Understanding the Impact of Video Quality on User Engagement

presented by Jason Lee
Before we get started...

Conviva provides real time streaming optimization and performance measurement for content providers to maximize their online video business.
Optimized Video for Every Viewer

Insights℠

If it’s not real time, it’s too late. Conviva Insights monitors each viewer, every second, and empowers content owners with actionable insights to make quick decisions that extend viewer engagement.

Read More: Solutions Page

What we do

Conviva helps content owners and rights-holders increase engagement and build stronger relationships with consumers by delivering an optimized and personal video experience to each and every viewer – every single time.

How we do it

Our solutions allow media companies to:

- Optimize every video stream
- View real-time audience metrics
- Compare timely indicators of performance against critical business goals

Read more: Case Studies

Jason Lee, ISE 2012
Video streaming today

- Streaming live events (sports, concerts, presidential debates…)
- Content delivery is cheaper, easier
- Provided by a variety of groups
  - Hulu, Netflix, YouTube
  - Revenue via subscriptions and ads
Aims

- Observe interplay among
  - Video quality
  - User engagement
    - Per video, per user
  - Content types
    - Short VOD, long VOD, live content

- Answering three questions
  - How much does quality matter?
  - Do metrics vary in how much they impact engagement?
  - Do the critical quality metrics vary across genres?
Video lifecycle

- **Player States**
  - Joining
  - Playing
  - Buffering
  - Playing

- **Events**
  - Network/stream connection established
  - Video buffer filled up
  - Video buffer empty
  - Buffer replenished sufficiently
  - User action

- **Player Monitoring**
  - Video download rate,
  - Available bandwidth,
  - Dropped frames,
  - Frame rendering rate, etc.
Analyzing quality on engagement

- **Quality metrics**
- **Time-scales of user engagement**
  - View level (single user, single video: play time)
  - Viewer level (single user, all videos: views, total play time)
- **Types of video content**
  - Long VOD (15~60 minutes)
  - Short VOD (2~5 minutes)
  - Live content (smaller buffers, synchronized viewing)
Collecting data

- Client-resident instrumentation library
  - At “edge”
  - At scale
- Data aggregation and processing in data centers
  - ~ 0.5 TB/day from affiliates

Insights monitors the experience of each viewer, every second providing an ongoing audit and independent analysis of the complete video ecosystem.
Buffering ratios can really hurt
Average bitrate isn’t critical to engagement
But is more important for live video
Rendering quality doesn’t have to be great
Join time matters the least

Correlation coefficient (kendall): -0.37

Number of views vs. Join time (s) with a correlation coefficient of -0.37.
All together now

![Kendall correlation coefficient chart](chart.png)
Wrapping up

- Blind men + elephant
  - Complementary analysis techniques are good!

- Lies, damned lies, and statistics
  - Don’t just rush to conclusions, look at context

- Ultimate goal?
  - Video quality index

Video AdVantage℠
Providing a high quality viewing experience that keeps your audience captive means more ad completions and ultimately, more revenue per viewer.