

# Young Minds and Popular Charts

## An empirical study on mainstream music consumption of children

Francisco Duque de Morais Amaro  
Supervisors: Sole Pera & Robin Ungruh

### 1 Introduction

Music recommender systems have a hidden yet significant influence on children's development, as musical exposure during childhood substantially impacts personality and creative development. Despite this, children remain a neglected and underrepresented demographic in research within this domain.

This study examines the connection between children's favorite artists and mainstream music charts, given the dynamic nature of their musical tastes, which adult data cannot replicate.

Utilizing multi-year listening logs from thousands of children aged 12 to 18, spanning several countries, we investigate the evolution of this relationship as they age, and examine the influence of geography on listening habits compared to age. With this, we aim to emphasize the importance of incorporating age-related developmental considerations into the design of recommender systems tailored for children.

#### Mainstream Definition

We use the term **Mainstream** to refer to artists that are present in the top-100 most popular artist of a chart in a certain month

### 2 Research Questions

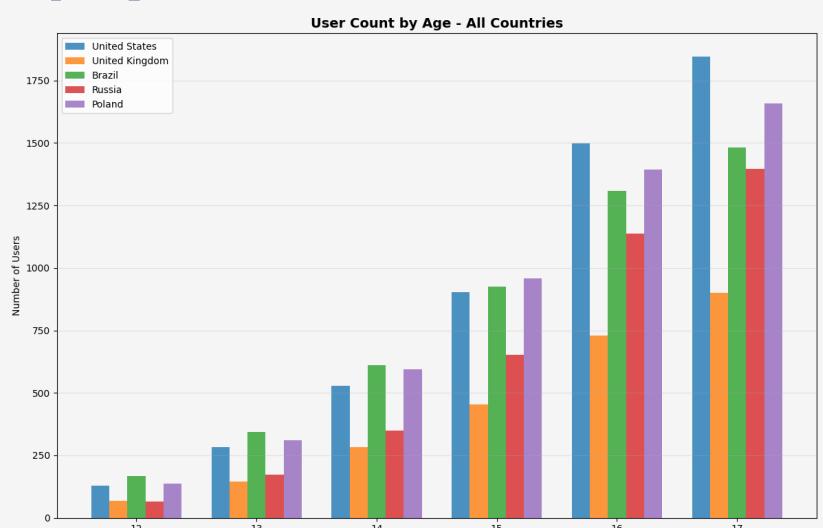
RQ1 - What is the alignment between children's most-played artists and reference mainstream charts?

RQ2 - How does aging influence children's mainstream music consumption?

RQ3 - Which scope (age vs. geography) has the highest influence when building reference charts that mirror children's mainstream listening behavior?

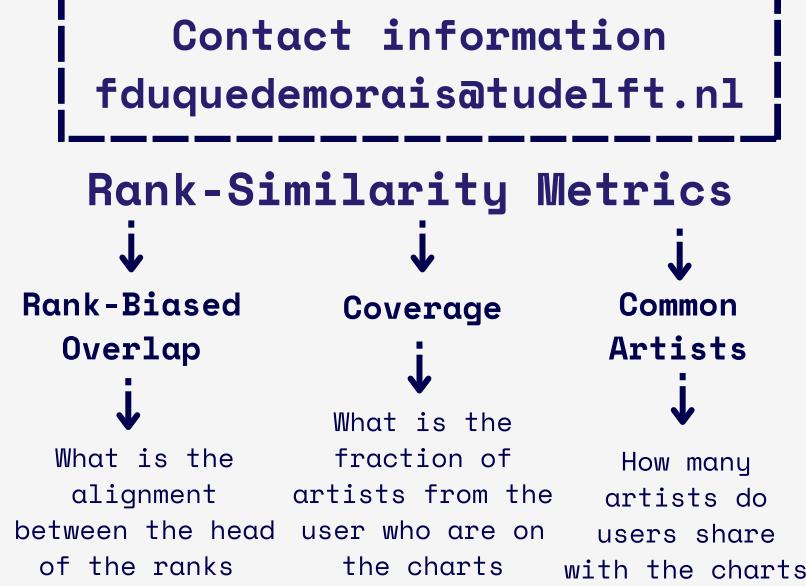
### 3 Methodology

- Our study makes use of the **LFM-2b** dataset, comprised of **1,337,596,535** listening events.
- The user cohort are children between **12 and 18** years of age from the United States, Poland, Russia, Brazil and the United Kingdom; with a total of **10,280** young users from this five countries.



### Popularity Charts

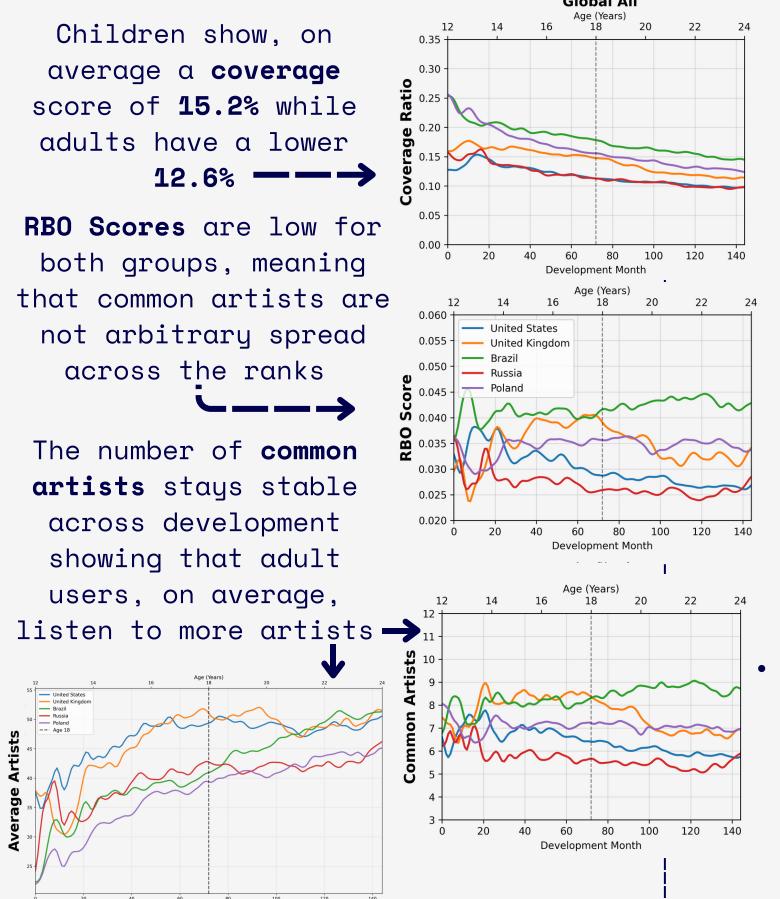
- We build 4 monthly artist popularity charts (top-100), covering both age and geographical scopes, based on monthly listeners:
  - Global All** → World-wide users
  - Global Young** → World-wide <18 users
  - Local Young** → Country specific <18 users
  - Local All** → Country specific users
- For each user, we create a monthly top-100 list of their most listened artists and map them to the corresponding development month to compare them with rank-similarity metrics



### 4 Results & Discussion

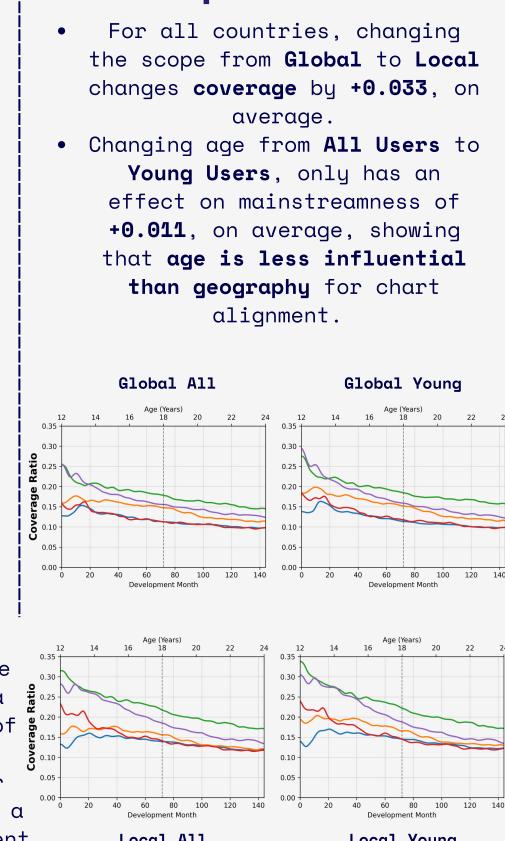
#### RQ1 - Children and Chart Alignment

- Children show, on average a **coverage score** of **15.2%** while adults have a lower **12.6%**
- RBO Scores** are low for both groups, meaning that common artists are not arbitrary spread across the ranks
- The number of **common artists** stays stable across development showing that adult users, on average, listen to more artists



#### RQ2 - Age-related drifts

- RBO and Common artists don't show significant change, but coverage suffers a **23.7% decrease**
- Age drifts from all countries combined in global charts in rank-similarity metric mean
- Early Adolescents (12-14) show the sharpest variations aligning with a self discovery and high importance of social image period. Mid to Late Adolescents (15-18) show that their music taste solidified, resulting in a small influence of trends and alignment with the mainstream



### 5 Conclusion & Limitations

- Children are more aligned with popularity charts than adults.
- Mainstream alignment decreases along childhood.
- Geography is more relevant than age for mainstream chart ranking construction regarding aligning children with the rankings.
- Since the study used only one dataset, platform bias could be hidden in the data making generalization harder
- The dataset and scores are very sparse, making it hard to reduce the scope for smaller than a country which could be hiding regional effects

### 6 Future Work

- Replication of the study once new dataset is available
- Investigate mainstream trends within a smaller scope than country, such as cities or states
- Extend the mainstream charts within genres and evaluate mainstream alignment
- A Recommender experiment to predict mid to late adolescence behavior based on early adolescence data