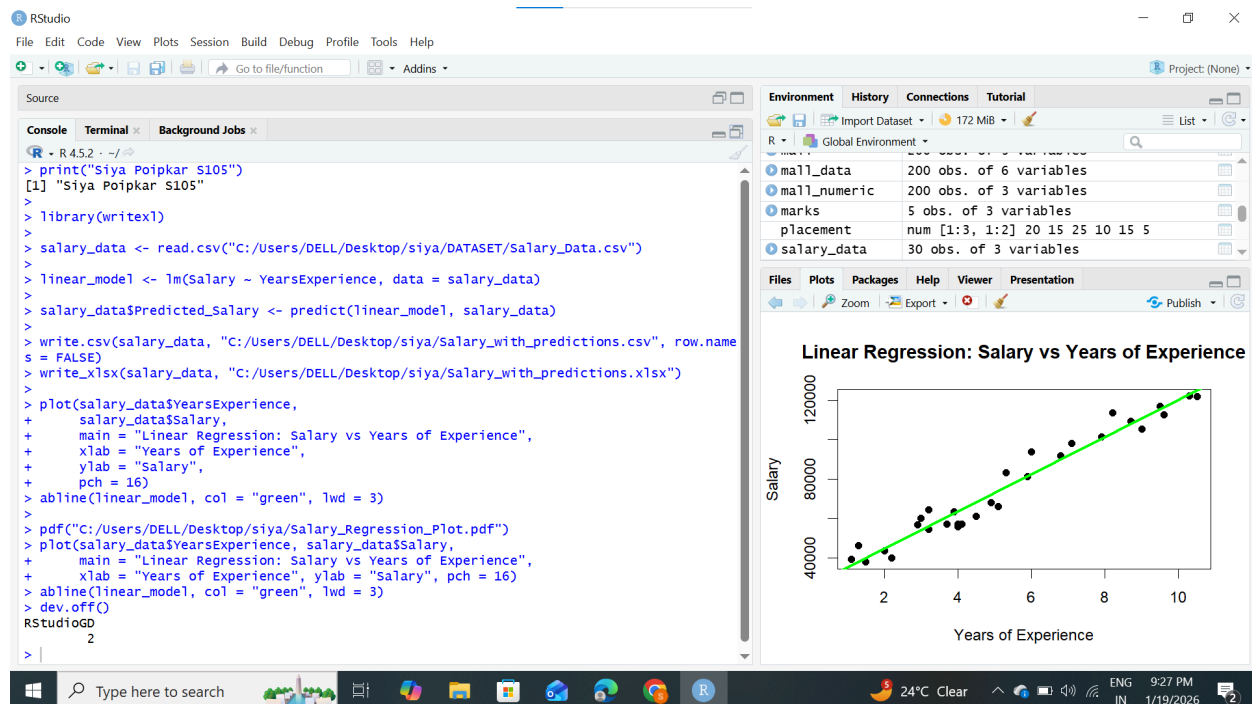


MVLU COLLEGE

PRACTICAL NO. 13 TO 15

AIM:13 Performing linear regression analysis using `lm()` (R).

```
print("Siya Poipkar S105")
library(writexl)
salary_data <- read.csv("C:/Users/DELL/Desktop/siya/DATASET/Salary_Data.csv")
linear_model <- lm(Salary ~ YearsExperience, data = salary_data)
salary_data$Predicted_Salary <- predict(linear_model, salary_data)
write.csv(salary_data, "C:/Users/DELL/Desktop/siya/Salary_with_predictions.csv", row.names = FALSE)
write_xlsx(salary_data, "C:/Users/DELL/Desktop/siya/Salary_with_predictions.xlsx")
plot(salary_data$YearsExperience,
     salary_data$Salary,
     main = "Linear Regression: Salary vs Years of Experience",
     xlab = "Years of Experience",
     ylab = "Salary",
     pch = 16)
abline(linear_model, col = "green", lwd = 3)
pdf("C:/Users/DELL/Desktop/siya/Salary_Regression_Plot.pdf")
plot(salary_data$YearsExperience, salary_data$Salary,
     main = "Linear Regression: Salary vs Years of Experience",
     xlab = "Years of Experience", ylab = "Salary", pch = 16)
abline(linear_model, col = "green", lwd = 3)
dev.off()
```



SIYA POIPKAR S105

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PRACTICAL NO. 13 TO 15

AIM:14 Performing logistic regression using glm() (R).

```
print ("Siya Poipkar S105")
diabetes_data <- read.csv("C:/Users/DELL/Desktop/siya/DATASET/diabetes-data.csv")
str(diabetes_data)
names(diabetes_data)
logistic_model <- glm(Outcome ~ Glucose,
                      family = binomial,
                      data = diabetes_data)

summary(logistic_model)

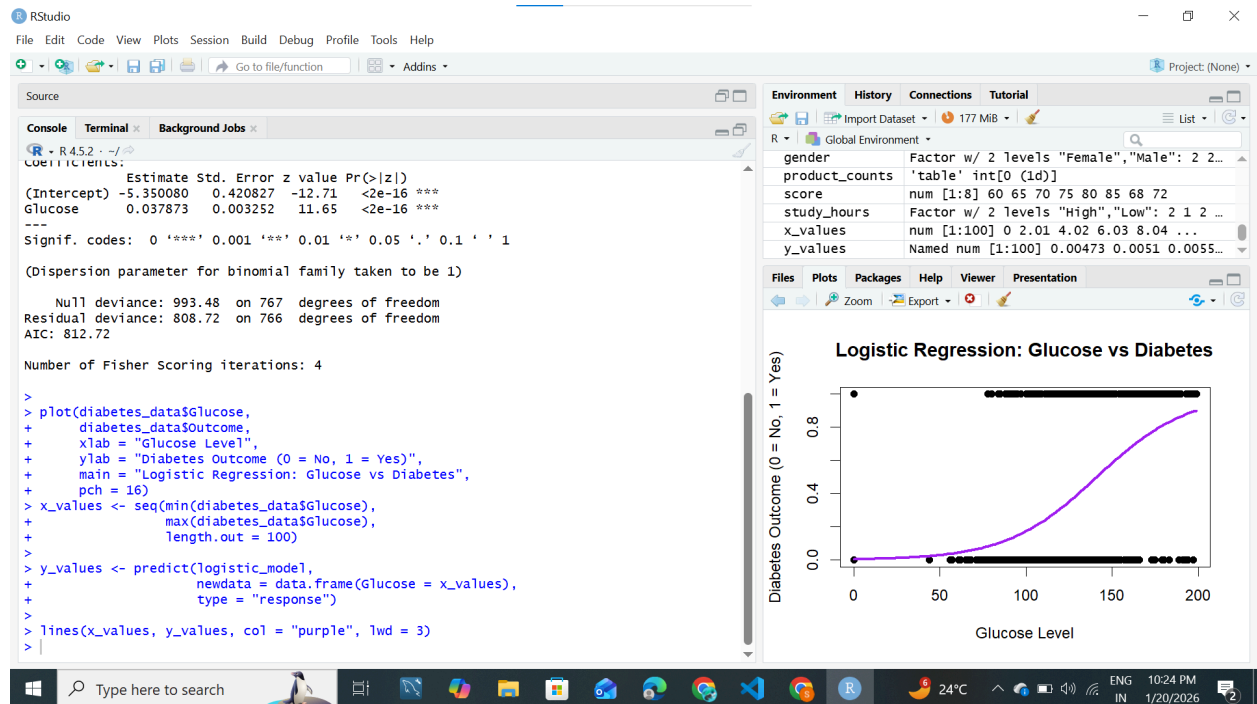
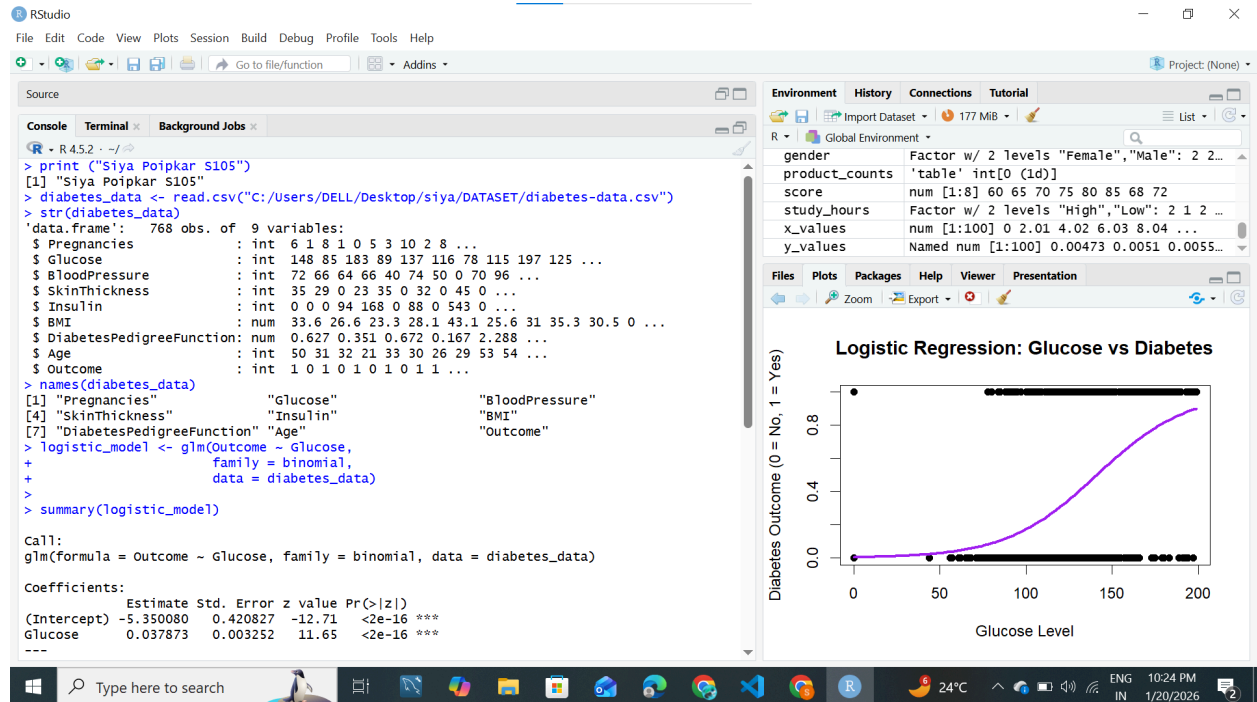
plot(diabetes_data$Glucose,
     diabetes_data$Outcome,
     xlab = "Glucose Level",
     ylab = "Diabetes Outcome (0 = No, 1 = Yes)",
     main = "Logistic Regression: Glucose vs Diabetes",
     pch = 16)
x_values <- seq(min(diabetes_data$Glucose),
                max(diabetes_data$Glucose),
                length.out = 100)

y_values <- predict(logistic_model,
                    newdata = data.frame(Glucose = x_values),
                    type = "response")

lines(x_values, y_values, col = "purple", lwd = 3)
```

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PRACTICAL NO. 13 TO 15



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AIM:15 Exporting results into external files (Excel, CSV, PDF) using write.csv() and writexl (R).

```
print("Siya Poipkar S105")
```

```
install.packages("writexl")  
library(writexl)
```

```
salary_data <- read.csv("C:/Users/DELL/Desktop/siya/DATASET/Salary_Data.csv")
```

```
linear_model <- lm(Salary ~ YearsExperience, data = salary_data)
```

```
salary_data$Predicted_Salary <- predict(linear_model, salary_data)
```

```
write.csv(salary_data,  
          "C:/Users/DELL/Desktop/siya/Salary_with_predictions.csv",  
          row.names = FALSE)
```

```
write_xlsx(salary_data,  
           "C:/Users/DELL/Desktop/siya/Salary_with_predictions.xlsx")
```

```
pdf("C:/Users/DELL/Desktop/siya/Salary_Regression_Plot.pdf")
```

```
plot(salary_data$YearsExperience,  
     salary_data$Salary,  
     main = "Linear Regression: Salary vs Years of Experience",  
     xlab = "Years of Experience",  
     ylab = "Salary",  
     pch = 16,  
     col = "blue")
```

```
abline(linear_model, col = "green", lwd = 3)
```

```
dev.off()
```

```
print("Siya Poipkar S105")
```

```
diabetes_data <- read.csv("C:/Users/DELL/Desktop/siya/DATASET/diabetes-data.csv")
```

```
str(diabetes_data)  
names(diabetes_data)
```

```
logistic_model <- glm(Outcome ~ Glucose,  
                      family = binomial,
```

SIYA POIPKAR S105

MVLU COLLEGE

PRACTICAL NO. 13 TO 15

```
data = diabetes_data)

summary(logistic_model)

diabetes_data$Predicted_Prob <- predict(logistic_model,
                                         diabetes_data,
                                         type = "response")

write.csv(diabetes_data,
          "C:/Users/DELL/Desktop/siya/Diabetes_with_predictions.csv",
          row.names = FALSE)

write_xlsx(diabetes_data,
           "C:/Users/DELL/Desktop/siya/Diabetes_with_predictions.xlsx")

x_values <- seq(min(diabetes_data$Glucose),
                max(diabetes_data$Glucose),
                length.out = 100)

y_values <- predict(logistic_model,
                    newdata = data.frame(Glucose = x_values),
                    type = "response")

pdf("C:/Users/DELL/Desktop/siya/Diabetes_Logistic_Regression_Plot.pdf")

plot(diabetes_data$Glucose,
     diabetes_data$Outcome,
     xlab = "Glucose Level",
     ylab = "Diabetes Outcome (0 = No, 1 = Yes)",
     main = "Logistic Regression: Glucose vs Diabetes",
     pch = 16,
     col = "blue")

lines(x_values, y_values, col = "purple", lwd = 3)

abline(h = 0.5, col = "red", lty = 2)
```

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PRACTICAL NO. 13 TO 15

dev.off()

RStudio

File Edit Code View Plots Session Build Debug Profile Tools Help

Source

Console

```
R - R 4.5.2 - ~/
> print("Siya Poipkar S105")
[1] "Siya Poipkar S105"
> install.packages("writex1")
Restarting R session...
> install.packages("writex1")
WARNING: Rtools is required to build R packages but is not currently installed. Please download and install the appropriate version of Rtools before proceeding:
https://cran.rstudio.com/bin/windows/Rtools/
Installing package into 'C:/Users/DELL/AppData/Local/R/win-library/4.5'
(as 'lib' is unspecified)
trying URL 'https://cran.rstudio.com/bin/windows/contrib/4.5/writex1_1.5.4.zip'
Content type 'application/zip' length 198391 bytes (193 KB)
downloaded 193 KB
package 'writex1' successfully unpacked and MD5 sums checked
The downloaded binary packages are in
C:/Users/DELL/AppData/Local/Temp/RtmpEUGgit/downloaded_packages
> print("Siya Poipkar S105")
[1] "Siya Poipkar S105"
> install.packages("writex1")
WARNING: Rtools is required to build R packages but is not currently installed. Please download and install the appropriate version of Rtools before proceeding:
https://cran.rstudio.com/bin/windows/Rtools/
```

Environment

History

Connections

Tutorial

logistic_model Large glm (30 elements, 596.9 kB)

ma11 200 obs. of 5 variables

ma11_data 200 obs. of 6 variables

ma11_numeric 200 obs. of 3 variables

marks 5 obs. of 3 variables

placement num [1:3 1:21 20 15 25 10 15 5]

Files

Plots

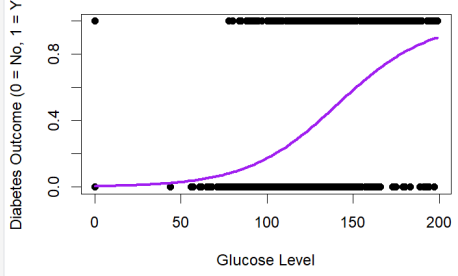
Packages

Help

Viewer

Presentation

Logistic Regression: Glucose vs Diabetes



RStudio

File Edit Code View Plots Session Build Debug Profile Tools Help

Source

```
R - R 4.5.2 - ~/
Content type 'application/zip' length 198391 bytes (193 KB)
downloaded 193 KB
package 'writex1' successfully unpacked and MD5 sums checked
The downloaded binary packages are in
C:/Users/DELL/AppData/Local/Temp/RtmpEUGgit/downloaded_packages
> library(writex1)
> salary_data <- read.csv("C:/Users/DELL/Desktop/siya/DATASET/Salary_Data.csv")
> linear_model <- lm(Salary ~ YearsExperience, data = salary_data)
> salary_data$Predicted_Salary <- predict(linear_model, salary_data)
> write.csv(salary_data,
+ "C:/Users/DELL/Desktop/siya/Salary_with_predictions.csv",
+ row.names = FALSE)
> write_xlsx(salary_data,
+ "C:/Users/DELL/Desktop/siya/Salary_with_predictions.xlsx")
> pdf("C:/Users/DELL/Desktop/siya/Salary_Regression_Plot.pdf")
> plot(salary_data$YearsExperience,
+ salary_data$Salary,
+ main = "Linear Regression: Salary vs Years of Experience",
+ xlab = "Years of Experience",
+ ylab = "Salary",
+ pch = 16,
+ col = "blue")
```

Environment

History

Connections

Tutorial

logistic_model Large glm (30 elements, 596.9 kB)

ma11 200 obs. of 5 variables

ma11_data 200 obs. of 6 variables

ma11_numeric 200 obs. of 3 variables

marks 5 obs. of 3 variables

placement num [1:3 1:21 20 15 25 10 15 5]

Files

Plots

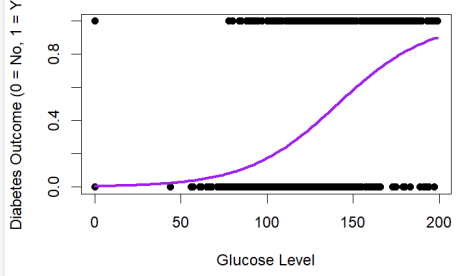
Packages

Help

Viewer

Presentation

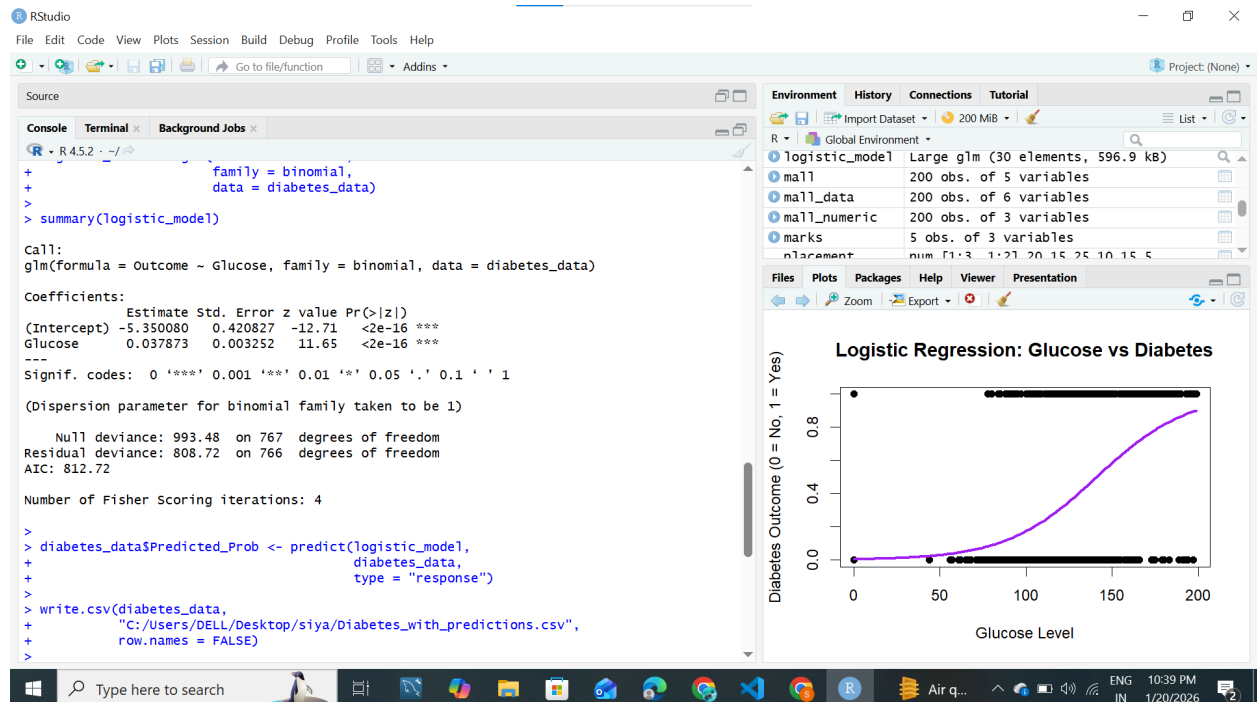
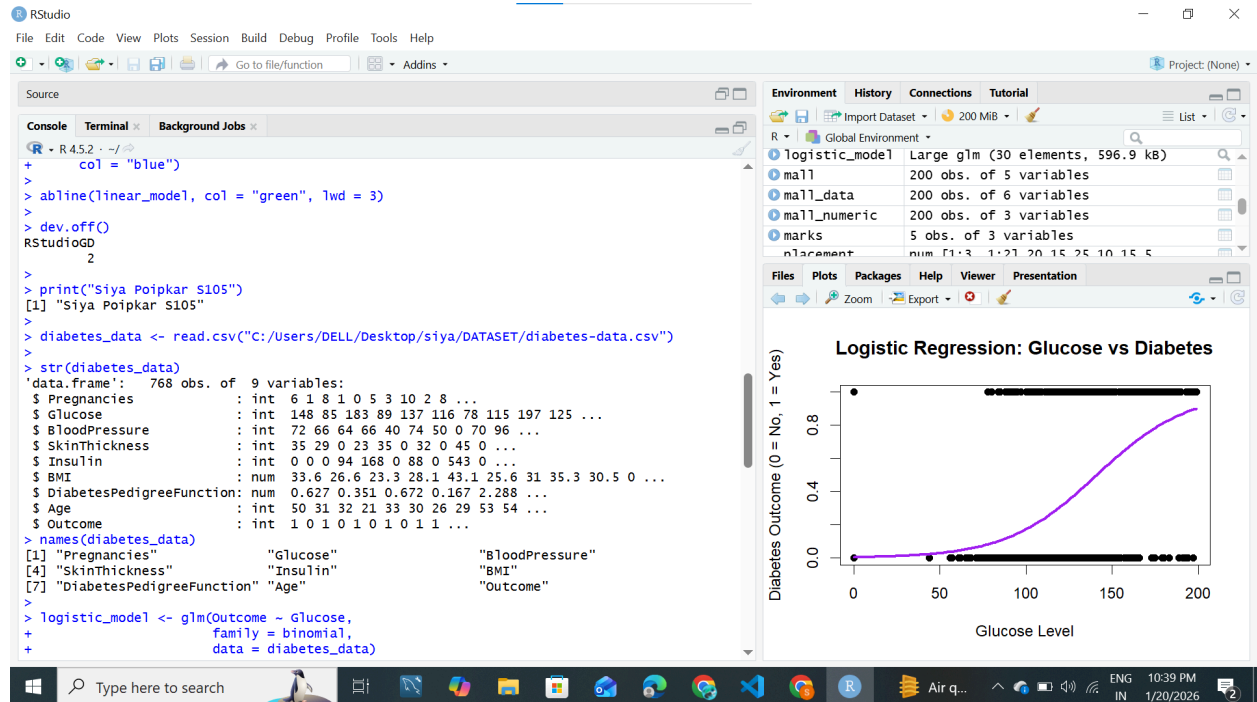
Logistic Regression: Glucose vs Diabetes



SIYA POIPKAR S105

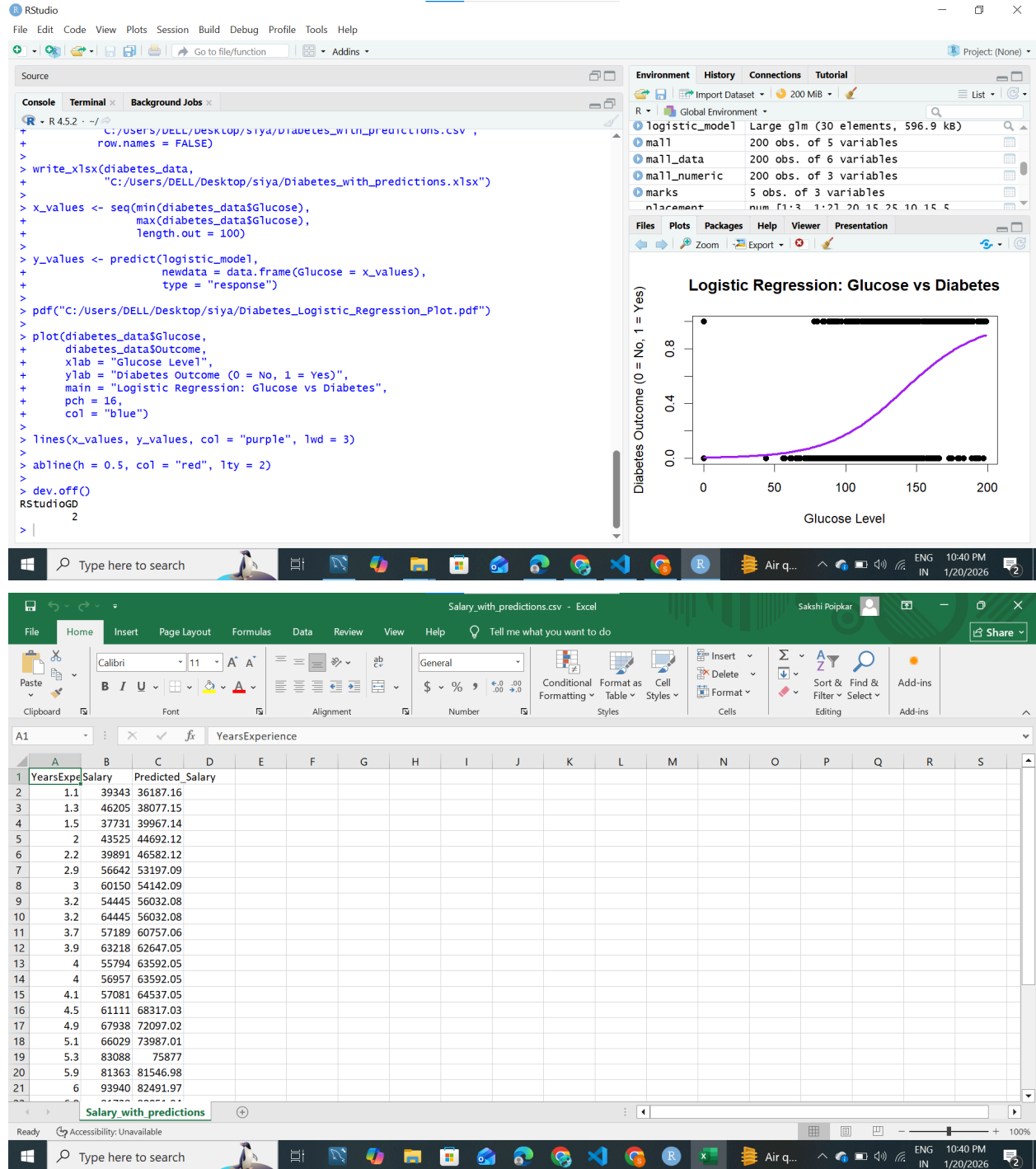
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Salary_with_predictions.xlsx - Excel

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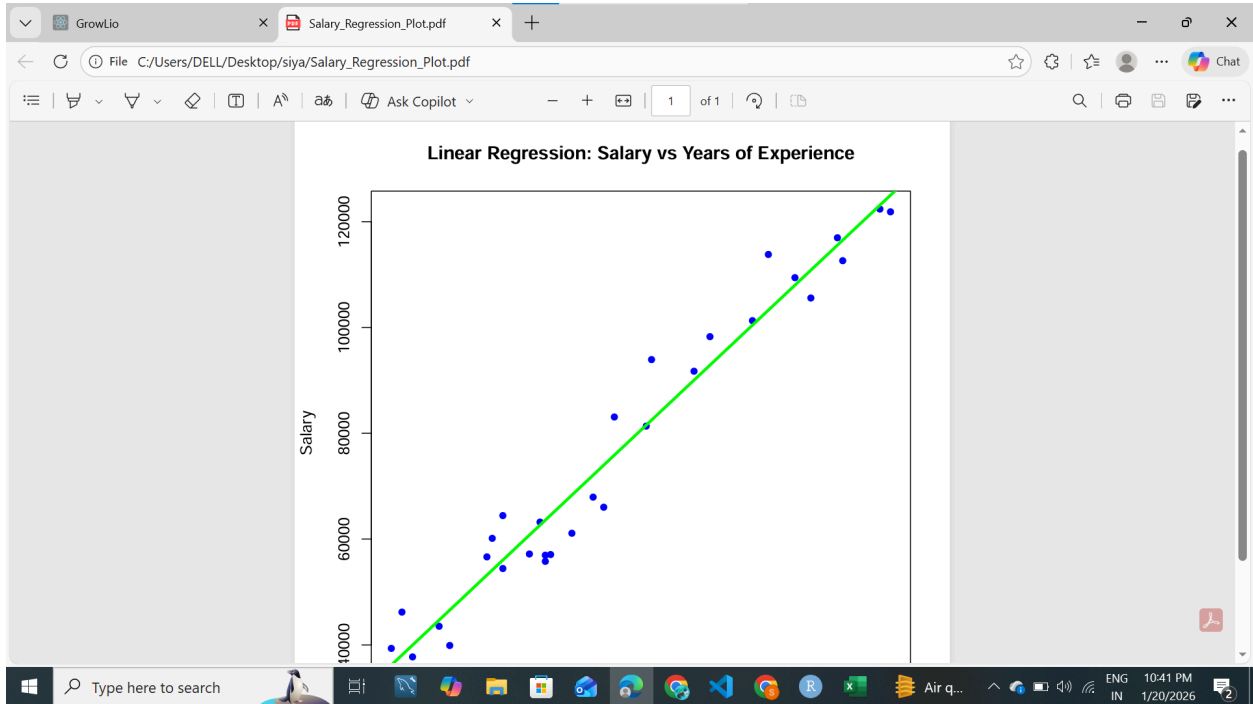
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A1 YearsExperience

YearsExperience	Salary	dicted_Salary
1.1	39343	36187.16
1.3	46205	38077.15
1.5	37731	39967.14
2	43525	44692.12
2.2	39891	46582.12
2.9	56642	53197.09
3	60150	54142.09
3.2	54445	56032.08
3.2	64445	56032.08
3.7	57189	60757.06
3.9	63218	62647.05
4	55794	63592.05
4	56957	63592.05
4.1	57081	64537.05
4.5	61111	68317.03
4.9	67938	72097.02
5.1	66029	73987.01
5.3	83088	75877
5.9	81363	81546.98

Sheet1

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Pregnancies

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S
1	Pregnancies	Glucose	BloodPres	SkinThickr	Insulin	BMI	DiabetesP	Age	Outcome	Predicted_Prob									
2	6	148	72	35	0	33.6	0.627	50	1	0.563439									
3	1	85	66	29	0	26.6	0.351	31	0	0.106132									
4	8	183	64	0	0	23.3	0.672	32	1	0.829302									
5	1	89	66	23	94	28.1	0.167	21	0	0.121385									
6	0	137	40	35	168	43.1	2.288	33	1	0.459719									
7	5	116	74	0	0	25.6	0.201	30	0	0.277518									
8	3	78	50	32	88	31	0.248	26	1	0.083479									
9	10	115	0	0	0	35.3	0.134	29	0	0.269988									
10	2	197	70	45	543	30.5	0.158	53	1	0.891959									
11	8	125	96	0	0	0	0.232	54	1	0.350703									
12	4	110	92	0	0	37.6	0.191	30	0	0.234325									
13	10	168	74	0	0	38	0.537	34	1	0.733527									
14	10	139	80	0	0	27.1	1.441	57	0	0.478581									
15	1	189	60	23	846	30.1	0.398	59	1	0.859111									
16	5	166	72	19	175	25.8	0.587	51	1	0.718462									
17	7	100	0	0	0	30	0.484	32	1	0.173249									
18	0	118	84	47	230	45.8	0.551	31	1	0.292958									
19	7	107	74	0	0	29.6	0.254	31	1	0.214558									
20	1	103	30	38	83	43.3	0.183	33	0	0.190131									

Diabetes with predictions

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Pregnancies

Pregnancies	Glucose	Insulin	BMI	Age	Outcome
6	148	35	33.6	50	1
1	85	29	26.6	31	0
8	183	0	23.3	32	1
1	89	23	28.1	21	0
0	137	35	43.1	33	1
5	116	0	25.6	30	0
3	78	32	31	26	1
10	115	0	35.3	29	0
2	197	45	30.5	53	1
8	125	0	0	54	1
4	110	0	37.6	30	0
10	168	0	38	34	1
1	139	0	27.1	57	0
1	189	23	30.1	59	1
5	166	19	25.8	51	1
7	100	0	30	32	1
0	118	47	45.8	31	1
7	107	0	29.6	31	1
1	103	38	43.3	33	0

Sheet1

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