



# Professional Perspective

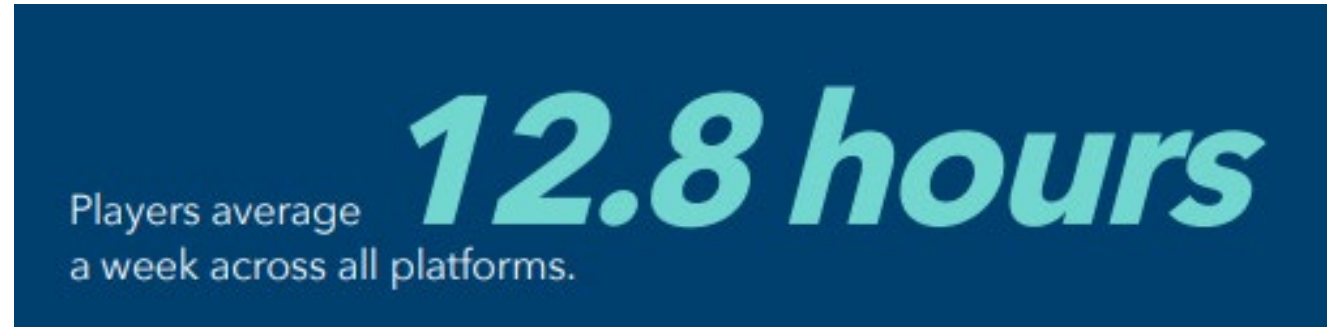
Brian Schmidt

# Disclaimer!

- “Professional Perspective”
- A very broad industry
- Many stakeholders
  - Console makers, software designers, peripheral ecosystem (eg Gaming Headsets, PC soundcards)

# Why Hearing Safety in Video Games?

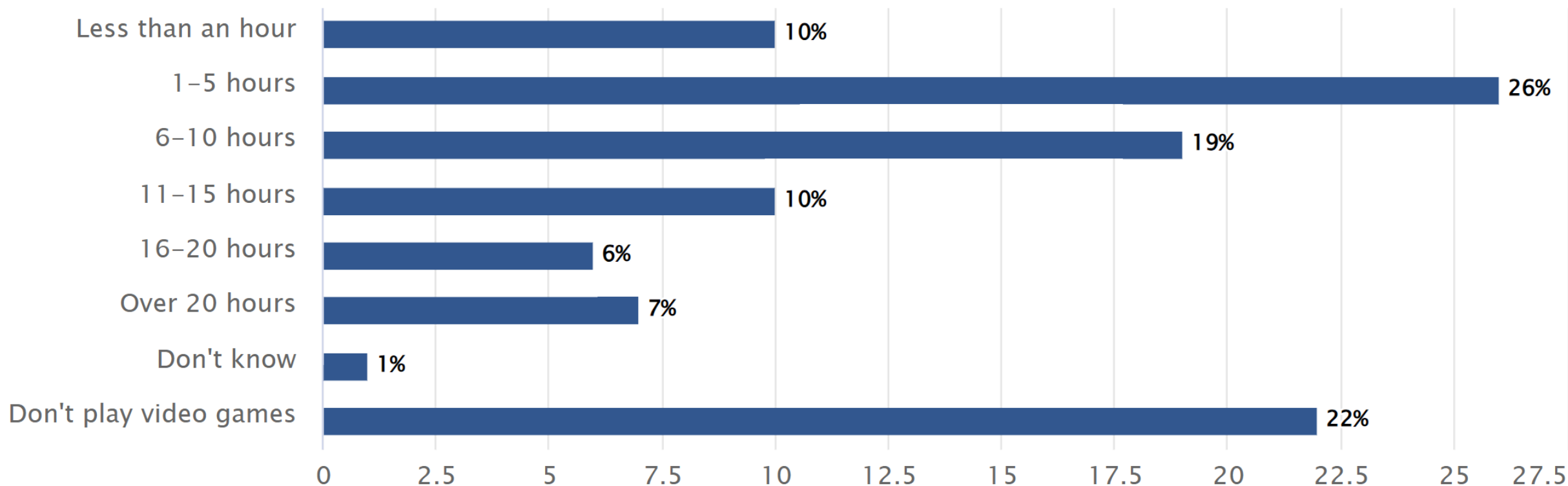
- Large Impactful Industry
  - Billions of people play Video Games
  - Many for long periods of time
- Important for our Audience of Players to enjoy our products safely
- Industry “wants to do the right thing”
- Headphones extremely popular (per Microsoft, Sony)



# How many hours per week do gamers worldwide spend playing video games?



## Among 18- to 64-year-old gamers



Source: Statista Global Consumer Survey (2020)

Designed by  FinancesOnline

# A New Topic!

- This hasn't been something we as an industry have given much thought to...
- *...but close to some things we have worked on\*\**

*\*\* Game Audio Authoring recommendations/standards are not well enforced or fully adopted*

Loudness  
Standards

Accessibility

Listening  
Environment  
Settings

Audio  
Customizability

**[GANG IESD MIX RECOMMENDATIONS]**  
**[Document v.03.02]**  
**[2015.03.11]**



**IESD Recommended Loudness**

**Sony, Microsoft & Nintendo Console Titles**

The IESD, through thorough discussion, have reached consensus between its various members and associated partners to recommend the following overall loudness numbers.

Measurement of Loudness Level and True Peak Levels should be done according to the ITU-R BS.1770-3 algorithms and specifications via a compliant meter\*.

Recommended Average Loudness for a console title should be normalized to -24 LUFS  
(tolerance of + or – 2 LU)

★

🖱️

🎮

🖥️

🔊

📺

📶

AUDIO MIX

MASTER VOLUME ★

MUSIC VOLUME

DIALOGUE VOLUME

EFFECTS VOLUME

HIT MARKER VOLUME

SPEAKERS/HEADPHONES GAME SOUND DEVICE

MONO AUDIO

MONO AMOUNT 1

SUBTITLES

SUBTITLES

HEADPHONE BASS BOOST ^

PC

HEADPHONES

HEADPHONE BASS BOOST ✓

SOUND BAR

HOME THEATER

SPEAKERS [JDS LABS UAC2 DAC [XU201 ✓

OFF

1

ALL OFF

Choose the audio mix to match your audio setup. audio quality on different equipment.

Tighter dynamic range and EQ with enhanced low-

# Example: Player option: Different output Mixes for Different Listening Environments

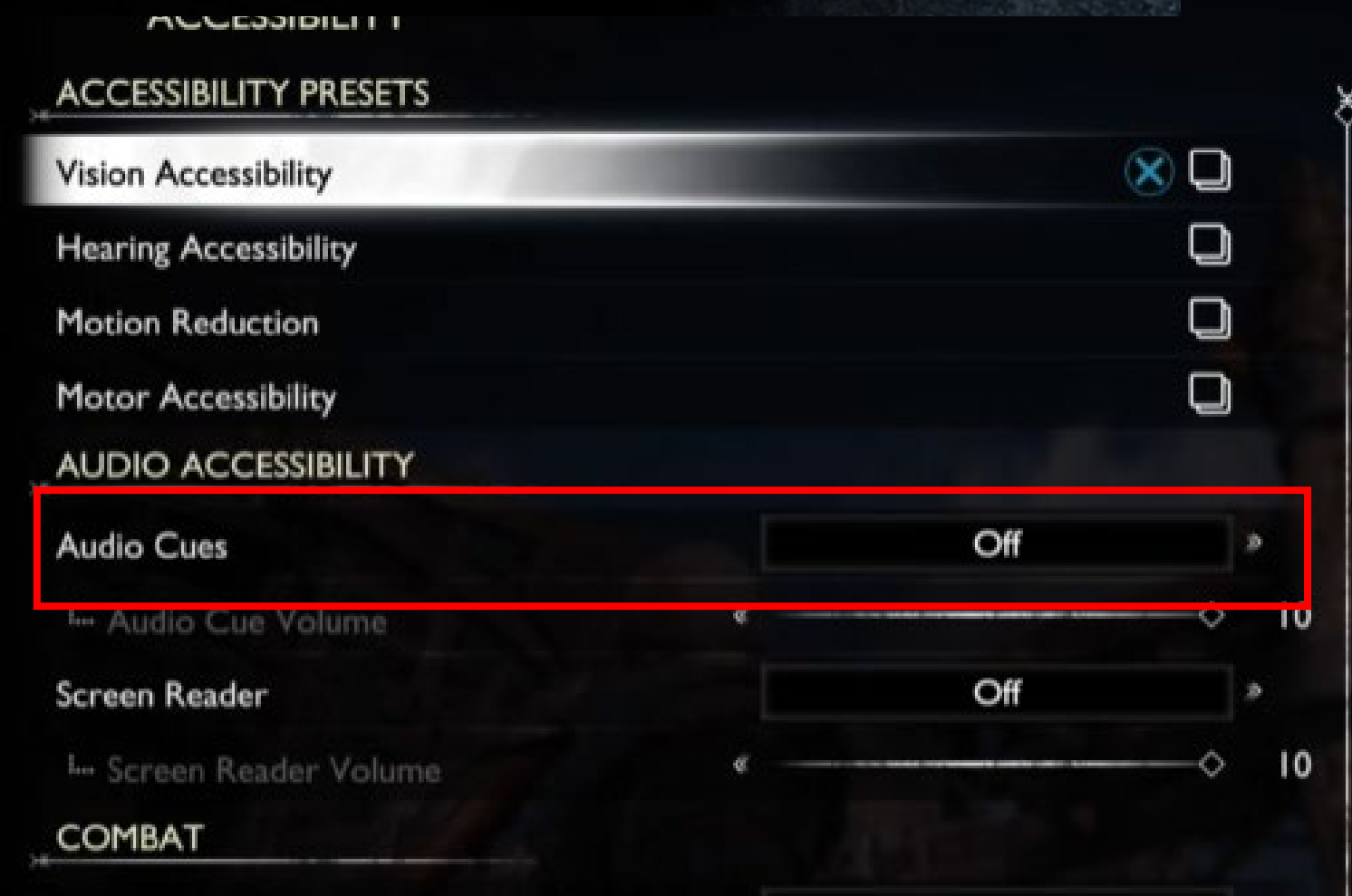
Here are my measurements from Knights and Bikes:

- **Large Speakers** = -22.3 LUFS, 20.0 LU range, -6.2 dBTP
- **Small Speakers (Default)** = -22.7 LUFS, 15.8 LU range, -8.5 dBTP
- **Night Mode** = -22.5 LUFS, 14.1 LU range, -9.3 dBTP



# God of War Ragnarök accessibility options

Explore over 70 accessibility features in God of War Ragnarök that enable players to customize the gameplay experience to suit their needs.



## VISION ACCESSIBILITY

A suite of options optimized for low vision gaming. **Large Text and High Contrast Display** boost visibility to make characters and objects stand out from backgrounds. **Navigation** and **Traversal Assist** enable more fluid guidance to selected tasks. Optimized **Combat Camera** and **Lock-On** keep attacks on target. **Audio Cues** and **Auto Pickup** make sure you don't miss any loot. Puzzle assists will smooth targeting and timing.

# Possibility of Implementation

- Technical Feasibility
  - Is it possible?
- Practical Feasibility
  - Can it be achieved with reasonable effort

# Possibility of Device Implementation

- Consoles: tight control over entire audio system
  - Dosimetry (to extent possible)
  - Volume limiting options
  - Parental Control Volume
  - Status/Dosage Meters
  - WHO-ITU-870-like specification, modified for gaming likely possible
- PC's
  - Much more challenging due to open architecture (Soundcards, Different PC makers, looser standards)

# Possibility of Software/Content Implementation

- Initial Informal Discussions Promising
  - Microsoft Game Studios
  - PlayStation Design and Audio Team
- “Cautiously optimistic”
- Education & Evangelization

Summary: *We want* to be safe, but...

- Immersion is our goal
- Ideally find ways to be both safe and fully immersive
- Device Standards may be easier to implement/enforce than SW Recommendations/Standards
- Open platforms (like PCs) will be a very large challenge

Summary: *We want to be safe, but...*

• Immersion is our goal

11:03 AM

Most games are louder than the Sony standard, some shockingly so. VR at -18 is what I mix to, particularly for the bad earbuds to allow things to sit in the sweet spot of terrible speakers. Worst case the user plugs in earbuds and has to turn down master volume a touch. Tom Bible on Henry, mixed at Skysound, ended up at -18 LKFS for CV1 Oculus and found the typical levels too quiet.

Open platforms (like iOS) will be a very large challenge