

# CIS 5250: VISUAL ANALYTICS

## PROJECT-1: SAS STUDIO PROJECT Online Gaming Anxiety Data

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## INDEX

Serial Number	Topic	Page numbers
A	Data sets	1
B	Introduction	1-3
C	Data Description	4-6
D	Data Cleaning	6-8
E	Data Loading into SAS	8-9
F	Analysis & Visualizations	9-18
G	Statistical Summary	18-19
H	Statistical Tests	19-26

## **[A] Dataset**

Data source URL:

- (1) <https://www.kaggle.com/datasets/divyansh22/online-gaming-anxiety-data/data>

## **[B] Introduction**

This project aims to analyze the intricate relationship between gaming habits and psychological well-being using a comprehensive global dataset of gamers. By examining various gaming behaviors, such as playstyles, the duration of gameplay, and the types of games played, the project seeks to uncover how these factors impact mental health indicators like General Anxiety Disorder (GAD), Satisfaction with Life (SWL), and the Social Phobia Inventory (SPIN). The objective is to identify patterns that highlight which specific gaming habits can be either beneficial or detrimental to players' mental health. For instance, understanding whether certain playstyles, such as cooperative or competitive gaming, lead to greater social connectivity or increased anxiety will provide crucial insights. This analysis will ultimately inform the optimization of game features designed to encourage healthier gaming practices, helping to foster a gaming environment that supports improved mental health outcomes for players.

In addition to individual gaming behaviors, the project will take a closer look at demographic factors, including birthplace, current residence, age, and cultural background, and how these relate to gaming habits and psychological health. By studying regional trends, the project aims to develop targeted marketing campaigns and culturally relevant game designs that resonate with diverse player communities. For example, players in different regions may have varying preferences for game genres, narrative styles, and community engagement methods, all of which can influence their gaming experience and psychological well-being. This understanding will enable the creation of personalized and culturally aligned gaming experiences that not only enhance user satisfaction but also foster a sense of belonging and connection within diverse gaming communities.

Furthermore, the project will delve into the correlation between gaming habits and psychological metrics to recommend healthy gaming practices tailored to individual players. This may include the development of features that promote well-being, such as in-game support communities, mindfulness-based gameplay options, and balanced game mechanics that encourage breaks and social interaction. By utilizing psychological scores to personalize gaming recommendations, the project aims to enhance user journeys and community interactions, ensuring that players engage with content that aligns with their mental health needs. For instance, suggesting games that promote relaxation for players with high anxiety scores or recommending social games for those who exhibit low satisfaction with life can create a more supportive environment. Ultimately, this holistic approach envisions a healthier gaming ecosystem where optimized game development, targeted marketing strategies, and balanced gaming practices converge to create a more positive player environment, fostering loyalty, deeper engagement, and a stronger sense of community among gamers worldwide.

## [C] Data Description

This dataset consists of data collected as a part of a survey among gamers worldwide. The questionnaire asked questions that psychologists generally ask people who are prone to anxiety, social phobia, and less to no life satisfaction.

Below is a sample screenshot of the dataset:

This dataset consist of 56 columns

S. No.	Timestamp	GAD1-Fee	GAD2-Not	GAD3-Wo	GAD4-Tro	GAD5-Bei	GAD6-Bec	GAD7-Fee	GADE	SWL1-In n	SWL2-The	SWL3-I am	SWL4-So f	SWL5-If I c	Game	Platform	Hours	earnings	wh
1	42052.01	Several da	More thar	More thar	More thar	Not at all	Several da	Not at all	Somewha	Slightly dis	Slightly ag	Slightly ag	Slightly ag	Slightly ag	Skyrim	Console (F	15 I play for f ha		
2	42052.04	Not at all	More thar	More thar	Not at all	Not at all	Nearly eve	Several da	Not diffi	Disagree	Agree	Slightly ag	Disagree	Disagree	Other	PC	8 I play for f ha		
3	42052.07	Not at all	Not at all	Not at all	Not at all	Not at all	Not at all	Not at all	Not diffi	Disagree	Slightly ag	Slightly ag	Slightly dis	Disagree	Other	PC	20 I play for f im		
4	42052.09	More thar	Several da	More thar	More thar	More thar	Nearly eve	More thar	Very diffi	Disagree	Disagree	Neither ag	Slightly ag	Strongly d	Other	Console (F	20 I play for f ha		
5	42052.13	Not at all	Not at all	Not at all	Not at all	Not at all	Several da	Not at all	Not diffi	Slightly dis	Slightly ag	Slightly dis	Slightly dis	Slightly dis	Other	Console (F	4 I play for f rel		
6	42052.15	Not at all	Not at all	Not at all	Not at all	Not at all	Not at all	Not at all	Not diffi	Slightly dis	Neither ag	Neither ag	Slightly dis	Disagree	Other	PC	30 I play for f rel		
7	42052.2	More thar	Nearly eve	More thar	More thar	Not at all	Several da	More thar	Very diffi	Disagree	Slightly dis	Slightly dis	Slightly dis	Strongly d	Other	Console (F	2 I play for f wi		
8	42052.23	More thar	Several da	More thar	More thar	More thar	Several da	Not at all	Somewha	Slightly dis	Slightly dis	Slightly dis	Disagree	Disagree	World of	PC	25 I play for f im		
9	42052.24	Nearly eve	Nearly eve	Nearly eve	Nearly eve	Several da	Nearly eve	Nearly eve	Somewha	Slightly ag	Slightly ag	Agree	Agree	Slightly ag	Other	PC	14 I play for f ha		
10	42052.31	Not at all	Not at all	Several da	Not at all	Not at all	Several da	Several da	Somewha	Agree	Strongly a	Slightly dis	Agree	Neither ag	Other	Console (F	25 I play for f rel		
11	42052.4	Not at all	Not at all	Not at all	Several da	Not at all	Several da	Not at all	Not diffi	Disagree	Neither ag	Slightly dis	Disagree	Disagree	Other	PC	30 I play for f ha		
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13	42052.47	Several da	Not at all	Several da	Several da	Not at all	Several da	Not at all	Not diffi	Slightly dis	Slightly dis	Slightly dis	Slightly dis	Slightly dis	Other	Console (F	4 I play for f ha		
14	42052.47	Not at all	Not at all	Not at all	Not at all	Not at all	Not at all	Several da	Not diffi	Slightly ag	Disagree	Neither ag	Agree	Disagree	Other	PC	20 I play for f im		
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21	42052.67	Several da	Not at all	Not at all	Several da	Not at all	Several da	Several da	Somewha	Strongly d	Strongly d	Disagree	Disagree	Strongly d	Other	PC	21 I play for f ha		
22	42052.67	Not at all	Not at all	Not at all	Not at all	Not at all	Not at all	Not at all	Not diffi	Neither ag	Slightly dis	Slightly dis	Slightly dis	Slightly dis	Skyrim	PC	20 I play for f ha		
23	42052.67	Several da	Not at all	Several da	Several da	Not at all	Several da	Several da	Somewha	Agree	Agree	Agree	Slightly dis	Slightly ag	League of	PC	5 I play for f ha		

Field Name	Data Description	ExampleValue
GADE	"Gade" is a method for calculating the digits collected in the answer to a challenge	“Not at all” and “Several days”
SWL	It is a psychological metric used to measure an individual's overall life satisfaction	“Slightly disagree” and “Slightly agree”

<b>GAME</b>	What game the user will be playing.	“World of Warcraft”
<b>PLATFORM</b>	On which platform user playing the game.	Console (PS, Xbox, ...)
<b>EARNINGS</b>	How much he will earn from playing games.	I play for fun
<b>WHYPLAY</b>	For what reason he / she is playing the game.	having fun
<b>SPIN</b>	What’s the reason for playing games.	Not At All
<b>GENDER</b>	Which gender type is playing more games.	Male
<b>AGE</b>	Which age group is playing games.	25
<b>WORK</b>	Whether the gamer is working or unemployed.	Employed
<b>DEGREE</b>	Whether the gamer is High School or Bachelor’s	High school diploma (or equivalent)
<b>BIRTHPLACE</b>	Where did the gamer born	USA

<b>RESIDENCE</b>	Where gamer currently residing	USA
<b>REFERENCE</b>	Information about the gamers.	Reddit

## [C] Data Cleaning

When working with a dataset, it is crucial to ensure that the data is clean, consistent, and free of errors. Data cleaning can significantly influence the outcome of data analysis. In the context of this project, we applied the following techniques.

### (1) Decimal Places:

**Issue Identified:** Numerical values, especially floating-point numbers, in the dataset had varied decimal places, making it challenging to carry out precise comparisons and calculations.

**Approach:** To ensure that all float values had the same amount of decimal places, they were standardized. They were rounded to two decimal places for uniformity and comparability.

**Benefit:** This makes the data easier to read and guarantees the accuracy and consistency of any mathematical operations performed on the data.

M12																			
	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1	S. No.	Timestamp	GAD1	GAD2	GAD3	GAD4	GAD5	GAD6	GAD7	GADE	SWL1	SWL2	SWL3	SWL4	SWL5	Game	Platform	Hours	Earnings
2	1	42052	0	0	0	0	1	0	0	Not difficu	3.2	5	5	5	5	Skyrim	Console (F	15	I play for f ha
3	2	42052.01	1	2	2	2	0	1	0	Somewha	3.2	5	2	5	1	Other	PC	8	I play for f ha
4	3	42052.04	0	2	2	0	0	3	1	Not difficu	3.2	6	5	2	2	Other	PC	0	I play for f ha
5	4	42052.07	0	0	0	0	0	0	0	Not difficu	3.3	5	5	3	2	Other	PC	20	I play for fim
6	5	42052.09	2	1	2	2	2	3	2	Very diffic	3.2	2	4	5	1	Other	Console (F	20	I play for f ha
7	6	42052.13	0	0	0	0	0	1	0	Not difficu	3.2	5	3	3	3	Other	Console (F	4	I play for f rel
8	7	42052.15	0	0	0	0	0	0	0	Not difficu	3.7	4	4	3	2	Other	PC	30	I play for f rel
9	8	42052.16	0	0	0	0	0	0	0	NA	3.7	6	4	3	7	Other	Console (F	25	I play for f ha
10	9	42052.2	2	3	2	2	0	1	2	Very diffic	3.5	3	3	3	1	Other	Console (F	2	I play for f wi
11	10	42052.23	2	1	2	2	2	1	0	Somewha	3.2	3	3	2	2	World of \ PC	25	I play for fim	
12	11	42052.24	3	3	3	3	1	3	3	Somewha	3.2	5	6	6	5	Other	PC	14	I play for f ha
13	12	42052.26	0	0	0	0	0	0	0	NA	4.5	7	7	5	7	League of	PC	25	I play for f ha
14	13	42052.28	0	0	0	0	0	0	0	NA	4.5	6	7	6	6	Other	PC	10	I play for fim
15	14	42052.31	0	0	1	0	0	1	1	Somewha	4.5	7	3	6	4	Other	Console (F	25	I play for f rel
16	15	42052.4	0	0	0	1	0	1	0	Not difficu	4.5	4	3	2	2	Other	PC	30	I play for f ha
17	16	42052.43	3	1	2	1	0	1	0	Somewha	3.2	6	6	5	6	Other	PC	14	I play for f ha
18	17	42052.47	1	0	1	1	0	1	0	Not difficu	3.2	3	3	3	3	Other	Console (F	4	I play for f ha
19	18	42052.47	0	0	0	0	0	0	1	Not difficu	4	2	4	6	2	Other	PC	20	I play for fim
20	19	42052.54	1	1	1	2	2	1	0	Somewha	3.2	1	1	1	2	Skyrim	PC	10	I play for f rel
21	20	42052.61	0	0	0	0	0	0	0	Not difficu	5.5	6	6	7	6	Other	Console (F	6	I play for f rel
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23	22	42052.65	3	3	3	2	0	1	3	Extremely	1	1	1	2	4	Starcraft 2 PC	60	I play for fim	
24	23	42052.66	0	0	0	1	1	1	0	Not difficu	7	7	7	7	5	Other	PC	10	I play for f ha
25	24	42052.66	0	0	0	0	0	0	0	NA	7	7	7	7	7	World of \ PC	21	I play for f ha	
26	25	42052.66	1	1	1	2	1	2	2	Somewha	1	2	2	2	1	Other	PC	20	I play for f ha

## **(2) Handling Missing Values:**

**Issue Identified:** Key columns like "GADE" and "SWL" occasionally have missing data, which could distort analysis findings.

**Approach:** The sector-wise average was used to impute the missing values rather than eliminating the rows with missing values, which can cause the loss of important data.

**Benefit:** Filling in missing values using sector-wise averages ensures that the dataset remains representative of the actual scenario without introducing bias.

## **(3) Addressing Duplicates in Categories:**

**Issue Identified:** Some sectors had duplicate or synonymous names, leading to potential double-counting or misrepresentation of data.

**Approach:** Columns with duplicate sector names, like "Telecom" and "Telecommunication Services", "Information Technology" and "IT", and "Consumer Staples" and "Consumer Goods", were identified. These were then merged into a singular representation to ensure consistency.

**Benefit:** This reduces redundancy, ensures clarity, and guarantees that data is categorized correctly, making subsequent analyses more accurate.

## **(4) Correction of Mismatched Column Names:**

**Issue Identified:** Inconsistent column names, such as "GADE-1," "GADE-2," "GADE-3," "GADE-4", and "SWL-1," could cause misunderstandings when interpreting the data.

**Approach:** The dataset was thoroughly examined in order to find these discrepancies. Following identification, the column names were changed to appropriately convey their actual significance.

**Benefit:** Clarity and the accurate interpretation of the dataset by analysts or automated systems depend on properly labeled columns.



## Before Correction

AutoSave

File Home Insert Page Layout Formulas Data Review View Automate Help Power Pivot

Comments Share

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	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T
1	S. No.	Timestamp	GAD1	GAD2	GAD3	GAD4	GAD5	GAD6	GAD7	GAD8	SWL1	SWL2	SWL3	SWL4	SWL5	Game	Platform	Hours	Earnings	Wf
2	1	42052.01	0	0	0	0	0	1	0	0	Not difficu	3.2	5	5	5	5	Skyrim	Console (F	15	I play for f ha
3	2	42052.01	1	2	2	2	0	0	1	0	Somewha	3.2	5	2	5	1	Other	PC	8	I play for f ha
4	3	42052.04	0	2	2	0	0	0	3	1	Not difficu	3.2	6	5	2	2	Other	PC	0	I play for f ha
5	4	42052.07	0	0	0	0	0	0	0	0	Not difficu	3.3	5	5	3	2	Other	PC	20	I play for f im
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7	6	42052.13	0	0	0	0	0	0	1	0	Not difficu	3.2	5	3	3	3	Other	Console (F	4	I play for f rel
8	7	42052.15	0	0	0	0	0	0	0	0	Not difficu	3.7	4	4	3	2	Other	PC	30	I play for f rel
9	8	42052.16	0	0	0	0	0	0	0	0	NA	3.7	6	4	3	7	Other	Console (F	25	I play for f ha
10	9	42052.2	2	3	2	2	0	1	2	Very diffic	3.5	3	3	3	3	1	Other	Console (F	2	I play for f wi
11	10	42052.23	2	1	2	2	2	2	1	0	Somewha	3.2	3	3	2	2	World of \PC	25	I play for f ha	
12	11	42052.24	3	3	3	3	3	1	3	3	Somewha	3.2	5	6	6	5	Other	PC	14	I play for f ha
13	12	42052.26	0	0	0	0	0	0	0	0	NA	4.5	7	7	5	7	League of PC	25	I play for f ha	
14	13	42052.28	0	0	0	0	0	0	0	0	NA	4.5	6	7	6	6	Other	PC	10	I play for f im
15	14	42052.31	0	0	1	0	0	1	1	1	Somewha	4.5	7	3	6	4	Other	Console (F	25	I play for f rel
16	15	42052.4	0	0	0	1	0	1	0	1	Not difficu	4.5	4	3	2	2	Other	PC	30	I play for f ha
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20	19	42052.54	1	1	1	2	2	2	1	0	Somewha	3.2	1	1	1	2	Skyrim	PC	10	I play for f rel
21	20	42052.61	0	0	0	0	0	0	0	0	Not difficu	5.5	6	6	7	6	Other	Console (F	6	I play for f rel
22	21	42052.65	1	0	0	0	0	0	0	1	Not difficu	5	6	1	3	5	Other	Console (F	7	I play for f ha
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GamingStudy\_data

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## After Correction

AutoSave

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Search

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CommentsShare

POSSIBLE DATA LOSS

Some features might be lost if you save this workbook in the comma-delimited (.csv) format. To preserve these features, save it in an Excel file format.

Don't show again

Save As...

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Slightly disagree

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	
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10	10	42052.23	More thar	Several da	More thar	More thar	More thar	Several da	Not at all	Somewha	Slightly dis	Slightly dis	Slightly dis	Disagree	Disagree	World of \PC	25	I play for f im		
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20	22	42052.65	Nearly eve	Nearly eve	Nearly eve	More thar	Not at all	Several da	Nearly eve	Extremely	Strongly d	Strongly d	Strongly d	Disagree	Disagree	Neither ag	Starcraft 2PC	60	I play for f im	
21	23	42052.66	Not at all	Not at all	Not at all	Several da	Several da	Several da	Not at all	Not difficu	Slightly ag	Strongly a	Strongly a	Strongly a	Slightly ag	Other	PC	10	I play for f ha	
22	25	42052.66	Several da	Several da	Several da	More thar	Several da	More thar	More thar	Somewha	Strongly d	Disagree	Disagree	Disagree	Strongly d	Other	PC	20	I play for f ha	
23	26	42052.67	Several da	Not at all	Not at all	Several da	Several da	Several da	Several da	Somewha	Strongly d	Strongly d	Disagree	Disagree	Strongly d	Other	PC	21	I play for f ha	
24	27	42052.67	Not at all	Not at all	Not at all	Not at all	Not at all	Not at all	Not at all	Not difficu	Neither ag	Slightly dis	Slightly dis	Slightly dis	Slightly dis	Skyrim	PC	20	I play for f ha	
25	28	42052.67	Several da	Not at all	Several da	Several da	Not at all	Several da	Several da	Somewha	Agree	Agree	Agree	Slightly dis	Slightly ag	League of PC	5	I play for f ha		

Game Data

Accessibility: Unavailable



## [E] Data Loading into SAS

The data has been loaded into SAS Environment Successfully.

FILE INFORMATION

SOURCE FILE

File name: **Game\_Data.csv**

Source location: **/home/u63986522**

End of line delimiter:

Default

OUTPUT DATA

SAS server: **SASApp**

Data set name: **Game\_Data**

Library: **WORK**

Change

CODE

LOG

RESULTS

OUTPUT DATA

Table of Contents

The CONTENTS Procedure

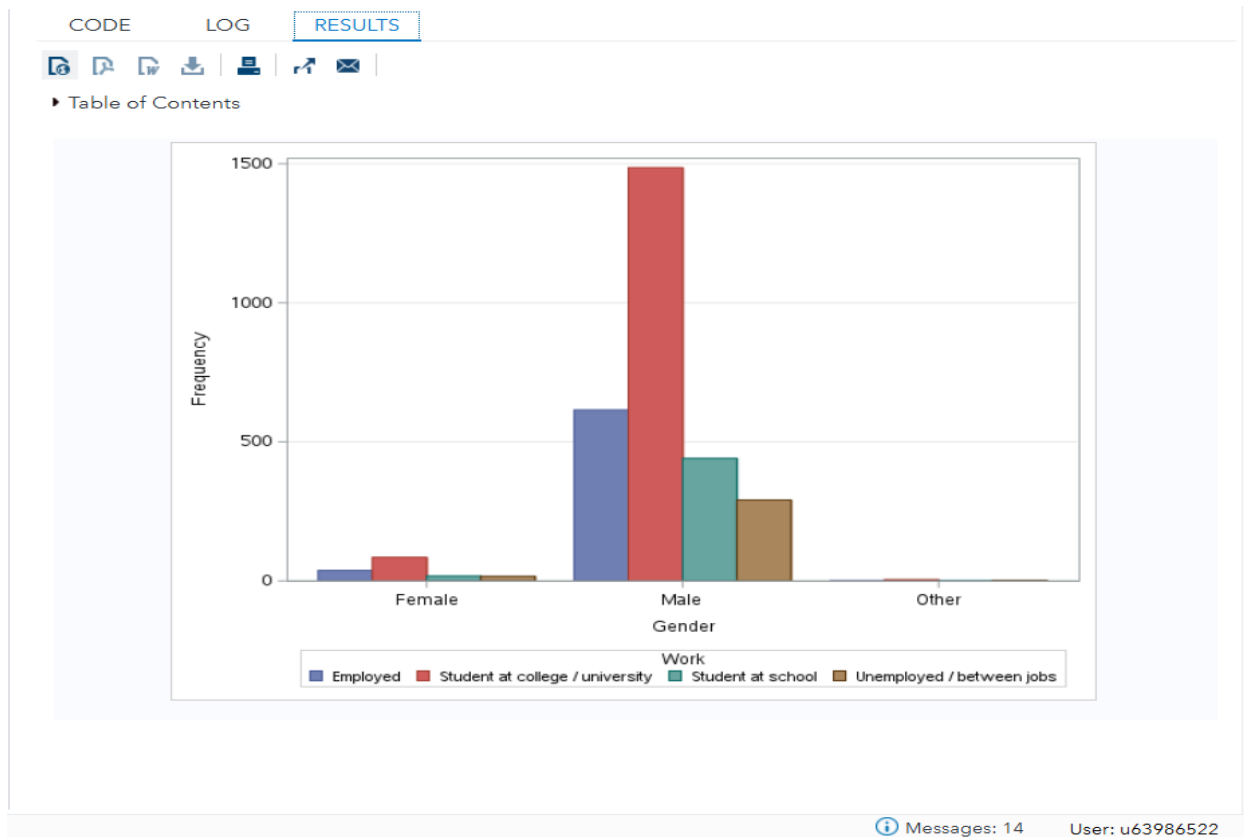
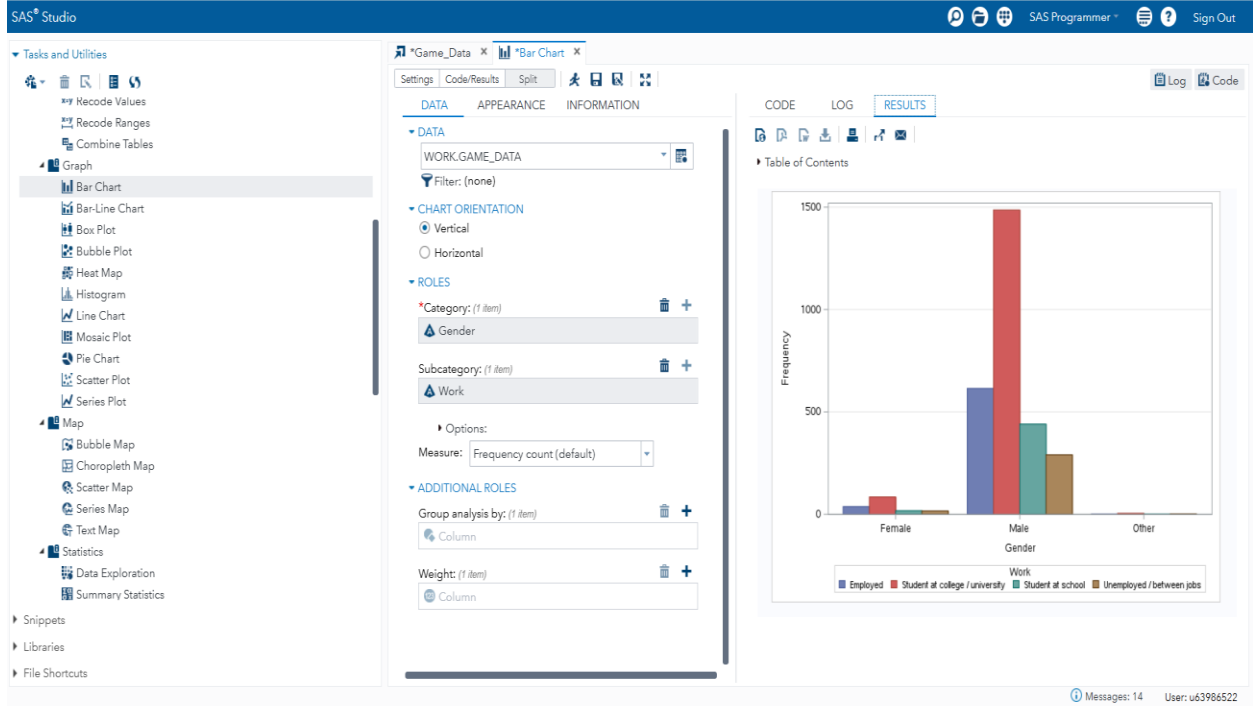
Data Set Name	WORK.GAME_DATA	Observations	3000
Member Type	DATA	Variables	52
Engine	V9	Indexes	0
Created	10/27/2024 16:23:20	Observation Length	832
Last Modified	10/27/2024 16:23:20	Deleted Observations	0
Protection		Compressed	NO
Data Set Type		Sorted	NO
Label			
Data Representation	SOLARIS_X86_64, LINUX_X86_64, ALPHA_TRU64, LINUX_IA64		
Encoding	utf-8 Unicode (UTF-8)		

Messages: 1

User: u63986522

## [F] Analysis & Visualizations

1. We'll make an analysis on to in order to determine which gender and occupation are more likely to engage in gaming.



## Sector-wise Analysis:

- Employed:
  - Males: Moderate representation, indicating a notable portion of employed male gamers.
  - Females: Highest representation among females, suggesting more adult women in gaming.
  - Other Genders: Very minimal representation, highlighting underrepresentation.
- Student at College/University:
  - Males: Most common category, showing a high number of college-aged male gamers.
  - Females: Fewer female students compared to employed females, indicating a lower student gamer base.
  - Other Genders: Low but noticeable representation.
- Student at School:
  - Males: Significant number of school-going males, showing gaming's appeal to younger males.
  - Females: Very few participants, indicating lower gaming interest or survey reach.
  - Other Genders: Very minimal representation.
- Unemployed/Between Jobs:
  - Males: Noticeable group, suggesting potential job-related stress or more free time.
  - Females: Few participants, indicating lower unemployment rates in the survey.
  - Other Genders: Minimal representation across the board.

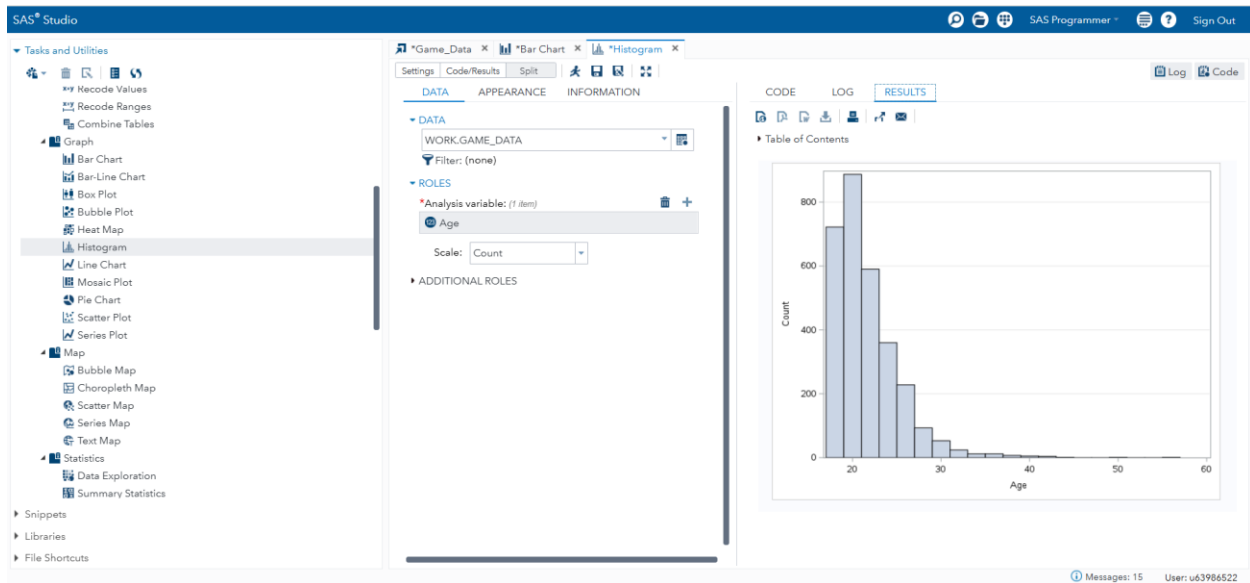
## **Interpretation**

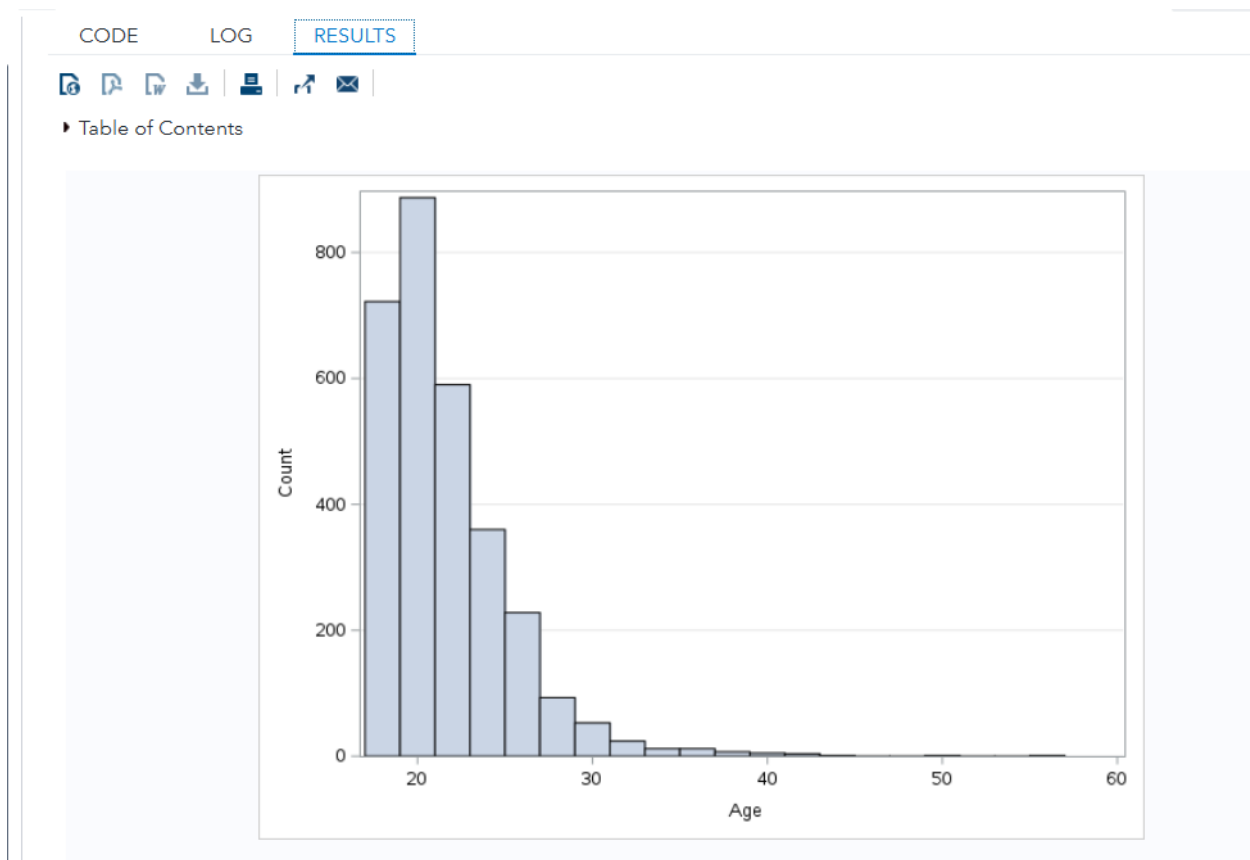
From the visualization, investors can discern that seems that it can be safely said the gaming community is ingrained into boys-as illustrated by high ratios of college-age boys-while young male continue to enjoy it. While some might like to think that adult females with regular jobs are gaming the most, it appears this is to no avail since women hardly dabble into gaming once past adolescence. Other genders largely lack representation, hinting that inclusivity may be less than complete.

Interestingly, the drop in the number of unemployed male gamers might lead to the speculation

that gaming has somewhat of a closer link with one contaminating or the other job stress. Whereby female school students engage least in gaming shows that the playing interests apparently increase between age and gender. Such trends give direction on possible mental health interventions and actionable inclusivity campaigns within gaming.

## 2. How does the age distribution vary among individuals who play games, and what are the predominant age groups within the gaming community?





### Sector-wise Analysis:

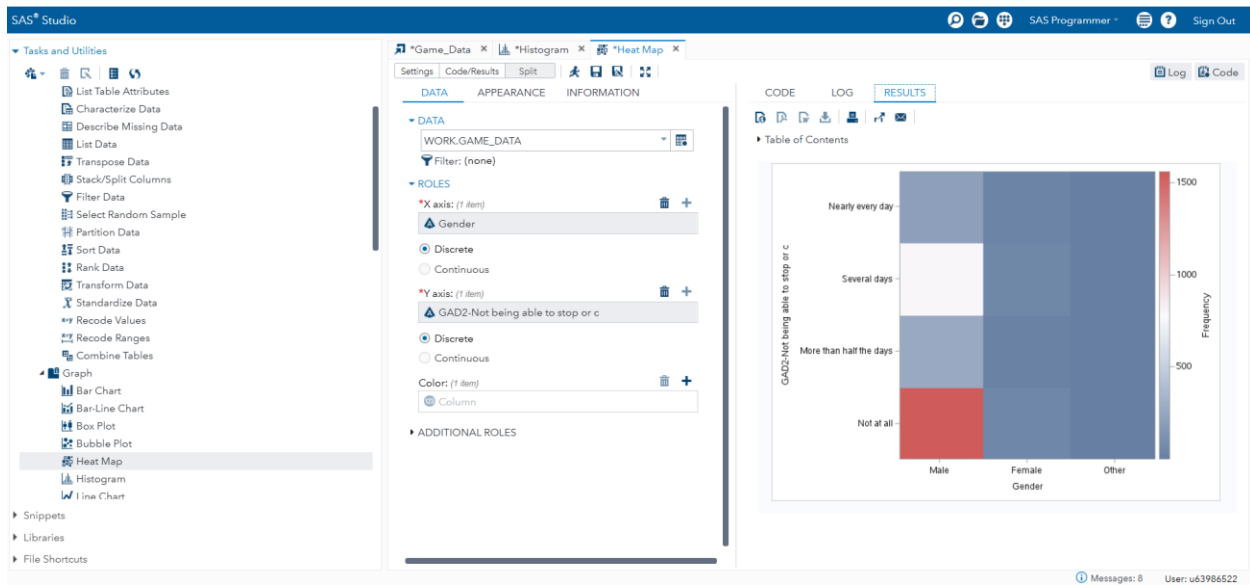
- Gaming is most prevalent among young adults (20-25), with participation sharply decreasing as age increases.
- Teenagers and young adults dominate the gaming community, while gaming interest significantly drops among those over 30.
- Older age groups show minimal engagement with gaming, suggesting a generational gap in gaming habits.

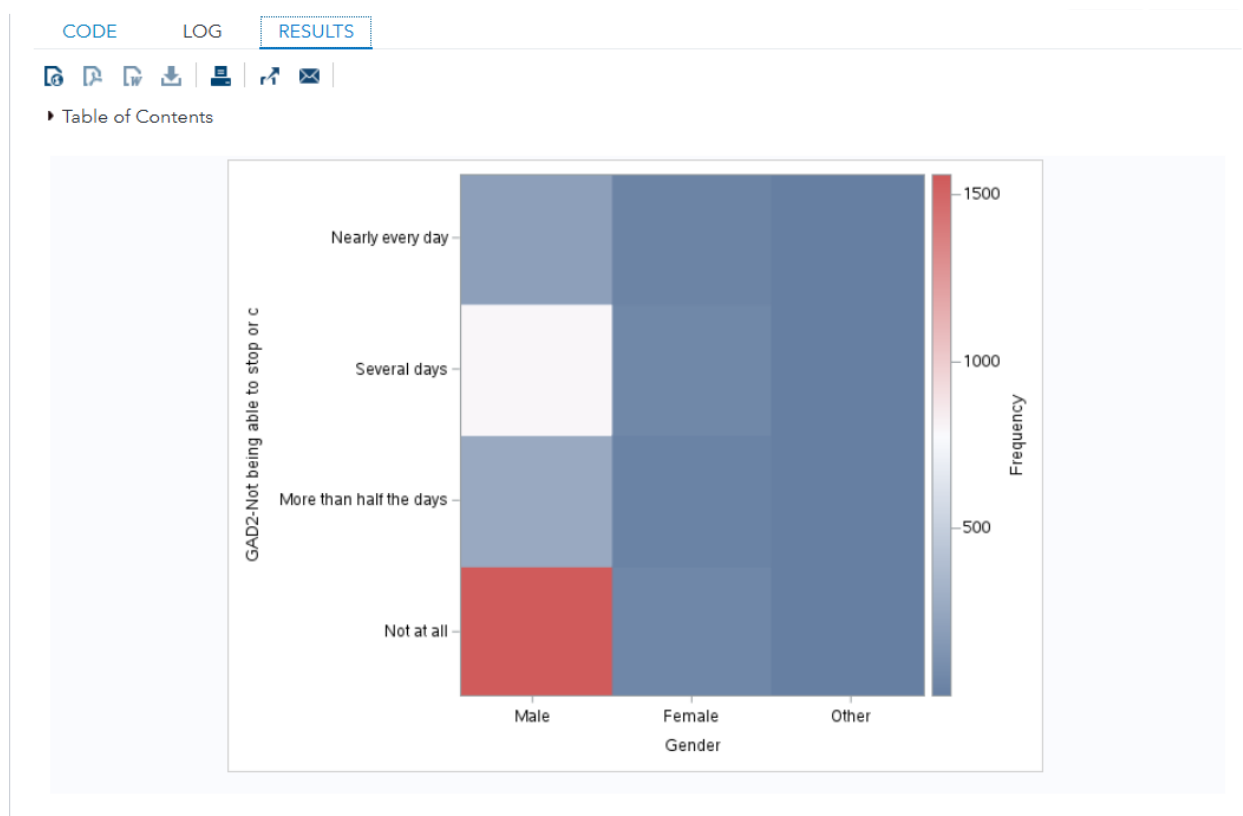
### Interpretation:

According to the age distribution, gaming is predominantly a youth-focused pastime, with teens and young adults (those under 25) being the most popular demographic. After the age of 25, participation drastically drops, indicating a change in priorities as people age, such as obligations to their families and jobs. There is little representation of older persons (40+), which suggests

that gaming preferences vary by generation. Overall, the research shows that younger demographics find gaming more appealing, with engagement declining with age.

**3. What are the differences between the two genders in the reasons given for playing games—"Not being able to stop or control worrying"—and which gender is more likely to give this explanation?**





### Sector-wise Analysis:

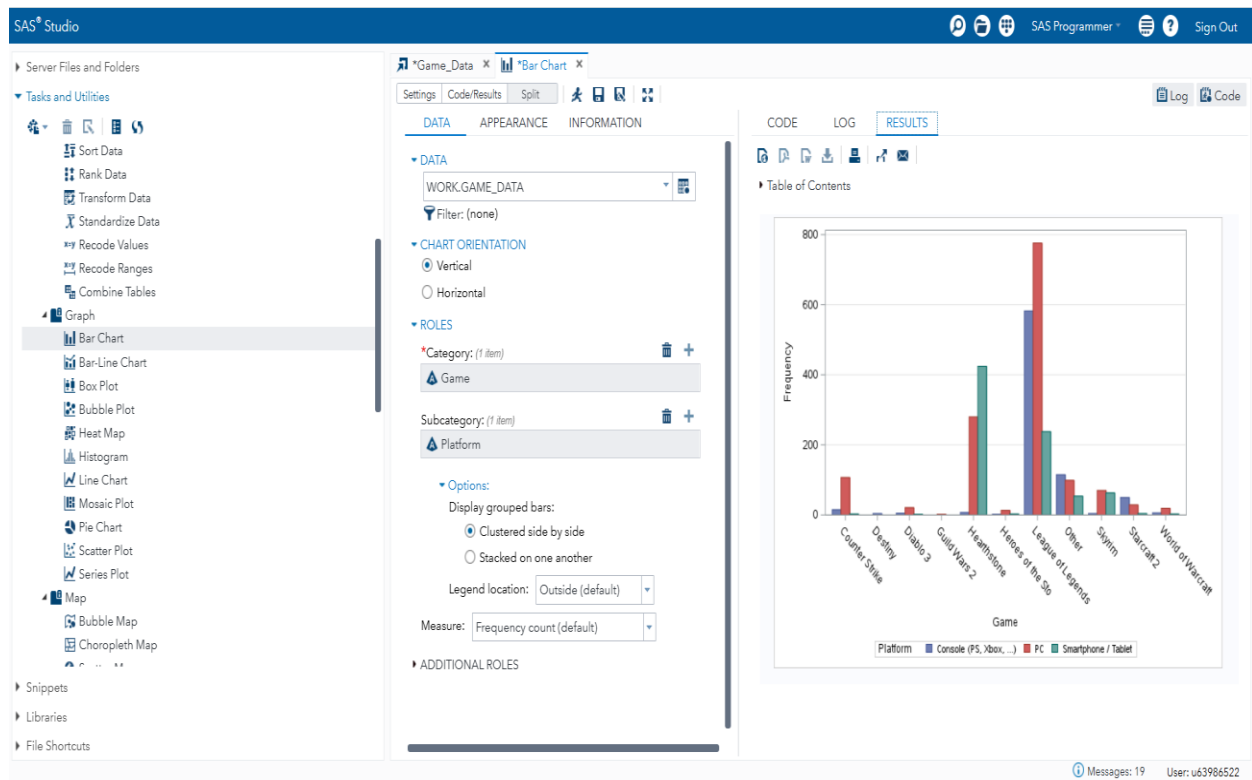
- The "**Not at All**" category had the highest frequency among men, suggesting that a greater percentage do not consider worrying to be a significant problem.
- The fact that all genders are represented in the "**Nearly Every Day**" and "**Several Days**" categories indicates that some gamers, irrespective of gender, have uncontrollable worry.
- Fe The "**Not at All**" sector is less represented by females and other gender categories, suggesting that worrying may be a more common cause of gaming among these groups.

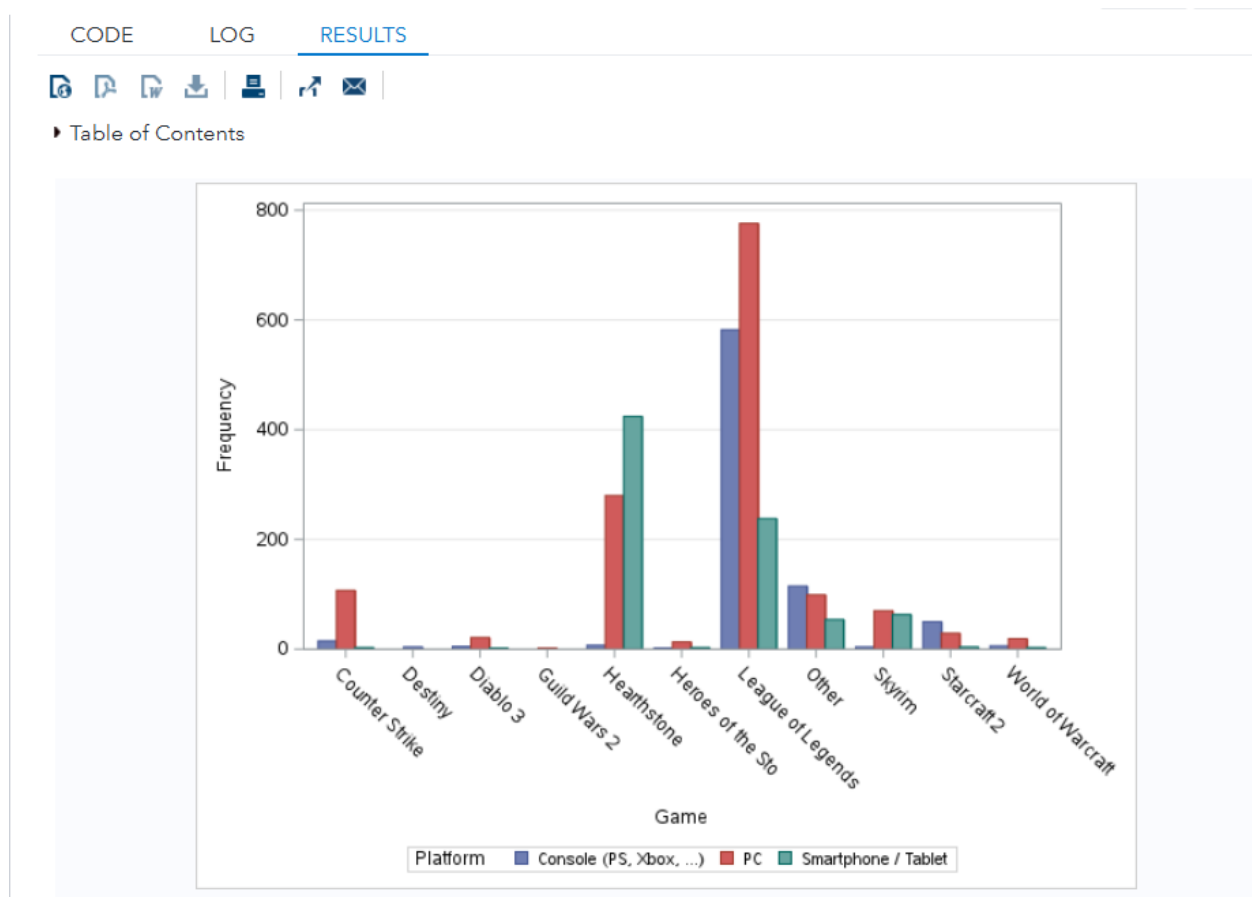
### Interpretation

The heatmaps indicate that male gamers are less likely to endorse the experience of uncontrollable worry than females or other gender orientations. Nevertheless, across genders, worrying is still an issue, with similar frequencies for "**nearly every day**" and "**several days**." This means that uncontrollable worry may affect gamers of all genders, with females and other gender orientations possibly encountering them slightly more than males.



#### 4. What types of games are most commonly played, and on which gaming consoles are preferred by players?





### Sector-wise Analysis:

- The **majority of games are played on PCs**, particularly "**League of Legends**" and "**Hearthstone**," which shows how popular the platform is for **online multiplayer** and strategy games.
- Console gaming has lower representation, suggesting it is not the primary choice for most games listed, except for select titles like role-playing games.
- Certain kinds of mobile gaming, such card games like "**Hearthstone**," are very popular, whereas other games are rarely played on mobile devices.

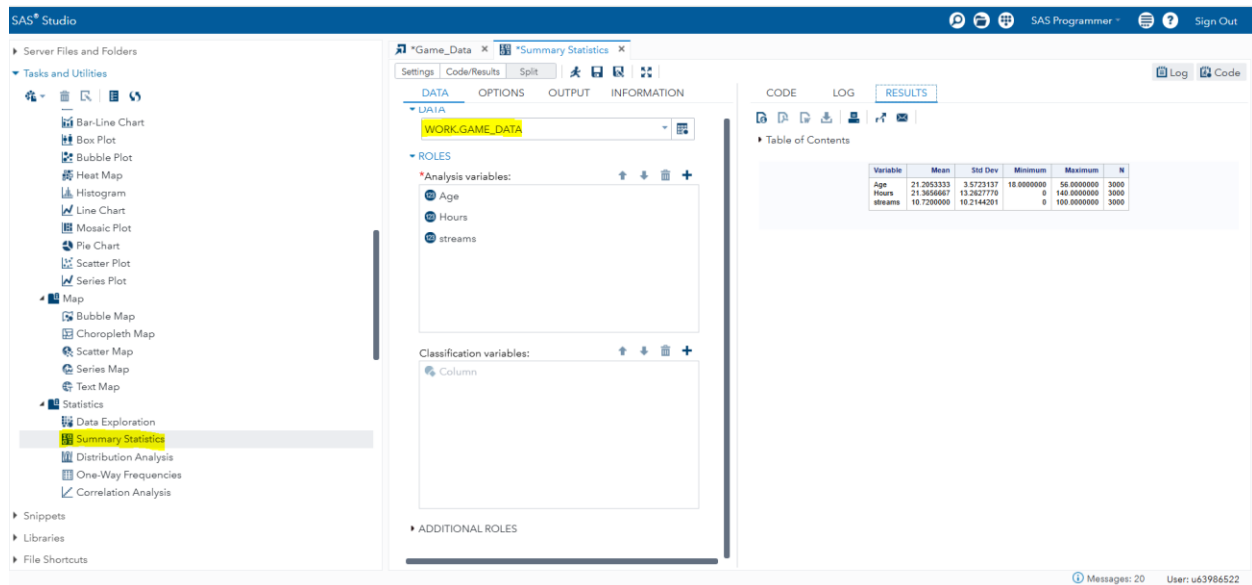
## Interpretation:

According to the graph, PC gaming is by far the most popular genre, and "**League of Legends**" draws the largest player base of all those titles. This suggests that PCs are the most popular platform for gamers, particularly for thrilling online multiplayer games.

"**Hearthstone**" is the main example of mobile gaming, suggesting that card games are widely accepted on mobile platforms. The fact that select games, like "**Skyrim**" and "**Destiny**," saw substantial support suggests that the listed genres are less popular on consoles, while console gaming participation remained low for the majority of games.

According to this statistics, **PCs are becoming more and more popular in the gaming culture**, while console and mobile gaming satisfy specialized tastes in specific game genres.

## [G] STATISTICAL SUMMARY:



### ► Table of Contents

Variable	Mean	Std Dev	Minimum	Maximum	N
Age	21.2053333	3.5723137	18.0000000	56.0000000	3000
Hours	21.3656667	13.2627770	0	140.0000000	3000
streams	10.7200000	10.2144201	0	100.0000000	3000

## **Interpretation:**

### **1. Age:**

- The majority of participants are young people, as evidenced by the average age of 21.2 years and the standard deviation of 3.57.
- Although the age range is from 18 to 56, the comparatively low mean indicates that there aren't many elder individuals.

### **2. Hours (Gaming Hours per Week):**

- The average weekly gaming time for participants is 21.37 hours, with a considerable degree of variability (standard deviation of 13.26).
- There are several outliers with extremely high gaming hours, since the hours range from 0 to 140.

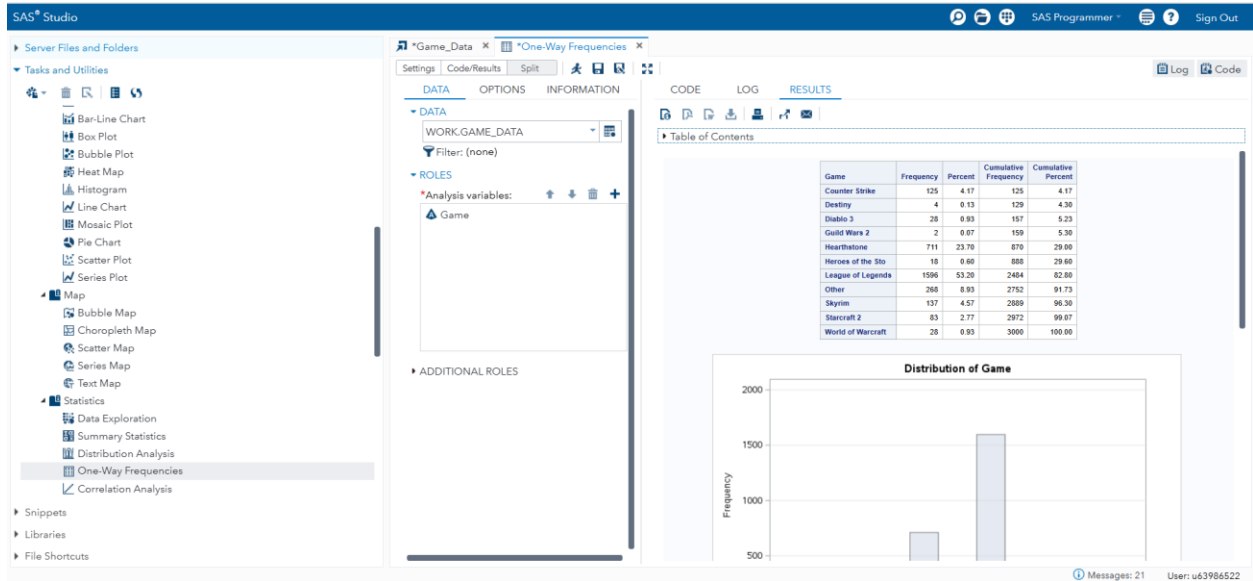
### **3. Streams (Number of Streaming Hours):**

- With a standard deviation of 10.21 and an average of 10.72 hours spent streaming or viewing streams, there appears to be moderate variety.
- The scale, which ranges from 0 to 100, shows that while some people never stream, others dedicate a substantial amount of time to streaming activities.

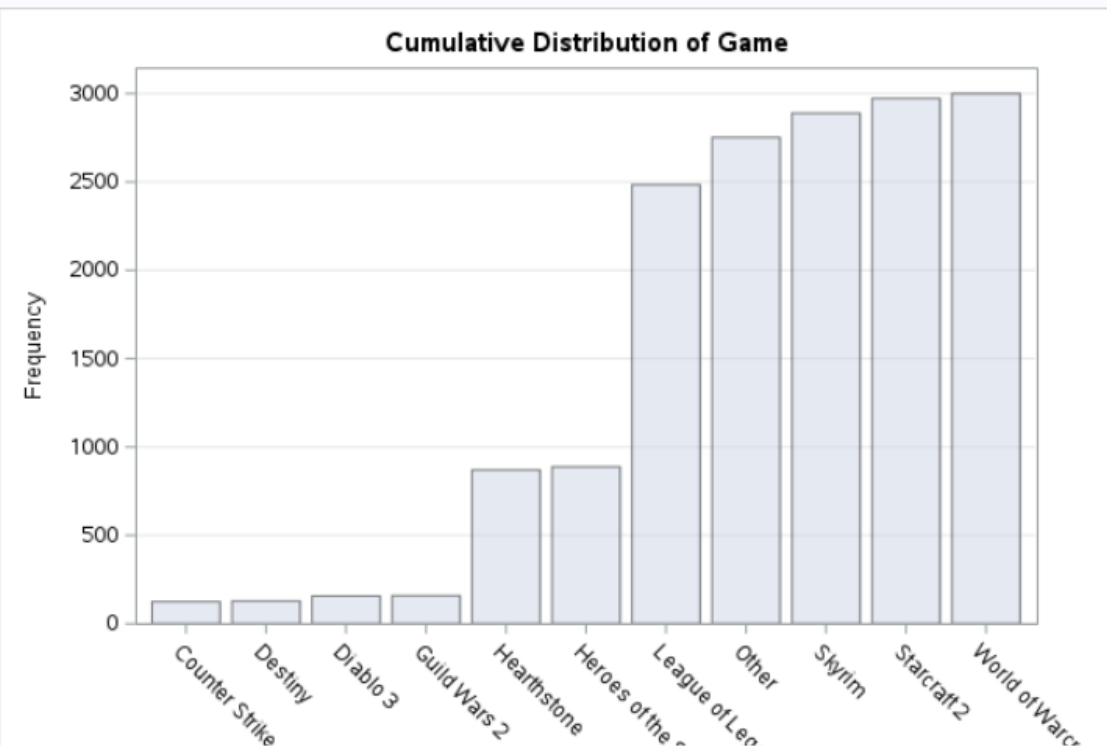
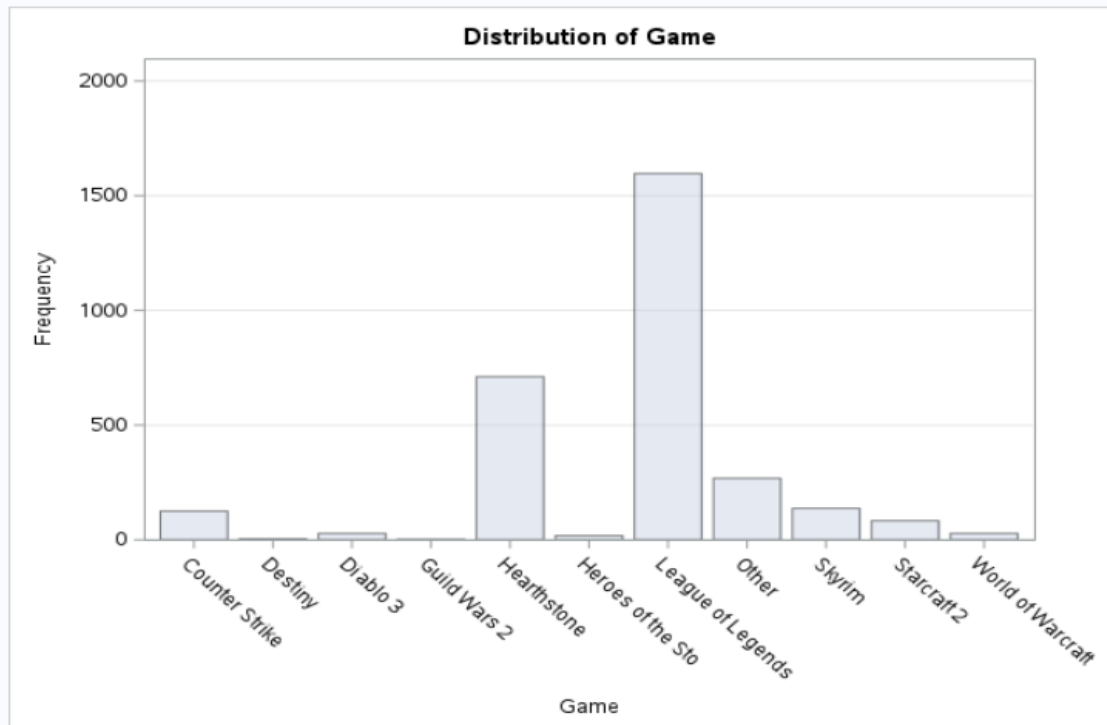
Overall, the data reflects a **young gaming population** with **considerable diversity in gaming and streaming habits**. The wide ranges and high standard deviations suggest a mix of casual and highly dedicated gamers.

## [H] Statistical Tests

### (1) One-way Frequency



Game	Frequency	Percent	Cumulative Frequency	Cumulative Percent
Counter Strike	125	4.17	125	4.17
Destiny	4	0.13	129	4.30
Diablo 3	28	0.93	157	5.23
Guild Wars 2	2	0.07	159	5.30
Hearthstone	711	23.70	870	29.00
Heroes of the Sto	18	0.60	888	29.60
League of Legends	1596	53.20	2484	82.80
Other	268	8.93	2752	91.73
Skyrim	137	4.57	2889	96.30
Starcraft 2	83	2.77	2972	99.07
World of Warcraft	28	0.93	3000	100.00

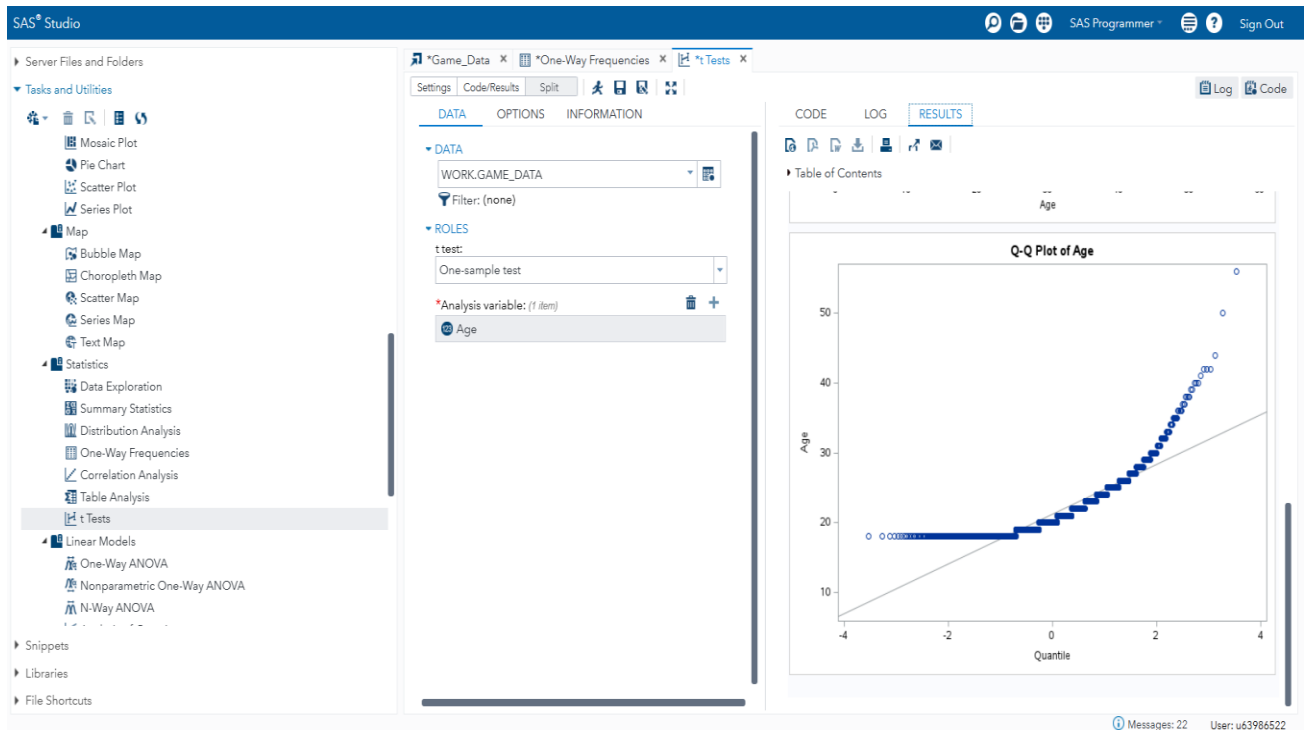


## Interpretation:

According to the research, there is a wide variety of gaming interests, with certain games (like World of Warcraft) having a massive fan base and others that appeal to a smaller demographic. The graph's cumulative structure illustrates how some games dominate the market while others target specific demographics.

1. **Most Popular Games:** The cumulative frequencies indicate that **World of Warcraft**, **Starcraft 2**, **Skyrim**, and Other games have the highest number of players, reaching close to the total sample size of 3,000. This suggests that these games are widely popular among the surveyed gamers.
2. **Moderately Popular Games:** League of Legends shows a noticeable jump in frequency, indicating a significant number of players, but it is not as cumulatively high as the top games. **Hearthstone** and **Heroes of the Storm** also have a moderate player base.
3. **Least Popular Games:** **Counter-Strike**, **Destiny**, **Diablo 3**, and **Guild Wars 2** have the lowest cumulative frequencies, indicating that fewer respondents reported playing these games.

## ( 2 ) T-test:





Variable: Age

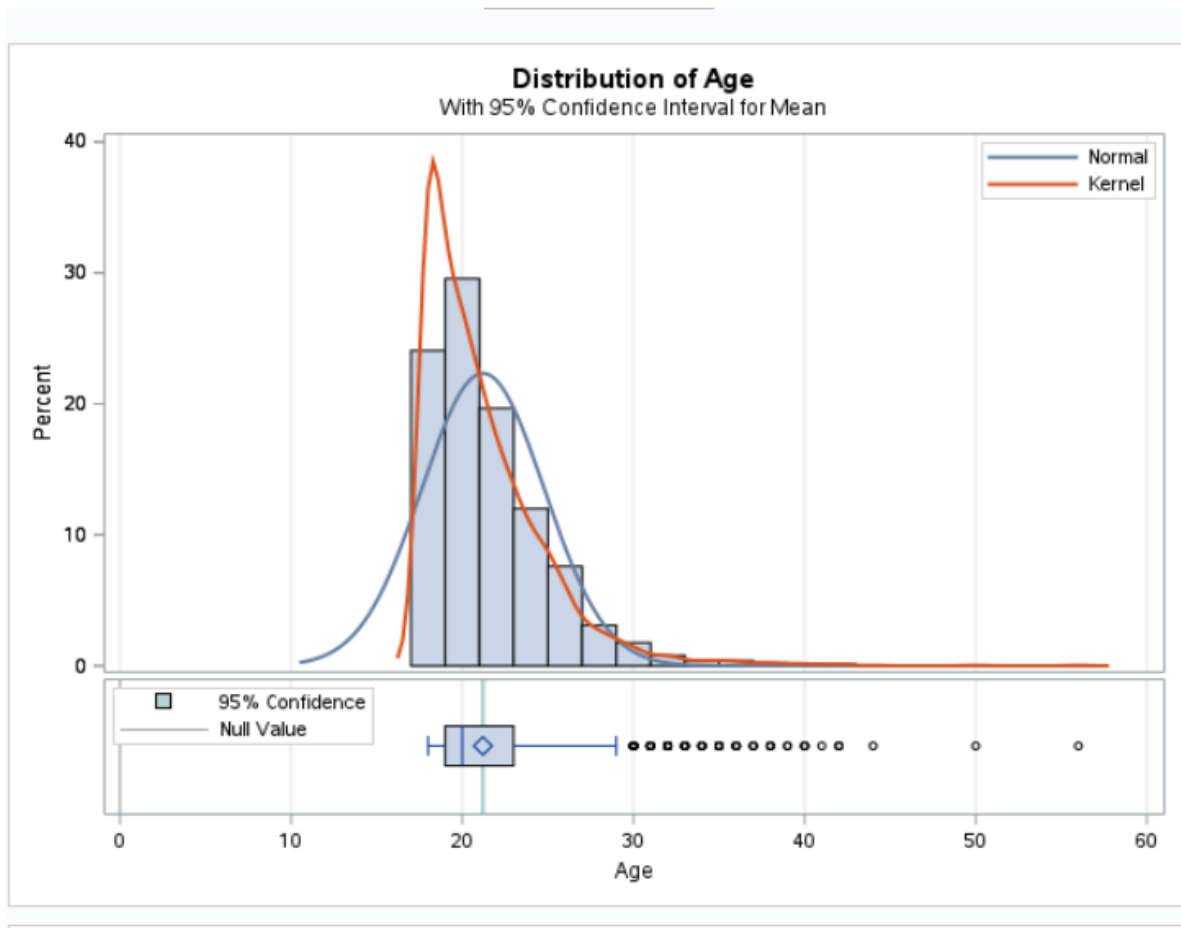
Tests for Normality				
Test	Statistic		p Value	
Kolmogorov-Smirnov	D	0.184787	Pr > D	<0.0100
Cramer-von Mises	W-Sq	22.50363	Pr > W-Sq	<0.0050
Anderson-Darling	A-Sq	135.1218	Pr > A-Sq	<0.0050

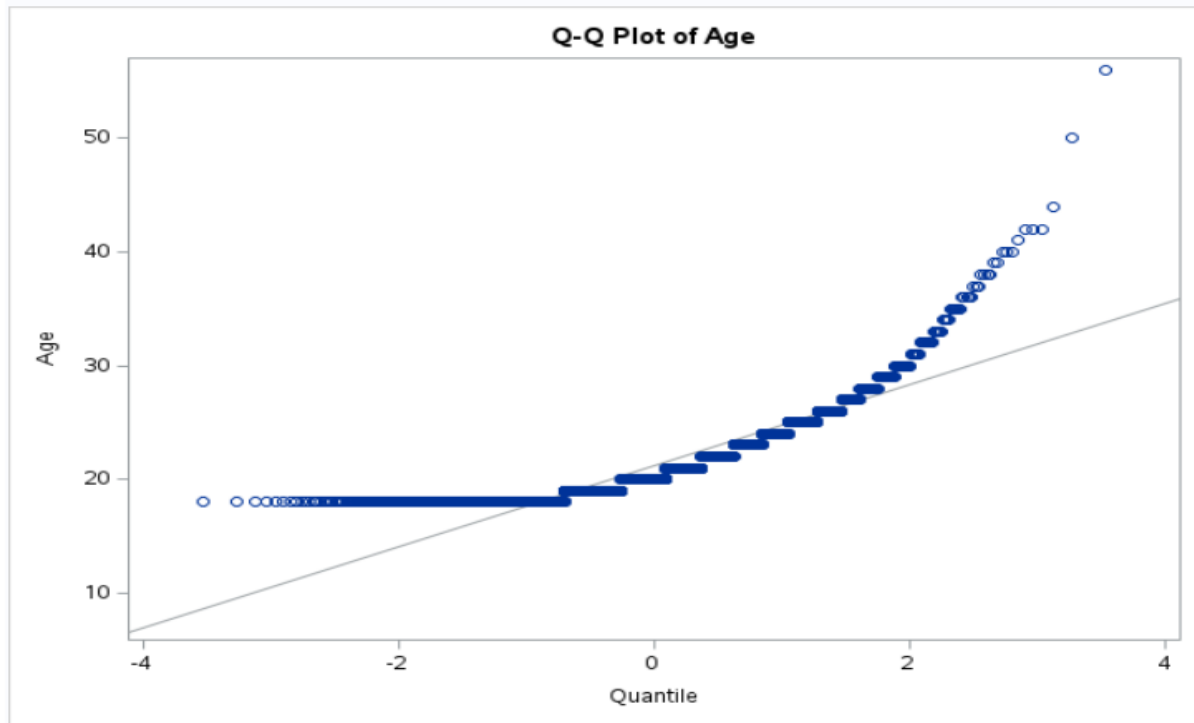
Variable: Age

N	Mean	Std Dev	Std Err	Minimum	Maximum
3000	21.2053	3.5723	0.0652	18.0000	56.0000

Mean	95% CL Mean	Std Dev	95% CL Std Dev
21.2053	21.0775 21.3332	3.5723	3.4842 3.6651

DF	t Value	Pr >  t
2999	325.13	<.0001





### **Interpretation of the Q-Q Plot and Age Distribution:**

#### **Q-Q Plot Analysis:**

- The Q-Q plot shows a significant deviation from the straight line, especially at the upper end, indicating that the age distribution is positively skewed.
- The presence of outliers at the higher end (ages above 30) confirms that most of the data is concentrated among younger ages, with a few older individuals representing the tail of the distribution.

#### **Age Distribution Histogram and Boxplot:**

- The kernel density curve shows a sharp peak around 20, suggesting that the mode of the age distribution is in the early 20s.
- The boxplot reveals several outliers beyond the age of 30, indicating a long tail in the age distribution.
- The histogram illustrates a right-skewed distribution, where the majority of the data is clustered around the lower age range (around 18-25).

### (3) CORRELATIONAL ANALYSIS:

The screenshot shows the SAS Studio interface with the 'Correlation Analysis' task selected in the 'Tasks and Utilities' pane. The main workspace displays the 'DATA' tab with the following settings:

- Correlate with:** SWL\_T
- Partial variables:** Column

The right-hand pane shows the 'RESULTS' tab with a 'Table of Contents' section. It displays the following information:

- 1 With Variables: SWL\_T
- 1 Variables: Age
- Pearson Correlation Coefficients, N = 3000

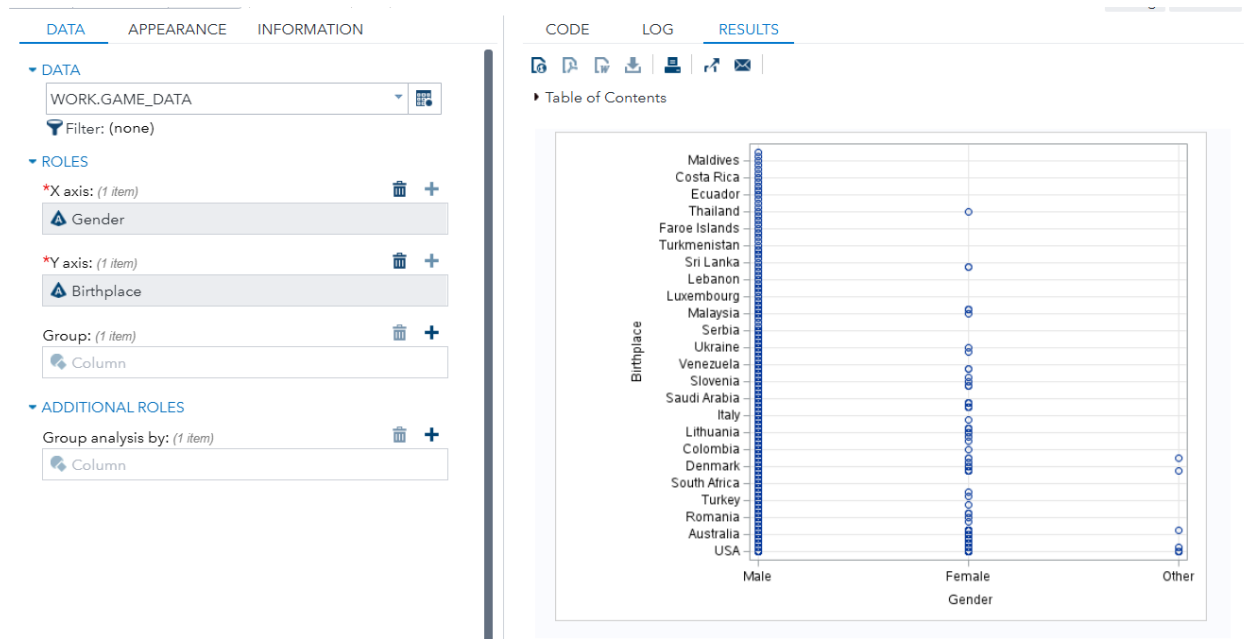
	Age
SWL_T	0.02052

The bottom status bar indicates 'Messages: 33' and 'User: u63986522'.

#### Table of Contents

1 With Variables:	SWL_T
1 Variables:	Age

Pearson Correlation Coefficients, N = 3000	
	Age
SWL_T	0.02052



### Interpretation of the Gender Vs Birthplace Chart:

- The chart shows the distribution of gamers' **birthplaces across different genders (Male, Female, Other).**
- There is a **wider distribution of birthplaces** for males and females, with participants from countries all over the world, including the **USA, Romania, Turkey, South Africa**, and many others.
- For the **"Other" gender category**, there are fewer birthplaces represented, indicating **lower participation or representation** in the dataset compared to males and females.

### Interpretation of the Pearson Correlation Coefficient ( Age Vs SWL T):

- The **Pearson correlation coefficient** between **Age and SWL\_T (Satisfaction with Life)** is **0.02052.**
- This value indicates a **very weak positive correlation**, suggesting that **age has little to no relationship** with life satisfaction scores in this dataset.
- Therefore, **age does not significantly influence the levels of life satisfaction** among the surveyed gamers.