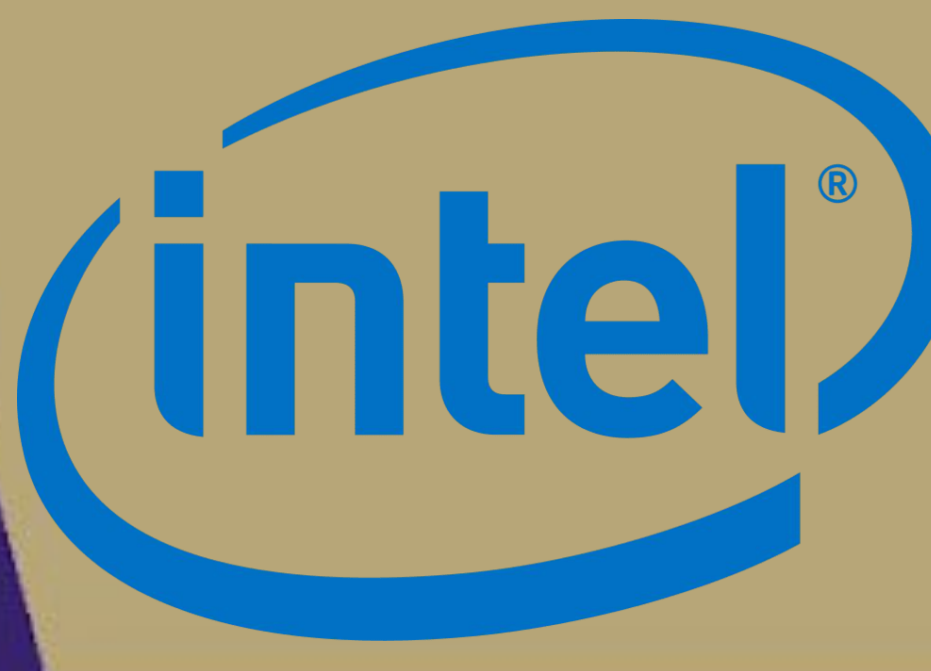# PLATFORM ARCHITECTURE OPTIMIZATION USING INSIGHTS FROM USER AND PROCESSOR DATA

STUDENTS: ANEESH KARPOOR, PO CHIN HO, JUSTIN PIERRE-TREMBLAY, LOGAN SUN, AISHWARYA VENKATESH, PINYI WANG, DONGYU WEI

Background

- Working jointly with Intel, our goal was to analyze insights from user and processor data in order to optimize platform architecture.
- This was accomplished by looking at terabytes of information collected from Intel users over the years of 2020, 2021, and 2022.
- Each of the seven students on the capstone team contributed and worked on their own research question by analyzing the database.

Objective

- We were tasked with analyzing web & PWA adoption/growth trends to ultimately extract actionable insights for Intel to improve their software and architecture
- This would be accomplished by utilizing various Python libraries including Matplotlib, OS, and Tkinter for data visualization and analysis. We completed all queries using PostgreSQL on the Datagrip IDE

Major Category Trends Over Recent Years
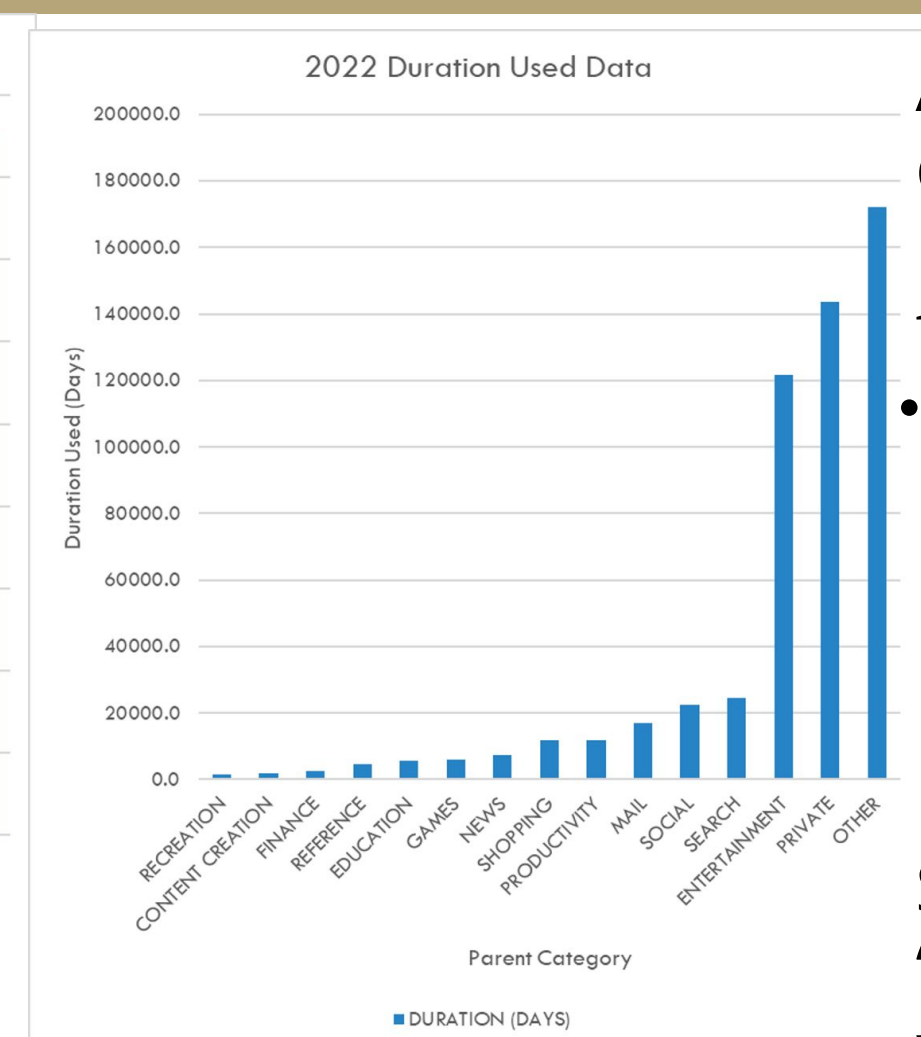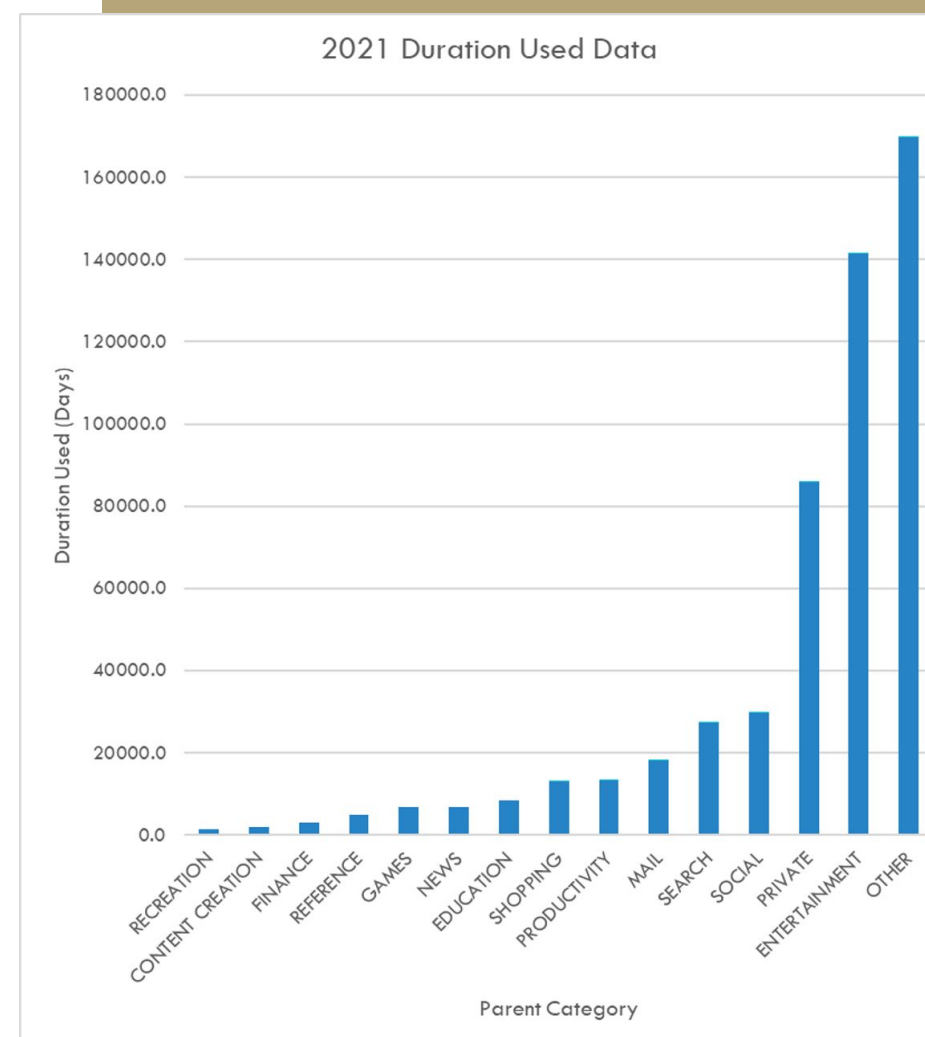
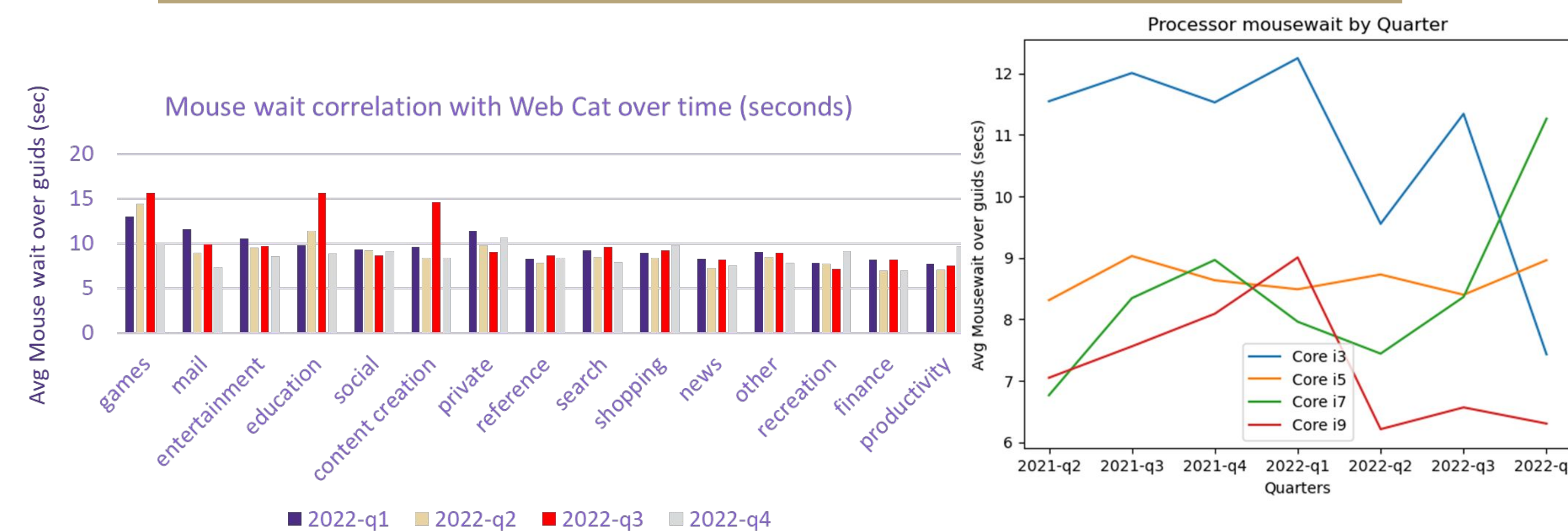Analyzing usage duration data for different categories led us to finding the following key insights:
- There has been a large increase in "private" web usage, which indicates a trend of users being more wary of their data security and privacy.
- Substantial decrease in "entertainment" web usage which could be attributed to the downturn of the COVID-19 pandemic.
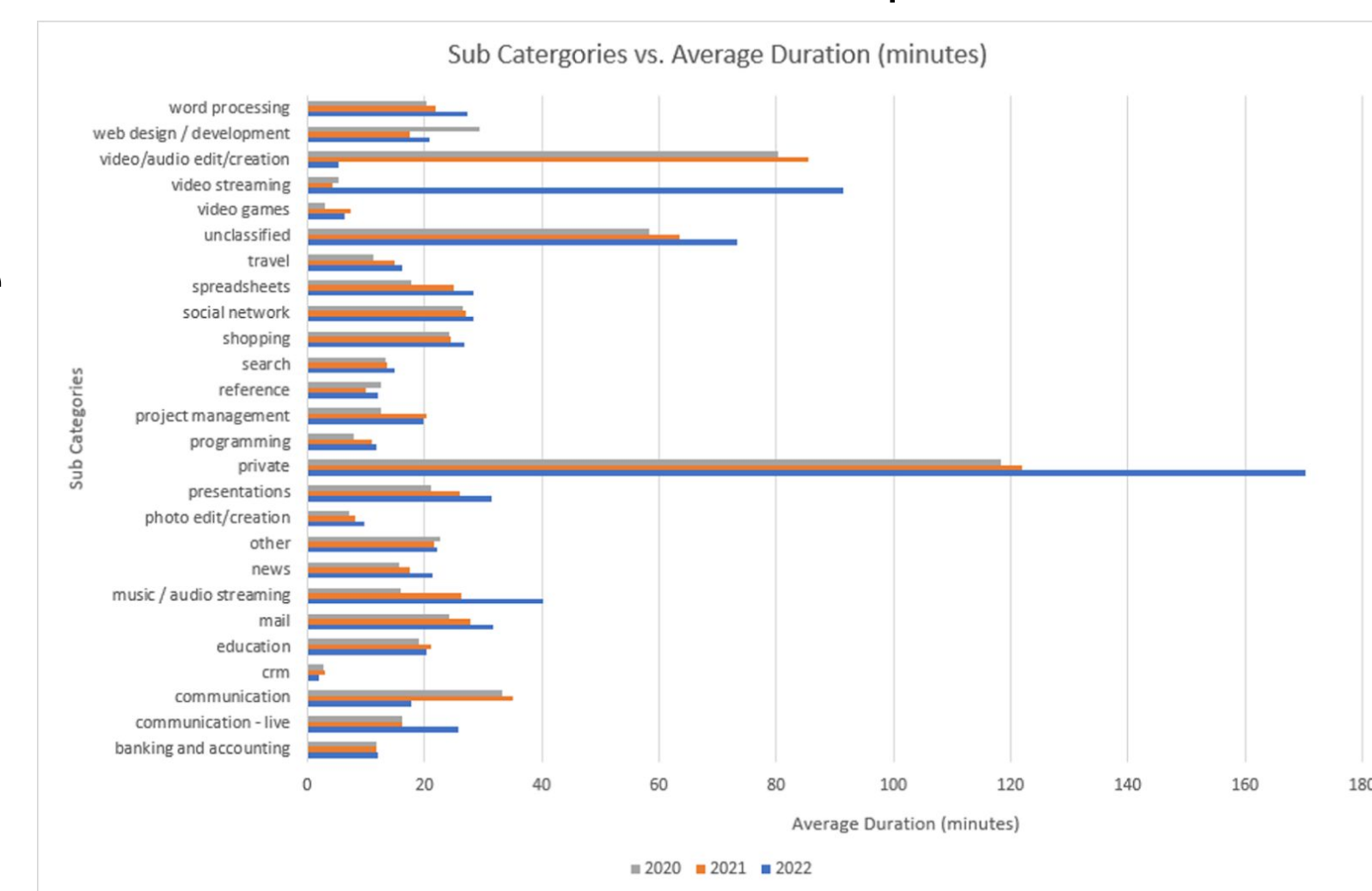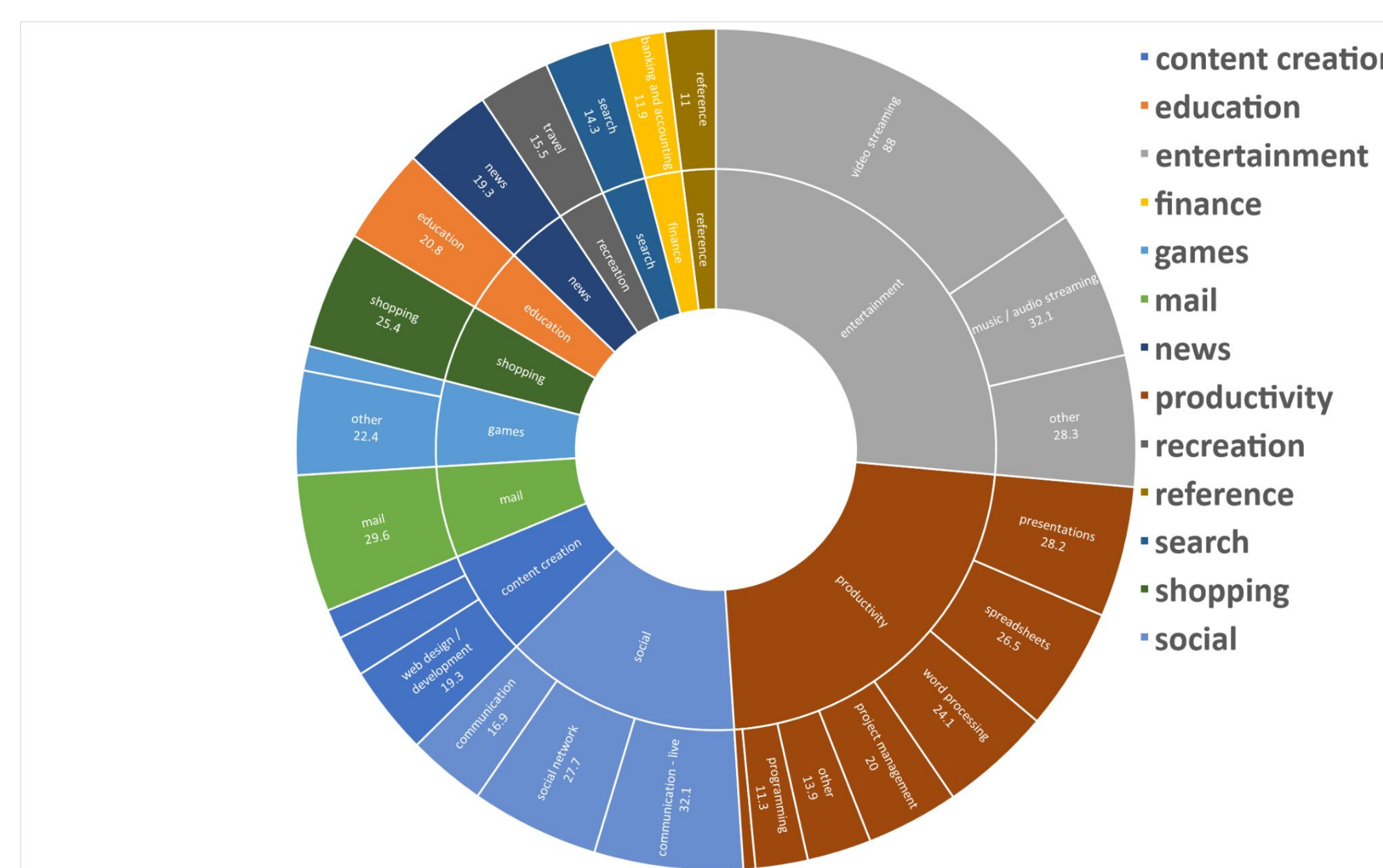
Analyzing the average duration, in minutes, of each sub-category over the span of three years:
- Drastic increase in private sub-category from 2021 -> 2022. More people are becoming aware of information sharing, hiding their data.
- Constant large increase in 'music / audio streaming' in 2020, 2021, 2022. Social media apps are becoming more popular than ever (tik tok, Instagram, etc).
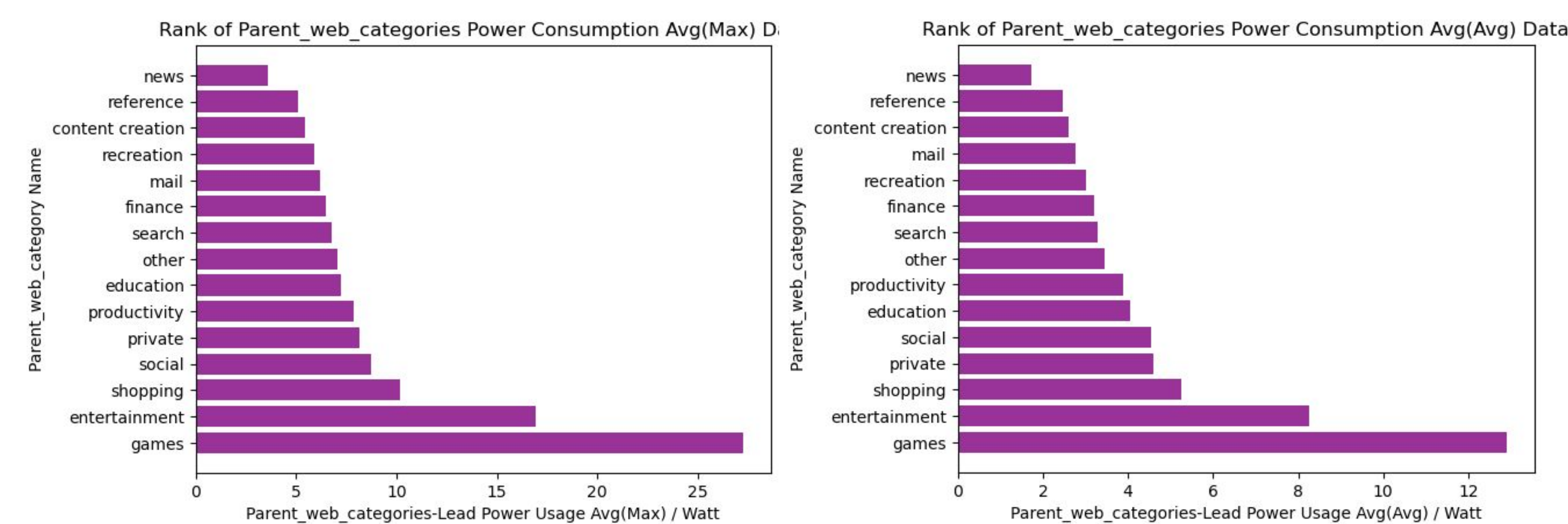

Mousewait

Average User Duration In Each Subcategory

- content creation
- education
- entertainment
- finance
- games
- mail
- news
- productivity
- recreation
- reference
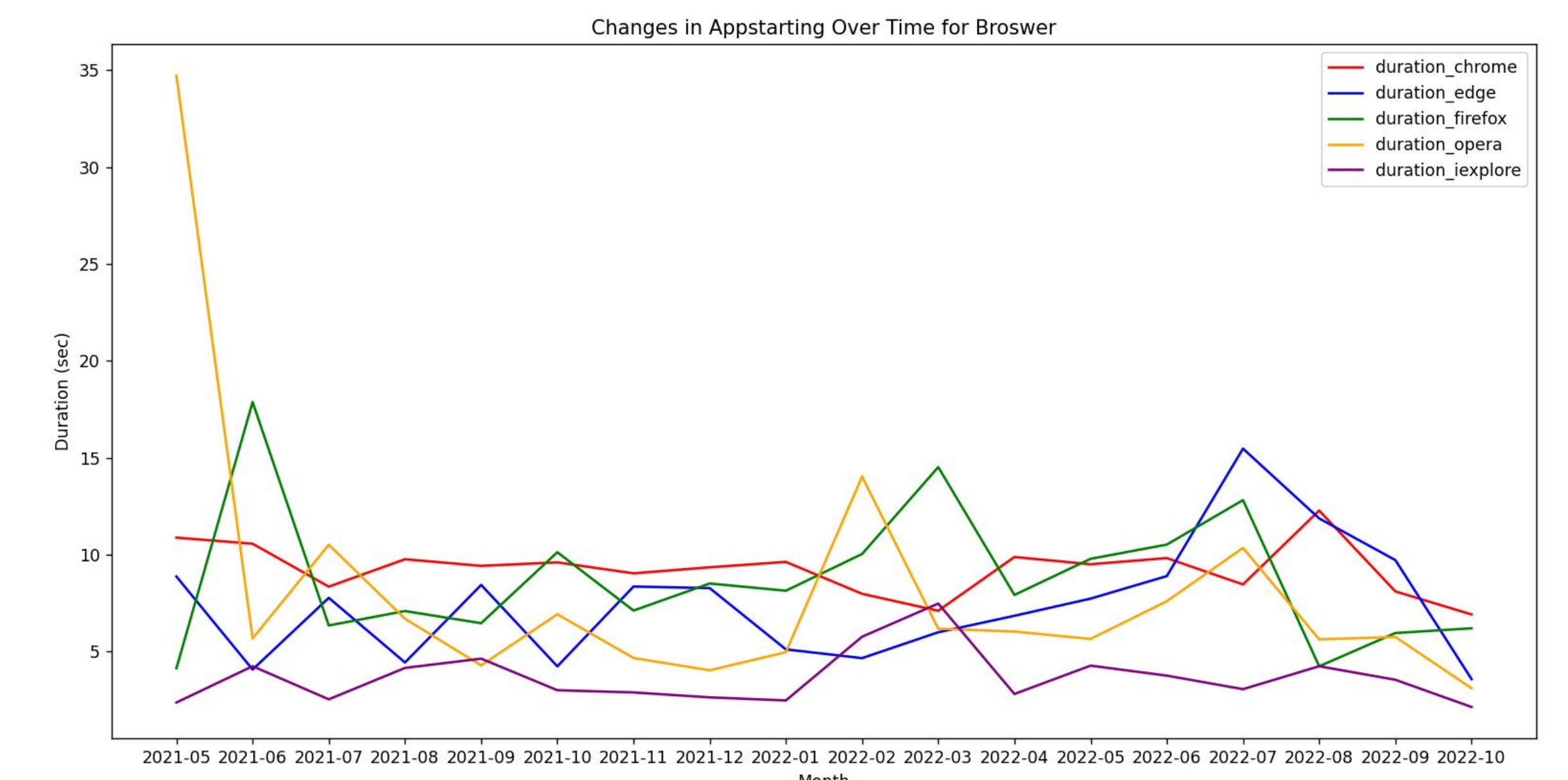- search
- shopping
- social

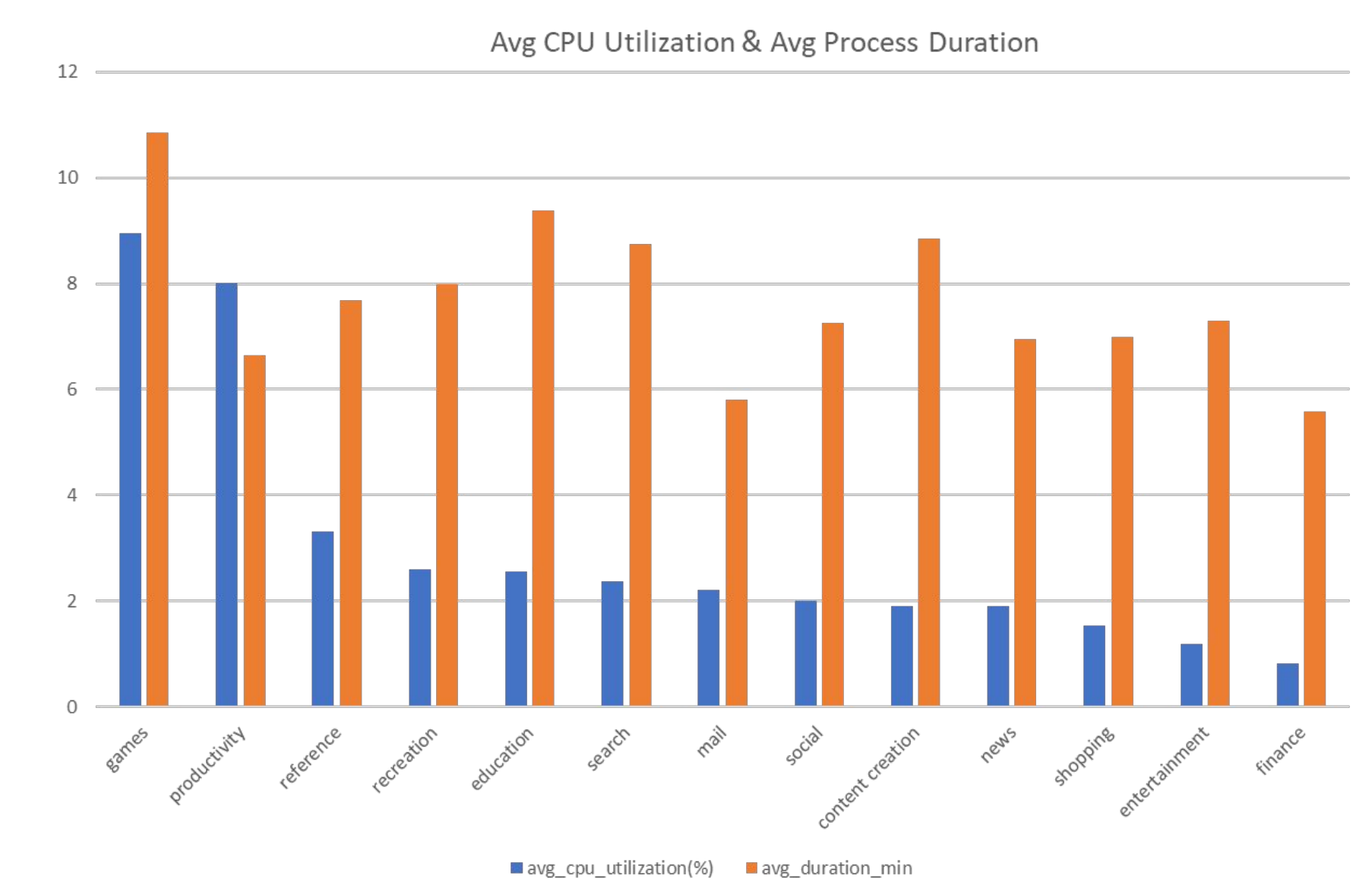## How Web Categories Affect Power Consumption

Changes in Appstarting Time for Browsers

- Chrome, on average, takes longer to open than other browsers.
- Opera has varying appstarting times with significant anomalies.
- Internet Explorer consistently has the least appstarting time.

CPU Utilization vs Average Process Duration

Future Works

User Experience Enhancement: Use the insights to enhance the user experience of web-based applications. Identify pain points or areas where users face challenges and propose design changes or feature enhancements to improve usability and user satisfaction.

Comparative Analysis: Extend the analysis to compare energy consumption and resource utilization across different web platforms and frameworks. Identify differences and strengths/weaknesses of various platforms.

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