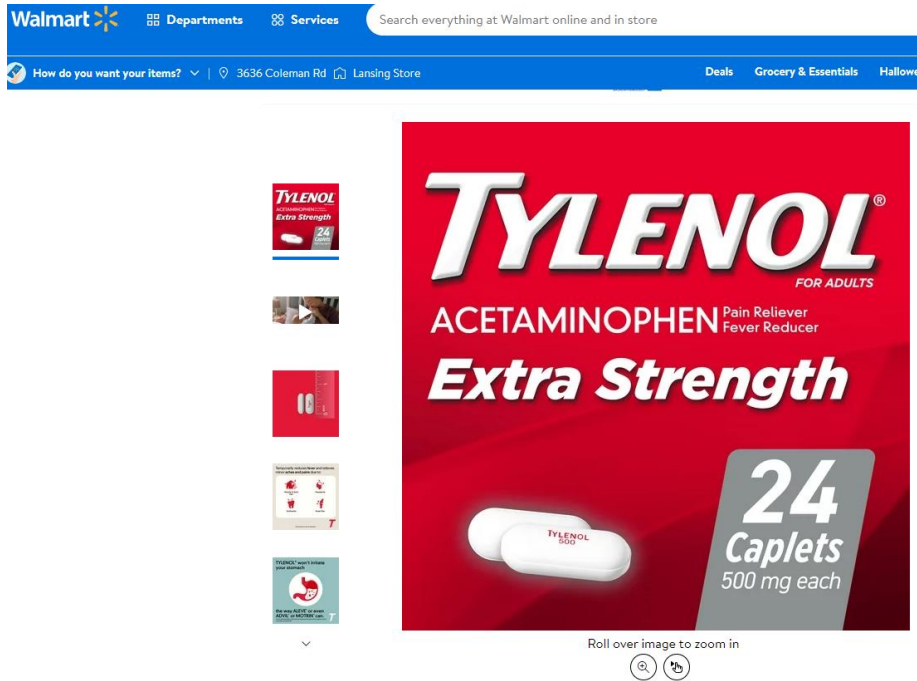


Figure 36 shows the screenshot of the Landing Page of Product Detail Page of the Tylenol Extra Strength ® 24ct pack.

Fig 36 depicts an example where the thumbnail images in the product detail page fail to include Drug Fact Label on the product detail page and needs to be scrolled down on the thumbnail section as seen on Fig 37 and was found to be in 9<sup>th</sup> position and we can see the expanded view when the mouse is hovered on it and the Ease of reading graphical DFL was found to be Good. When scrolled down as on Fig 40 to find the DFL in textual format, it was not exactly found the way it was on the DFL and only the directions were found. All count sizes were found to have the DFL.



Roll over image to zoom in



Figure 37 shows the screenshot of the thumbnail section scrolled down to find the DFL in position 9 for Tylenol Extra Strength® 24ct pack.



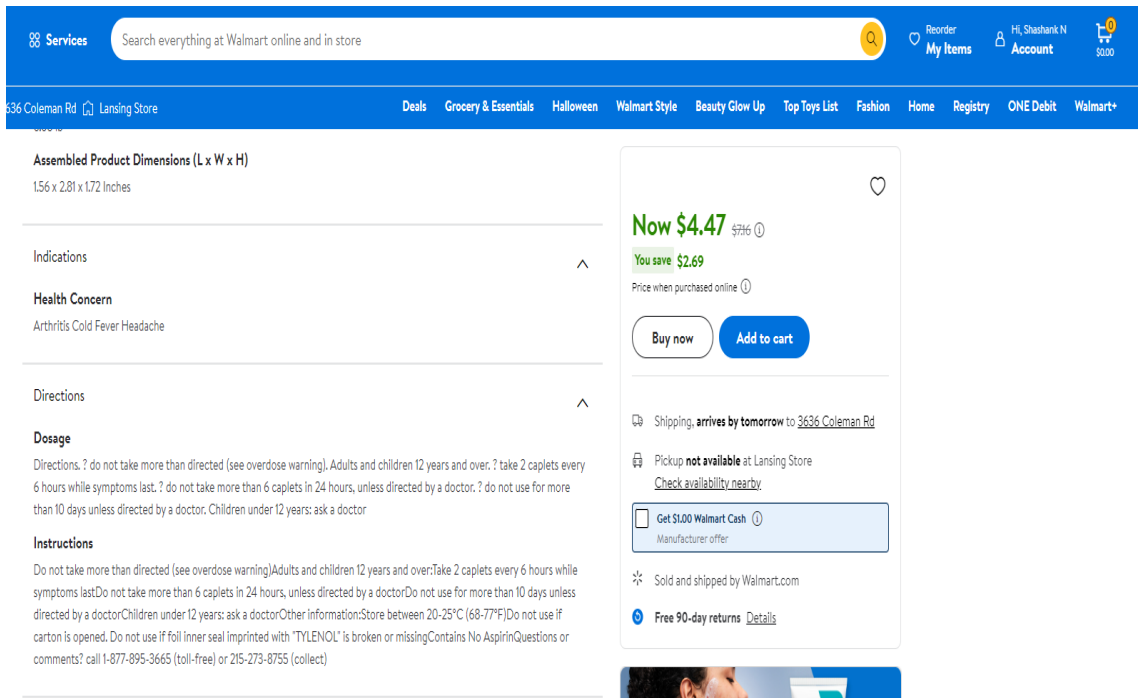


Figure 38 shows the screenshot of Tylenol Extra Strength ® on the 4th page scrolling down on Walmart.com.

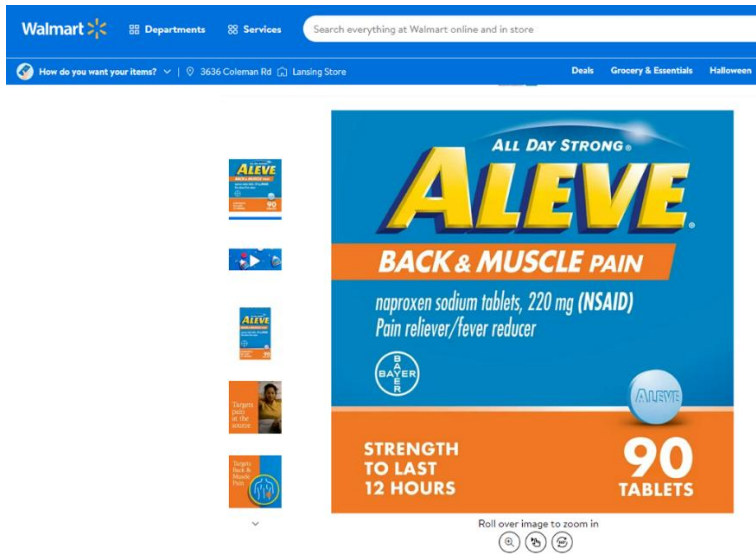


Figure 39 shows the screenshot of the Product detail Page of Product Detail Page of the Aleve Back & Muscle Pain ® 90ct pack.

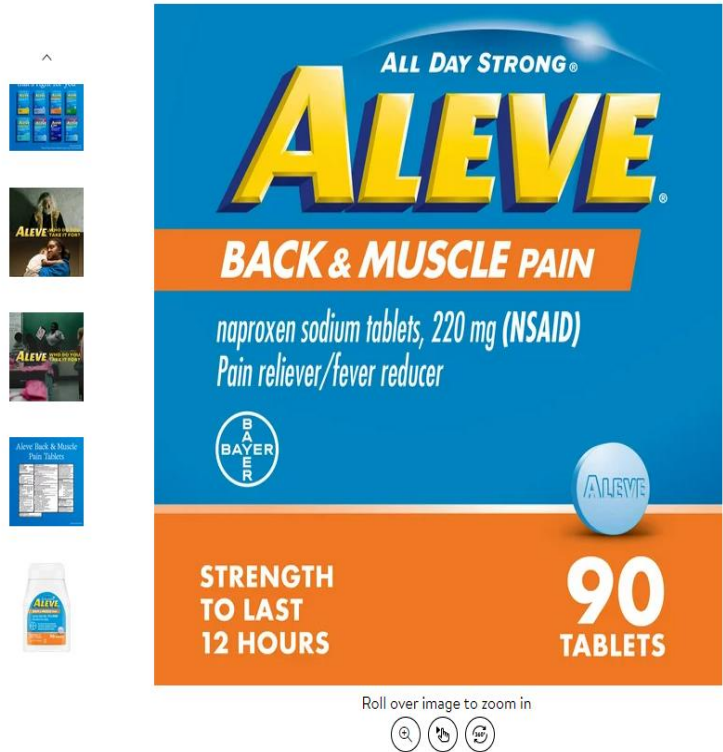


Figure 40 shows the screenshot of the thumbnail section scrolled down to find the DFL in position 9 for Aleve Back & Muscle Pain ® 90ct pack.



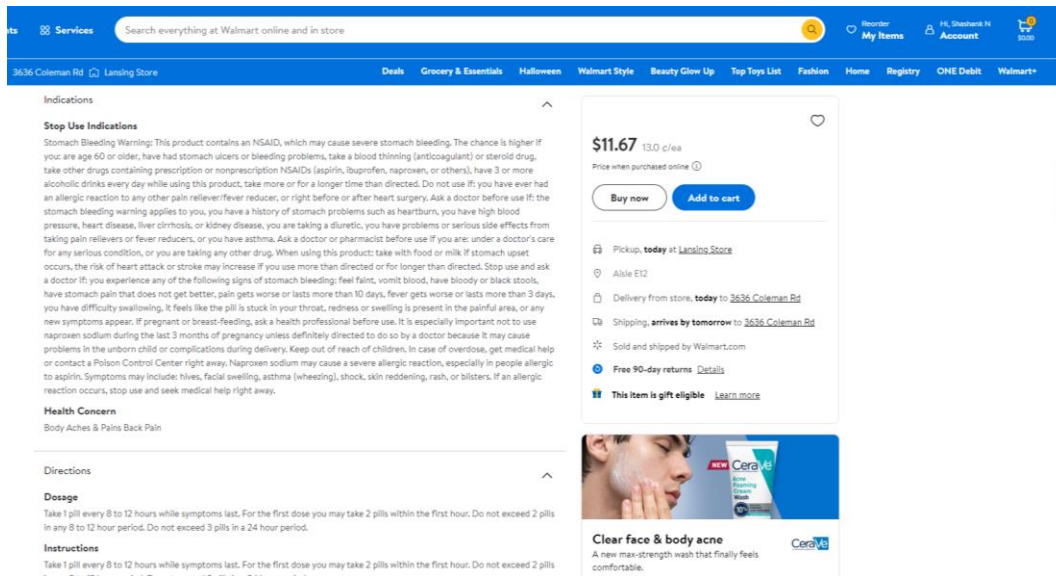


Figure 41 shows the screenshot of Aleve Back & Muscle Pain ® 90ct pack on the 3rd page scrolling down on Walmart.com.

In Fig 39, it is seen that the thumbnail images of the product in product detail page doesn't have the Drug Fact Label and is scrolled down on the thumbnail section as seen on Fig 40. and on the 16<sup>th</sup> position and we can see the expanded view when the mouse is hovered on it and the Ease of reading graphical DFL was found to be the Best. When scrolled down as on Fig 41 to find the DFL in textual format, it was exactly found the way it was on the. All count sizes were found to have the DFL.



Figure 42 shows the screenshot of the Product Detail Page of the Equate Extra Strength ® 100ct pack.

In Fig 42, it is seen that the thumbnail images of the product in product detail page has the Drug Fact Label on the 3<sup>rd</sup> position and we can see the expanded view when the mouse is hovered on it and the Ease of reading graphical DFL was found to be the Best. When scrolled down to find the DFL in textual format was not found. Not all count sizes were found to have the DFL. The requirement of Accessibility compliance for Walmart.com was seen to have a success criterion of fulfilling 2/4 components such as Images and Keyboard Navigation as per the study performed by Baymard Institute (<https://baymard.com/blog/accessibility-benchmark-launch#images>, 2021).

### 8.3. Target.com :

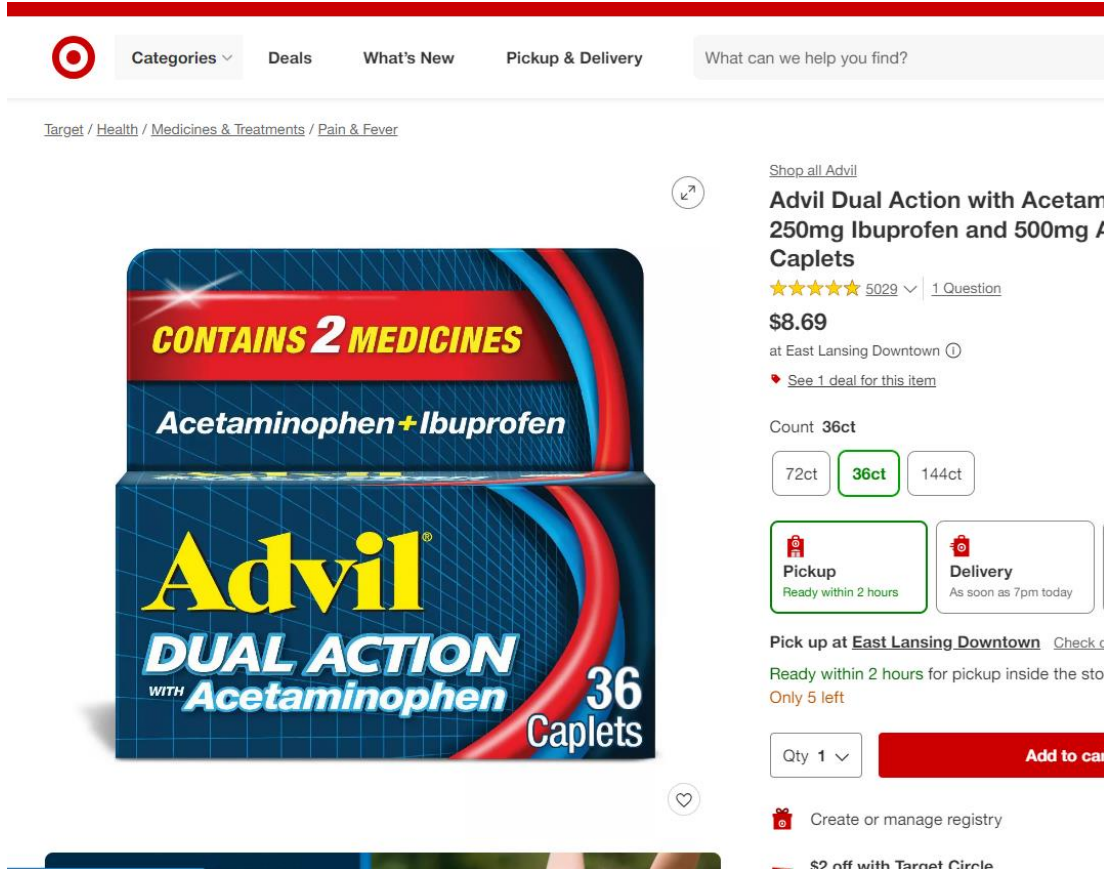


Figure 43 shows the screenshot of the Landing Page of Product Detail Page of Advil ® 36ct pack.

In Fig 43, it is seen that the thumbnail images of the product in product detail page doesn't have the Drug Fact Label and the thumbnail section needs to be scrolled down and on the 9<sup>th</sup> position (under see more images) and we can see the expanded view when the mouse is hovered on it and the Ease of reading graphical DFL was found to be Poor. When scrolled down to find the DFL in textual format, only the directions were found on the 5<sup>th</sup> page under the Drug Facts column and not all parts of the DFL were found. All count sizes were found to have the DFL.

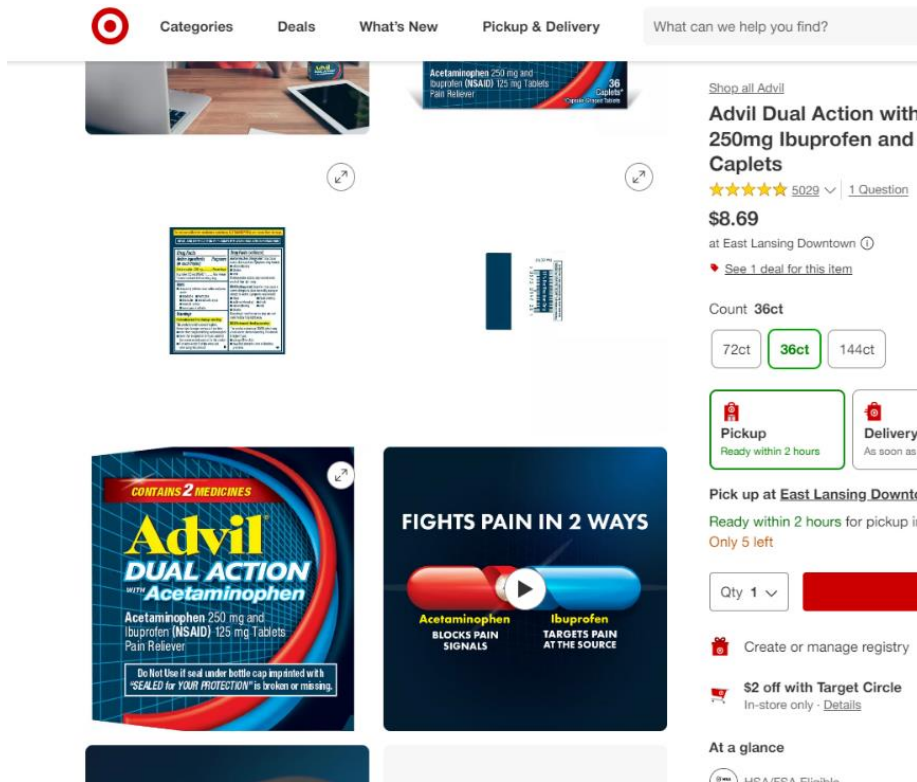


Figure 44 shows the screenshot of the thumbnail section of Product Detail Page of Advil Dual Action® 36ct pack and the DFL was found on the 9th position.

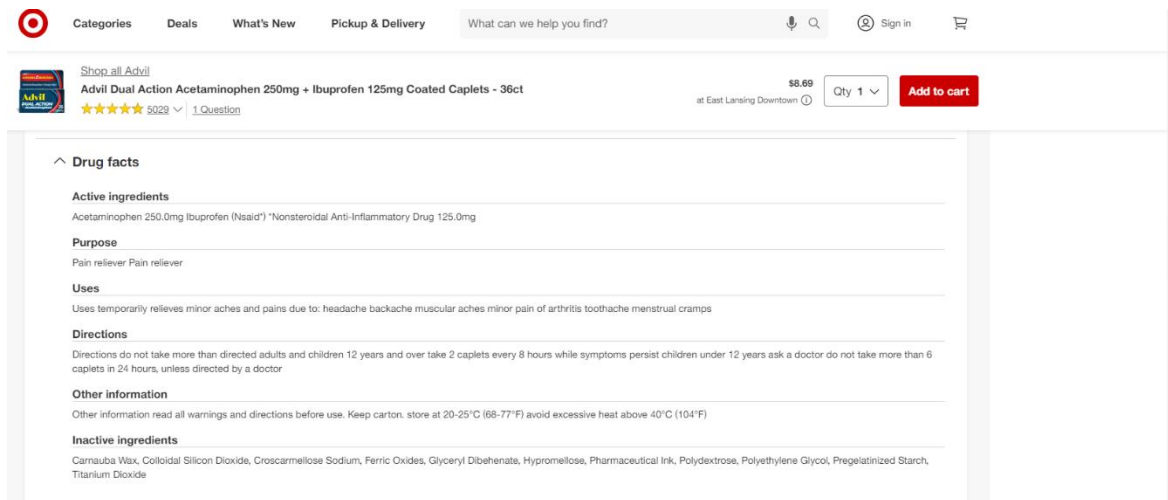



Figure 45 shows the screenshot of Advil Dual Action® 36ct pack on the 5th page scrolling down on Target.com.

Target Categories Deals What's New Pickup & Delivery What can we help you find?



Shop all Tylenol

### Tylenol Extra Strength Caplets - Acetaminophen

★★★★★ 2837 6 Questions

**\$4.99**  
at East Lansing Downtown

Size **24 Count**

**24 Count** 100 Count

**Pickup**  
Ready within 2 hours

**Deliver**  
As soon as possible

**Pick up at East Lansing Downtown**  
Ready within 2 hours for pickup

Qty 1

Create or manage registries

**At a glance**

HSA/FSA Eligible

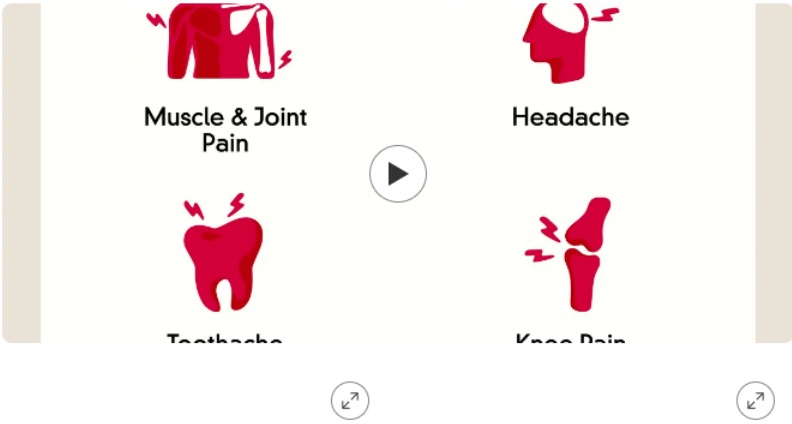




Figure 46 shows the screenshot of the Landing Page of Product Detail Page of Tylenol Extra Strength® 24 count pack.

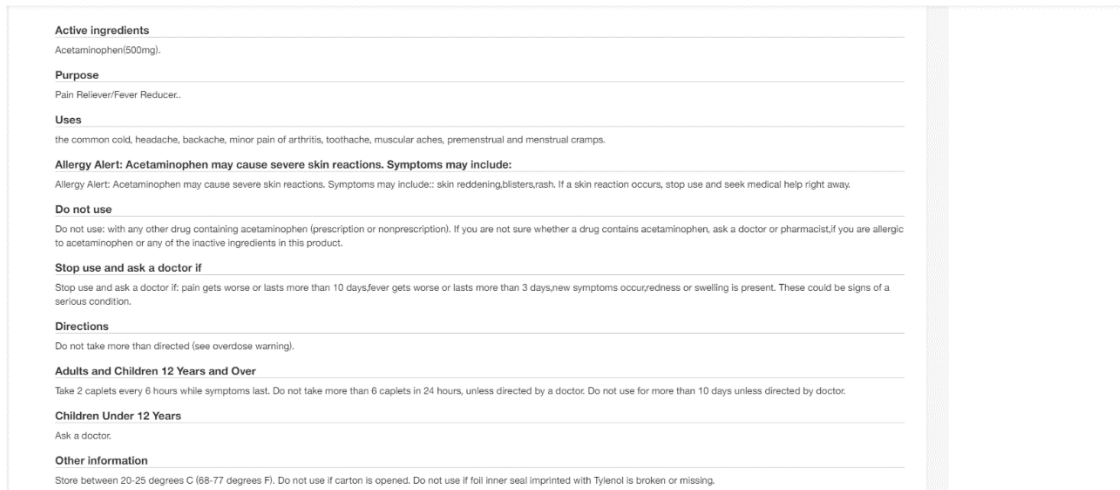


Figure 47 shows the screenshot of Advil Dual Action® 36ct pack on the 3rd page scrolling down on Target.com.

In Fig 47, it is seen that the thumbnail images of the product in product detail page has the Drug Fact Label and the thumbnail section needs to be scrolled down and on the 7<sup>th</sup> position (under see more images) and we can see the expanded view when the mouse is hovered on it and the Ease of reading graphical DFL was found to be Poor. By scrolling down to find the DFL in textual format, under the Drug Facts column on the 3<sup>rd</sup> page all parts of the DFL were found. All count sizes were found to have the DFL.

Target / Health / Medicines & Treatments / Pain & Fever



Shop this collection · Shop all Aleve

### Aleve Naproxen Sodium F Tablet (NSAID) - 90ct

★★★★★ 269 1 Question Save

**\$14.59**  
at East Lansing Downtown ⓘ  
[See 1 deal for this item](#)

**Pickup**  
Ready within 2 hours

**Delivery**  
As soon as 5pm to

**Same Day Delivery**  
to 48823 from East Lansing Downtow  
Get it as soon as 5pm today with Shipt  
Only 4 left  
Free with membership or \$9.99/deliver

Qty 1 Add

[Create or manage registry](#)

[Save 5% on Aleve, Aleve X & B](#)  
In-store, Order Pickup or Same Day D

At a glance

Figure 48 shows the screenshot of the Landing Page of Product Detail Page of Aleve Back & Muscle pain® 90 count pack.

In Fig 48, it is seen that the thumbnail images of the product in product detail page doesn't have the Drug Fact Label and the thumbnail section after scrolling down also, the DFL was not found. By scrolling down to find the DFL in textual format, under the Drug Facts column on the 4<sup>th</sup> page, not all parts of the DFL were found. None of the count sizes were found to have the DFL.

Categories Deals What's New Pickup & Delivery What can we help you find? Sign in

Shop all Aleve

**Aleve Naproxen Sodium Pain Reliever Back and Muscle Pain Tablet (NSAID) - 90ct**

★★★★★ 269 | 1 Question

\$14.59 at East Lansing Downtown Qty 1 **Add to cart**

- CHILD-RESISTANT PACKAGING: Aleve pain relief pills come in a convenient, child-resistant bottle

Specifications

Drug facts

**Active ingredients**  
Naproxen Sodium (Naproxen 200) (Nsaid) 220.0mg

**Purpose**  
Pain reliever/fever reducer

**Uses**  
temporarily relieves minor aches and pains due to: backache • minor pain of arthritis • menstrual cramps • headache • the common cold • muscular aches • toothache • temporarily reduces fever

**Directions**  
Directions • do not take more than directed • the smallest effective dose should be used • drink a full glass of water with each dose Adults and children 12 years and older • take 1 tablet every 8 to 12 hours while symptoms last • for the first dose you may take 2 tablets within the first hour • do not exceed 2 tablets in any 8- to 12-hour period • do not exceed 3 tablets in a 24-hour period Children under 12 years • ask a doctor

**Inactive ingredients**  
Inactive Ingredients: Fd&C Blue #2 Lake, Hypromellose, Magnesium Stearate, Microcrystalline Cellulose, Polyethylene Glycol, Povidone, Talc, Titanium Dioxide

Figure 49 shows the screenshot of Aleve Back & Muscle pain® 90 count pack on the 4th page scrolling down on Target.com.





Categories

Deals

What's New

Pickup & Delivery

What can we help you find?



# Up&Up™ Acetaminophen Extra Strength Pain Reliever & Fever Reducer Caplets

Shop all up & up

## Acetaminophen Extra Strength Reducer Caplets - up & up

★★★★★ 2749 | 19 Questions

\$2.19

at East Lansing Downtown

Size 100 count

50 count

**100 count**

225 count

**Pickup**  
Ready within 2 hours

**Delivery**  
As soon as 7pm tod

Pick up at **East Lansing Downtown**

Ready within 2 hours for pickup inside tl

Qty 1

**Add**

Create or manage registry

At a glance

**GF** Gluten Free

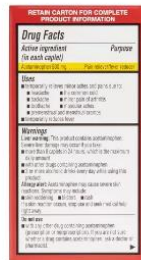


Figure 50 shows the screenshot of the Landing Page of Product Detail Page of Private Label Acetaminophen Brand Up & Up Extra Strength @100 count pack found on Target.com.

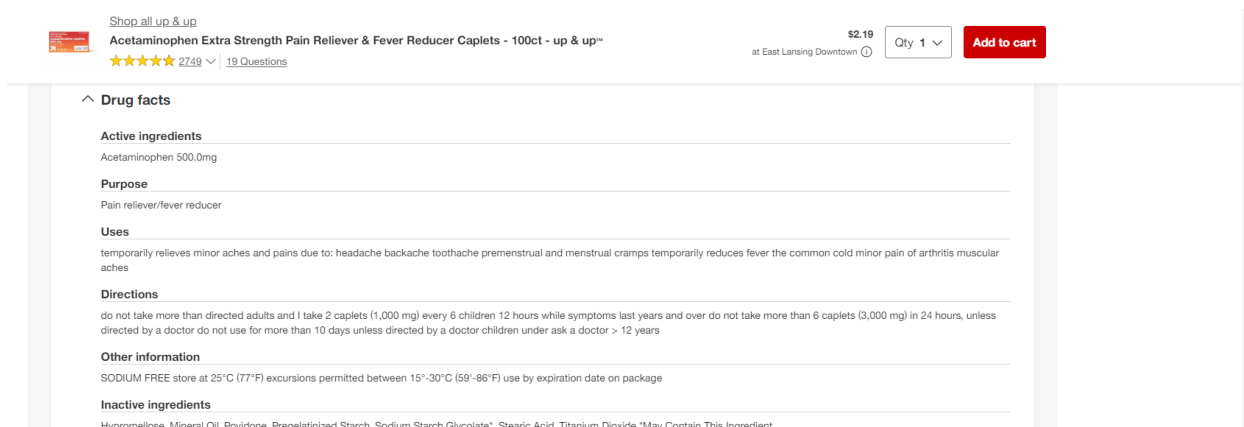


Figure 51 shows the screenshot of Up & Up Extra Strength @100 count pack on the 4th page scrolling down on Target.com.

In Fig 50, it is seen that the thumbnail images of the product in product detail page has the Drug Fact Label on the product detail page, the DFL was found on the 4<sup>th</sup> position of image(s). By scrolling down to find the DFL in textual format, under the Drug Facts column on the 4<sup>th</sup> page, not all parts of the DFL were found. All the count sizes were found to have the DFL.

The requirement of Accessibility compliance for Walmart.com was seen to have a success criterion of fulfilling 3/4 components such as Images, Links and Keyboard Navigation as per the study performed by Baymard Institute (<https://baymard.com/blog/accessibility-benchmark-launch#images>, 2021).

8.4. Costco.com:

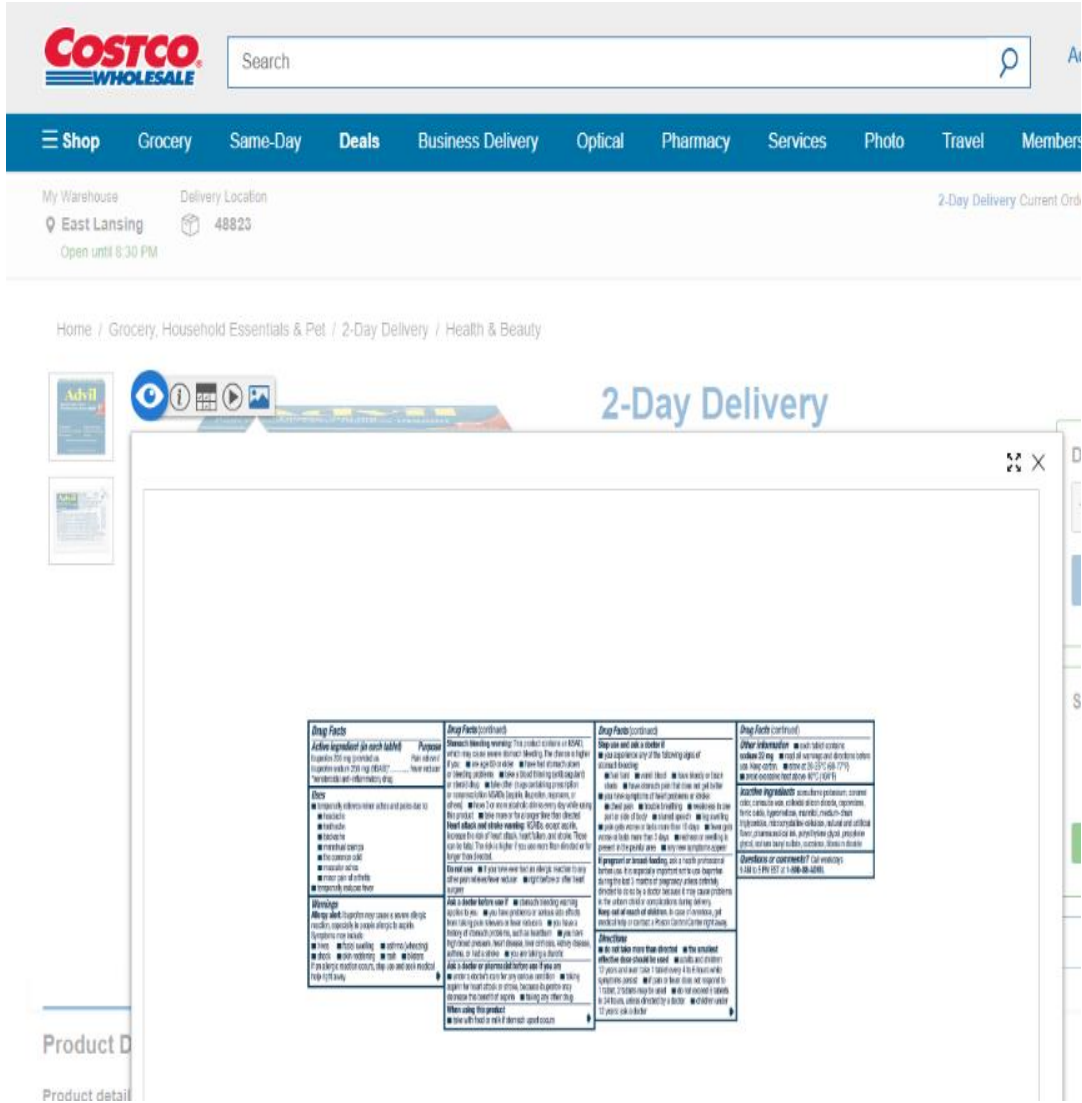


Figure 52 shows the screenshot of the Landing Page of Product Detail Page of Advil Ibuprofen® 2\*50 count pack.

Advil Ibuprofen, 200mg, 50 Packets of 2 Coated Tablets \$11.99

Product Details Specifications Drug Facts Shipping & Returns

### Drug Facts

Active Ingredient	Purpose
Ibuprofen (NSAID) 200 mg * *nonsteroidal anti-inflammatory drug.	Pain Reliever/Fever Reducer

### Uses

- Temporarily relieves minor aches and pains due to:
  - headache
  - toothache
  - backache
  - menstrual cramps
  - the common cold
  - muscular aches
  - minor pain of arthritis.

### Warnings

**Allergy Alert:** Ibuprofen may cause a severe allergic reaction, especially in people allergic to aspirin. Symptoms may include:

- hives
- facial swelling
- asthma (wheezing)
- shock
- skin redness
- rash
- blisters. If an allergic reaction occurs, stop use and seek medical help right away.

### Directions

- Do not take more than directed. The smallest effective dose should be used.

Figure 53 shows the screenshot of Advil Ibuprofen® 2\*50 count pack on the 3rd page scrolling down on Costco.com.

For this study, Advil Ibuprofen variant has been chosen instead of Advil Dual Action since Costco.com only sells the former product and the latter isn't sold on it. In Fig 52, it is seen that the thumbnail images of the product in product detail page has the Drug Fact Label on the landing page under the eye icon as highlighted, the DFL was found on the 4<sup>th</sup> position of image(s). By scrolling down to find the DFL in textual format as seen on Fig 53, under the Drug Facts column on the 3<sup>rd</sup> page, all parts of the DFL were found. All the count sizes were found to have the DFL.

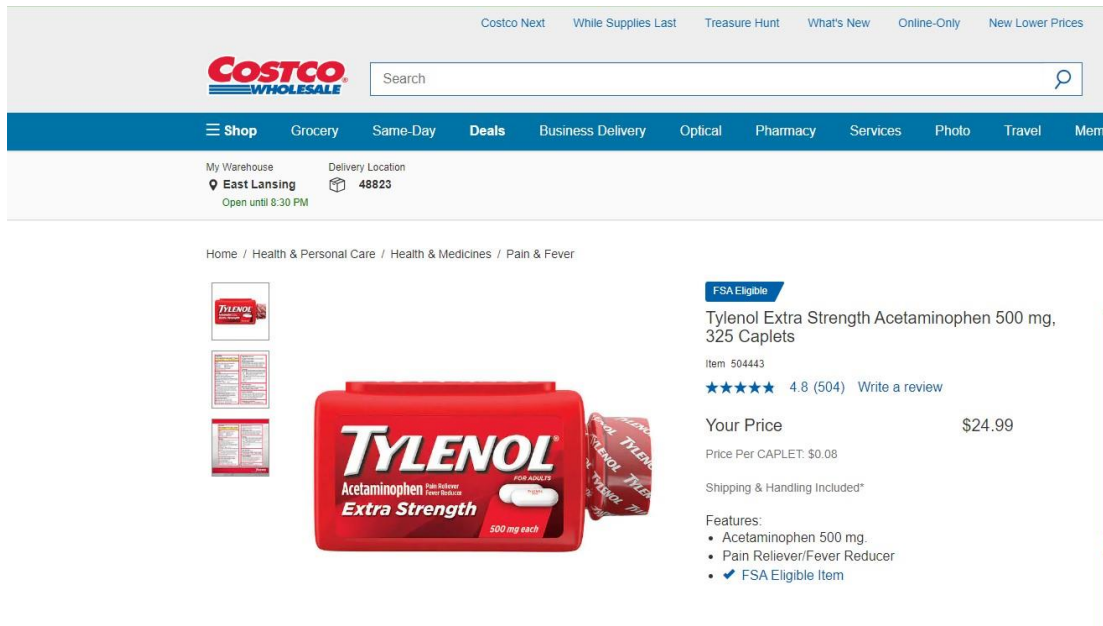


Figure 54 shows the screenshot of the Landing Page of Product Detail Page of Tylenol Extra Strength® 325 count pack.

In Fig 54, it is seen that the thumbnail images of the product in product detail page has the Drug Fact Label on the landing page as highlighted, the DFL was found on the 2<sup>nd</sup> position of image(s). By scrolling down to find the DFL in textual format no parts of the DFL were found. All the count sizes were found to have the DFL.



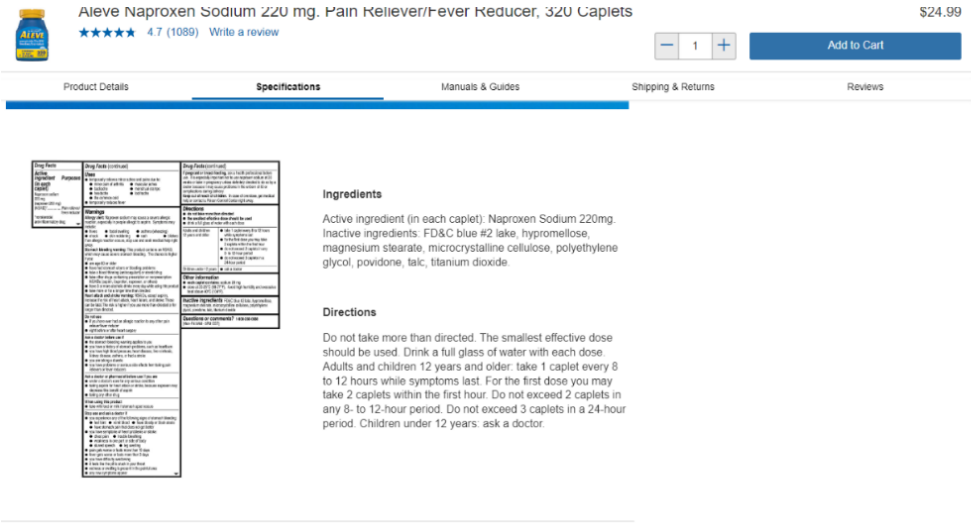


Figure 56 shows the screenshot of Aleve Pain reliever® 320 count pack on the 6th page scrolling down under view more column of Costco.com.

For this study, Aleve Pain Reliever 220mg 320ct variant has been chosen instead of Aleve Back & Muscle pain since Costco.com only sells the former product and the latter isn't sold on it. In Fig 55, it is seen that the thumbnail images of the product in product detail page has the Drug Fact Label on the landing page as highlighted, the DFL was found on the 2<sup>nd</sup> position of image(s). By scrolling down to find the DFL in textual format as seen on Fig 56, under the view more column on the 6<sup>th</sup> page, not all parts of the DFL were found and ease of reading of the DFL was found to be fair. All the count sizes were found to have the DFL.



Home / Health & Personal Care / Health & Medicines / Pain & Fever



Drug Facts		Drug Facts (continued)
<b>Active ingredient (in each caplet)</b> Acetaminophen 500 mg.	<b>Purpose</b> Pain reliever/fever reducer	<p>Slip, use and ask a doctor if:</p> <ul style="list-style-type: none"> <li>pain gets worse or lasts more than 10 days</li> <li>fever gets worse or lasts more than 3 days</li> <li>new symptoms occur or a redness or swelling is present. These could be signs of a serious condition.</li> </ul> <p>If pregnant or breast-feeding, ask a health professional before use.</p> <p><b>Keep out of reach of children. Overdose warning:</b> In case of overdose, get medical help or contact a Poison Control Center right away (1-800-232-1222). Quick medical attention is critical for adults as well as for children even if you do not notice any signs or symptoms.</p>
<b>Uses</b> temporarily relieves minor aches and pains due to: <ul style="list-style-type: none"> <li>the common cold</li> <li>headache</li> <li>minor pain of arthritis</li> <li>backache</li> <li>muscular aches</li> <li>toothache</li> <li>premenstrual and menstrual cramps</li> </ul> temporarily reduces fever		<p><b>Directions</b></p> <ul style="list-style-type: none"> <li>do not take more than directed (see overdose warning)</li> <li>adults and children 12 years and over: take 2 caplets every 6 hours while symptoms last. do not take more than 6 caplets in 24 hours, unless directed by a doctor.</li> <li>do not use for more than 10 days unless directed by a doctor.</li> <li>children under 12 years: ask a doctor</li> </ul> <p><b>Other information</b> ■ store at 20-25°C (68-77°F)</p> <p><b>Inactive ingredients</b> carnauba wax, corn starch, croscarmellose sodium, hydroxypropylcellulose, polyethylene glycol, polydioxanone, pregelatinized starch, sodium starch glycolate, stearic acid. *may contain one or more of these ingredients</p> <p><b>Questions or comments?</b> 1-800-719-9260</p>
<b>Warnings</b> Liver warning: This product contains acetaminophen. Severe liver damage may occur if you take: more than 4,000 mg of acetaminophen in 24 hours with other drugs containing acetaminophen 3 or more alcoholic drinks every day while using this product Allergy alert: Acetaminophen may cause severe skin reactions. Symptoms may include: skin redness ■ hives ■ rash if a skin reaction occurs, stop use and seek medical help right away. Do not use: with any other drug containing acetaminophen (prescription or nonprescription). If you are not sure whether a drug contains acetaminophen, ask a doctor or pharmacist. if you have ever had an allergic reaction to this product or any of its ingredients. Ask a doctor before use if you have liver disease. Ask a doctor or pharmacist before use if you are taking the blood thinning drug warfarin.		

FSA Eligible

Kirkland Signature Extra Strength Acetaminophen 500 mg., 1,000 Caplets

Item 383241

★★★★★ 4.8 (4786) Write a review

Your Price **\$9.99**

Price Per EACH: \$0.01

Shipping & Handling Included\*

Features:

- Compare to Extra Strength Tylenol Active Ingredient
- Pain Reliever/Fever Reducer
- 2 Bottles, 500 Caplets Each
- FSA Eligible Item

Figure 57 shows the screenshot of the Landing Page of Product Detail Page of Kirkland Signature Extra Strength® 1000 count pack.



<b>Acetaminophen 500 mg</b>	Pain reliever/fever reducer
<b>Uses</b>	
<ul style="list-style-type: none"> <li>Temporarily relieves minor aches and pains due to: the common cold; headache; backache; minor pain of arthritis; toothache; muscular aches; premenstrual and menstrual cramps. Also temporarily reduces fever.</li> </ul>	
<b>Warnings</b>	
<p><b>Liver warning:</b> This product contains acetaminophen. Severe liver damage may occur if you take more than 4,000 mg of acetaminophen in 24 hours, with other drugs containing acetaminophen, 3 or more alcoholic drinks every day while using this product. <b>Allergy alert:</b> Acetaminophen may cause severe skin reactions. Symptoms may include: skin reddening, blisters, rash. If a skin reaction occurs, stop use and seek medical help right away. Do not use with any other drug containing acetaminophen (prescription or nonprescription). If you are not sure whether a drug contains acetaminophen, ask a doctor or pharmacist. If you have ever had an allergic reaction to this product or any of its ingredients, ask a doctor before use. If you have liver disease, ask a doctor or pharmacist before use. If you are taking the blood thinning drug warfarin, stop use and ask a doctor if pain gets worse or lasts more than 10 days, fever gets worse or lasts more than 3 days, new symptoms occur, redness or swelling is present. These could be signs of a serious condition. If pregnant or breast-feeding, ask a health professional before use. Keep out of reach of children. <b>Overdose warning:</b> In case of overdose, get medical help or contact a Poison Control Center right away (1-800-222-1222). Quick medical attention is critical for adults as well as for children even if you do not notice any signs or symptoms.</p>	
<b>Directions</b>	
<ul style="list-style-type: none"> <li>Do not take more than directed (see overdose warning).</li> </ul>	
<p><b>Adults and children 12 years and over:</b></p> <ul style="list-style-type: none"> <li>Take 2 caplets every 6 hours while symptoms last; do not take more than 6 caplets in 24 hours, unless directed by a doctor; do not use for more than 10 days unless directed by a doctor.</li> </ul>	
<p><b>Children under 12 years</b></p> <ul style="list-style-type: none"> <li>ask a doctor</li> </ul>	
<b>Other Information</b>	

Get feedback

Figure 58 shows the screenshot of Kirkland Signature Extra Strength® 1000 count pack on the 5th page scrolling down of Costco.com.

Fig 57, it is seen that the thumbnail images of the product in product detail page has the Drug Fact Label on the landing page as highlighted, the DFL was found on the 3<sup>rd</sup> position of image(s). By scrolling down to find the DFL in textual format as seen on Fig 58, under the view more column on the 5<sup>th</sup> page, all parts of the DFL were found and ease of reading of the DFL was found to be good. Only one count size was found to be sold on Costco.com. The requirement of Accessibility compliance for Costco.com was seen to have a success criterion of fulfilling 3/4 components such as Images, Links and Keyboard Navigation as per the study performed by Baymard Institute. Costco.com was not originally a part of their study which is cited, the methodology used in their study was followed and this rating has been provided. (<https://baymard.com/blog/accessibility-benchmark-launch#images>, 2021) .

## 8.5. Walgreens.com :

The screenshot displays the product detail page for Advil Dual Action Combination Ibuprofen and Acetaminophen For 8 Hours Of Pain Relief, 36.0ea. The page features a dark blue header with the Walgreens logo and a search bar. Below the header, the selected store is identified as 3425 E SAGINAW ST, Lansing, MI. The breadcrumb trail indicates the path: Home > Shop > Medicines & Treatments > Pain Relief & Management > Non-Aspirin.

The main product information includes the product name, a 36.0ea count, a 4.8 star rating (4806 reviews), and a price of \$7.99. A coupon for \$6.00 off 2 items is available. The page also displays a grid of thumbnail images, including drug fact labels, and a section for available coupons. The coupon expiration and terms section shows a count of 36 ea for \$7.99.

Figure 59 shows the screenshot of the Landing Page of Product Detail Page of Advil dual action® 36 count pack.

Fig 59, it is seen that the thumbnail images of the product in product detail page has the Drug Fact Label on the landing page as highlighted, the DFL was found on the 3<sup>rd</sup> position of image(s). By scrolling down to find the DFL in textual format as seen on Fig 60, on the 5<sup>th</sup> page, all parts of the DFL were found and ease of reading of the DFL was found to be poor. All the count sizes were found to have the DFL.

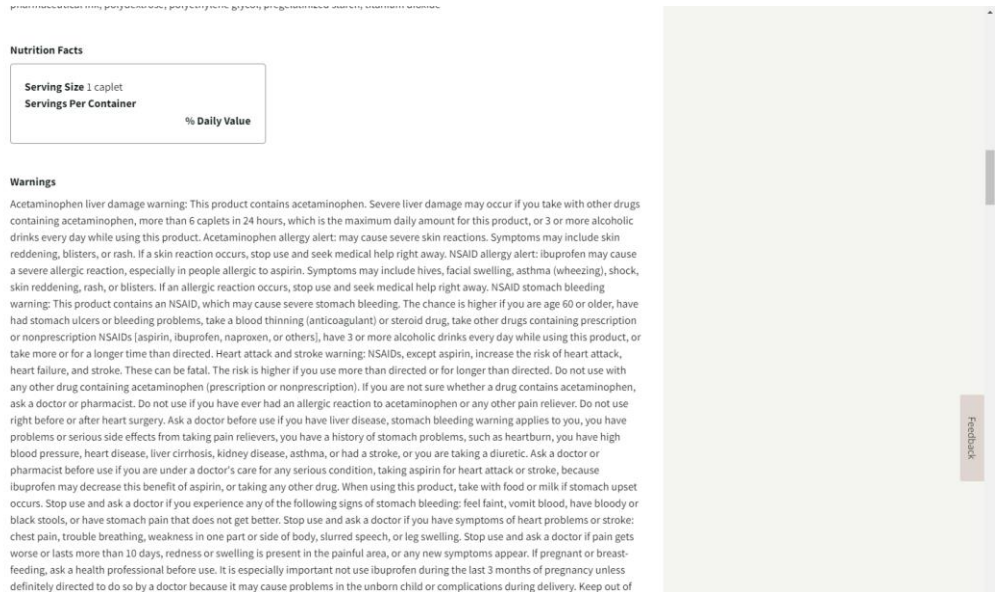


Figure 60 shows the screenshot of Advil dual action® 36 count pack on the 6th page scrolling down of Walgreens.com.

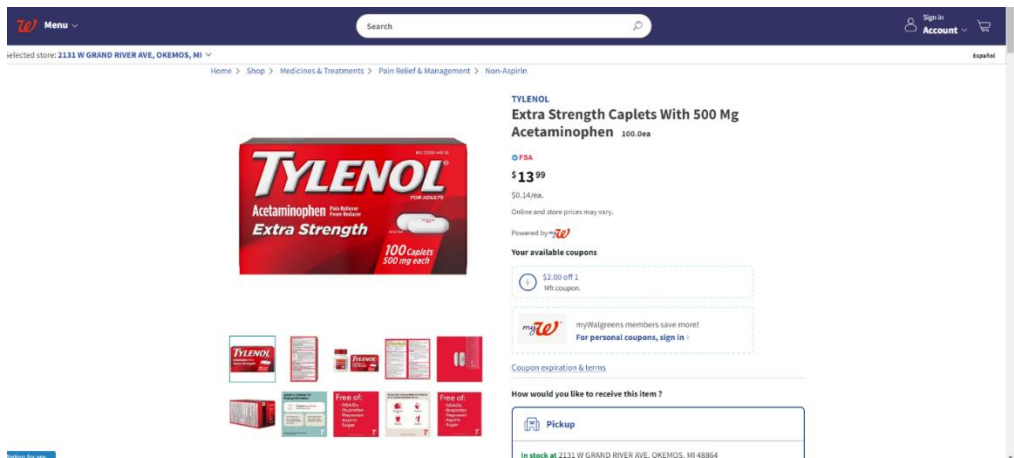


Figure 61 shows the screenshot of the Landing Page of Product Detail Page of Tylenol Extra Strength® 100 count pack.

Fig 61, it is seen that the thumbnail images of the product in product detail page has the Drug Fact Label on the landing page as highlighted, the DFL was found on the 4<sup>th</sup> position of image(s). By scrolling down to find the DFL in textual format as seen on Fig 62, on the 4<sup>th</sup> page,

all parts of the DFL were found and ease of reading of the DFL was found to be Good. All the count sizes were found to have the DFL.

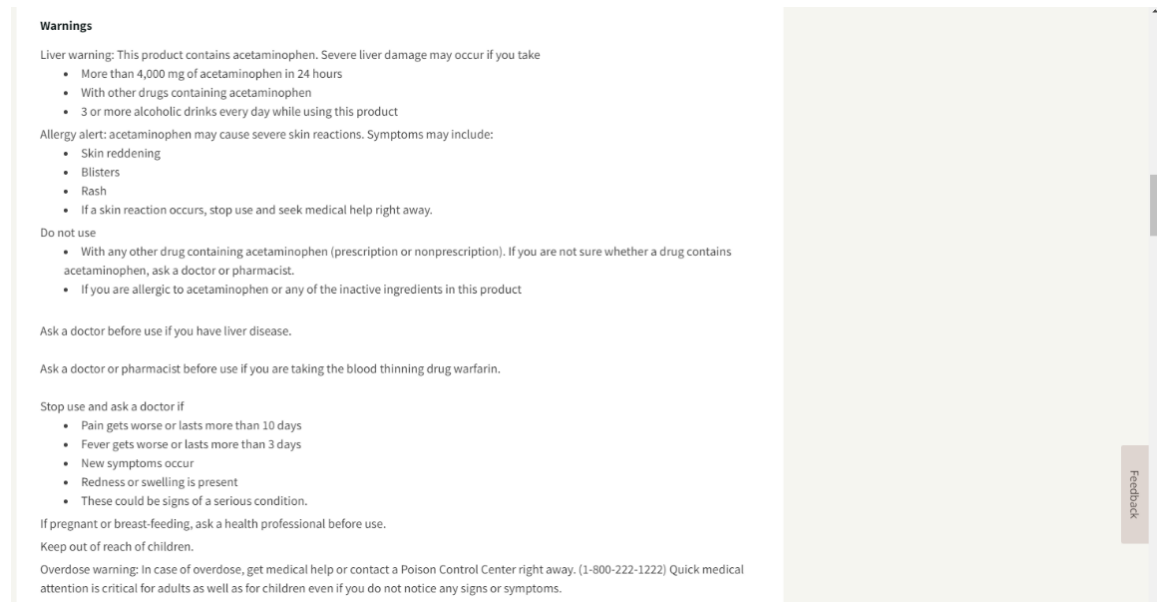


Figure 62 shows the screenshot of Tylenol Extra Strength® 100 count pack on the 6th page scrolling down of Walgreens.com.

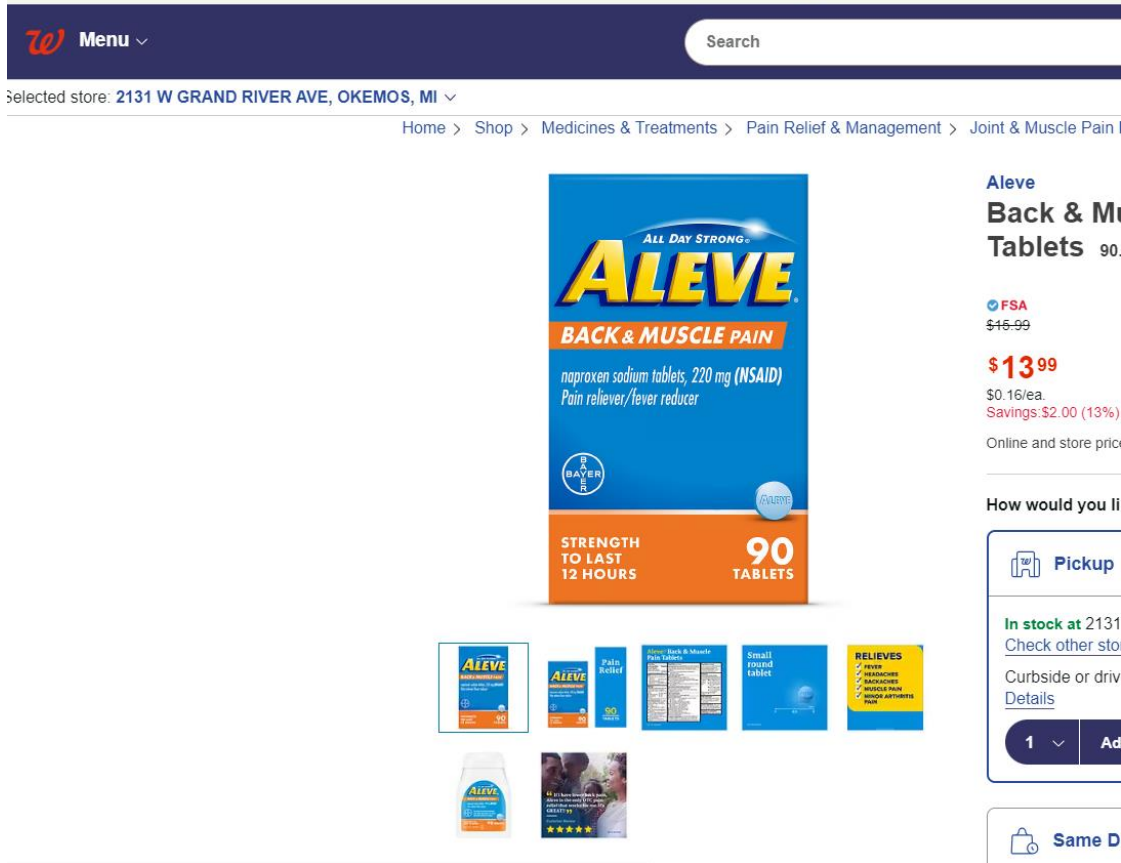


Figure 63 shows the screenshot of the Landing Page of Product Detail Page of Aleve Back and Muscle Pain® 90 count pack.

Fig 63, it is seen that the thumbnail images of the product in product detail page has the Drug Fact Label on the landing page as highlighted, the DFL was found on the 3<sup>rd</sup> position of image(s). By scrolling down to find the DFL in textual format was not found and ease of reading of the DFL was found to be Fair. All the count sizes were found to have the DFL.

Selected store: 3425 E SAGINAW ST, Lansing, MI

Home > Shop > Medicines & Treatments > Pain Relief & Management > Non-Aspirin



Walgreens  
Extra Strength  
Caplets  
★★★★  
FSA  
\$15.99  
\$0.07/ea  
Online an  
Powered  
Addition  
Buy 1, Ge  
How wo



In store  
Check  
Ready  
thru p  
1

Figure 64 shows the screenshot of the Landing Page of Product Detail Page of Walgreens Acetaminophen® 225 count pack.

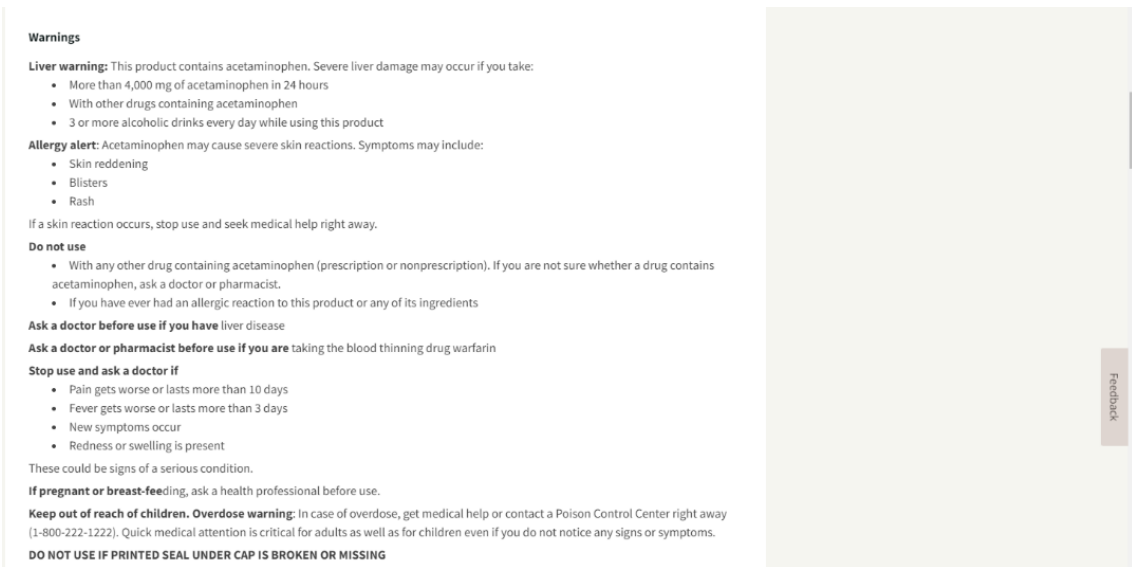


Figure 65 shows the screenshot of Walgreens Acetaminophen® 225 count pack on the 4th page scrolling down of Walgreens.com.

Fig 64, it is seen that the thumbnail images of the product in product detail page has the Drug Fact Label on the landing page as highlighted, the DFL was found on the 3<sup>rd</sup> position of image(s). By scrolling down to find the DFL in textual format as seen on Fig 66, on the 4<sup>th</sup> page, all parts of the DFL were found and ease of reading of the DFL was found to be Good. All the count sizes were found to have the DFL. The requirement of Accessibility compliance for Walgreens.com was seen to have a success criterion of fulfilling 1/4 components which was only Form fields as per the study performed by Baymard Institute. (<https://baymard.com/blog/accessibility-benchmark-launch#images>, 2021).

## 8.6. CVS.com :

The screenshot shows the CVS.com website interface. At the top, there is a navigation bar with the CVS logo, menu items for Prescriptions, Health, Shop, and Savings & Memberships, and a search bar. Below the navigation bar, a blue banner displays the store address "240 MAC AVE., EAST" and the closing time "Closes 11PM". A promotional message states: "Now! Get your order in as little as one hour with **FREE CVS Pickup** or **enjoy FREE shipping** on your order." The breadcrumb trail reads: "Home > Shop > Health & Medicine > Pain & Fever > Pain Relievers".

The main product title is "Advil Dual Action Acetaminophen and Ibuprofen Caplets". Below the title is a 5-star rating with 4568 reviews. To the left of the main product image is a vertical gallery of four smaller images: the top one shows the product box, the second shows a box of caplets, the third shows a single caplet, and the fourth shows the product box again.

The main product image is a large, detailed view of the Advil Dual Action box. The box is blue and red with the text "CONTAINS 2 MEDICINES" in yellow, "Acetaminophen + Ibuprofen" in white, and "Advil DUAL ACTION" in large yellow and white letters.

Figure 66 shows the screenshot of the Landing Page of Product Detail Page of Advil Dual action® 36 count pack.



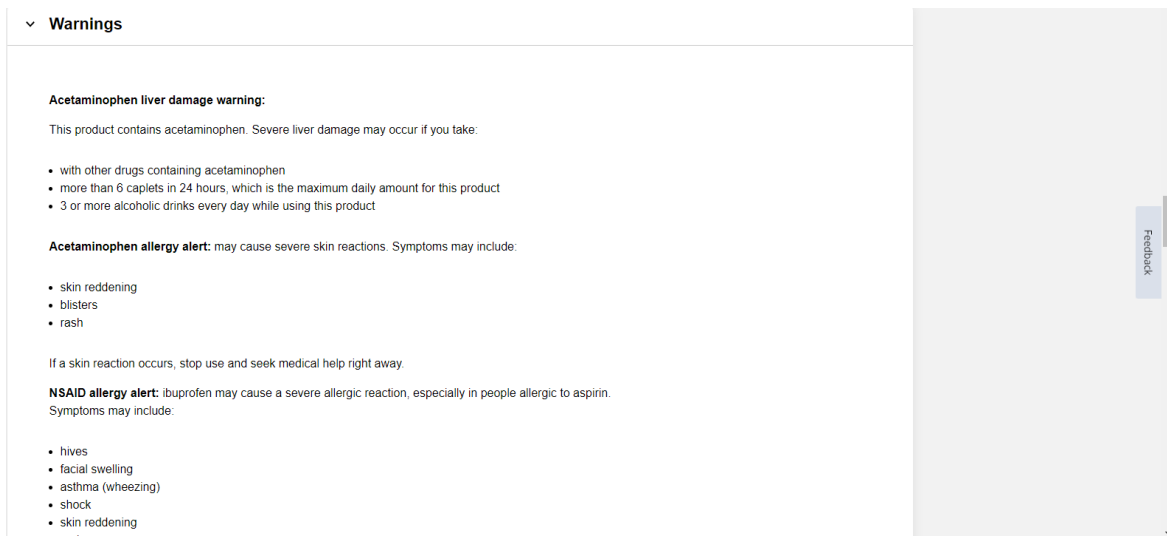


Figure 67 shows the screenshot of Advil Dual action® 36 count pack on the 9th page scrolling down of CVS.com.

Fig 66 it is seen that the thumbnail images of the product in product detail page has the Drug Fact Label on the landing page as highlighted, the DFL was found on the 2<sup>nd</sup> position of image(s). By scrolling down to find the DFL in textual format as seen on Fig 67, on the 9<sup>th</sup> page, all parts of the DFL were found and ease of reading of the DFL was found to be Fair. All the count sizes were found to have the DFL.

Now! Get your order in as little as one hour with **FREE CVS Pickup** or enjoy **FREE shipping on your on**

Home > Shop > Health & Medicine > Pain & Fever > Pain Relievers

# Tylenol Extra Strength Acetaminophen 500 MG Caplets

★★★★★ 5.0 (6956)



Cour

Stoc  
Ir  
Chec

How to

Pick  
With

Pickup

Limit 7

Quant

1

Figure 68 shows the screenshot of Advil Dual action® 36 count pack on the 9th page scrolling down of CVS.com.

# Tylenol Extra Strength Acetaminophen 500 MG Caplets

★★★★★ 5.0 (6956)



Figure 69 shows the screenshot of the scrolled down page to find the DFL of Product thumbnail images of Tylenol Extra Strength® 24 count pack.

Fig 68, it is seen that the thumbnail images of the product in product detail page has the Drug Fact Label on the landing page as highlighted, the DFL was found on the 6<sup>th</sup> position of image(s) when the thumbnail images was scrolled down. By scrolling down to find the DFL in textual format as seen on Fig 69 on the 9<sup>th</sup> page, all parts of the DFL were found and ease of reading of the DFL was found to be Good. All the count sizes were found to have the DFL.



Tylenol Extra Strength Acetaminophen 500 MG Caplets

★★★★★ 5.0 (7253)

\$12.99

Add for pickup

▼ Warnings

**Liver warning:** This product contains acetaminophen. Severe liver damage may occur if you take

- More than 4,000 mg of acetaminophen in 24 hours
- With other drugs containing acetaminophen
- 3 or more alcoholic drinks every day while using this product

**Allergy alert:** acetaminophen may cause severe skin reactions. Symptoms may include:

- Skin reddening
- Blisters
- Rash

If a skin reaction occurs, stop use and seek medical help right away.

**Do not use**

- With any other drug containing acetaminophen (prescription or nonprescription). If you are not sure whether a drug contains acetaminophen, ask a doctor or pharmacist.
- If you are allergic to acetaminophen or any of the inactive ingredients in this product

**Ask a doctor before use if you have** liver disease.

**Ask a doctor or pharmacist before use if you are** taking the blood thinning drug warfarin.

**Stop use and ask a doctor if**

- Pain gets worse or lasts more than 10 days
- Fever gets worse or lasts more than 3 days
- New symptoms occur
- Redness or swelling is present

These could be signs of a serious condition.

Feedback

Figure 70 shows the screenshot of Tylenol Extra Strength® 24 count pack on the 9th page scrolling down of CVS.com.

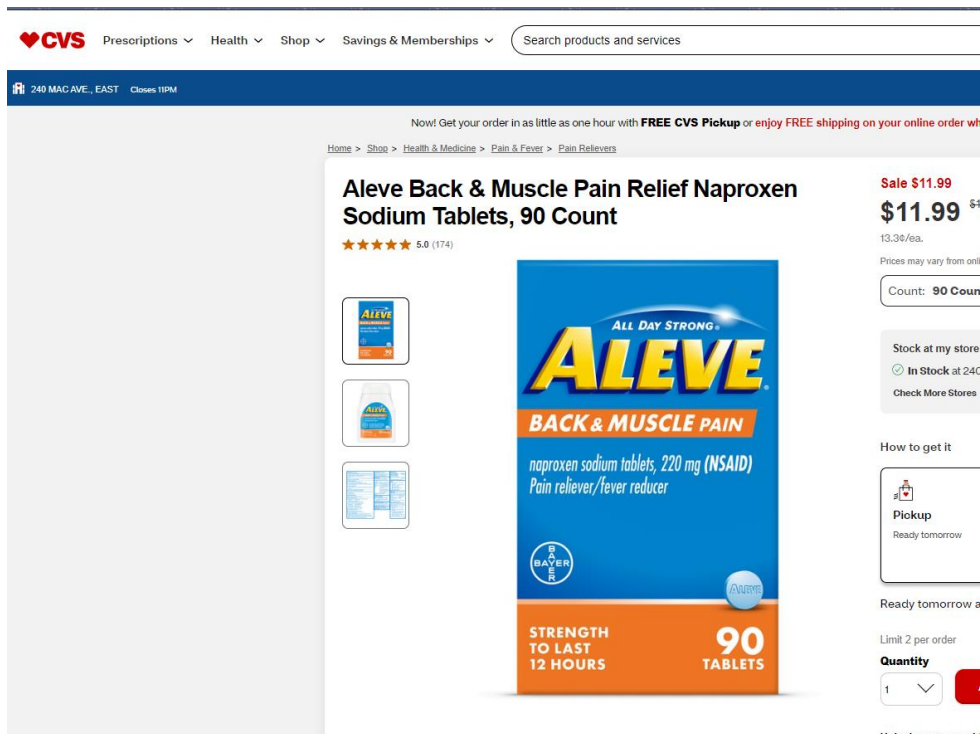


Figure 71 shows the screenshot of the Landing Page of Product Detail Page of Aleve Back & Muscle Pain® 90 count pack.

Fig 71, it is seen that the thumbnail images of the product in product detail page has the Drug Fact Label on the product detail page as highlighted, the DFL was found on the 3<sup>rd</sup> position of image(s). By scrolling down to find the DFL in textual format as seen on Fig 72 on the 9<sup>th</sup> page, all parts of the DFL were found and ease of reading of the DFL was found to be Good. All the count sizes were found to have the DFL.

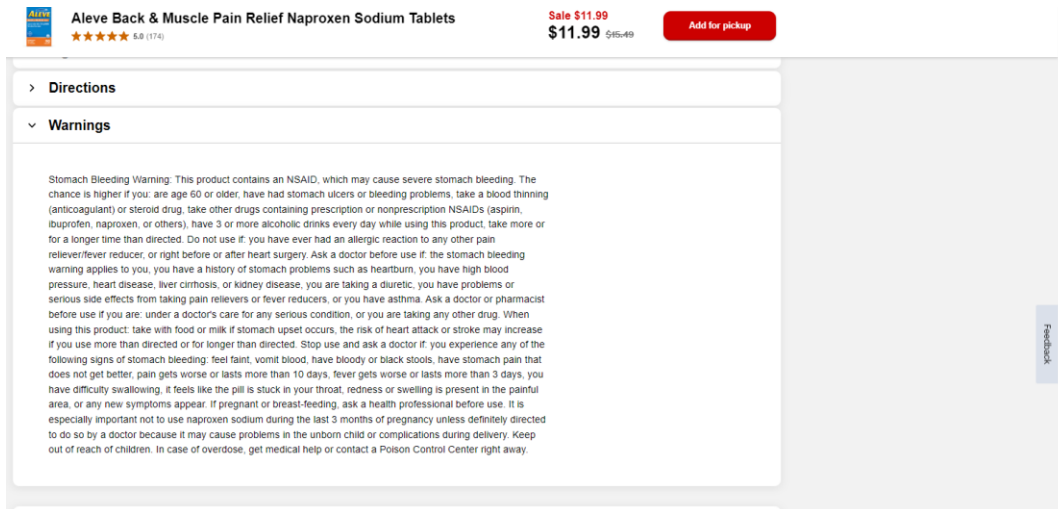


Figure 72 shows the screenshot of Aleve Back & Muscle Pain® 90 count pack on the 9th page scrolling down of CVS.com.

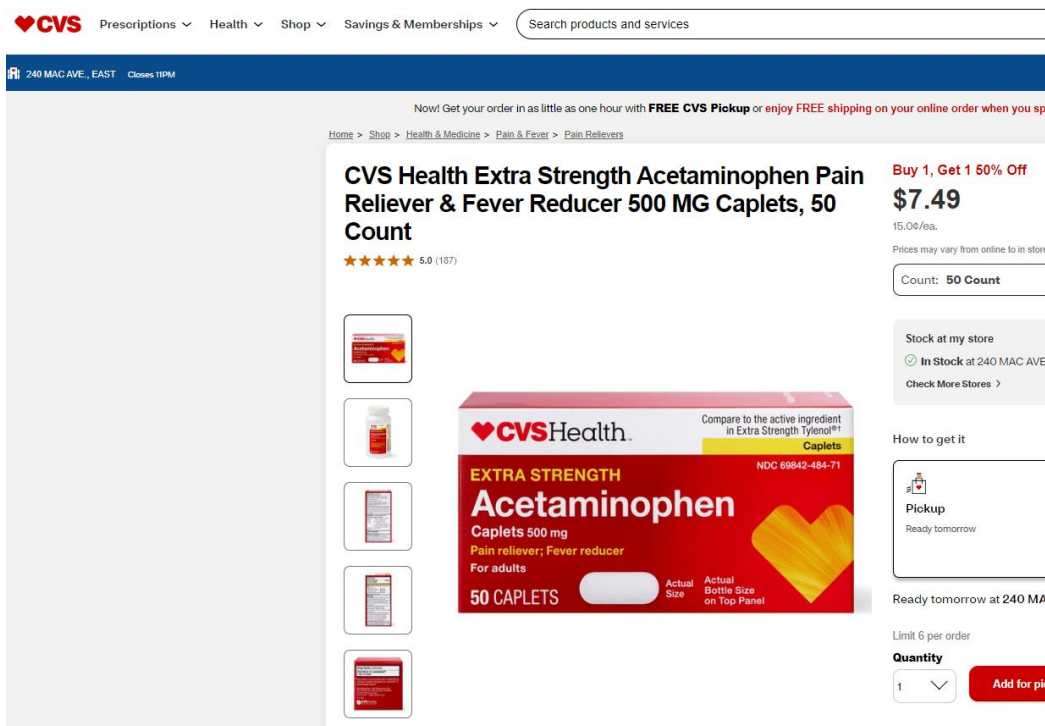


Figure 73 shows the screenshot of the Landing Page of Product Detail Page of Aleve Back & Muscle Pain® 90 count pack.

▼ Warnings

Warnings: Liver warning: This product contains acetaminophen. Severe liver damage may occur if you take more than 4,000 mg of acetaminophen in 24 hours; with other drugs containing acetaminophen; 3 or more alcoholic drinks every day while using this product. Allergy alert: Acetaminophen may cause severe skin reactions. Symptoms may include: skin reddening; blisters; rash. If a skin reaction occurs, stop use and seek medical help right away. Do not use with any other drug containing acetaminophen (prescription or nonprescription). If you are not sure whether a drug contains acetaminophen, ask a doctor or pharmacist; if you have ever had an allergic reaction to this product or any of its ingredients. Ask a doctor before use if you have liver disease. Ask a doctor or pharmacist before use if you are taking the blood thinning drug warfarin. Stop use and ask a doctor if: pain gets worse or lasts more than 10 days; fever gets worse or lasts more than 3 days; new symptoms occur; redness or swelling is present. These could be signs of a serious condition. If pregnant or breast-feeding, ask a health professional before use. Keep out of reach of children. Overdose warning: In case of overdose, get medical help or contact a Poison Control Center right away (1-800-222-1222). Quick medical attention is critical for adults as well as for children even if you do not notice any signs or symptoms.

From CVS Health

Feedback

Figure 74 shows the screenshot of Aleve Back & Muscle Pain® 90 count pack on the 9th page scrolling down of CVS.com.

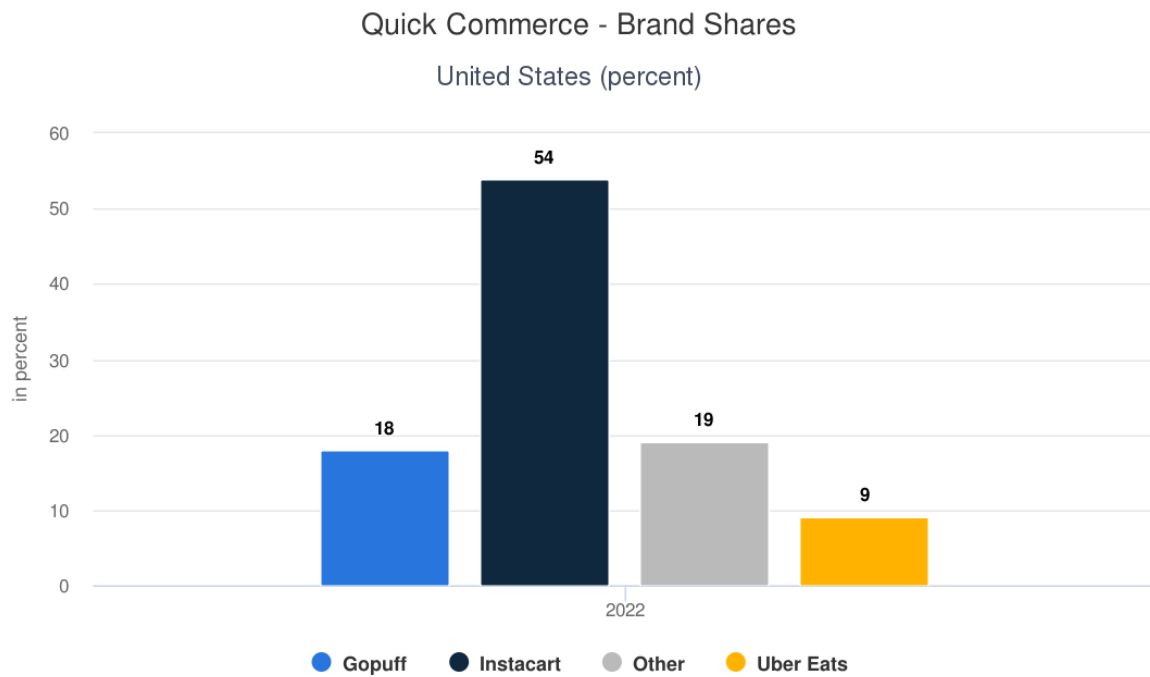
Fig 73, it is seen that the thumbnail images of the product in product detail page has the Drug Fact Label on the landing page as highlighted, the DFL was found on the 3<sup>rd</sup> position of image(s). By scrolling down to find the DFL in textual format as seen on Fig 74, on the 9<sup>th</sup> page, all parts of the DFL were found and ease of reading of the DFL was found to be Fair. All the count sizes were found to have the DFL. The requirement of Accessibility compliance for CVS.com was seen to be fulfilling 4/4 components such as Images, Links, Form-fields, and Keyboard Navigation as per the study performed by Baymard Institute. CVS.com was not originally a part of their study which is cited, the methodology used in their study was followed and this rating has been provided. (<https://baymard.com/blog/accessibility-benchmark-launch#images>, 2021).

### **8.7. Q-Commerce:**

There are a lot of delivery service(s) which do food, package deliveries instantly on the push of a button from their application(s) or website(s) which quickly get delivered to the consumer in the next few hours. This is called Quick Commerce or Q-Commerce. As the name suggests, quick commerce or q-commerce is all about speed and convenience. The term refers to e-commerce businesses that deliver goods within a couple of hours or even minutes, as in the case of some fast grocers. (<https://ohi.com/blog/what-is-quick-commerce-and-key-considerations/#what-is-quick-commerce>, n.d.) .

There are companies like Instacart, DoorDash, UberEats, GrubHub, GoPuff who all do these kind of delivery. Instacart is one of the biggest companies in terms of the market share occupied as shown in figure 75. (Quick Commerce - United States. (n.d.). Retrieved September 15, 2023, from <https://www-statista-com.proxy2.cl.msu.edu/outlook/dmo/online-food-delivery/grocery-delivery/quick-commerce/united-states>, n.d.).





Source: Statista Market Insights

statista

Figure 75 shows the chart of the Quick Commerce Brand Market Share as of 2022. Reprinted with written permission from Statista.(see citation).

A comparison of E-Commerce websites and Online Stores in Pharmacy Segment to Instacart was done in the study. The quality of content on websites like Walmart.com, Target.com, Costco.com, Walgreens.com and CVS.com which was mentioned earlier in this study was compared to how it looks on Instacart.com is discussed below. Amazon.com was not considered in this study because of its major exclusive online only presence and it being not available on Instacart’s platform since they have a designated portal called Amazon Fresh exclusively and it was not considered.

### 8.7.1. Instacart – Walmart:

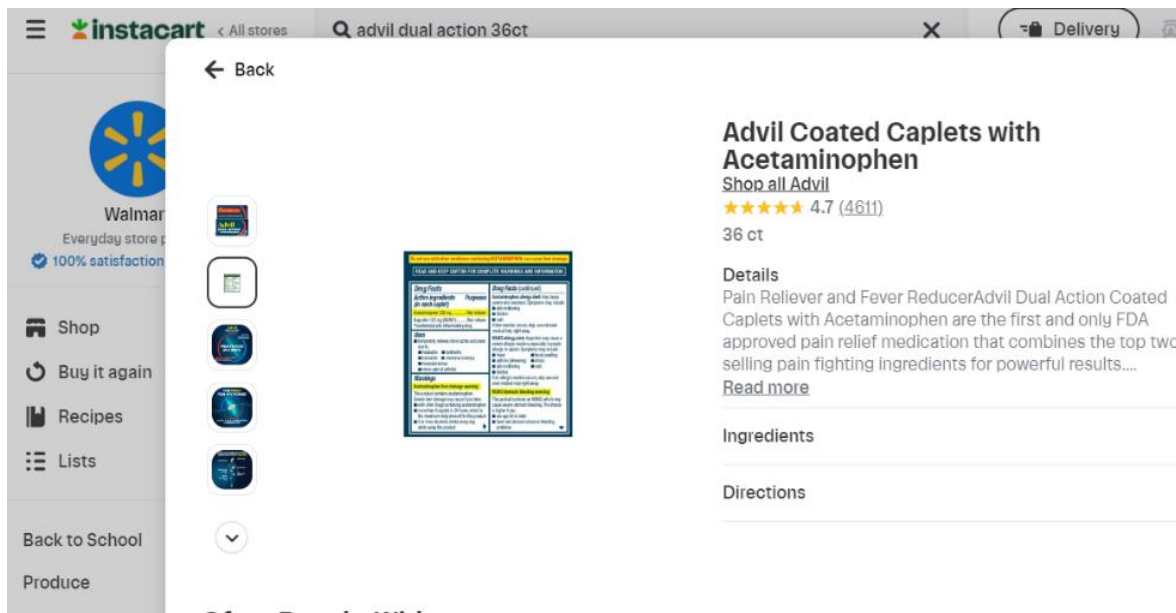


Figure 76 shows the screenshot of the Product detail Page of Product Detail Page of Advil Dual Action® 36 count pack on Walmart in Instacart.com.

In Fig 76, it is seen that the thumbnail images of the product in product detail page has the Drug Fact Label on the product detail page as highlighted, the DFL was found on the 2<sup>nd</sup> position of image(s). By scrolling down to find the DFL in textual format as seen on Fig 77, on the 15<sup>th</sup> page, all parts of the DFL were not found and ease of reading of the DFL was found to be Poor. All the count sizes were found to have the DFL.

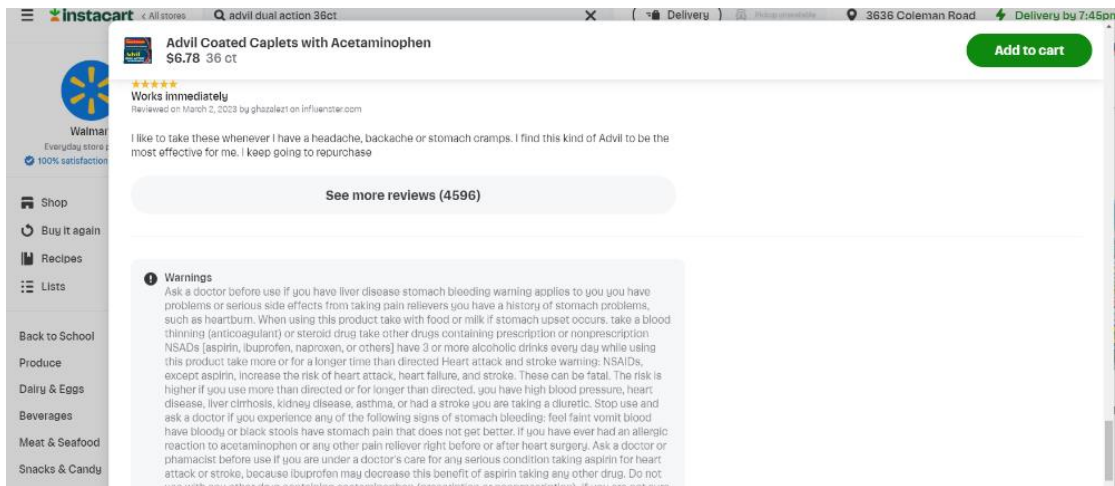


Figure 77 shows the screenshot of Warnings of Advil Dual Action® 36 count pack on the 15th page scrolling down on Walmart in Instacart.com.

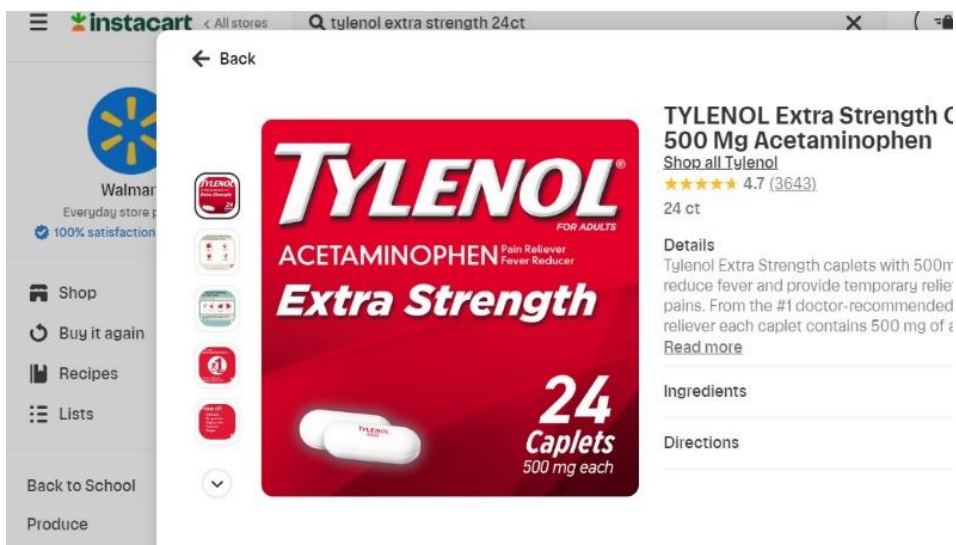


Figure 78 shows the screenshot of the Landing Page of Product Detail Page of Tylenol Extra Strength® 24 count pack of Walmart in Instacart.com.

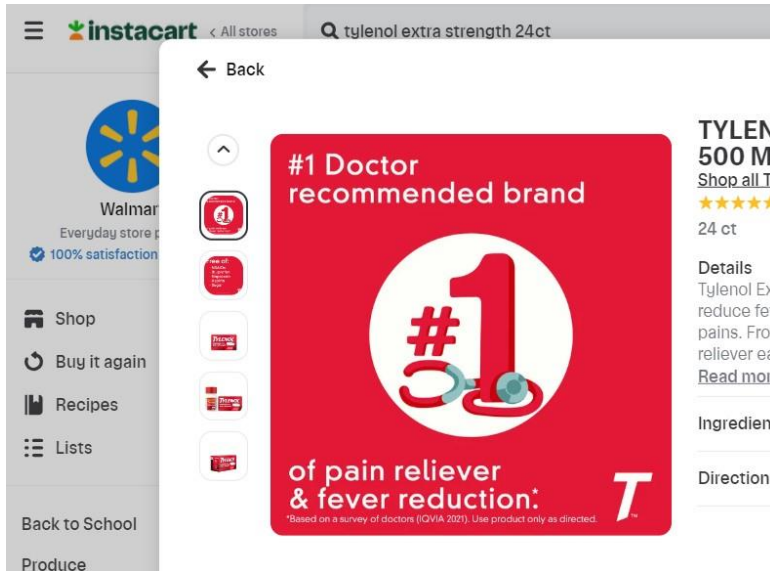


Figure 79 shows the screenshot of the thumbnail images scrolled down of Product Detail Page of Tylenol Extra Strength® 24 count pack of Walmart in Instacart.com.

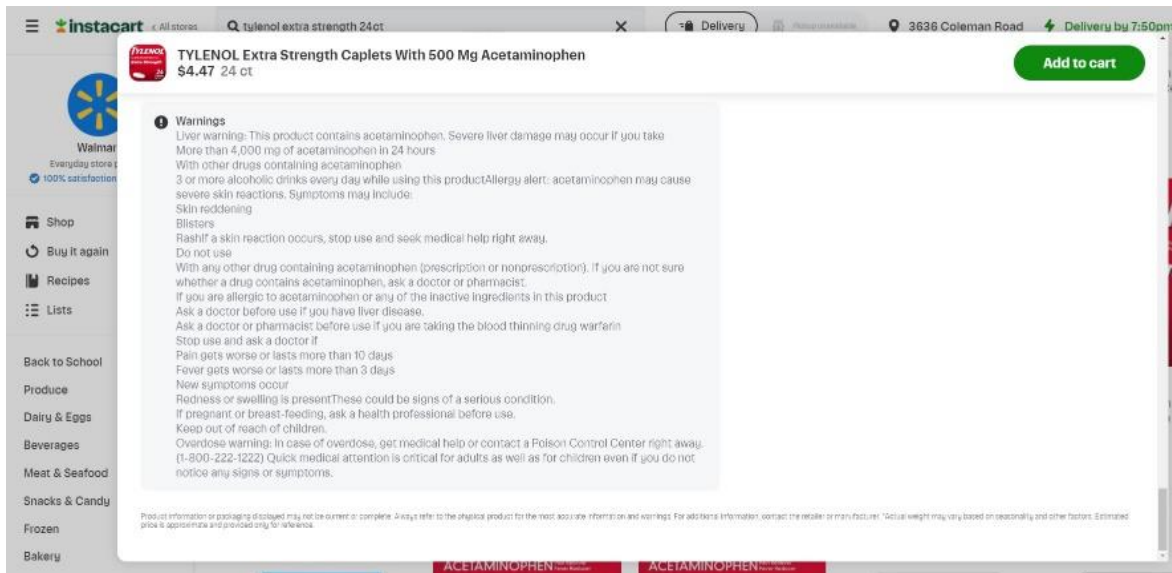


Figure 80 shows the screenshot of Warnings of Tylenol Extra Strength® 24 count pack.

In Fig 78, it is seen that the thumbnail images of the product in product detail page doesn't have the Drug Fact Label on the product detail page as highlighted, the DFL wasn't found after scrolling down in the thumbnail image(s) section as seen on Fig 79. By scrolling down to find

the DFL in textual format as seen on Fig 80, on the 7<sup>th</sup> page, all parts of the DFL were not found and ease of reading of the DFL was found to be Poor. None of the count sizes were found to have the DFL.

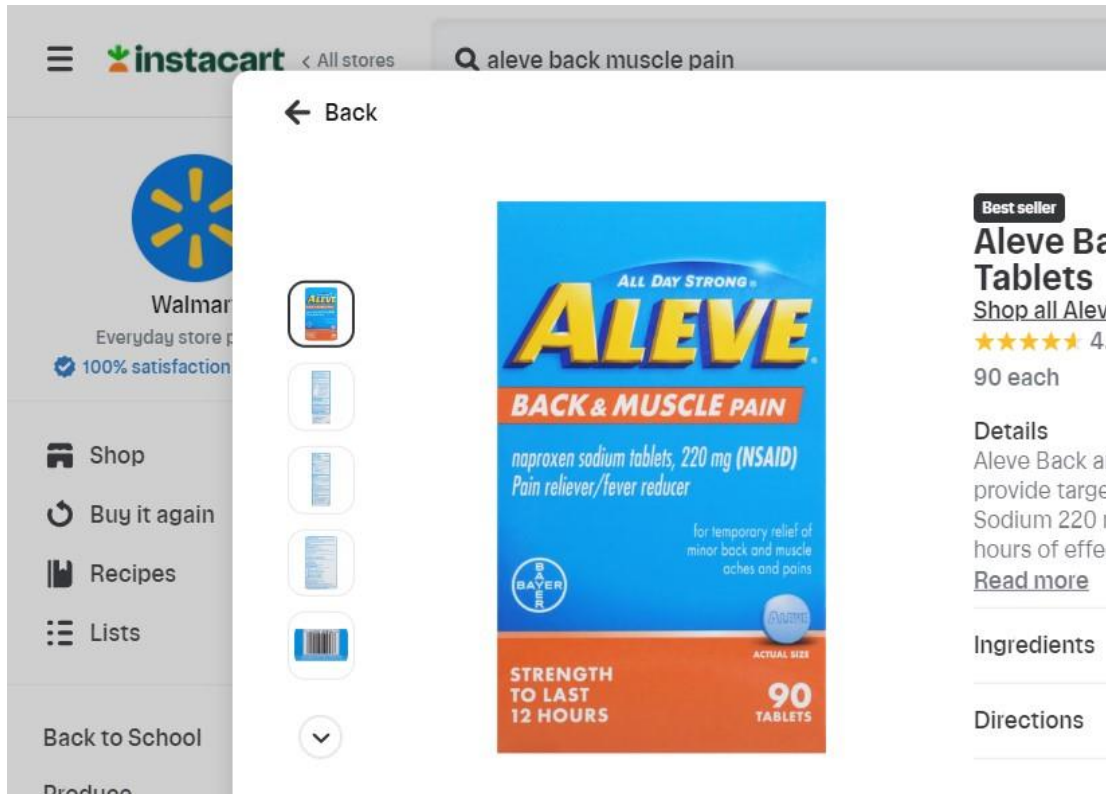


Figure 81 shows the screenshot of the Landing Page of Product Detail Page of Aleve Back & Muscle Pain® 90 count pack of Walmart on Instacart.com.

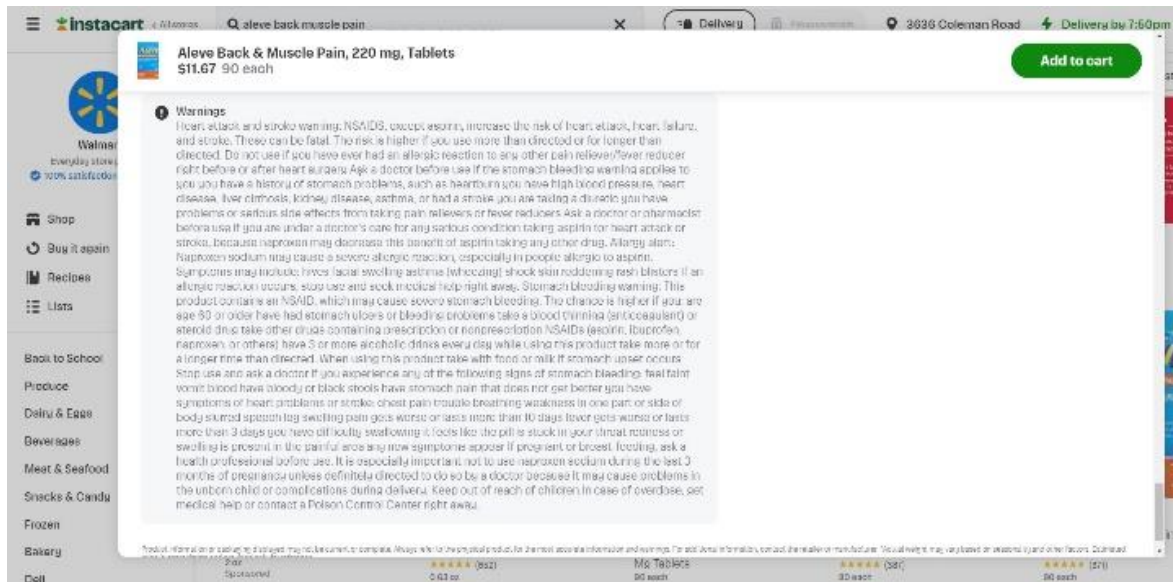


Figure 82 shows the screenshot of Warnings of Aleve Back & Muscle Pain® 90 count pack.

In Fig 81, it is seen that the thumbnail images of the product in product detail page have the Drug Fact Label on the product detail page as highlighted, the DFL was found on the 2<sup>nd</sup> position. By scrolling down to find the DFL in textual format as seen on Fig 82, on the 11<sup>th</sup> page, all parts of the DFL were found and ease of reading of the DFL was found to be Fair. None of the count sizes were found to have the DFL.

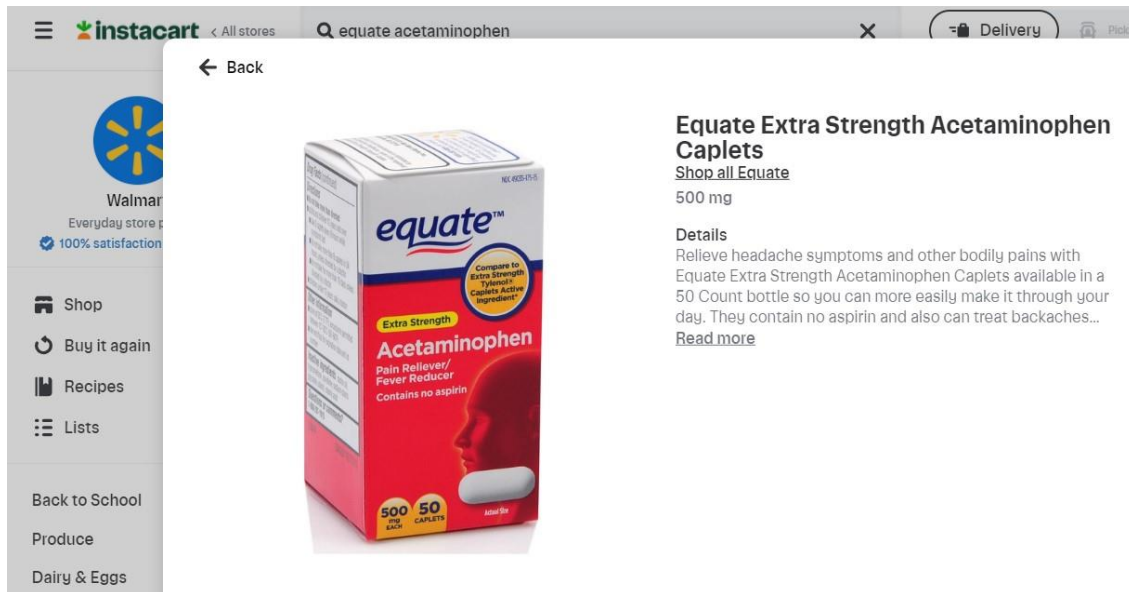


Figure 83 shows the screenshot of the Landing Page of Product Detail Page of Equate Acetaminophen® 50 count pack of Walmart on Instacart.com.

In Fig 83, it is seen that the thumbnail images of the product in product detail page doesn't have the Drug Fact Label on the product detail page and no supporting thumbnail images were found. By scrolling down to find the DFL in textual format, it was not found and none of the other sizes had the DFL.



### 8.7.2. Instacart- Target:

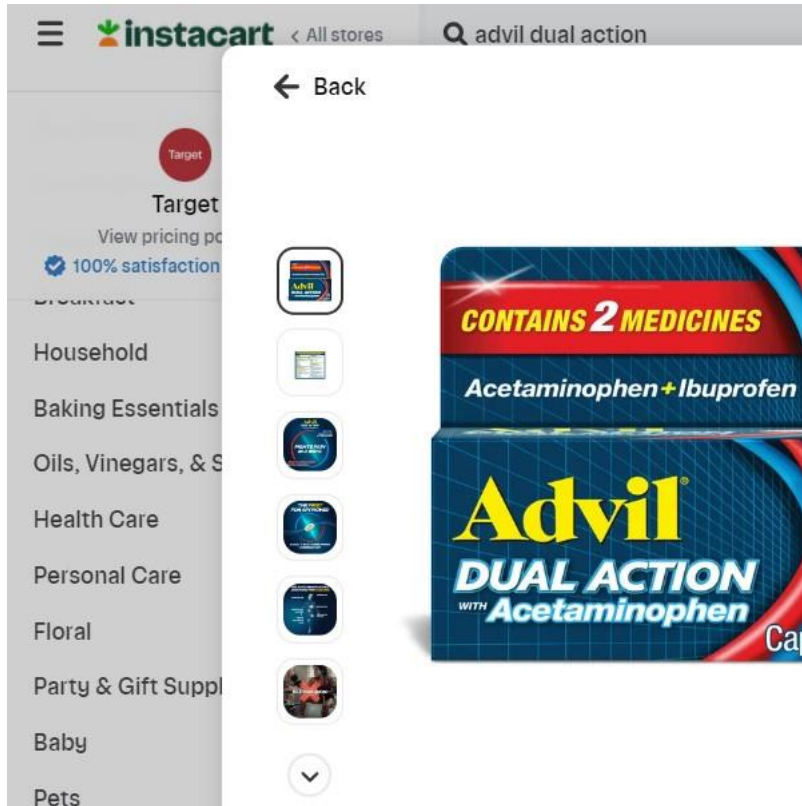


Figure 84 shows the screenshot of the Landing Page of Product Detail Page of Advil Dual Action® 36 count pack of Target on Instacart.com.





Figure 85 shows the screenshot of Warnings of Advil Dual Action® 36 count pack.

In Fig 84, it is seen that the thumbnail images of the product in product detail page have the Drug Fact Label on the product detailed page as highlighted, the DFL was found on the 2<sup>nd</sup> position.

By scrolling down to find the DFL in textual format as seen on Fig 85, on the 14<sup>th</sup> page, all parts of the DFL were found and ease of reading of the DFL was found to be Fair. All the count sizes were found to have the DFL.



Figure 86 shows the screenshot of the Landing Page of Product Detail Page of Tylenol Extra® 24 count pack of Target on Instacart.com.

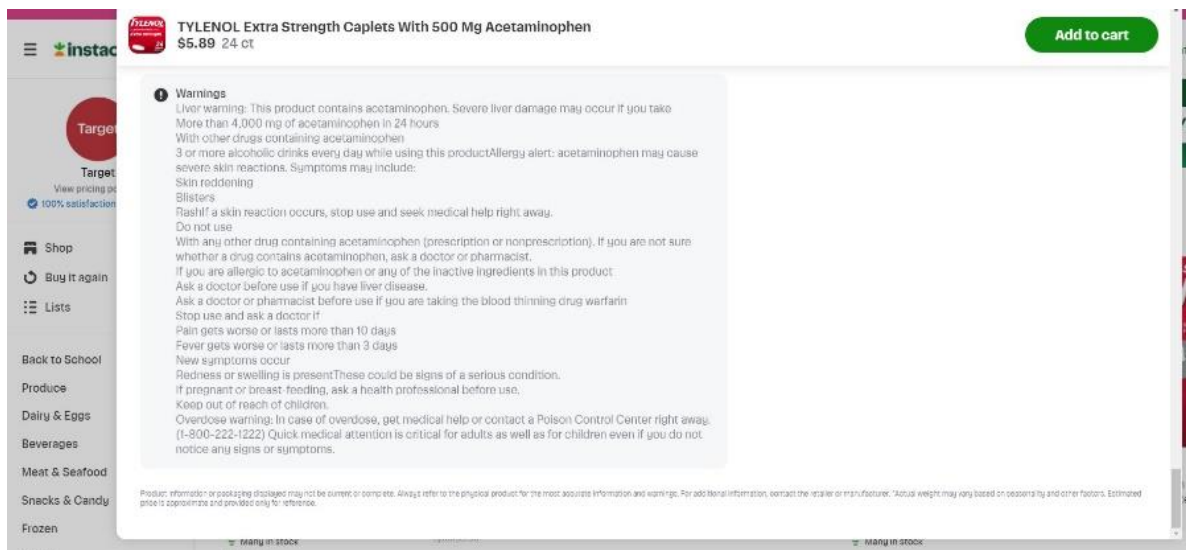


Figure 87 shows the screenshot of Warnings of Tylenol Extra® 24 count pack.

In Fig 86, it is seen that the thumbnail images of the product in product detail page doesn't have the Drug Fact Label on the product detail page and the DFL wasn't found by scrolling down all the way down in the thumbnail images section. By scrolling down to find the DFL in textual

format, it was found that all parts of the DFL was present on the 15<sup>th</sup> page and none of the count sizes had the DFL.

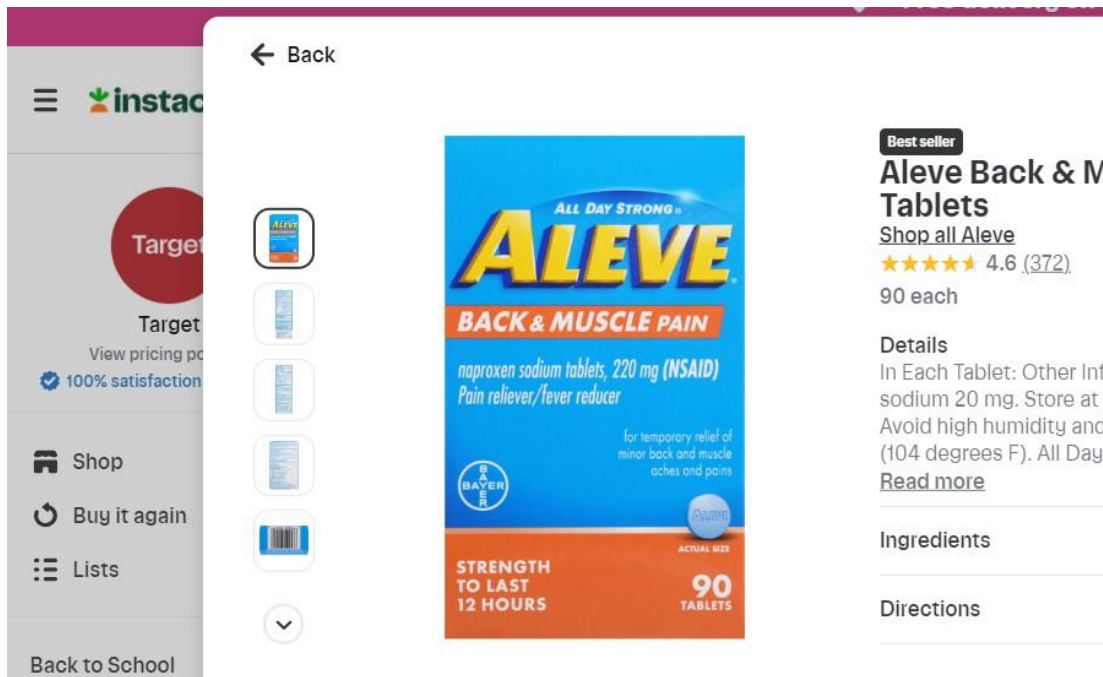


Figure 88 shows the screenshot of the Landing Page of Product Detail Page of Aleve Back & Muscle Pain ® 90 count pack of Target on Instacart.com.

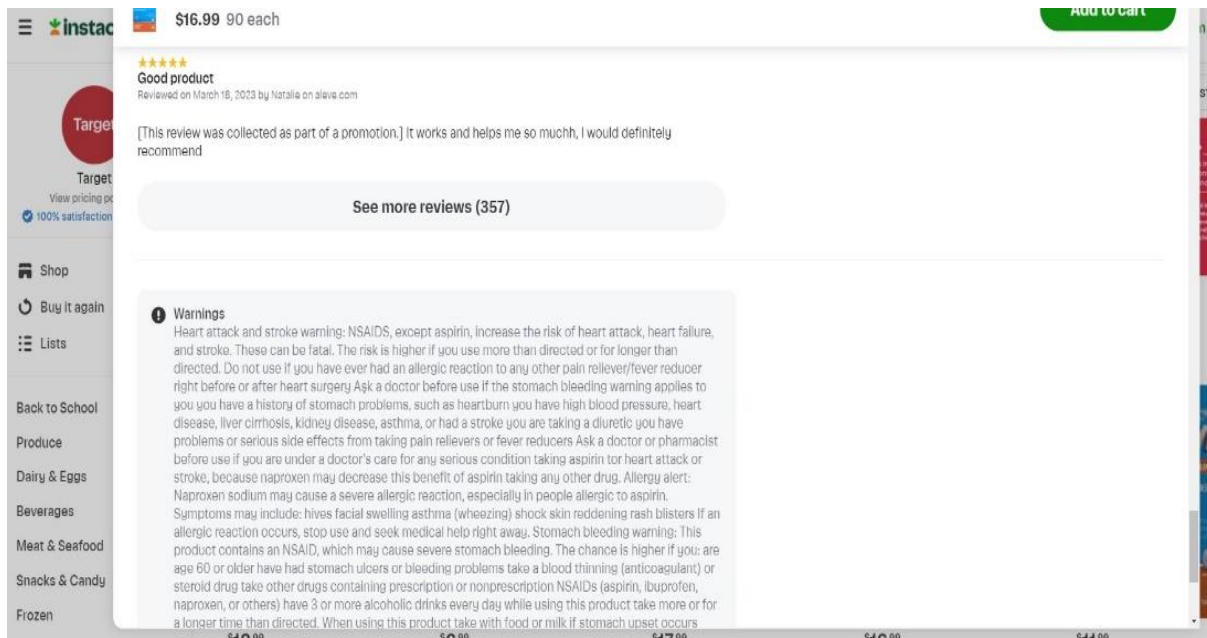


Figure 89 shows the screenshot of Warnings of Aleve Back & Muscle Pain ® 90 count pack on the 16th page scrolling down Target on Instacart.com.

In Fig 88, it is seen that the thumbnail images of the product in product detail page has the Drug Fact Label on the product detail page as highlighted, the DFL was found on the 2<sup>nd</sup> position. By scrolling down to find the DFL in textual format as seen on Fig 89, on the 15<sup>th</sup> page, all parts of the DFL were found and ease of reading of the DFL was found to be Good. All the count sizes were found to have the DFL.



Figure 90 shows the screenshot of the Landing Page of Product Detail Page of Up & Up Acetaminophen ® 100 count pack of Target on Instacart.com.

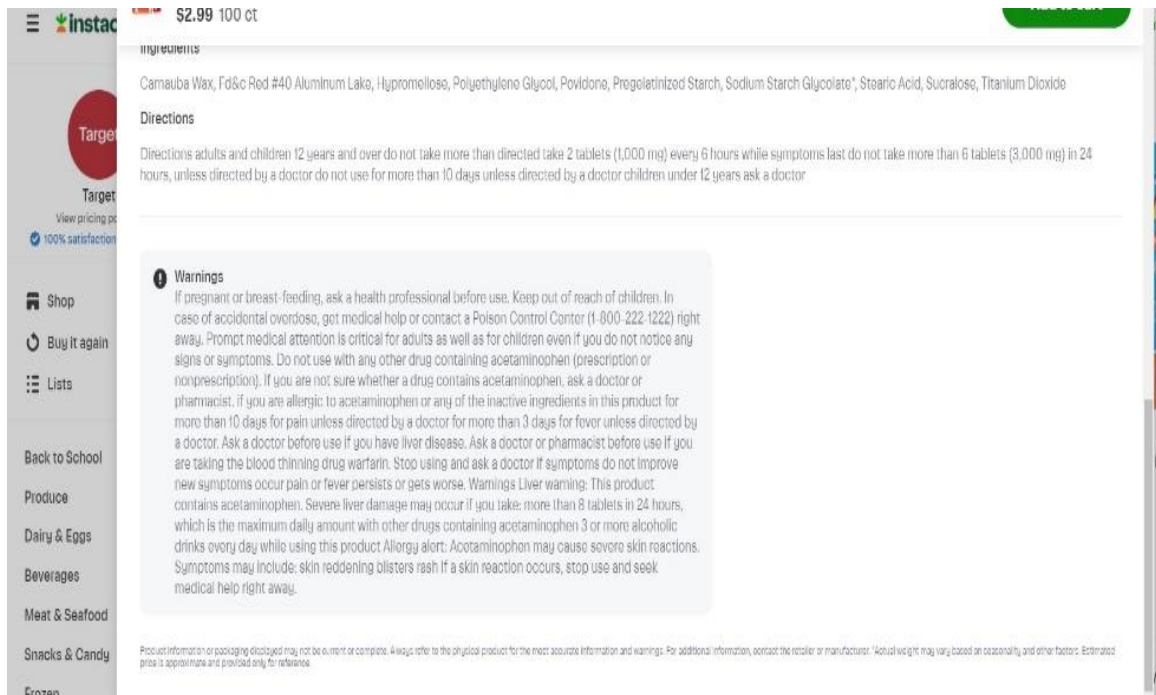


Figure 91 shows the screenshot of Warnings of Up & Up Acetaminophen ® 100 count pack on the 6th page of target on instacart.com.

In Fig 90, it is seen that the thumbnail images of the product in product detail page doesn't have the Drug Fact Label on the product detailed page and no supporting thumbnail images were found. By scrolling down to find the DFL in textual format as seen on Fig 91, it was found on the 6<sup>th</sup> page and all parts of the DFL were present but none of the other sizes had the DFL as well.

### 8.7.3. Instacart-Costco:



Figure 92 shows the screenshot of the Landing Page of Product Detail Page of Advil ® 360 count pack of Costco on Instacart.com.

In Fig 92, it is seen that the thumbnail images of the product in product detail page doesn't have the Drug Fact Label on the landing page and no supporting thumbnail images were found. By scrolling down to find the DFL in textual format, Costco sold only one size of this product variant.



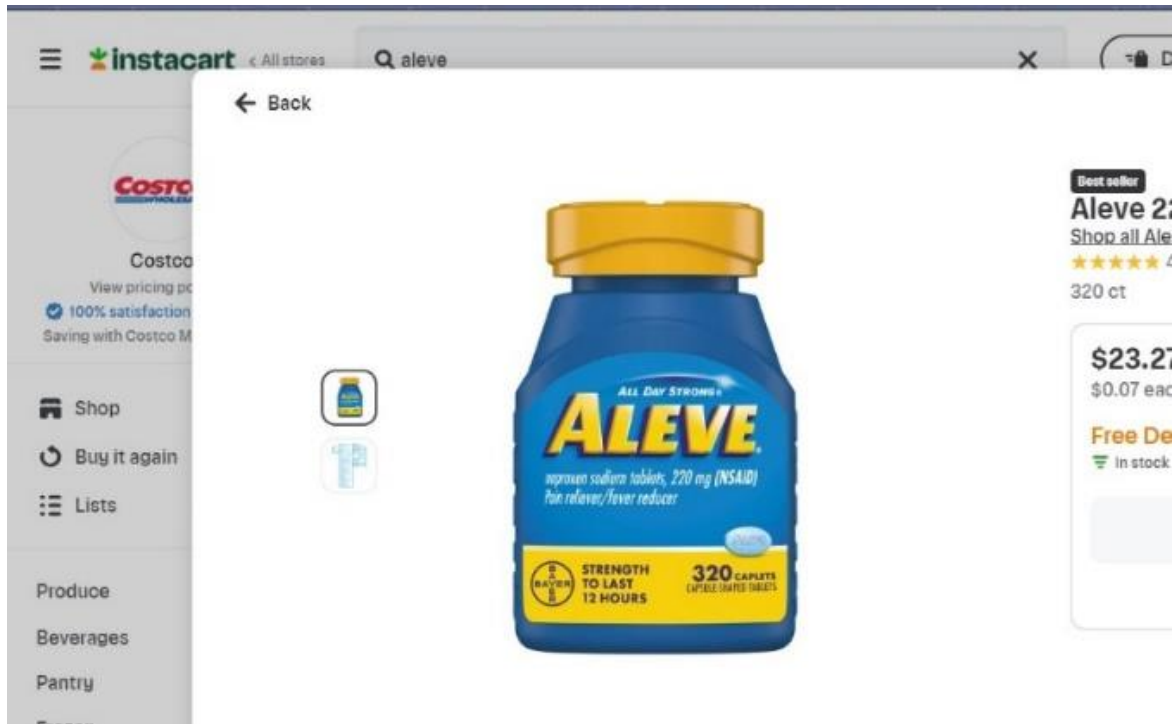


Figure 93 shows the screenshot of the Landing Page of Product Detail Page of Aleve ® 320 count pack of Costco on Instacart.com.

In Fig 93, it is seen that the thumbnail images of the product in product detail page has the Drug Fact Label on the product detailed page on the 2<sup>nd</sup> position of the supporting thumbnail images as highlighted. By scrolling down to find the DFL in textual format, Ease of reading graphical DFL was found to be poor . Costco sold only one size of this product variant.



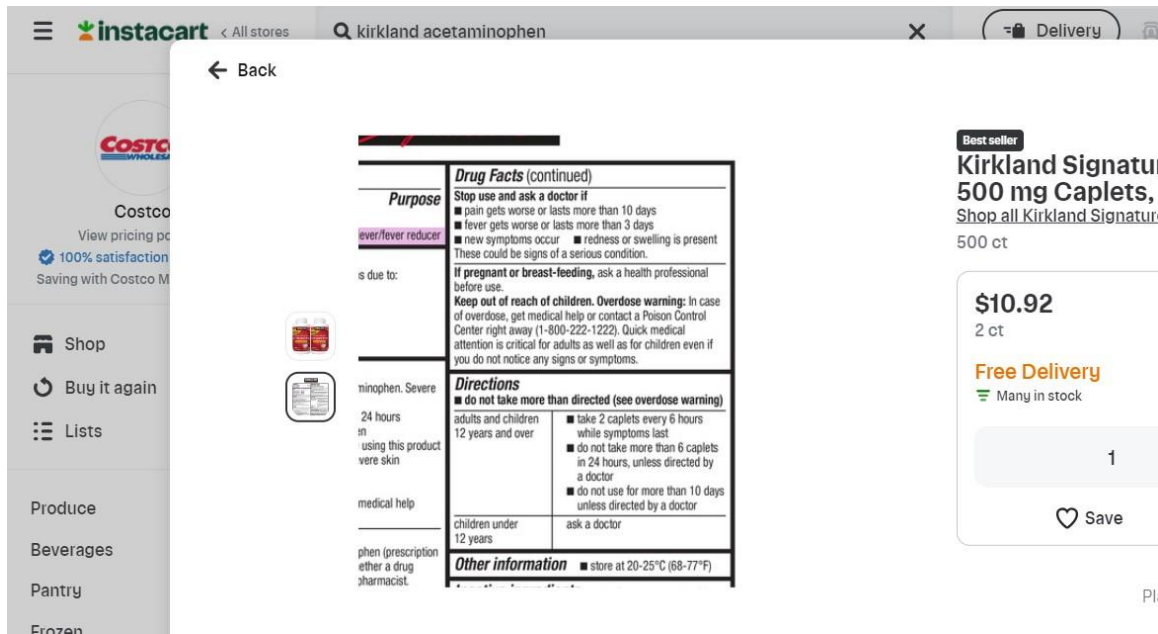


Figure 94 shows the screenshot of the Landing Page of Product Detail Page of Kirkland Acetaminophen ® 1000 count pack of Costco on Instacart.com.

In Fig 94, it is seen that the thumbnail images of the product in product detail page have the Drug Fact Label on the product detailed page on the 2<sup>nd</sup> position of the supporting thumbnail images as highlighted. By scrolling down to find the DFL in textual format, Ease of reading graphical DFL was found to be Fair. Costco sold only one size of this product variant.

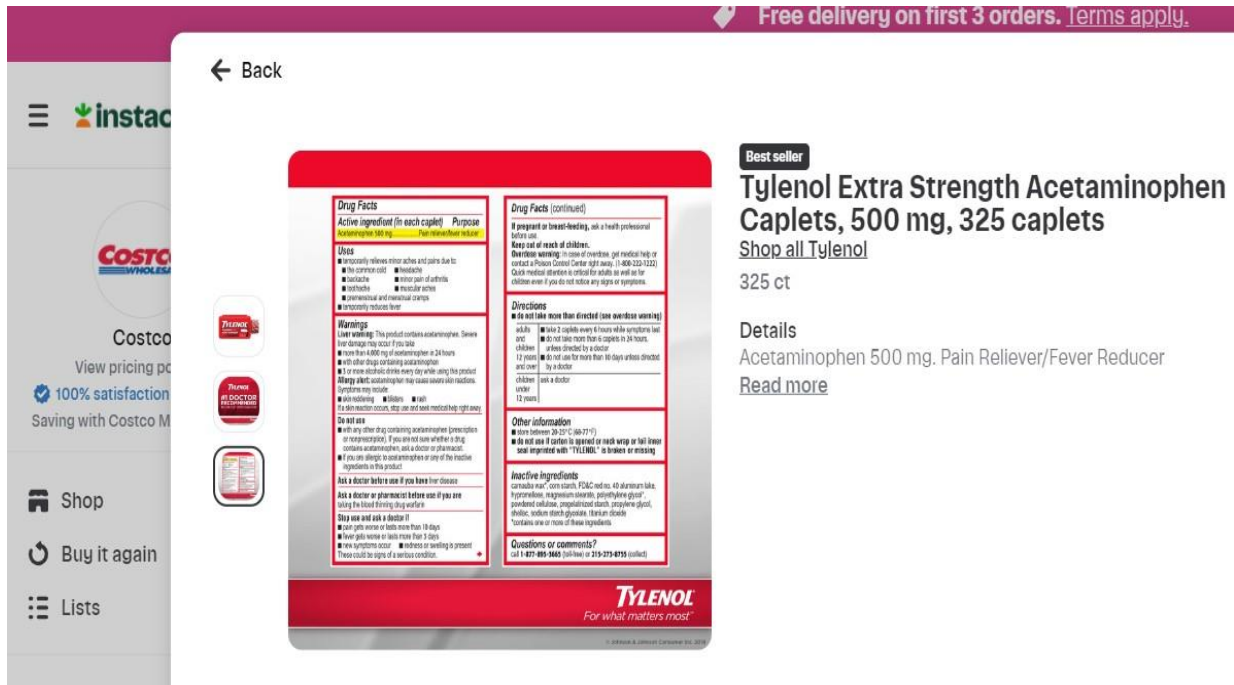


Figure 95 shows the screenshot of the Landing Page of Product Detail Page of Tylenol Extra @325ct in Costco on Instacart.com.

In Fig 95, it is seen that the thumbnail images of the product in product detail page has the Drug Fact Label on the product detailed page on the 3<sup>rd</sup> position of the supporting thumbnail images as highlighted. By scrolling down to find the DFL in textual format no parts of the DFL were found, Ease of reading graphical DFL was found to be Poor. DFL was available for all sizes of this product.

### 8.7.4. Instacart-Walgreens:

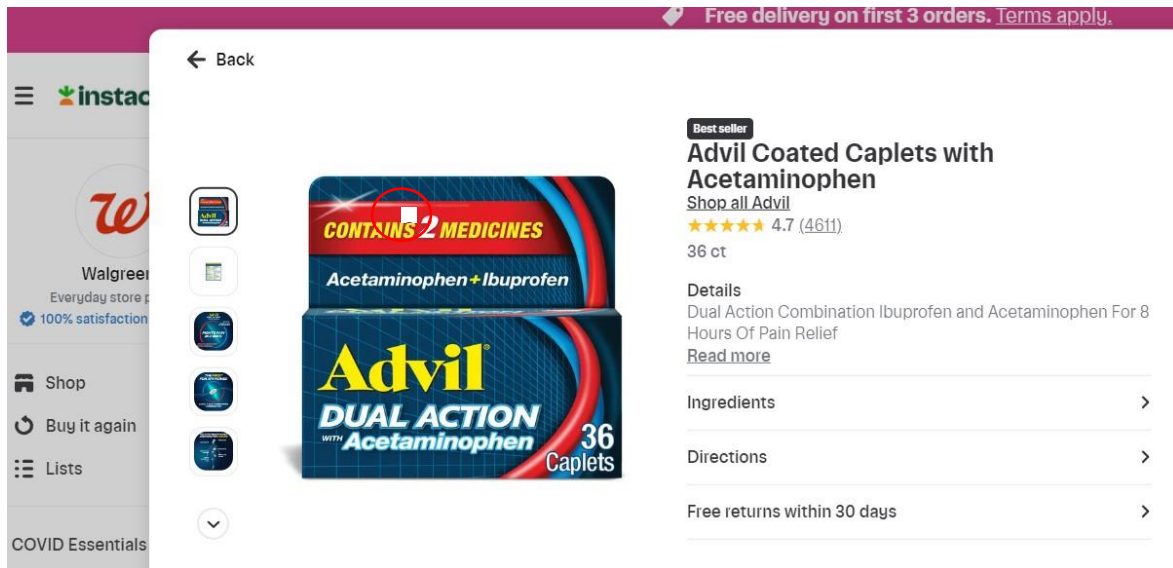


Figure 96 shows the screenshot of the Landing Page of Product Detail Page of Advil Dual Action ® 36 count pack of Walgreens on Instacart.com.



Figure 97 shows the screenshot of Warnings of Advil Dual Action ® 36 count pack on the 13th page.

In Fig 96, it is seen that the thumbnail images of the product in product detail page have the Drug Fact Label on the landing page on the 2<sup>nd</sup> position of the supporting thumbnail images were found. By scrolling down to find the DFL in textual format as seen on Fig 97, it was found on the 13<sup>th</sup> page and all parts of the DFL were present and the Ease of reading graphical DFL was poor, but all of the other sizes had the DFL.



Figure 98 shows the screenshot of the Landing Page of Product Detail Page of Tylenol Extra<sup>®</sup> 24 count pack of Walgreens on Instacart.com.

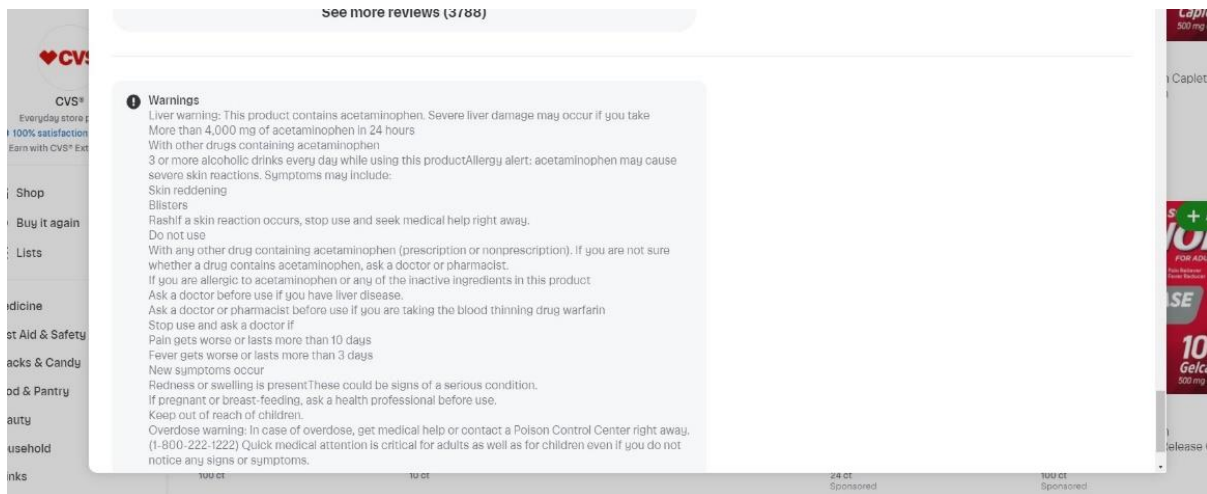


Figure 99 shows the screenshot of Warnings of Tylenol Extra<sup>®</sup> 24 count pack on the 12th page.

In Fig 98 it is seen that the thumbnail images of the product in product detail page doesn't have the Drug Fact Label on the product detailed page and supporting thumbnail images were found not have as well. By scrolling down to find the DFL in textual format as seen on Fig 99, it was

found on the 12<sup>th</sup> page and all parts of the DFL were present but none of the other sizes had the DFL as well.

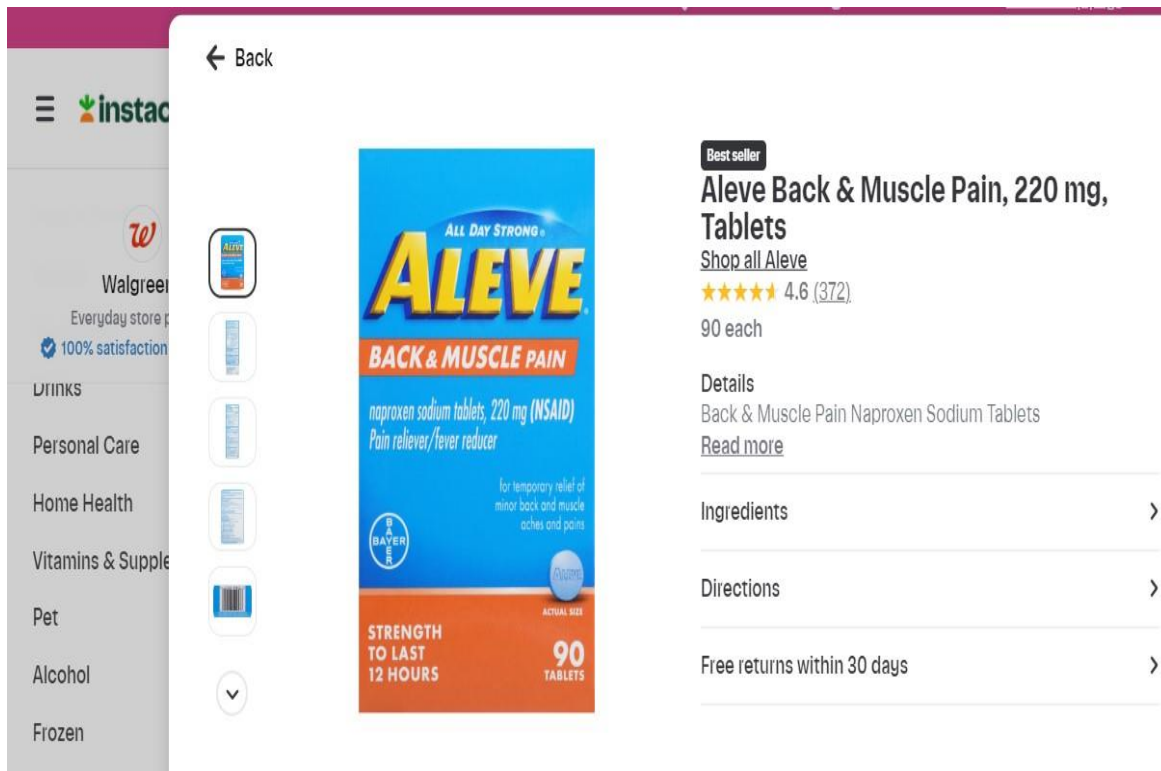


Figure 100 shows the screenshot of the Landing Page of Product Detail Page of Tylenol Extra<sup>®</sup> 24 count pack of Walgreens on Instacart.com.

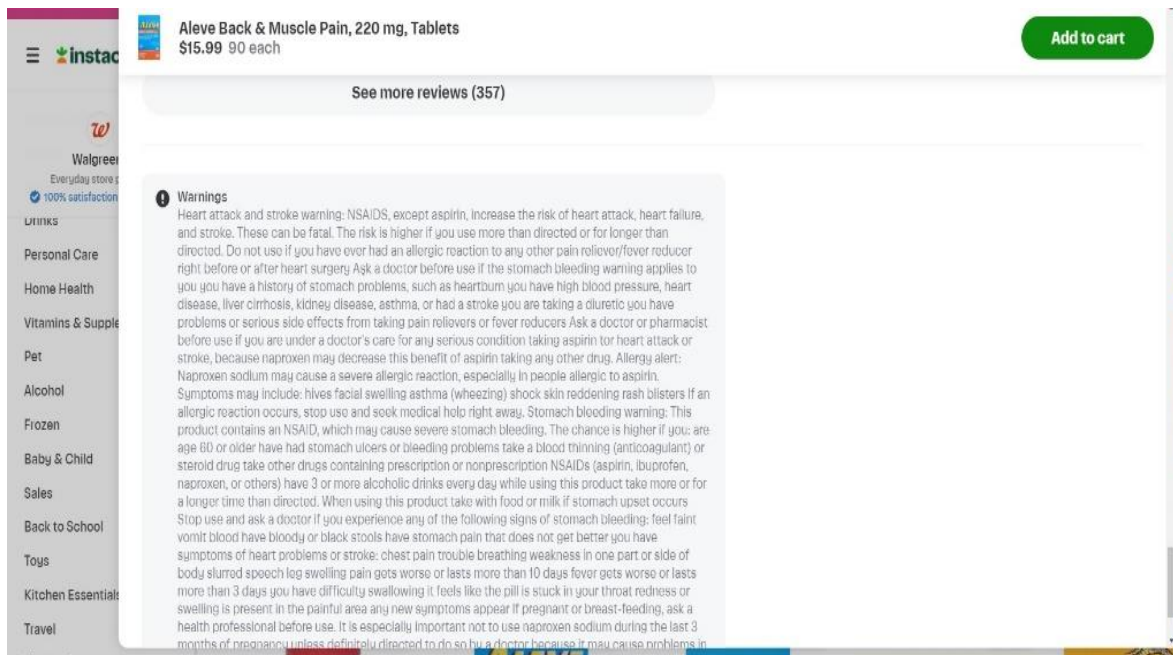


Figure 101 shows the screenshot of Warnings of Tylenol Extra ® 24 count pack on the 12th page.

In Fig 100, it is seen that the thumbnail images of the product in product detail page have the Drug Fact Label on the product detailed page on the 2<sup>nd</sup> position of the supporting thumbnail images were found. By scrolling down to find the DFL in textual format as seen on Fig 101, it was found on the 12<sup>th</sup> page and not all parts of the DFL were present and the Ease of reading graphical DFL was Good, but all the other sizes had the DFL.



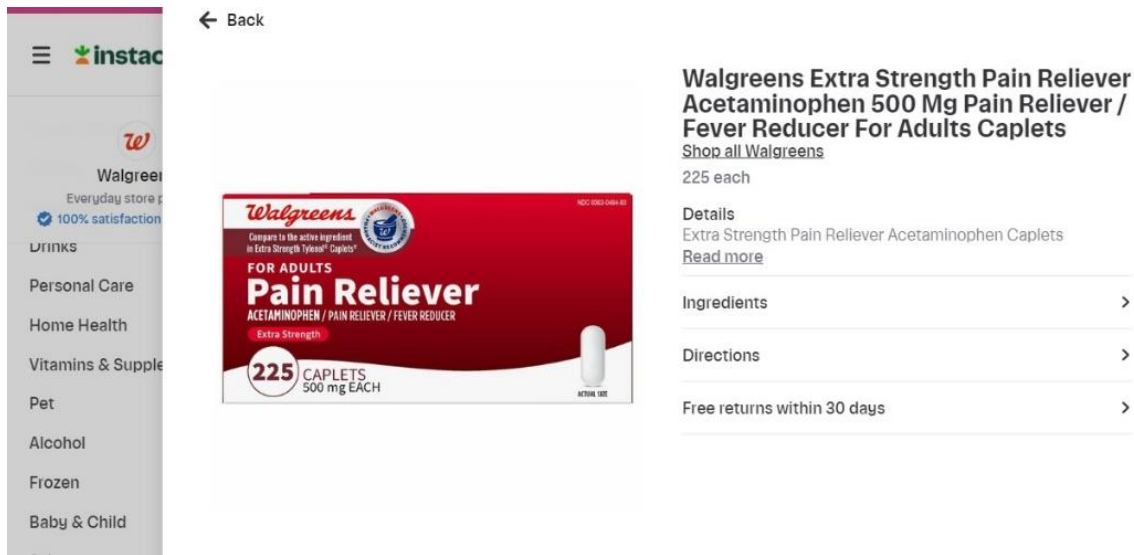


Figure 102 shows the screenshot of the Landing Page of Product Detail Page of Walgreens Extra Acetaminophen ® 225 count pack of Walgreens on Instacart.com.

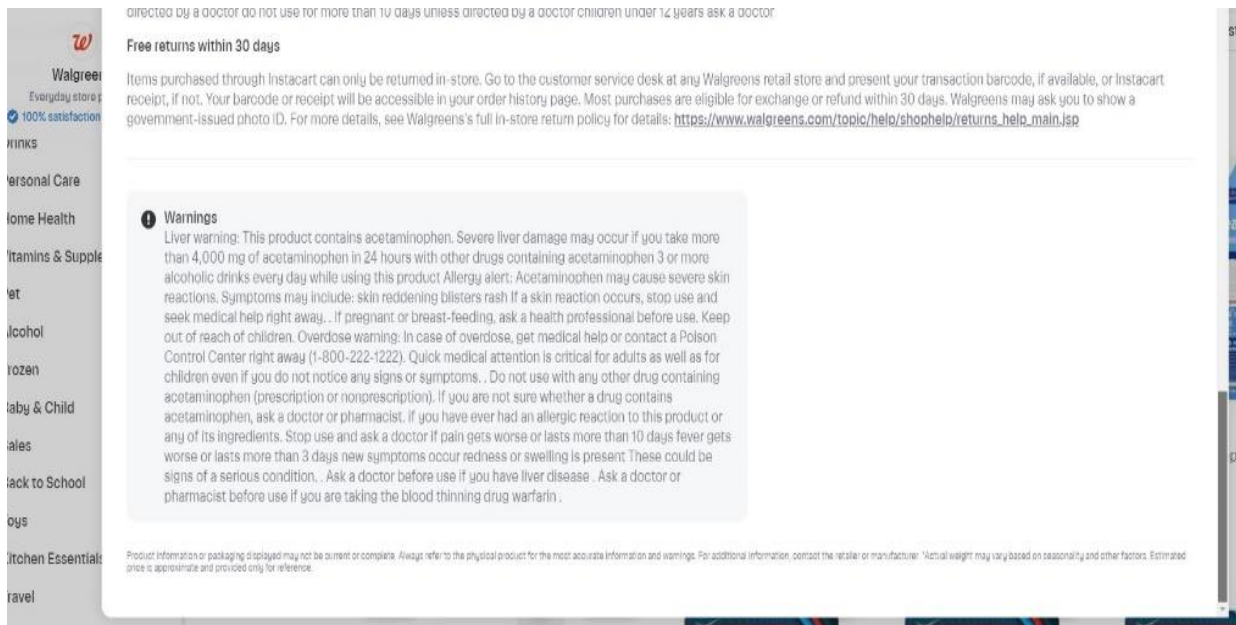


Figure 103 shows the screenshot of Warnings of Walgreens Extra Acetaminophen ® 225 count pack on the 6thpage scrolling down of Walgreens on Instacart.com.

In Fig 102, it is seen that there aren't any thumbnail images of the product in product detail page doesn't have the Drug Fact Label on the product detailed page. By scrolling down to find the



DFL in textual format as seen on Fig 103, it was found on the 6<sup>th</sup> page and all parts of the DFL were present but none of the other sizes had the DFL as well.

### 8.7.5. Instacart- CVS.com:

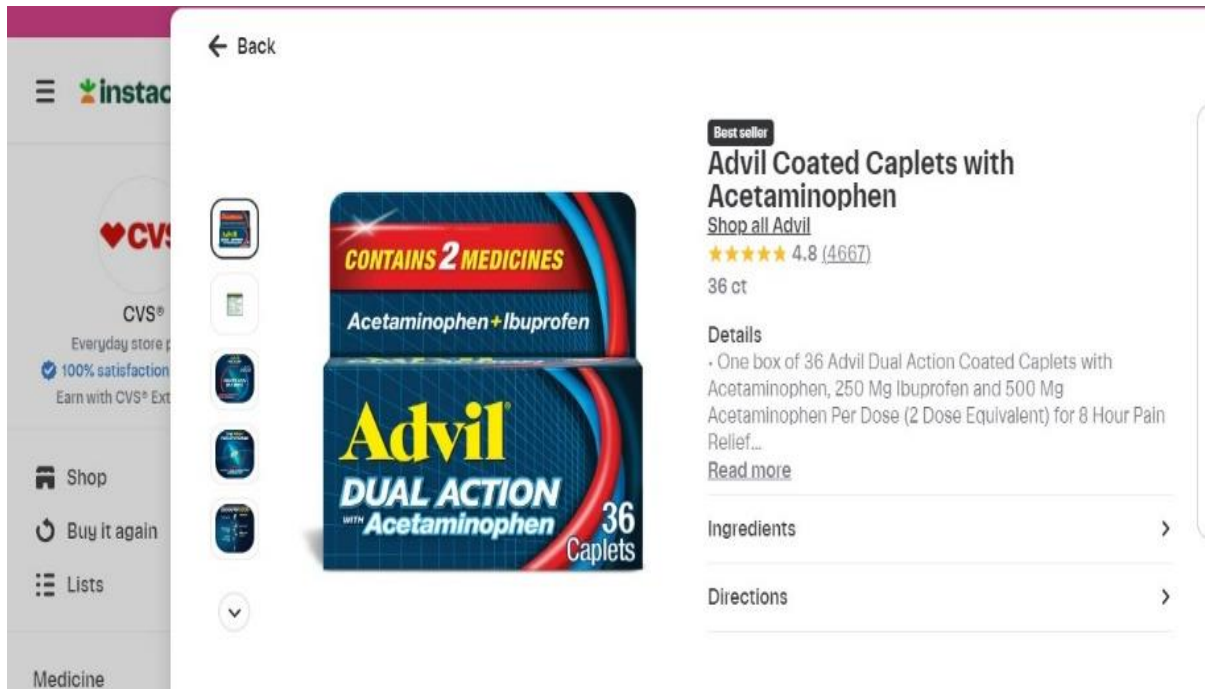


Figure 104 shows the screenshot of the Landing Page of Product Detail Page of Advil Dual Action ® 36 count pack of CVS on Instacart.com.

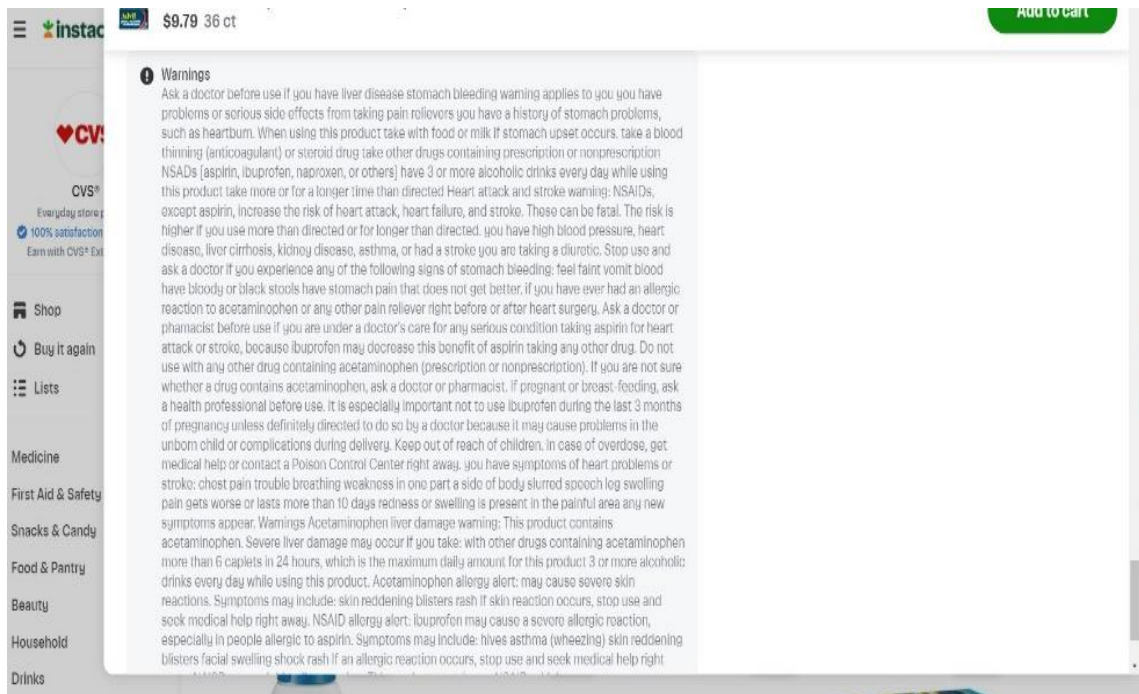


Figure 105 shows the screenshot of Warnings of CVS Advil dual action ® 36 count pack on the 13th page scrolling down of CVS on Instacart.com.

In Fig 104, it is seen that the thumbnail images of the product in product detail page has the Drug Fact Label on the product detailed page on the 2<sup>nd</sup> position thumbnail images were found. By scrolling down to find the DFL in textual format as seen on Fig 105, it was found on the 13<sup>th</sup> page and all parts of the DFL were not present and all the other sizes had the DFL as well and Ease of reading graphical DFL was poor.



Figure 106 shows the screenshot of the Landing Page of Product Detail Page of Tylenol Extra Strength ® 24 count pack of CVS on Instacart.com.

In Fig 105, it is seen that the thumbnail images of the product in product detail page doesn't have the Drug Fact Label on the product detailed page and supporting thumbnail images were found not have as well. By scrolling down to find the DFL in textual format as seen on Fig 106, it was found on the 12<sup>th</sup> page and all parts of the DFL were not present and none of the other sizes had the DFL as well.

See more reviews (3/88)

**CVS**  
 Everyday store  
 100% satisfaction  
 Earn with CVS® ExtraCare

Shop

Buy it again

Lists

Medicine

First Aid & Safety

Snacks & Candy

Food & Pantry

Beauty

Household

Books

### Warnings

**Liver warning:** This product contains acetaminophen. Severe liver damage may occur if you take more than 4,000 mg of acetaminophen in 24 hours.

With other drugs containing acetaminophen

3 or more alcoholic drinks every day while using this product. **Allergy alert:** acetaminophen may cause severe skin reactions. Symptoms may include:

- Skin reddening
- Blisters

Rash: If a skin reaction occurs, stop use and seek medical help right away.

Do not use

With any other drug containing acetaminophen (prescription or nonprescription); if you are not sure whether a drug contains acetaminophen, ask a doctor or pharmacist.

If you are allergic to acetaminophen or any of the inactive ingredients in this product:

Ask a doctor before use if you have liver disease.

Ask a doctor or pharmacist before use if you are taking the blood thinning drug warfarin.

Stop use and ask a doctor if:

- Pain gets worse or lasts more than 10 days
- Fever gets worse or lasts more than 3 days
- No symptoms occur

Redness or swelling is present. These could be signs of a serious condition.

If pregnant or breast-feeding, ask a health professional before use.

Keep out of reach of children.

**Overdose warning:** In case of overdose, get medical help or contact a Poison Control Center right away. (1-800-222-1222) Quick medical attention is critical for adults as well as for children even if you do not notice any signs or symptoms.

Figure 107 shows the screenshot of Warnings of Tylenol Extra Strength® 24 count pack on the 12th page scrolling down of CVS on Instacart.com.

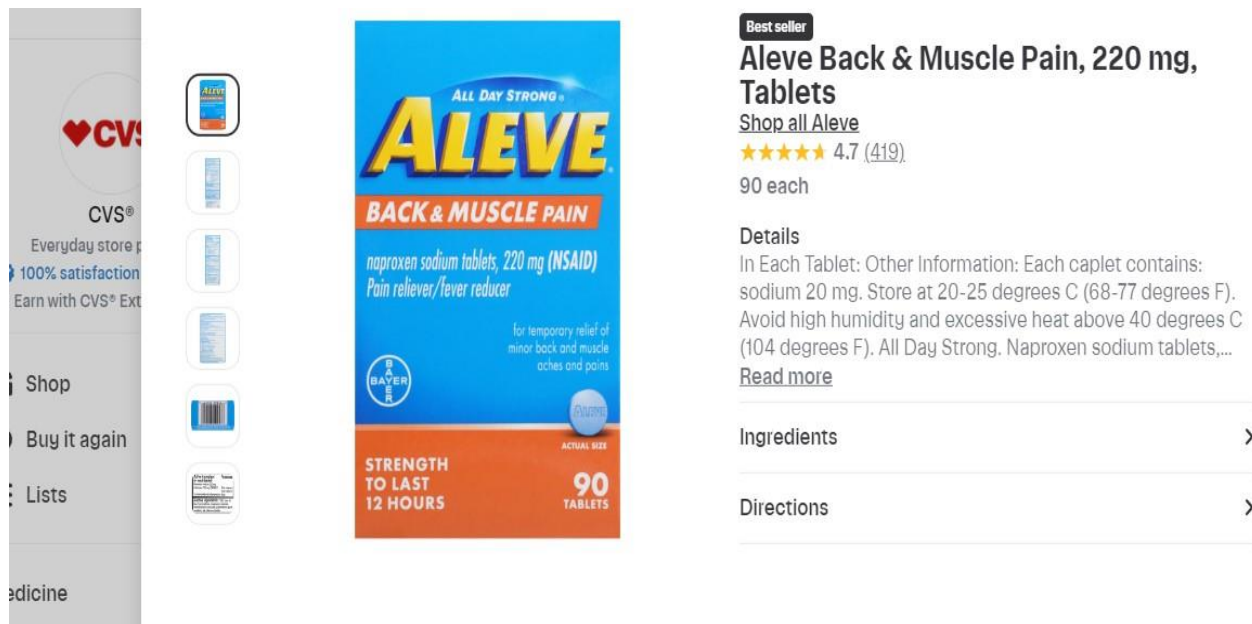


Figure 108 shows the screenshot of the Landing Page of Product Detail Page of Aleve Back & Muscle Pain ® 90 count pack of CVS on Instacart.com.



Figure 109 shows the screenshot of Warnings of Aleve Back & Muscle Pain ® 90 count pack on the 11th page scrolling down of CVS on Instacart.com.

In Fig 108, it is seen that the thumbnail images of the product in product detail page have the Drug Fact Label on the product detailed page on the 2<sup>nd</sup> position thumbnail images was found.

By scrolling down to find the DFL in textual format as seen on Fig 109, it was found on the 11<sup>th</sup> page and all parts of the DFL were not present and all the other sizes had the DFL as well and Ease of reading graphical DFL was Good.



Figure 110 shows the screenshot of the Landing Page of Product Detail Page of CVS Health Extra Strength Acetaminophen @ 100 count pack of CVS on Instacart.com.

In Fig 110, it is seen that there are no thumbnail images of the product in the product detail page, and it doesn't have the Drug Fact Label on the landing page. By scrolling down to find the DFL in textual format as seen no parts of the DFL were present and none of the other sizes had the DFL as well. The requirement of Accessibility compliance for CVS.com was seen to have a success criterion of fulfilling 3/4 components such as Images, Links, and Keyboard Navigation as per the study performed by Baymard Institute. CVS.com was not originally a part of their study which is cited, the methodology used in their study was followed and this rating has been provided. (<https://baymard.com/blog/accessibility-benchmark-launch#images>, 2021) – To be reviewed by Baymard.com.

## 8.8. Baymard Institute’s design guidelines :

(Use Both “Bullet Lists” and “Blocks of Text” for Product Descriptions #843

<https://baymard.com/premium/guideline-collections/yrj1sh/843>) “It’s important to remember that while a customer in a physical store can consult with an employee about a product’s features, online shoppers are more restricted: even if the option to “chat” about the product is available. Because product photographs are so vital in assisting users in finding a suitable product, any queries or concerns raised by these images must also be addressed in the product description. This is especially true for products with a limited number of images, as the quality and detail of the product description is more important — without the visual information provided by multiple product images, the user must rely more heavily on product descriptions to fill in conceptual gaps”. (Ensure a Consistently High Level of Detail in the Product Descriptions #841, <https://baymard.com/premium/guideline-collections/yrj1sh/841>). While there is no official “minimum font size” requirement within the Web Content Accessibility Guidelines (WCAG), it is generally recommended not to go below the default font size in most browsers. Typically, this is 1em (The em is simply the font size. In an element with a 2in font, 1em thus means 2in) which is a relative unit based on font size — equivalent to a font set to 16 CSS pixels (16px). As opposed to setting font size using absolute size (i.e., directly in “pixels”) — which doesn’t always allow users to adjust the text size in older browsers — using the relative measure of “em” units ensures that the text maintains a fixed spatial relationship to the surrounding page elements, regardless of size change or viewport adjustments. (Page Design and Visibility Considerations for Accessibility #1545, <https://baymard.com/premium/guideline-collections/cb3zzh/1545>).

Some important guidelines pertaining to page design are :

1. To make sure to use bulleted lists / blocks of text / feature highlights based on the product being sold. (<https://baymard.com/blog/structure-descriptions-by-highlights>, n.d.), product descriptions needs to be used that consist both text blocks and bullet lists at certain times. (Saenz, 2023)
2. The optimal line length for body text is 50–75 characters - shorter or longer line lengths can hurt readability. (<https://baymard.com/blog/line-length-readability>, n.d.).
3. To make sure the font size is 1em in a html/xml/coded webpage for easy readability.

### **8.8.1. Accessibility Compliance:**

The figure 11 shows that up to 94% of the top grossing sites have Accessibility issues.

Accessibility factors defined by the Baynard Institute data (See Table 8) were used as the reference for the current study being performed since Baymard institute has already defined the accessibility compliance rating of 4/6 e-commerce websites such as Amazon.com, Walmart.com, Target.com, Walgreens.com which are used in the study. For Costco.com, CVS.com and Instacart.com , the compliance rating was derived by me based on the methodology provided in the accessibility study performed by Baymard institute as mentioned below :

1. Image information needs to be placed in specific markup in order for people with visual impairments—who depend on assistive technology like screen readers—to hear it read aloud. Users may hear unnecessary information about an image, such as the filename or URL of the image source, if the screen reader-accessible image markup is absent. This is provided that the pictures are not entirely ignored.



2. Users with impairments may find embedded text in pictures especially troublesome since it cannot be accessed by screen readers and will not be highlighted when the user's keyboard focuses on an image. All pertinent content for users that isn't currently available elsewhere on the website has to be presented using screen reader-accessible markup language.
3. Links that have an insufficient contrast ratio between the backdrop and surrounding text may be hard for visually impaired users to locate, so it needs to have adequate contrast ratio.
4. Users using screen readers may encounter difficulties when form fields or inputs lack labels from the markup. This is because they may not understand what information is being requested of them, forcing them to solve the problem on their own or enter potentially incorrect data that they will later have to correct.
5. Furthermore, when taking into account any unique guidelines for form fields and inputs, including if a certain field is necessary or if the data submitted needs to be formatted specifically (like "DD/MM/YYYY")
6. All elements of a website must be accessible through keyboard navigation in order to support users who use screen readers or have other mobility issues.