## Lawsuits Accessibility Issues Mining and WCAG guidelines Comparison

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#### GitHub Link:

https://github.com/AmulyaSaiJ/Lawsuits

#### INTRODUCTION:

Our team at the Interactive Intelligent Systems Lab, based at Old Dominion University, is dedicated to investigating the notable surge in lawsuits targeting website owners for alleged violations of the Americans with Disabilities Act (ADA) over the past decade.

Digital accessibility refers to the inclusive practice of designing and developing digital content and technologies that can be accessed and used by all individuals, regardless of their abilities or disabilities. In today's increasingly digital world, access to information, services, and communication through digital platforms is essential for full participation in society. However, barriers such as inaccessible websites, mobile applications, documents, and multimedia content can prevent individuals with disabilities from fully engaging with digital resources.

Ensuring digital accessibility involves adhering to established guidelines and standards, such as the Web Content Accessibility Guidelines (WCAG), developed by the World Wide Web Consortium (W3C). These guidelines provide a framework for creating

accessible web content and applications, covering aspects such as perceivability, operability, understandability, and robustness.

In recent years, there has been a growing awareness of the importance of digital accessibility, driven by factors such as increased legal requirements, advances in assistive technologies, and a greater recognition of the social and economic benefits of inclusivity. Organizations across various sectors are increasingly recognizing the need to prioritize accessibility in their digital initiatives to ensure equal access for all users.

Despite the availability of accessibility guidelines and third-party assistance for addressing accessibility concerns, the escalating trend in litigation remains puzzling. To address this complex issue, our team has embarked on a comprehensive study aimed at collecting data on ADA compliance lawsuits spanning a decade.

The primary objective of our study is to conduct a meticulous comparison of these lawsuits against the established Web Content Accessibility Guidelines (WCAG) and ADA standards. By scrutinizing the nature of these legal actions, we seek to uncover underlying patterns or insights that may shed light on the surge in litigation despite efforts to comply with accessibility standards.

To undertake this ambitious research endeavor, we will harness the power of Large Language Models (LLMs) for content analysis across a broad spectrum of lawsuits. This innovative approach will enable us to process and analyze vast amounts of data contained in legal documents related to ADA compliance, a task that would be impractical to accomplish manually. Through the utilization of LLMs, our aim is to develop a specialized language model tailored to accessibility concerns. This tool will serve as a valuable resource for website owners and compliance testers, offering insights into potential compliance shortcomings with WCAG and ADA guidelines and facilitating proactive measures to address accessibility issues.

Moreover, our primary objective is to extract and categorize accessibility issues cited in these legal documents. By doing so, we will create a comprehensive database documenting real-world challenges faced by individuals with disabilities. This database will serve as an invaluable resource for understanding prevalent accessibility barriers within the industry and will inform future efforts to improve accessibility standards and practices in digital spaces.

## Methodology:

Creating a comprehensive dataset of legal documents related to accessibility issues, including lawsuits and settlements, is a critical step. Here's a detailed plan for gathering and cleaning such a dataset:

## 1) Identify Relevant Legal Databases:

- Utilize legal databases and repositories that host court filings, judgments, settlements, and other legal documents. Explore specialized legal databases or repositories that focus on disability rights, accessibility litigation, or relevant case law archives.
- Acknowledged the significance of accessibility.com as a valuable source of information pertaining to digital accessibility lawsuits. This recognition underscores the platform's role in providing comprehensive data essential for understanding legal actions related to digital accessibility.

#### 2) Search Queries and Filters:

- Develop specific search queries and filters to retrieve documents related to accessibility lawsuits and settlements. These queries may include keywords such as "disability discrimination," "accessibility compliance," "ADA violations," and "WCAG litigation."
- Use advanced search features provided by legal databases to narrow down results based on jurisdiction, case type, date range, and relevant legal statutes.

## 3) Data Collection and Scraping:

- Collect legal documents matching the search criteria identified.
- Use web scraping techniques to extract documents from online sources, if permissible under the terms of service and copyright laws. Ensure compliance with legal and ethical guidelines regarding data collection, copyright, and terms of use for the selected legal databases.
- Curated a collection of complete lawsuit pages sourced from diverse online platforms. This compilation encompasses approximately 20 to 25 lawsuits listed in the CSV file. The purpose of gathering these pages is to facilitate descriptive analysis, allowing for a detailed examination of the legal landscape surrounding digital accessibility. Since there are many cases, visualizing all

the data can be challenging. Therefore, we have chosen a few lawsuits related to famous brands/websites such as Calvin Klein, Prada, Kohl's, and Dominos. We have downloaded all the case-related files and gathered all the necessary information.

https://www.pacermonitor.com/public/case/52536737/Hussein v Calvin Klein, Inc https://casetext.com/case/robles-v-dominos-pizza-llc

https://unicourt.com/case/ca-la23-brittney-mejico-an-individual-vs-the-hertz-corporation-a-delaware-corporation-481296?init S=chup ltst

https://www.pacermonitor.com/public/case/52361746/Mahlberg\_v\_Genesco\_Inc

https://unicourt.com/case/ca-la23-rosario-rodriguez-vs-genesco-inc-622315

https://www.courtlistener.com/docket/18419519/luis-licea-v-genesco-inc/

https://www.pacermonitor.com/public/case/51543405/Hussein\_v\_Prada\_USA\_Corp

https://unicourt.com/case/ca-sd-mitchell-vs-petco-animal-supplies-stores-inc-1153629

https://breakoutinternetmedia.com/website-lawsuits/pamela-hill-v-petco-animal-supplies-stores- inc/

https://unicourt.com/case/pc-db5-fernandez-v-petco-animal-supplies-stores-inc-626185

#### 4) Quality Assurance and Validation:

Conduct manual review and validation of the cleaned dataset to ensure the
accuracy and completeness of the extracted legal documents. Verify the
relevance and integrity of the documents by cross-referencing with external
sources, legal databases, or expert judgment. Address any discrepancies or
errors identified during the validation process through additional cleaning
and refinement steps.

#### 5) Documentation:

 Document the source of each legal document, including the database or repository from which it was retrieved. Maintain a detailed log of data cleaning and preparation steps, including any transformations or modifications applied to the dataset.

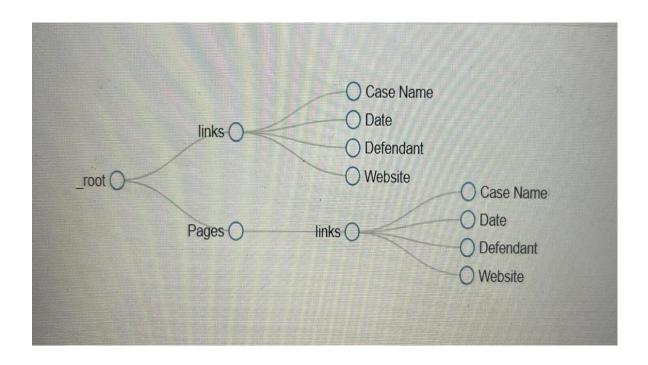
## 6) Data Privacy and Compliance:

 Ensure compliance with data protection laws and regulations, such as the General Data Protection Regulation (GDPR) in the United States. Implement appropriate data security measures to protect the confidentiality and integrity of the dataset, including encryption, access controls, and secure storage practices.

## **Implementation:**

#### 1) Identification of Data Source:

- Recognized accessibility.com as a valuable data source for digital accessibility lawsuit information.
- Identified the potential of using a web scraper extension to automate data collection from accessibility.com.
- Assessed the web scraper extension's efficiency in extracting data from accessibility.com and emphasized its benefits in saving time and ensuring data accuracy.
- Demonstrated a proactive approach by utilizing technology for research in digital accessibility, emphasizing the advantages of automation.



- The selector graph is a visual representation within the web scraper tool.It outlines the process of extracting specific elements from accessibility.com.
- The focus is on retrieving the defendant's name, plaintiff's name, and filing dates of lawsuits.
- Each node and connection in the graph is configured to pinpoint and extract this information accurately.
- It serves as a blueprint guiding the web scraper's actions.
- The links specified in the web scraper's selector lead to the respective pages of each lawsuit. The scraper navigates to these pages and extracts the plaintiff name, defendant name, and filing date for each lawsuit.
- The systematic approach enables efficient data gathering for analysis of digital accessibility lawsuits.

#### 2) Initiation of Data Collection:

- The team initiated the data collection process by utilizing the web scraper extension to extract information from accessibility.com.
- Successfully configured the web scraper to retrieve details such as lawsuit names, Plaintiff Names, Defendant names, dates.
- Each team member was assigned specific web pages to scrape, streamlining the data collection process and ensuring efficient utilization of resources.
- Started collecting data from accessibility.com and have generated a CSV file with 10,000+ rows which covering a diverse range of lawsuits data filed in the digital accessibility domain.

web-scraper-(web-scraper-start-url	Case links	links-href	Plaintiff Name	Dates	Defendant Name	Website	pages
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1710522645- https://www.accessibility.	com PARADISE MORGAN v. HAIRBRELLA, INC.	https://www.accessibility.co	Name: PARADISE MO	2/16/2024	Name: HAIRBRELLA,	www.hairbrell	la Page number5
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1710522695- https://www.accessibility.	com ANDREW TORO v. Fairytale Brownies, Inc.	https://www.accessibility.co	Name: ANDREW TOR	2/20/2024	Name: Fairytale Bro	www.brownie	s Page number4
1710522698- https://www.accessibility.	com ANDREW TORO v. 1st Class Cigar Humidors	https://www.accessibility.co	Name: ANDREW TOR	2/20/2024	Name: 1st Class Ciga	a www.cigarhun	n Page number4
1710522700- https://www.accessibility.	com LAUREL HILBERT v. ATHENEUM HOTEL COR	https://www.accessibility.co	Name: LAUREL HILBER	2/20/2024	Name: ATHENEUM	www.atheneu	n Page number4
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- And gathered a collection of complete lawsuit pages, sourced from different online platforms, comprising between 20 and 25 lawsuits which were listed in the CSV file, for the purpose of conducting descriptive analysis.
- Since there are many cases, visualizing all the data can be challenging. Therefore, we have chosen a few lawsuits related to famous brands/websites such as Calvin Klein, Prada, Kohl's, and Dominos. We have downloaded all the case-related files and gathered all the necessary information. Additionally, we have created several charts to provide a comprehensive overview of the data, including the number of lawsuits each year, distribution of lawsuits by the defendant, distribution of lawsuits by filing year and defendant, and types of lawsuits across different brands. These visualizations will help us understand the data more comprehensively and identify significant trends and patterns.

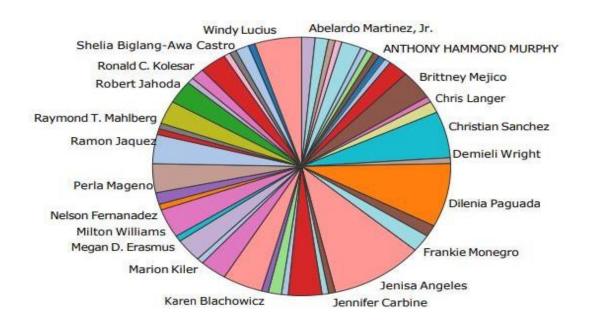
#### 3) Data Visualization:

- Successfully concluded the data collection phase, ensuring all relevant information was gathered for analysis.
- Commenced the process of data visualization by utilizing pivot tables within Excel, enabling initial organization and summarization of the collected data.
- Progressed to generating charts and graphs within Excel based on the summarized data, aiming to visually convey key findings and trends.
- Transitioned from utilizing pivot tables in Excel to leveraging Tableau, a more robust platform offering advanced data visualization capabilities.
- Utilized Tableau to create comprehensive visualizations, which provide an
  in-depth overview of the collected data. These visual representations offer
  insights into patterns, trends, and relationships within the dataset, enhancing
  the understanding of digital accessibility lawsuit information.

## **Result:**

#### **Tableau Visualizations:**

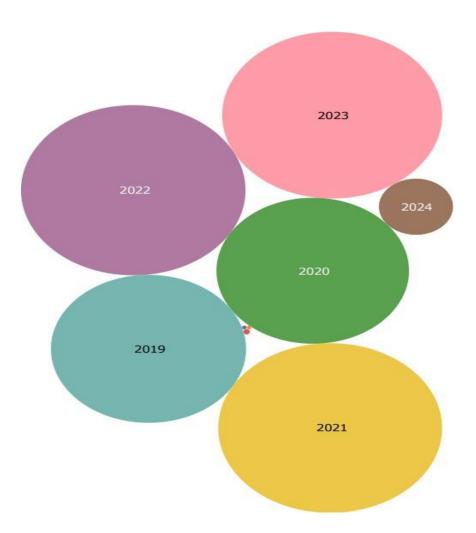
## Total No. of Lawsuits filed by each person per year-month:



- Plaintiff Names: Each slice of the pie chart represents a unique plaintiff name associated with legal cases. The plaintiff names are the individual entities or individuals taking legal action.
- Color shows details about Plaintiff Names: The color of each slice of the pie chart provides additional information about the plaintiff names. This could represent categorical information related to plaintiff characteristics or attributes, allowing for visual differentiation between different types of plaintiffs.
- Size shows count of Plaintiff Names: The size of each slice of the pie chart represents the count of plaintiff names associated with that particular category or attribute. Larger slices indicate a higher count of plaintiff names within that category, while smaller slices represent a lower count.
- The marks are labeled by Plaintiff Names: Each slice of the pie chart is labeled with the corresponding plaintiff name. This labeling provides clarity and allows viewers to easily identify which plaintiff each slice represents.
- Details are shown for Plaintiff Names: Additional details about plaintiff names may be provided in tooltips or labels, offering more information about each plaintiff entity or individual.
- The data is filtered on Dates Year and Dates Month: The dataset used to create the pie chart has been filtered to include only data from January 2021. This means that the pie chart visualizes legal cases involving plaintiff names specifically from January 2021.

In summary, the pie chart provides a visual representation of the distribution of plaintiff names, with color and size encoding additional information and labels providing specific plaintiff name details. The chart focuses on legal cases occurring in a month.

#### **Lawsuit Filings Across the Years:**



- Dates Year: This refers to the period represented on the horizontal axis of the bubble chart. Each point on the axis corresponds to a specific year.
- Color shows details about Dates Year: The color of each bubble represents additional information about the year indicated on the horizontal axis. This could encode a categorical variable related to the year, providing further insights or context.
- Size shows the count of Case links: The size of each bubble corresponds to the count of case links associated with the year. Larger bubbles indicate a higher count of case links, while smaller bubbles indicate a lower count.
- The marks are labeled by Dates Year: Each bubble is labeled with the corresponding year on the chart, making it easy to identify the period associated with each data point. Overall, this bubble chart visualizes the temporal distribution of lawsuit cases over a series of years, with additional details encoded through color and size to provide further context and insights.

## Total No.of Lawsuits filed by each person per year

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	39 PERLA MAGENO	32 KEVIN DAVIS	ARTURO	17		11		8									
			Brittney	16		11											

- In our Tableau visualization, we've constructed a treemap to illustrate the count and distribution of plaintiff names in lawsuits filed in 2021. The treemap employs color to represent the count of plaintiff names, with darker hues indicating a higher frequency. Additionally, the size of each rectangle within the treemap corresponds to the count of plaintiff names, where larger rectangles signify a greater count. Each rectangle in the treemap is labeled with both the count of plaintiff names and the respective plaintiff names, providing detailed information for each segment.
- Furthermore, we've applied a filter to the visualization to focus exclusively on data from the year 2021. This ensures that the treemap exclusively showcases lawsuits filed during that particular year, facilitating a targeted analysis of recent data within the context of plaintiff names.

## The defendants and the number of lawsuits filed against them:



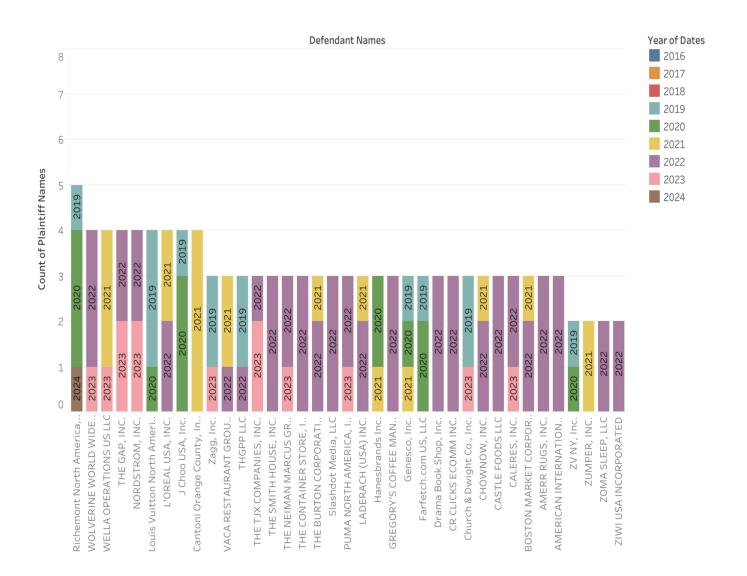
Count of Defendant Names for each Dates Year broken down by Defendant Names. Color shows details about Dates Year. The data is filtered on Dates Year, which keeps 9 of 9 members.

In a side-by-side bar chart visualization, we have bars grouped together for each year, and within each group, there would be sub-bars representing different defendant names. Here's how to interpret the components:

- Count of Defendant Names for each Dates Year: Each group of side-by-side bars represents a specific year, showing the count of defendant names associated with legal cases in that year. Essentially, it illustrates the distribution of legal cases across different defendants within each year.
- Broken down by Defendant Names: Within each group (representing a year), the sideby-side bars are further divided into segments, each representing a different defendant name. This breakdown allows for a detailed analysis of defendant counts within each year, providing insights into the distribution of legal cases across defendants.
- Color shows details about Dates Year: The color of each group of side-by-side bars provides additional information about the corresponding year. This color encoding helps differentiate between different years, facilitating visual comparison and analysis of defendant counts across years.

- In summary, the side-by-side bar chart visually presents the count of defendant names associated with legal cases for each year, with color encoding highlighting the years represented in the dataset.
- The breakdown by defendant names within each year provides additional insight into the distribution of legal cases across defendants over time.

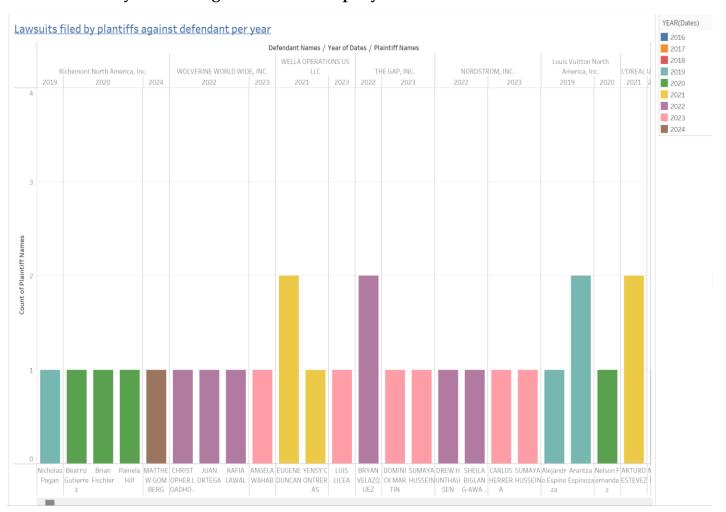
## Total No. of Lawsuits filed against Defendant:



In our Tableau visualization, we've crafted a stacked bar chart to depict the count
of plaintiff names associated with each defendant name. The height of each bar
represents the total count of plaintiff names for a specific defendant. Within each
bar, different segments indicate the distribution of plaintiff names across various
defendant names.

- The color scheme within each bar provides details about the dates (years)
  associated with the lawsuits. Each color represents a different year, allowing for
  easy identification of the distribution of lawsuits over time within each defendant
  category.
- Additionally, each segment of the stacked bar is labeled with the corresponding date (year), providing specific information about the time frame of lawsuits associated with each defendant. This labeling enhances the clarity and interpretability of the visualization, enabling users to discern trends and patterns regarding plaintiff names across different defendant categories.

## Lawsuits filed by Plantiffs against Defendant per year:



- In our Tableau visualization, we've developed a detailed representation of the count of plaintiff names categorized by both plaintiff names and defendant names, further broken down by dates (years).
- This visualization employs a combination of grouping and color coding to enhance data comprehension. Each segment of the visualization corresponds to a unique

combination of plaintiff and defendant names.

- The color gradient is used to represent details about the dates (years) associated with the lawsuits, with each color denoting a different year. This color coding aids in discerning temporal patterns within the data.
- Additionally, the size or length of each segment corresponds to the count of
  plaintiff names for the specific plaintiff-defendant pair. Larger segments indicate a
  higher count of plaintiff names associated with that particular combination.
- Furthermore, the labels within the visualization provide additional context by specifying the defendant names and the corresponding years, enabling users to easily interpret and analyze the data. Overall, this visualization offers a comprehensive overview of plaintiff names across different defendants and years, facilitating in-depth analysis and insights.

## ➤ Descriptive Analysis:

- The data collection phase has been successfully concluded.
- Next steps involve conducting content analysis on raw documents from lawsuits.
- It's recommended to begin leveraging Legal Language Models (LLM) for content analysis specifically tailored to accessibility lawsuits. Additionally, consider proposing the development of a custom LLM focused on accessibility.
- Furthermore, utilize LIWC software for statistical analysis of the lawsuits.

The combination of web scraping for data collection, tableau for data visualization and LLM for content analysis demonstrates a comprehensive approach to exploring and understanding the dataset on lawsuits related to digital accessibility.

## **Key Findings:**

The most common issues highlighted in the lawsuits are related to website navigation, lack of alt text, and inaccessible forms. A majority of the lawsuits are related to the failure to comply with the Web Content Accessibility Guidelines (WCAG). Specific details regarding the types of accessibility issues, the frequency of occurrence, and the severity of the violations will be identified and categorized. The analysis will reveal that certain brands/websites have been targeted more frequently than others.

## **Challenges Faced:**

- ➤ Technical Issues with Web Scraper:
  - We encountered occasional technical glitches with the web scraper extension, resulting in disruptions to the data collection process. These interruptions impeded our progress and required troubleshooting to resolve promptly.
  - Navigating through certain sections of accessibility.com proved challenging due to the complex structures of some webpages. This complexity posed difficulties in effectively extracting data and necessitated innovative approaches to overcome.

#### > Switch from Pivot tables to Tableau:

- Transitioning from pivot tables to Tableau marked a significant shift in our data visualization approach. While pivot tables offered basic summarization, Tableau presented opportunities for dynamic and interactive visualizations, facilitating deeper exploration and understanding of the data.
- Leveraging Tableau's intuitive interface, we were able to generate sophisticated charts and dashboards without extensive programming knowledge. This transition empowered us to conduct more insightful analysis and make informed decisions based on the visual representations of our data.

Addressing these challenges required meticulous attention to detail and effective collaboration among team members. Through proactive problem-solving and collective effort, we successfully navigated these obstacles and ensured the smooth progression of our project.

#### **Conclusion:**

In summary, our project has taken a meticulous and multidimensional approach to comprehensively explore the landscape of lawsuits concerning digital accessibility.

We initiated our journey by pinpointing accessibility.com as a pivotal data hub, recognizing its significance in housing pertinent information on digital accessibility lawsuits. Implementing advanced web scraping techniques, we streamlined the data collection process, extracting vital details such as lawsuit names, dates, and involved plaintiff names and defendant names from a multitude of sources. This systematic approach ensured the acquisition of a diverse and extensive dataset, laying the foundation for our subsequent analyses.

Transitioning to the realm of data visualization, we harnessed the power of tools like pivot tables in Excel and later Tableau to transform raw data into meaningful insights. By visualizing our findings, we were able to identify trends, patterns, and correlations within the dataset, providing a clearer understanding of the digital accessibility litigation landscape.

Looking forward, our journey continues with the onset of content analysis on raw lawsuit documents. Here, we are poised to leverage cutting-edge Legal Language Models (LLM), tailoring them to the nuances of accessibility lawsuits. Additionally, we are considering the proposition of developing a custom LLM specifically designed to navigate the intricacies of this domain. Simultaneously, the utilization of LIWC software for statistical analysis will offer a deeper understanding of the linguistic nuances present within the lawsuits.

In essence, our project exemplifies a holistic and interdisciplinary approach, bridging the realms of data collection, visualization, and advanced analysis techniques. By delving into the complexities of digital accessibility lawsuits, we aim not only to gain insights but also to contribute meaningfully to the ongoing discourse surrounding accessibility and legal frameworks. Through our collective efforts, we endeavor to promote inclusivity and equitable access in digital spaces, paving the way for a more accessible future for all.

#### **FUTURE IMPLEMENTATION PLAN:**

The upcoming steps entail delving into content analysis of the raw documents extracted from the lawsuits.

# Content Analysis of Raw Documents from Lawsuits Content Analysis:

This process involves thoroughly examining the textual content to identify patterns, themes, and key insights relevant to accessibility lawsuits.

#### **Content Analysis of Raw Documents from Lawsuits:**

#### 1. Content Analysis:

Content analysis of raw documents from lawsuits will be a crucial step in understanding the landscape of accessibility-related legal actions. By examining select cases from famous brands/websites such as Calvin Klein, Prada, Kohl's, Dominos, and others, we aim to delve deeper into the patterns, trends, and insights within this specific subset of data. In this report, we will present our findings and visualizations created using Tableau and Power BI.

To enhance the efficiency and accuracy of content analysis, it's advisable to utilize Legal Language Models (LLM) tailored specifically for accessibility lawsuits. These models are trained to understand legal language nuances and can effectively analyze large volumes of legal text to extract meaningful information. Moreover, considering the specialized nature of accessibility lawsuits, it may be beneficial to explore the possibility of developing a custom LLM specifically focused on accessibility-related legal documents. This custom model could be trained on a corpus of accessibility lawsuits to better understand the unique language and legal aspects involved in such cases, thereby improving the accuracy of content analysis.

In addition to leveraging LLMs, employing software like the Linguistic Inquiry and Word Count (LIWC) for statistical analysis can provide valuable insights into the linguistic characteristics of the lawsuits. LIWC software analyzes text based on predefined linguistic categories and can identify patterns in language use, emotional tone, and cognitive processes present in the documents. By applying LIWC analysis to the lawsuits, researchers can gain a deeper understanding of the linguistic features and emotional undertones prevalent in accessibility-related legal texts, complementing the content analysis process.

Overall, by combining the use of Legal Language Models, potentially customizing

them for accessibility lawsuits, and employing LIWC software for statistical analysis, researchers can conduct a comprehensive examination of the raw lawsuit documents, uncovering valuable insights and trends relevant to digital accessibility litigation.