

# Does Content Determine Information Popularity in Social Media?

A Case Study of YouTube Videos'  
Content and their Popularity

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# What drives information popularity online?

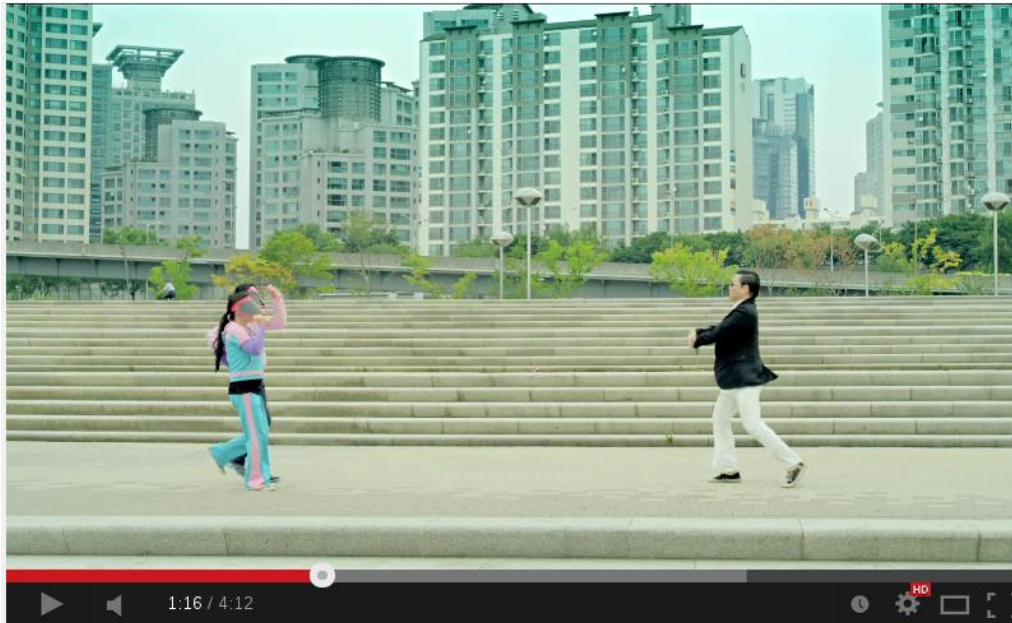
# What drives information popularity online?

Content?



# What drives information popularity online?

## Dissemination?



### PSY - GANGNAM STYLE (강남스타일) M/V



officialpsy ✓ · 61 videos

Subscribe 6,962,812

1,978,711,760

8,260,467 1,021,820

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<http://youtu.be/9bZkp7q19f0>

Start at: 1:16



Mix - PSY - GANGNAM STYLE (강남스타일) MV

by YouTube



PSY - GENTLEMAN MV

by officialpsy

676,323,940 views



PSY\_0715\_SBS Inkigayo\_GANGNAM STYLE (강남스타일)

by officialpsy

45,882,887 views



PSY - GENTLEMAN '2013 PSY CONCERT 달밤에체조 (GYMNASTICS)

by officialpsy

2,524,060 views



gangnam style soc chuot

by long huynh

9,875,679 views



LMFAO - Party Rock Anthem ft. Lauren Bennett, GoonRock

by LMFAOVEVO

677,612,401 views



PSY - Gangnam style Sponge bob parody

by Kadrin Jackson

25,403,050 views



"Dancing Zombie" - Gangnam Style - Daniel Cloud Campos

by bartender72

9,579,801 views



The Walking Dead - Gangnam Style

# The effect of content vs dissemination

- Intuitively, both factors *should* matter
- However...
  - The individual effect of content has been less explored
  - Most previous work is on dissemination

# Our Study

- **Users perception** of the content
  - Mechanical Turk
- Information from a live system
  - YouTube videos
- Evaluation methodology
  - Two focused research questions
  - Experimental setup to focus on content only

# Research Questions

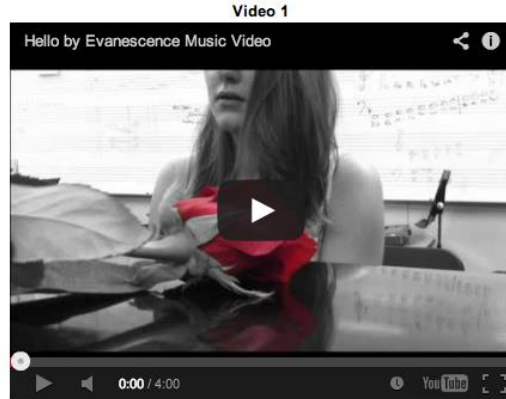
- [Q1] Given a **pair** of YouTube videos with **similar topic**, can users **reach consensus** on their relative popularity (preference)?
- [Q2] **When** users reach consensus, does the preferred video **match** the **most popular** one on YouTube?



[home](#) > Evaluating a Video Pair. Your unique id is 81943345 (please write it down)

- rank videos:
  - [home](#)
  - [new evaluation](#)
  - [continue evaluation](#)
- about:
  - [disclaimer](#)
  - [privacy issues](#)
  - [source code](#)
- external links:
  - [VoD Lab](#)
  - [OSN group @ MPI](#)
  - [UFMG](#)

## Video Pair 1 of 4: Please watch both videos and then answer the form below



## Please provide answers to the form

If you are confused, [go back to instructions](#). You will continue from here on returning

Which video did you like more?  
 Video 1 (left)  
 Video 2 (right)  
 I liked them both  
 I don't like either of them

Which video would you share with your friends?  
 Video 1 (left)  
 Video 2 (right)  
 Both  
 Neither

Which video do you predict will be more popular on YouTube?  
 Video 1 (left)  
 Video 2 (right)  
 I think they will be equally popular  
 I don't know

Did you already know one of these videos?  
 Video 1 (left)  
 Video 2 (right)  
 Both  
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If you want, provide extra feedback on the videos:



home > Evaluating a Video Pair. Your unique id is 81943345 (please write it d

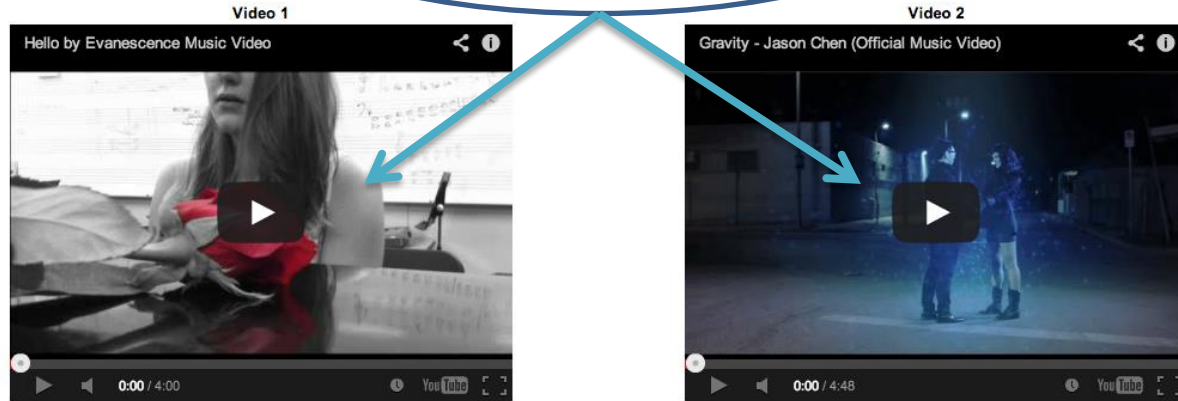
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## Video Pair 1 of 4: Please watch both

Pair of videos  
(up to 100,000 x  
difference in views)



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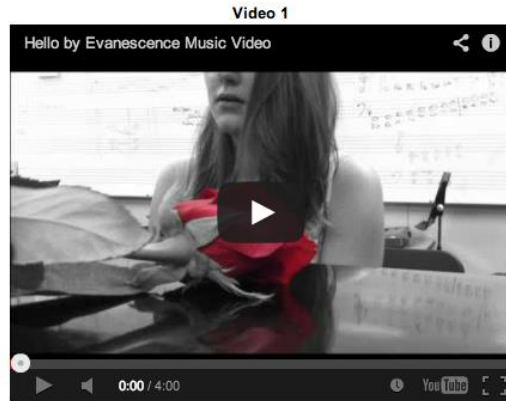
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- Video 1 (left)
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  - Neither

If you want, provide extra feedback on the videos:

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If you want, provide extra feedback on the videos:

Three different content perception questions

# Evaluation Forms

- E1: Which video did you enjoy watching more?
  - Individual
- E2: Which video would you be most willing to share with a friend or group of friends?
  - Social
- E3: Which video do you predict will be more popular on YouTube?
  - Global

# Experimental Setup

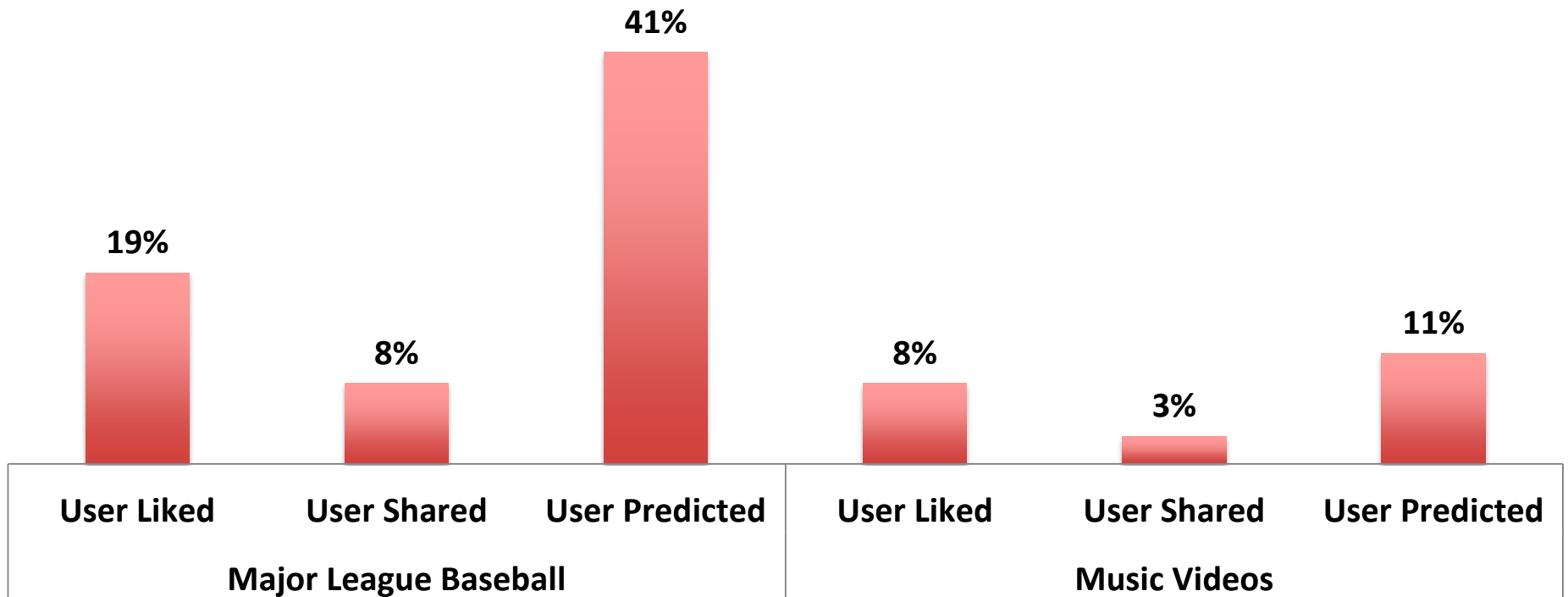
- Two Topics (Baseball Videos, Music Videos)
- 9 different videos. 3 for each popularity group
  - 0 to 10 views
  - 1,000 to 10,000 views
  - 1,000,000 or + views
  - At least 10x different between groups
- 36 pairs per topic
- 8 MT users evaluated each pair

# Q1: Can Users Reach Consensus?

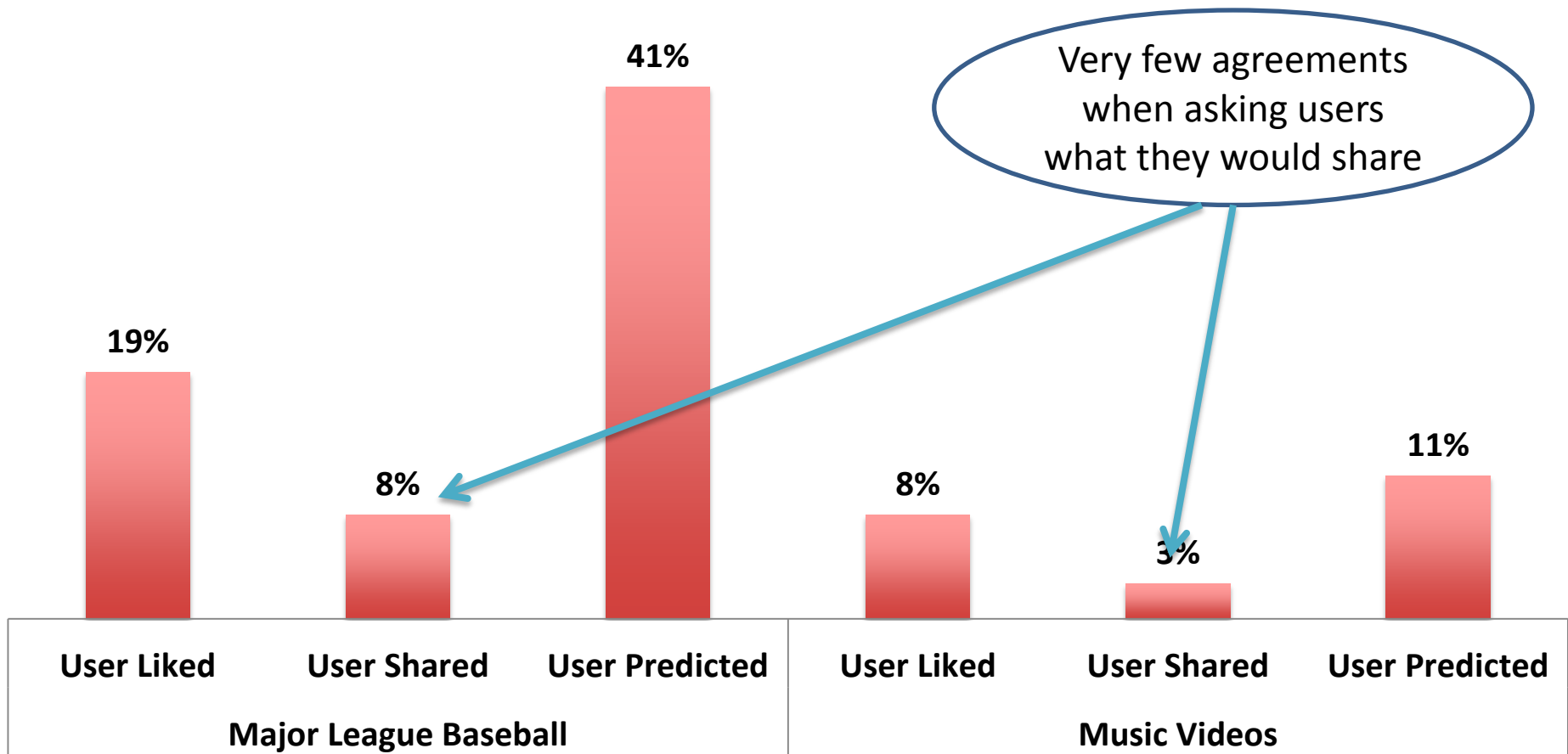
- Consensus
  - Statistically positive Fleiss' Kappa
- Fraction of the cases where Kappa is positive
  - Kappa above 0.4 in practice

# Q1: Can Users Reach Consensus?

Percentage of Pairs Which Users Reached Consensus  
(Kappa statistically above 0 with a p-value of 0.01)



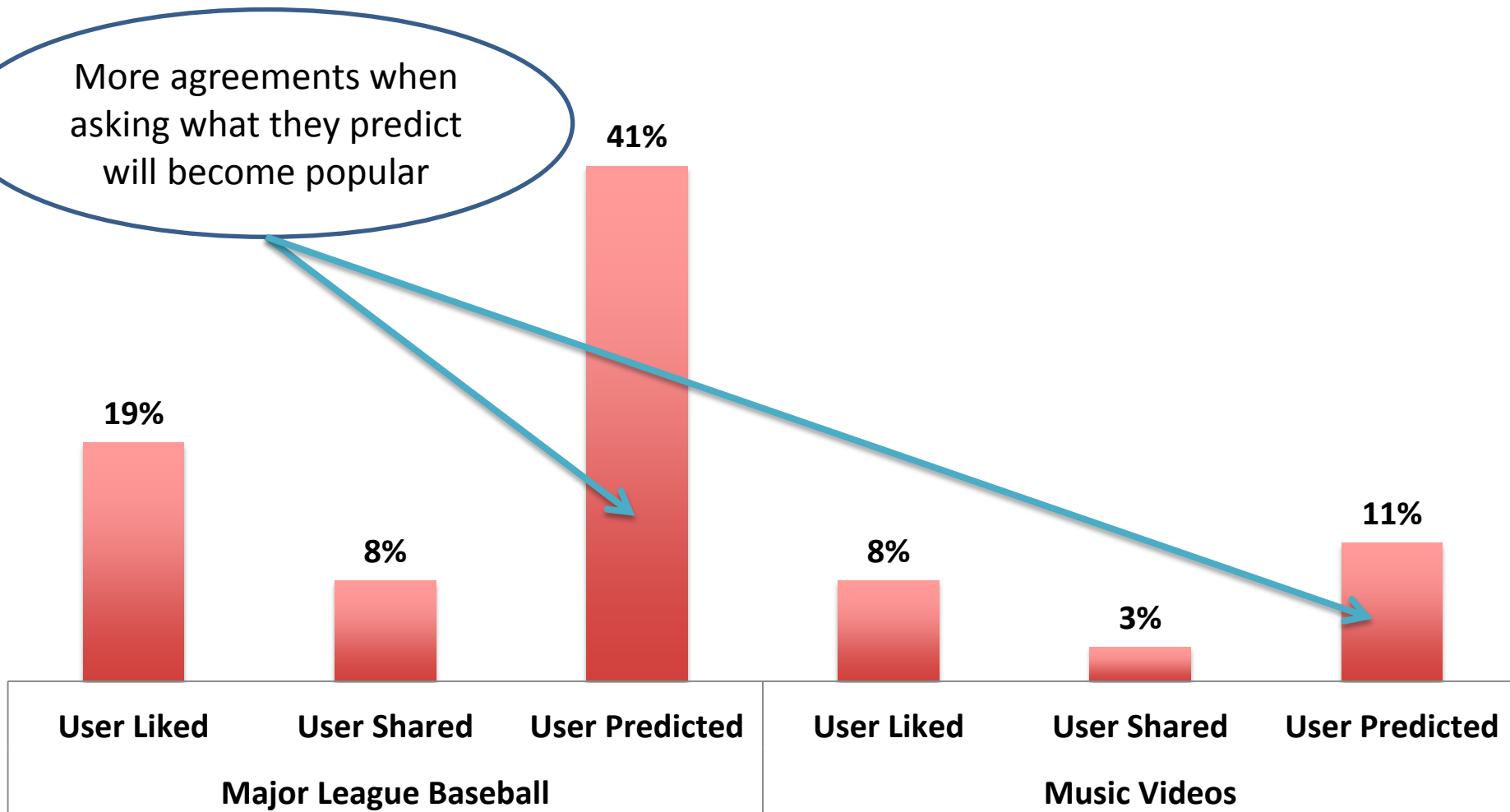
# Q1: Can Users Reach Consensus?





# Q1: Can Users Reach Consensus?

More agreements when asking what they predict will become popular

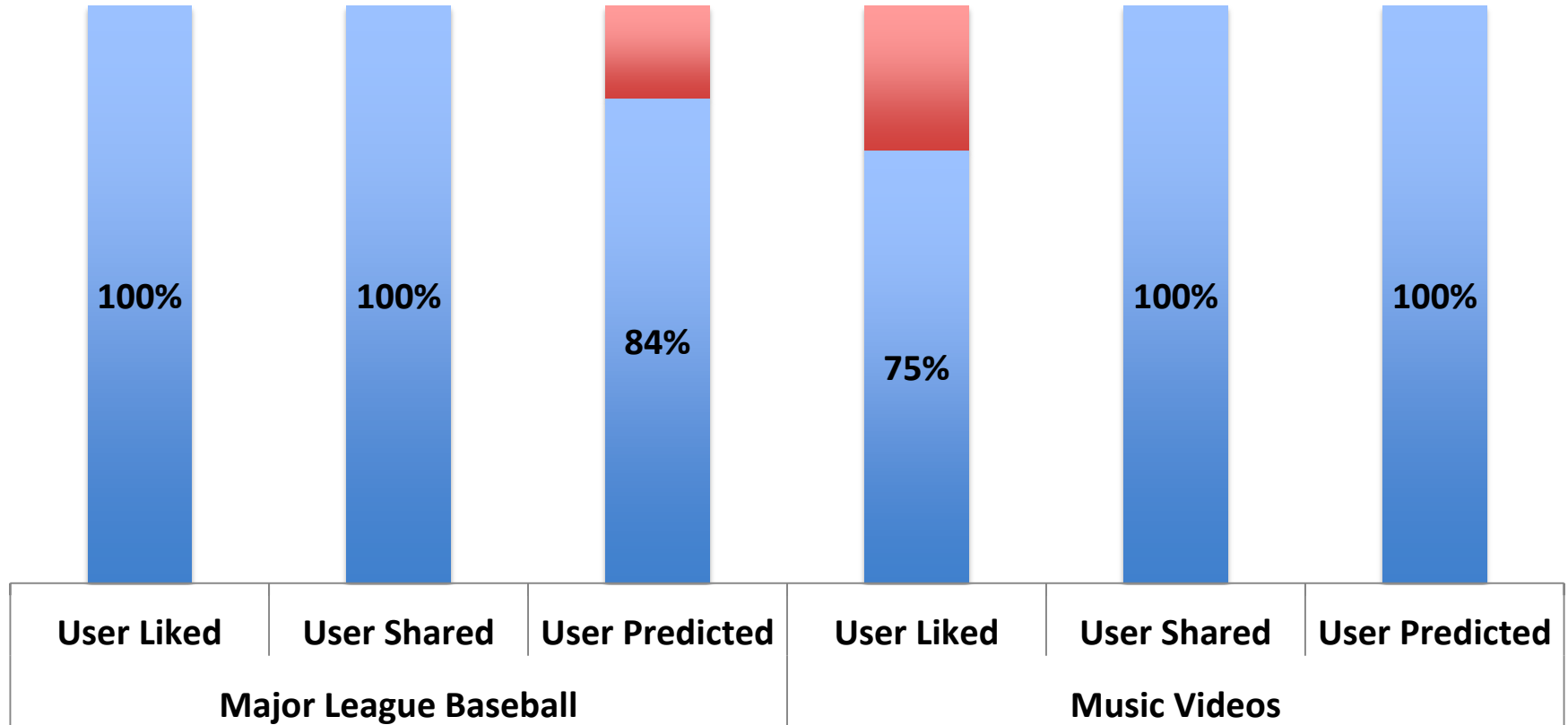


# Q1: Can Users Reach Consensus?

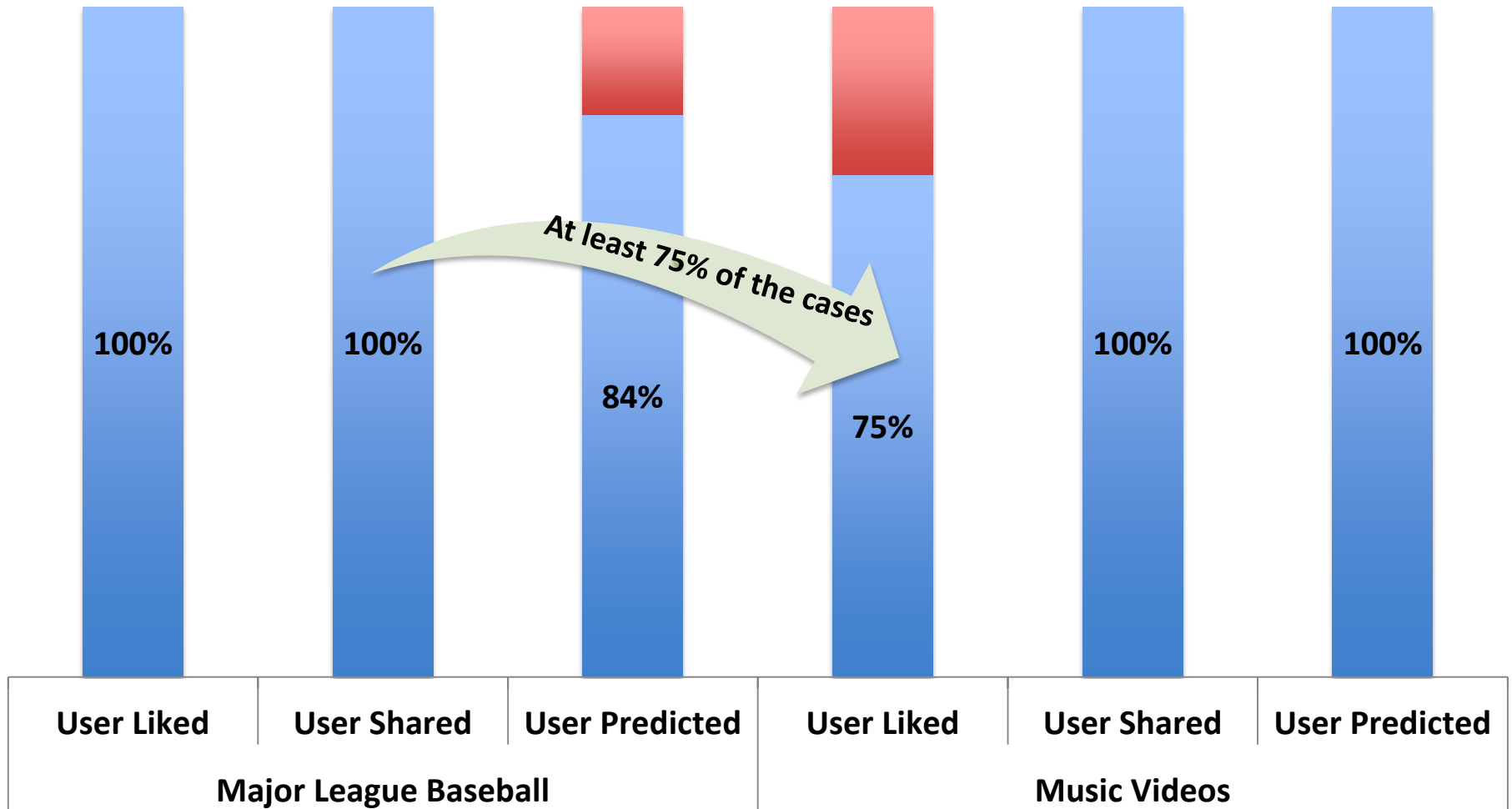
- More agreement when asking if users can predict what is more popular
- Other factors have larger influence on cases without consensus
  - Also possible due to subjective user opinions
- However, what can we say about the cases with consensus?

# Q2: Does Consensus Predict the Popularity on YouTube?

Percentage of cases where the preferred video matches YouTube's Popularity



# Q2: Does Consensus Predict the Popularity on YouTube?



# Discussion and Future Work

- Consensus is hard to reach
  - Subjective user opinions
  - Other factors affecting popularity
- Preference towards popular content
- Can we predict the popularity of videos using our methodology?
- How can we quantify the importance of the content and dissemination factors?

**Thank You!**

# User Feedback

U1: the girl in the video 2 was stunningly beautiful so i would share that one

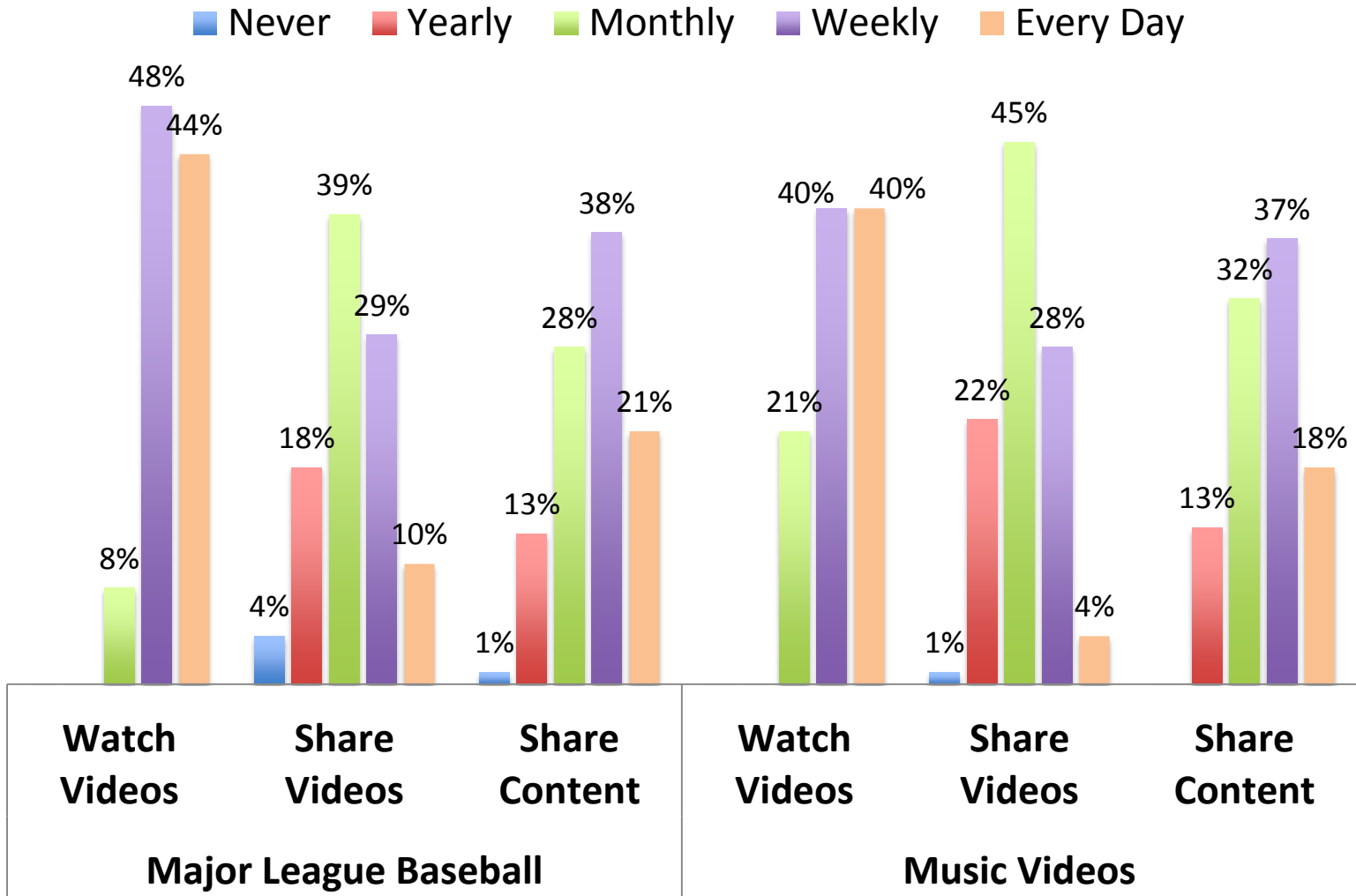
U2: Video 2 was sad and dark and I didn't like the girl's voice.

U3: I secretly like Evanescence but I would never let my friends know.

U4: The video on the left was much better music for my tastes

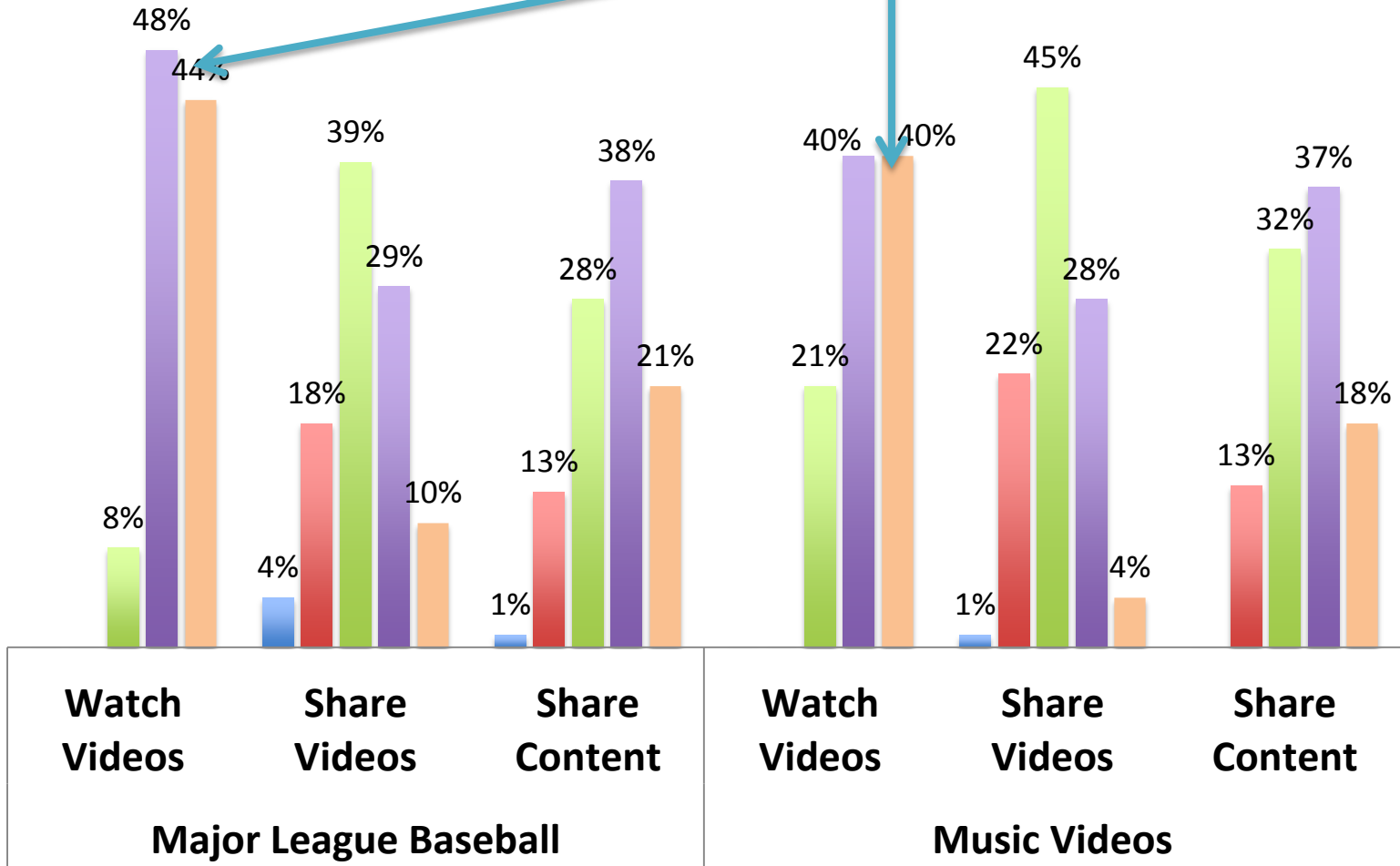


# Demographic Survey



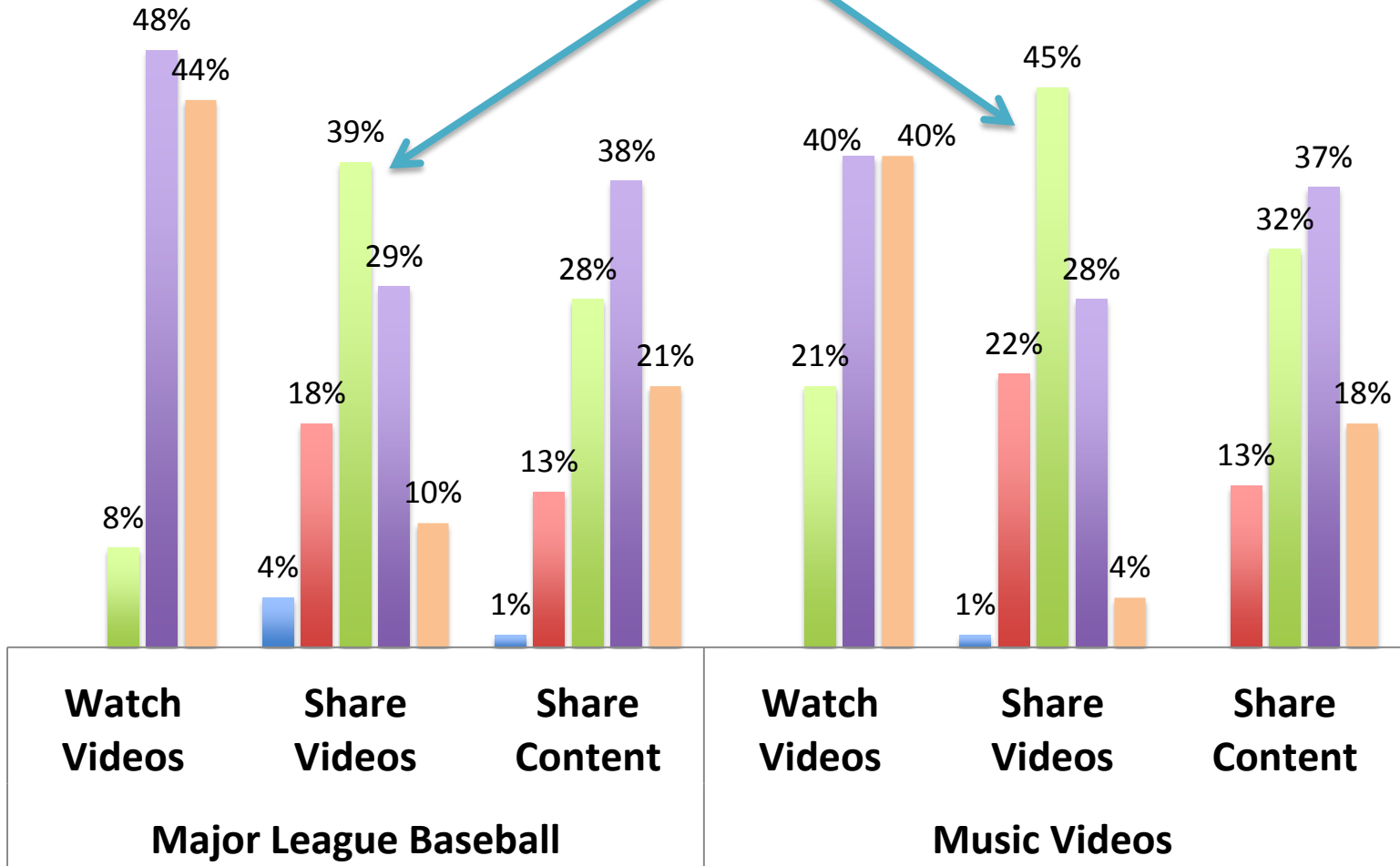
Mostly watch videos daily or weekly

■ Never ■ Yearly ■ Monthly ■ Weekly ■ Every Day



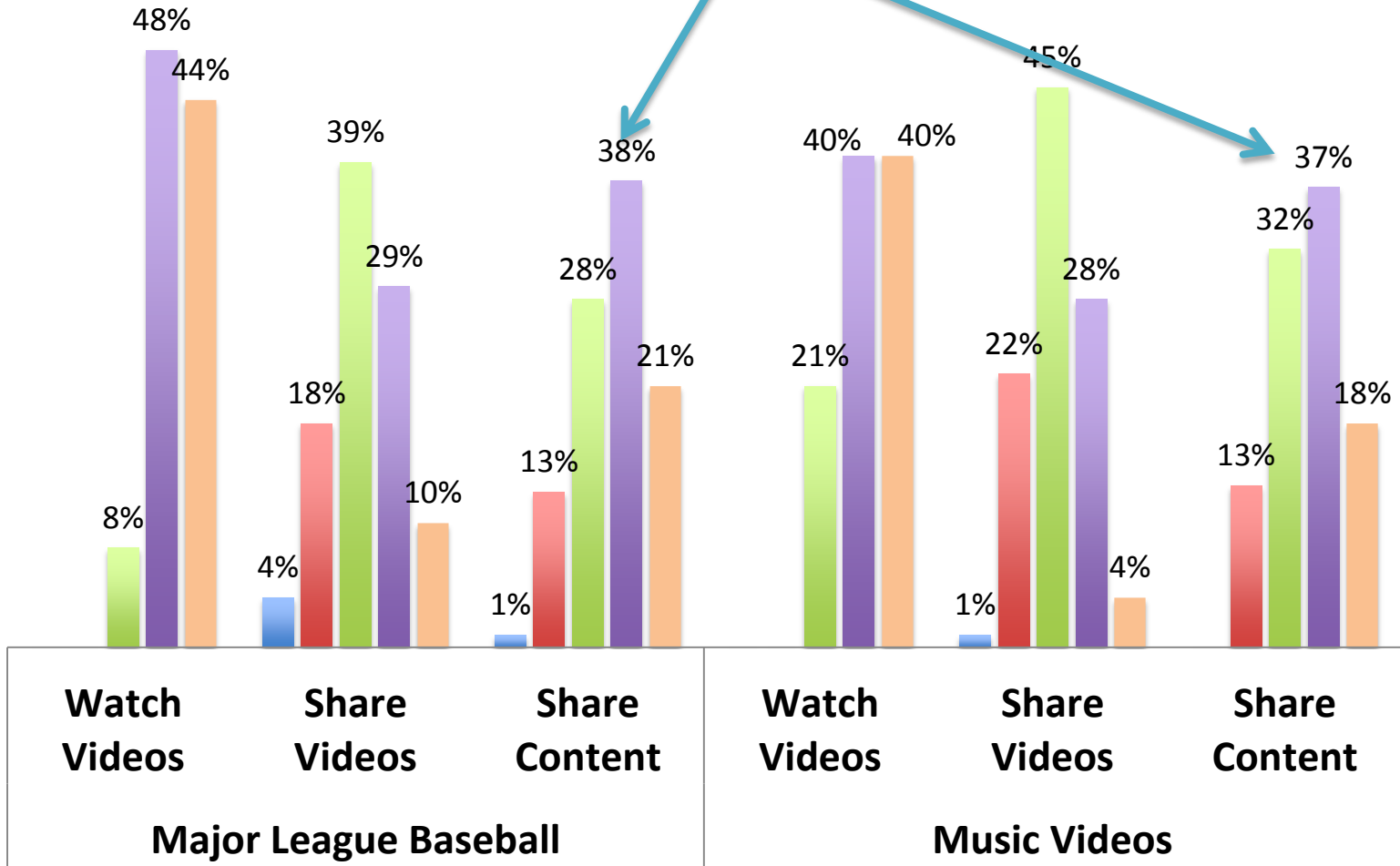
Share videos on a weekly, monthly, or even yearly basis

■ Never   
 ■ Yearly   
 ■ Monthly   
 ■ Weekly   
 ■ Every Day



Share in general more often

■ Never ■ Yearly ■ Monthly ■ Weekly ■ Every Day

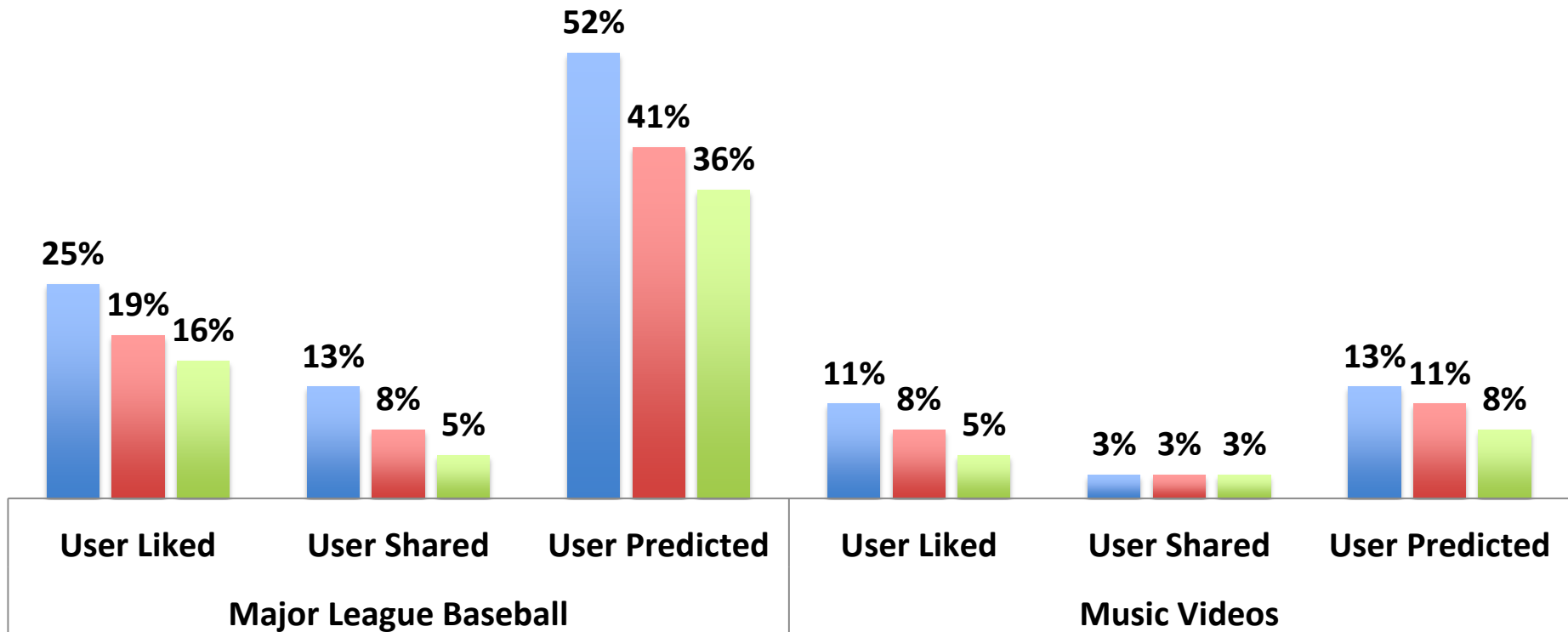


# Demographic Survey

- Avid YouTube Viewers
  - Daily/Weekly modes
- Infrequent Shares of Videos
  - Monthly mode
- However, somewhat common sharing in general
  - Weekly mode

# Q1: Can Users Reach Consensus?

■ p-val < 0.05   ■ p-val < 0.01   ■ p-val < 0.001



- Greater for Prediction. Up to 52% of pairs (p-val < 0.05)
- Kappa > 0.4 or > 0.75 when consensus is reached
- Very rare agreements when asking which video users share

# Interesting example without consensus

