



INSTITUTO NACIONAL DE ESTATÍSTICA
STATISTICS PORTUGAL

» Operação Estatística - IUT

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DMSI / ME



Abril de 2020



» Fases da Operação Estatística

- **Concepção**
- **Operação**
- **Difusão**



OE/Concepção



» Concepção

Objectivo Compreender a realidade a partir de dados.

Tipo Recenseamento, Amostragem, Estudo estatístico.

Fonte Questionários, Dados administrativos.

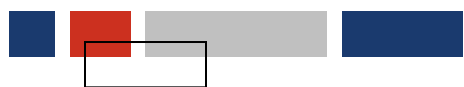


OE/Operação



» Operação

- **Recolha:** Directa (Presencial, Telefónica, Web) ou Indirecta.
- **Tratamento:** Formatação, Validação, *Outliers*, Imputação.
- **Análise:** Gráficos, Medidas descritivas, Modelos.



OE/Operação/Análise

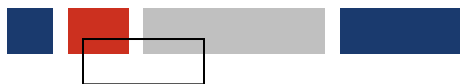


» Análise

Gráficos *Pie chart, Barplot, Boxplot, Histogram, Countplot.*

Medidas descritivas Tendência central, Dispersão.

Modelos Regressão linear, Regressão logística.



» Difusão

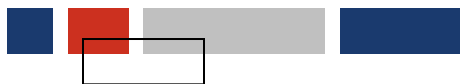
Indicadores Resultados dos inquéritos, para público em geral.

Microdados Base de dados dos inquéritos, para investigadores.

Destaques *Press release* curta, harmonizada, calendarizada.

Publicações/Boletins Documento longo, calendarizado.

Estudos Documento longo, não-calendarizado.



» Inquérito à Utilização do Telemóvel

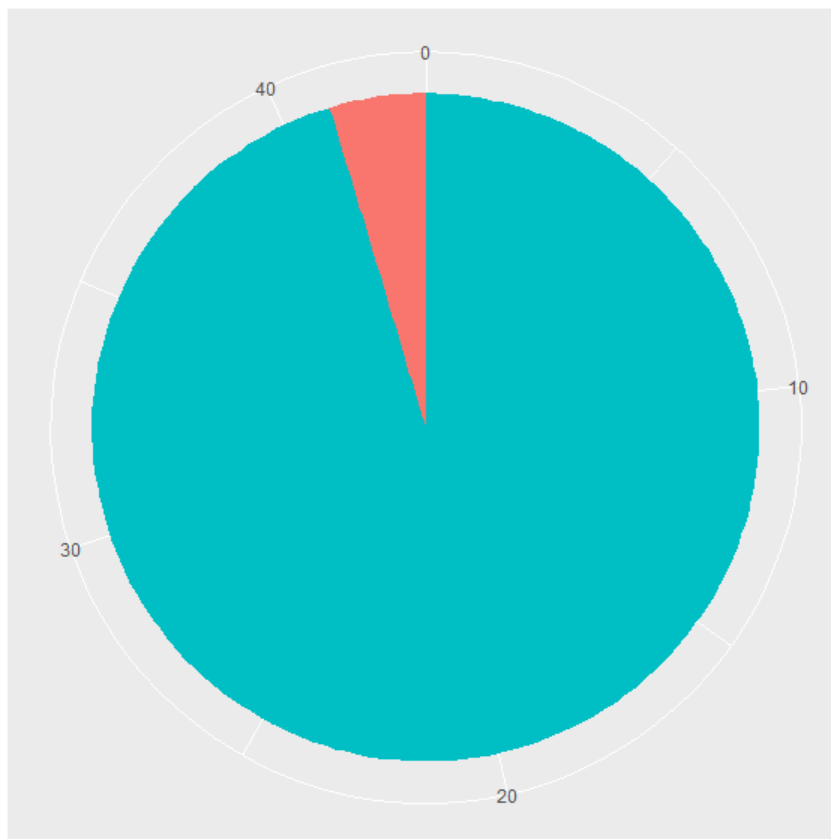
- Vídeo: ..\media\OE-IUT_20180411.mp4
- Questionário: <https://docs.google.com/forms/.../viewform>
- Análise: <https://r2.ine.pt/>



IUT/Análise/Exploração

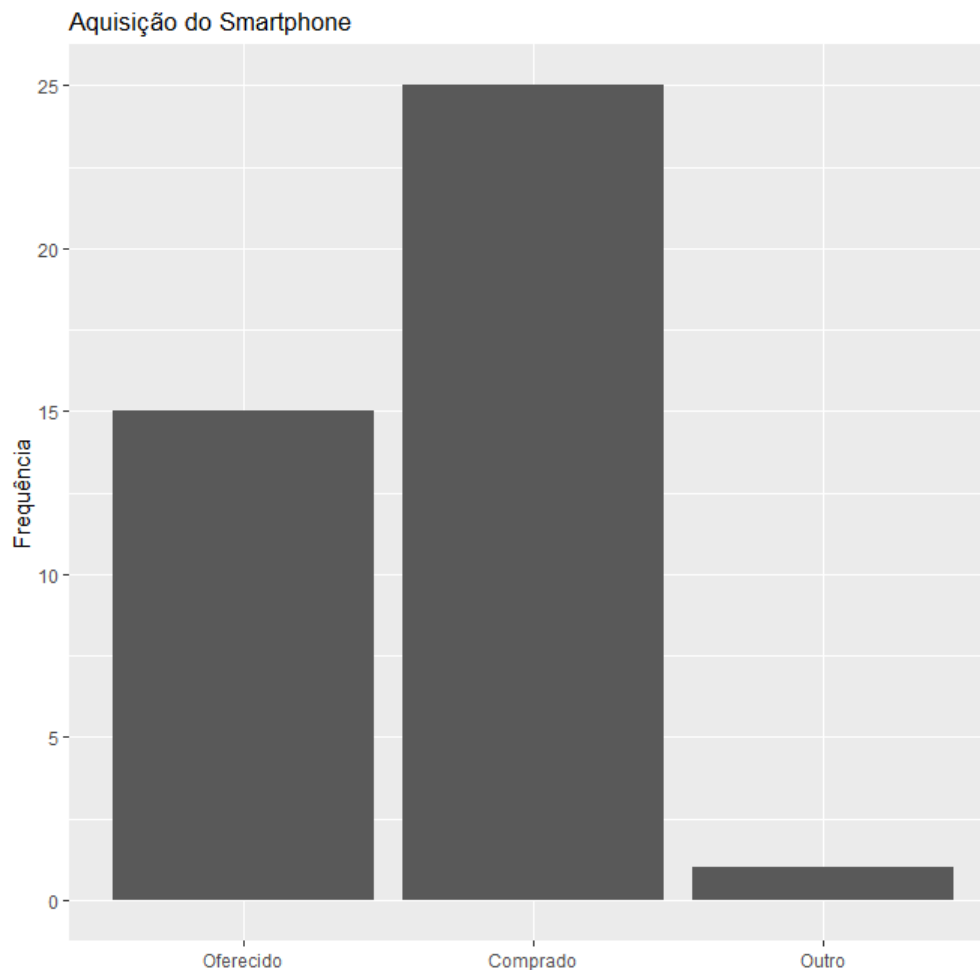


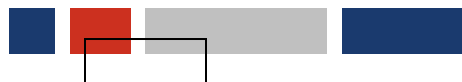
Tem Smartphone?





IUT/Análise/Exploração

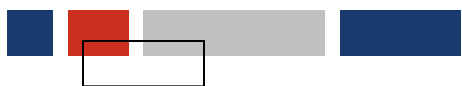




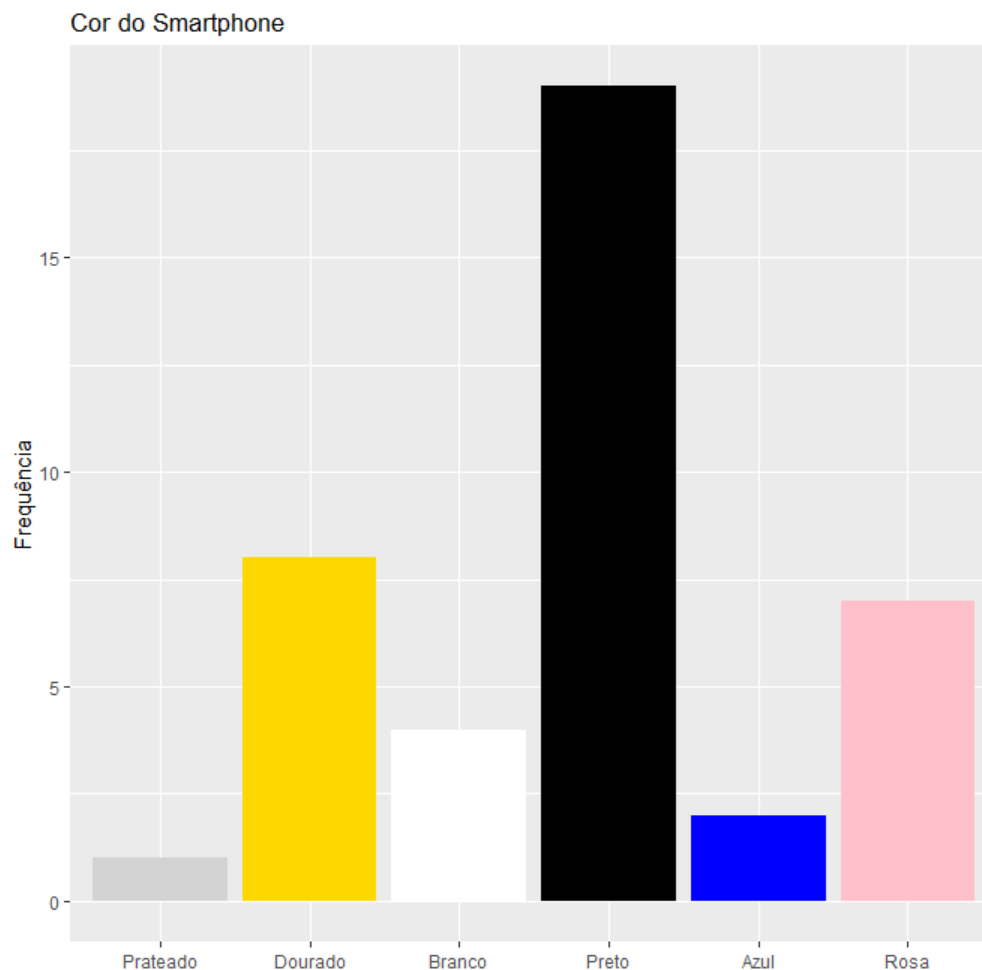
IUT/Análise/Exploração



AGE_FIRST	Freq	Cumul	Rel	RelCumul
6	2	2	0.06	0.06
8	1	3	0.03	0.09
9	3	6	0.09	0.18
10	8	14	0.24	0.42
11	6	20	0.18	0.61
12	4	24	0.12	0.73
13	4	28	0.12	0.85
14	1	29	0.03	0.88
15	3	32	0.09	0.97
17	1	33	0.03	1.00

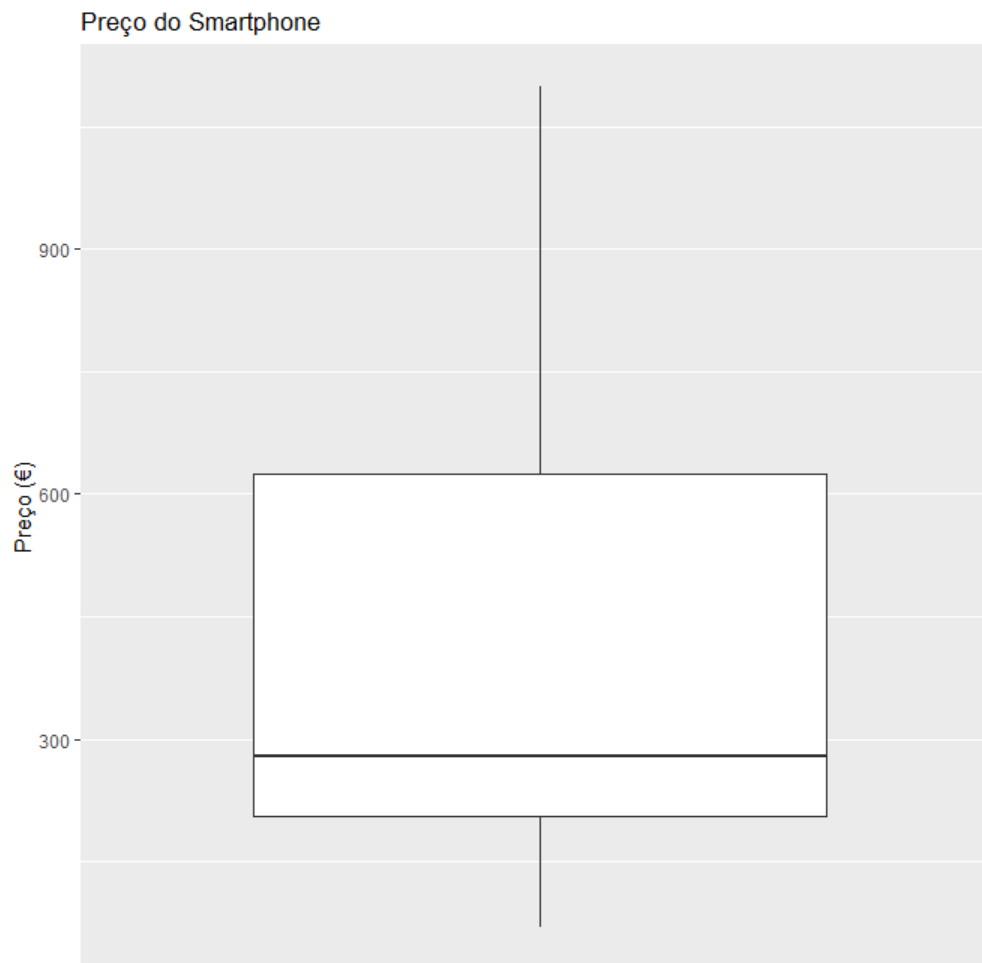


IUT/Análise/Exploração



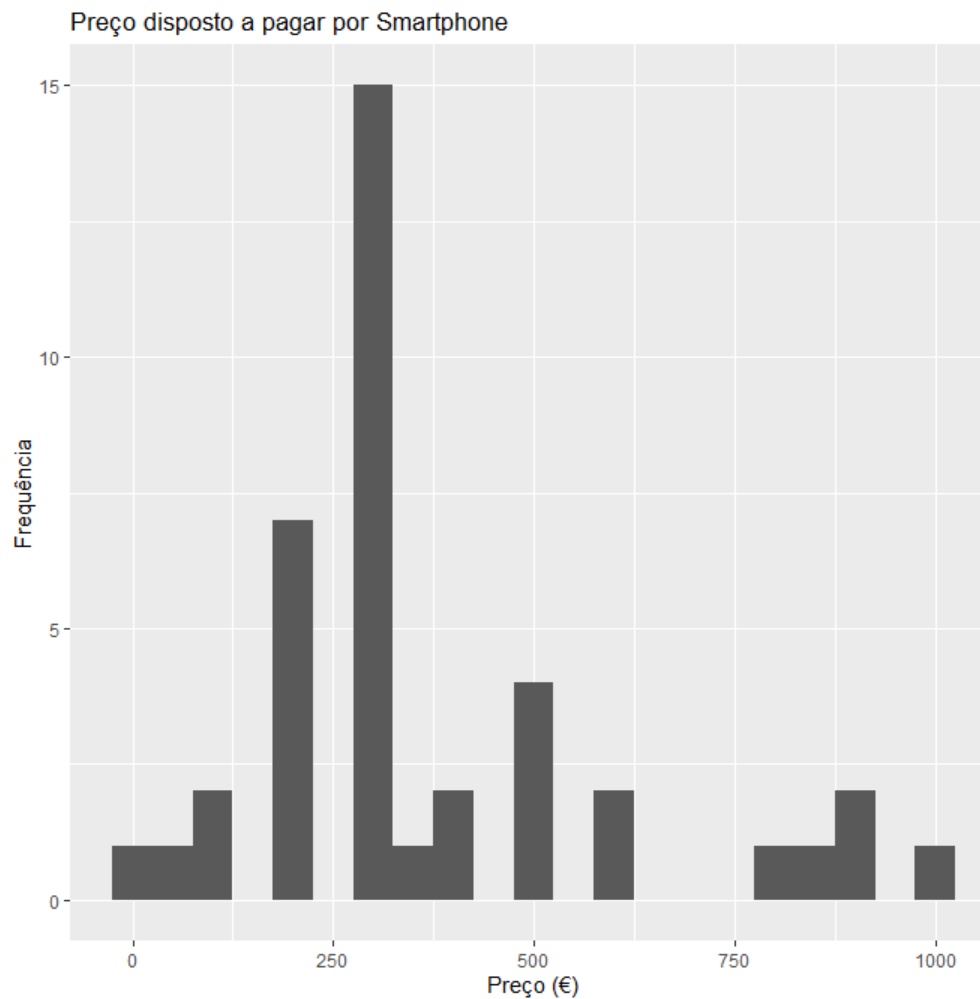


IUT/Análise/Exploração



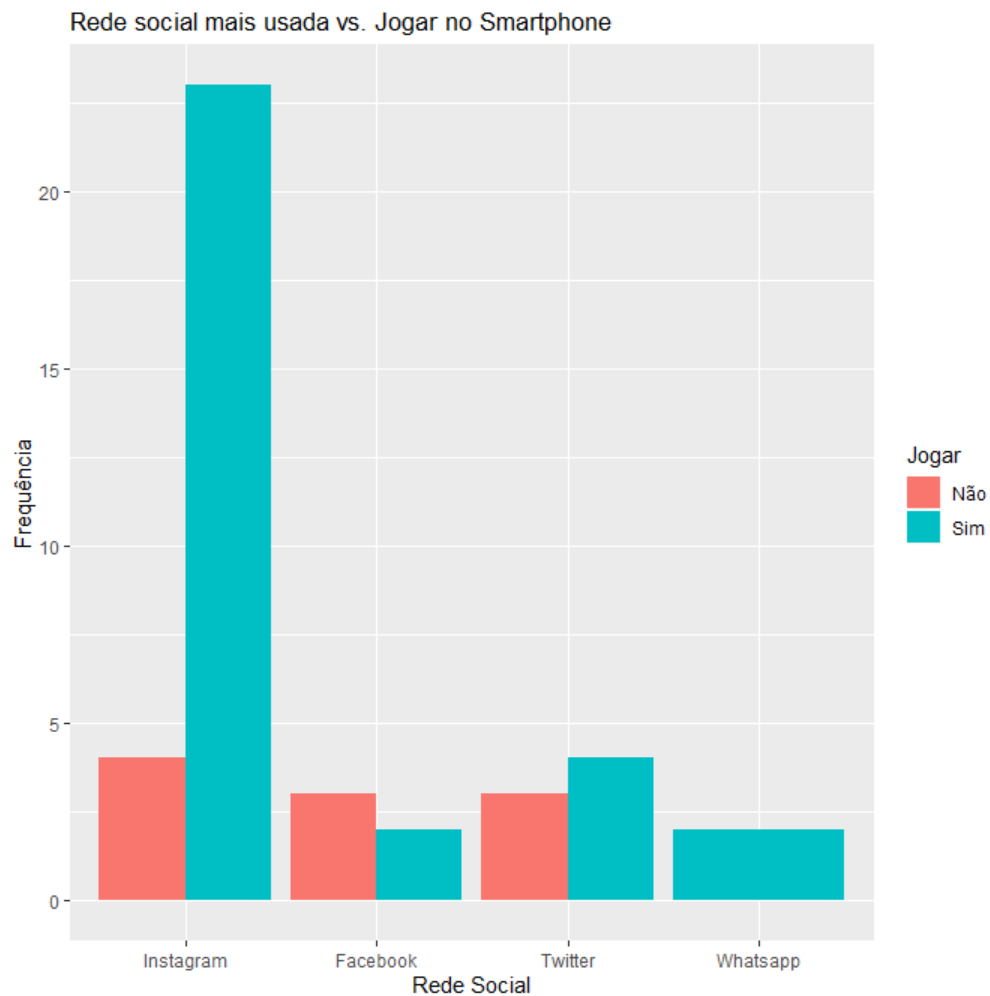


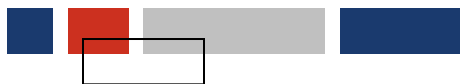
IUT/Análise/Exploração



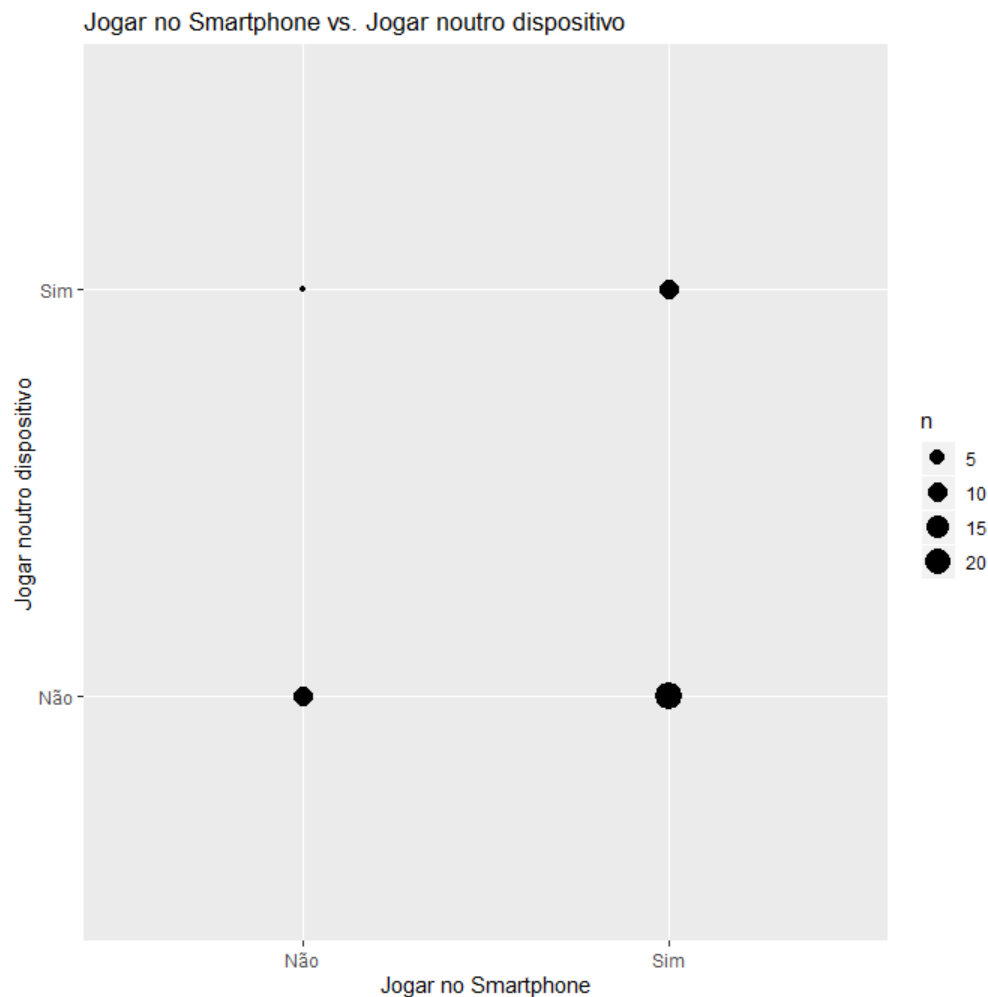


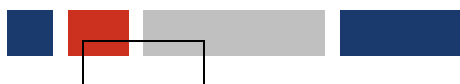
IUT/Análise/Exploração



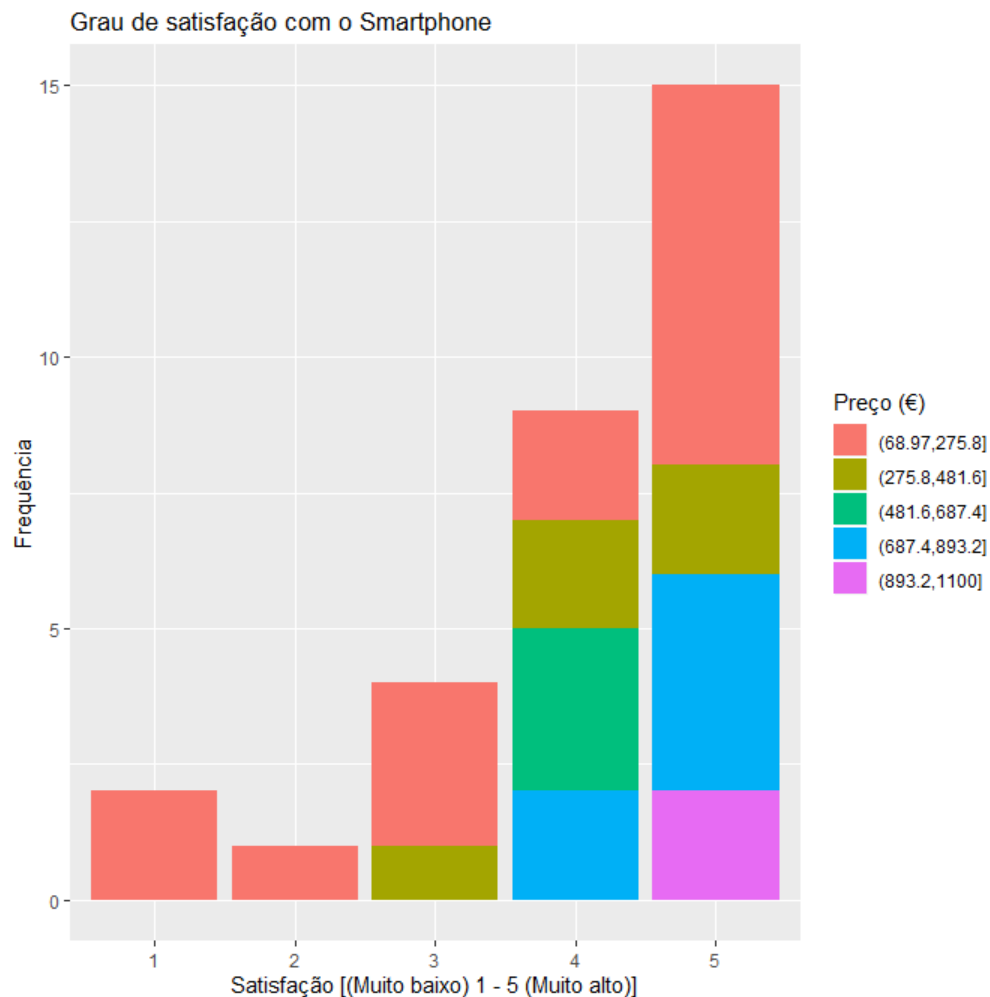


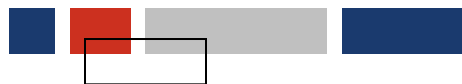
IUT/Análise/Exploração





IUT/Análise/Exploração





IUT/Análise/Exploração



	AGE_FIRST	PRICE	PRICE_NEW
Mean	11.18	417.16	372.50
Median	11.00	279.00	300.00
Mode	10.00	500.00	300.00
	AGE_FIRST	PRICE	PRICE_NEW
StDev	2.44	295.32	238.27
IQR	3.00	420.00	300.00
Range	11.00	1029.00	1000.00



Call:

```
lm(formula = PRICE_NEW ~ PRICE, data = d5)
```

Residuals:

Min	1Q	Median	3Q	Max
-395.10	-62.72	-14.54	127.81	434.75

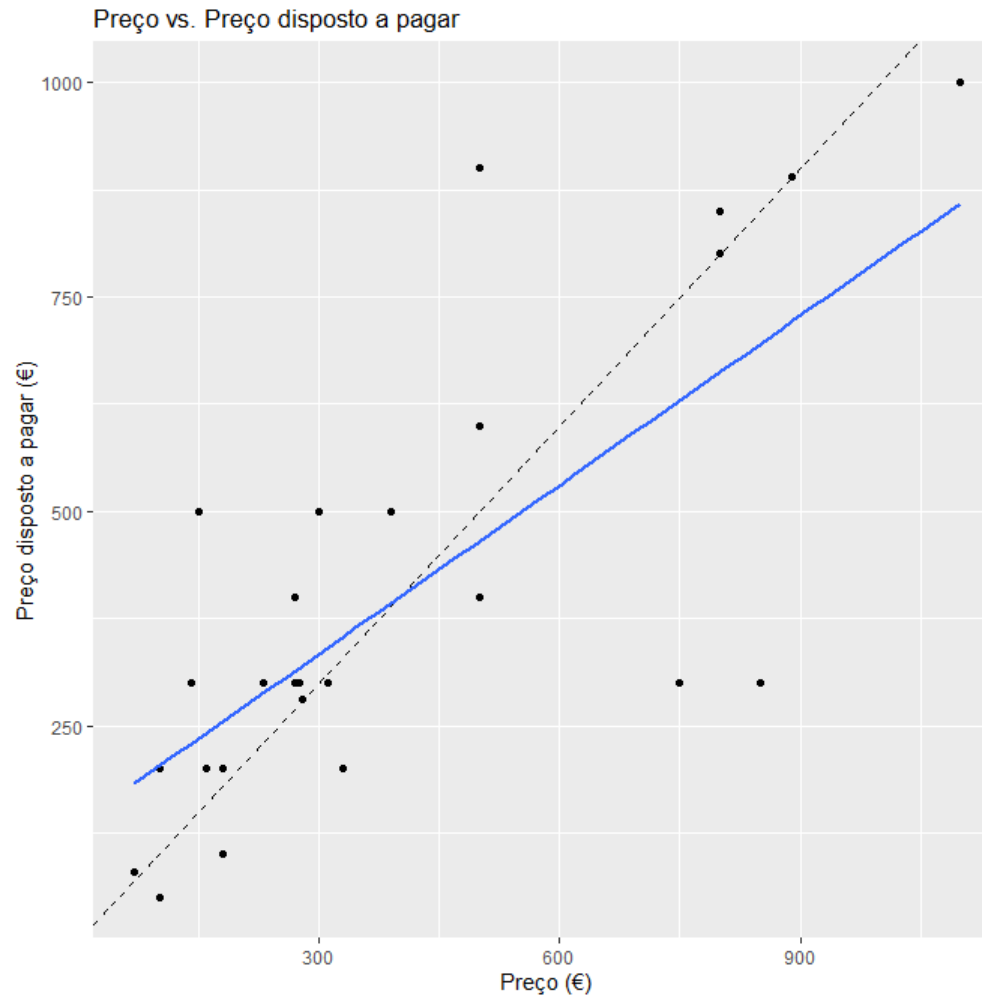
Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	136.9020	57.4812	2.382	0.0243 *
PRICE	0.6567	0.1187	5.532	6.5e-06 ***

Residual standard error: 179.2 on 28 degrees of freedom

Multiple R-squared: 0.5222, Adjusted R-squared: 0.5051

F-statistic: 30.6 on 1 and 28 DF, p-value: 6.5e-06





Call:

```
lm(formula = PRICE_NEW ~ PRICE + PLAY_PHONE, data = d5)
```

Residuals:

Min	1Q	Median	3Q	Max
-436.11	-71.77	-18.74	90.85	398.19

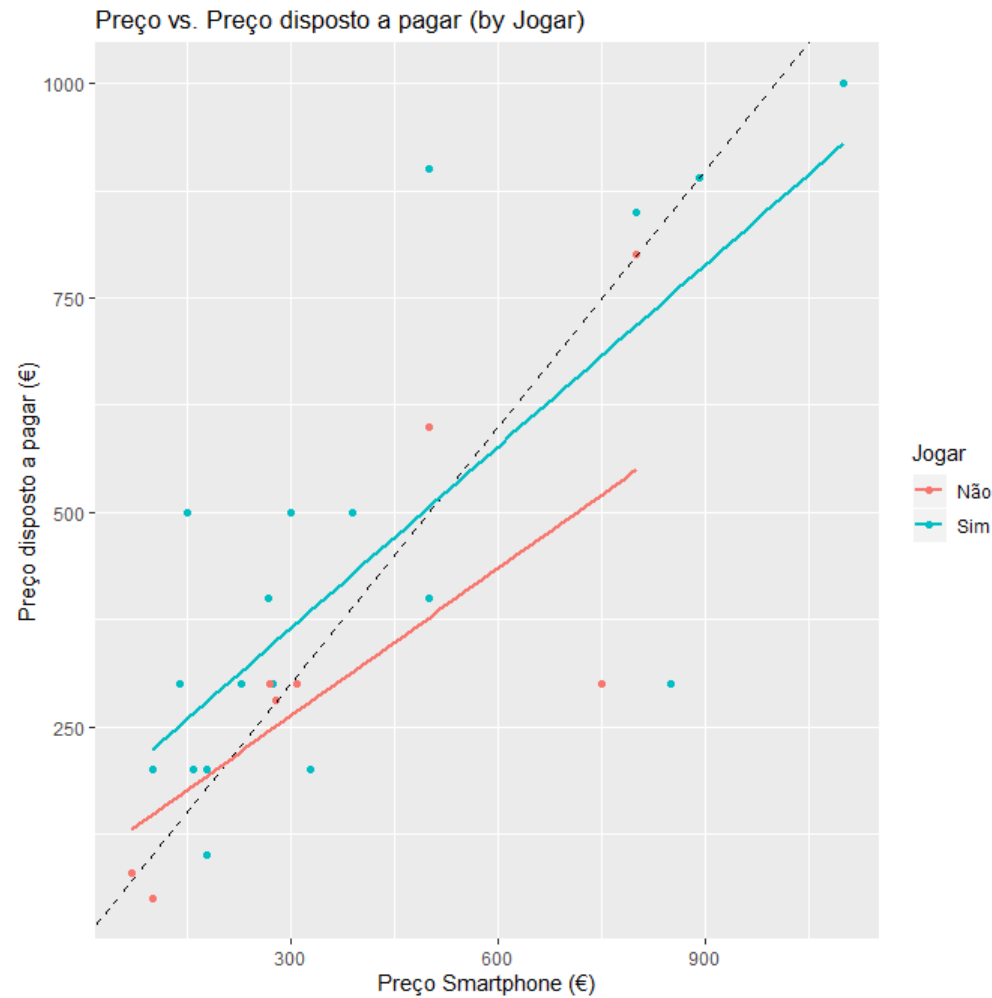
Coefficients:

	Estimate	Std. Error	t value	Pr(> t)
(Intercept)	49.5597	75.8010	0.654	0.519
PRICE	0.6694	0.1152	5.813	3.47e-06 ***
PLAY_PHONETRUE	117.5265	69.2618	1.697	0.101

Residual standard error: 173.5 on 27 degrees of freedom

Multiple R-squared: 0.5682, Adjusted R-squared: 0.5362

F-statistic: 17.77 on 2 and 27 DF, p-value: 1.191e-05





```
Call:
glm(formula = PLAY_PHONE ~ PRICE, family = "binomial", data = d5)
```

Deviance Residuals:

Min	1Q	Median	3Q	Max
-1.5947	-1.5504	0.8190	0.8253	0.8618

Coefficients:

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	0.9522114	0.6946710	1.371	0.170
PRICE	-0.0001392	0.0013528	-0.103	0.918

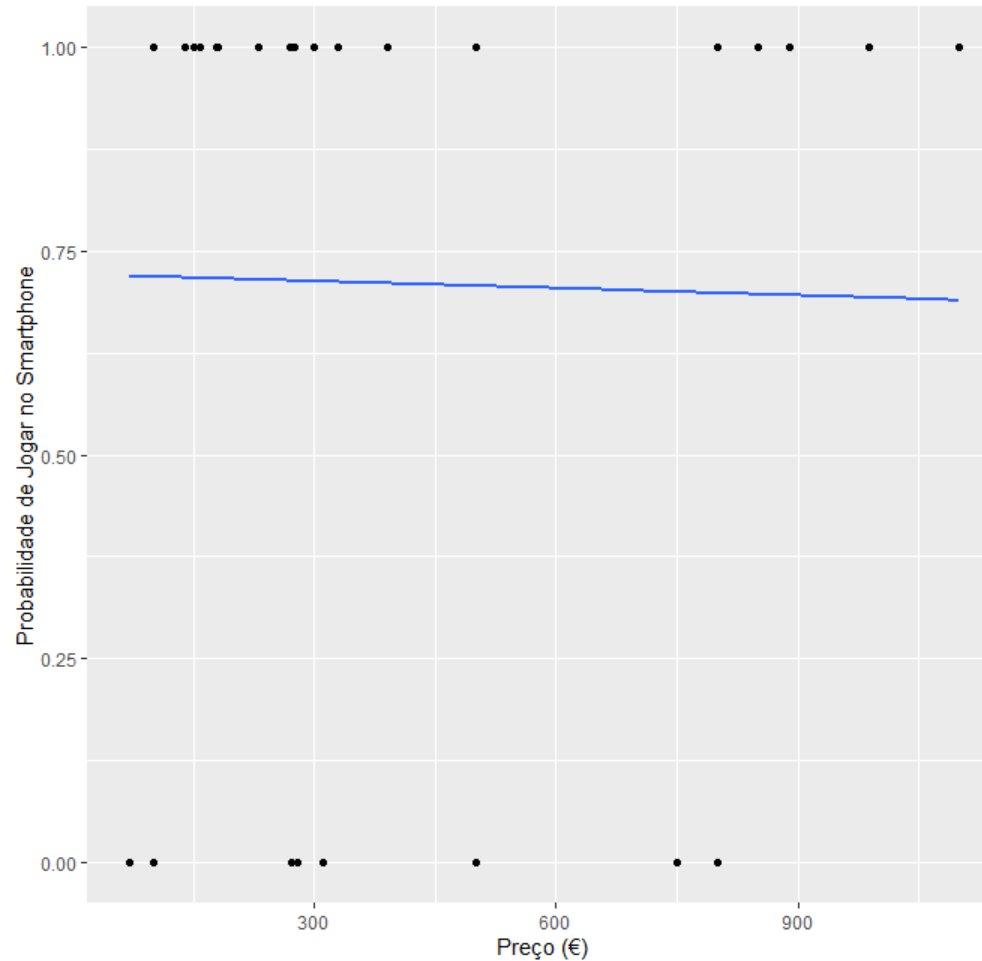
Null deviance: 37.351 on 30 degrees of freedom

Residual deviance: 37.341 on 29 degrees of freedom

AIC: 41.341

	OR	2.5%	97.5%
PRICE	1.00	1.00	1.00

Jogar no Smartphone vs. Preço do Smartphone





```
Call:
glm(formula = PLAY_PHONE ~ PRICE + SOCIALNET, family = "binomial", data = d5)
```

Deviance Residuals:

Min	1Q	Median	3Q	Max
-2.1465	0.4006	0.4553	0.6282	1.4812

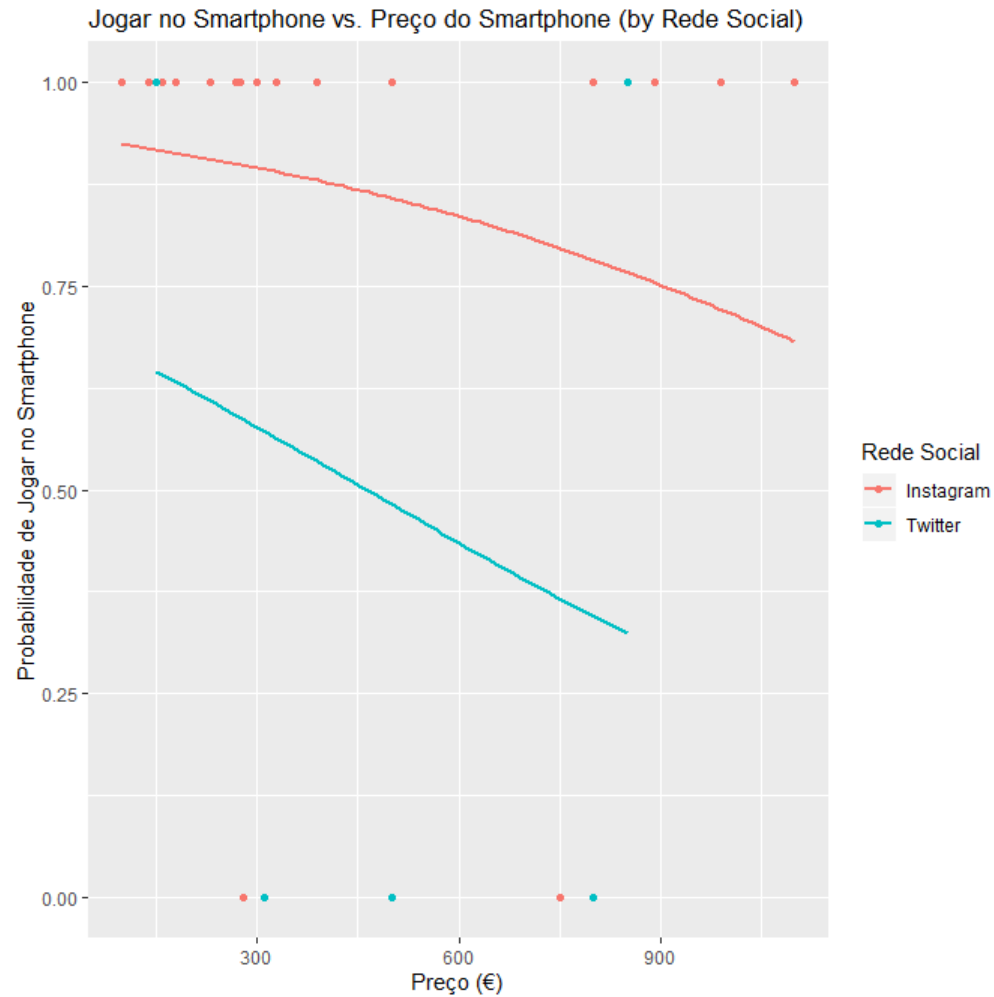
Coefficients:

	Estimate	Std. Error	z value	Pr(> z)
(Intercept)	2.696793	1.132332	2.382	0.0172 *
PRICE	-0.001786	0.001658	-1.077	0.2815
SOCIALNETTwitter	-1.869468	1.069673	-1.748	0.0805 .

Null deviance: 28.604 on 26 degrees of freedom
Residual deviance: 24.375 on 24 degrees of freedom
AIC: 30.375

	OR	2.5%	97.5%
PRICE	1.00	0.99	1.00
SOCIALNETTwitter	0.15	0.02	1.25

IUT/Analise/Modelos





Obrigado

<https://www.r-project.org/>

<https://rstudio.com/>

<https://github.com/jsollari/OE-IUT2020>