Data Analysis : Assignment 2

Ghazal Ayobi and Shah Ali Gardezi

Introduction

The Question of this case study is how hotels distance from center is related to highly rated hotels. For this assignment we use Hotels-Europe data. This data set contains two tables Features and Price. We joined the two tables using left join.

Data Transformation

As a process of filtering and data transformation, we use hotel user rating as the dependent variables and transformed it to a binary variable called *highly_rated* which equals to one if *rating* is more than *4*, *0* otherwise. We selected ***Paris*** City and considered ***Hotels*** as accommodation type. Moreover, we excluded hotels with less than *USD600* per night. Removed NULL and duplicated values from the data set.

Analysis

In the first place in order to understand what functional form to include in the regression. We use distance from city center and number of stars relationship. To capture nonliterary

- Filtered the data for **Paris**
- Selected Hotels and Apartments for accommodation type
- Price is less than 600
- Removed null values from *stars*
- Removed duplicates
- Removed Null values from *rating*, *stars*, and *distance*
- Created log of price, *lnprice*
- Created *highly_rated* if rating >= 4
- Distance is with in 2 miles

```
## fitting null model for pseudo-r2
## fitting null model for pseudo-r2
```

```
## Warning: Removed 106 rows containing missing values (geom_point).
```

```
## Warning: Removed 106 rows containing missing values (geom_point).
```

	Mean	SD	Min	Max	Median	P95	N
highly_rated	0.56	0.50	0.00	1.00	1.00	1.00	11397
distance	1.62	0.78	0.10	4.20	1.60	2.90	11397
stars	3.22	0.78	1.00	5.00	3.00	4.00	11397

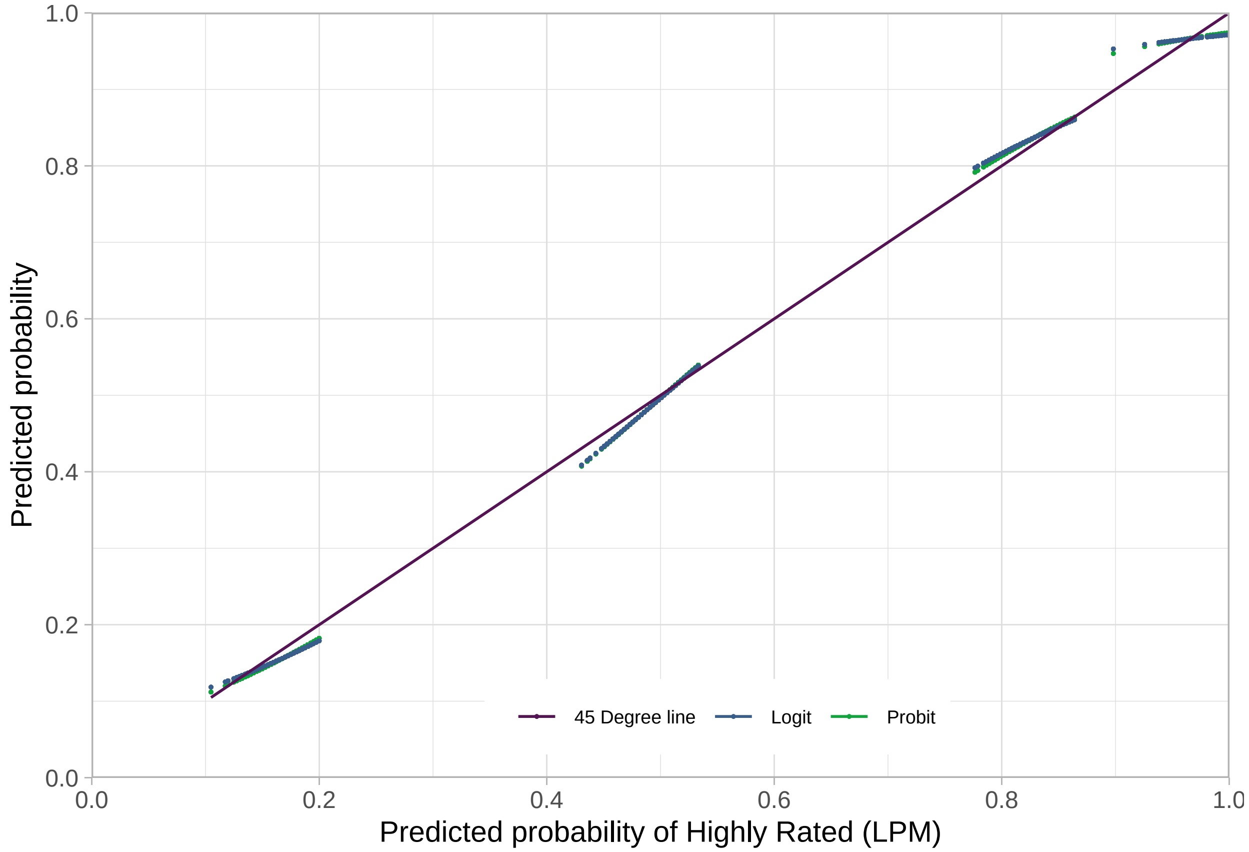
	Model 1	Model 2	Model 3	Model 4	Model 5
Constant	−0.457**	−4.826**		−2.886**	
	(0.022)	(0.134)		(0.075)	
lspline(stars, c(4))1	0.331**	1.664**	0.312**	0.998**	0.312**
	(0.006)	(0.039)	(0.010)	(0.022)	(0.005)
lspline(stars, c(4))2	0.137**	1.714**	0.275**	0.852**	0.241**
	(0.020)	(0.243)	(0.029)	(0.107)	(0.025)
distance	−0.025**	−0.127**	−0.024**	−0.081**	−0.025**
	(0.005)	(0.028)	(0.005)	(0.017)	(0.005)
Num.Obs.	11 397	11 397	11 397	11 397	11 397

* p < 0.05, ** p < 0.01

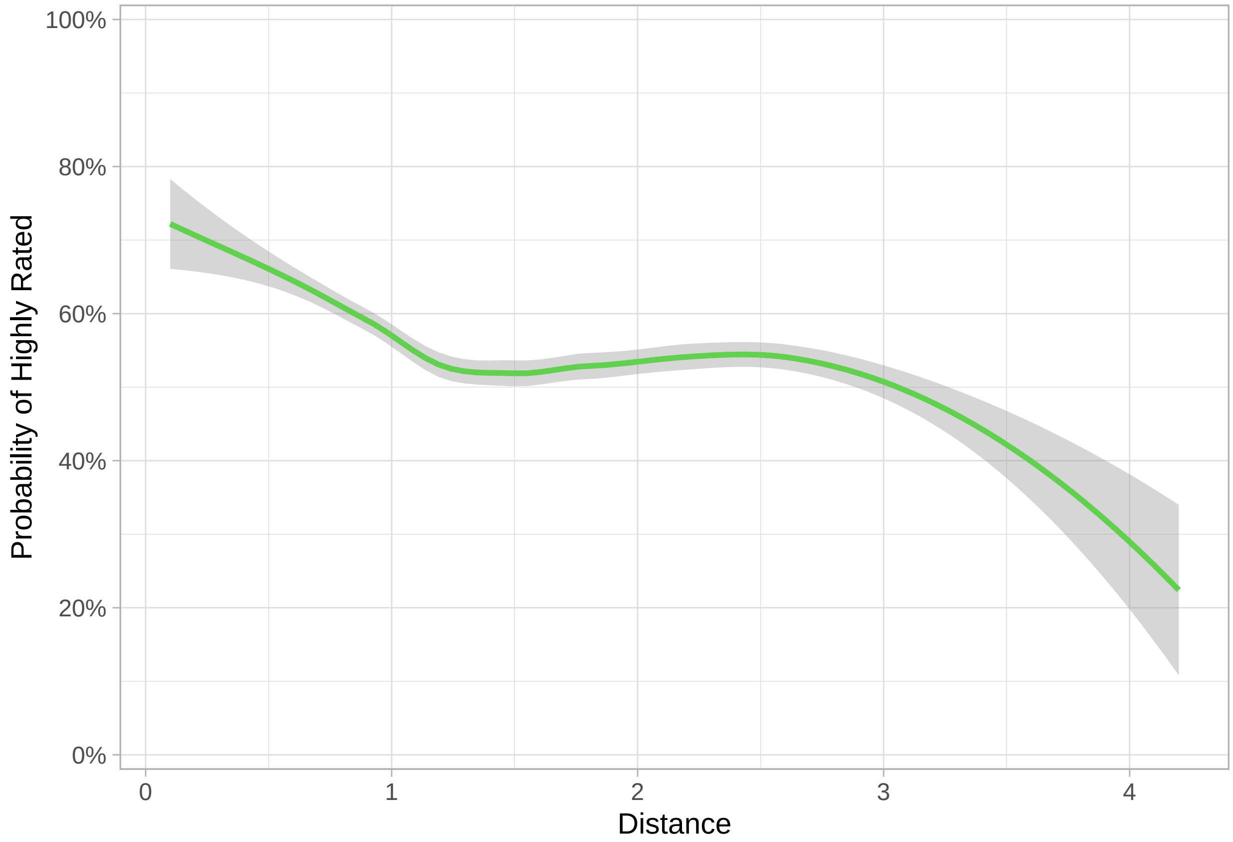
	Model 1	Model 2	Model 3
Constant	−0.457**	−4.826**	−2.886**
	(0.022)	(0.134)	(0.075)
lspline(stars, c(4))1	0.331**	1.664**	0.998**
	(0.006)	(0.039)	(0.022)
lspline(stars, c(4))2	0.137**	1.714**	0.852**
	(0.020)	(0.243)	(0.107)
distance	−0.025**	−0.127**	−0.081**
	(0.005)	(0.028)	(0.017)
Num.Obs.	11 397	11 397	11 397
R2	0.238		
PseudoR2		0.195	0.196

* p < 0.05, ** p < 0.01

```
## Warning: Removed 106 row(s) containing missing values (geom_path).
```



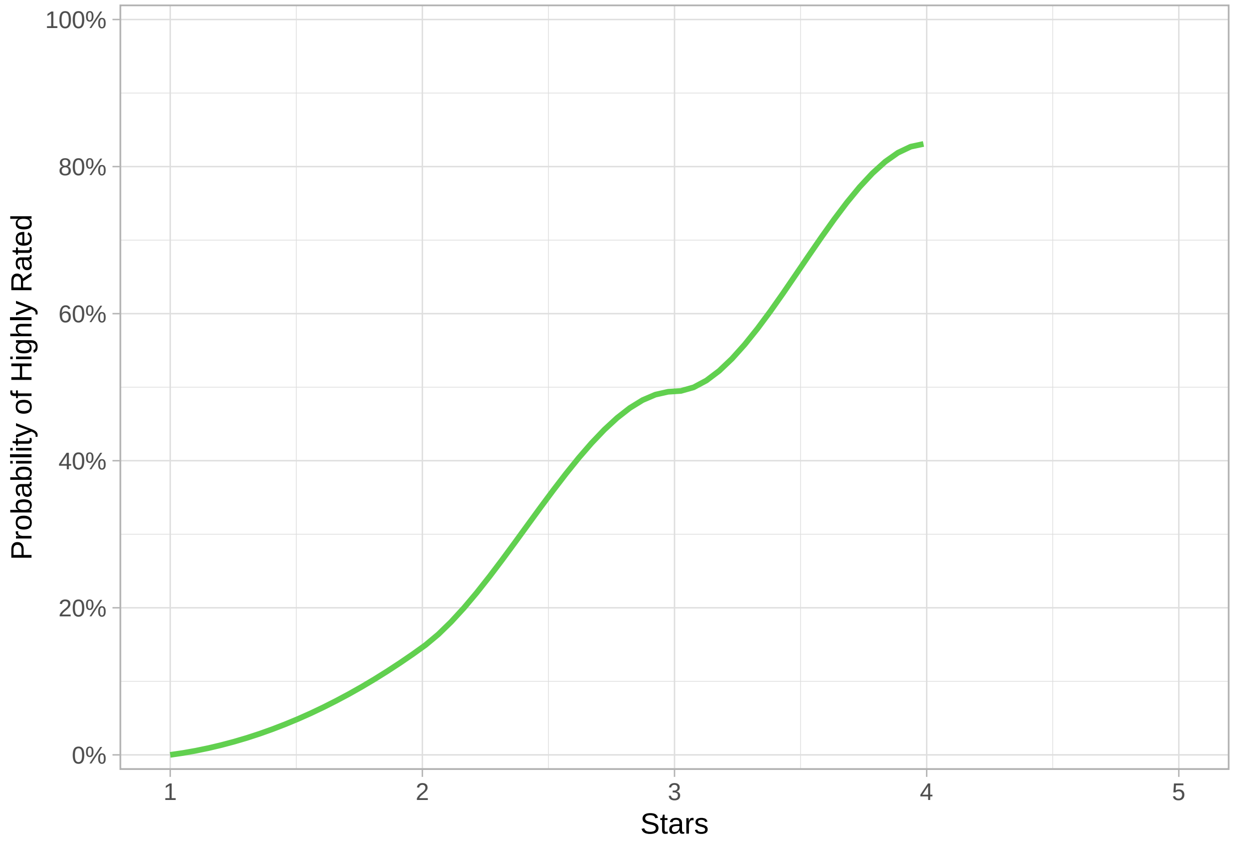
```
## 'geom_smooth()' using formula 'y ~ x'
```



```
## 'geom_smooth()' using formula 'y ~ x'

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : pseudoinverse used at 3

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : neighborhood radius 1

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : reciprocal condition number 0

## Warning in simpleLoess(y, x, w, span, degree = degree, parametric =
## parametric, : There are other near singularities as well. 1

## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object)), : pseudoinverse used at 3

## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object)), : neighborhood radius 1

## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object)), : reciprocal condition
## number 0
## Warning in predLoess(object$y, object$x, newx = if
## (is.null(newdata)) object$x else if (is.data.frame(newdata))
## as.matrix(model.frame(delete.response(terms(object)), : There are other near
## singularities as well. 1
```

```
## Warning: Removed 20 rows containing missing values (geom_smooth).
```

```
## Warning in max(ids, na.rm = TRUE): no non-missing arguments to max; returning
## -Inf
```


Probability of Highly Rated
Stars