FIT5147 Data Exploration and Visualisation

DVP Part 2: Data Visualisation Project

—— How Does MBTI Influence Twitter Engagement and Content?

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Class No.Applied 11

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1. Introduction

This interactive narrative visualization, "How Personality Shapes Online Presence," examines the relationship between MBTI personality types and social media behavior on Twitter. The visualization presents a structured analysis through three connected stages that reveal how personality traits influence digital communication patterns and online engagement.

1.1 Key Findings

The narrative visualization conveys three main insights about MBTI personality types and Twitter behavior:

Social Visibility Patterns: The analysis reveals that social media success does not simply correlate with posting frequency. Introverted intuitive types (INFJ, INTJ) demonstrate high follower counts and engagement rates despite posting less frequently, while extraverted sensing types maintain visibility through regular posting activity.

Emotional Expression Differences: Different personality types exhibit distinct emotional expression patterns in their tweets. The sentiment analysis uncovers meaningful variations in positivity scores across MBTI types, with feeling-oriented personalities typically expressing more positive emotions compared to thinking-oriented types, extending to symbolic expression through emoji usage patterns.

Communication Style Variations: Personality types demonstrate different approaches to social media interaction, distinguishing between expression-focused communication (creating original content, replies) and amplification-focused behavior (sharing, retweeting). This reveals that introverts and extroverts engage with social platforms in fundamentally different ways that align with their personality preferences.

1.2 Target Audience and Approach

This visualization targets MBTI enthusiasts, digital communication researchers, and social media analysts interested in personality-driven online behavior patterns. The intended audience is assumed to have basic MBTI familiarity, allowing focus on behavioral insights rather than personality theory explanations.

The visualization employs guided exploration that allows users to follow the main narrative while enabling detailed investigation of specific personality types. By presenting personality traits and social media behavior as interconnected elements, the visualization helps users understand how individual expression styles translate into different forms of online presence and influence.

2. Design Process

2.1 Theoretical Foundation

The design process followed the Five Design Sheet methodology systematically, with each design decision directly informed by visualization theory principles to address the specific challenges of presenting MBTI personality data effectively.

Addressing Multi-Dimensional Data Complexity The MBTI-Twitter dataset presents unique challenges: 16 categorical personality types with multiple quantitative metrics (followers, tweets, sentiment scores) and qualitative patterns (emoji usage, communication styles). Following Munzner's What-Why-How framework (2014), I systematically approached these challenges:

- **What** (Data): Multi-dimensional dataset requiring categorical comparison and pattern identification
- **Why** (Tasks): Enable personality type comparison, reveal emotional expression patterns, and support communication style exploration
- **How** (Solution): Dashboard with coordinated views, consistent color encoding for personality categories, and progressive disclosure of complexity

Justifying Narrative Structure Choice Given the target audience of MBTI enthusiasts who prefer systematic exploration, I adopted Segel and Heer's "interactive slideshow" approach (2010) combined with "drill-down story" elements. This hybrid structure addresses the specific need to present three distinct research questions (engagement patterns, emotional expression, communication styles) while maintaining coherence across the personality framework.

Color Strategy for Personality Recognition The choice of warm reds for extroverts and cool blues for introverts follows both Few's categorical data guidelines (2009) and established MBTI community conventions. This decision leverages users' existing mental models while supporting Cleveland and McGill's hierarchy (1984) - using position as primary encoding and color as secondary identification aid. The consistent application across all charts reduces cognitive load when comparing personality types across different metrics.

Interactive Design for Personality Analysis The filtering system design directly addresses how MBTI enthusiasts naturally think about personality patterns. Rather than generic filters, the I/E and T/F toggles align with fundamental MBTI dimensions, following Norman's principle of natural mappings (2013). This allows users to explore personality-driven hypotheses such as whether introverts are more emotionally expressive through direct manipulation.

2.2 Design Sheet Analysis

Sheet 1 - Ideas and Brainstorming The initial ideation phase applied systematic design thinking to structure visualization possibilities. Three main visualization categories emerged based on data characteristics and analytical requirements:

Ideas A (Engagement Overview): Focused on quantitative comparison tasks, exploring bar charts, scatter plots, and multi-panel layouts for engagement metrics. This category addressed elementary-level reading tasks for comparing individual MBTI types across engagement dimensions.

Ideas B (Sentiment Expression): Centered on distribution analysis and emotional pattern recognition, considering violin plots, box plots, and emoji visualizations for understanding sentiment patterns within and across personality groups.

Ideas C (Communication Patterns): Explored text visualization approaches including word clouds, network diagrams, and flow charts for comprehending the complete communication-to-influence pathway.

Filter System Design: Early brainstorming explored various filtering approaches, ultimately settling on MBTI trait-based filters (Introvert/Extrovert, Thinking/Feeling) that align with the analytical preferences of the target audience while maintaining narrative coherence.

Sheet 2 - "Who Is Most Popular Online?" (Engagement-Focused Layout) This design prioritized social engagement metrics through a comprehensive dashboard approach, implementing Shneiderman's "overview first, zoom and filter, details on demand" principle (1996). The layout featured multiple complementary visualizations including engagement overview charts and detailed distribution analysis.

Theoretical justification: Bar charts were selected over pie charts following Cleveland and McGill's perceptual accuracy hierarchy (1984) - position judgments are more precise than area judgments for quantitative engagement data. The four-panel subplot arrangement follows Tufte's principle of small multiples (2001), enabling efficient comparison across related metrics while maintaining visual consistency.

Design choices: The layout grouped related metrics (tweets, followers, likes, friends) in a 2x2 grid, with consistent color coding across panels. Box plots were included to show distribution variance within personality types, addressing the research question about whether high performers exist across all types or concentrate in specific personalities.

Strengths: Effectively highlighted engagement hierarchies showing that INFJ and INFP users receive highest favorites (190-200 average) while ESFJ and ISTJ are most active posters (55-60 tweets average). The multi-chart layout enabled elementary-level reading for individual comparisons while supporting intermediate-level pattern recognition across metrics.

Limitations: Dense information layout risked cognitive overload, particularly for casual users. Focus on engagement metrics alone didn't capture emotional and linguistic dimensions central to personality-driven behavior. The static nature limited exploratory potential that interactive elements could provide.

Sheet 3 - "How Do MBTI Types Feel and Express Emotion?" (Sentiment-Focused Layout) This design centered on emotional expression through sentiment analysis and emoji usage patterns, applying dual coding theory by combining numerical sentiment scores with symbolic emoji representation.

Theoretical justification: Violin plots were chosen over box plots following Wickham's grammar of graphics principles (2010) - they reveal full distribution shape for continuous sentiment data, effectively showing the 0.18-point range discovered between feeling-intuitive types (0.26-0.28) and thinking-sensing types (0.10-0.12). The violin plot's kernel density estimation provides more nuanced understanding of sentiment distribution patterns than simple quartile representations.

Visual design rationale: The sentiment analysis section employed horizontal bar charts to rank personality types by positivity, making comparative reading straightforward. Emoji visualization used frequency-based sizing, following Bertin's visual variable principles (1983) where symbol size corresponds to data magnitude. The color scheme maintained consistency with the overall temperament-based palette.

Data processing considerations: The sentiment analysis required processing 1.5 million tweets using the syuzhet package, with results aggregated by personality type. Emoji extraction involved Unicode pattern matching to handle diverse symbolic expressions while filtering out modifier characters that could skew frequency counts.

Strengths: Effectively demonstrated personality-emotion correlations with clear visual encoding. Emoji analysis leveraged contemporary understanding of digital emotional communication, resonating with the target audience's social media experience. The combination of quantitative sentiment scores with qualitative emoji patterns provided multiple perspectives on emotional expression.

Limitations: Violin plots might challenge non-technical audiences to interpret. Insufficient connection to engagement outcomes missed the link between expression style and social impact that would complete the personality-behavior narrative.

Sheet 4 - "How Do MBTI Types Communicate and Engage?" (Communication-Focused Layout) This design explored communication pathways from language choice to social amplification, implementing narrative flow principles from data storytelling theory.

Theoretical justification: Word clouds were retained despite analytical limitations because the intended audience expects familiar social media visualization formats, prioritizing pattern recognition over precise measurement following Hearst's text visualization principles (2009).

Strengths: Word cloud juxtaposition provided immediate visual contrast between extroverts' social terms ("video," "birthday," "social") and introverts' introspective vocabulary ("feel," "hope," "life"). Funnel visualization effectively illustrated amplification progression.

Limitations: Word clouds difficult to interpret quantitatively. Complex progression from micro-level communication to macro-level outcomes might overwhelm users seeking quick insights.

2.3 Final Design Justification (Sheet 5)

The final design synthesizes insights from alternative approaches into a modular dashboard with three narrative stages:

1. Social Visibility by MBTI: Introduces platform behavior through engagement metrics
2. Expression Styles by Personality: Explores emotional tone and communication preferences
3. From Expression to Amplification: Illustrates personality-driven conversion to social reach

Layout Architecture: Vertical scrolling narrative with embedded interactive modules supports cognitive processing needs of MBTI enthusiasts who prefer systematic exploration. This addresses Munzner's nested model (2014) by providing appropriate abstraction of personality data at each stage.

Interaction Design Justification: Multiple interaction types serve different user needs within the target audience:

- MBTI trait filtering: Supports analytical nature of MBTI enthusiasts, following Norman's visibility principle for interactive affordances (2013)

- Hover tooltips: Balance detail for researchers with clean design for casual users, implementing progressive disclosure from cognitive load theory
- Linked highlighting: Enables cross-chart comparison essential for understanding personality relationships
- Consistent color encoding: Maintains visual identity using temperament colors, reducing cognitive load per Few's categorical data guidelines (2009)

Typography and Visual Hierarchy: Sans-serif fonts ensure accessibility while clear size relationships (headers 18pt, subheaders 14pt, body 12pt) guide attention flow through the narrative structure, following established typographic hierarchy principles.

Audience-Specific Design Decisions:

- MBTI terminology used without extensive explanation, assuming domain familiarity reduces extraneous cognitive load
- Color coding aligns with MBTI community conventions, leveraging existing mental models
- Interactive complexity calibrated for personality framework comfort but visualization novices
- Data source attribution prominently displayed addresses researcher credibility expectations

The final design successfully balances competing user needs: systematic exploration for MBTI enthusiasts, pattern analysis for researchers, and guided discovery for curious newcomers, while maintaining theoretical grounding in established visualization principles.

3. Implementation

3.1 Technical Implementation

This interactive narrative visualization was implemented using R Shiny as the primary framework, chosen for its robust reactive programming capabilities and seamless integration with R's data visualization ecosystem.

Core Technical Stack: The application employs a modular architecture using shiny for reactive framework and dashboard layout, plotly for interactive visualizations with coordinated filtering and hover details, dplyr for data manipulation and real-time filtering operations, syuzhet for sentiment analysis on tweet content, shinyjs for custom JavaScript interactions and enhanced user experience, and data.table for efficient processing of large tweet datasets.

Differences from Final Design (Sheet 5): While the implementation closely follows Sheet 5's core framework, several practical modifications were necessary during development. The funnel visualization in the "From Expression to Amplification" section was implemented as horizontal stacked bar charts rather than the funnel shape shown in Sheet 5, as this approach better accommodated the comparative analysis between introverts and

extroverts while maintaining data clarity and interactive functionality. Additionally, a pie chart was added for MBTI distribution to provide immediate demographic context that enhances the narrative opening and user orientation. The tabbed interface for Communication Patterns replaced the linear arrangement in Sheet 5 to optimize screen space utilization while preserving analytical depth.

Technical Challenges and Project Complexity: The project demonstrates sophistication through several challenging implementation aspects. The implementation processes a substantial dataset comprising 8328 users with more than 1.5 million tweets, requiring sophisticated text processing and performance optimization. The emoji analysis required complex Unicode pattern matching to extract and filter emojis while removing skin tone modifiers and duplicate variations from this extensive tweet corpus. Sentiment analysis integration processed individual tweets across all personality types to generate meaningful comparative insights between different MBTI groups. The implementation features coordinated filtering across multiple chart types with real-time updates, custom JavaScript integration for enhanced user experience including automated welcome modal triggers, and dynamic emoji selection with random sampling functionality. The reactive programming paradigm manages complex data dependencies while maintaining smooth performance across interactive elements despite the large-scale text data processing requirements. Performance optimization through pre-computed aggregations and efficient data processing using data.table ensures responsive user interactions across the substantial dataset.

External Code Sources: All visualization code was developed specifically for this project using standard R packages. No external templates or third-party visualization libraries were used beyond the established R ecosystem packages listed above.

3.2 Interactive Narrative Visualisation Implementation

The final implementation transforms the theoretical design into a cohesive narrative that guides users through three key insights about personality and social media behavior. The dashboard structure supports both guided story exploration and detailed analytical investigation, making complex personality-behavior relationships accessible to the target audience.

Narrative Structure and User Journey The implementation employs a vertical scroll design that maintains story continuity while enabling focused exploration. Users begin with demographic context, progress through engagement pattern discoveries, and conclude with communication style insights. This flow mirrors natural analytical thinking: understanding who is present, how they behave, and why their behavior differs.

The sidebar filtering system allows users to test personality-driven hypotheses throughout their journey. For instance, users can filter to thinking-oriented types while exploring sentiment patterns, immediately seeing how personality preferences translate into measurable behavioral differences.

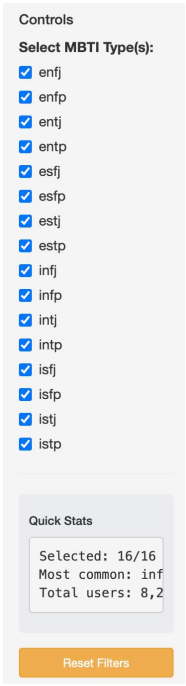

Figure 1: Sidebar Filtering

Section 1: "Who Is Present?" - Establishing Context: The opening MBTI distribution visualization immediately reveals platform demographics, showing that intuitive types (INFJ 11%, ENFP 10.8%, INTJ 10.8%, INFP 10.8%) significantly outnumber sensing types. This finding sets crucial context for all subsequent analysis - Twitter's user base shows systematic personality bias that affects how we interpret engagement patterns.

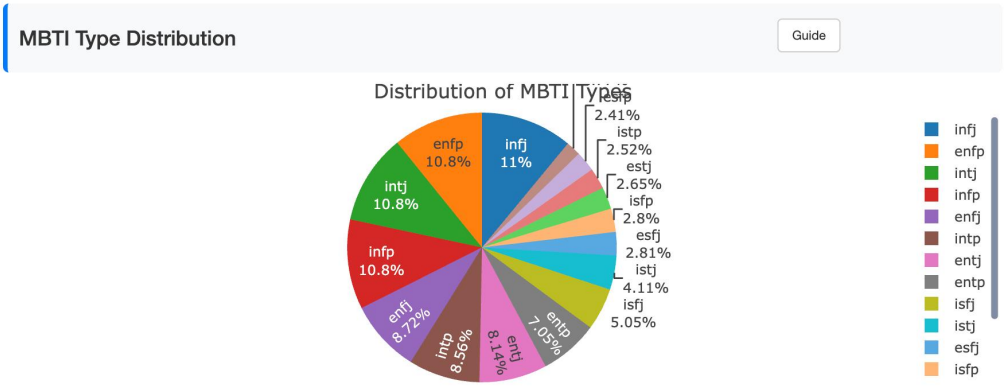

Figure 2: MBTI Type Distribution

The transition to engagement patterns builds on this demographic foundation, revealing that platform presence and platform success follow different rules. The four-panel engagement

analysis demonstrates that high followers don't correlate with high activity - INFJ users average 2,700+ followers despite moderate posting, while ESFJ users maintain different engagement profiles through consistent activity.

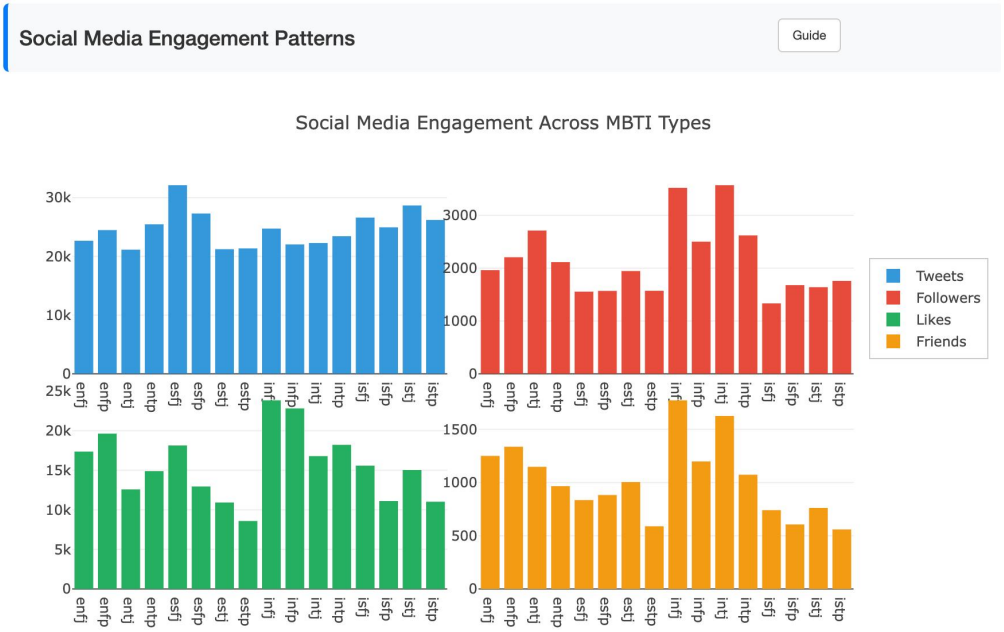

Figure 3: Social Media Engagement Patterns Across MBTI Types

Section 2: "How Do They Express?" - Emotional and Communication Patterns: The sentiment analysis section provides the narrative's emotional core, demonstrating that personality types express fundamentally different emotional tones online. The visualization clearly shows the 0.18-point positivity range between feeling-intuitive types (ENFJ: 0.30, INFJ: 0.33) and thinking-sensing types (ESTP: 0.10, ISTP: 0.12), making abstract personality differences concrete and measurable.

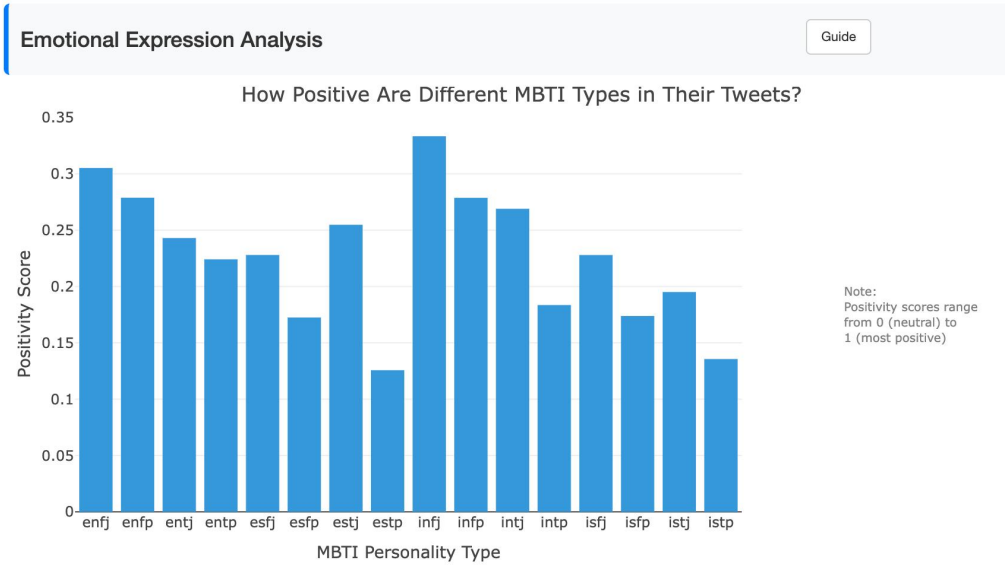

Figure 4: Sentiment Analysis by MBTI Type

The communication patterns section extends this emotional insight into behavioral analysis through three complementary views. The interaction style comparison reveals that both introverts and extroverts balance expression and amplification, but through different mechanisms. The emoji exploration interface enables users to discover symbolic communication preferences, while the activity level analysis demonstrates how different personality types achieve social media presence through distinct approaches.

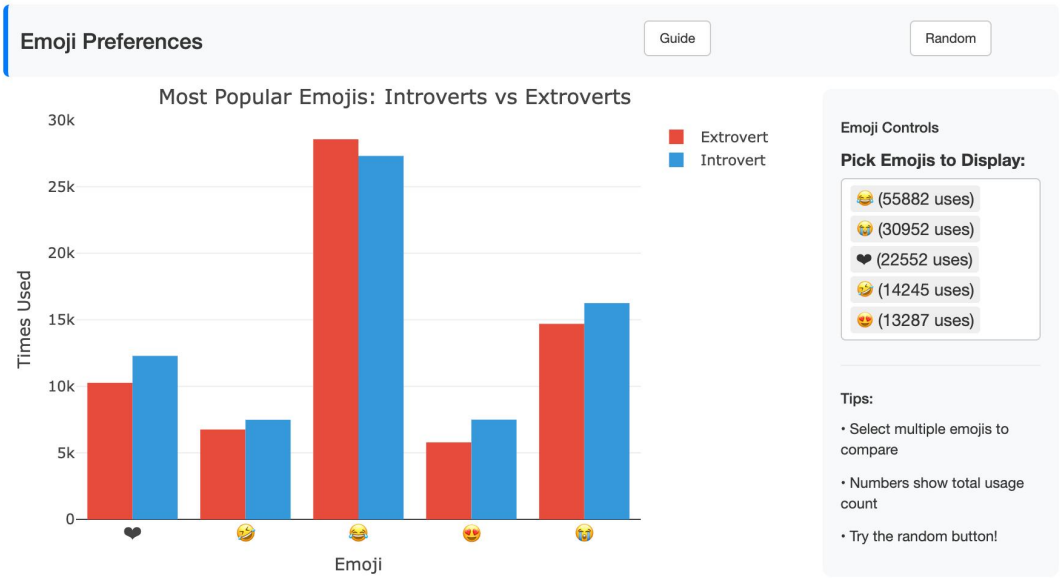

Figure 5: Emoji Usage Comparison by Personality Type

Interactive Features Supporting Narrative Discovery:
The filtering system serves the narrative by enabling hypothesis testing throughout the exploration journey. Users can examine specific personality combinations while maintaining visual consistency across all charts. The guide system provides contextual explanations that enhance understanding without interrupting the discovery flow.

The welcome modal establishes appropriate expectations and navigation guidance, ensuring users understand both the analytical possibilities and the underlying data limitations. Real-time statistics in the sidebar maintain awareness of data scope while enabling focused analysis.

Translating Insights for the Target Audience:
The implementation successfully addresses MBTI enthusiasts' analytical preferences while remaining accessible to broader audiences. Technical concepts like sentiment scoring are explained through annotations and hover details, while the overall narrative maintains focus on personality-behavior relationships rather than statistical methodology.

The color consistency across visualizations reinforces personality-based thinking, with warm reds consistently representing extroversion and cool blues representing introversion.

This visual coherence supports pattern recognition across different analytical dimensions while respecting established MBTI community conventions.

The dashboard effectively demonstrates that personality psychology provides meaningful organization for understanding complex social media behavior patterns, making academic research insights accessible through interactive exploration rather than static presentation.

3.3 Using the Implementation

This section provides instructions for running and using the interactive narrative visualization, emphasizing features that may not be immediately apparent to users.

System Setup and Launch: Install R with required packages: shiny, plotly, dplyr, syuzhet, shinyjs, and data.table. Execute the main R script to launch the dashboard in your browser at a local server address. No additional setup is required as all data is pre-processed.

Getting Started: Upon launch, a welcome modal automatically appears after one second to orient new users. This modal is easily missed if users immediately start interacting - it provides crucial navigation guidance. The visualization is designed for vertical scrolling exploration from top to bottom for optimal narrative flow.

Key Features That Users Often Overlook:

Persistent Cross-Chart Filtering: The sidebar checkbox filters affect ALL visualizations simultaneously, though this coordination isn't immediately obvious. Selecting specific MBTI types updates every chart in real-time, enabling cross-sectional analysis that many users miss.

Guide System: Each section includes a small "Guide" button in chart headers that provides essential interpretation help. These buttons are easily missed but explain visualization types, sentiment scoring, and pattern interpretation.

Rich Hover Information: All charts include detailed hover tooltips with exact values, sample sizes, and contextual explanations. Users often don't realize the depth of information available through hovering.

Random Emoji Discovery: In the Communication Patterns section, the "Random" button automatically selects unexpected emoji combinations, revealing surprising usage patterns that manual selection might miss. This feature is frequently overlooked.

Reset Functionality: The "Reset Filters" button in the sidebar returns all charts to showing complete data, but its location makes it easy to overlook when users want to return to full overview.

Effective Usage Pattern: Start with the demographic overview, progress through engagement patterns, then explore sentiment and communication sections. For comparative analysis, try filtering to thinking-oriented types (NT/ST) while exploring sentiment patterns, then switch to feeling-oriented types (NF/SF) to observe differences. The filtering system maintains selections across sections, enabling hypothesis testing throughout exploration.

Troubleshooting: If charts appear empty, verify that at least one personality type remains selected in sidebar filters. If the application fails to load, check that required R packages are installed.

4. Conclusion

This interactive narrative visualization successfully transforms complex statistical relationships between MBTI personality types and social media behavior into an accessible exploration platform. The implementation demonstrates how theoretical visualization principles can be effectively applied to personality psychology data, creating value for both researchers and general audiences.

Key Achievements:

The visualization effectively communicates three fundamental insights about personality-driven social media behavior. It reveals that social media success follows multiple pathways, with introverted intuitive types achieving high engagement through quality content while extraverted types maintain visibility through consistent activity. The sentiment analysis demonstrates meaningful emotional expression differences across personality types, with a clear 0.18-point range between feeling-oriented and thinking-oriented personalities. The communication pattern analysis illustrates how personality preferences translate into distinct interaction styles and symbolic expression patterns.

The Five Design Sheet methodology proved invaluable for systematically refining concepts while ensuring theoretical foundations remained connected to practical user needs throughout development.

Learning and Reflection:

This project reinforced the importance of audience-centered design when translating academic research into accessible formats. The implementation process highlighted technical challenges of processing large text datasets for sentiment analysis and emoji extraction, requiring careful attention to performance optimization and data quality validation.

In hindsight, several enhancements could strengthen the visualization's impact. The current implementation focuses on English-language tweets from a specific period, limiting generalizability. Future development could incorporate multilingual analysis capabilities, statistical validation features with confidence intervals, and machine learning integration for personality prediction based on social media behavior patterns.

Broader Impact:

This work demonstrates the value of applying personality psychology frameworks to understand digital communication behavior, with applications for social media platforms, digital marketing, and user experience design. The visualization methodology serves as a model for translating complex psychological research into accessible interactive formats while maintaining scientific rigor.

5. Bibliography

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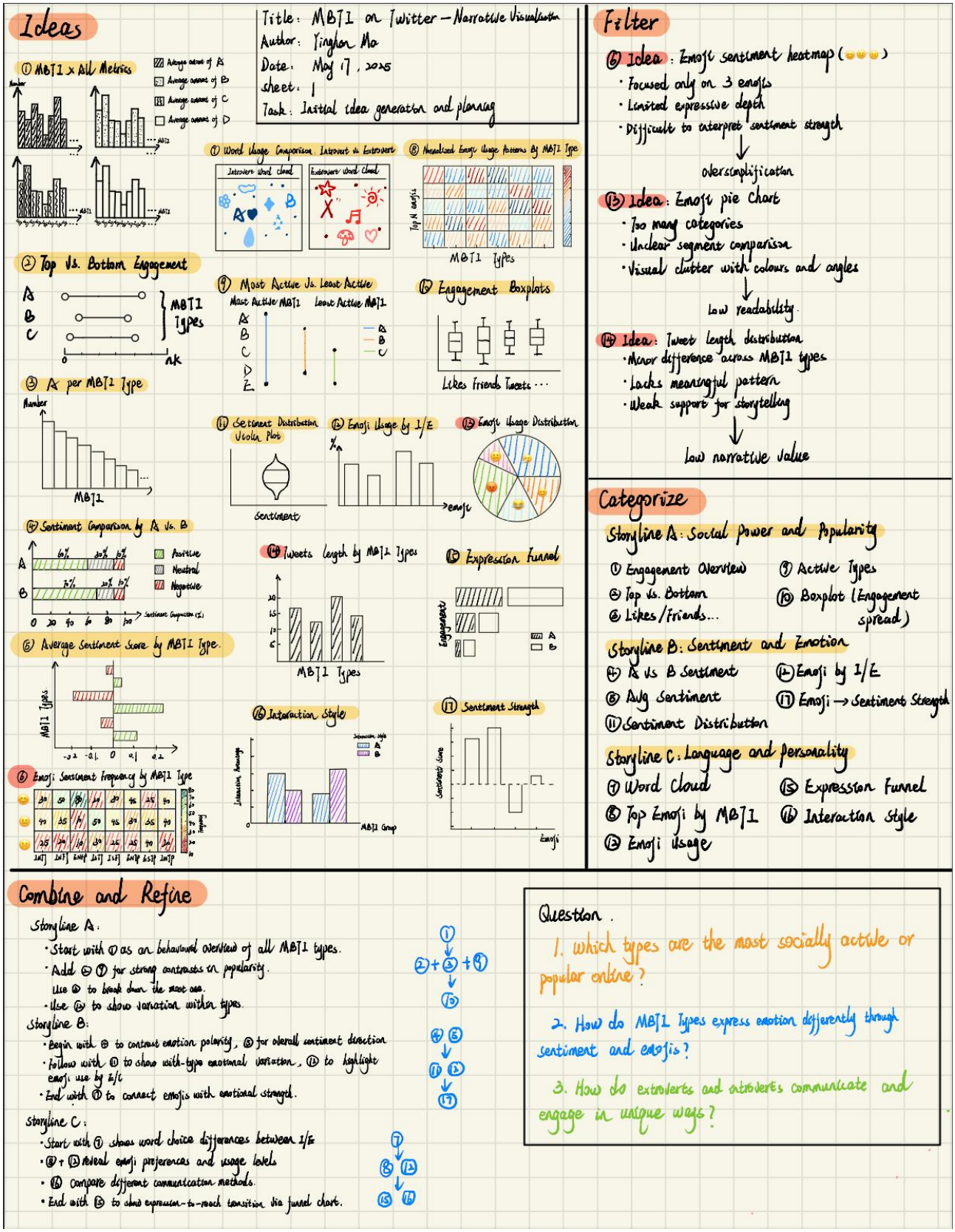
[10] I acknowledge the use of ChatGPT (https://chat.openai.com/) to refine the academic language and accuracy of my own work.

6. Appendix

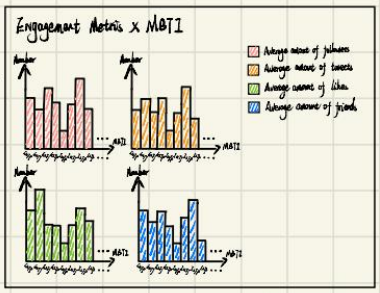

Ideas
Title: MBTI on Twitter – Narrative Visualization
Author: Yinghan Ma
Date: May 17, 2025
sheet: 1
Task: Initial idea generation and planning
① MBTI x All Metrics
② Top Vs. Bottom Engagement
③ Ax per MBTI Type
④ Sentiment Comparison by A vs. B
⑤ Average Sentiment Score by MBTI Type
⑥ Emoji Sentiment Frequency by MBTI Type
⑦ Word Usage Comparison Introvert vs Extrovert
⑧ Normalized Emoji Usage Patterns by MBTI Type
⑨ Most Active Vs. Least Active
⑩ Engagement Boxplots
⑪ Sentiment Distribution Violin Plot
⑫ Emoji Usage by I/E
⑬ Emoji Usage Distribution
⑭ Tweets Length by MBTI Types
⑮ Expression Funnel
⑯ Interaction Style
⑰ Sentiment Strength
Filter
⑥ Idea: Emoji sentiment heatmap
· Focused only on 3 emojis
· Limited expressive depth
· Difficult to interpret sentiment strength
oversimplification
⑬ Idea: Emoji pie chart
· Too many categories
· Unclear segment comparison
· Visual clutter with colours and angles
Low readability
⑭ Idea: Tweet length distribution
· Minor difference across MBTI types
· Lacks meaningful pattern
· Weak support for storytelling
Low narrative value
Categorize
Storyline A: Social power and Popularity
① Engagement Overview
② Top Vs. Bottom
④ Likes/Friends...
⑨ Active Types
⑩ Boxplot (Engagement spread)
Storyline B: Sentiment and Emotion
④ A Vs B Sentiment
⑤ Avg Sentiment
⑪ Sentiment Distribution
⑫ Emoji by I/E
⑰ Emoji → Sentiment Strength
Storyline C: Language and personality
⑦ Word Cloud
⑧ Top Emoji by MBTI
⑬ Emoji Usage
⑮ Expression Funnel
⑯ Interaction Style
Combine and Refine
Storyline A:
· Start with ① as an behavioural overview of all MBTI types.
· Add ② & ⑨ for strong contrasts in popularity.
Use ⑩ to break down the most one.
· Use ⑭ to show variation within types.
Storyline B:
· Begin with ④ to contrast emotion polarity, ⑤ for overall sentiment direction
· Follow with ⑪ to show with-type emotional variation, ⑫ to highlight emoji use by I/E
· End with ⑰ to connect emojis with emotional strength.
Storyline C:
· Start with ⑦ shows word choice differences between I/E
· ⑧ + ⑬ reveal emoji preferences and usage levels
· ⑯ compare different communication methods.
· End with ⑮ to show expression-to-reach transition via funnel chart.
Question.
1. which types are the most socially active or popular online?
2. How do MBTI types express emotion differently through sentiment and emojis?
3. How do extroverts and introverts communicate and engage in unique ways?

Layout

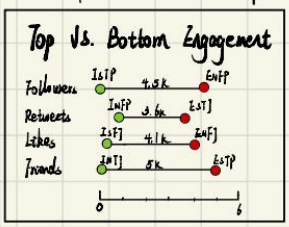
Who Is Most Popular Online?
—— MBTI and Social Engagement

Title: Who Is Most Popular?
Author: Yinghan Ma
Date: May 18th
Sheet: 2
Task: Narrative Visualisation Design

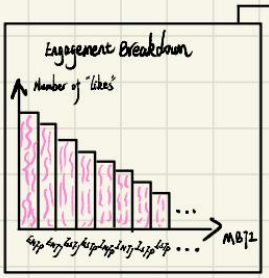
1 Engagement Overview
Each MBTI type's average favorites, followers, friends, and tweets.
Provides a general social behaviour snapshot.

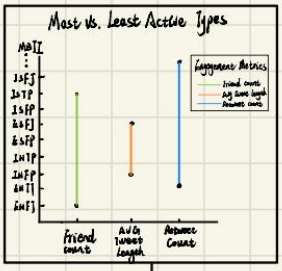


2 Top vs Bottom Engagement
Highlights the best and worst performing types in terms of social metrics.



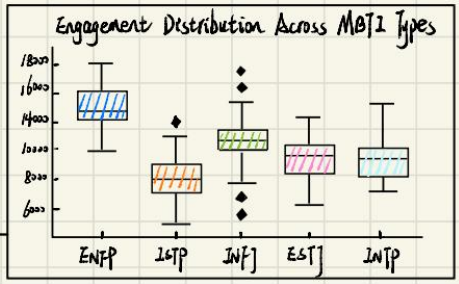
3 Breakdown
Dives deeper into personal connection metrics to identify socially engaging types.





4 Most vs Least Active Types
Compares total tweet count between the most and least vocal MBTI types.

5 Engagement Boxplot
Shows the variation in engagement within each type, not just the averages.



Operations

- Hover tooltips: Users can hover over bars and boxplots to see exact engagement values.
- Trait filter: Users can filter by MBTI traits (e.g., Extraverted only) to compare within or across categories.
- Static layout flow: The charts are organised left to right to guide users from overall engagement to activity level and consistency.
- Multi-chart comparison: Users can visually compare popularity, tweet frequency, and engagement variability across all MBTI types.

What users can do with it:

- Identify which personality types are the most socially visible on Twitter.
- Compare high- and low-engagement types across different metrics.
- Understand not just total engagement, but how consistently each type performs.

Focus

This page presents a narrative layout titled "Who Is Most Popular Online? – MBTI and Social Engagement."

It is designed for MBTI enthusiasts, social media researchers, and digital communicators who are curious about the relationship between personality types and online influence.

The goal is to identify which MBTI types tend to be more socially active or visible on Twitter, and whether popularity is driven by activity, personality alignment, or engagement consistency.

The layout includes five complementary visualisations—from overview metrics to behavioral variance—that collectively build a foundational understanding of personality-driven social performance.

Discussion

Pros:

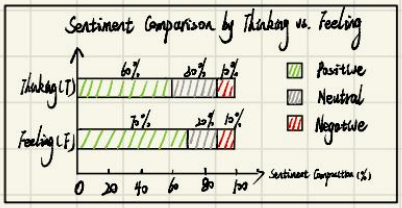
- Logical chart progression: from general overview to extremes, then into within-type variation
- Clearly highlights the difference between being active and being popular
- Boxplot adds nuance by showing distribution rather than just averages
- Colour coding and structure make comparisons easy to follow.

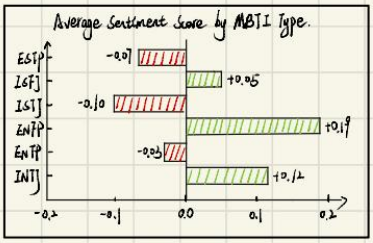
Cons:

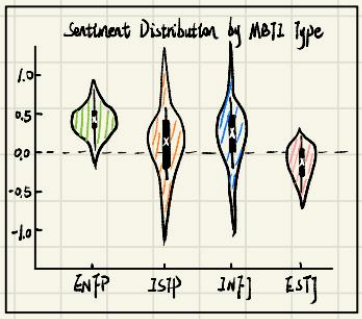
- Engagement averages may be distorted by outliers or small group sizes
- Label density and chart spacing can reduce readability in a static layout
- Lack of median or sample size reference may limit interpretability
- Doesn't explore external factors (e.g., tweet content) that may affect popularity

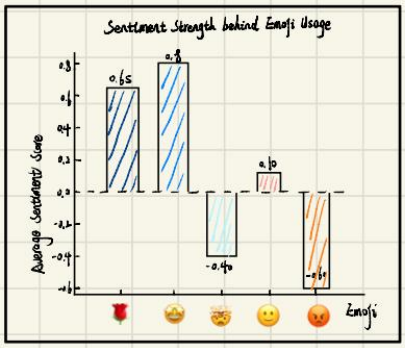
Layout

How Do MBTI Types Feel and Express Emotion?









1. Compares how Thinking and Feeling types express positive, neutral, or negative sentiment.
2. Shows average emotional tone across personality types.
3. Visualises emotional spread and variability within each MBTI type.
4. Highlights symbolic expressiveness differences between introverts and extroverts.
5. Maps emotional tone behind commonly used emojis.

Focus

This sheet explores emotional expression across different MBTI types—focusing on how people feel and how they choose to show those feelings.

It is designed for audiences such as MBTI enthusiasts, emotion researchers, and digital communicators who are curious about how personality affects tone and symbolic language in online platforms.

By combining sentiment scores, distribution analysis, and emoji usage, this narrative reveals not only how strongly people feel, but also how they express emotions differently through words and symbols.

The visual flow is structured to first compare logical vs feeling types, then zoom in on intra-type variation and the expressive power of emojis.

Title: How Do MBTI Types Feel and Express Emotion?
Auther: Yinghan Ma
Date: May 18th
Sheet: 3
Task: Narrative Visualisation Design

Operations

- Hover tooltips: Users can hover over bars and violin plots to view sentiment values and emotional range for each type.
- Trait filter: Users can filter by MBTI trait groups (e.g., Thinking vs Feeling, or I/E) to focus on specific emotional patterns.
- Emoji insight view: Emoji insight view: Emoji sentiment strength is visually encoded and grouped to compare symbolic expression styles.
- Static visual flow: Layout guides users from sentiment polarity to emotional variability, and finally to emoji usage.

What users can do with it:

- Compare emotional tone between Thinking and Feeling types.
- Explore how sentiment varies across MBTI types, both in range and direction.
- Understand how introverts and extroverts use emojis to express emotion, and how strong those emotions are.

Discussion

Pros:

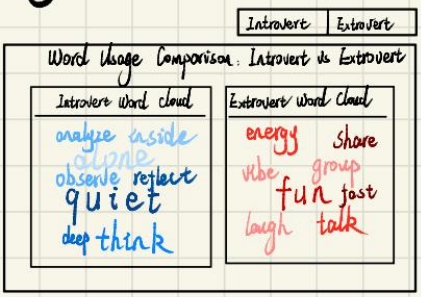
- Smooth narrative flow from internal emotion (sentiment) to external expression (emoji)
- Violin plot effectively shows emotional variability within each type
- Emoji sentiment strength adds a symbolic layer beyond plain frequency
- Highlights subtle yet meaningful contrasts between introverts and extroverts

Cons:

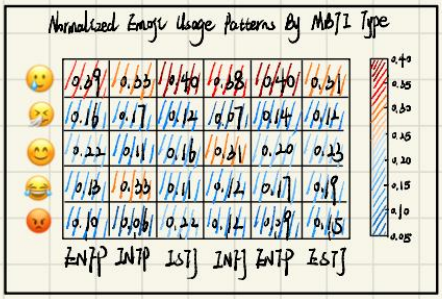
- Violin plot may be hard to interpret for non-technical audiences
- Emoji sentiment is inferred automatically and doesn't reflect context
- Differences between types are visible but sometimes small in magnitude
- Layout may feel slightly dense due to complexity of visual types

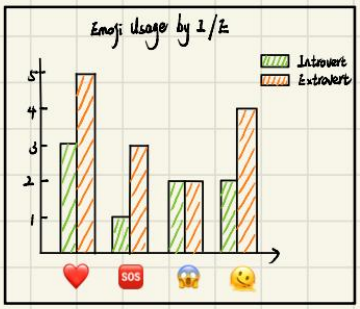
Layout

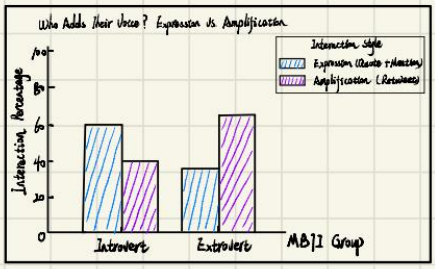
How Do MBTI Types Communicate and Engage?

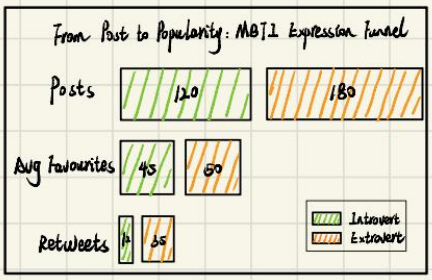


1. Shows common vocabulary used by introverts and extroverts.
2. Normalized emoji usage across MBTI types reveals symbol preferences.
3. Highlights expressive differences in emoji choice between introverts and extroverts.
4. Extroverts retweet more; introverts prefer quote + mention.
5. Traces content from creation to amplification, comparing impact styles.









Title: How Do MBTI Types Communicate and Engage?
Author Yinghan Ma
Date: May 18th
Sheet: 4
Task: Narrative Visualisation Design

Operations

- Hover tooltips: Users can hover over emoji bars and funnel segments to view exact values for usage and amplification.
- Trait filter: Users can filter by MBTI traits (e.g., Introvert or Extrovert) to view differences in language and interaction styles.
- Word cloud comparison: Visualises the most frequent words used by I/E types.
- Interaction behaviour visual: Quote vs retweet preference is shown in grouped bars to compare amplification methods.
- Funnel chart: Represents how posts translate into reach (likes, retweets), helping users understand communication impact.

What users can do with it:

- Explore how introverts and extroverts differ in their word choices and emoji preferences.
- Compare interaction styles, such as quoting versus retweeting.
- Understand how expression leads to reach by following the funnel from post to amplification.

Focus

This sheet explores how personality influences the style of communication on Twitter—beyond just sentiment.

It is designed for MBTI and digital behavior enthusiasts who want to understand how different types engage with others, whether through words, emojis, or interaction styles.

The goal is to uncover how introverts and extroverts vary not only in what they say, but how they say it, and how far their voices travel.

Through five visuals, this layout traces communication from word choice to symbolic expression, interaction behavior, and content amplification.

Discussion

Pros:

- Provides a complete behavioural path: from language → emoji → interaction → impact
- Word clouds and grouped bar charts clearly show contrasting tendencies between I/E types
- Funnel chart visualises message amplification effectively
- Storyline captures both what is said and how far it travels

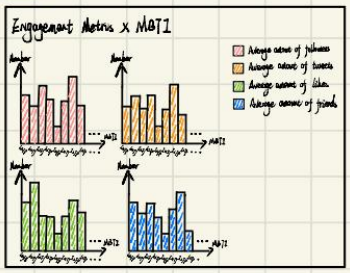
Cons:

- Funnel logic is inferred from group behaviour, not tracked at the tweet level
- Interaction types (quote vs retweet) may oversimplify more complex behaviours
- Word cloud may highlight frequency but not intent or sentiment
- Visual density could overwhelm if not explained step by step

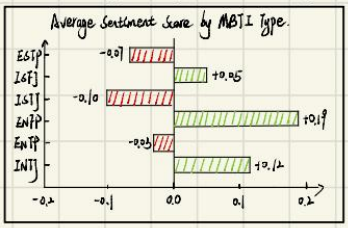
Layout

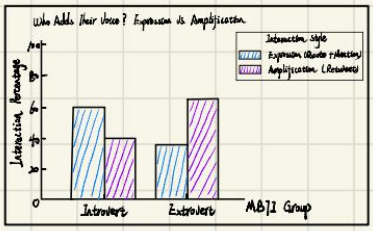
How Personality Shapes Online Presence

Social Visibility by MBTI

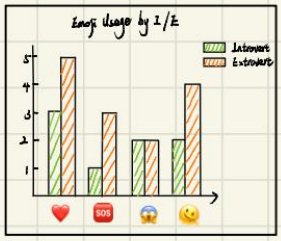


Expression Styles by Personality





Some Modules can be filtered by MBTI traits (e.g., I/E), with tooltip popups on hover to assist exploration.



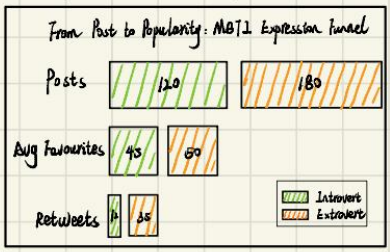
Data from 3 public sources:

A. MBTI Tweets (Kaggle)
https://www.kaggle.com/datasets/sanketrai/twitter-mbti-dataset/data

B. TECLA Benchmark (PLOS ONE)
https://doi.org/10.1371/journal.pone.0212844.t017

C. US MBTI Distribution (MBTI® Manual)
https://archive.org/details/mbti-manual-a-guide-to-the-development-and-use-of-the-myers-briggs-type-indicator-pdfdrive

From Expression to Amplification



Title: How personality Shapes Online Presence
Author: Yinghan Ma
Date: May 18th
Sheet: 5
Task: Visual Refinement and Final Narrative Selection.

Operations

Each visualisation will be implemented as a static chart or interactive module in R Shiny.

- Filter MBTI traits using checkbox selectors (e.g., I/E, T/F) to explore personality-specific behaviours.
- Hover tooltips reveal metric details (e.g., emoji sentiment scores, amplification types).
- Charts are linked and arranged in a vertical scroll layout to support smooth narrative flow.
- Click to highlight selected MBTI behaviours across multiple charts for comparison.
- Modules are modular and designed to progressively guide the user from visibility → expression → reach.

What users can do with it:

- Personalise their view using filters to focus on specific traits.
- Use hover interactions to understand fine-grained differences (like sentiment polarity or emoji tone).
- Follow a story-like interface that mimics narrative scrolling, moving naturally from left to right.
- Compare how different MBTI types go from posting to amplification — all in one interactive layout.

Focus

This design focuses on delivering a cohesive narrative that explains how different MBTI personality types express themselves and generate influence on Twitter. The goal is to transition viewers from general visibility metrics (e.g., followers, likes) to deeper insights about emotional tone, communication styles, and amplification outcomes.

The visual story progresses in three stages:

1. Social Visibility by MBTI – introducing platform behavior of each type.
2. How Personality Drives Expression – exploring tone, emoji use, and engagement preferences.
3. From Expression to Amplification – illustrating how different MBTI types translate expression into social reach.

This layout is designed for clarity, narrative logic, and ease of interaction in R Shiny.

Detail

The dashboard will rely on pre-processed MBTI-labelled tweet and user data. Sentiment scoring was conducted using the syuzhet package, and emoji usage was normalised by personality group. Retweet and quote proportions reflect expression vs amplification styles. All charts were based on prior EDA and are technically feasible within Shiny, using standard libraries like ggplot2 and plotly. No external APIs are needed, and development can be completed in under 10 hours.