Projet D'Analyse de Données. Professeur: Mme Fanny Villiers

«Spotify Audio Features»

Analyse d'une base de données musicale

POLYTECH SORBONNE

SCIENCES SORBONNE UNIVERSITÉ

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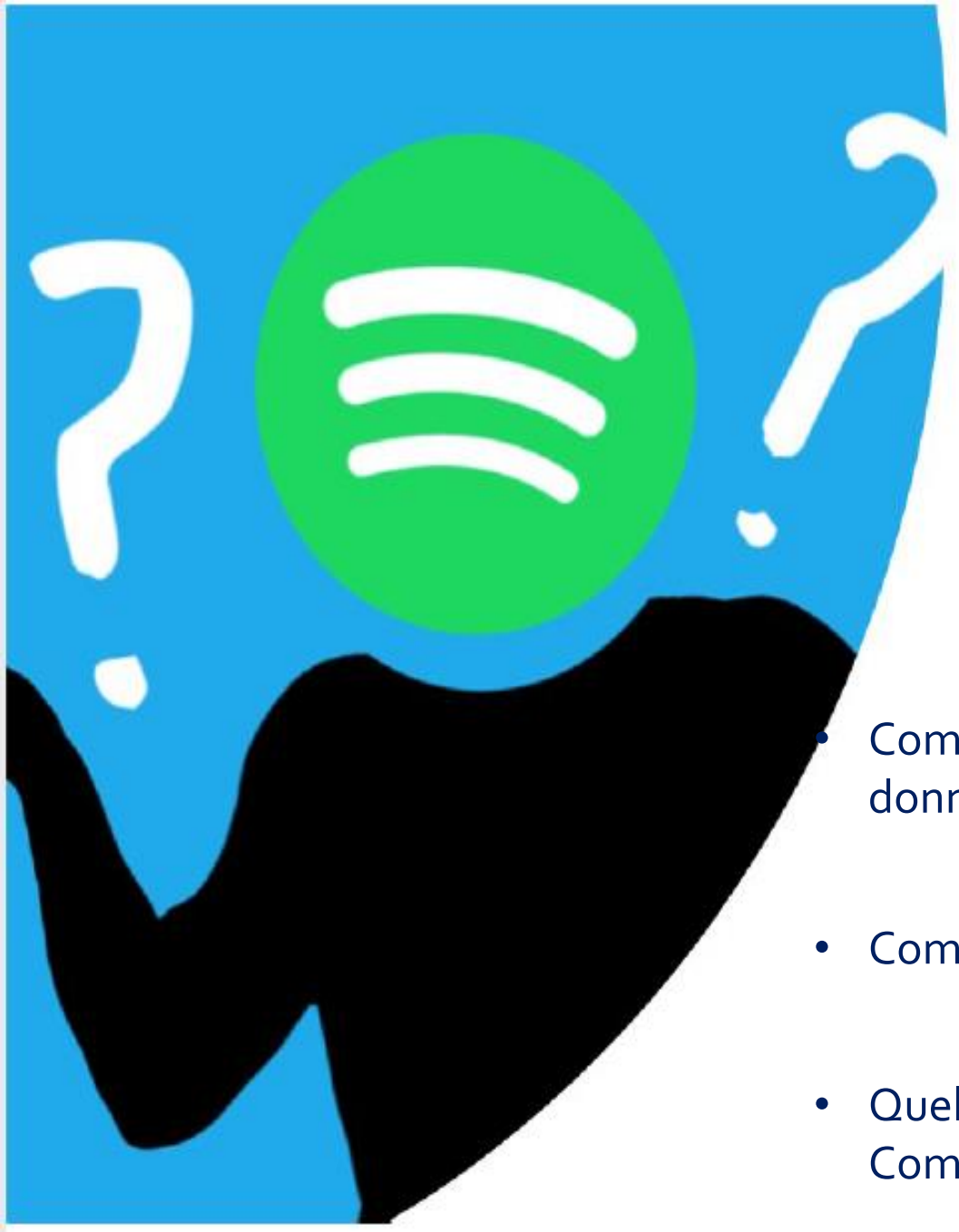


Quel est le secret de la popularité d'un artiste?

Pourquoi une chanson serait plus célèbre qu'une autre?

STRATEGIES:

- Comment travailler sur un *grand* jeu de données? → **Analyse Descriptive et AFC/ACP**
- Comment identifier les *genres musicaux* ? → **Classification non Supervisée**
- Quels critères déterminent la popularité? Comment peut-on prédire cette popularité? → **Régression linéaire et Prédiction**

DATASET

#chansons: n = 130326
#variables: p = 17

- **3 VARIABLES DESCRIPTIVES:**

Artist name, Track ID, Track Name.

- **2 VARIABLES QUALITATIVES:**

Key, Mode.

- **12 VARIABLES QUANTITATIVES:**

Acousticness, Energy, Danceability, Loudness, Speechiness, Instrumentalness, Liveness, Valence, Tempo, Duration, Time signature, **Popularity**.

Statistiques Descriptives

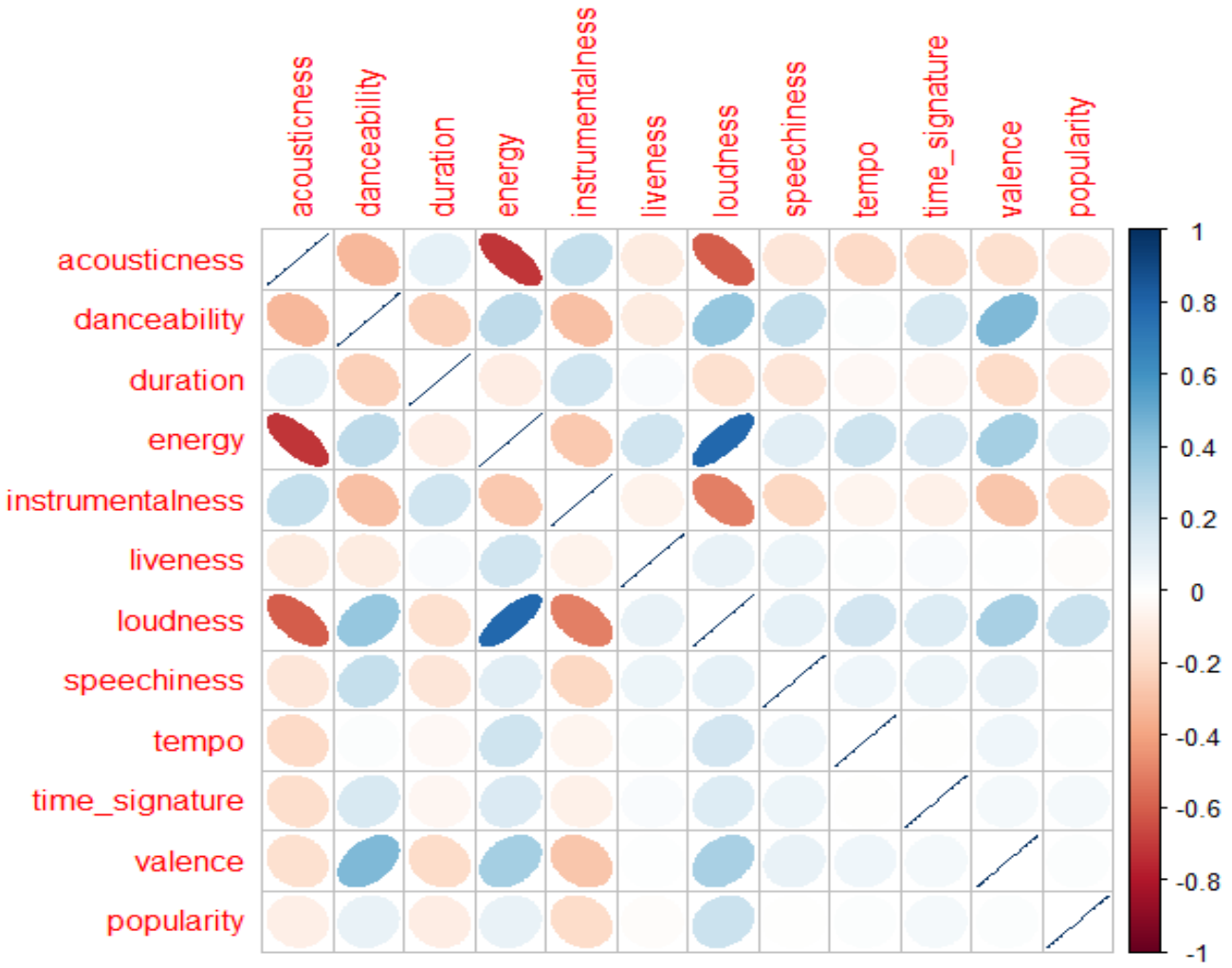


Table des Corrélations

→ **Analyse bivariée exploratoire ++**

→ **Pas assez d'information sur POPULARITE**

PASSAGE OBLIGATOIRE ACP/AFC !!!

AFC / ACP

qualitatives

KEY

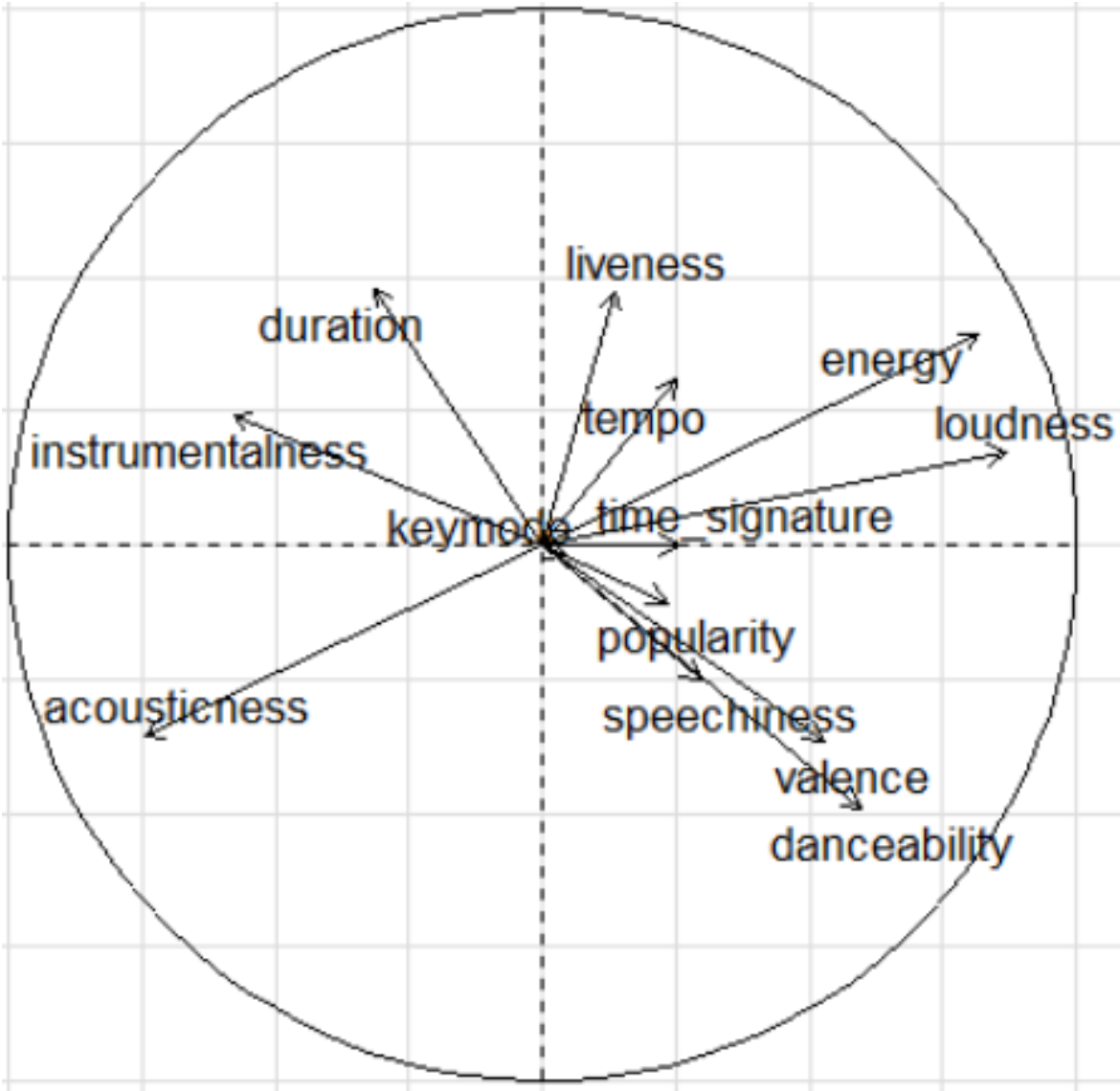
MODE

AFC

quantitative

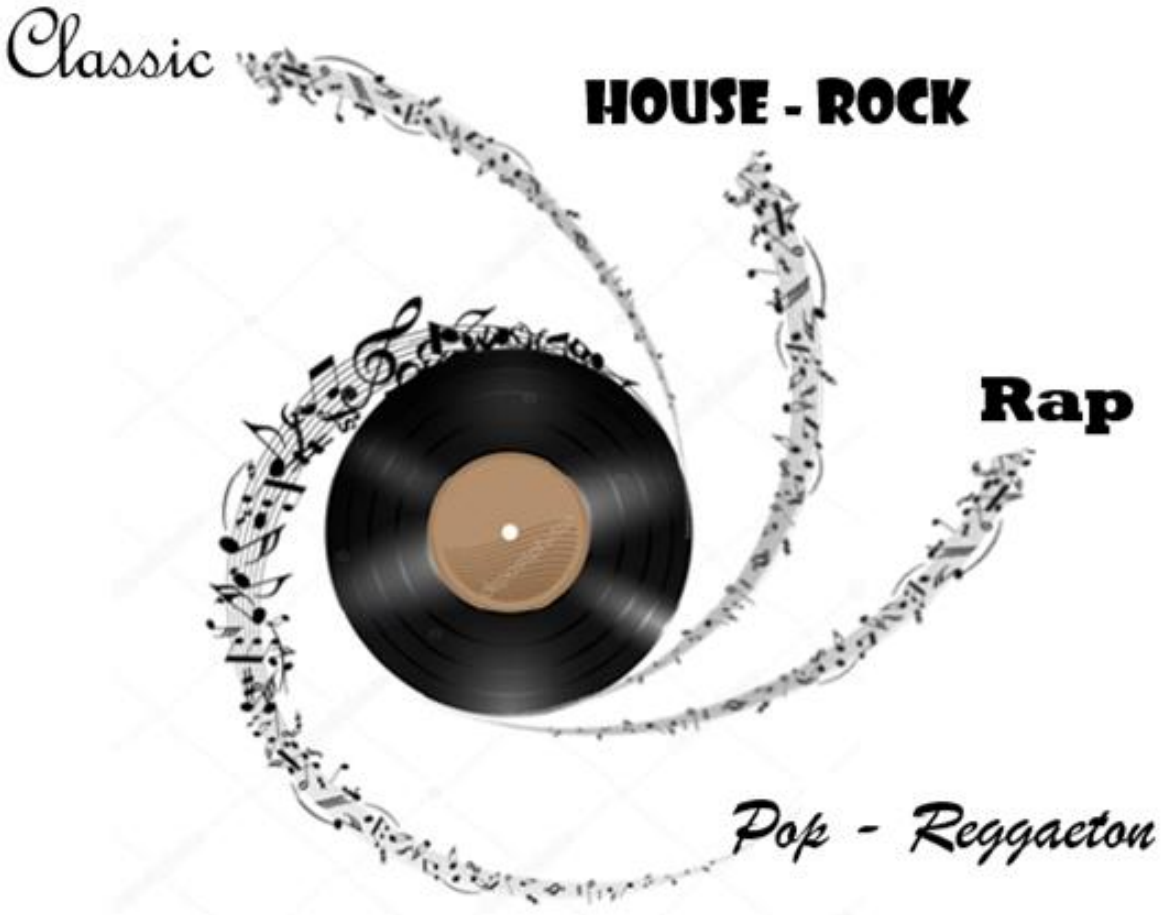
KEYMODE

ACP



ACP axes 1-2

Peut-on créer des clusters représentants des *GENRES MUSICAUX?*



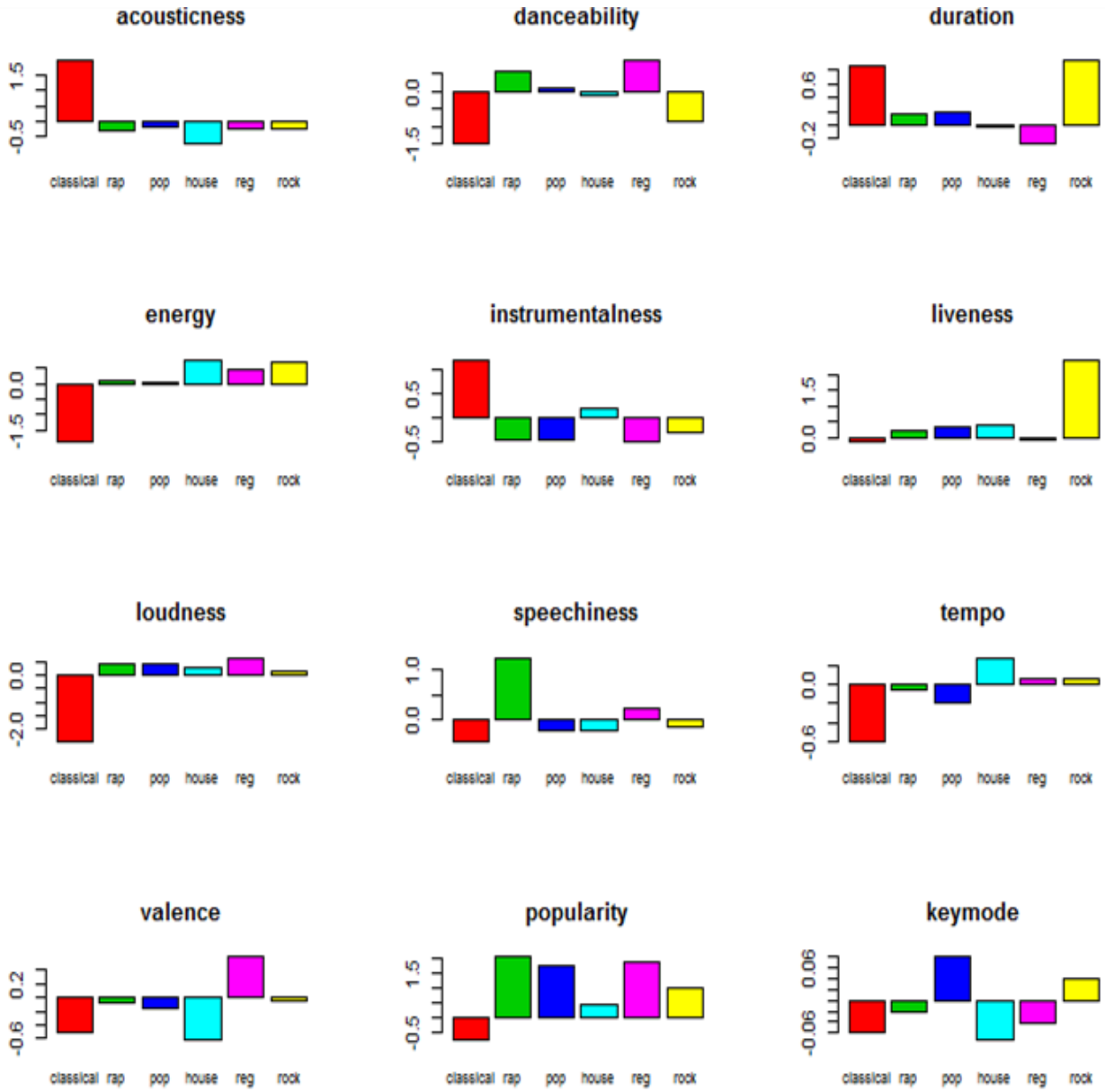
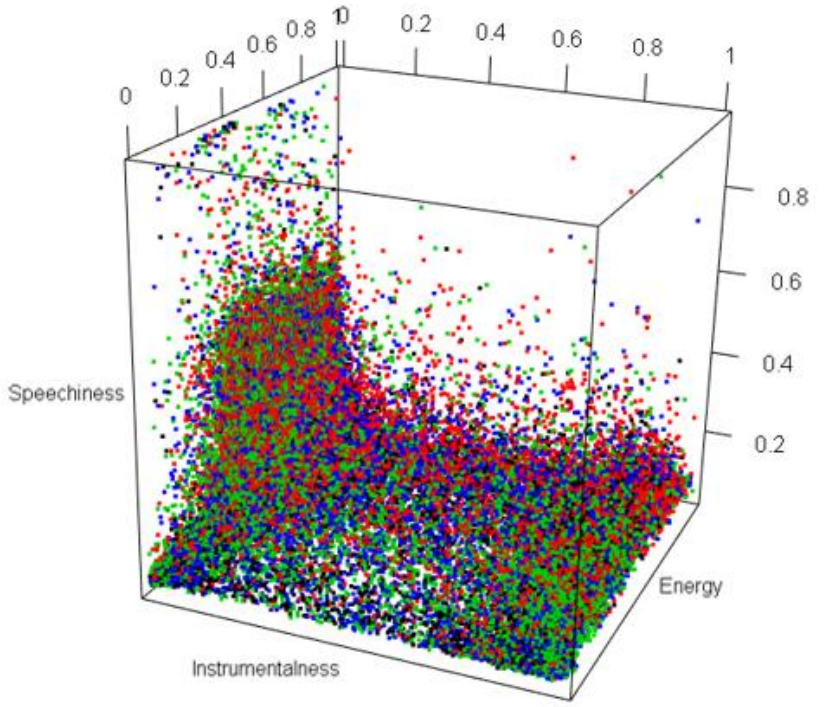
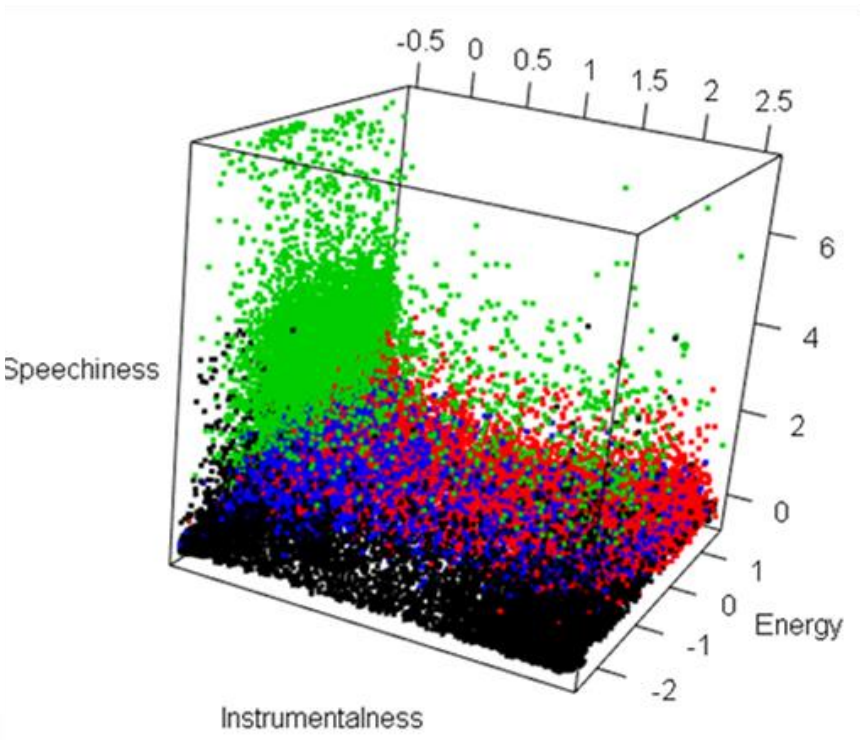


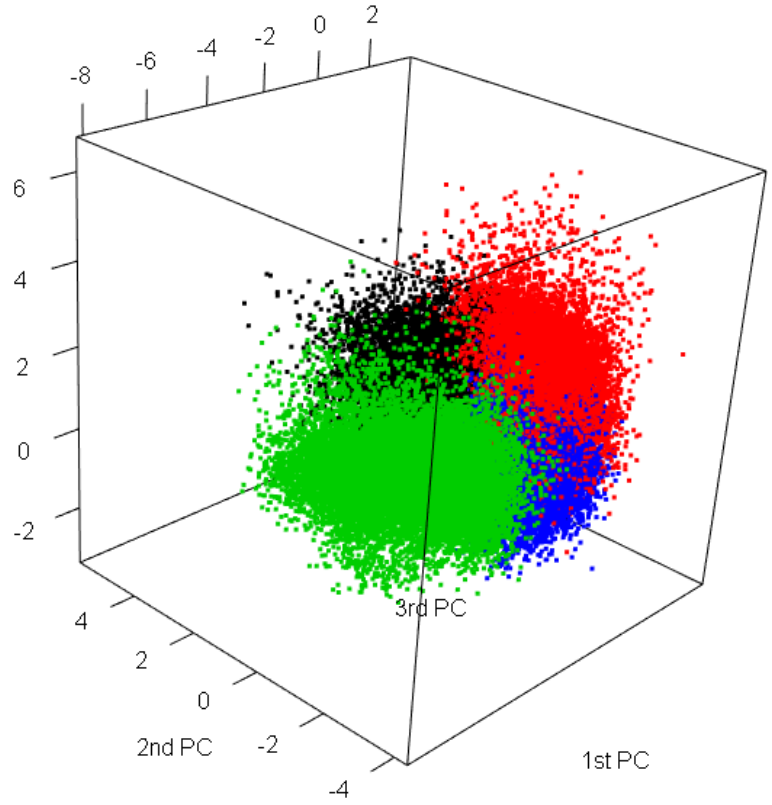
Diagramme en bâtons des différentes variables pour chaque genre

CLASSIFICATION NON SUPERVISÉE : *ALGORITHME DES K-MEANS*

Choix du nombre de classes: 4
Choix des centres: centres aléatoires

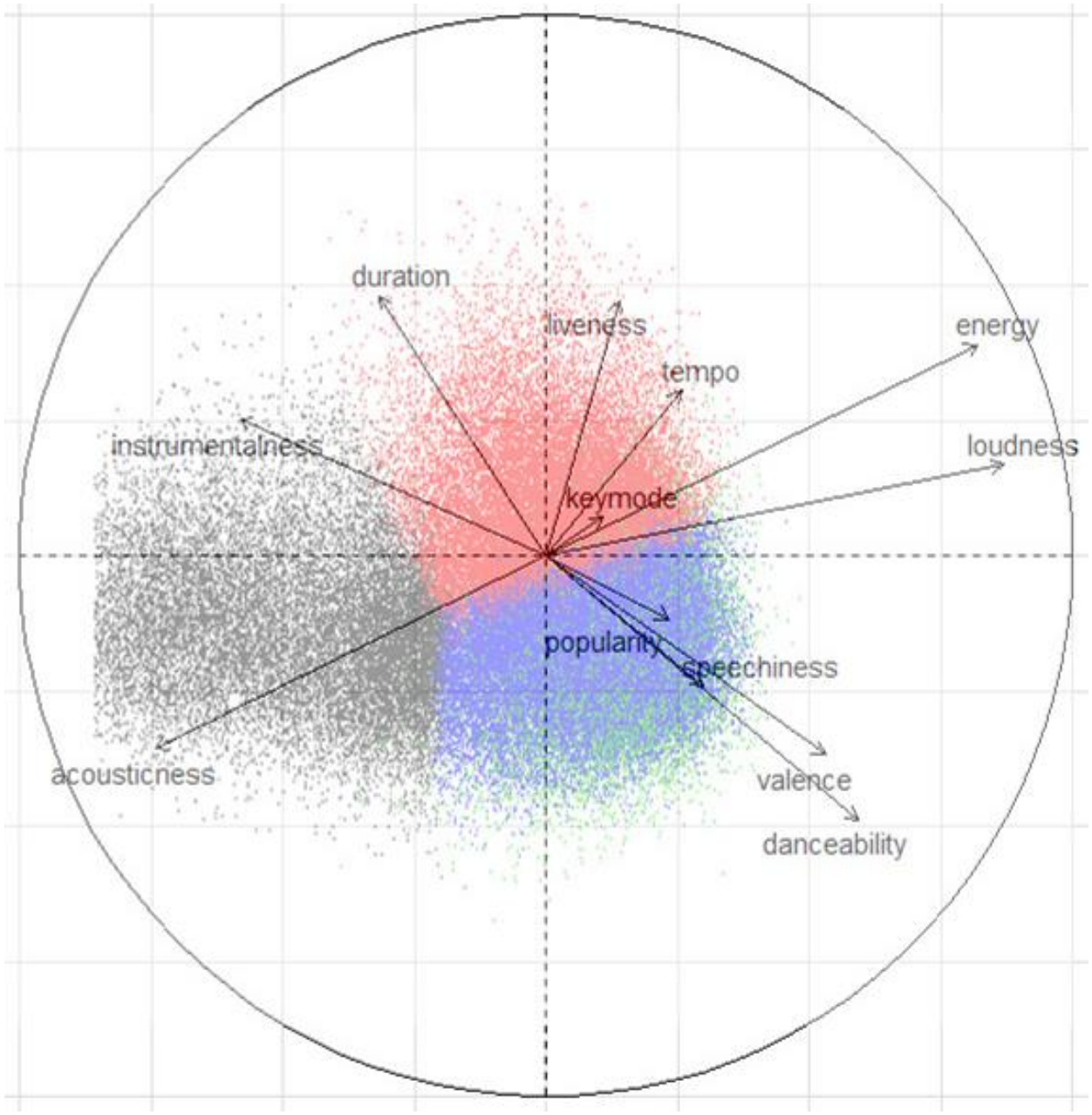




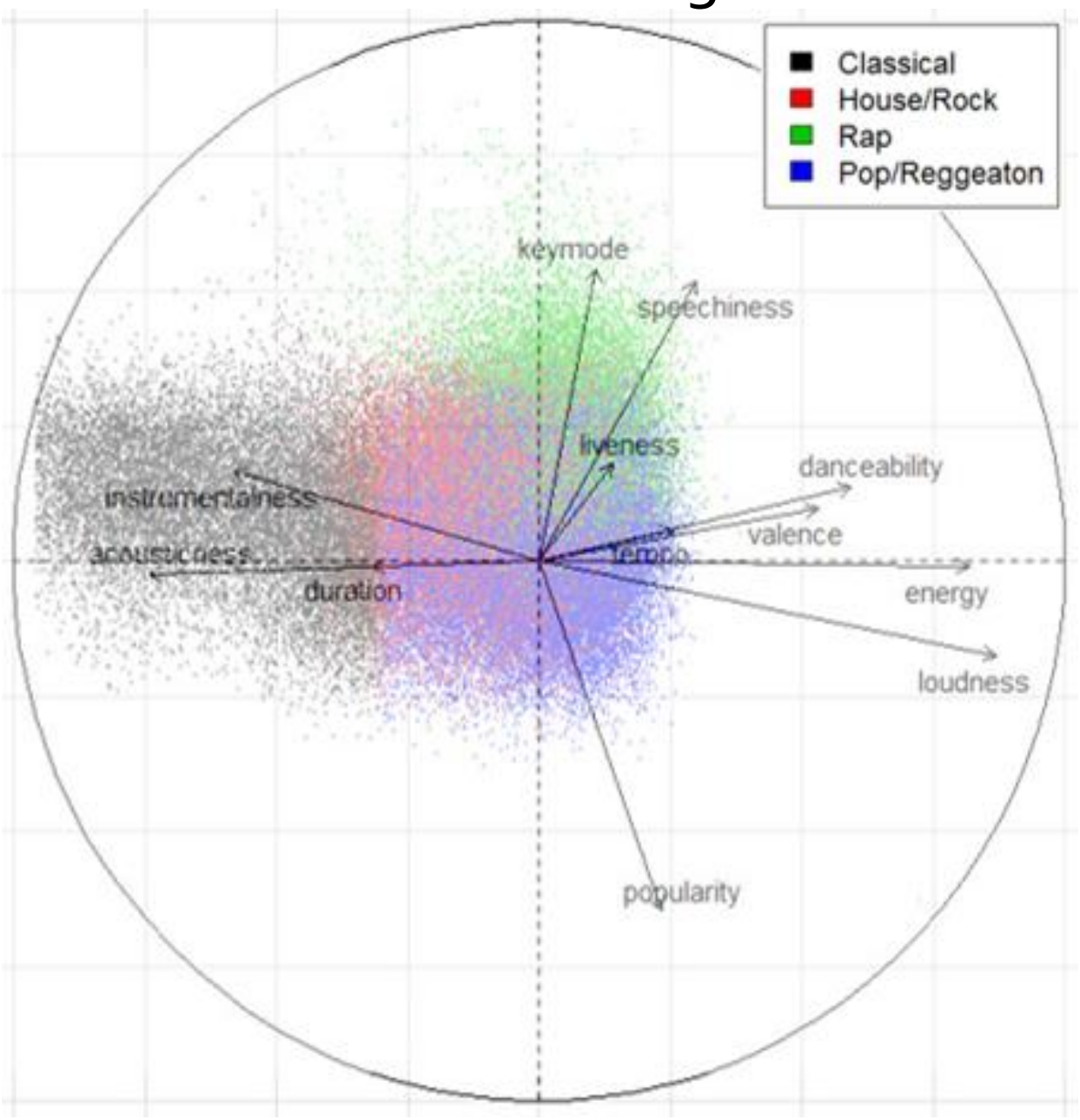


Base de Données initiale → **Données échelonnées** → **Composantes Principales**

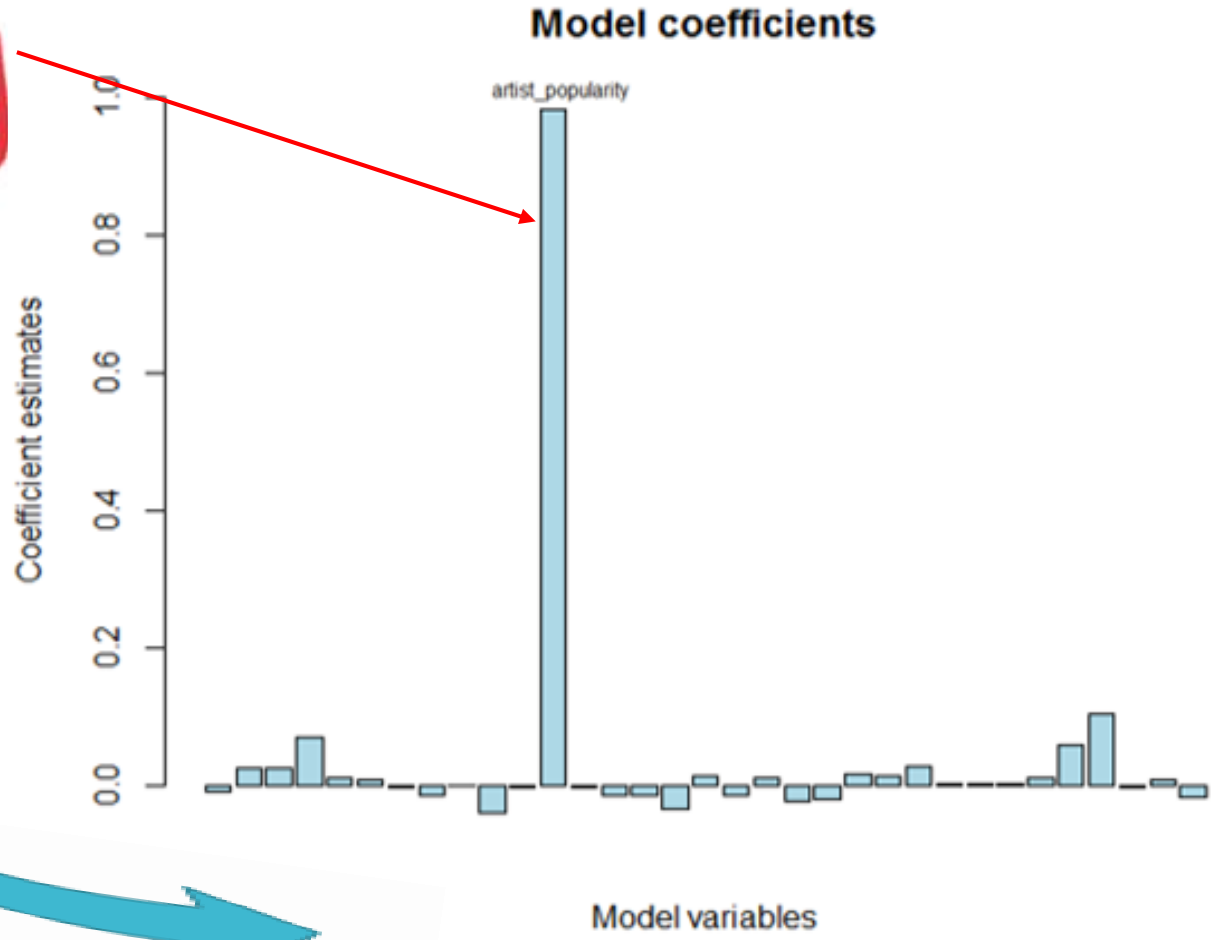
ACP axes 1-2



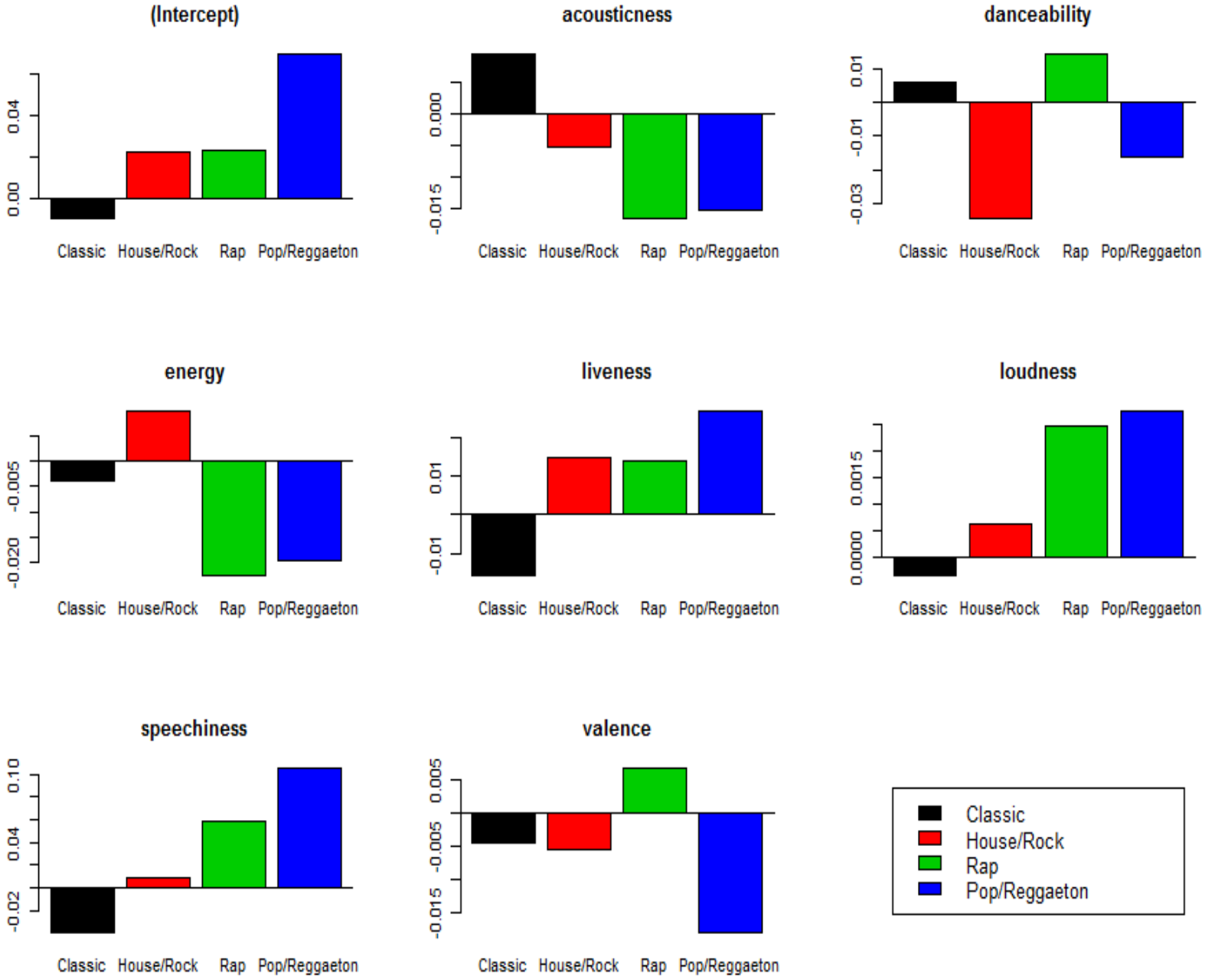
ACP axes 1-3



Nouvelle variable:
«POPULARITÉ DE L'ARTISTE»

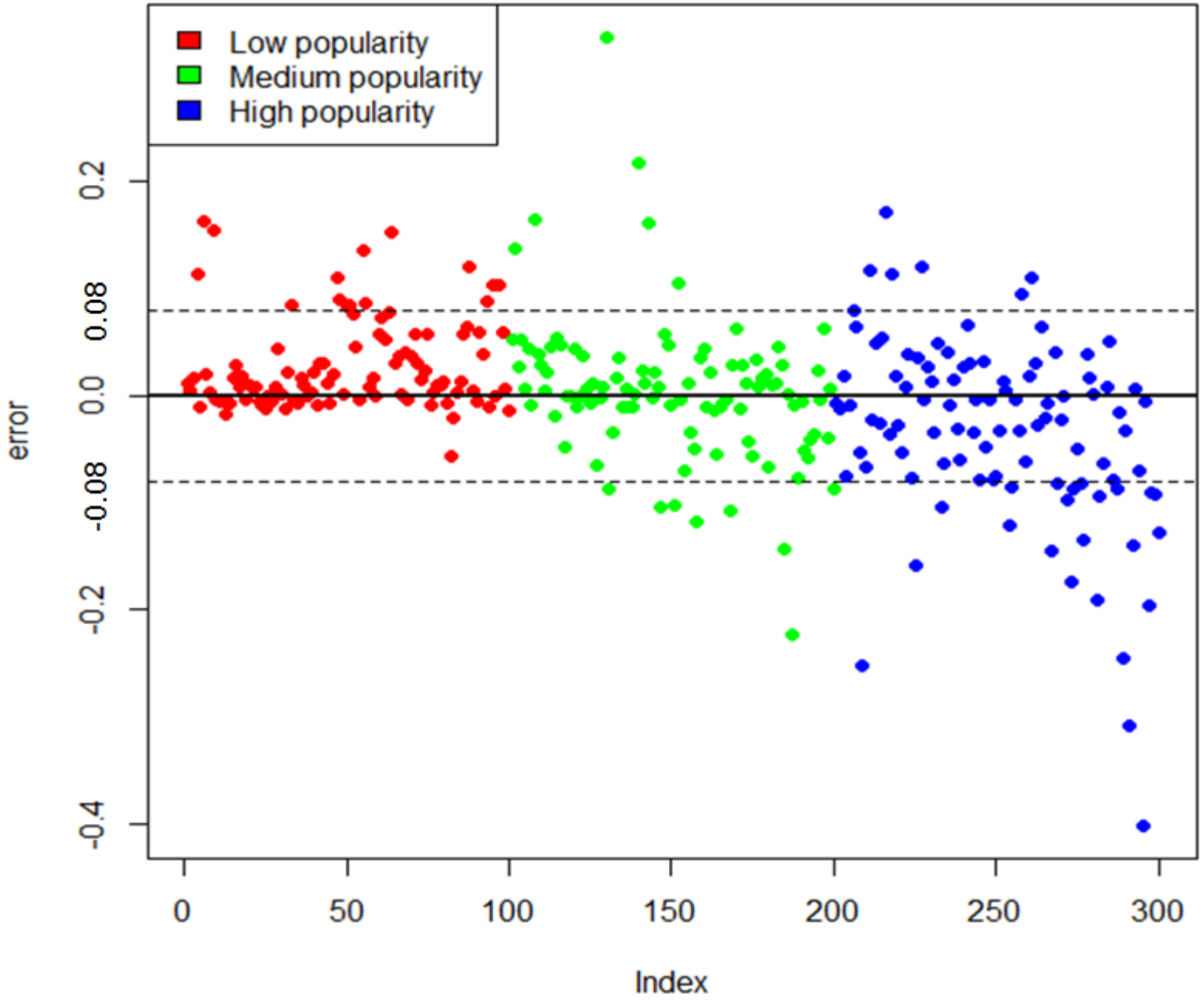


COEFFICIENTS DU MODÈLE



PRÉDICTION

erreur moyenne: 0.05 (~5%)
variance: 0.003



Merci de votre attention!

Dataset source: Kaggle "Spotify Audio Features"
https://www.kaggle.com/tomigelo/spotify-audio-features