

# Genre-breadth, variety-seeking behavior and preferences in recorded popular music.

## An exploratory study

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### Abstract

Among the determinants of cultural consumption, cultural capital and preferences stand out. However these are unobserved traits that are usually indirectly measured through observed variables and actual outcomes: most applied studies on individual's cultural engagement usually rely on binary indicators (participation) or count frequency data (intensity) to infer the heterogeneity in tastes. Yet the complexity in individual behavior is only partially addressed within this modeling framework, especially in the cultural industries where variety is key in understanding choices. In this paper we analyze recorded music use and consumption by looking at consumers' genres of choice, classifying individuals according to the variety or mix of music styles chosen using

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a latent class model. This segmentation provides us a deeper insight into heterogeneous preferences and group membership and related socioeconomic traits that, ultimately, explain participation.

**Keywords:** recorded music, cultural consumer tastes, latent class clustering, correspondence analysis

# 1 Introduction

From an economic perspective, the consumption of recorded music should be related to the satisfaction of music-related needs. However, cultural contents create a problem in the microeconomic economic model, in that there is an ambiguity in the definition of the needs to be satisfied. The acknowledgement that needs are dynamic and depend on previous consumption lead to a recursive framework that has usually been addressed within a learning by doing model — see Levy-Garboua and Montmarquette (1996)— or a rational addiction model —see Stigler and Becker (1977)— of cultural consumption that, in short, stretch the basic model of choice within restrictions.

By looking more carefully at individual motivations, the complexity of choices is magnified. The symbolic nature of music makes it a vehicle for self-expression and the construction of social identity, status and membership to social spaces by individuals (see Larsen, Lawson and Todd 2010), two aspects that are initially missing from the economic model. In most cases it is the specific recorded music to which individuals listen to/use/purchase what becomes meaningful in order to understand consumers' behavior and participation in the market. In other words, participation in popular music is intimately linked to the expressive nature of music consumption, which makes it rather rigid due to its non-substitutive nature.

This paper deals with choices of genres by consumers of recorded popular music. Genres, as classification devices, might help in identifying specific preferences, or preference patterns for that matter, that could be useful in clustering individuals in specific social spaces, from which a deeper understanding of consumer habits and behavior can be derived. Additionally genres serve as supply-side institutional arrangements that allow music to be tagged, hence reducing consumers' uncertainty about the sheer amount of recordings that are available each year in the market. In this sense, genres are information diffusion means in a market that is saturated with differentiated products. However genres can also be the outcome of a demand-driven processes. As Lena and Peterson (2008) put it, genres are “[...] systems of orien-

tations, expectations and conventions that bind together an industry, performers, critics, and fans in making what they identify as a distinctive sort of music.” This definition allows us to identify the different agents (both in the supply and demand side) that to some extent play a role in the development and stabilization of music genres.<sup>1</sup>

In this research we look at the choice of genres for a sample of the Spanish population over 15. We deliberately talk about choices in that we analyze what people purchase or download, hence there is an intentionality in the use of recorded music as compared to when one listens to the radio in which individuals might be more passive when choosing what to listen to. The aim is twofold. Firstly, to analyze how these choices depict different groups of recorded music users in the two areas, which could be related to individual choices of social spaces and the expressive nature of music. Moreover we will look at the association between choices in both realms (purchase and copy) to see whether there are commonalities among them. Secondly, we want to relate these findings with individuals’ revealed preferences in the recorded music market. As it has been mentioned before, the basic microeconomic model of cultural participation, that of rational addition, is of a recursive nature, as past choices build up cultural capital and explain actual participation. However this only shifts the problem. However, if we think in the sociological terms of self-expression, group membership and status seeking, preferences emerge in a given social context and are allowed to evolve thereafter. This does not exclude the process of consumption-capital accumulation of the economic model, but incorporates it.

The structure of the paper is as follows. Next, we introduce the dataset used in the empirical analysis. Then the quantitative analyses is carried out on this dataset, by estimating a latent class model that allows to cluster individuals in different social groups. These share

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<sup>1</sup>Related to this issue is the cultural homogenization thesis, i.e. whether the supply-driven development of genres leads to the homogenization of the recorded music market (see Berger,1975, or DiMagio, 1987). Nevertheless this topic is beyond the scope of this paper.

some common features that allow us to label and identify the different standards of behavior in recorded music use and consumption. Furthermore we run a correspondence analysis on the cross-tabulation of the different classes found. Finally we conclude with a discussion of the results and some preliminary conclusions.

## 2 Description of the dataset

We use the information provided by the Survey on Cultural Habits and Practices 2014-2015 (SCHP1415), which aims at describing cultural practices and participation in Spain for individuals over 15. In it, survey-takers (15,153 overall) answer an in-depth interview on an array of cultural practices, among them on the use and consumption of recorded popular music. By looking at the data we see the relative relevance of the different forms of participation, being listening to recorded music one of the most common cultural activities, with 85% of the sample engaged with it. It is also worth mentioning that individuals listen to music from different sources: radio is still the most common one (66.6% of the sample), followed by physical (31.79%) and digital media (28.79%), internet streaming (17.38%) and internet radio (6.1%).

The reproduction of recorded music from files or physical media can be done either by purchasing the tracks/media or downloading them.<sup>2</sup> Table 1 tabulates both activities by frequency of participation. Considering participation over the past year, slightly over 15% of the sample purchases recorded music, while 42% download it. Interestingly the overlap between both participation means is limited: 37% of the individuals that purchase music do also download, while 24% of downloaders are actual purchasers. It seems that purchasers have a greater propensity to participate, which makes sense, given that individuals invest more resources in this activity.

Individuals that used recorded music in the three months prior to

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<sup>2</sup>For the sake of simplicity we will refer to download, although the survey question also includes copying recorded music).

Table 1: Recorded music participation: relative frequency for the different means of access to recorded music.

| Last time individual ...    | Purchased | Downloaded |
|-----------------------------|-----------|------------|
| <i>In past three months</i> | 9.65%     | 19.10%     |
| <i>In past year</i>         | 4.84%     | 22.21%     |
| <i>More than one year</i>   | 85.52%    | 77.79%     |

the survey, choose among a list of genres those that qualify for the music they purchased/downloaded. Once we remove classical genres the list is down to 18 different genres. Table 2 shows its relative share in terms of purchases, downloads and the music that individuals listen to. Note that the table only includes individuals that actively participate in recorded music in some way —i.e., purchase, download, attend or listen to music frequently— leaving 5,811 individuals.

Prior to the descriptive analysis one comment applies. It should be noted that some specific genres might have different meanings (hence encompassing different type of artists and or music styles). In order to void the ambiguity involved in the question, survey-takers are given examples of artists that are included in some of the genres. Yet individuals might misclassify their tastes specially for those genres that are weakly defined or whose boundaries are fuzzy (e.g. there are many bands/artists that could be categorized as pop-rock, blues or punk, as these three genres definitely overlap). Even though this could be problematic, it should be note that the analysis that we will perform hereafter is more focused on the combination or mix of genres than on the individual genres chosen.

An inspection of table 2 yields some interesting insights. Firstly, there is a consistent popularity of some specific genres across the three categories. Here we find Spanish pop-rock, Pop-rock, Singer-songwriter and Latin pop-rock appearing on the top five genres in all rankings. Secondly, however, there is also a significant variability in the position

Table 2: Tabulation of individuals according to genres of choice

| <b>Genre</b>                    | <b>Purchase</b> | <b>Download</b> | <b>Listen</b> |
|---------------------------------|-----------------|-----------------|---------------|
| <i>Children</i>                 | 1.44%           | 3.56%           | 6.44%         |
| <i>Singer-songwriter</i>        | 4.11%           | 8.59%           | 25.11%        |
| <i>Adult</i>                    | 3.18%           | 6.88%           | 22.75%        |
| <i>Flamenco</i>                 | 2.13%           | 6.76%           | 16.62%        |
| <i>New flamenco</i>             | 1.20%           | 4.53%           | 10.77%        |
| <i>Other Spanish folk</i>       | 1.29%           | 2.70%           | 8.43%         |
| <i>Spanish pop/rock</i>         | 11.01%          | 31.58%          | 66.43%        |
| <i>Latin pop/rock</i>           | 2.63%           | 16.70%          | 33.92%        |
| <i>Pop/rock</i>                 | 6.85%           | 26.04%          | 51.63%        |
| <i>Blues, soul</i>              | 1.34%           | 4.20%           | 11.44%        |
| <i>Jazz</i>                     | 1.29%           | 3.20%           | 10.27%        |
| <i>World music, ethnic</i>      | 0.67%           | 2.24%           | 5.56%         |
| <i>Reggae</i>                   | 0.47%           | 4.95%           | 9.81%         |
| <i>Rap, Hip hop</i>             | 0.83%           | 7.26%           | 12.43%        |
| <i>Electronic music, techno</i> | 1.21%           | 10.03%          | 15.61%        |
| <i>Hard-rock, metal, punk</i>   | 1.31%           | 4.82%           | 9.78%         |
| <i>Dance, House</i>             | 0.83%           | 8.16%           | 13.44%        |
| <i>Other</i>                    | 1.82%           | 4.53%           | 9.86%         |

of the genres (except for the top two) depending on the specific means of participation (purchase, download or listening). Latin pop-rock is the third preferred genre when downloading or listening to music, but fifth when considering purchases. Similar shifts occur with other genres, such as Adult or Electronic music whose position changes from one classification variable to another. In short, this variability reflects not only the heterogeneity of individuals' tastes and preferences but also the heterogeneous profiles and competences that lead to participation by different means.

Finally we can summarize this information by looking at the ratios of participation (purchase to download and purchase to listening) in figure 1. We expect this to be between 0 and 1, as purchasing music is a rarer form of participation than downloading or plainly listening to recorded music. The greater ratio observed for certain genres can be interpreted either in terms of popularity or of involvement. First, greater ratios could be related to the greater level of social acceptance/widespread support of certain genres, those with more people buying that specific style of music (i.e. for any given base of listeners/downloaders the ratio increases with the number of purchasers). However, and second, these could also be related to the greater involvement of the individuals that are attached to a specific genre, i.e. genres in which the individuals that listen or download show their support by also buying. In short, we could be looking to most popular genres, or to niche/specialized genres with a hardcore fan base that supports it. Interestingly, the second interpretation also allows us to identify genres to which individuals are more weakly attachment, such as electronic music.

From the descriptive analysis it becomes apparent that the heterogeneity of participation in recorded music can be better captured by looking at the genres of choice as opposed to considering just the raw data on participation. Next we further analyze these.

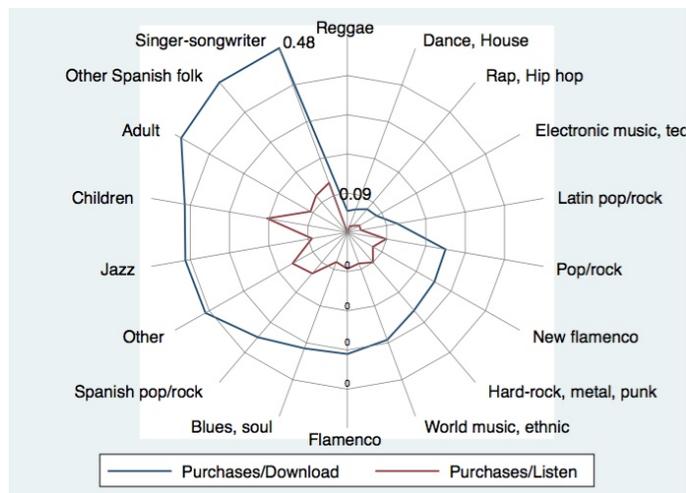


Figure 1: Relative relevance of genres

### 3 Empirical analysis

Based on the preferences revealed by survey-takers, a two-steps empirical analysis is undertaken. First, we proceed to classify individuals according to their preferences when purchasing and downloading music. This segmentation will allow us to identify the similarities and dissimilarities among groups of participants in two different dimensions, which are also attached to two different degrees of engagement. To some extent we will be able to identify clusters that combine economic but also social-driven factors, and the intertwined relations between these.

Second, we resort to correspondence analysis in order to look at the association between purchase/download class membership. Additionally the analysis provides insight into how similar/disimilar are the different groups among them and from the average participant.

#### 3.1 Latent-class model estimation results

A latent-class model is estimated using the 18 individual answers to the genres of choice (purchased/downloaded) as manifest variables. Let

$Y_{ij}$  denote the binary observed outcome of respondent  $i$  to the  $j$ -th variable (where  $j = 1 \dots 18$ ). We aim at summarizing the joint distribution of the  $J$  manifest variables as the weighted sum of  $k$  different classes. Define  $\pi_{jk}$  as the class-conditional probability that an individual in class  $k$  generates a positive outcome in  $j$ , i.e. the individual purchases/downloads genre  $j$ . Finally define  $p_k$  as the prior (unconditional) probability of latent class membership. Then, the probability density function is given by:

$$P(Y_i|\pi, p) = \sum_k p_k \prod_j (\pi_{jk})^{Y_{ij}} \quad (1)$$

Maximum likelihood estimation provide estimates for  $p_k$  and  $\pi_{jk}$ . Based on these, a posterior probability of each individual's membership to class  $k$  is computed using a the Bayes' rule.

Key to this process is the choice of the number of classes  $k$ . In the empirical strategy we resort to an iterative process: starting from  $k = 2$ , at each step the number of classes is increased by one, and two information criteria (AIC and BIC) are computed after each iteration. Then, the number of classes that minimizes the information criteria is chosen. Dziak et al. (2012, 2013) discuss the tendency of AIC to overestimate the number of classes, while BIC underestimates it. Table 3 shows the results for both genres purchased and downloaded.<sup>3</sup>

When using downloaded genres as manifest variables, BIC achieves a minimum with  $k=7$ , while AIC decreases for all the range of estimated models (at least up to  $k=12$ , not shown in the table). Given the tendency of AIC to overfit the model,  $k = 7$  seems to be a rather conservative yet reasonable outcome. Further classes do only increase the complexity of the model by splitting smaller-sized clusters into refinements that do not provide much further knowledge into participants.

As for purchasers, there is a discrepancy between the minimum BIC at  $k = 2$  and AIC at  $k = 7$ . As suggested by the previously mentioned literature literature, the number of classes should be between 2 and 7. After an inspection of the different estimated solutions, one learns that there is a large group of non-participants, i.e. individuals whose

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<sup>3</sup>See also Nylund et al. (2007) for a similar discussion.

participation in recorded music becomes manifest through ways other than purchase. This means that  $k = 2$  is trivial as it classifies purchasers and non-purchasers. As we increase  $k$ , the number of classes increases without significantly affecting the share of non-participants, which means that classes for active purchasers become smaller. It has been chosen  $k = 4$  as a conservative compromise, although  $k = 5$  was also analysed and general results were not significantly altered.

Table 3: Latent class models: estimation results. Choice of the number of classes

| <i>Classes</i> | <b>Download</b> |                 | <b>Purchase</b> |                 |
|----------------|-----------------|-----------------|-----------------|-----------------|
|                | AIC             | BIC             | AIC             | BIC             |
| 2              | 42409.28        | 42642.64        | 16174.63        | <b>16408.00</b> |
| 3              | 41588.59        | 41941.97        | 16055.67        | 16409.05        |
| 4              | 41006.29        | 41479.68        | 15971.16        | 16444.55        |
| 5              | 40790.55        | 41383.96        | 15926.03        | 16519.44        |
| 6              | 40602.82        | 41316.24        | 15894.16        | 16607.59        |
| 7              | 40450.41        | <b>41283.85</b> | <b>15892.28</b> | 16725.72        |
| 8              | 40372.88        | 41326.33        | 15895.07        | 16848.53        |
| 9              | 40301.79        | 41375.26        | 15904.2         | 16977.67        |
| 10             | 40264.00        | 41458.00        | 15891.28        | 17084.76        |

### 3.1.1 Description of the classes: purchasers

Table 4 shows the profiles of the different clusters using genres purchased as manifest variables. Cluster #1 is the smallest and composed of the largest share of men (67%) with the largest level of education (58% have completed university studies). It is also the group with the lowest unemployment rate (13% compared to 16% at the sample level, not shown in the table). Finally, with regards to the recorded music participation, all of the members of this cluster purchase recorded mu-

sic but download and attend live concerts below the average. As for genres of choice when purchasing, they show preferences for a great diversity of genres except for children music. Indeed the variety index (% of genres purchased out of the 18 in table 2) is at 0.49 the largest and, evidently, larger than the average. Due to this fact we label this group as *omnivorous* purchasers.

Next, # 2 stands out as the class that has the largest share of females and the largest mean age. In this group retired citizens and house-husbands/wives are overrepresented (14.8% and 8.9% respectively compared to 5.9% and 3.9% at the sample level, not shown). With regards to their recorded music preferences, all of them purchase, although only 33% and 27% attend live concerts (sample average is 65%) and download (sample average is 53%) respectively. In comparison to other clusters they lean toward <sup>4</sup> music styles with wider acceptance among older individuals that could be labeled as more traditional (adult, singer-songwriter, flamenco, new flamenco or folk), while showing a level of engagement significantly below the sample average for genres such as Reggae, Rap/Hip-hop or Electronic music. This, and the fact that individuals in this class consume recorded music in a more traditional way, makes us label them as *traditional* purchasers.

Table 4: Descriptive statistics of clusters : purchasers.

| Class        | %    | Age | Female | University | Student | Downloads | Attends | Variety |
|--------------|------|-----|--------|------------|---------|-----------|---------|---------|
| 1            | 1.4  | 45  | 0.67   | 0.58       | 0.05    | 0.34      | 0.55    | 0.49    |
| 2            | 4.1  | 47  | 0.49   | 0.31       | 0.04    | 0.27      | 0.33    | 0.44    |
| 3            | 3.6  | 39  | 0.60   | 0.30       | 0.14    | 0.38      | 0.52    | 0.46    |
| 4            | 90.9 | 38  | 0.52   | 0.26       | 0.20    | 0.55      | 0.67    | 0.40    |
| <i>Total</i> |      | 38  | 0.52   | 0.27       | 0.19    | 0.53      | 0.65    | 0.40    |

Cluster #3 is composed of individuals approximately of the mean

<sup>4</sup>There is a statistically significant difference in the proportions observed between this class and the overall sample proportion.

age that download and attend below the sample mean, although 100% of them purchase recorded music. They do favor all genres except for blues and soul. Indeed this class is second to omnivorous in genre variety, and stand out for being top purchasers for Rap/Hip-hop, Electronic music/Techno, Dance/House music and Hard-rock/Metal/Punk. Based on this trait, this class is labeled as *hedonists*.

Finally, the largest cluster in size, #4, includes the youngest group of individuals whose involvement with all genres is below the average, which becomes apparent as they have the lowest variety index. They do engage in music but not through purchase: only 25% purchase but they download (55%) and attend (67%) to live music events more than the average. Therefore we label this group as *occasional* purchasers.

### 3.1.2 Description of the classes: downloaders

Turning now to the classification based on genres downloaded, table 5 shows a brief description of the different clusters found.

First, there is a cluster consisting in its majority of women, cluster #1, which prefer mainstream genres (pop-rock, adult, singer-songwriter) and that do purchase and attend below the average. We identify this group of users as *adult mainstream*.

Cluster #2 is the largest group, composed of individuals who are, on average, the oldest of the sample and who show the lowest participation rate when downloading (only 23% do). They also show a clear indifference about the genres they download: all stand out for being below the average, as can be seen by the variety index which is at its lowest. Hence we tag this group as *incidental* users.

Cluster #3, *young mainstream* users, is composed of individuals who are younger than the average and show a weaker than the average engagement with music (purchasing and attending below the average), and a preference for downloading mainstream genres (all different Pop-rock genres are above the average). This is second in size to incidental users.

Next comes cluster #4, that is is composed mainly of women, who are less educated than the average, and who stand out for their lean-

ing towards Flamenco and New Flamenco. We denote this group as *Flamenco enthusiasts*.

Individuals in class #5 show the lowest engagement with purchases and attendance, while they stand out for downloading all genres above the average individual, which manifests itself in the largest variety index, hence the label *compulsives*.

Class #6, *aficionados*, includes the largest share of university graduates, who favor purchases of recorded music (above the mean) over live concerts (below the mean). They are overrepresented in two minority genres: Blues/Soul and Jazz. They also are above the mean in all Pop-rock styles (bar latin Pop-rock), World music, and Hard-rock/Metal/Punk.

To conclude, we find a cluster with the youngest individuals in the sample, and the largest share of students. These are second to compulsives in the variety of genres they seek for, and 75% use a cell phone to listen to music, hence the tag *mobiles*.

Table 5: Descriptive statistics of clusters: downloaders.

| Class        | %    | Age | Female | University | Student | Purchases | Attends | Variety |
|--------------|------|-----|--------|------------|---------|-----------|---------|---------|
| 1            | 6.1  | 38  | 0.44   | 0.35       | 0.18    | 0.26      | 0.42    | 0.21    |
| 2            | 61.1 | 42  | 0.51   | 0.28       | 0.12    | 0.38      | 0.76    | 0.07    |
| 3            | 15.6 | 32  | 0.54   | 0.28       | 0.31    | 0.22      | 0.46    | 0.24    |
| 4            | 3.9  | 34  | 0.48   | 0.17       | 0.18    | 0.20      | 0.45    | 0.39    |
| 5            | 1.9  | 33  | 0.60   | 0.17       | 0.28    | 0.17      | 0.41    | 0.80    |
| 6            | 2.4  | 38  | 0.63   | 0.39       | 0.20    | 0.36      | 0.55    | 0.51    |
| 7            | 9.0  | 26  | 0.63   | 0.13       | 0.45    | 0.17      | 0.52    | 0.60    |
| <i>Total</i> |      | 38  | 0.48   | 0.27       | 0.19    | 0.31      | 0.65    | 0.19    |

Table 6 shows the cross-tabulation of the sample based on both attributes. As it can be seen, some of the row/column percentages deviate from the sample-level share, implying a larger/smaller share of those specific groups than would be expected under no association. Re-

markable examples are, using row percentages, the overrepresentation of traditional purchasers in adult mainstream users, or that of omnivorous purchasers in aficionados, or the underrepresentation of traditional or hedonist purchasers in aficionados. Likewise, an analysis of column percentages shows aficionados being strongly overrepresented in omnivorous purchasers (and strongly underrepresented in the rest of the column clusters), or incidental users being overrepresented in all clusters bar occasional. All this examples suggest an association between both attributes that we analyze next.

Table 6: Cross tabulation based on class membership. Row (line on top) and column (line on bottom) percentages.

|                            | <i>Omnivorous</i> | <i>Traditional</i> | <i>Hedonist</i> | <i>Occasional</i> | <b>Total</b> |
|----------------------------|-------------------|--------------------|-----------------|-------------------|--------------|
| <i>Adult mainstream</i>    | 0                 | 6.21               | 3.11            | 90.68             | 100          |
|                            | 0                 | 9.28               | 5.24            | 6.08              | 6.09         |
| <i>Incidental</i>          | 1.69              | 5.4                | 4.05            | 88.85             | 100          |
|                            | 72.29             | 81.01              | 68.57           | 59.78             | 61.14        |
| <i>Young mainstream</i>    | 0.11              | 0.33               | 3.2             | 96.35             | 100          |
|                            | 1.2               | 1.27               | 13.81           | 16.51             | 15.57        |
| <i>Flamenco enthusiast</i> | 1.75              | 3.49               | 3.49            | 91.27             | 100          |
|                            | 4.82              | 3.38               | 3.81            | 3.96              | 3.94         |
| <i>Compulsives</i>         | 0.92              | 2.75               | 0.92            | 95.41             | 100          |
|                            | 1.2               | 1.27               | 0.48            | 1.97              | 1.88         |
| <i>Aficionados</i>         | 10.79             | 1.44               | 0.72            | 87.05             | 100          |
|                            | 18.07             | 0.84               | 0.48            | 2.29              | 2.39         |
| <i>Mobiles</i>             | 0.38              | 1.34               | 3.07            | 95.21             | 100          |
|                            | 2.41              | 2.95               | 7.62            | 9.41              | 8.98         |
| <b>Total</b>               | 1.43              | 4.08               | 3.61            | 90.88             | 100          |
|                            | 100               | 100                | 100             | 100               | 100          |

### 3.2 Correspondence analysis

A correspondence analysis is performed to further investigate the association between the different categories of recorded music users and purchasers. We used the common rule of choosing the number of dimensions needed to explain at least 90% of the inertia, a goal that was achieved by choosing 2 dimensions. Based on the outcome of this analysis, a biplot is produced (see Figure 2) in order to reveal the similarities/dissimilarities of different row/column profiles and the association between them.

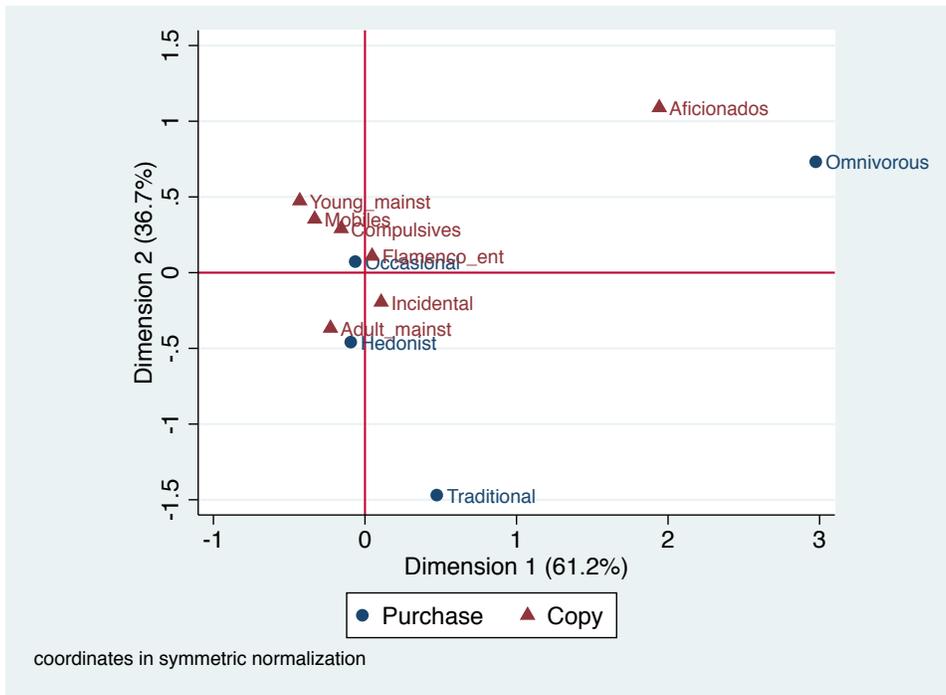


Figure 2: Correspondence biplot of categories of downloaders and purchasers of recorded music

Firstly, we can derive the similarity of the categories within one classification by looking at the closeness of column/row points. Looking at the second quadrant in figure 2, we see three row categories clustered together: young mainstream, mobiles and compulsive. This

implies individuals in these classes have similar profiles as purchasers. Indeed we can see that within these three groups there is a higher percentage than the average of occasional purchasers and a lower percentage than the average of omnivorous purchasers. Additionally, we find no similarity between purchasers categories.

Secondly, by looking at the distance of column/row-points to the origin one can tell how different from the population these categories are. This would be the case for aficionados (downloaders), and omnivorous and traditionalists (purchasers). In other words, the profile of individuals in these groups are quite different from that of the average individual.

Thirdly, we can analyze the association between row/column categories by looking at the product of the vectors from the origin to the column/row points. As expected, there is a clear direct and intense association between aficionados and omnivorous. There is also an association, smaller in magnitude, between adult mainstream and hedonists, and incidental downloaders and traditional purchasers. On the other hand, there is almost no departure from independence in the case of aficionados and traditional, and omnivorous and young mainstream/compulsives/mobiles, which suggests that these combination happen together very infrequently.

This analysis brings the question of what are we measuring in both dimensions. Dimension 1, even though not in a clear-cut way, appears to be roughly capturing the degree of involvement or engagement of users and consumers with recorded music, with increasing levels of commitment being located to the right. The vertical axis is more difficult to interpret, although it could be linked somehow with the degree of experimentation in music and music genres. At this stage further analysis is required to get more conclusive results.

## 4 Preliminary results and discussion

Based on the foregoing discussion, there are some interesting results that stand out from this analysis.

We see that participation profiles and clustering of individuals according to genres showed a link with socio-economic indicators. There is both evidence of distinction and omnivorous effects. Let us consider education attainment as an indicator of socio-economic status. Then, purchasers' clusters shows how *omnivorous* —the group with the largest share of university graduates, roughly 58% compared to a sample mean of 26.65%— reflect their social standing by choosing a wide variety of music genres when purchasing. *Traditional* and *Hedonists* come next in education levels, being the difference generational, i.e. the former are older. In this case the choice of genres makes a difference: we see less variety than *omnivorous*, and each group is overrepresented in specific genres (adult contemporary vs. more dance and club oriented) which reflects the age gap. Compared to the former groups, *occasional* purchasers have the lowest education attainment and also reverse the pattern of participation: they download and attend live events over the mean, while purchase below the mean (and all genres are below the mean), which is the opposite case of the former three groups. What this implies is that individuals produce consistent participation patterns across different socio-economic levels. In other words, there is evidence of correlation between participation patterns and socio-economic status.

When looking at different groups of music use, the picture becomes, at first, more confusing, if only for the increased number of classes. However by looking at three dimensions one could identify patterns of participation and socio-economic position. First, only *aficionados* and *adult mainstream* have an education level over the average; *incidental* and *young mainstream* are on the average while *compulsive*, *flamenco* and *mobile*, in this order, have the lowers levels. Second, with respect to participation all classes, except *incidental*, attend live events less than the average, while the latter and *aficionado* purchase over the average. The variety of participation, and its casual connection with downloading (only 23% are engaged in it) distinguishes *incidental* from other groups in a kind of distinction effect. However, it is also noteworthy that the average age is largest in this group, which makes the

digital divide also a likely explanation. There are some more distinction effects at play based on preferred genres: flamenco, a specialized group, or adult and young mainstream that are rather amorphous in their preferences. Overall one could say that a distinction effect plays a role for for *aficionados* (which based on the correspondence analysis are associated with *omnivorous* purchasers), while for the rest a distinction effect is at play.

To conclude, our analysis shows that the use of genres reveals a richer underlying heterogeneity in the demand for recorded music in individuals that other more aggregated measures of participation tend to hide. In this respect more work is needed to provide a clearer explanation of some of the findings. First, it would be interesting to further analyze what is the relationship between the different clusters and the knowledge and competences about popular music of individuals. This could be connected with the concept of cultural capital and provide additional tools to proxy it. Second, and related to previous comment, we think it would be fruitful to connect the engagement of individuals with popular music and the probability of cross-market indirect effects, i.e. to which extent participation in one market affects participation in any other. We expect these effects to be different for individuals in different groups.

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