Is Taylor Swift leading a new Pop revolution? A cross-generation analysis of Pop/Rock cover songs [version 1; peer review: awaiting peer review]

José Luis Ortega

Institute for Advanced Social Studies, Camposanto de los Mártires, Córdoba, 7 14004, Spain
Joint Research Unit Knowledge Transfer and Innovation, (UCO-CSIC), Camposanto de los Mártires, Córdoba, 7 14004, Spain

Abstract
Background: The aim of this paper is to find evidence of a changing pattern in cover songs by 21st-century artists. To this end, over 76,000 covers performed by artists who grew up in the 2000s were quantitatively analyzed. Methods: SecondHandSongs.com was crawled to extract the cover relationships, and Allmusic.com to obtain the genre and starting decade of each performer. Results: The results show that the current music panorama is dominated by Pop/Rock music and, for the first time since the 1960s, artists from the 2010s generation prefer to cover more songs by contemporary artists than by classic figures from the 1960s. Pop and Dance are the emerging sub-genres with the largest proportion of covered musicians, while Taylor Swift, Justin Bieber and Ed Sheeran are responsible for this changing trend. Conclusions: These results provide an interesting opportunity to introduce quantitative studies in cultural studies about music, cinema and arts.

Keywords
Contemporary popular music; Cover songs; Pop/Rock; Taylor Swift, SecondHandSongs, digital humanities, popular culture

This article is included in the AI for Music collection.
Introduction

With the proliferation of new forms of data collection (data repositories, public APIs and web scrapping), the appearance of more advanced processing tools (OpenRefine, R packages, etc.) and the increase of storage space, digital humanities are becoming established as reference discipline in the study of complex cultural and historical phenomena (Black, 2016). This freely accessible information is fostering new quantitative research fronts that are exploring historical, cultural and social phenomena from a quantitative perspective. In this sense, multiple web platforms are expanding, providing music information about releases (Discogs), artists (MusicBrainz, Allmusic), samples (Whosampled), lyrics (Genius) and cover songs (SecondHandSongs). This great variety of web sources offers the chance to explore the evolution and impact of contemporary popular music, and concretely, the influence among artists through cover songs.

700,830 artists and 96,133 original songs. According to “https://secondhandsongs.com/”¹, original performers are those that perform, record or release a song for the first time. A cover is a version of the same song performed, recorded or released by subsequent artists. This definition excludes songwriters, who could be the original authors, but not the original performers. This database is limited to versions, including a list of covered songs and initial performers by artist (SecondHandSongs, 2020). This database is limited to versions, including a list of covered songs and initial performers by artist (SecondHandSongs, 2020).

Allmusic is a comprehensive music web database created in 1994 and owned by TiVo Corporation. The platform provides 30 million tracks and three million albums (Smith, 2016). However, the site’s most valuable information is the classification scheme. Each artist is arranged according to 21 genres and over 100 styles. Styles are not considered sub-categories of genres, but labels or keywords freely assigned to an artist. Allmusic also includes an artist’s active period expressed in decades. This information means that artists can be located in time and their influence tracked across decades.

Studying connections between musicians through cover versions provides an opportunity to analyze music performers’ influence on their contemporaries and later artists, build impact indicators and track links between music genres. In a previous study, the global network of artists connected through cover songs was modeled and analyzed (Ortega, 2021). One of the most important results was the detection of time patterns in covers. The results mainly pinpointed two waves in which songs were covered by artists raised in specific periods. Thus, a first wave involved performers from the first half of the 20th century who mainly covered artists from the 1920s, when Jazz music was booming. Meanwhile, a second wave, with performers from 1950–2000, preferred covering songs by musicians that started their musical career in the 1960s, the decade when Pop/Rock music took off (Hall, 2014).

However, these results also suggested that musicians beginning their careers in the 21st century were again changing their preferences, choosing to cover more contemporary musicians than 1960s old Pop/Rock glories. That being the case, we would be witnessing a third wave in popular music. This study will thoroughly analyze contemporary musicians’ behavior when covering songs, to discover whether a third wave is emerging and who is responsible for the change.

Related research

Important studies have focused on the transformations of popular music in the 21st century. From a business point of view, VanDen Heuvel (2020) perceived that artists are using sales and streaming to attract concert goers, rather than sales of recorded music as in the 20th century. Tan et al. (2020) examined how the new digital environment is influencing the business ecosystem of popular music, K-Pop, in Korea. Meier (2017) also emphasized the power of digital media in promoting popular music artists. Another important aspect is the role of social networks in the emergence of new artists and genres (Cayari, 2011). Verboord and van Noord (2016) observed that artists on the periphery with a good fan base in social networks could improve their visibility, while Oh and Lee (2013) described the importance of YouTube in the emergence of K-Pop. Other authors have pointed out the influence of TV song contests promoting new talent (Kjus, 2017).

Cover songs in contemporary popular music have always been studied from a theoretical and cultural perspective. Some authors (Weinstein, 1998; Coyle, 2002; Plasketes, 2005) have reported a loss of originality in covers, with actions of appropriation in some cases. Others (Cusic, 2005; Solis, 2010), however, have defended the value of cover versions in transmitting new styles and ideas. In this context, most analyses of covers are case studies that focus on content and the consequences for popular music. For example, Doktor (2008) analyzed cross-gender adaptations of the song Satisfaction, while Chu and Leung (2013) studied the importance of remakes in the fall of Cantopop.

¹https://web.archive.org/web/20200129161939/, https://secondhandsongs.com/
From a quantitative perspective, the work of Anderson (2015), who quantified the wave of ‘adaptations’ in French Pop, is worthy of mention. And more recently, Ortega (2021) was the first to map the entire network of cover songs between artists, revealing two clear musical waves: Jazz in the 1920s and Pop/Rock in the 1960s. There is, however, a gap in the exploration of cover songs and their role in transforming Pop/Rock music today.

Objectives
The main objective of this study is to find evidence of a changing pattern in cover versions by 21st-century artists. To that end, we analyzed covers between generations to discover which new artists or genres are leading these changes. Several research questions were formulated:

- Is there a pattern of change in contemporary music related to covers?
- Is a specific music genre influencing this change?
- Which musicians are leading this change and attracting more covers?

Methods
Study design
This research is based on the analysis of quantitative data extracted and compiled from two web sources: SecondHandSongs and Allmusic. The first one was used to extract the connections between original and versioned songs. This site was selected because it is the most comprehensive source of cover songs. Allmusic was selected for extracting the music gender and starting decade of each artist. The reason for using this platform is because it is the only database that classifies artists by decade and music genre. A web crawler was built to sequentially extract information about performers and cover songs. This task was accomplished during January 2020. Data were analyzed using descriptive statistics, using R packages and Excel for the tables and graphs.

Data extraction
After the selection of the web sources, several scripts in WebQL were written to extract specific items from each source:

SecondHandSongs: The first step was to design a crawler to extract the internal ID of each performer. The platform assigns a sequential number, then numbers from 1 to 175000 were automatically generated (no more than 175000 artist codes were detected) and these codes were inserted in the url: https://secondhandsongs.com/artist/[artist code]/covers#nav-entity. This page shows the list of cover songs by each artist. Song titles, song codes, performers, performers code, artist, artist code, nationality, born date and dead date were extracted from this web page. 143,707 artists were retrieved, a 99.9% of the total number of artists reported by the site in that date.

Allmusic: As with SecondHandSongs, sequential IDs are assigned to each performer. Codes from mn0000000001 to mn0003600000 were generated and added to the url: https://www.allmusic.com/artist/[artist code]. Information about the fields title, active, genre and styles were extracted from the section Artist details, resulting in 871k performer profiles.

Data matching
The next stage was to match the artists list of SecondHandSongs with the Allmusic’s one. However, this process was problematic because an artist’s name could be written differently in each platform. Thus, certain characters, such as ampersands and punctuation marks, were removed or replaced by letters (Iron & Wine by Iron and Wine, Eli “Paperboy” Reed by Eli Paperboy Reed). In other cases, different variations of names were normalized (B.R.M.C. became Black Rebel Motorcycle Club, Tatu became t.A.T.u); synonymy between different artists (Nirvana, 1960s British pop band and Nirvana, 1990s American alternative band) was solved by adding a digit to the name. Finally, a total list of 106k artists (73.8% of the initial sample) and 855k (96.6% of the total songs indexed in the platform) cover and original songs were obtained.

For this analysis, 11,614 soloists and bands starting their music career in the 21st century were selected and 76,177 covers associated with these artists were identified, along with the name, genre and decade in which the covered artists initially appeared.

Data cleaning
In SecondHandSongs, each cover has an ID because a song could have a different title from the cover version. Translations and reworking of lyrics could cause slight variations between the original song and the cover (i.e., “That’s all right” by Arthur Crudup and “That’s Alright Mama” by Bob Dylan). Therefore, links between artists
were established according to the number of times an artist covered another, regardless of song title. In the rare event that an artist covered the same song more than once, it was counted as a different version.

Medleys were removed because they include parts from more than one song and SecondHandSongs does not accurately identify which performer is the author of each part. Samples were also removed because they do not reuse an entire song. SecondHandSongs usually assigns a generic unknown to traditional songs or when the original performer is unknown. These covers were removed because no connection can be created between artists. The platform also joins the codes of two or more artists when they perform together (e.g., Jennifer López and LI Cool J, Holly Golightly and The White Stripes). These cases were duplicated and the same song was assigned to each artist.

Results
First, the distribution of artists by genre and sub-genre on the current music scene is important to identify which music genres are more popular in the 21st century. Figure 1 shows that over half the musicians belong to Pop/Rock (55.6%), while Alternative/Indie Rock (40.3%) and Pop (37.3%) are the most salient sub-genres within Pop/Rock. Other important genres today, but with considerably fewer artists, are Jazz (8.3%), Electronic (6.4%) and Country (5.1%). Therefore, Pop/Rock music is currently the most dominant music genre and both aspects, Rock (Alternative/Indie Rock) and Pop, are the principal sub-genres in similar proportion. The full dataset can be found under Underlying data (Ortega, 2022).

Figure 2 depicts the proportion of artists’ covers according to decade and by the music genre of the performers. This graph illustrates differences between genres when they are covered by artists from other periods and pinpoints which artists from different decades exert most influence in each genre. Thus, for example, the artists most covered by Latin singers

![Figure 1. Sunburst showing the proportion of artists that started their career in the 21st century by musical genre and sub-genre.](image-url)
are those who started their career in the 1960s (32.6%), while performers raised in the 1950s (20.8%) are the biggest influence for Blues artists. The general pattern is that in most genres covers are mainly of artists from the 1960s, ranging from 33.6% of Children’s to 18.1% of Vocal music. This result can be interpreted in two ways. First, most genres are mainly influenced by artists from the 1960s, when Pop/Rock appeared. Second, 1960s music cuts across all genres: Reggae, Rhythm and Blues (R&B) and Country musicians also cover artists from the 1960s, many of them Pop/Rockers. This would suggest that 1960s music influences all kinds of music today.

But not all genres follow this pattern. Some pre-Rock genres with a glorious past retain their connections with previous periods. Jazz, Blues and Vocal focus their covers on artists who emerged before the 1950s, a time when these genres flourished and hit their height of popularity. Thus, Jazz performers mainly cover songs from the 1920s (19.6%), Blues from the 1950s (20.8%), and Vocal music from the 1920s (16.1%) and 1930s (16.3%).

Also worthy of mention is the particular case of Stage & Screen, a genre with a high percentage of covers of artists from the 1990s (20.9%) and 2000s (33.7%). These outlier values stem from The Piano Tribute Players, a band specializing in adapting songs by successful artists to piano pieces for movie soundtracks. Interestingly, this example shows how today’s artists value the influence of their contemporaries, using them as recent classics. This issue will be explored further below.

As we have seen in Figure 1, more than half of current music is made by Pop/Rock musicians. However, Figure 2 indicates a more homogeneous distribution of covers throughout the decades. The graph shows that Pop/Rock performers only covered 22.9% of songs from 1960s artists, while other covers are distributed across other decades, such as the 1970s (15.8%) and 1980s (12.6%). This pattern could suggest that today’s Pop/Rockers are influenced by a wide range of musicians from different periods, not only by 1960s artists.
Figure 3 gives a detailed view of Pop/Rock covers, distinguishing those performed by generations from the 1990s, 2000s and 2010s. It illustrates how the cover preferences of different generations of musicians change according to when artists began their careers. Thus, for example, 13.1% of the cover songs made by the 1990s generation was of 1950s artists, while the 2010s generation covered 17.2% of songs by 1970s artists.

In general, the graph shows that the 1960s remains the decade of reference for generations from the 1990s (29.2%) and 2000s (25.1%). However, artists from the 2010s have changed this pattern and, for the first time, prefer to cover more songs by contemporary artists from the 2000s (21.9%) than by 1960s oldies (16.1%). In fact, this change in trend already occurred in the 1990s when the following generations began covering more young artists than older ones. For example, 7.3% of 1990s performers were covered by their contemporaries, and 9.5% and 14.8% by the generations of the 2000s and 2010s, respectively. For musicians from the 1980s, 1970s and 1960s, the pattern is just the opposite. 1990s artists, for example, cover more songs by artists from those decades than from the 2000s and 2010s generations.

Figure 4 represents the evolution of Pop/Rock musicians’ genre preferences when they come to cover songs by artists from different generations. Thus, for example, the most covered artists from the 1960s are Pop (14.3%) and R&B (12.5%) performers. In the 1980s, however, the most covered artists are Alternative/Indie Rock (9.9%), Pop (9.7%) and Hard Rock (9.6%) musicians.

The aim was to observe whether today’s Pop/Rock performers’ preference (Figure 3) for covering contemporary artists has some connection with music sub-genres. The graph clearly shows that Alternative/Indie Rock (16.1%), Pop (13.5%) and Dance (5.9%) versions proliferated in the 2010s. This increase is especially significant in Dance (Δ562%) and Pop (Δ40%) in the 2000s. Interestingly, Pop made by 1960s–1980s generations fell from favor, stalled in the 1980s–2000s and firmly bounced back in the 2010s. These results suggest that 21st-century Pop/Rock artists are covering more contemporary musicians due to a possible reevaluation of Pop and the emergence of Dance music.
Finally, Table 1 ranks the ten artists most covered by musicians from the 2000s and 2010s. This comparison clearly shows how 2000s performers’ preference for classic 1960s artists is being replaced that of 2010s artists for contemporary Pop/Rock singers. Thus, the most covered artists in the 2000s are key figures in the history of Pop/Rock such as The Beatles (3.1%), Bob Dylan (1.7%) and David Bowie (.8%), all raised in the 1960s. Also appreciable is the emergence of covers of more recent artists like Queen (.62%), Bruce Springsteen (.57%) or Pink Floyd (.41%), though they belong to the 1970s and 1980s.

However, the ranking of the most covered artists in the 2010s reveals a radical change in positions, with many more 21st-century artists now appearing. For the first time, The Beatles are no longer the most covered band since the 1960s. Taylor Swift (1.58%) has replaced them as the most covered artist by the 2010s generation. Other important contemporary performers such as Justin Bieber (1.03%), Ed Sheeran (.98%) and Adele (.87%) also figure among the most covered. This weighty presence of contemporary performers in the top positions demonstrates that this change is not caused by specific stars only. Rather there is a genuine generational shift in preferences for more covers of contemporaries than of 1960s Pop/Rock classics. The table also indicates that the most frequent sub-genres of these top covered artists are Pop (Taylor Swift, Adele) and Dance (Justin Bieber, Katy Perry, Rihanna), which fits with the results shown in Figure 4.

Discussion

Quantitative analysis of cover songs between music artists offers the opportunity to track the influence and impact of musicians on their contemporaries and next-generation artists. A broader perspective, encompassing genres and the decades when performers began their careers, can provide insights into the evolution of popular contemporary music since the early 20th century. Concretely, more than half of all active performers of 21st-century music are Pop/Rock musicians. Since appearing in the 1960s, Pop/Rock music has grown considerably and is today the main music genre in popularity and releases (Resnikoff, 2016; Music & Copyright, 2018). One explanation for the continuity of this genre is that, since the 1960s, some of its most salient founders, such as The Beatles, Bob Dylan and Elvis Presley, have been covered by subsequent generations (Ortega, 2021) and are the main reference for current popular music. That today performers from many different genres such as Latin, Reggae, Rap or R&B are increasingly covering 1960s artists is a sign that Pop/Rock influence transcends genres.

However, results have shown that early Pop/Rock is starting to lose ground. Artists raised in the 2010s are tending to cover more songs by contemporary 21st-century artists than classic performers from the 1960s (Crane, 2005). This change in trend arises mainly from Pop and Dance music, the sub-genres most covered by Pop/Rock performers today. Unlike the 1960s Pop/Rock revolution, this new wave has not emerged from a new music genre attempting to replace old

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**Table 1. Top 10 ranking of the artists most covered by the 2000s and 2010s generations.**

| 2000s Name    | Sub-genre          | Covers | Covers % | 2010s Name    | Sub-genre          | Covers | Covers % |
|---------------|--------------------|--------|----------|---------------|--------------------|--------|----------|
| The Beatles   | British Invasion   | 972    | 3.09%    | Taylor Swift  | Pop                | 208    | 1.58%    |
| Bob Dylan     | Folk/Country Rock  | 549    | 1.74%    | The Beatles    | British Invasion   | 160    | 1.22%    |
| David Bowie   | Soft Rock          | 237    | 0.75%    | Justin Bieber  | Dance              | 135    | 1.03%    |
| Elvis Presley | Rock & Roll/ Roots | 230    | 0.73%    | Ed Sheeran     | Singer/ Songwriter | 129    | 0.98%    |
| Queen         | Hard Rock          | 194    | 0.62%    | Adele          | Pop                | 115    | 0.87%    |
| Bruce Springsteen | Hard Rock       | 180    | 0.57%    | Katy Perry     | Dance              | 111    | 0.84%    |
| Bing Crosby   | Vocal              | 141    | 0.45%    | Rihanna         | Dance              | 101    | 0.77%    |
| Pink Floyd    | Hard Rock          | 128    | 0.41%    | Maroon 5       | Alternative/ Indie Rock | 91    | 0.69%    |
| The Rolling Stones | Hard Rock       | 122    | 0.39%    | David Bowie    | Soft Rock          | 90     | 0.68%    |
| Ramones       | Punk/New Wave      | 121    | 0.38%    | Bob Dylan      | Folk/Country Rock  | 89     | 0.68%    |
| TOTAL         | 31,481             |        |          | TOTAL          | 13,167             |        |          |
music traditions, but from an internal revolution or reevaluation of Pop music. Bolstered by Dance music, a transformation is giving rise to a new language and new inspirations. Headed by Taylor Swift, a new generation of Pop and Dance artists are becoming the main influence of current Pop/Rock music and perhaps of up-and-coming artists. Young artists raised in the 21st century like Taylor Swift, Justin Bieber and Ed Sheeran are the most covered artists in the 2010s, overtaking classic stars like The Beatles, Bob Dylan and David Bowie, who had led the ranking of the most covered artists since the 1960s. The reasons behind this generational replacement could be related to the appearance of new media (i.e., YouTube, TikTok) and TV song contests (i.e., Idol, The Voice) popularizing new young artists that mainly opt to cover songs by today’s idols (Cayari, 2011; Kjus, 2017).

Nevertheless, these results should be considered cautiously, given the limitations in the data. The categorization of analyzed units might produce misclassifications and the creation of spurious groups. In our study, the Dance sub-genre is somewhat imprecise and many artists in this category could also belong to Pop (i.e., Justin Bieber, Katy Perry, Rihanna). Therefore, this music genre classification should be seen in perspective.

A more important limitation is associated with the completeness of the data. Many databases often lack comprehensive data of the latest events, depicting an incomplete picture of recent years. That the number of covers in the 2010s is less than half of the 2000s could indicate that SecondHandSongs has yet to index all the cover songs from recent years. Although the number of covers has dropped since the 1950s (Ortega, 2021), new records could complete this picture in the future. Further studies are needed to confirm these results and uncover more clues about this generational change.

Conclusions
Several conclusions can be drawn from the results of this study. The findings reveal a clear change in pattern in contemporary popular music concerning covers. Pop/Rock artists raised in the 2010s are covering more songs by contemporary musicians than by the music legends of the 1960s. This change means that important 1960s figures like The Beatles and Bob Dylan are no longer the most covered artists for the first time since the 1960s. Dance and Pop sub-genres—the sub-genres most covered by the 2010s generation—are responsible for this transformation. This new wave is led by Taylor Swift and followed by emerging 21st-century figures like Justin Bieber, Ed Sheeran and Adele, who are the most covered by the 2010s generation. These results allow us to conclude that the quantitative study of cover songs between artists can be a good approach to understanding the evolution of musical influences.

Data availability statement
OSF: Is Taylor Swift leading a new Pop revolution? A cross-generation analysis of Pop/Rock cover songs. https://doi.org/10.17605/OSF.IO/9JRGC (Ortega, 2022).

This project contains the following underlying data:

- Cover_songs.csv [list of performers and cover songs]

Data are available under the terms of the Creative Commons Zero “No rights reserved” data waiver (CC0 1.0 Public domain dedication).

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