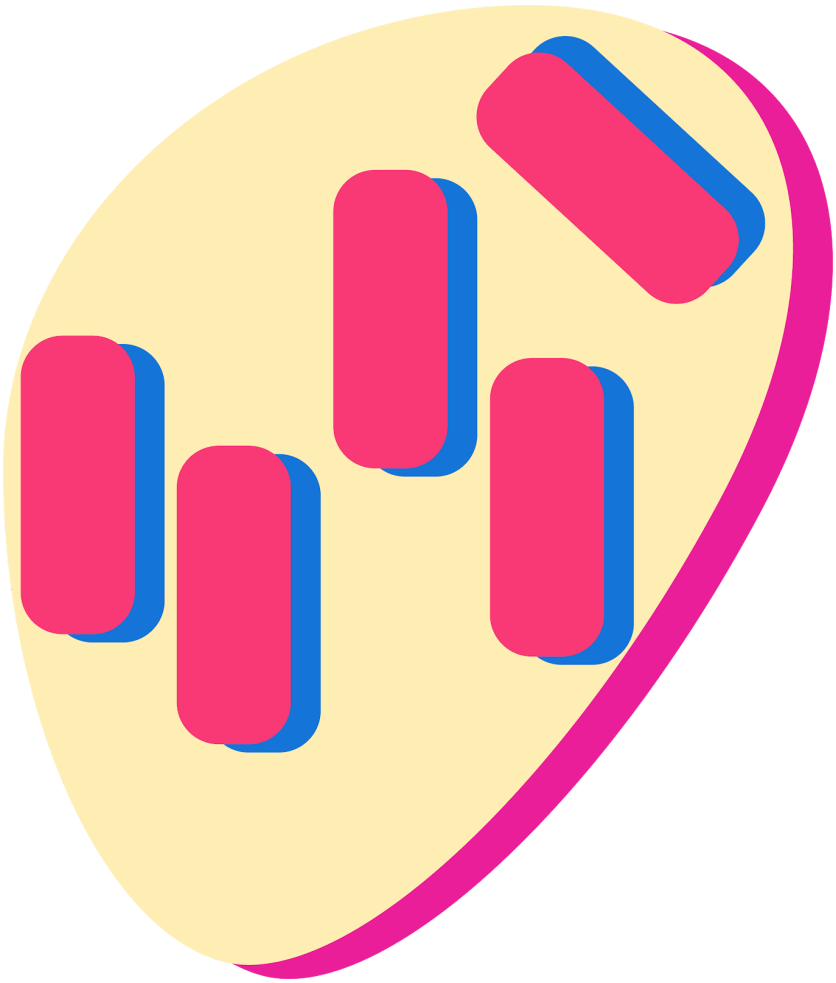
Final Report Data Visualization

Group Music - 09 / 06 / 2020

Tim Yeung s2085615
Luukas Kiviniemi s2195364
Ilse Westra s2091003
Rainer Pits s2026392
Rares Gabriel Negru s2187442



Presentation Materials **3**

Description of datasets and workflow **4**

Rainer Pits - Vietnam War and the influence of culture on Music 4

Rares-Gabriel Negru - Record labels 4

Tim Yeung - Origin of Musical Instruments 5

Ilse Westra - Evolution of Popular and Classical Music 5

Luukas Kiviniemi - Loudness war and Track length 6

Appendix A **8**

Origin of Musical Instruments 8

Vietnam War and the influence of culture on Music 9

Presentation Materials

The presentation of the final visualizations were done through screen sharing a website, serving as the background of the presentation. Visualisations were displayed on this website through a combination of still images (of graphs made in Tableau, some edited in Photoshop), uploaded Tableau Public worksheets and an online WebGL build of a Unity project, hosted on the portfolio website of the university.
The website itself can be found at: https://timvalkskrant.wixsite.com/mijnsite

Description of datasets and workflow

Rainer Pits - Vietnam War and the influence of culture on Music

Visualization 1-3:

The first source was worldradiohistory.com, which has a vast library of digitized old radio journals and magazines. There I located the Billboard Hot Year-End Singles for the years 1965 to 1974. The second dataset came was a list of anti Vietnam War songs on Wikipedia. This list was the most comprehensive because it was created using a number of different sources.

> "Text Search in Billboard Magazine 1930-2016." *SEARCH: Billboard Magazine 1930-2016*, worldradiohistory.com/hd2/IDX-Business/Music/Billboard-IDX/search.cgi.
>
> "List of Anti-War Songs." *Wikipedia*, Wikimedia Foundation, 4 June 2020, en.wikipedia.org/wiki/List_of_anti-war_songs#Vietnam_War_era.

Additional sources:

I used a number of additional sources for decorative elements or for providing historical context. Because these do not relate specifically to the data, they can be found in Appendix A.

Rares-Gabriel Negru - Record labels

Visualisation 1:
"Expenses of U.S. record production and distribution companies 2007-2018"

Published by Amy Watson, Nov 27, 2019:
https://www.statista.com/statistics/185342/expenses-of-us-record-production-companies-since-2005/

- This dataset contains the estimated expenses of record production and distribution companies in the U.S.

Visualisation 2:
"Top-selling albums of the 21st century in the U.S. 2000-2017"

Published by Amy Watson, Mar 11, 2019:
https://www.statista.com/statistics/965686/top-selling-albums-21st-century-in-the-united-states/

- This dataset shows the top selling albums of the 21st century in the U.S. over the time span of 15 years.

Visualisation 3:
“Universal Music Group's revenue 2004-2019”

Published by Amy Watson, Mar 11, 2020:
https://www.statista.com/statistics/273044/universal-music-groups-annual-revenue/

- This dataset contains the annual revenue of the Universal Media Group record label.

Why were these sources chosen and where did I get them from?

All of these sources are from www.statista.com. I chose them because they had easily accessible, valuable information about the music scene. This data is much more clear than all the rest that was found, thus, providing more accurate visualizations.

Tim Yeung - Origin of Musical Instruments

Visualisation 1, Unity visualisation on lineage of instruments:
Note that data for this visualisation was handmade as there were no existing datasets on lineage of musical instruments. Data was initially sourced from a website containing image visualisations of the lineage of instruments, which was then manually entered into an excel sheet. Some instruments were left out due to inaccuracies when cross-referencing with wikipedia entries, supporting entries from a database hosted on “instrumentsoftheworld.com” and occasional extra literature from other sources when the information from the former was not conclusive. Of course the data is heavily simplified as to put in every single instrument and subtype of instrument.

Visualisation 2, Map and Timeline visualisation:
The map visualisations were based on the instruments of the first visualisation as I wanted to link the 2 visualisations together in a meaningful way. Data was once again compiled from the same sources as the above. Data used were the approximate century of invention and lat long coordinates of modern day locations which correspond with the historical locations of the places of invention. Some liberty was taken with the location data especially with older instruments as their precise origins are naturally not very well documented.

A full list of the used sources can be found in the appendix.

Ilse Westra - Evolution of Popular and Classical Music

Visualization 1:
"Instrumentation per Composer"
Sources:
The database which this visualization is based on is a combination of the Cross-Era and the Cross-Composer dataset of AudioLabs. These are two datasets containing 100 tracks of each of 11 composers of Western classical music.
AudioLabs - Cross-Era Dataset. (n.d.). Retrieved June 8, 2020, from https://www.audiolabs-erlangen.de/resources/MIR/cross-era
AudioLabs - Cross-Composer Dataset. (n.d.). Retrieved June 8, 2020, from https://www.audiolabs-erlangen.de/resources/MIR/cross-comp

Visualizations 2-4:
"Change in Song Attributes"
"Average Position"
"Energy per Genre"
Source:
The dataset used for this visualization was extracted from Data World. The top 100 songs on Billboard of every week since February 1958 have been gathered in one part of these two datasets, the other one contains details per song, such as 'instrumentalness', duration, loudness and genre.
Billboard Hot weekly charts - dataset by kcmillersean | data.world. (n.d.). Retrieved June 8, 2020, from https://data.world/kcmillersean/billboard-hot-100-1958-2017

Luukas Kiviniemi - Loudness war and Track length

Visualisations 1-3:
"Average Loudness and Track Length of popular music 1972 - 2019"

"Average Loudness by Genre"

"Average Track Length by Genre"

Source:

Billboard Hot weekly charts - dataset by kcmillersean | data.world. (n.d.). Retrieved June 8, 2020, from https://data.world/kcmillersean/billboard-hot-100-1958-2017
This dataset contains 2 files. The first one contains the top 100 Billboard weekly charts from 1958 to 2019. The second file contains metadata (loudness, track length, instrumentalness etc.) from the Spotify (Echonest) API for each song listed in the first file. Both files contain a SongID column, which acts as a key to connect the two datasets.

Visualisation 4-5:
“U.S. Music Revenue by Format”

“Market Share by Format”

Source:
U.S. Sales Database - dataset by the RIAA (Recording Industry Association of America). Retrieved June 7, 2020, from https://www.riaa.com/u-s-sales-database/
A database by the RIAA that contains the yearly revenues of the United States music industry per musical format (CD, vinyl, download, streaming etc.) for 1973 to 2019. The data is very comprehensive and the database website already has a visualisation made with Tableau.

Appendix A

Origin of Musical Instruments

https://en.wikipedia.org/wiki/Oud
https://en.wikipedia.org/wiki/Bouzouki
https://en.wikipedia.org/wiki/Mandolin
https://en.wikipedia.org/wiki/Lute
https://en.wikipedia.org/wiki/Theorbo
https://en.wikipedia.org/wiki/Vihuela
https://en.wikipedia.org/wiki/Guitar
https://en.wikipedia.org/wiki/Electric_guitar
https://en.wikipedia.org/wiki/Qanun_(instrument)
https://en.wikipedia.org/wiki/Psaltery
https://en.wikipedia.org/wiki/Hammered_dulcimer
https://en.wikipedia.org/wiki/Santur
https://en.wikipedia.org/wiki/Harpsichord
https://en.wikipedia.org/wiki/Lyre
https://en.wikipedia.org/wiki/Harp
https://en.wikipedia.org/wiki/Rebec
https://en.wikipedia.org/wiki/Rebab
https://en.wikipedia.org/wiki/Fiddle
https://en.wikipedia.org/wiki/Lira_da_braccio
https://en.wikipedia.org/wiki/Hurdy-gurdy
https://en.wikipedia.org/wiki/Viol
https://en.wikipedia.org/wiki/Double_bass
https://en.wikipedia.org/wiki/Bass_guitar
https://en.wikipedia.org/wiki/Dulcian
https://en.wikipedia.org/wiki/Bassoon //note bassoon has been misspelled in the database, this was noticed after the creation of the visualisations unfortunately
https://en.wikipedia.org/wiki/Shawm
https://en.wikipedia.org/wiki/Zurna
http://www.instrumentsoftheworld.com/instrument/203-Zurna.html
https://en.wikipedia.org/wiki/Oboe
https://en.wikipedia.org/wiki/Oboe_d%27amore
https://en.wikipedia.org/wiki/Cor_anglais
https://en.wikipedia.org/wiki/Saxophone
https://en.wikipedia.org/wiki/Clarinet
https://en.wikipedia.org/wiki/Pan_flute
https://study.com/academy/lesson/what-is-a-pan-flute-history-origin-types.html#:~:text=In%20Western%20cultures%2C%20the%20most,around%20the%20world%20as%20well.
https://en.wikipedia.org/wiki/Water_organ
https://en.wikipedia.org/wiki/Ney
https://larkinthemorning.com/blogs/articles/the-ney-the-middle-eastern-flute
https://en.wikipedia.org/wiki/Flute#Wooden_one-keyed_transverse_flute
https://en.wikipedia.org/wiki/Post_horn
https://www.britannica.com/art/post-horn
https://en.wikipedia.org/wiki/Cornet#:~:text=The%20cornet%20(%2F%CB%88k%C9%94%CB%90r,shape%2C%20and%20mellower%20tone%20quality.
https://en.wikipedia.org/wiki/Serpent_(instrument)
https://en.wikipedia.org/wiki/Tuba
https://en.wikipedia.org/wiki/Wagner_tuba
https://en.wikipedia.org/wiki/Sousaphone
https://en.wikipedia.org/wiki/Euphonium
http://www.public.asu.edu/~jgerics/play-natural-horn.html
https://en.wikipedia.org/wiki/French_horn
https://en.wikipedia.org/wiki/Virginals
https://en.wikipedia.org/wiki/Spinet
https://en.wikipedia.org/wiki/Harpsichord
https://en.wikipedia.org/wiki/Clavichord
https://en.wikipedia.org/wiki/Piano
https://en.wikipedia.org/wiki/Positive_organ
https://en.wikipedia.org/wiki/Pipe_organ#:~:text=The%20Greek%20engineer%20Ctesibius%20of,in%20the%203rd%20century%20BC.&text=The%20first%20Western%20European%20pipe,of%20the%20Franks%20in%20757.
https://en.wikipedia.org/wiki/Electric_organ
https://en.wikipedia.org/wiki/Accordion
https://en.wikipedia.org/wiki/Concertina#History
http://musixcool.com/members/musixcool/english/ancientinst.htm

Vietnam War and the influence of culture on Music

History sites in Visualization 3:

1. “Timeline: Vietnam War and Protests.” *PBS*, Public Broadcasting Service, www.pbs.org/wgbh/americanexperience/features/two-days-in-october-vietnam-battlefields-and-home-front/.
2. History.com Editors. “Vietnam War Protests.” *History.com*, A&E Television Networks, 22 Feb. 2010, www.history.com/topics/vietnam-war/vietnam-war-protests#:~:text=The%20launch%20of%20the%20Tet,anti%2Dwar%20protests%20to%20date.

Images in Visualization 2:

1. https://en.wikipedia.org/wiki/The_Temptations_discography#/media/File:The_Temptations_on_the_Ed_Sullivan_Show.JPG
2. https://static.qobuz.com/images/artists/covers/medium/5eb36718aa9174de2ba93a009c732cf0.jpg
3. https://thestrangebrew.co.uk/wp-content/uploads/2013/03/The+Hollies.png
4. https://kpbs.media.clients.ellingtoncms.com/img/croppedphotos/2015/08/07/Simon_and_Garfunkel_Lead_t800.jpg?90232451fbcadccc64a17de7521d859a8f88077d
5. https://i.pinimg.com/originals/16/1d/52/161d52e7812e2ae4630a3890f355561b.jpg
6. https://dt7v1i9vyp3mf.cloudfront.net/styles/news_large/s3/imagelibrary/C/ClassicTracks_01-0711-.W5hpqmlKYEGn7cEKFTpxajFRqoxsEId.jpg
7. http://www.wliw.org/21pressroom/files/2010/11/denver1.jpg
8. https://i.pinimg.com/736x/9e/96/fb/9e96fb21ccf645cf3d4dbd103adf3d7e.jpg
9. https://i.pinimg.com/originals/30/31/f1/3031f122ab5542a65cf5c3f6329df9bb.jpg
10. https://upload.wikimedia.org/wikipedia/commons/c/c5/Donovan_1969.JPG
11. https://i.pinimg.com/originals/da/4c/cb/da4ccb50bfe260a294b93a41bf632992.jpg

PNG Icons in Visualizations 1 and 3:

1. Icons made by bqlqn from www.flaticon.com

2. Icons made by srip from www.flaticon.com