Experiment 2

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Introduction and Basics of SAS

The dataset used here is a shoes dataset with variables and attributes as Stores, Regions, Products, Sales, Inventory, Returns and Subsidiary

Analysis of variance method is used here between the variables to make insights out of the given data

SAS Code:

```
1  PROC SQL;
2  CREATE TABLE WORK.query AS
3  SELECT Region , Product , 'Stores'n , Subsidiary , Sales , Inventory , 'Returns'n FROM SASHELP.SHOES;
4  RUN;
5  QUIT;
6
7  PROC DATASETS NOLIST NODETAILS;
8  CONTENTS DATA=WORK.query OUT=WORK.details;
9  RUN;
10
11 PROC ANOVA DATA = WORK.query;
12 CLASS Sales;
13 MODEL Stores = Sales;
14 MEANS Sales / tukey lines;
15 RUN;
16
17
18 PROC PRINT DATA=WORK.details;
19 RUN;
```

.

DATA:

CODE   LOG   RESULTS   OUTPUT DATA

Table: WORK.QUERY ▼ | View: Column names ▼ | Filter: (none)

Columns ⊙   Total rows: 395 Total columns: 7   Rows 1-100

		Region	Product	Stores	Subsidiary	Sales	Inventory	Returns
☑	Select all							
☑	Region	1	Africa	Boot	12	Addis Ababa	$29,761	$191,821	$769
☑	Product	2	Africa	Men's Casual	4	Addis Ababa	$67,242	$118,036	$2,284
☑	Stores	3	Africa	Men's Dress	7	Addis Ababa	$76,793	$136,273	$2,433
☑	Subsidiary	4	Africa	Sandal	10	Addis Ababa	$62,819	$204,284	$1,861
		5	Africa	Slipper	14	Addis Ababa	$68,641	$279,795	$1,771
☑	Sales	6	Africa	Sport Shoe	4	Addis Ababa	$1,690	$16,634	$79
☑	Inventory	7	Africa	Women's Casual	2	Addis Ababa	$51,541	$98,641	$940
☑	Returns	8	Africa	Women's Dress	12	Addis Ababa	$108,942	$311,017	$3,233
		9	Africa	Boot	21	Algiers	$21,297	$73,737	$710
		10	Africa	Men's Casual	4	Algiers	$63,206	$100,982	$2,221
		11	Africa	Men's Dress	13	Algiers	$123,743	$428,575	$3,621
		12	Africa	Sandal	25	Algiers	$29,198	$84,447	$1,530
		13	Africa	Slipper	17	Algiers	$64,891	$248,198	$1,823
		14	Africa	Sport Shoe	9	Algiers	$2,617	$9,372	$168
		15	Africa	Women's Dress	12	Algiers	$90,648	$266,805	$2,690
		16	Africa	Boot	20	Cairo	$4,846	$18,965	$229
		17	Africa	Men's Casual	25	Cairo	$360,209	$1,063,251	$9,424
		18	Africa	Men's Dress	5	Cairo	$4,051	$45,962	$97
		19	Africa	Sandal	9	Cairo	$10,532	$50,430	$598

Property	Value
Label	
Name	
Length	
Type	
Format	
Informat	

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OUTPUT:

▸ Table of Contents

The DATASETS Procedure				
Data Set Name	WORK.QUERY		**Observations**	395
Member Type	DATA		**Variables**	7
Engine	V9		**Indexes**	0
Created	11/18/2022 11:46:53		**Observation Length**	88
Last Modified	11/18/2022 11:46:53		**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)			

Engine/Host Dependent Information	
Data Set Page Size	131072
Number of Data Set Pages	1
First Data Page	1
Max Obs per Page	1486
Obs in First Data Page	395
Number of Data Set Repairs	0
Filename	/saswork/SAS_work6BCC0001FD60_odaws01-apse1.oda.sas.com/SAS_workF0D90001FD60_odaws01-apse1.oda.sas.com/query.sas7bdat
Release Created	9.0401M6
Host Created	Linux
Inode Number	1631585
Access Permission	rw-r--r--
Owner Name	u62333431
File Size	256KB
File Size (bytes)	262144

Alphabetic List of Variables and Attributes

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Below is the table for the list of variable and attributes

▸ Table of Contents

Alphabetic List of Variables and Attributes						
#	**Variable**	**Type**	**Len**	**Format**	**Informat**	**Label**
6	Inventory	Num	8	DOLLAR12.	DOLLAR12.	Total Inventory
2	Product	Char	14			
1	Region	Char	25			
7	Returns	Num	8	DOLLAR12.	DOLLAR12.	Total Returns
5	Sales	Num	8	DOLLAR12.	DOLLAR12.	Total Sales
3	Stores	Num	8			Number of Stores
4	Subsidiary	Char	12			

The ANOVA Procedure

Class Level Information

Class	Levels	Values
Sales	392	$325 $449 $450 $554 $601 $712 $736 $737 $801 $936 $937 $977 $1,093 $1,155 $1,179 $1,190 $1,249 $1,380 $1,487 $1,520 $1,650 $1,663 $1,690 $1,716 $1,814 $1,927 $1,996 $2,071 $2,177 $2,196 $2,202 $2,259 $2,281 $2,427 $2,521 $2,598 $2,600 $2,617 $2,886 $3,002 $3,019 $3,033 $3,230 $3,449 $3,545 $3,551 $4,051 $4,130 $4,184 $4,231 $4,659 $4,729 $4,846 $4,888 $4,892 $4,978 $5,117 $5,120 $5,172 $5,217 $5,389 $5,655 $5,676 $5,709 $6,081 $6,110 $6,596 $7,892 $8,095 $8,365 $8,467 $8,587 $9,165 $9,244 $9,745 $9,969 $10,532 $11,145 $11,385 $11,754 $11,759 $11,975 $12,127 $12,211 $12,343 $12,415 $12,601 $12,775 $13,732 $13,921 $14,095 $14,437 $14,907 $15,032 $15,062 $15,312 $15,403 $15,470 $15,759 $15,897 $15,908 $15,951 $16,019 $16,282 $16,289 $16,307 $16,314 $16,460 $16,662 $17,027 $17,252 $17,337 $17,347 $17,492 $17,720 $17,919 $18,053 $18,151 $18,153 $18,177 $18,189 $18,712 $18,761 $18,765 $19,146 $19,196 $19,210 $19,282 $19,582 $19,686 $19,964 $20,141 $20,448 $20,835 $21,261 $21,297 $21,434 $21,436 $21,466 $22,060 $22,190 $22,712 $22,973 $23,117 $23,260 $23,708 $24,497 $24,733 $24,940 $25,796 $26,427 $26,888 $27,728 $27,742 $28,249 $28,515 $28,761 $29,069 $29,198 $29,435 $29,570 $29,582 $29,761 $30,157 $30,408 $30,619 $30,905 $31,301 $31,503 $32,640 $32,892 $32,928 $33,000 $33,291 $33,662 $33,723 $33,824 $34,585 $34,660 $34,955 $35,393 $36,110 $36,244 $36,309 $36,612 $37,187 $37,271 $37,499 $37,519 $38,492 $38,791 $38,912 $38,961 $39,360 $39,452 $40,056 $40,213 $41,341 $41,939 $42,442 $42,654 $42,682 $42,760 $43,452 $44,121 $44,720 $44,909 $45,566 $48,031 $48,260 $48,567 $49,880 $50,146 $51,541 $52,022 $52,233 $52,807 $52,968 $53,703 $53,929 $53,940 $54,449 $54,768 $54,791 $55,094 $55,667 $57,691 $60,515 $60,712 $61,108 $62,661 $62,819 $62,893 $63,206 $63,238 $63,492 $63,697 $64,026 $64,891 $65,248 $65,478 $65,610 $65,842 $66,216 $66,796 $66,936 $67,242 $67,476 $68,387 $68,482 $68,641 $68,962 $69,276 $69,470 $69,553 $70,790 $71,014 $71,618 $71,736 $72,671 $74,102 $76,349 $76,793 $78,234 $78,992 $80,352 $80,525 $82,483 $82,695 $83,212 $85,168 $85,932 $86,215 $89,416 $90,648 $90,972 $90,975 $91,243 $92,539 $96,113 $97,151 $98,866 $101,922 $102,372 $102,448 $104,119 $104,420 $106,657 $106,676 $108,906 $108,936 $108,942 $109,110 $109,808 $110,760 $111,396 $111,816 $111,940 $112,009 $113,119 $116,333 $122,546 $123,743 $124,203 $125,763 $127,033 $128,309 $128,497 $128,971 $131,079 $131,794 $131,813 $132,397 $132,638 $132,853 $133,405 $135,305 $135,371 $140,189 $141,287 $141,878 $144,151 $144,302 $147,670 $148,129 $149,013 $149,354 $150,273 $151,402 $151,458 $155,255 $161,679 $167,780 $170,694 $171,735 $172,002 $172,021 $175,694 $177,010 $178,842 $186,631 $191,755 $200,156 $203,532 $208,004 $215,069 $217,891 $224,168 $226,514 $229,372 $233,374 $235,842 $241,820 $243,342 $245,757 $252,758 $253,814 $261,445 $261,607 $263,712 $270,863 $286,497 $288,904 $298,972 $293,313 $304,093 $304,106 $311,341 $324,312 $328,474 $329,235 $340,201 $353,361 $360,209 $373,908 $375,817 $387,680 $408,978 $419,336 $434,496 $435,891 $456,985 $476,638 $502,636 $576,112 $700,513 $756,347 $757,798 $1,298,717

Number of Observations Read	395
Number of Observations Used	395

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Number of Observations Read	395
Number of Observations Used	395

The ANOVA Procedure

Dependent Variable: Stores Number of Stores

Source	DF	Sum of Squares	Mean Square	F Value	Pr > F
Model	391	30991.08608	79.26109	7.21	0.0632
Error	3	33.00000	11.00000		
Corrected Total	394	31024.08608			

R-Square	Coeff Var	Root MSE	Stores Mean
0.998936	28.47352	3.316625	11.64810

Source	DF	Anova SS	Mean Square	F Value	Pr > F
Sales	391	30991.08608	79.26109	7.21	0.0632

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Number of observations were 395 in the dataset. We can see the Analysis of variance for the dataset above.

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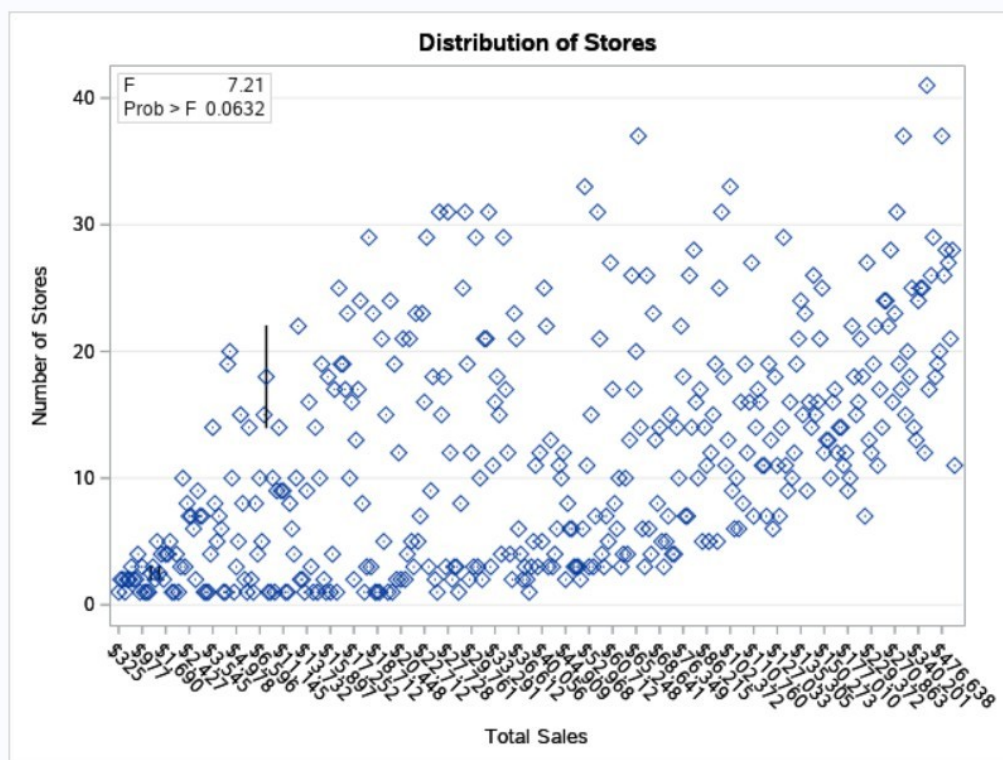
Above graphs depicts the number of stores vs total sales. The total sales are less when the number of stores are also less. We see the average sales peak at around 25 stores

The ANOVA Procedure

Tukey's Studentized Range (HSD) Test for Stores

Note: This test controls the Type I experimentwise error rate, but it generally has a higher Type II error rate than REGWQ.

Alpha	0.05
Error Degrees of Freedom	3
Error Mean Square	11
Critical Value of Studentized Range	17.41272
Minimum Significant Difference	57.641
Harmonic Mean of Cell Sizes	1.003841

Note: Cell sizes are not equal.

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