Assignment 3: Report - The Unspoken Epidemic - Analysis to Combat the Rise of 'Brain Rot'

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The "Brain Rot" Phenomenon

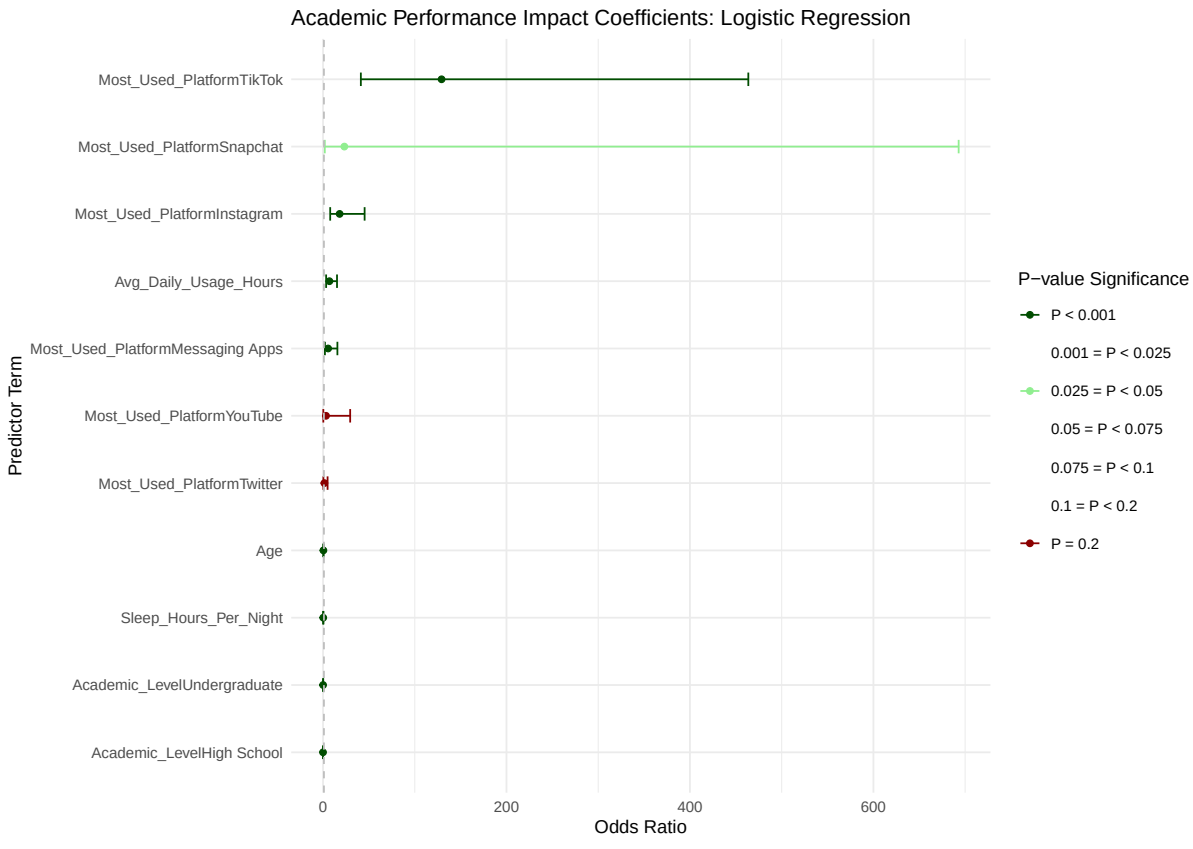
- **What is "Brain Rot"?**
  - Cognitive and linguistic decline from excessive digital content (Oxford Word of the Year 2024).
  - Linked to decreased attention, simplified language, and impacts on well-being.
- **Project Goal:**
  - Analyze social media's impact on student academic performance, sleep, and mental health.
  - Demonstrate feasibility for a comprehensive, data-driven solution.

Data & Methodology

- **Data Sources:**
  - **Current:** Student survey data (645 obs.) on usage, well-being, demographics.
  - **Future:** Mobile engagement trends, academic records, linguistic corpora, neuroscience data.
- **Data Characteristics (The 4 V's):**
  - **Volume:** Scaling from small to petabytes.
  - **Variety:** Structured to unstructured (text, video).
  - **Velocity:** Static to high-velocity (real-time trends).
  - **Veracity:** Self-report bias to complex data quality.
- **Methodology:**
  - **CRISP-DM:** Structured process for data science projects.
  - **Key Techniques:** Regression (Logistic, Linear), Time-Series, NLP, ML.

Academic Performance Impact

How Social Media Affects Academic Performance



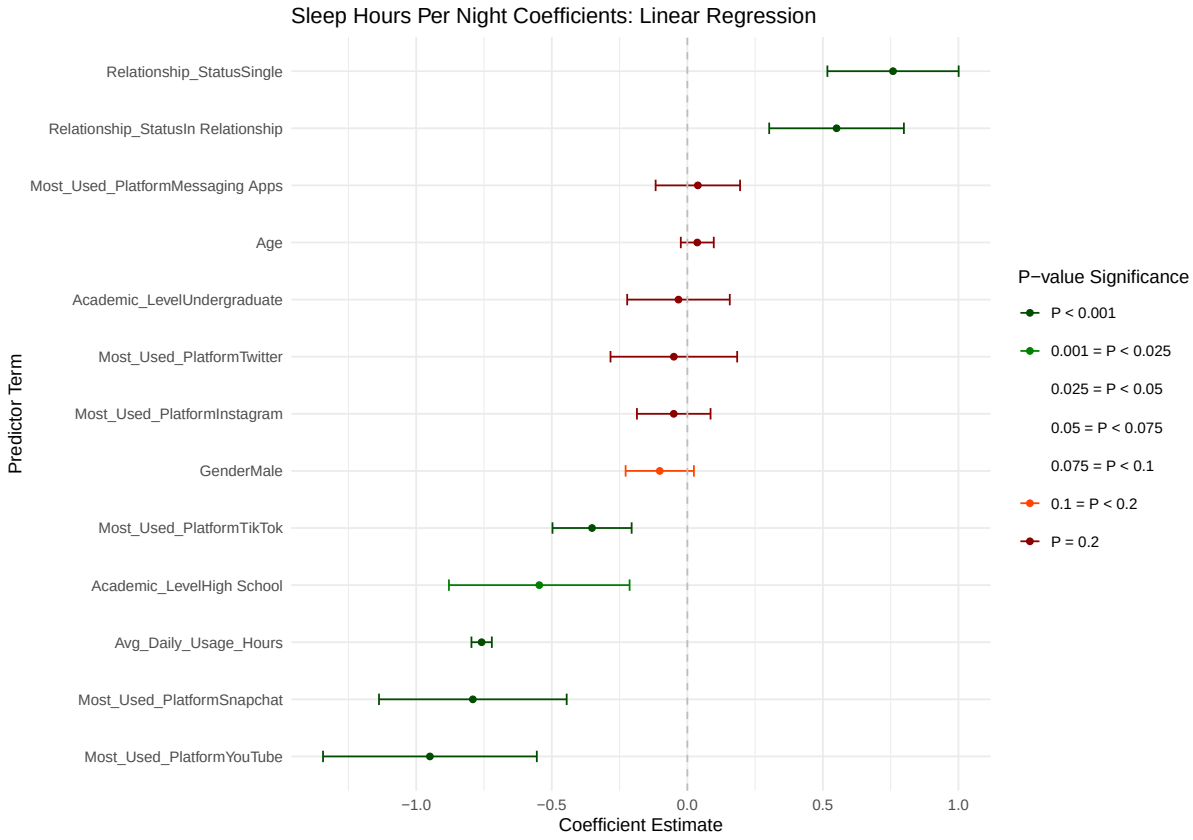
Academic Performance Impact

How Social Media Affects Academic Performance

- **Key Drivers:**
  - **Higher Usage Hours:** Significantly increases odds of academic impact.
  - **Less Sleep:** Strong negative link to academic performance.
  - **Academic Level & Age:** High School/Undergraduate & older students show lower odds of impact (compared to Graduate/younger).
- **Platform Influence (vs. Facebook baseline):**
  - **TikTok (129x), Snapchat (23x), Instagram (18x), Messaging Apps (5.6x):** Significantly higher odds of academic impact.
  - **Twitter & YouTube:** Not statistically significant in this model.

Sleep Hours Impact

Factors Influencing Student Sleep Hours



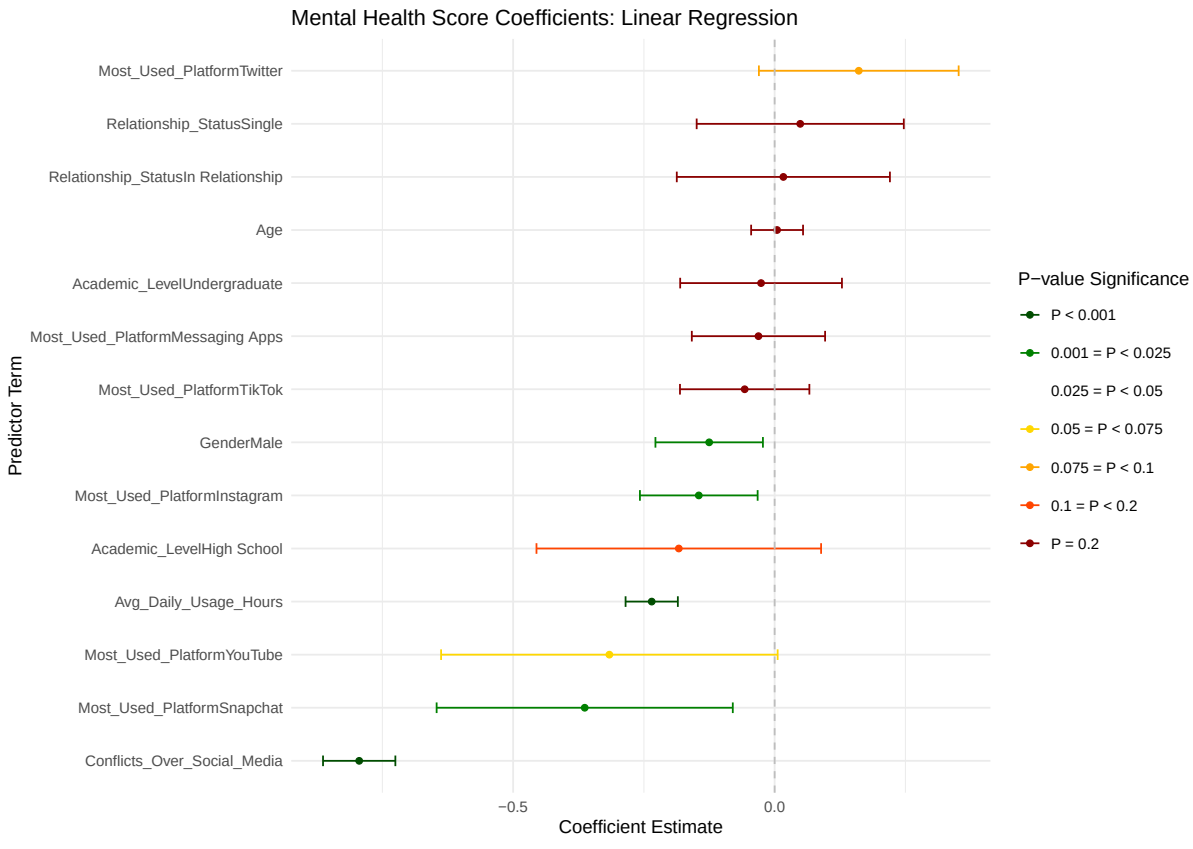
Sleep Hours Impact

Factors Influencing Student Sleep Hours

- **Key Drivers:**
  - **Higher Usage Hours:** Directly linked to **less sleep** (-0.76 hours/day).
  - **Platforms:** Snapchat (-0.79 hrs), YouTube (-0.95 hrs), TikTok (-0.35 hrs) users sleep significantly **less** (vs. Facebook baseline).
  - **Academic Level:** High Schoolers sleep less (-0.55 hrs) than Graduate students.
  - **Relationship Status:** "In Relationship" (+0.55 hrs) and "Single" (+0.76 hrs) sleep more than "It's Complicated."
- **Not Significant:** Age, Gender, Instagram, Messaging Apps, Twitter.

Mental Health Impact

Predictors of Student Mental Health Score



Mental Health Impact

Predictors of Student Mental Health Score

- **Key Drivers (Negative Impact):**
  - **Higher Usage Hours:** Linked to **lower mental health** (-0.24 score).
  - **Social Media Conflicts:** Strongest negative predictor (-0.79 score).
  - **Platforms:** Instagram (-0.15 score), Snapchat (-0.36 score) users have **lower** scores (vs. Facebook).
  - **Gender:** Males have **lower** scores (-0.13 score) than Females.
- **Nuanced Platform Effects:**
  - **YouTube:** Marginally negative trend (-0.32 score, $p=0.054$).
  - **Twitter:** Marginally **positive** trend (+0.16 score, $p=0.099$), suggesting unique dynamics.
- **Not Significant:** Academic Level, TikTok, Messaging Apps, Age, Relationship Status.

Conclusion & Future Outlook

- **Feasibility Confirmed:**
  - Project successfully identifies significant, nuanced links between social media and student well-being.
  - Highlights platform-specific impacts (e.g., TikTok vs. Twitter).
- **Future Directions:**
  - Integrate objective behavioral data (e.g., app usage logs).
  - Expand to time-series and geographical analyses.
  - Develop predictive models for early intervention strategies.
- **Ethical Commitment:** Responsible data handling, emphasizing correlation, not causation, to inform solutions.