

Working Paper 5

1. Data Description

The Ministry of Education provides information regarding the salaries obtained by graduates and other related information at the website "http://graduate.edu.ru". A key purpose of this website is to provide accurate information to prospective university students and their families about the prospects of graduates from each of the universities or colleges. The Ministry of Finance collects information from all education establishments and others providing public service as a means to foster citizen engagement and accountability. This information includes details about revenue and income streams. This paper presents analysis from the merger of these two databases. The content of the data is presented in this section. Subsequent sections provide analysis and interpretation.

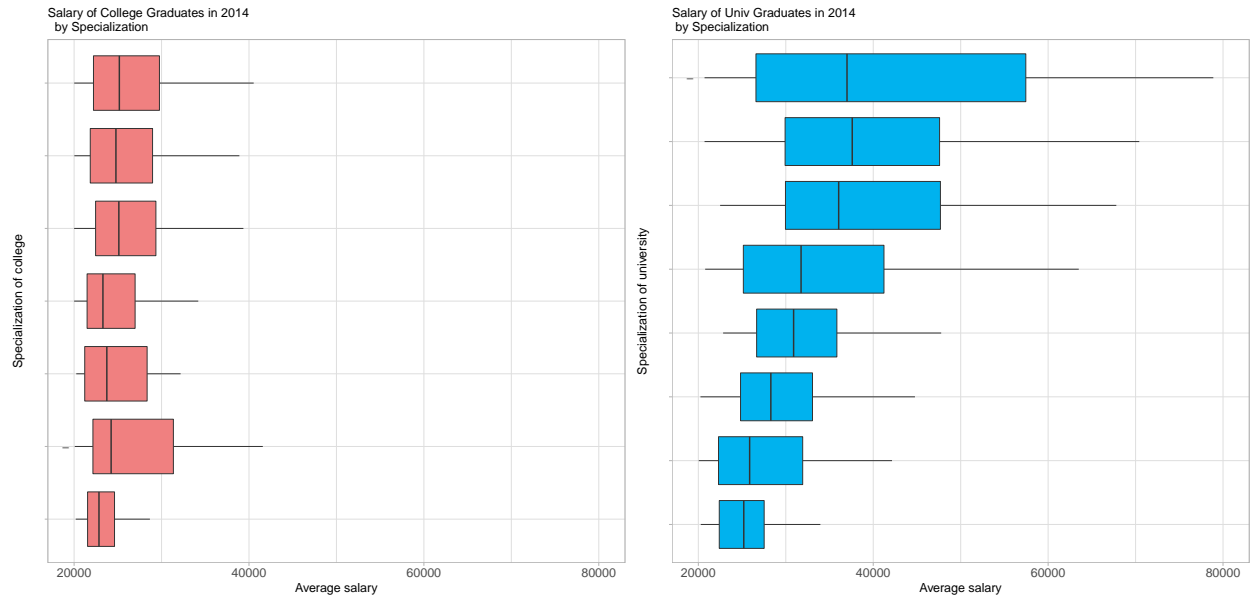
1.1. Graduate.edu portal

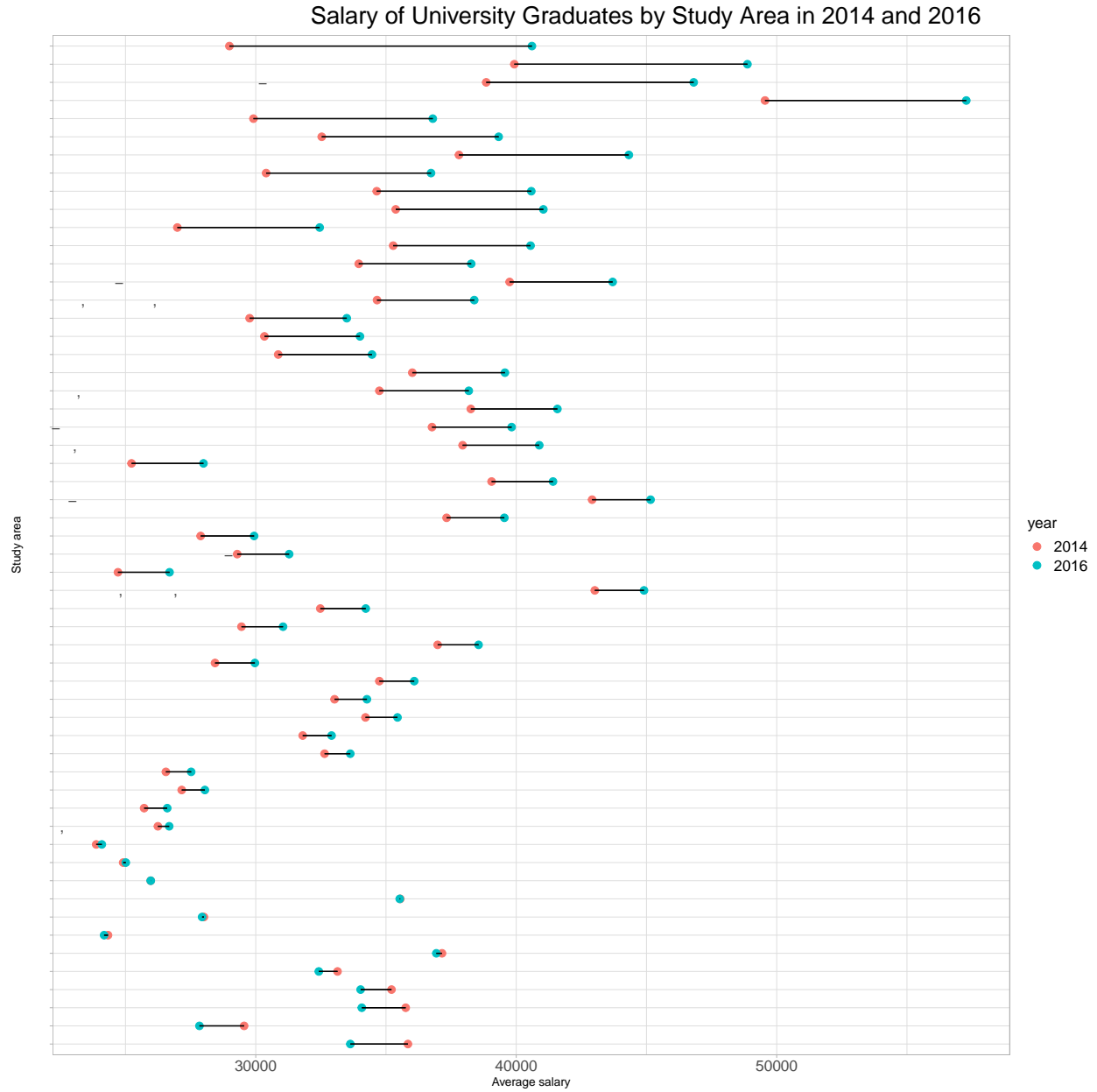
Graduate.edu allows the registered users to download all desirable information about the earnings of college or university graduates in .xlsx format. By using that service we obtained data about the number of graduates in 2013 in each university and college and their corresponding salaries in 2014, 2015 and 2016. Our final set of data consists of 1909 colleges, 423 universities, and 2975 pairs of university-study areas with information about the graduates earning in them. We filtered out universities and colleges with less than 100 and 50 graduates in 2013, respectively. Salaries in 2014 and 2015 were adjusted to the prices of 2016.

	Mean	Std	Quantile.25.	Quantile.50.	Quantile.75.
College Graduates Avg. Earnings 2014	301,255	81,712	247,093	279,156	328,995
College Graduates Avg. Earnings 2015	281,567	76,821	229,697	261,667	311,208
College Graduates Avg. Earnings 2016	287,918	80,574	233,763	267,480	320,583
University Graduates Avg. Earnings 2014	411,050	152,936	300,829	365,771	481,628
University Graduates Avg. Earnings 2015	419,488	158,256	304,798	368,518	496,961
University Graduates Avg. Earnings 2016	433,387	175,586	305,856	380,304	508,152

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1.2. Bus.gov.ru portal

We obtained financial data about the colleges and universities from the open data section on the <https://bus.gov.ru>. It contains information about the total cash receipts of an organization for a given year and provides data on the income subcategories, such as cash receipts from paid services, target subsidy, budget investments, state (municipal) tasks. In our research, we approximated fee payments through the information about cash receipts from the paid services and used it together with the number of graduates for the calculation of the private education cost. To estimate the social cost of education we used total cash receipts in an organization

	Mean	Std	Quantile
Number of College Graduates in 2013	192	149	97
Total Cash Receipts in Colleges, mean 2012-2017	106,233,973	251,105,561	47,882
Cash Receipts from the Paid Services in Colleges, mean 2012-2017	13,423,225	14,185,670	4,220,9
Cash Receipts from the Target Subsidy in Colleges, mean 2012-2017	13,644,089	87,268,649	2,973,8
Cash Receipts from the Budget Investments in Colleges, mean 2012-2017	380,156	2,290,744	0
Cash Receipts from the State (Municipal) Tasks in Colleges, mean 2012-2017	71,886,730	89,598,370	34,835
Social Cost for Colleges	206,856	160,781	110,17
Private Cost for Colleges	24,287	20,441	10,204
Number of University Graduates in 2013	1,673	1,547	649
Total Cash Receipts in Universities, mean 2012-2017	1,557,966,861	NA	488,13
Cash Receipts from the Paid Services in Universities, mean 2012-2017	553,941,067	677,845,294	133,15
Cash Receipts from the Target Subsidy in Universities, mean 2012-2017	219,389,727	306,523,836	75,000
Cash Receipts from the Budget Investments in Universities, mean 2012-2017	35,201,477	122,918,853	0
Cash Receipts from the State (Municipal) Tasks in Universities, mean 2012-2017	653,606,278	1,060,196,583	246,27
Social Cost for Universities	264,869	265,986	107,27
Private Cost for Universities	97,452	119,749	34,450

2. Regional Returns

In the first part of our research, we focus on calculating the social and private regional internal rate of return by using the following methodology. We utilize the average wage in each age from 2014 to 2018 Rosstat Survey to calculate the potential earnings profiles and then add the mean social and private cost estimates for the regions to the begging of that profile. We also adjust for the foregone earnings of graduates by adding to the educational cost the potential wage that graduates missed due to the enrolment in the university of college, we took average wage in the region as the approximation of such earnings.

Below you can see an estimate of social and private IRR of university graduates by regions of Russia. Both types of returns have high dispersion across the country: from around 40% IRR in Magadanskaya and Ulyanovskaya oblast to the less than 15% in Kurganskaya and Kurskaya oblast. It is interesting to notice that although Moscovskaya oblast has substantially high social and private returns, the Moscow lacking behind in that ranking with only 20% of IRR. That may happen due to the circular migration from Moscovskaya Oblast to Moscow - people in Moscovskaya Oblast can get access to the cheaper education inside their region and still be able to work in the nearby capital.

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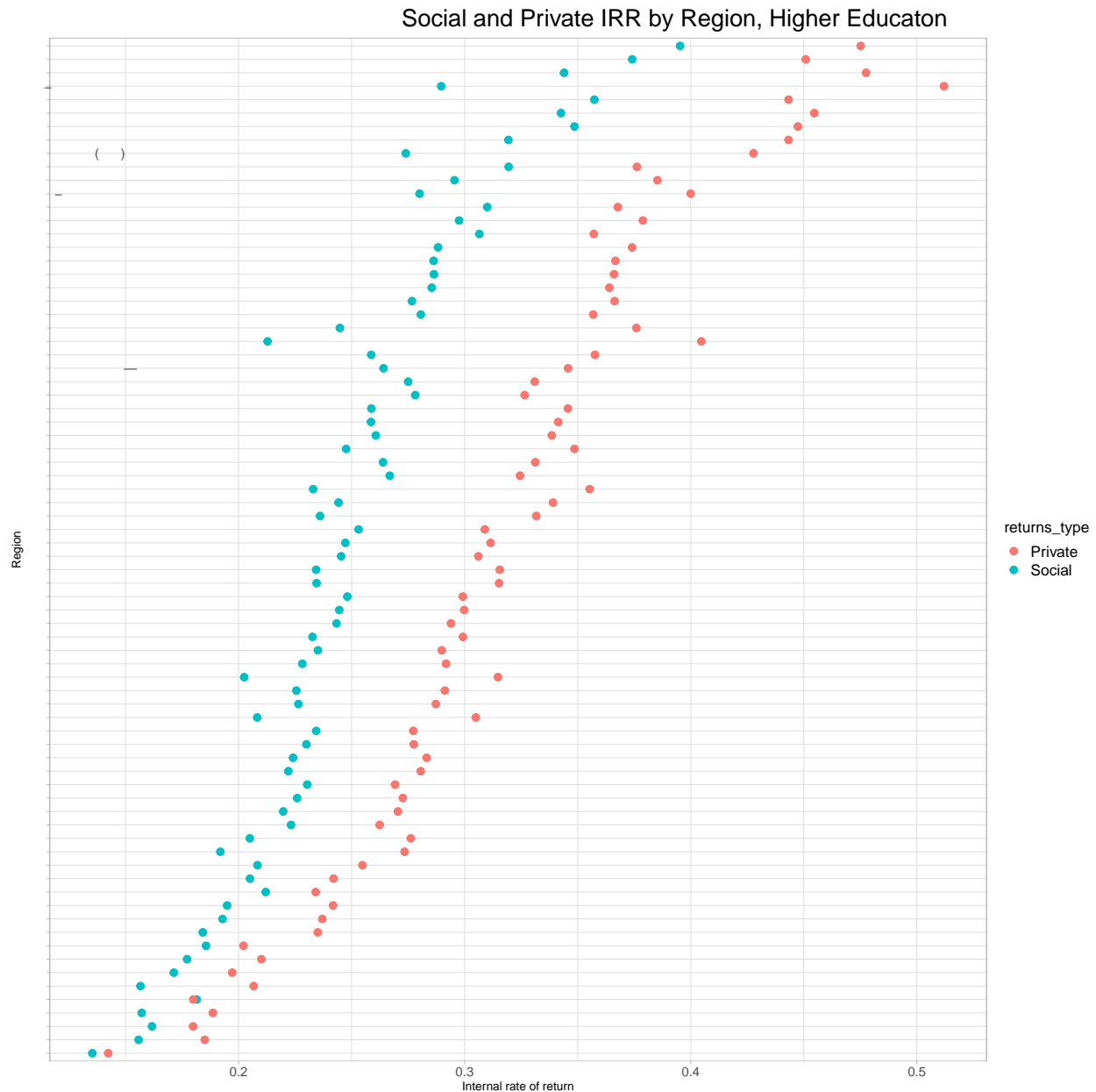
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
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The next graph demonstrates the social and private IRR of colleges. As you may notice the regional variation is still present, but not to the same extent as in universities - returns are lying between 20-30% in most of the regions.

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## font width unknown for character 0xea

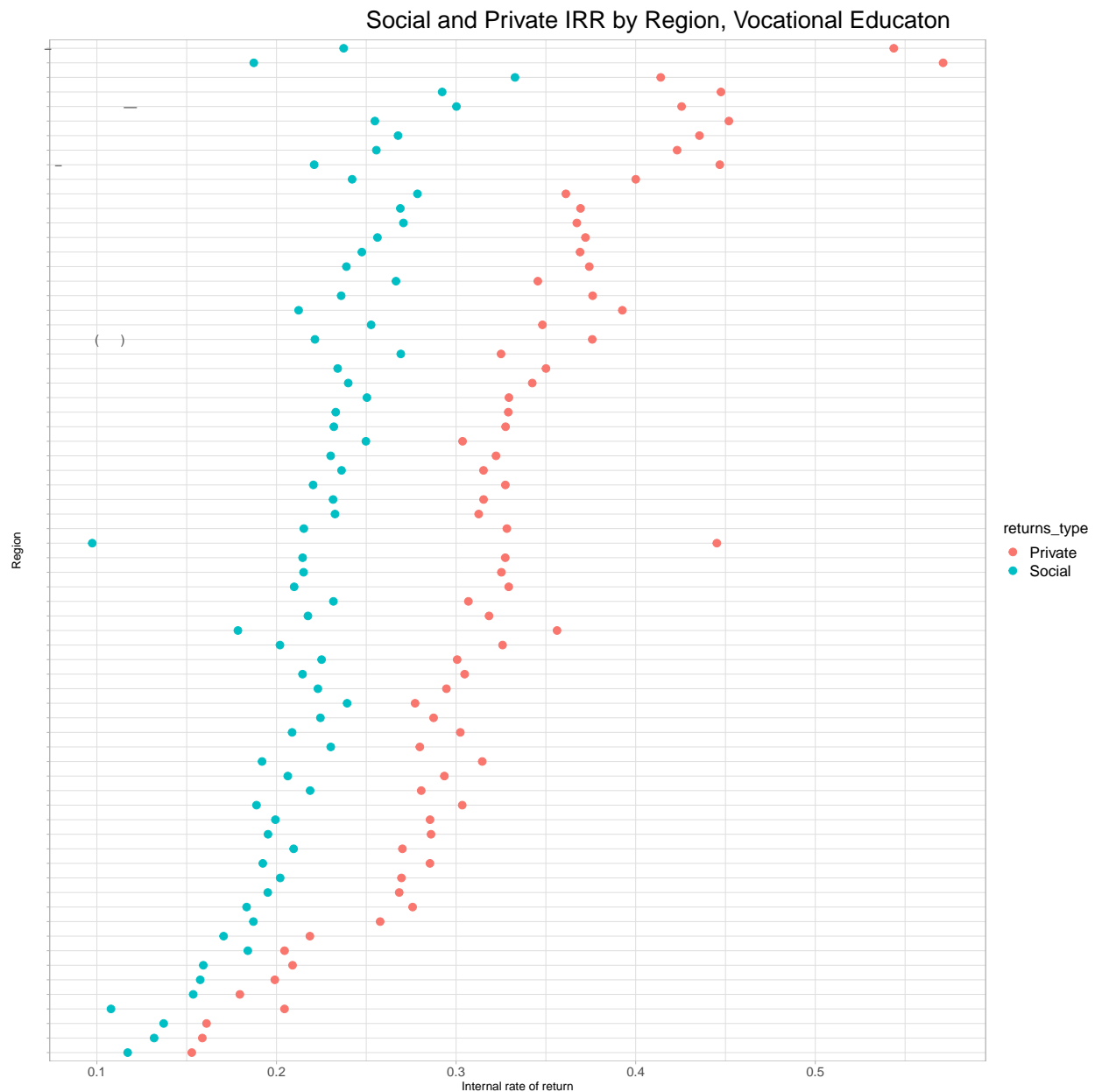
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
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## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0xcd

## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0x4

## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0xd5

```



```
## Saving 14 x 14 in image
```

The average levels of social returns of college and university graduates in a region are highly correlated - regions with a high level of university returns tend to have higher rates of college returns. Nonetheless, there are some exceptions: for example, Respublika Tatarstan has above average social returns of college graduates, but lacking behind in university returns. The situation in Sahalinskaya Oblast is directly the opposite - the region is characterized by one of the highest levels of social university returns, but the college returns are a lot lower than in most of the other regions. You can see a distribution of returns by two levels of education on the scatterplot below.

```
## Saving 8 x 8 in image
```

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## Warning: Removed 9 rows containing missing values (geom_point).
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## Warning: Removed 74 rows containing missing values (geom_text).
```

3. Organizational Returns

Data provided by graduate.edu allow us to calculate IRR directly for each educational organization. As in the previous part we use social and private cost as the cost part of the IRR specification, but now we utilize graduate salaries in 2014, 2015, and 2016 as the benefits obtained by the graduates. Resulting IRR estimations have a negative sign for most of the organizations since we have access only to the 3 years of observations after graduation. However such estimates still can be used to compare universities or colleges with each other.

Bellow, you can the tables with Top-10 and Bottom-10 universities/colleges ranked according to the social IRR.

social returns	private returns	name	region
0.07	0.09		
0.05	0.09		
0.05	0.07		
0.04	0.07		
0.04	0.2	-	
0.04	0.1		
0.04	0.13		
0.03	0.09		
0.03	0.1		
0.02	0.15		(
...
-0.29	-0.18		
-0.3	-0.13		
-0.3	-0.22	-	
-0.3	-0.1	-	
-0.3	-0.17		
-0.31	-0.16		
-0.31	-0.14	« »	
-0.32	-0.18	-	-
-0.34	-0.16		
-0.35	-0.15		

```
## % latex table generated in R 3.6.3 by xtable 1.8-4 package
## % Sat May 09 18:23:50 2020
## \begin{table}[ht]
## \centering
## \begin{tabular}{rrllllllllll}
## \hline
## & social returns & private returns & name & region & income & fee income & graduates number & salary
## \hline
## 1 & 0.07 & 0.09 & & & & & & 16419973 & 2135936 &
## 2 & 0.05 & 0.09 & & & & & & 1100392770 & 687722327 & 3019 &
## 3 & 0.05 & 0.07 & & & & & & 4183964503 & 3062237486 & 6655 & 891604.86 &
## 4 & 0.04 & 0.07 & & & & & & 772501080 & 617780376 & 1826 & 42204
## 5 & 0.04 & 0.2 & - & & & & & 523571221 & 90276607 & 573 & 758097.924
## 6 & 0.04 & 0.1 & & & & & & 541798925 & 207680607 & 1727 & 39416
## 7 & 0.04 & 0.13 & & & & & & 2635986297 & 1474296345 & 2879 & 5881
## 8 & 0.03 & 0.09 & & & & & & 652983402 & 341877460 & 1768
## 9 & 0.03 & 0.1 & & & & & & 533540405 & 232659966 & 826 & 570974.46
## 10 & 0.02 & 0.15 & & & & & & ( ) & 221197434 & 45218603 & 366
## 11 & ... & ... & ... & ... & ... & ... & ... & ... & ... & ... \\\end{tabular}
```

```

## 12 & -0.29 & -0.18 & & 2808462605 & 1435110302 &
## 13 & -0.3 & -0.13 & & & 503602416 &
## 14 & -0.3 & -0.22 & - & & 325385006 & 68334706 & 2 &
## 15 & -0.3 & -0.1 & - & . . . & & 737231046 & 135743693 &
## 16 & -0.3 & -0.17 & & & 2017650593 & 820981827 & 6 &
## 17 & -0.31 & -0.16 & & & 692626466 & 187517317 & 408 & 247969. &
## 18 & -0.31 & -0.14 & & « » & & 6407021047 & 1860200816 & 1394 &
## 19 & -0.32 & -0.18 & - & . . & & - & & 4976035 &
## 20 & -0.34 & -0.16 & . . & & & 254287233 & 16350307 & 1 &
## 21 & -0.35 & -0.15 & & & & 779596081 & 183471177 & 260 & 3201 &
## \hline
## \end{tabular}
## \end{table}

```

social returns	private returns	name	region	income	fee income	gr
0.13	0.35			77494648	15863750	14
0.13	0.22			92245066	28143249	30
0.12	0.24			65409748	11559321	24
0.12	0.28		()	52924188	2300450	15
0.11	0.21			55748751	8735011	28
0.11	0.25		-	63656896	6861353	22
0.11	0.24	-	-	71753379	1316861	30
0.1	0.18			64188098	31136275	17
0.1	0.3		()	102647775	12136284	22
0.1	0.19	-		170093710	53870817	48
...
-0.32	-0.04			102510593	2504406	70
-0.32	-0.24			40375002	2698852	62
-0.32	-0.19			217475527	23639667	15
-0.32	0.04		-	121820668	11148350	55
-0.32	-0.16			210753603	12964108	15
-0.33	-0.02	-		126101858	15068464	73
-0.33	-0.14	№ 21		382506424	44584864	21
-0.33	0.12			295523466	14124141	82
-0.34	0.15	« »	-	183183432	752462	74
-0.34	-0.02			264550658	6833323	14

```

## % latex table generated in R 3.6.3 by xtable 1.8-4 package
## % Sat May 09 18:23:50 2020
## \begin{table}[ht]
## \centering
## \begin{tabular}{rllllllllll}
## \hline
## & social returns & private returns & name & region & income & fee income & graduates number & salary &
## \hline
## 1 & 0.13 & 0.35 & & & & 77494648 & 15863750 & 140 & 539416.116 & 484520.4
## 2 & 0.13 & 0.22 & & & & 92245066 & 28143249 & 306 & 480500.28 & 479186.8
## 3 & 0.12 & 0.24 & & & & 65409748 & 11559321 & 244 & 465314.868 & 3
## 4 & 0.12 & 0.28 & & ( ) & & 52924188 & 2300450 & 156 & 425013.408 & 426275.136
## 5 & 0.11 & 0.21 & & & & 55748751 & 8735011 & 280 & 313505.28 & 352453.248
## 6 & 0.11 & 0.25 & & - & & 63656896 & 6861353 & 229 & 410139.72 & 371384.244 & 3
## 7 & 0.11 & 0.24 & - & & & 71753379 & 1316861 & 305 & 367166.34 & 383850.
## 8 & 0.1 & 0.18 & & & & 64188098 & 31136275 & 171 & 502231.896 & 486949.428 &

```



```

## 9 & 0.1 & 0.3 & & ( ) & 102647775 & 12136284 & 220 & 516749.328 & 425
## 10 & 0.1 & 0.19 & - & & & 170093710 & 53870817 & 489 & 510811.72
## 11 & ... & ... & ... & ... & ... & ... & ... & ... & ... & ... \\
## 12 & -0.32 & -0.04 & & & 102510593 & 2504406 & 70 & 230779.668 & 246
## 13 & -0.32 & -0.24 & & & 40375002 & 2698852 & 62 & 246083.832 & 236
## 14 & -0.32 & -0.19 & & & 217475527 & 23639667 & 154 & 277849.992 & 311
## 15 & -0.32 & 0.04 & & - & 121820668 & 11148350 & 55 & 304109.028 & 278926.956 &
## 16 & -0.32 & -0.16 & & & 210753603 & 12964108 & 154 & 305801.244 & 275
## 17 & -0.33 & -0.02 & - & & 126101858 & 15068464 & 73 & 259428.58
## 18 & -0.33 & -0.14 & № 21 & & 382506424 & 44584864 & 216 & 303114.48 & 286252.59
## 19 & -0.33 & 0.12 & & & 295523466 & 14124141 & 82 & 4842
## 20 & -0.34 & 0.15 & « » & - & 183183432 & 752462 & 74 & 296865.156 & 316866.06 &
## 21 & -0.34 & -0.02 & & & 264550658 & 6833323 & 148 & 284707.92 & 2
## \hline
## \end{tabular}
## \end{table}

```

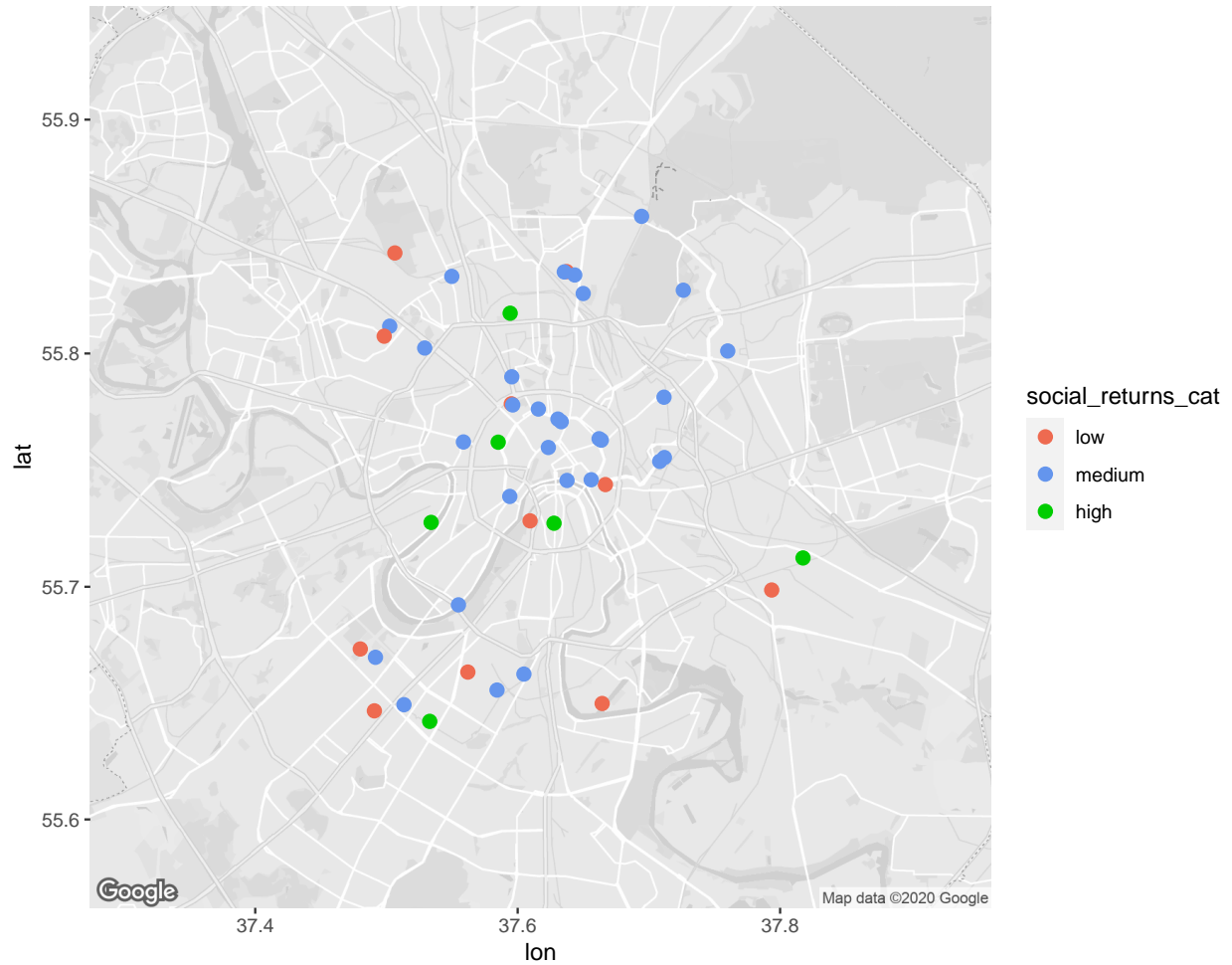
The provided data allow us to map the educational organizations according to their precise coordinates. We can observe a few examples of such plotting for Moscow universities and Saint Peterburg colleges with an indication of the level of social returns for each organization.

```

## Source : https://maps.googleapis.com/maps/api/staticmap?center=Moscow&zoom=11&size=1000x1000&scale=2
## Source : https://maps.googleapis.com/maps/api/geocode/json?address=Moscow&key=xxx
## Warning: Removed 1 rows containing missing values (geom_point).

```

Social IRR of Universities in Moscow



```
## Saving 8 x 8 in image
```

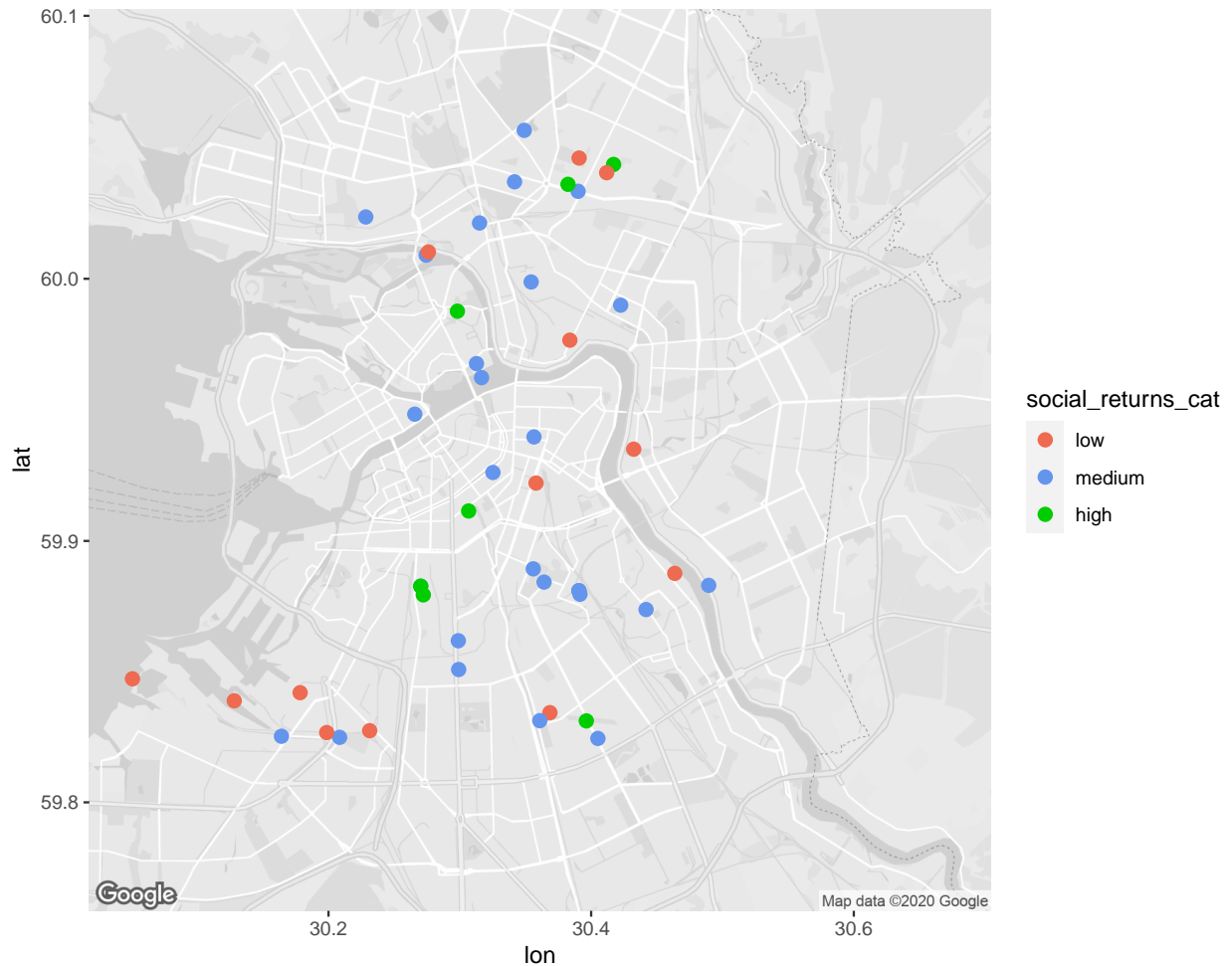
```
## Warning: Removed 1 rows containing missing values (geom_point).
```

```
## Source : https://maps.googleapis.com/maps/api/staticmap?center=Saint-Petersburg&zoom=11&size=1000x1000
```

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## Source : https://maps.googleapis.com/maps/api/geocode/json?address=Saint-Petersburg&key=xxx
```

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## Warning: Removed 2 rows containing missing values (geom_point).
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Social IRR of Colleges in Saint Petersburg



```
## Saving 8 x 8 in image
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## Warning: Removed 2 rows containing missing values (geom_point).
```

Another aspect that can influence the rate of returns substantially is the education area of the organization. Technical specialization has the highest social internal return rate for both college and university and art specializations are amongst less returnable once for both educational levels. Medical universities in Russia, in opposite to their American counterparts, are also having one of the lowest internal return rates.

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## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## width unknown for character 0xe8

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## width unknown for character 0xed

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## width unknown for character 0xf1

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
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## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## width unknown for character 0xf5

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## width unknown for character 0xf3

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## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0xf0

## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0xed

## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0xfb

## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0xe9

## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0xe9

## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0xf2

## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0xe5

## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0xf5

## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0xed

## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0xe8

## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0xf7

## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0xe5

## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0xf1

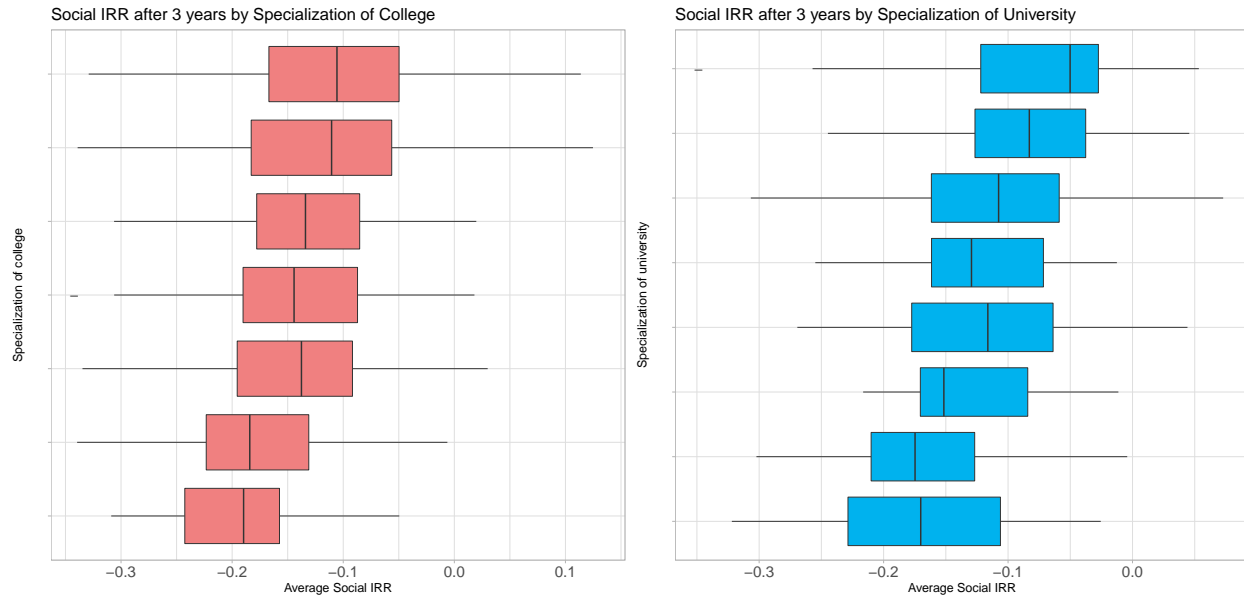
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0xf1

## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0xf1

## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0xc6

## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0x4

```



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## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## width unknown for character 0xf5

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## width unknown for character 0xf3

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## width unknown for character 0xe4

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## width unknown for character 0xee

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## width unknown for character 0xe6

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## width unknown for character 0xe5

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## width unknown for character 0xf1

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## width unknown for character 0xf2

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## width unknown for character 0xf2

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## width unknown for character 0xef

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## width unknown for character 0xe5

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## width unknown for character 0xe4

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## width unknown for character 0xe0

## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
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```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## width unknown for character 0xf1
```

```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## width unknown for character 0xcd
```

```
## Warning in grid.Call(C_textBounds, as.graphicsAnnot(x$label), x$x, x$y, : font
## width unknown for character 0x4
```

```
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0xec
```

```
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0xe5
```

```
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0xe4
```

```
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0xe8
```

```
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0xf6
```

```
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0xe8
```

```
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0xed
```

```
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :  
## font width unknown for character 0xf1
```

```
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0xf1
```

```
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0xf5
```

```
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0xf3
```

```
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0xe4
```

```
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0xee
```

```
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0xe6
```

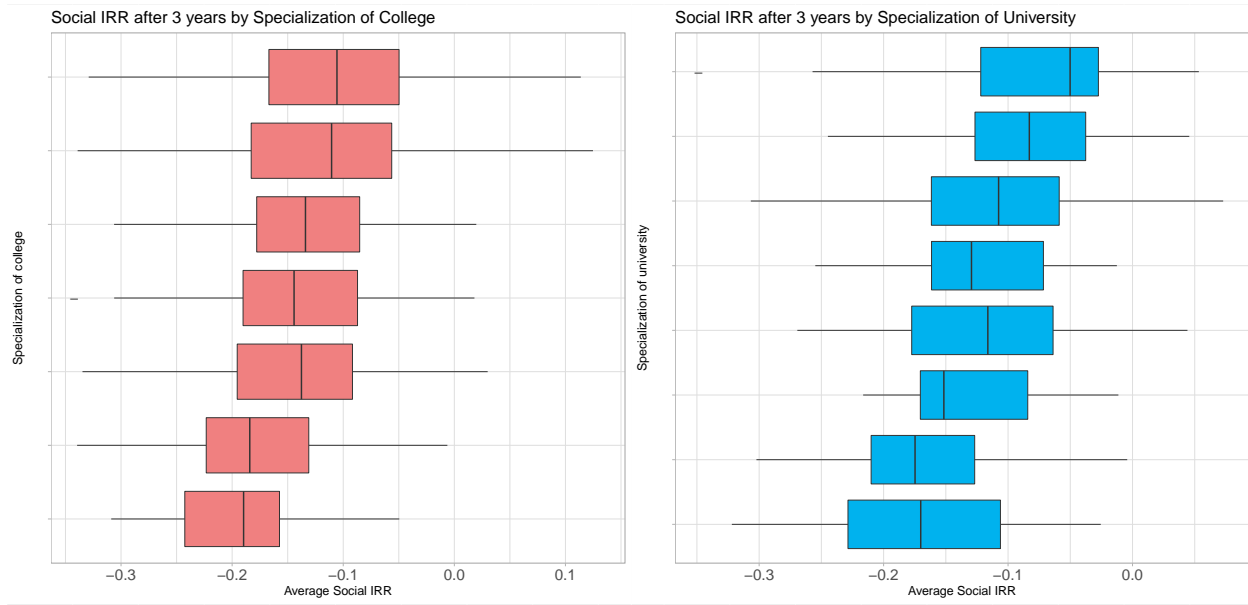
```
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0xe5
```

```
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0xf1
```

```
## Warning in grid.Call.graphics(C_text, as.graphicsAnnot(x$label), x$x, x$y, :
## font width unknown for character 0xf2
```

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We estimate the factors which are explaining the difference in returns between organization by conducting 4 separate linear regression models with 1) Social IRR in colleges, 2) Private IRR in colleges, 3) Social IRR in universities, and 4) Private IRR in universities as dependent variables. We are going to use 1) the specialization of organization, 2) the number of graduates, 3) the number of staff, 4) the average wage in the organization, 5) the proportion of income obtained from paid services and 6) the average wage in the region as the main predictors for these models.

Tables with Linear Regression estimates for the Social/Private returns of Higher/Vocational education are depicted below.

```
##
## \begin{table}[!htbp] \centering
## \caption{}
## \label{}
## \begin{tabular}{@{\extracolsep{5pt}}lcc}
## \hline[-1.8ex]\hline
## \hline \hline[-1.8ex]
## \hline \hline[-1.8ex] & (1) & (2)\hline
## \hline \hline[-1.8ex]
## Constant & $-0.004 & 0.269^{***}$ \hline
## & (0.009) & (0.009) \hline
## & & \hline
## speciality\_type & $-0.035^{***}$ & $-0.035^{***}$ \hline
## & (0.008) & (0.008) \hline
## & & \hline
## speciality\_type & $-0.064^{***}$ & $-0.032^{***}$ \hline
## & (0.009) & (0.009) \hline
## & & \hline
## speciality\_type & $-0.016^{*}$ & $-0.013$ \hline
## & (0.008) & (0.008) \hline
## & & \hline
## speciality\_type & $-0.011^{*}$ & $-0.007$ \hline
## & (0.007) & (0.007) \hline
## & & \hline
## speciality\_type - & $-0.038^{***}$ & $-0.051^{***}$ \hline
```

```

## & (0.012) & (0.012) \\
## & & \\
## speciality\_type & $-0.087$^{***}$ & $-0.028$^{**}$ \\
## & (0.015) & (0.014) \\
## & & \\
## graduates\_number & 0.0001$^{***}$ & 0.00001 \\
## & (0.00002) & (0.00002) \\
## & & \\
## staff\_endYear\_2017 & $-0.00000 & $-0.00000 \\
## & (0.00000) & (0.00000) \\
## & & \\
## staff\_averageSalary\_2017 & $-0.00000$^{**}$ & 0.00000$^{***}$ \\
## & (0.00000) & (0.00000) \\
## & & \\
## paidServices\_ratio & 0.094$^{***}$ & $-0.171$^{***}$ \\
## & (0.023) & (0.023) \\
## & & \\
## annual\_wage\_region & $-0.00000$^{***}$ & $-0.00000$^{***}$ \\
## & (0.00000) & (0.00000) \\
## & & \\
## \hline \\[-1.8ex]
## Observations & 989 & 989 \\
## R$^{2}$ & 0.382 & 0.595 \\
## Adjusted R$^{2}$ & 0.375 & 0.590 \\
## Residual Std. Error & 0.072 & 0.070 \\
## F Statistic & 54.966$^{***}$ & 130.371$^{***}$ \\
## \hline
## \hline \\[-1.8ex]
## \textit{Note:} & \multicolumn{2}{r}{\textit{$^{*}$}$p$<$0.1; \textit{$^{**}$}$p$<$0.05; \textit{$^{***}$}$p$<$0.01}} \\
## \end{tabular}
## \end{table}

```

Colleges with higher graduates are tend to provide higher social returns, while the average wage in the organization boosts only private returns.

```

##
## \begin{table}[!htbp] \centering
## \caption{}
## \label{}
## \begin{tabular}{@{\extracolsep{5pt}}lcc}
## \\[-1.8ex]\hline
## \hline \\[-1.8ex]
## \\[-1.8ex] & (1) & (2)\\
## \hline \\[-1.8ex]
## Constant & $-0.068$^{***}$ & 0.092$^{***}$ \\
## & (0.017) & (0.016) \\
## & & \\
## specialization\_type & $-0.001 & 0.016 \\
## & (0.014) & (0.013) \\
## & & \\
## specialization\_type & $-0.001 & $-0.001 \\
## & (0.016) & (0.015) \\
## & & \\
## specialization\_type & $-0.041$^{***}$ & $-0.008 \\
## & (0.015) & (0.013) \\

```

```

## & & \\
## specialization\_type & 0.028 & 0.061$^{***}$ \\
## & (0.025) & (0.023) \\
## & & \\
## specialization\_type - & 0.053$^{***}$ & 0.056$^{***}$ \\
## & (0.018) & (0.017) \\
## & & \\
## specialization\_type & 0.032$^{**}$ & 0.054$^{***}$ \\
## & (0.013) & (0.012) \\
## & & \\
## specialization\_type & $-0.017 & 0.025 \\
## & (0.016) & (0.015) \\
## & & \\
## graduates\_number & 0.00001$^{***}$ & 0.00001$^{*}$ \\
## & (0.00000) & (0.00000) \\
## & & \\
## staff\_averageSalary\_2017 & 0.00000$^{**}$ & 0.00000$^{***}$ \\
## & (0.00000) & (0.00000) \\
## & & \\
## paidServices\_ratio & 0.059$^{**}$ & $-0.077$^{***}$ \\
## & (0.028) & (0.026) \\
## & & \\
## annual\_wage\_region & $-0.00000$^{***}$ & $-0.00000$^{***}$ \\
## & (0.00000) & (0.00000) \\
## & & \\
## \hline \\[-1.8ex]
## Observations & 304 & 304 \\
## R$^{2}$ & 0.391 & 0.518 \\
## Adjusted R$^{2}$ & 0.368 & 0.500 \\
## Residual Std. Error & 0.064 & 0.059 \\
## F Statistic & 17.060$^{***}$ & 28.565$^{***}$ \\
## \hline
## \hline \\[-1.8ex]
## \textit{Note:} & \multicolumn{2}{r}{ $^{*}$p<$0.1; $^{**}$p<$0.05; $^{***}$p<$0.01} \\
## \end{tabular}
## \end{table}

```

Conclusion