Final\_Project\_Q1.2\_R\_Script

2025-05-03

library(tidyverse)

## Warning: package 'tidyverse' was built under R version 4.4.3

## ── Attaching core tidyverse packages ──────────────────────── tidyverse 2.0.0 ──  
## ✔ dplyr 1.1.4 ✔ readr 2.1.5  
## ✔ forcats 1.0.0 ✔ stringr 1.5.1  
## ✔ ggplot2 3.5.1 ✔ tibble 3.2.1  
## ✔ lubridate 1.9.3 ✔ tidyr 1.3.1  
## ✔ purrr 1.0.2   
## ── Conflicts ────────────────────────────────────────── tidyverse\_conflicts() ──  
## ✖ dplyr::filter() masks stats::filter()  
## ✖ dplyr::lag() masks stats::lag()  
## ℹ Use the conflicted package (<http://conflicted.r-lib.org/>) to force all conflicts to become errors

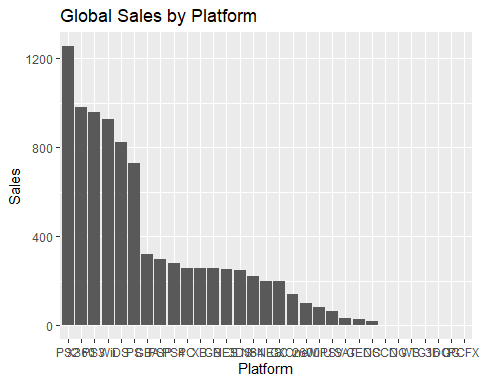
game\_data = read\_csv('C:/Users/swyre/Downloads/vgsales\_final.csv')

## Rows: 16598 Columns: 16  
## ── Column specification ────────────────────────────────────────────────────────  
## Delimiter: ","  
## chr (5): Name, Platform, Year, Genre, Publisher  
## dbl (11): Rank, NA\_Sales, EU\_Sales, JP\_Sales, Other\_Sales, Global\_Sales, Cri...  
##   
## ℹ Use `spec()` to retrieve the full column specification for this data.  
## ℹ Specify the column types or set `show\_col\_types = FALSE` to quiet this message.

head(game\_data, 5)

## # A tibble: 5 × 16  
## Rank Name Platform Year Genre Publisher NA\_Sales EU\_Sales JP\_Sales  
## <dbl> <chr> <chr> <chr> <chr> <chr> <dbl> <dbl> <dbl>  
## 1 1 Wii Sports Wii 2006 Spor… Nintendo 41.5 29.0 3.77  
## 2 2 Super Mario B… NES 1985 Plat… Nintendo 29.1 3.58 6.81  
## 3 3 Mario Kart Wii Wii 2008 Raci… Nintendo 15.8 12.9 3.79  
## 4 4 Wii Sports Re… Wii 2009 Spor… Nintendo 15.8 11.0 3.28  
## 5 5 Pokemon Red/P… GB 1996 Role… Nintendo 11.3 8.89 10.2   
## # ℹ 7 more variables: Other\_Sales <dbl>, Global\_Sales <dbl>,  
## # Critic\_Score <dbl>, User\_Score <dbl>, Norm\_Critic <dbl>, Norm\_User <dbl>,  
## # Pop\_Score <dbl>

library(ggplot2)  
  
#Graph Global Sales by Platform  
game\_data %>%  
 group\_by(Platform) %>%  
 summarise(sales = sum(Global\_Sales)) %>%  
 ggplot() +  
 labs(title = "Global Sales by Platform",  
 x = "Platform",  
 y = "Sales") +  
 geom\_bar(aes(x=reorder(Platform, -sales), y=sales), stat = "identity")



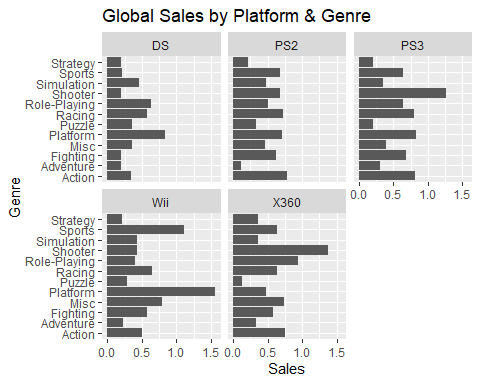
library(tidytext)

## Warning: package 'tidytext' was built under R version 4.4.3

#Graph Global Sales by Top 5 Platform & Genre  
top\_5\_platform = filter(game\_data, Platform %in% c("PS2", "X360", "PS3", "Wii", "DS"))

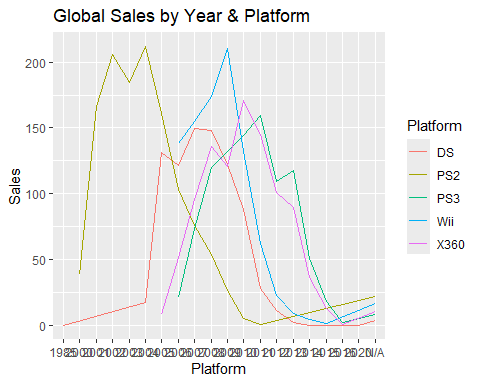
#Graph Average Global Sales by Top 5 Platform & Genre  
top\_5\_platform %>%  
 group\_by(Platform, Genre) %>%  
 summarise(sales = mean(Global\_Sales)) %>%  
 ggplot() +  
 labs(title = "Global Sales by Platform & Genre",  
 x = "Sales",  
 y = "Genre") +  
 scale\_fill\_brewer(palette = "Set2") +  
 geom\_bar(aes(x = sales, y = Genre), stat = "identity", show.legend = FALSE) +  
 facet\_wrap(~Platform)

## `summarise()` has grouped output by 'Platform'. You can override using the  
## `.groups` argument.



#Trend Analysis  
top\_5\_platform %>%  
 group\_by(Platform, Year) %>%  
 summarise(sales = sum(Global\_Sales)) %>%  
 ggplot() +  
 labs(title = "Global Sales by Year & Platform",  
 x = "Platform",  
 y = "Sales") +  
 geom\_line(aes(x = Year, y=sales, group = Platform, color = Platform), stat = "identity")

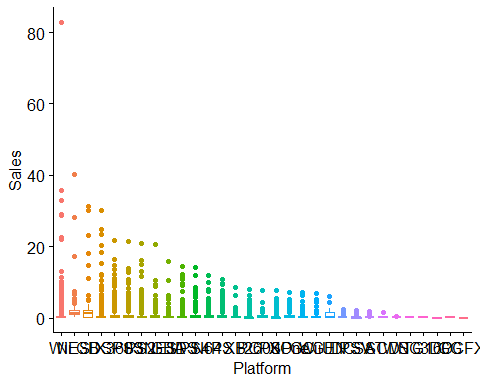
## `summarise()` has grouped output by 'Platform'. You can override using the  
## `.groups` argument.



#One-way Anova  
#Test if sales differ by platform or genre  
library(dplyr)  
library("ggpubr")

## Warning: package 'ggpubr' was built under R version 4.4.3

clean\_data = filter(game\_data, Year != "N/A")  
ggboxplot(clean\_data, x = "Platform", y = "Global\_Sales",  
 color = "Platform",  
 ylab = "Sales", xlab = "Platform") +  
 theme(legend.position = "none")



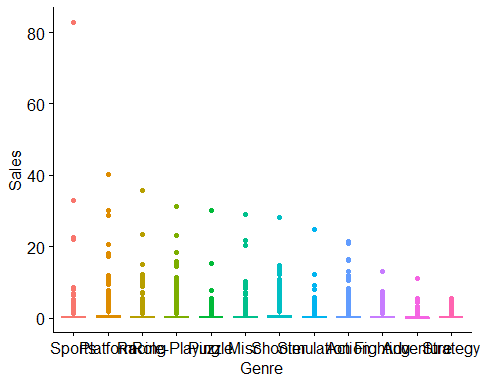
plt.aov = aov(Global\_Sales ~ Platform, data = clean\_data)  
summary(plt.aov)

## Df Sum Sq Mean Sq F value Pr(>F)   
## Platform 30 1452 48.42 20.46 <2e-16 \*\*\*  
## Residuals 16296 38571 2.37   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

#There is significant differences between platforms  
t.plt.aov = TukeyHSD(plt.aov, ordered = TRUE)  
t.plt.aov

## Tukey multiple comparisons of means  
## 95% family-wise confidence level  
## factor levels have been ordered  
##   
## Fit: aov(formula = Global\_Sales ~ Platform, data = clean\_data)  
##   
## $Platform  
## diff lwr upr p adj  
## 3DO-PCFX 0.003333333 -6.685748349 6.6924150 1.0000000  
## GG-PCFX 0.010000000 -8.182418485 8.2024185 1.0000000  
## TG16-PCFX 0.050000000 -7.044842526 7.1448425 1.0000000  
## NG-PCFX 0.090000000 -5.939456748 6.1194567 1.0000000  
## PSV-PCFX 0.119587379 -5.680353262 5.9195280 1.0000000  
## SAT-PCFX 0.164161850 -5.645471219 5.9737949 1.0000000  
## WS-PCFX 0.206666667 -6.050396305 6.4637296 1.0000000  
## PSP-PCFX 0.213700919 -5.581633005 6.0090348 1.0000000  
## PC-PCFX 0.240466596 -5.555518790 6.0364520 1.0000000  
## DC-PCFX 0.277115385 -5.571235134 6.1254659 1.0000000  
## SCD-PCFX 0.281666667 -5.975396305 6.5387296 1.0000000  
## XB-PCFX 0.283935243 -5.512585345 6.0804558 1.0000000  
## GC-PCFX 0.333726937 -5.464529282 6.1319832 1.0000000  
## DS-PCFX 0.353947492 -5.440324941 6.1482199 1.0000000  
## GBA-PCFX 0.356633785 -5.439851243 6.1531188 1.0000000  
## 3DS-PCFX 0.462560000 -5.336144686 6.2612647 1.0000000  
## WiiU-PCFX 0.542447552 -5.270686772 6.3555819 1.0000000  
## PS2-PCFX 0.549905971 -5.244370291 6.3441822 1.0000000  
## PS-PCFX 0.581766190 -5.213584008 6.3771164 1.0000000  
## XOne-PCFX 0.632253521 -5.174243612 6.4387507 1.0000000  
## N64-PCFX 0.660537975 -5.141535454 6.4626114 1.0000000  
## Wii-PCFX 0.675279070 -5.119880476 6.4704386 1.0000000  
## PS3-PCFX 0.698029141 -5.097106308 6.4931646 1.0000000  
## 2600-PCFX 0.716293103 -5.101537439 6.5341236 1.0000000  
## X360-PCFX 0.755109312 -5.040150188 6.5503688 1.0000000  
## PS4-PCFX 0.797678571 -5.003850098 6.5992072 1.0000000  
## SNES-PCFX 0.807029289 -4.997991794 6.6120504 1.0000000  
## GEN-PCFX 1.020370370 -4.878845173 6.9195859 1.0000000  
## NES-PCFX 2.531938776 -3.290456562 8.3543341 0.9992545  
## GB-PCFX 2.592886598 -3.229811886 8.4155851 0.9988628  
## GG-3DO 0.006666667 -6.682415016 6.6957483 1.0000000  
## TG16-3DO 0.046666667 -5.241516726 5.3348501 1.0000000  
## NG-3DO 0.086666667 -3.652643671 3.8259770 1.0000000  
## PSV-3DO 0.116254045 -3.240441436 3.4729495 1.0000000  
## SAT-3DO 0.160828516 -3.212586594 3.5342436 1.0000000  
## WS-3DO 0.203333333 -3.892875909 4.2995426 1.0000000  
## PSP-3DO 0.210367586 -3.138361787 3.5590970 1.0000000  
## PC-3DO 0.237133263 -3.112723408 3.5869899 1.0000000  
## DC-3DO 0.273782051 -3.165883180 3.7134473 1.0000000  
## SCD-3DO 0.278333333 -3.817875909 4.3745426 1.0000000  
## XB-3DO 0.280601910 -3.070180693 3.6313845 1.0000000  
## GC-3DO 0.330393604 -3.023390574 3.6841778 1.0000000  
## DS-3DO 0.350614158 -2.996277854 3.6975062 1.0000000  
## GBA-3DO 0.353300452 -2.997420636 3.7040215 1.0000000  
## 3DS-3DO 0.459226667 -2.895332792 3.8137861 1.0000000  
## WiiU-3DO 0.539114219 -2.840327124 3.9185556 1.0000000  
## PS2-3DO 0.546572638 -2.800326005 3.8934713 1.0000000  
## PS-3DO 0.578432857 -2.770324680 3.9271904 1.0000000  
## XOne-3DO 0.628920188 -2.739091403 3.9969318 1.0000000  
## N64-3DO 0.657204641 -2.703174682 4.0175840 1.0000000  
## Wii-3DO 0.671945736 -2.676481847 4.0203733 1.0000000  
## PS3-3DO 0.694695808 -2.653690071 4.0430817 1.0000000  
## 2600-3DO 0.712959770 -2.674553379 4.1004729 1.0000000  
## X360-3DO 0.751775978 -2.596824594 4.1003766 1.0000000  
## PS4-3DO 0.794345238 -2.565093409 4.1537839 1.0000000  
## SNES-3DO 0.803695955 -2.561770267 4.1691622 1.0000000  
## GEN-3DO 1.017037037 -2.508418558 4.5424926 0.9999999  
## NES-3DO 2.528605442 -0.866741460 5.9239523 0.5585604  
## GB-3DO 2.589553265 -0.806313453 5.9854200 0.5024926  
## TG16-GG 0.040000000 -7.054842526 7.1348425 1.0000000  
## NG-GG 0.080000000 -5.949456748 6.1094567 1.0000000  
## PSV-GG 0.109587379 -5.690353262 5.9095280 1.0000000  
## SAT-GG 0.154161850 -5.655471219 5.9637949 1.0000000  
## WS-GG 0.196666667 -6.060396305 6.4537296 1.0000000  
## PSP-GG 0.203700919 -5.591633005 5.9990348 1.0000000  
## PC-GG 0.230466596 -5.565518790 6.0264520 1.0000000  
## DC-GG 0.267115385 -5.581235134 6.1154659 1.0000000  
## SCD-GG 0.271666667 -5.985396305 6.5287296 1.0000000  
## XB-GG 0.273935243 -5.522585345 6.0704558 1.0000000  
## GC-GG 0.323726937 -5.474529282 6.1219832 1.0000000  
## DS-GG 0.343947492 -5.450324941 6.1382199 1.0000000  
## GBA-GG 0.346633785 -5.449851243 6.1431188 1.0000000  
## 3DS-GG 0.452560000 -5.346144686 6.2512647 1.0000000  
## WiiU-GG 0.532447552 -5.280686772 6.3455819 1.0000000  
## PS2-GG 0.539905971 -5.254370291 6.3341822 1.0000000  
## PS-GG 0.571766190 -5.223584008 6.3671164 1.0000000  
## XOne-GG 0.622253521 -5.184243612 6.4287507 1.0000000  
## N64-GG 0.650537975 -5.151535454 6.4526114 1.0000000  
## Wii-GG 0.665279070 -5.129880476 6.4604386 1.0000000  
## PS3-GG 0.688029141 -5.107106308 6.4831646 1.0000000  
## 2600-GG 0.706293103 -5.111537439 6.5241236 1.0000000  
## X360-GG 0.745109312 -5.050150188 6.5403688 1.0000000  
## PS4-GG 0.787678571 -5.013850098 6.5892072 1.0000000  
## SNES-GG 0.797029289 -5.007991794 6.6020504 1.0000000  
## GEN-GG 1.010370370 -4.888845173 6.9095859 1.0000000  
## NES-GG 2.521938776 -3.300456562 8.3443341 0.9993059  
## GB-GG 2.582886598 -3.239811886 8.4055851 0.9989375  
## NG-TG16 0.040000000 -4.384411658 4.4644117 1.0000000  
## PSV-TG16 0.069587379 -4.036552083 4.1757268 1.0000000  
## SAT-TG16 0.114161850 -4.005656863 4.2339806 1.0000000  
## WS-TG16 0.156666667 -4.573228351 4.8865617 1.0000000  
## PSP-TG16 0.163700919 -3.935928958 4.2633308 1.0000000  
## PC-TG16 0.190466596 -3.910084152 4.2910173 1.0000000  
## DC-TG16 0.227115385 -3.947123902 4.4013547 1.0000000  
## SCD-TG16 0.231666667 -4.498228351 4.9615617 1.0000000  
## XB-TG16 0.233935243 -3.867371960 4.3352424 1.0000000  
## GC-TG16 0.283726937 -3.820032928 4.3874868 1.0000000  
## DS-TG16 0.303947492 -3.794181699 4.4020767 1.0000000  
## GBA-TG16 0.306633785 -3.794623160 4.4078907 1.0000000  
## 3DS-TG16 0.412560000 -3.691833485 4.5169535 1.0000000  
## WiiU-TG16 0.492447552 -3.632307048 4.6172022 1.0000000  
## PS2-TG16 0.499905971 -3.598228634 4.5980406 1.0000000  
## PS-TG16 0.531766190 -3.567886693 4.6314191 1.0000000  
## XOne-TG16 0.582253521 -3.533141818 4.6976489 1.0000000  
## N64-TG16 0.610537975 -3.498613509 4.7196895 1.0000000  
## Wii-TG16 0.625279070 -3.474104299 4.7246624 1.0000000  
## PS3-TG16 0.648029141 -3.451320163 4.7473784 1.0000000  
## 2600-TG16 0.666293103 -3.465077378 4.7976636 1.0000000  
## X360-TG16 0.705109312 -3.394415358 4.8046340 1.0000000  
## PS4-TG16 0.747678571 -3.360703682 4.8560608 1.0000000  
## SNES-TG16 0.757029289 -3.356283198 4.8703418 1.0000000  
## GEN-TG16 0.970370370 -3.274840328 5.2155811 1.0000000  
## NES-TG16 2.481938776 -1.655857414 6.6197350 0.9209847  
## GB-TG16 2.542886598 -1.595336146 6.6811093 0.8985179  
## PSV-NG 0.029587379 -1.666861700 1.7260365 1.0000000  
## SAT-NG 0.074161850 -1.655134085 1.8034578 1.0000000  
## WS-NG 0.116666667 -2.779790666 3.0131240 1.0000000  
## PSP-NG 0.123700919 -1.556930906 1.8043327 1.0000000  
## PC-NG 0.150466596 -1.532410297 1.8333435 1.0000000  
## DC-NG 0.187115385 -1.668102076 2.0423328 1.0000000  
## SCD-NG 0.191666667 -2.704790666 3.0881240 1.0000000  
## XB-NG 0.193935243 -1.490784013 1.8786545 1.0000000  
## GC-NG 0.243726937 -1.446954355 1.9344082 1.0000000  
## DS-NG 0.263947492 -1.413020327 1.9409153 1.0000000  
## GBA-NG 0.266633785 -1.417963120 1.9512307 1.0000000  
## 3DS-NG 0.372560000 -1.319658686 2.0647787 1.0000000  
## WiiU-NG 0.452447552 -1.288574765 2.1934699 1.0000000  
## PS2-NG 0.459905971 -1.217075080 2.1368870 1.0000000  
## PS-NG 0.491766190 -1.188921752 2.1724541 0.9999998  
## XOne-NG 0.542253521 -1.176477697 2.2609847 0.9999991  
## N64-NG 0.570537975 -1.133188564 2.2742645 0.9999963  
## Wii-NG 0.585279070 -1.094751348 2.2653095 0.9999912  
## PS3-NG 0.608029141 -1.071918154 2.2879764 0.9999799  
## 2600-NG 0.626293103 -1.130345806 2.3829320 0.9999855  
## X360-NG 0.665109312 -1.015265860 2.3454845 0.9998743  
## PS4-NG 0.707678571 -0.994191854 2.4095490 0.9996737  
## SNES-NG 0.717029289 -0.996708678 2.4307673 0.9996335  
## GEN-NG 0.930370370 -1.079448546 2.9401893 0.9977881  
## NES-NG 2.441938776 0.670240295 4.2136373 0.0000943  
## GB-NG 2.502886598 0.730192128 4.2755811 0.0000480  
## SAT-PSV 0.044574471 -0.480237103 0.5693860 1.0000000  
## WS-PSV 0.087079288 -2.295026469 2.4691850 1.0000000  
## PSP-PSV 0.094113540 -0.236773281 0.4250004 0.9999999  
## PC-PSV 0.120879217 -0.221228069 0.4629865 0.9999880  
## DC-PSV 0.157528006 -0.694994478 1.0100505 1.0000000  
## SCD-PSV 0.162079288 -2.220026469 2.5441850 1.0000000  
## XB-PSV 0.164347864 -0.186710148 0.5154059 0.9973329  
## GC-PSV 0.214139559 -0.164497456 0.5927766 0.9595973  
## DS-PSV 0.234360113 -0.077383087 0.5461033 0.5363490  
## GBA-PSV 0.237046407 -0.113423977 0.5875168 0.7630047  
## 3DS-PSV 0.342972621 -0.042471068 0.7284163 0.1773715  
## WiiU-PSV 0.422860174 -0.139386631 0.9851070 0.5353508  
## PS2-PSV 0.430318592 0.118504220 0.7421330 0.0000911  
## PS-PSV 0.462178811 0.131007078 0.7933505 0.0000667  
## XOne-PSV 0.512666142 0.023790128 1.0015422 0.0260536  
## N64-PSV 0.540950596 0.107768328 0.9741329 0.0010787  
## Wii-PSV 0.555691691 0.227873201 0.8835102 0.0000001  
## PS3-PSV 0.578441762 0.251049532 0.9058340 0.0000000  
## 2600-PSV 0.596705725 -0.012180978 1.2055924 0.0643492  
## X360-PSV 0.635521933 0.305941178 0.9651027 0.0000000  
## PS4-PSV 0.678091193 0.252267636 1.1039147 0.0000010  
## SNES-PSV 0.687441910 0.216421131 1.1584627 0.0000179  
## GEN-PSV 0.900782992 -0.250014485 2.0515805 0.4403554  
## NES-PSV 2.412351397 1.761292058 3.0634107 0.0000000  
## GB-PSV 2.473299219 1.819534399 3.1270640 0.0000000  
## WS-SAT 0.042504817 -2.363103794 2.4481134 1.0000000  
## PSP-SAT 0.049539069 -0.421641408 0.5207195 1.0000000  
## PC-SAT 0.076304746 -0.402821906 0.5554314 1.0000000  
## DC-SAT 0.112953535 -0.803190307 1.0290974 1.0000000  
## SCD-SAT 0.117504817 -2.288103794 2.5231134 1.0000000  
## XB-SAT 0.119773393 -0.365784721 0.6053315 1.0000000  
## GC-SAT 0.169565088 -0.336291555 0.6754217 0.9999962  
## DS-SAT 0.189785642 -0.268154066 0.6477254 0.9996937  
## GBA-SAT 0.192471936 -0.292661493 0.6776054 0.9998683  
## 3DS-SAT 0.298398150 -0.212573269 0.8093696 0.9411355  
## WiiU-SAT 0.378285703 -0.276425243 1.0329966 0.9479098  
## PS2-SAT 0.385744121 -0.072244041 0.8437323 0.2770821  
## PS-SAT 0.417604340 -0.053776261 0.8889849 0.1844165  
## XOne-SAT 0.468091671 -0.124803523 1.0609869 0.4201139  
## N64-SAT 0.496376125 -0.051503270 1.0442555 0.1501975  
## Wii-SAT 0.511117220 0.042086393 0.9801480 0.0144426  
## PS3-SAT 0.533867291 0.065134290 1.0026003 0.0068065  
## 2600-SAT 0.552131254 -0.143043523 1.2473060 0.4061423  
## X360-SAT 0.590947462 0.120683251 1.0612117 0.0009380  
## PS4-SAT 0.633516722 0.091436787 1.1755967 0.0042251  
## SNES-SAT 0.642867439 0.064606660 1.2211282 0.0103808  
## GEN-SAT 0.856208521 -0.342482343 2.0548994 0.6535388  
## NES-SAT 2.367776926 1.635381392 3.1001725 0.0000000  
## GB-SAT 2.428724748 1.693923146 3.1635264 0.0000000  
## PSP-WS 0.007034252 -2.363833034 2.3779015 1.0000000  
## PC-WS 0.033799929 -2.338659343 2.4062592 1.0000000  
## DC-WS 0.070448718 -2.427214227 2.5681117 1.0000000  
## SCD-WS 0.075000000 -3.269540841 3.4195408 1.0000000  
## XB-WS 0.077268576 -2.296497910 2.4510351 1.0000000  
## GC-WS 0.127060271 -2.250941325 2.5050619 1.0000000  
## DS-WS 0.147280825 -2.220990575 2.5155522 1.0000000  
## GBA-WS 0.149967119 -2.223712534 2.5236468 1.0000000  
## 3DS-WS 0.255893333 -2.123201545 2.6349882 1.0000000  
## WiiU-WS 0.335780886 -2.078271117 2.7498329 1.0000000  
## PS2-WS 0.343239304 -2.025041466 2.7115201 1.0000000  
## PS-WS 0.375099523 -1.995807543 2.7460066 1.0000000  
## XOne-WS 0.425586854 -1.972438450 2.8236122 1.0000000  
## N64-WS 0.453871308 -1.933422658 2.8411653 1.0000000  
## Wii-WS 0.468612403 -1.901828603 2.8390534 1.0000000  
## PS3-WS 0.491362474 -1.879019620 2.8617446 1.0000000  
## 2600-WS 0.509626437 -1.915712430 2.9349653 1.0000000  
## X360-WS 0.548442645 -1.822242715 2.9191280 1.0000000  
## PS4-WS 0.591011905 -1.794957773 2.9769816 1.0000000  
## SNES-WS 0.600362622 -1.794086412 2.9948117 1.0000000  
## GEN-WS 0.813703704 -1.800844141 3.4282515 0.9999993  
## NES-WS 2.325272109 -0.110996322 4.7615405 0.0875890  
## GB-WS 2.386219931 -0.050772896 4.8232128 0.0650121  
## PC-PSP 0.026765677 -0.225466853 0.2789982 1.0000000  
## DC-PSP 0.063414466 -0.757181926 0.8840109 1.0000000  
## SCD-PSP 0.067965748 -2.302901539 2.4388330 1.0000000  
## XB-PSP 0.070234324 -0.194010982 0.3344796 1.0000000  
## GC-PSP 0.120026018 -0.179890374 0.4199424 0.9998438  
## DS-PSP 0.140246573 -0.068960684 0.3494538 0.7787939  
## GBA-PSP 0.142932866 -0.120531256 0.4063970 0.9761220  
## 3DS-PSP 0.248859081 -0.059605976 0.5573241 0.3700910  
## WiiU-PSP 0.328746633 -0.183801240 0.8412945 0.8474488  
## PS2-PSP 0.336205052 0.126891755 0.5455183 0.0000007  
## PS-PSP 0.368065271 0.130876378 0.6052542 0.0000024  
## XOne-PSP 0.418552602 -0.012241561 0.8493468 0.0713475  
## N64-PSP 0.446837056 0.080461932 0.8132122 0.0017968  
## Wii-PSP 0.461578151 0.229094138 0.6940622 0.0000000  
## PS3-PSP 0.484328222 0.252445652 0.7162108 0.0000000  
## 2600-PSP 0.502592184 -0.060725550 1.0659099 0.1731505  
## X360-PSP 0.541408393 0.306445997 0.7763708 0.0000000  
## PS4-PSP 0.583977652 0.226333199 0.9416221 0.0000004  
## SNES-PSP 0.593328370 0.182908550 1.0037482 0.0000239  
## GEN-PSP 0.806669451 -0.320680843 1.9340197 0.6496899  
## NES-PSP 2.318237857 1.709581864 2.9268938 0.0000000  
## GB-PSP 2.379185679 1.767636585 2.9907348 0.0000000  
## DC-PC 0.036648789 -0.788535885 0.8618335 1.0000000  
## SCD-PC 0.041200071 -2.331259201 2.4136593 1.0000000  
## XB-PC 0.043468647 -0.234698369 0.3216357 1.0000000  
## GC-PC 0.093260341 -0.218991399 0.4055121 0.9999997  
## DS-PC 0.113480896 -0.113056040 0.3400178 0.9922398  
## GBA-PC 0.116167189 -0.161257847 0.3935922 0.9996280  
## 3DS-PC 0.222093404 -0.098378122 0.5425649 0.7167359  
## WiiU-PC 0.301980956 -0.217881170 0.8218431 0.9445971  
## PS2-PC 0.309439375 0.082804507 0.5360742 0.0001217  
## PS-PC 0.341299594 0.088693422 0.5939058 0.0001608  
## XOne-PC 0.391786925 -0.047684255 0.8312581 0.1743872  
## N64-PC 0.420071379 0.043531821 0.7966109 0.0097830  
## Wii-PC 0.434812474 0.186618752 0.6830062 0.0000000  
## PS3-PC 0.457562545 0.209932108 0.7051930 0.0000000  
## 2600-PC 0.475826507 -0.094154350 1.0458074 0.2953606  
## X360-PC 0.514642716 0.264125980 0.7651595 0.0000000  
## PS4-PC 0.557211975 0.189161894 0.9252621 0.0000056  
## SNES-PC 0.566562693 0.147044236 0.9860811 0.0001627  
## GEN-PC 0.779903774 -0.350790700 1.9105982 0.7260604  
## NES-PC 2.291472180 1.676644216 2.9063001 0.0000000  
## GB-PC 2.352420002 1.734727845 2.9701122 0.0000000  
## SCD-DC 0.004551282 -2.493111663 2.5022142 1.0000000  
## XB-DC 0.006819858 -0.822115651 0.8357554 1.0000000  
## GC-DC 0.056611553 -0.784374975 0.8975981 1.0000000  
## DS-DC 0.076832107 -0.736233802 0.8898980 1.0000000  
## GBA-DC 0.079518401 -0.749168416 0.9082052 1.0000000  
## 3DS-DC 0.185444615 -0.658628360 1.0295176 1.0000000  
## WiiU-DC 0.265332168 -0.672758350 1.2034227 0.9999999  
## PS2-DC 0.272790586 -0.540302614 1.0858838 0.9999962  
## PS-DC 0.304650805 -0.516060513 1.1253621 0.9999659  
## XOne-DC 0.355138137 -0.540904333 1.2511806 0.9998709  
## N64-DC 0.383422590 -0.483491032 1.2503362 0.9989914  
## Wii-DC 0.398163685 -0.421200283 1.2175277 0.9951352  
## PS3-DC 0.420913756 -0.398279763 1.2401073 0.9887210  
## 2600-DC 0.439177719 -0.527587696 1.4059431 0.9983927  
## X360-DC 0.477993927 -0.342076694 1.2980645 0.9423974  
## PS4-DC 0.520563187 -0.342696943 1.3838233 0.9164034  
## SNES-DC 0.529913904 -0.356513152 1.4163410 0.9237775  
## GEN-DC 0.743254986 -0.630872804 2.1173828 0.9770462  
## NES-DC 2.254823391 1.260956894 3.2486899 0.0000000  
## GB-DC 2.315771213 1.320130319 3.3114121 0.0000000  
## XB-SCD 0.002268576 -2.371497910 2.3760351 1.0000000  
## GC-SCD 0.052060271 -2.325941325 2.4300619 1.0000000  
## DS-SCD 0.072280825 -2.295990575 2.4405522 1.0000000  
## GBA-SCD 0.074967119 -2.298712534 2.4486468 1.0000000  
## 3DS-SCD 0.180893333 -2.198201545 2.5599882 1.0000000  
## WiiU-SCD 0.260780886 -2.153271117 2.6748329 1.0000000  
## PS2-SCD 0.268239304 -2.100041466 2.6365201 1.0000000  
## PS-SCD 0.300099523 -2.070807543 2.6710066 1.0000000  
## XOne-SCD 0.350586854 -2.047438450 2.7486122 1.0000000  
## N64-SCD 0.378871308 -2.008422658 2.7661653 1.0000000  
## Wii-SCD 0.393612403 -1.976828603 2.7640534 1.0000000  
## PS3-SCD 0.416362474 -1.954019620 2.7867446 1.0000000  
## 2600-SCD 0.434626437 -1.990712430 2.8599653 1.0000000  
## X360-SCD 0.473442645 -1.897242715 2.8441280 1.0000000  
## PS4-SCD 0.516011905 -1.869957773 2.9019816 1.0000000  
## SNES-SCD 0.525362622 -1.869086412 2.9198117 1.0000000  
## GEN-SCD 0.738703704 -1.875844141 3.3532515 0.9999999  
## NES-SCD 2.250272109 -0.185996322 4.6865405 0.1242662  
## GB-SCD 2.311219931 -0.125772896 4.7482128 0.0940000  
## GC-XB 0.049791694 -0.272241661 0.3718250 1.0000000  
## DS-XB 0.070012249 -0.169827939 0.3098524 0.9999998  
## GBA-XB 0.072698543 -0.215691789 0.3610889 1.0000000  
## 3DS-XB 0.178624757 -0.151384835 0.5086343 0.9768326  
## WiiU-XB 0.258512310 -0.267283242 0.7843079 0.9941632  
## PS2-XB 0.265970728 0.026038038 0.5059034 0.0108989  
## PS-XB 0.297830947 0.033228962 0.5624329 0.0083898  
## XOne-XB 0.348318278 -0.098155966 0.7947925 0.4482124  
## N64-XB 0.376602732 -0.008087236 0.7612927 0.0651637  
## Wii-XB 0.391343827 0.130950940 0.6517367 0.0000071  
## PS3-XB 0.414093898 0.154237850 0.6739499 0.0000010  
## 2600-XB 0.432357861 -0.143039837 1.0077556 0.5375016  
## X360-XB 0.471174069 0.208566058 0.7337821 0.0000000  
## PS4-XB 0.513743329 0.137358957 0.8901277 0.0001227  
## SNES-XB 0.523094046 0.096245047 0.9499430 0.0016236  
## GEN-XB 0.736435128 -0.396999620 1.8698699 0.8290705  
## NES-XB 2.248003533 1.628150521 2.8678565 0.0000000  
## GB-XB 2.308951355 1.686257262 2.9316454 0.0000000  
## DS-GC 0.020220555 -0.258432593 0.2988737 1.0000000  
## GBA-GC 0.022906848 -0.298485815 0.3442995 1.0000000  
## 3DS-GC 0.128833063 -0.230375222 0.4880413 0.9999835  
## WiiU-GC 0.208720615 -0.335875771 0.7533170 0.9999341  
## PS2-GC 0.216179034 -0.062553736 0.4949118 0.4621745  
## PS-GC 0.248039253 -0.052191444 0.5482699 0.3174468  
## XOne-GC 0.298526584 -0.169942744 0.7669959 0.8561701  
## N64-GC 0.326811037 -0.083201928 0.7368240 0.3978438  
## Wii-GC 0.341552132 0.045024365 0.6380799 0.0055470  
## PS3-GC 0.364302204 0.068245745 0.6603587 0.0014874  
## 2600-GC 0.382566166 -0.210060842 0.9751932 0.8384596  
## X360-GC 0.421382374 0.122907538 0.7198572 0.0000481  
## PS4-GC 0.463951634 0.061721034 0.8661822 0.0054059  
## SNES-GC 0.473302351 0.023497584 0.9231071 0.0247838  
## GEN-GC 0.686643433 -0.455634373 1.8289212 0.9191492  
## NES-GC 2.198211838 1.562332905 2.8340908 0.0000000  
## GB-GC 2.259159661 1.620510935 2.8978084 0.0000000  
## GBA-DS 0.002686294 -0.236292948 0.2416655 1.0000000  
## 3DS-DS 0.108612508 -0.179221517 0.3964465 0.9999520  
## WiiU-DS 0.188500061 -0.311902834 0.6889030 0.9999537  
## PS2-DS 0.195958479 0.018448506 0.3734685 0.0116828  
## PS-DS 0.227818698 0.018161108 0.4374763 0.0151205  
## XOne-DS 0.278306029 -0.137964730 0.6945768 0.7834409  
## N64-DS 0.306590483 -0.042592085 0.6557731 0.1993060  
## Wii-DS 0.321331578 0.117011852 0.5256513 0.0000015  
## PS3-DS 0.344081649 0.140446533 0.5477168 0.0000001  
## 2600-DS 0.362345612 -0.189944715 0.9146359 0.8143287  
## X360-DS 0.401161820 0.194026449 0.6082972 0.0000000  
## PS4-DS 0.443731080 0.103720360 0.7837418 0.0003869  
## SNES-DS 0.453081797 0.057933518 0.8482301 0.0060295  
## GEN-DS 0.666422879 -0.455457873 1.7883036 0.9288450  
## NES-DS 2.177991284 1.579526706 2.7764559 0.0000000  
## GB-DS 2.238939106 1.637532398 2.8403458 0.0000000  
## 3DS-GBA 0.105926215 -0.223458201 0.4353106 0.9999985  
## WiiU-GBA 0.185813767 -0.339589625 0.7112172 0.9999878  
## PS2-GBA 0.193272185 -0.045799892 0.4323443 0.3654266  
## PS-GBA 0.225132405 -0.038689453 0.4889543 0.2511640  
## XOne-GBA 0.275619736 -0.170392610 0.7216321 0.8926385  
## N64-GBA 0.303904189 -0.080249599 0.6880580 0.4153733  
## Wii-GBA 0.318645284 0.059045173 0.5782454 0.0015690  
## PS3-GBA 0.341395356 0.082333725 0.6004570 0.0003044  
## 2600-GBA 0.359659318 -0.215380048 0.9346987 0.8792503  
## X360-GBA 0.398475526 0.136653584 0.6602975 0.0000047  
## PS4-GBA 0.441044786 0.065208443 0.8168811 0.0039043  
## SNES-GBA 0.450395503 0.024029662 0.8767613 0.0233897  
## GEN-GBA 0.663736585 -0.469516294 1.7969895 0.9391588  
## NES-GBA 2.175304990 1.555784596 2.7948254 0.0000000  
## GB-GBA 2.236252812 1.613889819 2.8586158 0.0000000  
## WiiU-3DS 0.079887552 -0.469463039 0.6292381 1.0000000  
## PS2-3DS 0.087345971 -0.200565137 0.3752571 0.9999996  
## PS-3DS 0.119206190 -0.189564470 0.4279769 0.9999236  
## XOne-3DS 0.169693521 -0.304294201 0.6436812 0.9999841  
## N64-3DS 0.197977975 -0.218328981 0.6142849 0.9965526  
## Wii-3DS 0.212719070 -0.092452301 0.5178904 0.7050781  
## PS3-3DS 0.235469141 -0.069244292 0.5401826 0.4708468  
## 2600-3DS 0.253733103 -0.343265741 0.8507319 0.9995092  
## X360-3DS 0.292549312 -0.014514325 0.5996129 0.0893617  
## PS4-3DS 0.335118571 -0.073525901 0.7437630 0.3335242  
## SNES-3DS 0.344469289 -0.111080026 0.8000186 0.5225406  
## GEN-3DS 0.557810370 -0.586741697 1.7023624 0.9949078  
## NES-3DS 2.069378776 1.429423412 2.7093341 0.0000000  
## GB-3DS 2.130326598 1.487619010 2.7730342 0.0000000  
## PS2-WiiU 0.007458418 -0.492988819 0.5079057 1.0000000  
## PS-WiiU 0.039318638 -0.473413214 0.5520505 1.0000000  
## XOne-WiiU 0.089805969 -0.536467927 0.7160799 1.0000000  
## N64-WiiU 0.118090422 -0.465746980 0.7019278 1.0000000  
## Wii-WiiU 0.132831517 -0.377740904 0.6434039 1.0000000  
## PS3-WiiU 0.155581589 -0.354717253 0.6658804 0.9999996  
## 2600-WiiU 0.173845551 -0.550006817 0.8976979 1.0000000  
## X360-WiiU 0.212661759 -0.299043926 0.7243674 0.9996771  
## PS4-WiiU 0.255231019 -0.323167577 0.8336296 0.9990315  
## SNES-WiiU 0.264581736 -0.347855860 0.8770193 0.9993380  
## GEN-WiiU 0.477922818 -0.737624000 1.6934696 0.9998899  
## NES-WiiU 1.989491223 1.229821888 2.7491606 0.0000000  
## GB-WiiU 2.050439045 1.288449758 2.8124283 0.0000000  
## PS-PS2 0.031860219 -0.177903184 0.2416236 1.0000000  
## XOne-PS2 0.082347550 -0.333976512 0.4986716 1.0000000  
## N64-PS2 0.110632004 -0.238614107 0.4598781 0.9999990  
## Wii-PS2 0.125373099 -0.079055203 0.3298014 0.9004995  
## PS3-PS2 0.148123170 -0.055620887 0.3518672 0.6142359  
## 2600-PS2 0.166387133 -0.385943370 0.7187176 0.9999997  
## X360-PS2 0.205203341 -0.002039130 0.4124458 0.0566726  
## PS4-PS2 0.247772601 -0.092303376 0.5878486 0.6093213  
## SNES-PS2 0.257123318 -0.138081114 0.6523277 0.8270846  
## GEN-PS2 0.470464400 -0.651436131 1.5923649 0.9996176  
## NES-PS2 1.982032805 1.383531149 2.5805345 0.0000000  
## GB-PS2 2.042980627 1.441537024 2.6444242 0.0000000  
## XOne-PS 0.050487331 -0.380525708 0.4815004 1.0000000  
## N64-PS 0.078771785 -0.287860675 0.4454042 1.0000000  
## Wii-PS 0.093512880 -0.139376461 0.3264022 0.9998333  
## PS3-PS 0.116262951 -0.116025997 0.3485519 0.9923388  
## 2600-PS 0.134526913 -0.428958223 0.6980121 1.0000000  
## X360-PS 0.173343122 -0.062020334 0.4087066 0.5845083  
## PS4-PS 0.215912381 -0.141995685 0.5738204 0.9160496  
## SNES-PS 0.225263099 -0.185386457 0.6359127 0.9724205  
## GEN-PS 0.438604180 -0.688829771 1.5660381 0.9999109  
## NES-PS 1.950172585 1.341361657 2.5589835 0.0000000  
## GB-PS 2.011120408 1.399417111 2.6228237 0.0000000  
## N64-XOne 0.028284454 -0.485276059 0.5418450 1.0000000  
## Wii-XOne 0.043025549 -0.385416379 0.4714675 1.0000000  
## PS3-XOne 0.065775620 -0.362340247 0.4938915 1.0000000  
## 2600-XOne 0.084039582 -0.584421740 0.7525009 1.0000000  
## X360-XOne 0.122855791 -0.306936015 0.5526476 0.9999999  
## PS4-XOne 0.165425050 -0.341943873 0.6727940 0.9999980  
## SNES-XOne 0.174775768 -0.371079614 0.7206311 0.9999987  
## GEN-XOne 0.388116849 -0.795281797 1.5715155 0.9999977  
## NES-XOne 1.899685254 1.192595595 2.6067749 0.0000000  
## GB-XOne 1.960633077 1.251051536 2.6702146 0.0000000  
## Wii-N64 0.014741095 -0.348865293 0.3783475 1.0000000  
## PS3-N64 0.037491166 -0.325730964 0.4007133 1.0000000  
## 2600-N64 0.055755129 -0.573122967 0.6846332 1.0000000  
## X360-N64 0.094571337 -0.270624661 0.4597673 1.0000000  
## PS4-N64 0.137140597 -0.316809119 0.5910903 0.9999997  
## SNES-N64 0.146491314 -0.350102300 0.6430849 0.9999998  
## GEN-N64 0.359832396 -0.801666410 1.5213312 0.9999994  
## NES-N64 1.871400801 1.201607619 2.5411940 0.0000000  
## GB-N64 1.932348623 1.259925331 2.6047719 0.0000000  
## PS3-Wii 0.022750071 -0.204732677 0.2502328 1.0000000  
## 2600-Wii 0.041014034 -0.520506887 0.6025350 1.0000000  
## X360-Wii 0.079830242 -0.150791096 0.3104516 0.9999923  
## PS4-Wii 0.122399502 -0.232408093 0.4772071 0.9999929  
## SNES-Wii 0.131750219 -0.276199904 0.5397003 0.9999984  
## GEN-Wii 0.345091301 -0.781362232 1.4715448 0.9999995  
## NES-Wii 1.856659706 1.249666303 2.4636531 0.0000000  
## GB-Wii 1.917607528 1.307713137 2.5275019 0.0000000  
## 2600-PS3 0.018263962 -0.543008213 0.5795361 1.0000000  
## X360-PS3 0.057080171 -0.172934855 0.2870952 1.0000000  
## PS4-PS3 0.099649430 -0.254764367 0.4540632 0.9999999  
## SNES-PS3 0.109000148 -0.298607523 0.5166078 1.0000000  
## GEN-PS3 0.322341229 -0.803988328 1.4486708 0.9999999  
## NES-PS3 1.833909634 1.227146335 2.4406729 0.0000000  
## GB-PS3 1.894857457 1.285192075 2.5045228 0.0000000  
## X360-2600 0.038816208 -0.523735350 0.6013678 1.0000000  
## PS4-2600 0.081385468 -0.542446628 0.7052176 1.0000000  
## SNES-2600 0.090736185 -0.564779914 0.7462523 1.0000000  
## GEN-2600 0.304077267 -0.933733548 1.5418881 1.0000000  
## NES-2600 1.815645672 1.020838120 2.6104532 0.0000000  
## GB-2600 1.876593494 1.079568261 2.6736187 0.0000000  
## PS4-X360 0.042569260 -0.313867187 0.3990057 1.0000000  
## SNES-X360 0.051919977 -0.357447601 0.4612876 1.0000000  
## GEN-X360 0.265261059 -0.861706586 1.3922287 1.0000000  
## NES-X360 1.776829464 1.168882507 2.3847764 0.0000000  
## GB-X360 1.837777286 1.226933870 2.4486207 0.0000000  
## SNES-PS4 0.009350717 -0.480837044 0.4995385 1.0000000  
## GEN-PS4 0.222691799 -0.936082683 1.3814663 1.0000000  
## NES-PS4 1.734260204 1.069202515 2.3993179 0.0000000  
## GB-PS4 1.795208027 1.127501574 2.4629145 0.0000000  
## GEN-SNES 0.213341082 -0.962793763 1.3894759 1.0000000  
## NES-SNES 1.724909487 1.030045037 2.4197739 0.0000000  
## GB-SNES 1.785857309 1.088457295 2.4832573 0.0000000  
## NES-GEN 1.511568405 0.252477121 2.7706597 0.0024892  
## GB-GEN 1.572516228 0.312023848 2.8330086 0.0011027  
## GB-NES 0.060947822 -0.768741559 0.8906372 1.0000000

ggboxplot(clean\_data, x = "Genre", y = "Global\_Sales",  
 color = "Genre",  
 ylab = "Sales", xlab = "Genre") +  
 theme(legend.position = "none")



gen.aov = aov(Global\_Sales ~ Genre, data = clean\_data)  
summary(gen.aov)

## Df Sum Sq Mean Sq F value Pr(>F)   
## Genre 11 486 44.21 18.24 <2e-16 \*\*\*  
## Residuals 16315 39537 2.42   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

#There is significant differences between genres  
g.plt.aov = TukeyHSD(gen.aov, ordered = TRUE)  
g.plt.aov

## Tukey multiple comparisons of means  
## 95% family-wise confidence level  
## factor levels have been ordered  
##   
## Fit: aov(formula = Global\_Sales ~ Genre, data = clean\_data)  
##   
## $Genre  
## diff lwr upr p adj  
## Strategy-Adventure 0.074452438 -0.168181739 0.3170866 0.9976701  
## Puzzle-Adventure 0.240190613 -0.015989642 0.4963709 0.0909466  
## Simulation-Adventure 0.274459846 0.049269782 0.4996499 0.0039264  
## Misc-Adventure 0.282431905 0.094206992 0.4706568 0.0000605  
## Action-Adventure 0.345615496 0.177545810 0.5136852 0.0000000  
## Fighting-Adventure 0.347147748 0.120748970 0.5735465 0.0000351  
## Sports-Adventure 0.384233989 0.206679958 0.5617880 0.0000000  
## Racing-Adventure 0.408785177 0.205301921 0.6122684 0.0000000  
## Role-Playing-Adventure 0.444022811 0.249373328 0.6386723 0.0000000  
## Shooter-Adventure 0.616455480 0.415251523 0.8176594 0.0000000  
## Platform-Adventure 0.762505726 0.539251679 0.9857598 0.0000000  
## Puzzle-Strategy 0.165738175 -0.123954211 0.4554306 0.7780742  
## Simulation-Strategy 0.200007408 -0.062678566 0.4626934 0.3470291  
## Misc-Strategy 0.207979467 -0.023800544 0.4397595 0.1294460  
## Action-Strategy 0.271163058 0.055429948 0.4868962 0.0023600  
## Fighting-Strategy 0.272695309 0.008972421 0.5364182 0.0351918  
## Sports-Strategy 0.309781550 0.086580320 0.5329828 0.0003589  
## Racing-Strategy 0.334332739 0.089999378 0.5786661 0.0004816  
## Role-Playing-Strategy 0.369570372 0.132543419 0.6065973 0.0000226  
## Shooter-Strategy 0.542003041 0.299564620 0.7844415 0.0000000  
## Platform-Strategy 0.688053287 0.427025080 0.9490815 0.0000000  
## Simulation-Puzzle 0.034269233 -0.240977746 0.3095162 0.9999997  
## Misc-Puzzle 0.042241292 -0.203683397 0.2881660 0.9999920  
## Action-Puzzle 0.105424883 -0.125438180 0.3362879 0.9429836  
## Fighting-Puzzle 0.106957135 -0.169279614 0.3831939 0.9832450  
## Sports-Puzzle 0.144043375 -0.093813237 0.3819000 0.7077280  
## Racing-Puzzle 0.168594564 -0.089195602 0.4263847 0.5954492  
## Role-Playing-Puzzle 0.203832198 -0.047043779 0.4547082 0.2489386  
## Shooter-Puzzle 0.376264866 0.120270009 0.6322597 0.0000997  
## Platform-Puzzle 0.522315112 0.248649799 0.7959804 0.0000001  
## Misc-Simulation 0.007972059 -0.205478625 0.2214227 1.0000000  
## Action-Simulation 0.071155650 -0.124752481 0.2670638 0.9900091  
## Fighting-Simulation 0.072687902 -0.175080101 0.3204559 0.9984495  
## Sports-Simulation 0.109774142 -0.094328798 0.3138771 0.8407048  
## Racing-Simulation 0.134325331 -0.092694518 0.3613452 0.7378888  
## Role-Playing-Simulation 0.169562965 -0.049573973 0.3886999 0.3215886  
## Shooter-Simulation 0.341995633 0.117016504 0.5669748 0.0000438  
## Platform-Simulation 0.488045879 0.243148052 0.7329437 0.0000000  
## Action-Misc 0.063183591 -0.088796831 0.2151640 0.9710023  
## Fighting-Misc 0.064715843 -0.150009648 0.2794413 0.9980184  
## Sports-Misc 0.101802083 -0.060605008 0.2642092 0.6595518  
## Racing-Misc 0.126353272 -0.064056982 0.3167635 0.5724675  
## Role-Playing-Misc 0.161590906 -0.019348450 0.3425303 0.1341469  
## Shooter-Misc 0.334023574 0.146051071 0.5219961 0.0000004  
## Platform-Misc 0.480073820 0.268666633 0.6914810 0.0000000  
## Fighting-Action 0.001532251 -0.195764067 0.1988286 1.0000000  
## Sports-Action 0.038618492 -0.099927040 0.1771640 0.9990331  
## Racing-Action 0.063169680 -0.107343856 0.2336832 0.9882492  
## Role-Playing-Action 0.098407314 -0.061460918 0.2582755 0.6854088  
## Shooter-Action 0.270839983 0.103053026 0.4386269 0.0000087  
## Platform-Action 0.416890229 0.223210596 0.6105699 0.0000000  
## Sports-Fighting 0.037086241 -0.168349520 0.2425220 0.9999866  
## Racing-Fighting 0.061637429 -0.166581443 0.2898563 0.9992806  
## Role-Playing-Fighting 0.096875063 -0.123503790 0.3172539 0.9563624  
## Shooter-Fighting 0.269307732 0.043118761 0.4954967 0.0056498  
## Platform-Fighting 0.415357978 0.169348247 0.6613677 0.0000023  
## Racing-Sports 0.024551188 -0.155317877 0.2044203 0.9999993  
## Role-Playing-Sports 0.059788822 -0.110022444 0.2296001 0.9922879  
## Shooter-Sports 0.232221491 0.054935063 0.4095079 0.0011302  
## Platform-Sports 0.378271737 0.176306852 0.5802366 0.0000001  
## Role-Playing-Racing 0.035237634 -0.161525848 0.2320011 0.9999877  
## Shooter-Racing 0.207670303 0.004420508 0.4109201 0.0400248  
## Platform-Racing 0.353720549 0.128620979 0.5788201 0.0000184  
## Shooter-Role-Playing 0.172432669 -0.021972745 0.3668381 0.1411145  
## Platform-Role-Playing 0.318482915 0.101335955 0.5356299 0.0001049  
## Platform-Shooter 0.146050246 -0.076991035 0.3690915 0.5935033

#Two-way Anova  
aov2 = aov(Global\_Sales ~ Platform + Genre, data = clean\_data)  
aov3 = aov(Global\_Sales ~ Platform \* Genre, data = clean\_data)  
summary(aov2)

## Df Sum Sq Mean Sq F value Pr(>F)   
## Platform 30 1452 48.42 20.63 <2e-16 \*\*\*  
## Genre 11 345 31.40 13.38 <2e-16 \*\*\*  
## Residuals 16285 38226 2.35   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

summary(aov3)

## Df Sum Sq Mean Sq F value Pr(>F)   
## Platform 30 1452 48.42 20.808 < 2e-16 \*\*\*  
## Genre 11 345 31.40 13.493 < 2e-16 \*\*\*  
## Platform:Genre 251 918 3.66 1.571 2.59e-08 \*\*\*  
## Residuals 16034 37308 2.33   
## ---  
## Signif. codes: 0 '\*\*\*' 0.001 '\*\*' 0.01 '\*' 0.05 '.' 0.1 ' ' 1

TukeyHSD(aov2, which = "Genre", ordered = TRUE)

## Tukey multiple comparisons of means  
## 95% family-wise confidence level  
## factor levels have been ordered  
##   
## Fit: aov(formula = Global\_Sales ~ Platform + Genre, data = clean\_data)  
##   
## $Genre  
## diff lwr upr p adj  
## Strategy-Adventure 0.0707611683 -0.168034298 0.3095566 0.9983010  
## Puzzle-Adventure 0.1382476447 -0.113879586 0.3903749 0.8226857  
## Misc-Adventure 0.1985208168 0.013273807 0.3837678 0.0233946  
## Simulation-Adventure 0.2453167019 0.023689366 0.4669440 0.0156726  
## Action-Adventure 0.2573835378 0.091972880 0.4227942 0.0000239  
## Fighting-Adventure 0.2579729499 0.035156024 0.4807899 0.0085255  
## Sports-Adventure 0.2582813973 0.083536446 0.4330263 0.0000873  
## Racing-Adventure 0.3202031610 0.119939211 0.5204671 0.0000114  
## Role-Playing-Adventure 0.3747324473 0.183162511 0.5663024 0.0000000  
## Shooter-Adventure 0.5074462633 0.309425551 0.7054670 0.0000000  
## Platform-Adventure 0.6040092883 0.384287340 0.8237312 0.0000000  
## Puzzle-Strategy 0.0674864764 -0.217622691 0.3525956 0.9997972  
## Misc-Strategy 0.1277596485 -0.100353375 0.3558727 0.8012843  
## Simulation-Strategy 0.1745555336 -0.083974489 0.4330856 0.5445778  
## Action-Strategy 0.1866223695 -0.025697631 0.3989424 0.1506825  
## Fighting-Strategy 0.1872117816 -0.072338752 0.4467623 0.4354577  
## Sports-Strategy 0.1875202291 -0.032149738 0.4071902 0.1840955  
## Racing-Strategy 0.2494419927 0.008974227 0.4899098 0.0339829  
## Role-Playing-Strategy 0.3039712790 0.070694326 0.5372482 0.0012450  
## Shooter-Strategy 0.4366850950 0.198082289 0.6752879 0.0000002  
## Platform-Strategy 0.5332481200 0.276349636 0.7901466 0.0000000  
## Misc-Puzzle 0.0602731721 -0.181760746 0.3023071 0.9996681  
## Simulation-Puzzle 0.1070690573 -0.163823244 0.3779614 0.9803035  
## Action-Puzzle 0.1191358931 -0.108074689 0.3463465 0.8623122  
## Fighting-Puzzle 0.1197253052 -0.152141106 0.3915917 0.9557929  
## Sports-Puzzle 0.1200337527 -0.114059734 0.3541272 0.8793970  
## Racing-Puzzle 0.1819555163 -0.071756156 0.4356672 0.4449668  
## Role-Playing-Puzzle 0.2364848026 -0.010422069 0.4833917 0.0754362  
## Shooter-Puzzle 0.3691986186 0.117253852 0.6211434 0.0001071  
## Platform-Puzzle 0.4657616437 0.196425985 0.7350973 0.0000011  
## Simulation-Misc 0.0467958851 -0.163277799 0.2568696 0.9998884  
## Action-Misc 0.0588627210 -0.090713222 0.2084387 0.9809615  
## Fighting-Misc 0.0594521331 -0.151876188 0.2707805 0.9989465  
## Sports-Misc 0.0597605805 -0.100077071 0.2195982 0.9873392  
## Racing-Misc 0.1216823442 -0.065715432 0.3090801 0.6066058  
## Role-Playing-Misc 0.1762116305 -0.001865087 0.3542883 0.0555137  
## Shooter-Misc 0.3089254465 0.123926854 0.4939240 0.0000032  
## Platform-Misc 0.4054884715 0.197425954 0.6135510 0.0000000  
## Action-Simulation 0.0120668358 -0.180741836 0.2048755 1.0000000  
## Fighting-Simulation 0.0126562479 -0.231191821 0.2565043 1.0000000  
## Sports-Simulation 0.0129646954 -0.187909136 0.2138385 1.0000000  
## Racing-Simulation 0.0748864590 -0.148541712 0.2983146 0.9949294  
## Role-Playing-Simulation 0.1294157454 -0.086254230 0.3450857 0.7198628  
## Shooter-Simulation 0.2621295613 0.040709823 0.4835493 0.0061571  
## Platform-Simulation 0.3586925864 0.117669283 0.5997159 0.0000740  
## Fighting-Action 0.0005894121 -0.193585485 0.1947643 1.0000000  
## Sports-Action 0.0008978596 -0.135455746 0.1372515 1.0000000  
## Racing-Action 0.0628196232 -0.104996221 0.2306355 0.9872143  
## Role-Playing-Action 0.1173489095 -0.039990050 0.2746879 0.3803310  
## Shooter-Action 0.2500627255 0.084930323 0.4151951 0.0000482  
## Platform-Action 0.3466257505 0.156010320 0.5372412 0.0000002  
## Sports-Fighting 0.0003084475 -0.201877117 0.2024940 1.0000000  
## Racing-Fighting 0.0622302111 -0.162378013 0.2868384 0.9990862  
## Role-Playing-Fighting 0.1167594974 -0.100132746 0.3336517 0.8398822  
## Shooter-Fighting 0.2494733134 0.026862875 0.4720838 0.0133363  
## Platform-Fighting 0.3460363384 0.103918724 0.5881540 0.0001900  
## Racing-Sports 0.0619217636 -0.115101596 0.2389451 0.9927010  
## Role-Playing-Sports 0.1164510499 -0.050673635 0.2835757 0.4928571  
## Shooter-Sports 0.2491648659 0.074683284 0.4236464 0.0001935  
## Platform-Sports 0.3457278910 0.146958289 0.5444975 0.0000009  
## Role-Playing-Racing 0.0545292863 -0.139121203 0.2481798 0.9989374  
## Shooter-Racing 0.1872431023 -0.012791081 0.3872773 0.0922180  
## Platform-Racing 0.2838061273 0.062267854 0.5053444 0.0016942  
## Shooter-Role-Playing 0.1327138160 -0.058615912 0.3240435 0.5003595  
## Platform-Role-Playing 0.2292768410 0.015565360 0.4429883 0.0230897  
## Platform-Shooter 0.0965630251 -0.122949524 0.3160756 0.9561395

TukeyHSD(aov2, which = "Platform", ordered = TRUE)

## Tukey multiple comparisons of means  
## 95% family-wise confidence level  
## factor levels have been ordered  
##   
## Fit: aov(formula = Global\_Sales ~ Platform + Genre, data = clean\_data)  
##   
## $Platform  
## diff lwr upr p adj  
## 3DO-PCFX 0.003333333 -6.657984851 6.6646515 1.0000000  
## GG-PCFX 0.010000000 -8.148415282 8.1684153 1.0000000  
## TG16-PCFX 0.050000000 -7.015394889 7.1153949 1.0000000  
## NG-PCFX 0.090000000 -5.914431069 6.0944311 1.0000000  
## PSV-PCFX 0.119587379 -5.656280205 5.8954550 1.0000000  
## SAT-PCFX 0.164161850 -5.621357932 5.9496816 1.0000000  
## WS-PCFX 0.206666667 -6.024425930 6.4377593 1.0000000  
## PSP-PCFX 0.213700919 -5.557579068 5.9849809 1.0000000  
## PC-PCFX 0.240466596 -5.531462150 6.0123953 1.0000000  
## DC-PCFX 0.277115385 -5.546961148 6.1011919 1.0000000  
## SCD-PCFX 0.281666667 -5.949425930 6.5127593 1.0000000  
## XB-PCFX 0.283935243 -5.488526483 6.0563970 1.0000000  
## GC-PCFX 0.333726937 -5.440463217 6.1079171 1.0000000  
## DS-PCFX 0.353947492 -5.416275410 6.1241704 1.0000000  
## GBA-PCFX 0.356633785 -5.415792529 6.1290601 1.0000000  
## 3DS-PCFX 0.462560000 -5.312076759 6.2371968 1.0000000  
## WiiU-PCFX 0.542447552 -5.246558953 6.3314541 1.0000000  
## PS2-PCFX 0.549905971 -5.220320745 6.3201327 1.0000000  
## PS-PCFX 0.581766190 -5.189530004 6.3530624 1.0000000  
## XOne-PCFX 0.632253521 -5.150143342 6.4146504 1.0000000  
## N64-PCFX 0.660537975 -5.117453545 6.4385295 1.0000000  
## Wii-PCFX 0.675279070 -5.095827263 6.4463854 1.0000000  
## PS3-PCFX 0.698029141 -5.073053195 6.4691115 1.0000000  
## 2600-PCFX 0.716293103 -5.077390128 6.5099763 1.0000000  
## X360-PCFX 0.755109312 -5.016096561 6.5263152 1.0000000  
## PS4-PCFX 0.797678571 -4.979770450 6.5751276 1.0000000  
## SNES-PCFX 0.807029289 -4.973897651 6.5879562 1.0000000  
## GEN-PCFX 1.020370370 -4.854360069 6.8951008 1.0000000  
## NES-PCFX 2.531938776 -3.266290305 8.3301679 0.9991966  
## GB-PCFX 2.592886598 -3.205644371 8.3914176 0.9987769  
## GG-3DO 0.006666667 -6.654651517 6.6679849 1.0000000  
## TG16-3DO 0.046666667 -5.219567753 5.3129011 1.0000000  
## NG-3DO 0.086666667 -3.637123403 3.8104567 1.0000000  
## PSV-3DO 0.116254045 -3.226509238 3.4590173 1.0000000  
## SAT-3DO 0.160828516 -3.198585000 3.5202420 1.0000000  
## WS-3DO 0.203333333 -3.875874308 4.2825410 1.0000000  
## PSP-3DO 0.210367586 -3.124462653 3.5451978 1.0000000  
## PC-3DO 0.237133263 -3.098819595 3.5730861 1.0000000  
## DC-3DO 0.273782051 -3.151606611 3.6991707 1.0000000  
## SCD-3DO 0.278333333 -3.800874308 4.3575410 1.0000000  
## XB-3DO 0.280601910 -3.056273037 3.6174769 1.0000000  
## GC-3DO 0.330393604 -3.009470459 3.6702577 1.0000000  
## DS-3DO 0.350614158 -2.982386346 3.6836147 1.0000000  
## GBA-3DO 0.353300452 -2.983513235 3.6901141 1.0000000  
## 3DS-3DO 0.459226667 -2.881409459 3.7998628 1.0000000  
## WiiU-3DO 0.539114219 -2.826300518 3.9045290 1.0000000  
## PS2-3DO 0.546572638 -2.786434470 3.8795797 1.0000000  
## PS-3DO 0.578432857 -2.756425429 3.9132911 1.0000000  
## XOne-3DO 0.628920188 -2.725112237 3.9829526 1.0000000  
## N64-3DO 0.657204641 -2.689227194 4.0036365 1.0000000  
## Wii-3DO 0.671945736 -2.662583966 4.0064754 1.0000000  
## PS3-3DO 0.694695808 -2.639792363 4.0291840 1.0000000  
## 2600-3DO 0.712959770 -2.660493271 4.0864128 1.0000000  
## X360-3DO 0.751775978 -2.582925995 4.0864780 1.0000000  
## PS4-3DO 0.794345238 -2.551149825 4.1398403 1.0000000  
## SNES-3DO 0.803695955 -2.547801666 4.1551936 1.0000000  
## GEN-3DO 1.017037037 -2.493785910 4.5278600 0.9999999  
## NES-3DO 2.528605442 -0.852648836 5.9098597 0.5487724  
## GB-3DO 2.589553265 -0.792218672 5.9713252 0.4925812  
## TG16-GG 0.040000000 -7.025394889 7.1053949 1.0000000  
## NG-GG 0.080000000 -5.924431069 6.0844311 1.0000000  
## PSV-GG 0.109587379 -5.666280205 5.8854550 1.0000000  
## SAT-GG 0.154161850 -5.631357932 5.9396816 1.0000000  
## WS-GG 0.196666667 -6.034425930 6.4277593 1.0000000  
## PSP-GG 0.203700919 -5.567579068 5.9749809 1.0000000  
## PC-GG 0.230466596 -5.541462150 6.0023953 1.0000000  
## DC-GG 0.267115385 -5.556961148 6.0911919 1.0000000  
## SCD-GG 0.271666667 -5.959425930 6.5027593 1.0000000  
## XB-GG 0.273935243 -5.498526483 6.0463970 1.0000000  
## GC-GG 0.323726937 -5.450463217 6.0979171 1.0000000  
## DS-GG 0.343947492 -5.426275410 6.1141704 1.0000000  
## GBA-GG 0.346633785 -5.425792529 6.1190601 1.0000000  
## 3DS-GG 0.452560000 -5.322076759 6.2271968 1.0000000  
## WiiU-GG 0.532447552 -5.256558953 6.3214541 1.0000000  
## PS2-GG 0.539905971 -5.230320745 6.3101327 1.0000000  
## PS-GG 0.571766190 -5.199530004 6.3430624 1.0000000  
## XOne-GG 0.622253521 -5.160143342 6.4046504 1.0000000  
## N64-GG 0.650537975 -5.127453545 6.4285295 1.0000000  
## Wii-GG 0.665279070 -5.105827263 6.4363854 1.0000000  
## PS3-GG 0.688029141 -5.083053195 6.4591115 1.0000000  
## 2600-GG 0.706293103 -5.087390128 6.4999763 1.0000000  
## X360-GG 0.745109312 -5.026096561 6.5163152 1.0000000  
## PS4-GG 0.787678571 -4.989770450 6.5651276 1.0000000  
## SNES-GG 0.797029289 -4.983897651 6.5779562 1.0000000  
## GEN-GG 1.010370370 -4.864360069 6.8851008 1.0000000  
## NES-GG 2.521938776 -3.276290305 8.3201679 0.9992518  
## GB-GG 2.582886598 -3.215644371 8.3814176 0.9988569  
## NG-TG16 0.040000000 -4.366047830 4.4460478 1.0000000  
## PSV-TG16 0.069587379 -4.019509265 4.1586840 1.0000000  
## SAT-TG16 0.114161850 -3.988557269 4.2168810 1.0000000  
## WS-TG16 0.156666667 -4.553596593 4.8669299 1.0000000  
## PSP-TG16 0.163700919 -3.918913159 4.2463150 1.0000000  
## PC-TG16 0.190466596 -3.893064531 4.2739977 1.0000000  
## DC-TG16 0.227115385 -3.929798432 4.3840292 1.0000000  
## SCD-TG16 0.231666667 -4.478596593 4.9419299 1.0000000  
## XB-TG16 0.233935243 -3.850349199 4.3182197 1.0000000  
## GC-TG16 0.283726937 -3.802999987 4.3704539 1.0000000  
## DS-TG16 0.303947492 -3.777172129 4.3850671 1.0000000  
## GBA-TG16 0.306633785 -3.777600608 4.3908682 1.0000000  
## 3DS-TG16 0.412560000 -3.674797914 4.4999179 1.0000000  
## WiiU-TG16 0.492447552 -3.615186967 4.6000821 1.0000000  
## PS2-TG16 0.499905971 -3.581219042 4.5810310 1.0000000  
## PS-TG16 0.531766190 -3.550870798 4.6144032 1.0000000  
## XOne-TG16 0.582253521 -3.516060584 4.6805676 1.0000000  
## N64-TG16 0.610537975 -3.481558190 4.7026341 1.0000000  
## Wii-TG16 0.625279070 -3.457089523 4.7076477 1.0000000  
## PS3-TG16 0.648029141 -3.434305528 4.7303638 1.0000000  
## 2600-TG16 0.666293103 -3.447929838 4.7805160 1.0000000  
## X360-TG16 0.705109312 -3.377399995 4.7876186 1.0000000  
## PS4-TG16 0.747678571 -3.343651556 4.8390087 1.0000000  
## SNES-TG16 0.757029289 -3.339210609 4.8532692 1.0000000  
## GEN-TG16 0.970370370 -3.257220286 5.1979610 1.0000000  
## NES-TG16 2.481938776 -1.638683203 6.6025608 0.9174190  
## GB-TG16 2.542886598 -1.578160165 6.6639334 0.8942074  
## PSV-NG 0.029587379 -1.659820470 1.7189952 1.0000000  
## SAT-NG 0.074161850 -1.647956522 1.7962802 1.0000000  
## WS-NG 0.116666667 -2.767768718 3.0011021 1.0000000  
## PSP-NG 0.123700919 -1.549955327 1.7973572 1.0000000  
## PC-NG 0.150466596 -1.525425400 1.8263586 1.0000000  
## DC-NG 0.187115385 -1.660401867 2.0346326 1.0000000  
## SCD-NG 0.191666667 -2.692768718 3.0761021 1.0000000  
## XB-NG 0.193935243 -1.483791468 1.8716620 1.0000000  
## GC-NG 0.243726937 -1.439937064 1.9273909 1.0000000  
## DS-NG 0.263947492 -1.406059955 1.9339549 1.0000000  
## GBA-NG 0.266633785 -1.410971083 1.9442387 1.0000000  
## 3DS-NG 0.372560000 -1.312635014 2.0577550 1.0000000  
## WiiU-NG 0.452447552 -1.281348531 2.1862436 1.0000000  
## PS2-NG 0.459905971 -1.210114654 2.1299266 1.0000000  
## PS-NG 0.491766190 -1.181945940 2.1654783 0.9999998  
## XOne-NG 0.542253521 -1.169343983 2.2538510 0.9999990  
## N64-NG 0.570537975 -1.126117129 2.2671931 0.9999960  
## Wii-NG 0.585279070 -1.087778265 2.2583364 0.9999903  
## PS3-NG 0.608029141 -1.064945416 2.2810037 0.9999781  
## 2600-NG 0.626293103 -1.123054754 2.3756410 0.9999841  
## X360-NG 0.665109312 -1.008291346 2.3385100 0.9998635  
## PS4-NG 0.707678571 -0.987128122 2.4024853 0.9996471  
## SNES-NG 0.717029289 -0.989595689 2.4236543 0.9996038  
## GEN-NG 0.930370370 -1.071106652 2.9318474 0.9976289  
## NES-NG 2.441938776 0.677593853 4.2062837 0.0000841  
## GB-NG 2.502886598 0.737549820 4.2682234 0.0000425  
## SAT-PSV 0.044574471 -0.478058836 0.5672078 1.0000000  
## WS-PSV 0.087079288 -2.285139373 2.4592979 1.0000000  
## PSP-PSV 0.094113540 -0.235399912 0.4236270 0.9999999  
## PC-PSV 0.120879217 -0.219808129 0.4615666 0.9999869  
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## SCD-PSV 0.162079288 -2.210139373 2.5342979 1.0000000  
## XB-PSV 0.164347864 -0.185253057 0.5139488 0.9971438  
## GC-PSV 0.214139559 -0.162925897 0.5912050 0.9575147  
## DS-PSV 0.234360113 -0.076089175 0.5448094 0.5264885  
## GBA-PSV 0.237046407 -0.111969325 0.5860621 0.7554124  
## 3DS-PSV 0.342972621 -0.040871257 0.7268165 0.1708470  
## WiiU-PSV 0.422860174 -0.137052986 0.9827733 0.5254878  
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## PS-PSV 0.462178811 0.132381629 0.7919760 0.0000594  
## XOne-PSV 0.512666142 0.025819242 0.9995130 0.0245094  
## N64-PSV 0.540950596 0.109566281 0.9723349 0.0009833  
## Wii-PSV 0.555691691 0.229233834 0.8821495 0.0000001  
## PS3-PSV 0.578441762 0.252408396 0.9044751 0.0000000  
## 2600-PSV 0.596705725 -0.009653751 1.2030652 0.0611652  
## X360-PSV 0.635521933 0.307309126 0.9637347 0.0000000  
## PS4-PSV 0.678091193 0.254035046 1.1021473 0.0000008  
## SNES-PSV 0.687441910 0.218376135 1.1565077 0.0000157  
## GEN-PSV 0.900782992 -0.245238020 2.0468040 0.4305375  
## NES-PSV 2.412351397 1.763994325 3.0607085 0.0000000  
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## GC-SAT 0.169565088 -0.334191962 0.6733221 0.9999959  
## DS-SAT 0.189785642 -0.266253356 0.6458246 0.9996687  
## GBA-SAT 0.192471936 -0.290647913 0.6755918 0.9998570  
## 3DS-SAT 0.298398150 -0.210452447 0.8072487 0.9383067  
## WiiU-SAT 0.378285703 -0.273707820 1.0302792 0.9453460  
## PS2-SAT 0.385744121 -0.070343129 0.8418314 0.2687081  
## PS-SAT 0.417604340 -0.051819763 0.8870284 0.1777329  
## XOne-SAT 0.468091671 -0.122342670 1.0585260 0.4103791  
## N64-SAT 0.496376125 -0.049229259 1.0419815 0.1443332  
## Wii-SAT 0.511117220 0.044033138 0.9782013 0.0135014  
## PS3-SAT 0.533867291 0.067079799 1.0006548 0.0063144  
## 2600-SAT 0.552131254 -0.140158152 1.2444207 0.3964802  
## X360-SAT 0.590947462 0.122635116 1.0592598 0.0008539  
## PS4-SAT 0.633516722 0.093686728 1.1733467 0.0039014  
## SNES-SAT 0.642867439 0.067006772 1.2187281 0.0096713  
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## GC-WS 0.127060271 -2.241071264 2.4951918 1.0000000  
## DS-WS 0.147280825 -2.211160900 2.5057226 1.0000000  
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## 3DS-WS 0.255893333 -2.113326946 2.6251136 1.0000000  
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## Wii-WS 0.468612403 -1.891989923 2.8292147 1.0000000  
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## PS4-WS 0.591011905 -1.785054640 2.9670784 1.0000000  
## SNES-WS 0.600362622 -1.784148085 2.9848733 1.0000000  
## GEN-WS 0.813703704 -1.789992279 3.4173997 0.9999992  
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## GB-WS 2.386219931 -0.040657988 4.8130979 0.0618030  
## PC-PSP 0.026765677 -0.224419944 0.2779513 1.0000000  
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## GC-PSP 0.120026018 -0.178645550 0.4186976 0.9998306  
## DS-PSP 0.140246573 -0.068092355 0.3485855 0.7714966  
## GBA-PSP 0.142932866 -0.119437730 0.4053035 0.9747847  
## 3DS-PSP 0.248859081 -0.058325671 0.5560438 0.3606749  
## WiiU-PSP 0.328746633 -0.181673875 0.8391671 0.8416859  
## PS2-PSP 0.336205052 0.127760524 0.5446496 0.0000006  
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## XOne-PSP 0.418552602 -0.010453520 0.8475587 0.0679023  
## N64-PSP 0.446837056 0.081982597 0.8116915 0.0016457  
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## GBA-PC 0.116167189 -0.160106375 0.3924408 0.9995979  
## 3DS-PC 0.222093404 -0.097047982 0.5412348 0.7083910  
## WiiU-PC 0.301980956 -0.215723446 0.8196854 0.9419024  
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## 3DS-DC 0.185444615 -0.655124977 1.0260142 1.0000000  
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## N64-DC 0.383422590 -0.479892847 1.2467380 0.9989146  
## Wii-DC 0.398163685 -0.417799456 1.2141268 0.9948078  
## PS3-DC 0.420913756 -0.394879644 1.2367072 0.9880253  
## 2600-DC 0.439177719 -0.523575069 1.4019305 0.9982742  
## X360-DC 0.477993927 -0.338672934 1.2946608 0.9396172  
## PS4-DC 0.520563187 -0.339113922 1.3802403 0.9126798  
## SNES-DC 0.529913904 -0.352833974 1.4126618 0.9203097  
## GEN-DC 0.743254986 -0.625169391 2.1116794 0.9757533  
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## GB-DC 2.315771213 1.324262796 3.3072796 0.0000000  
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## X360-SCD 0.473442645 -1.887403020 2.8342883 1.0000000  
## PS4-SCD 0.516011905 -1.860054640 2.8920784 1.0000000  
## SNES-SCD 0.525362622 -1.859148085 2.9098733 1.0000000  
## GEN-SCD 0.738703704 -1.864992279 3.3423997 0.9999999  
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## GB-SCD 2.311219931 -0.115657988 4.7380979 0.0897695  
## GC-XB 0.049791694 -0.270905039 0.3704884 1.0000000  
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## GBA-XB 0.072698543 -0.214494805 0.3598919 1.0000000  
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## WiiU-XB 0.258512310 -0.265100891 0.7821255 0.9937771  
## PS2-XB 0.265970728 0.027033895 0.5049076 0.0101590  
## PS-XB 0.297830947 0.034327211 0.5613347 0.0077996  
## XOne-XB 0.348318278 -0.096302843 0.7929394 0.4383692  
## N64-XB 0.376602732 -0.006490553 0.7596960 0.0619489  
## Wii-XB 0.391343827 0.132031718 0.6506559 0.0000062  
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## 2600-XB 0.432357861 -0.140651608 1.0053673 0.5276442  
## X360-XB 0.471174069 0.209656031 0.7326921 0.0000000  
## PS4-XB 0.513743329 0.138921167 0.8885655 0.0001097  
## SNES-XB 0.523094046 0.098016713 0.9481714 0.0014856  
## GEN-XB 0.736435128 -0.392295220 1.8651655 0.8228540  
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## GB-XB 2.308951355 1.688841797 2.9290609 0.0000000  
## DS-GC 0.020220555 -0.257276024 0.2977171 1.0000000  
## GBA-GC 0.022906848 -0.297151853 0.3429655 1.0000000  
## 3DS-GC 0.128833063 -0.228884303 0.4865504 0.9999819  
## WiiU-GC 0.208720615 -0.333615385 0.7510566 0.9999283  
## PS2-GC 0.216179034 -0.061396836 0.4937549 0.4522961  
## PS-GC 0.248039253 -0.050945316 0.5470238 0.3085460  
## XOne-GC 0.298526584 -0.167998330 0.7650515 0.8506344  
## N64-GC 0.326811037 -0.081500141 0.7351222 0.3882309  
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## PS3-GC 0.364302204 0.069474548 0.6591299 0.0013599  
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## PS4-GC 0.463951634 0.063390520 0.8645127 0.0050037  
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## GEN-GC 0.686643433 -0.450893270 1.8241801 0.9155198  
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## GB-GC 2.259159661 1.623161691 2.8951576 0.0000000  
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## 3DS-DS 0.108612508 -0.178026842 0.3952519 0.9999478  
## WiiU-DS 0.188500061 -0.309825877 0.6868260 0.9999496  
## PS2-DS 0.195958479 0.019185274 0.3727317 0.0108975  
## PS-DS 0.227818698 0.019031306 0.4366061 0.0141419  
## XOne-DS 0.278306029 -0.136236969 0.6928490 0.7762342  
## N64-DS 0.306590483 -0.041142779 0.6543237 0.1923014  
## Wii-DS 0.321331578 0.117859895 0.5248033 0.0000013  
## PS3-DS 0.344081649 0.141291734 0.5468716 0.0000001  
## 2600-DS 0.362345612 -0.187652395 0.9123436 0.8077720  
## X360-DS 0.401161820 0.194886179 0.6074375 0.0000000  
## PS4-DS 0.443731080 0.105131598 0.7823306 0.0003494  
## SNES-DS 0.453081797 0.059573608 0.8465900 0.0055869  
## GEN-DS 0.666422879 -0.450801429 1.7836472 0.9255583  
## NES-DS 2.177991284 1.582010674 2.7739719 0.0000000  
## GB-DS 2.238939106 1.640028579 2.8378496 0.0000000  
## 3DS-GBA 0.105926215 -0.222091068 0.4339435 0.9999984  
## WiiU-GBA 0.185813767 -0.337408902 0.7090364 0.9999866  
## PS2-GBA 0.193272185 -0.044807606 0.4313520 0.3560487  
## PS-GBA 0.225132405 -0.037594442 0.4878593 0.2431921  
## XOne-GBA 0.275619736 -0.168541405 0.7197809 0.8881449  
## N64-GBA 0.303904189 -0.078655142 0.6864635 0.4056618  
## Wii-GBA 0.318645284 0.060122661 0.5771679 0.0014352  
## PS3-GBA 0.341395356 0.083408979 0.5993817 0.0002743  
## 2600-GBA 0.359659318 -0.212993307 0.9323119 0.8743560  
## X360-GBA 0.398475526 0.137740294 0.6592108 0.0000041  
## PS4-GBA 0.441044786 0.066768377 0.8153212 0.0036024  
## SNES-GBA 0.450395503 0.025799324 0.8749917 0.0219776  
## GEN-GBA 0.663736585 -0.464812649 1.7922858 0.9362544  
## NES-GBA 2.175304990 1.558355958 2.7922540 0.0000000  
## GB-GBA 2.236252812 1.616472980 2.8560326 0.0000000  
## WiiU-3DS 0.079887552 -0.467182921 0.6269580 1.0000000  
## PS2-3DS 0.087345971 -0.199370142 0.3740621 0.9999996  
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## XOne-3DS 0.169693521 -0.302326882 0.6417139 0.9999826  
## N64-3DS 0.197977975 -0.216601070 0.6125570 0.9963133  
## Wii-3DS 0.212719070 -0.091185666 0.5166238 0.6965687  
## PS3-3DS 0.235469141 -0.067979557 0.5389178 0.4609527  
## 2600-3DS 0.253733103 -0.340787855 0.8482541 0.9994701  
## X360-3DS 0.292549312 -0.013239836 0.5983385 0.0852852  
## PS4-3DS 0.335118571 -0.071829794 0.7420669 0.3244459  
## SNES-3DS 0.344469289 -0.109189237 0.7981278 0.5126506  
## GEN-3DS 0.557810370 -0.581991155 1.6976119 0.9945665  
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## GB-3DS 2.130326598 1.490286613 2.7703666 0.0000000  
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## XOne-WiiU 0.089805969 -0.533868533 0.7134805 1.0000000  
## N64-WiiU 0.118090422 -0.463323722 0.6995046 1.0000000  
## Wii-WiiU 0.132831517 -0.375621737 0.6412848 1.0000000  
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## 2600-WiiU 0.173845551 -0.547002418 0.8946935 1.0000000  
## X360-WiiU 0.212661759 -0.296920056 0.7222436 0.9996508  
## PS4-WiiU 0.255231019 -0.320766894 0.8312289 0.9989576  
## SNES-WiiU 0.264581736 -0.345313895 0.8744774 0.9992862  
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## GB-WiiU 2.050439045 1.291612447 2.8092656 0.0000000  
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## XOne-PS2 0.082347550 -0.332248531 0.4969436 1.0000000  
## N64-PS2 0.110632004 -0.237164536 0.4584285 0.9999989  
## Wii-PS2 0.125373099 -0.078206709 0.3289529 0.8962519  
## PS3-PS2 0.148123170 -0.054775233 0.3510216 0.6047673  
## 2600-PS2 0.166387133 -0.383650884 0.7164251 0.9999996  
## X360-PS2 0.205203341 -0.001178956 0.4115856 0.0537867  
## PS4-PS2 0.247772601 -0.090891867 0.5864371 0.5998165  
## SNES-PS2 0.257123318 -0.136440790 0.6506874 0.8208211  
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## GB-PS2 2.042980627 1.444033357 2.6419279 0.0000000  
## XOne-PS 0.050487331 -0.378736759 0.4797114 1.0000000  
## N64-PS 0.078771785 -0.286338941 0.4438825 1.0000000  
## Wii-PS 0.093512880 -0.138409838 0.3254356 0.9998192  
## PS3-PS 0.116262951 -0.115061866 0.3475878 0.9918457  
## 2600-PS 0.134526913 -0.426619439 0.6956733 1.0000000  
## X360-PS 0.173343122 -0.061043442 0.4077297 0.5748446  
## PS4-PS 0.215912381 -0.140510163 0.5723349 0.9123139  
## SNES-PS 0.225263099 -0.183682027 0.6342082 0.9709084  
## GEN-PS 0.438604180 -0.684150278 1.5613586 0.9999031  
## NES-PS 1.950172585 1.343888570 2.5564566 0.0000000  
## GB-PS 2.011120408 1.401956029 2.6202848 0.0000000  
## N64-XOne 0.028284454 -0.483144491 0.5397134 1.0000000  
## Wii-XOne 0.043025549 -0.383638101 0.4696892 1.0000000  
## PS3-XOne 0.065775620 -0.360563322 0.4921146 1.0000000  
## 2600-XOne 0.084039582 -0.581647245 0.7497264 1.0000000  
## X360-XOne 0.122855791 -0.305152135 0.5508637 0.9999999  
## PS4-XOne 0.165425050 -0.339838003 0.6706881 0.9999978  
## SNES-XOne 0.174775768 -0.368814003 0.7183655 0.9999985  
## GEN-XOne 0.388116849 -0.790370018 1.5666037 0.9999975  
## NES-XOne 1.899685254 1.195530420 2.6038401 0.0000000  
## GB-XOne 1.960633077 1.253996704 2.6672694 0.0000000  
## Wii-N64 0.014741095 -0.347356120 0.3768383 1.0000000  
## PS3-N64 0.037491166 -0.324223385 0.3992057 1.0000000  
## 2600-N64 0.055755129 -0.570512765 0.6820230 1.0000000  
## X360-N64 0.094571337 -0.269108890 0.4582516 1.0000000  
## PS4-N64 0.137140597 -0.314924970 0.5892062 0.9999996  
## SNES-N64 0.146491314 -0.348041154 0.6410238 0.9999998  
## GEN-N64 0.359832396 -0.796845529 1.5165103 0.9999993  
## NES-N64 1.871400801 1.204387642 2.5384140 0.0000000  
## GB-N64 1.932348623 1.262716271 2.6019810 0.0000000  
## PS3-Wii 0.022750071 -0.203788494 0.2492886 1.0000000  
## 2600-Wii 0.041014034 -0.518176255 0.6002043 1.0000000  
## X360-Wii 0.079830242 -0.149833887 0.3094944 0.9999916  
## PS4-Wii 0.122399502 -0.230935440 0.4757344 0.9999922  
## SNES-Wii 0.131750219 -0.274506678 0.5380071 0.9999982  
## GEN-Wii 0.345091301 -0.776686808 1.4668694 0.9999995  
## NES-Wii 1.856659706 1.252185671 2.4611337 0.0000000  
## GB-Wii 1.917607528 1.310244546 2.5249705 0.0000000  
## 2600-PS3 0.018263962 -0.540678614 0.5772065 1.0000000  
## X360-PS3 0.057080171 -0.171980162 0.2861405 1.0000000  
## PS4-PS3 0.099649430 -0.253293348 0.4525922 0.9999999  
## SNES-PS3 0.109000148 -0.296915719 0.5149160 1.0000000  
## GEN-PS3 0.322341229 -0.799313419 1.4439959 0.9999999  
## NES-PS3 1.833909634 1.229664748 2.4381545 0.0000000  
## GB-PS3 1.894857457 1.287722533 2.5019924 0.0000000  
## X360-2600 0.038816208 -0.521400441 0.5990329 1.0000000  
## PS4-2600 0.081385468 -0.539857369 0.7026283 1.0000000  
## SNES-2600 0.090736185 -0.562059149 0.7435315 1.0000000  
## GEN-2600 0.304077267 -0.928595929 1.5367505 1.0000000  
## NES-2600 1.815645672 1.024137024 2.6071543 0.0000000  
## GB-2600 1.876593494 1.082876370 2.6703106 0.0000000  
## PS4-X360 0.042569260 -0.312387773 0.3975263 1.0000000  
## SNES-X360 0.051919977 -0.355748492 0.4595884 1.0000000  
## GEN-X360 0.265261059 -0.857029028 1.3875511 1.0000000  
## NES-X360 1.776829464 1.171405833 2.3822531 0.0000000  
## GB-X360 1.837777286 1.229469218 2.4460854 0.0000000  
## SNES-PS4 0.009350717 -0.478802486 0.4975039 1.0000000  
## GEN-PS4 0.222691799 -0.931273109 1.3766567 1.0000000  
## NES-PS4 1.734260204 1.071962883 2.3965575 0.0000000  
## GB-PS4 1.795208027 1.130272936 2.4601431 0.0000000  
## GEN-SNES 0.213341082 -0.957912134 1.3845943 1.0000000  
## NES-SNES 1.724909487 1.032929120 2.4168899 0.0000000  
## GB-SNES 1.785857309 1.091351902 2.4803627 0.0000000  
## NES-GEN 1.511568405 0.257703067 2.7654337 0.0022868  
## GB-GEN 1.572516228 0.317255610 2.8277768 0.0010054  
## GB-NES 0.060947822 -0.765297875 0.8871935 1.0000000