

College tuition, diversity, and pay

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4/25/2020

College tuition, diversity, and pay

- ▶ Many people are interested to know about the tuition, costs, diversity and potential salary when searching for college.
- ▶ In this project, we want to analyze tuition costs across different states, and explore diversity in different schools.
- ▶ The data set includes different variables such as school name, state, type of school, in-state/out-of-state tuition, group/racial/gender category, early/mid-career pay, stem percent and historical tuition information.
- ▶ We are also interested in trends of tuition over time. We will use different summary statistics and visualizations in R to address these problems.

Diversity dataset

```
diversity_school %>% glimpse()
```

```
## Rows: 50,655
```

```
## Columns: 5
```

```
## $ name          <chr> "University of Phoenix-Arizona"
```

```
## $ total_enrollment <dbl> 195059, 195059, 195059, 195059,
```

```
## $ state          <chr> "Arizona", "Arizona", "Arizona"
```

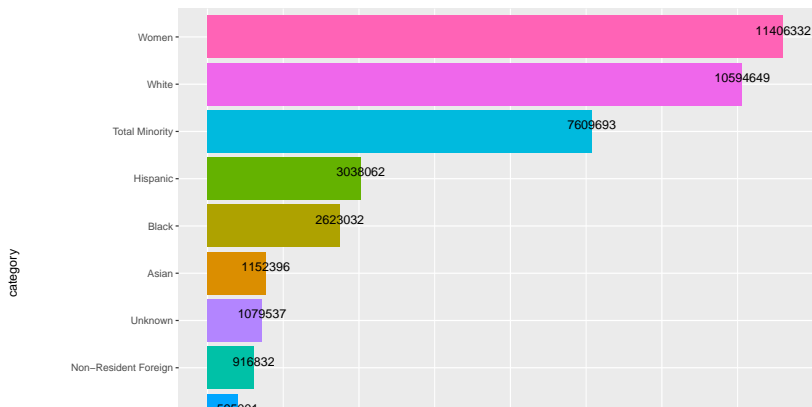
```
## $ category        <chr> "Women", "American Indian / Ala
```

```
## $ enrollment       <dbl> 134722, 876, 1959, 31455, 13984
```

name	total_enrollment	state	category
University of Phoenix-Arizona	195059	Arizona	Women
University of Phoenix-Arizona	195059	Arizona	American Indian
University of Phoenix-Arizona	195059	Arizona	Asian
University of Phoenix-Arizona	195059	Arizona	Black
University of Phoenix-Arizona	195059	Arizona	Hispanic
University of Phoenix-Arizona	195059	Arizona	Native Hawaiian

Diversity categories

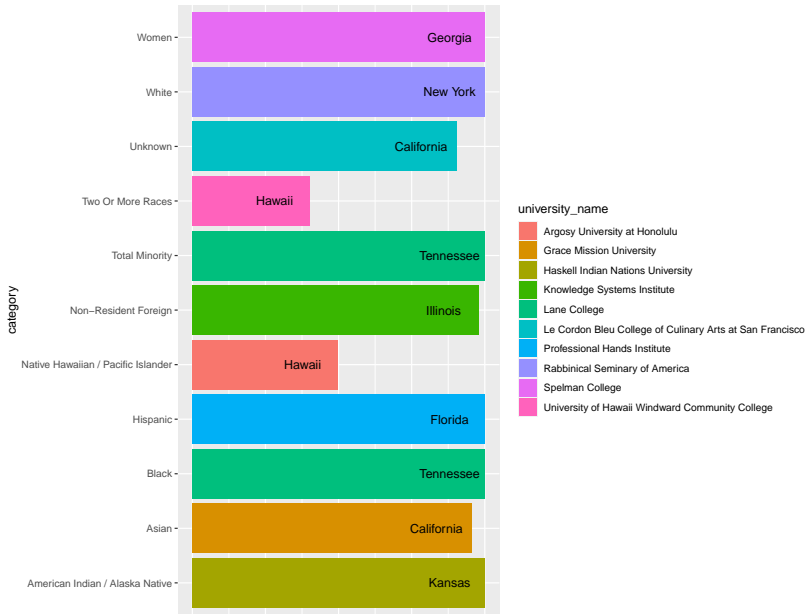
```
## [1] "Women" "American Indian or Alaska Native"  
## [3] "Asian" "Black"  
## [5] "Hispanic" "Native Hawaiian or Other Pacific Islander"  
## [7] "White" "Two Or More Races"  
## [9] "Unknown" "Non-Resident Foreign Born"  
## [11] "Total Minority"
```



Finding the most diverse campus per each diversity categories

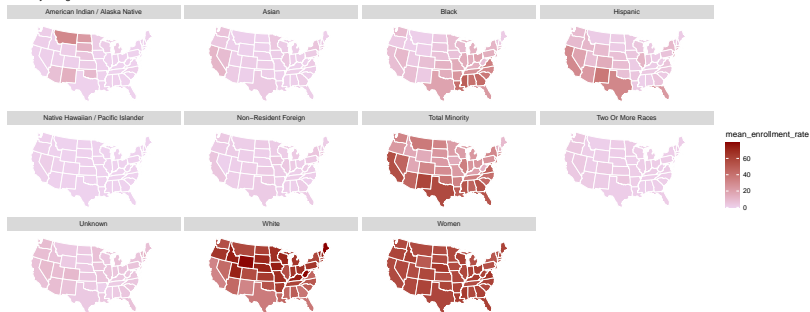
category	university_name
American Indian / Alaska Native	Haskell Indian Nations University
Asian	Grace Mission University
Black	Lane College
Hispanic	Professional Hands Institute
Native Hawaiian / Pacific Islander	Argosy University at Honolulu
Non-Resident Foreign	Knowledge Systems Institute
Total Minority	Lane College
Two Or More Races	University of Hawaii Windward Con
Unknown	Le Cordon Bleu College of Culinary
White	Rabbinical Seminary of America
Women	Spelman College

Finding the most diverse campus per each diversity categories

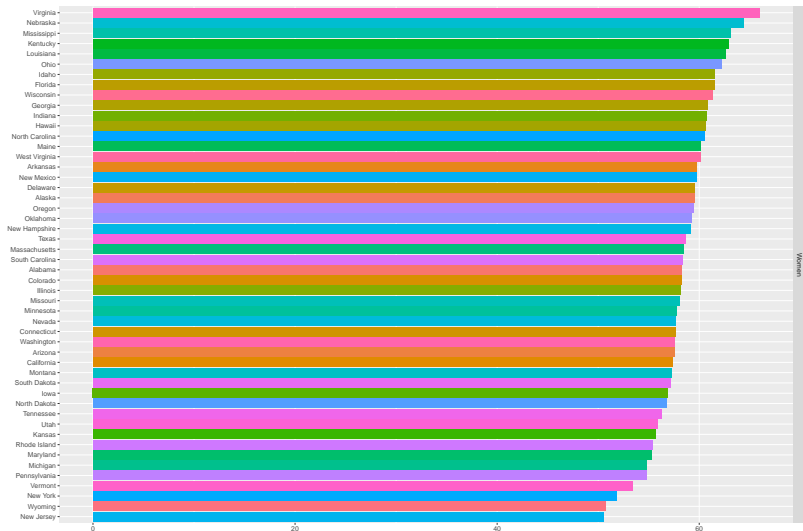


Diversity map of the US for each diversity Group

Diversity categories across the US



Women enrollment rate across the US



Tuition cost dataset

```
tuition_cost %>% glimpse()
```

```
## Rows: 2,973
## Columns: 10
## $ name      <chr> "Aaniiih Nakoda College", "
## $ state     <chr> "Montana", "Texas", "Georgi
## $ state_code <chr> "MT", "TX", "GA", "MN", "CA
## $ type      <chr> "Public", "Private", "Publ
## $ degree_length <chr> "2 Year", "4 Year", "2 Year
## $ room_and_board <dbl> NA, 10350, 8474, NA, 16648
## $ in_state_tuition <dbl> 2380, 34850, 4128, 17661, 2
## $ in_state_total  <dbl> 2380, 45200, 12602, 17661,
## $ out_of_state_tuition <dbl> 2380, 34850, 12550, 17661,
## $ out_of_state_total <dbl> 2380, 45200, 21024, 17661,
```

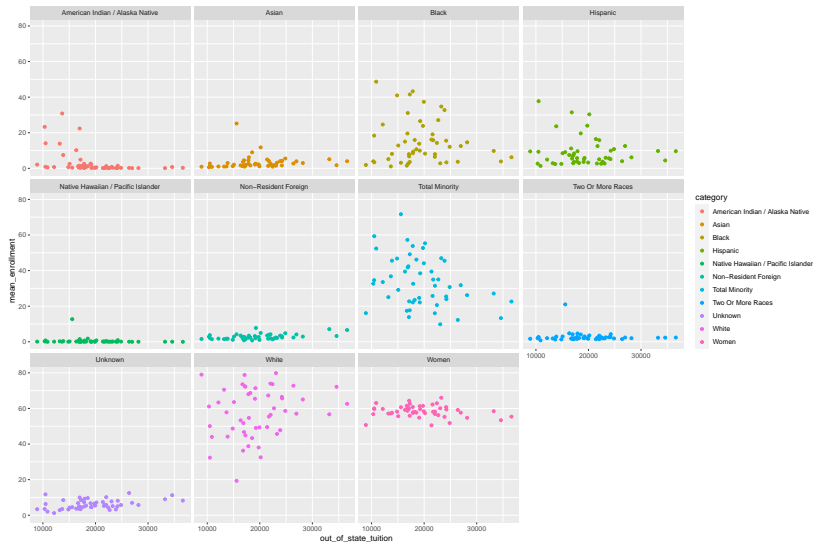
merge tuition cost dataset and diversity dataset

- ▶ we are interested to know whether there is any correlation between enrollment rate and each diversity group

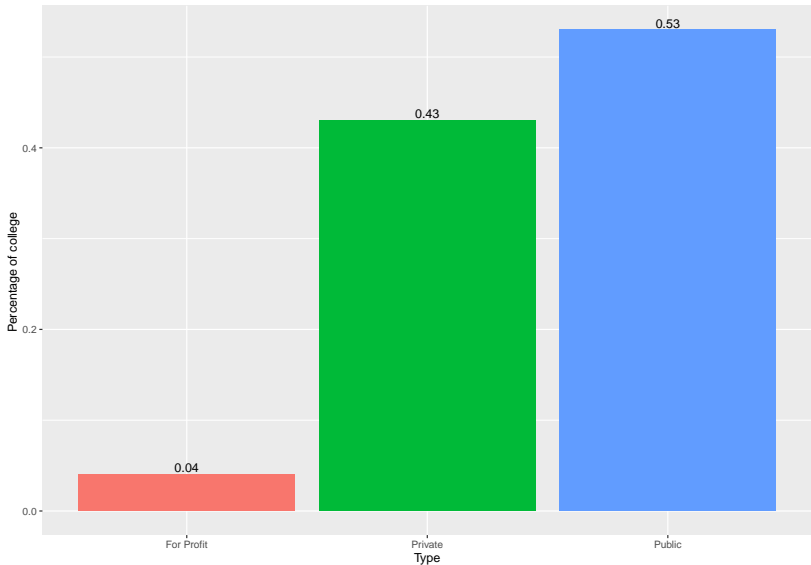
Relationship between enrollment rate and in state tuition per each diversity group



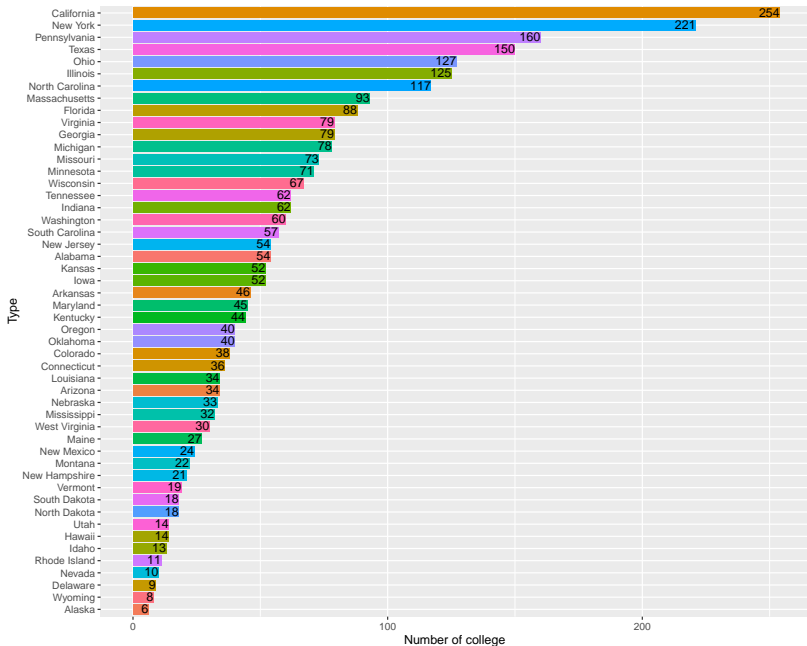
Relationship between enrollment rate and out of state tuition per each diversity group



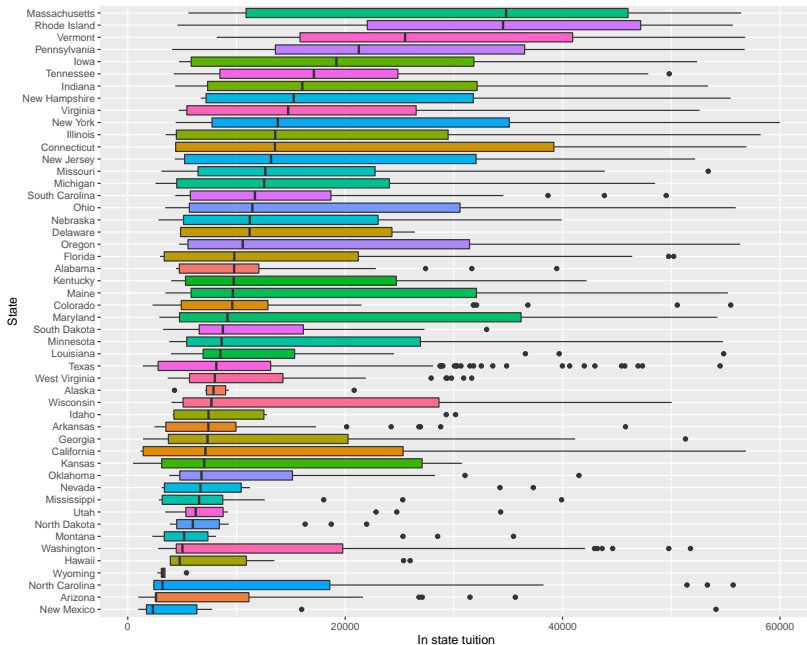
Different types of colleges in US



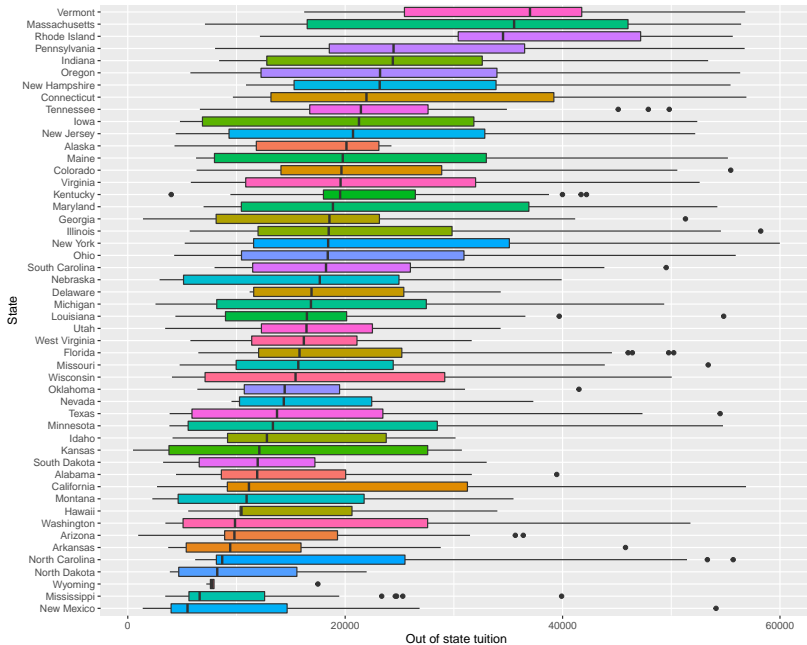
How many collages are there in each state?



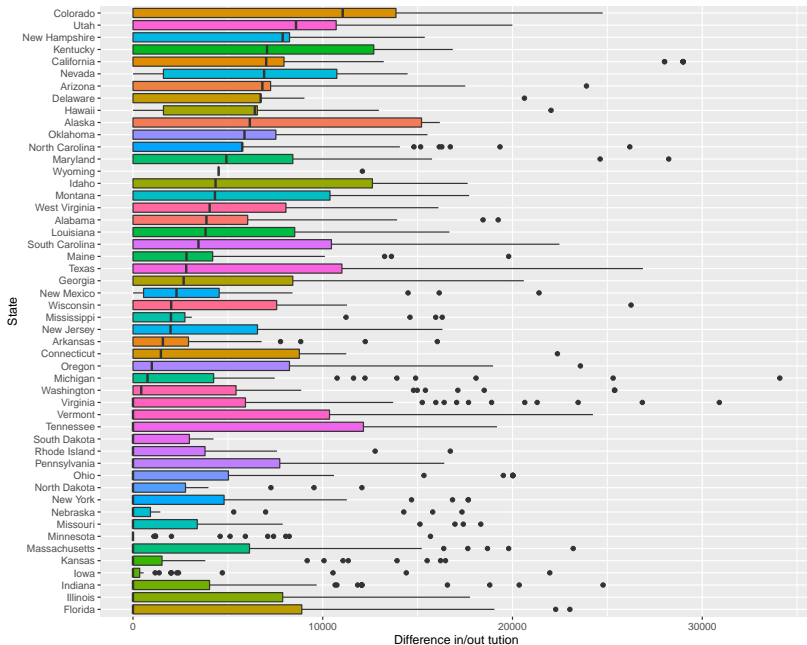
Comparing different states in terms of in state tuition



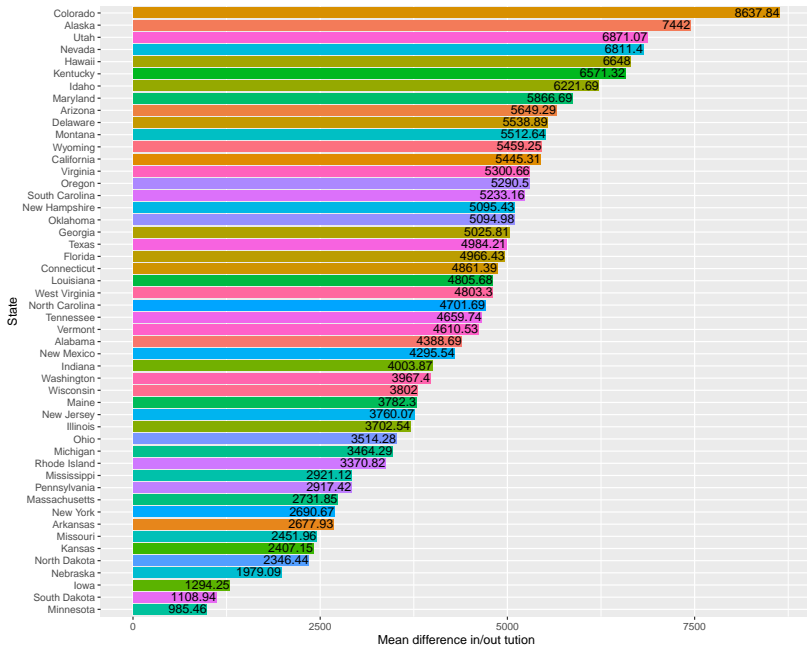
Comparing different states in terms of out of state tuition



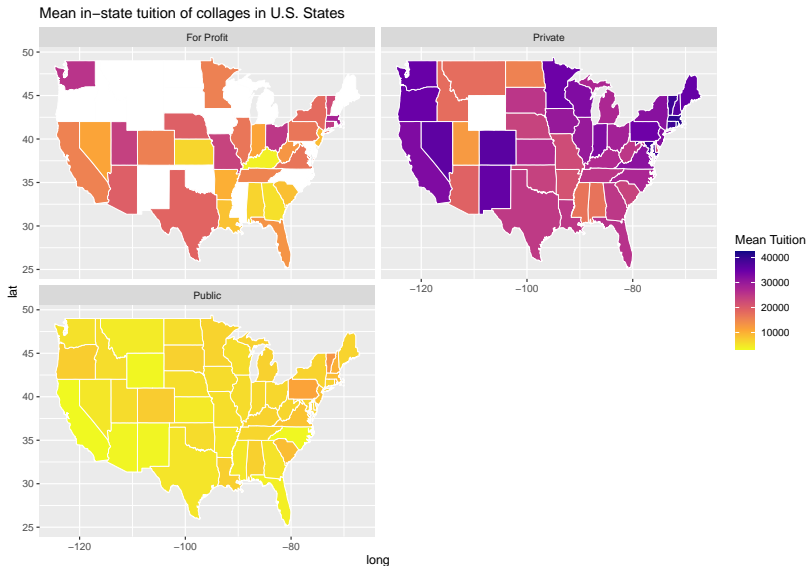
Comparing in/out of state tuition (1/2)



Comparing in/out of state tuition (2/2)

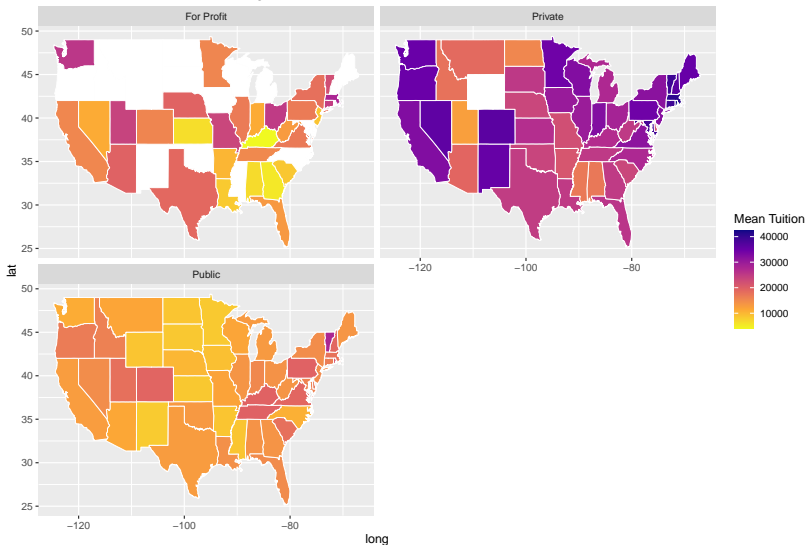


In state tuition; different type of colleges; What is the relationship?



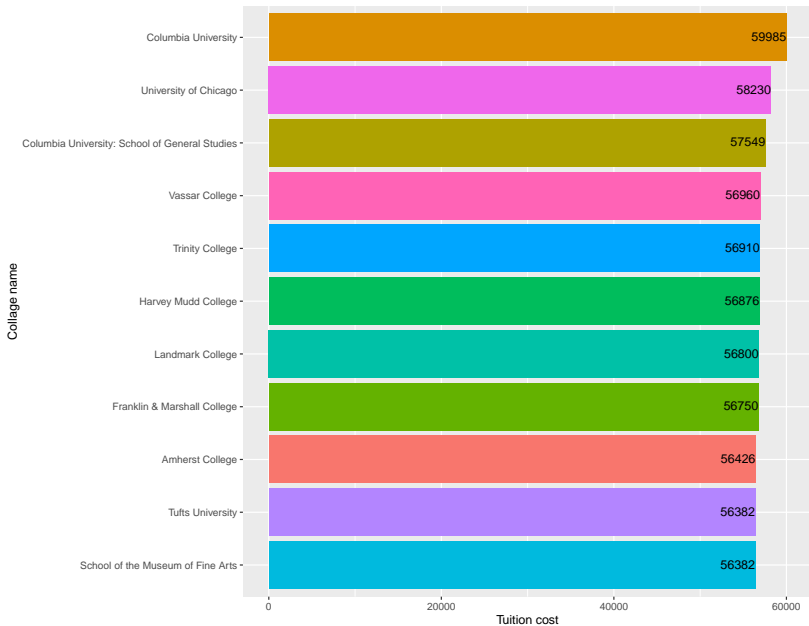
Out of state tuition; different type of colleges; What is the relationship?

Mean out-of-state tuition of colleges in U.S. States



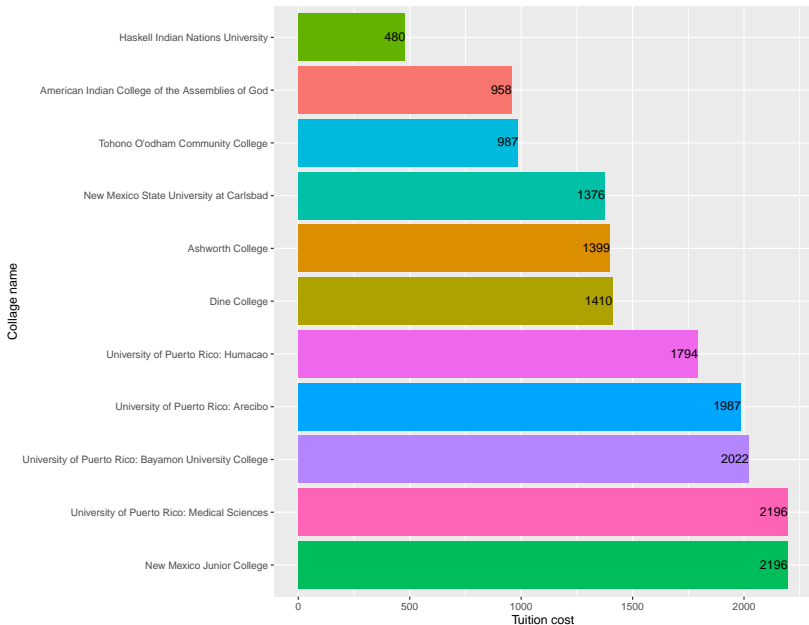
Most expensive collages with out of state tuition

Top 10 most expensive collages with out of state tuition



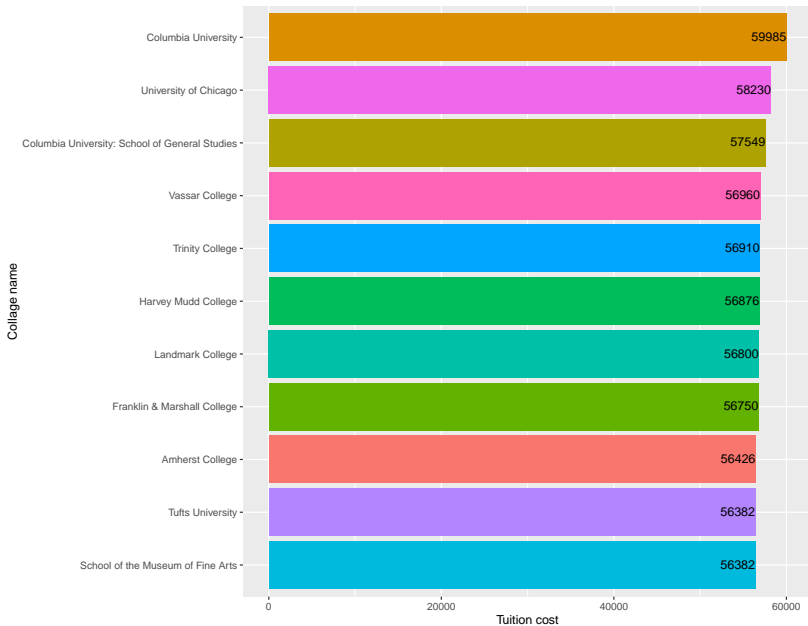
The cheapest Colleges in terms of out of state tuition

Top 10 cheapest colleges with out of state tuition



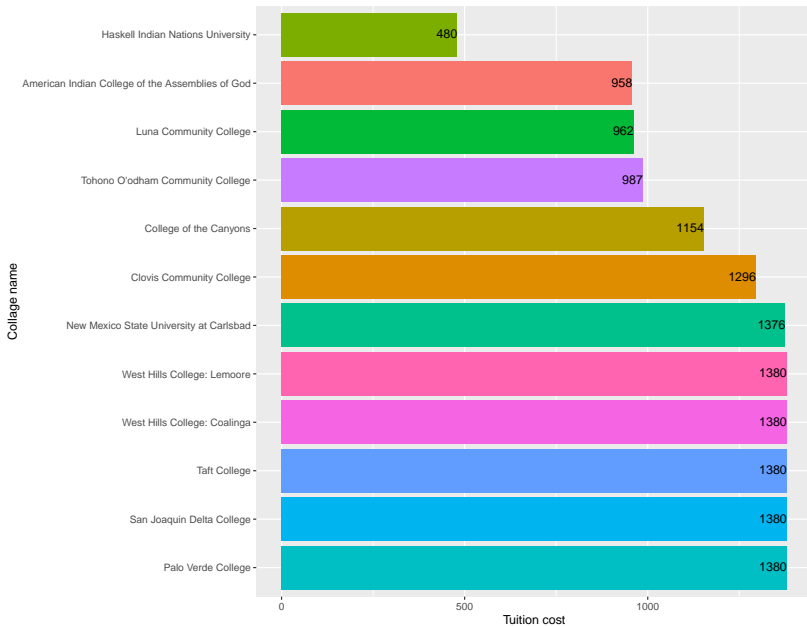
Most expensive collages with in state tuition

Top 10 most expensive collages with in state tuition



The cheapest collages in terms of in state tuition

Top 10 cheapest collages with in state tuition



The historical tuition dataset

270 observations and 4 variables

type	year	tuition_type	tuition_cost
All Institutions	1985-86	All Constant	10893
All Institutions	1985-86	4 Year Constant	12274
All Institutions	1985-86	2 Year Constant	7508
All Institutions	1985-86	All Current	4885
All Institutions	1985-86	4 Year Current	5504
All Institutions	1985-86	2 Year Current	3367

The historical tuition dataset

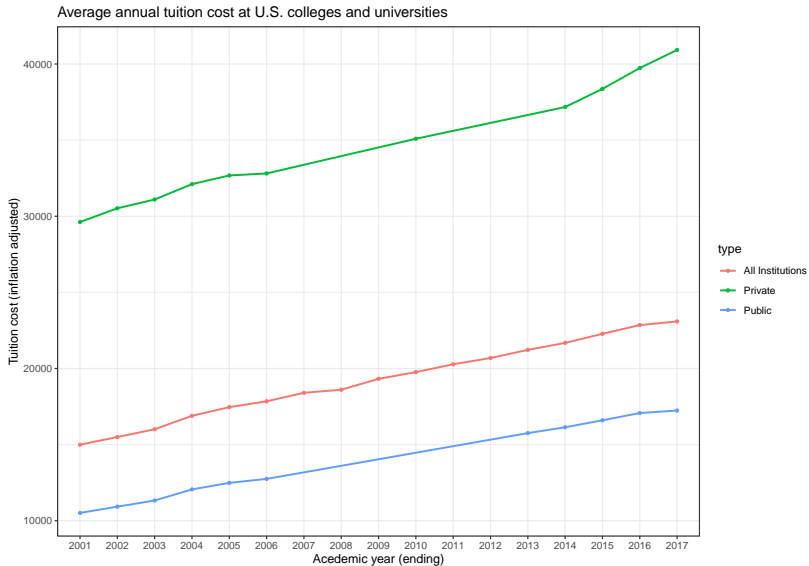
We observe that the data is available consistently from 2000 till 2017.

```
## [1] "1985-86" "1995-96" "2000-01" "2001-02" "2002-03" "  
## [8] "2005-06" "2006-07" "2007-08" "2008-09" "2009-10" "  
## [15] "2012-13" "2013-14" "2014-15" "2015-16" "2016-17"
```

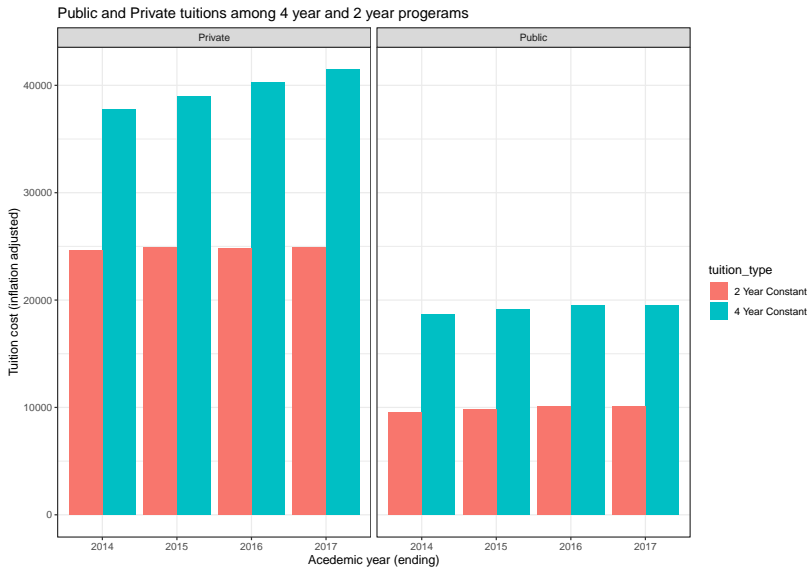
For convenience, we will consider the end of year.

```
## [1] 1986 1996 2001 2002 2003 2004 2005 2006 2007 2008 2  
## [16] 2014 2015 2016 2017
```

Average tuition cost over time



Tuition comparison between 2 year and 4 year programs

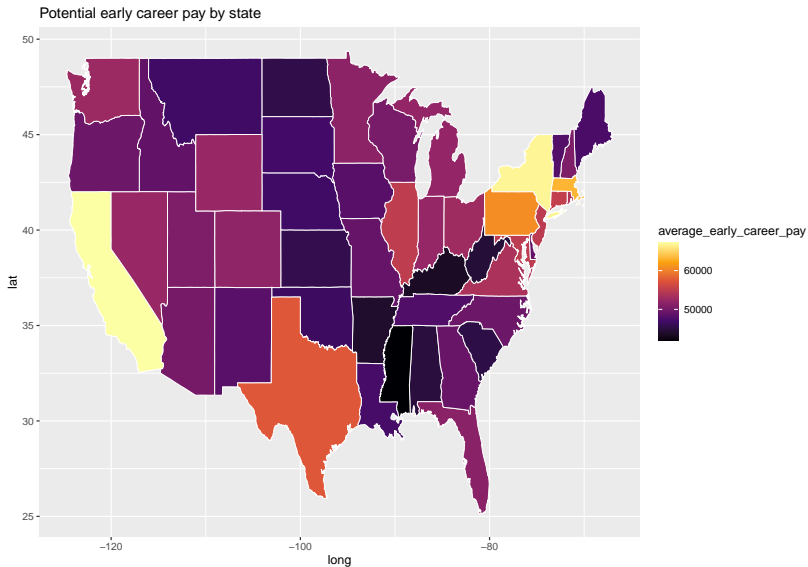


Salary potential dataset

935 observations and 5 variables including:

- ▶ University
- ▶ State
- ▶ Early career pay
- ▶ Mid career pay
- ▶ Stem percent

Which states have the highest/least early career pay?

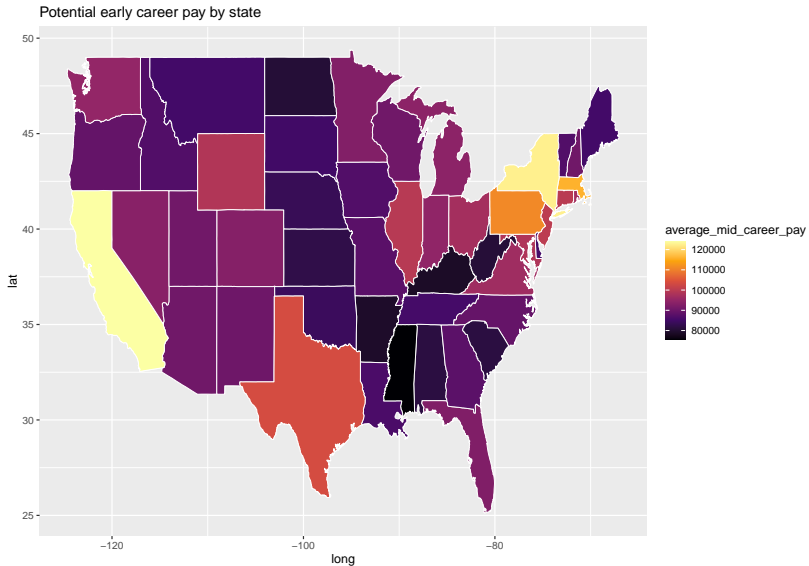


Top 5 states

state_name	average_mid_career_pay
California	123976
New-York	122328
Massachusetts	115712
Pennsylvania	110884
Texas	103476

state_name	average_early_career_pay
California	67232
New-York	66688
Massachusetts	63100
Pennsylvania	60644
Texas	57468

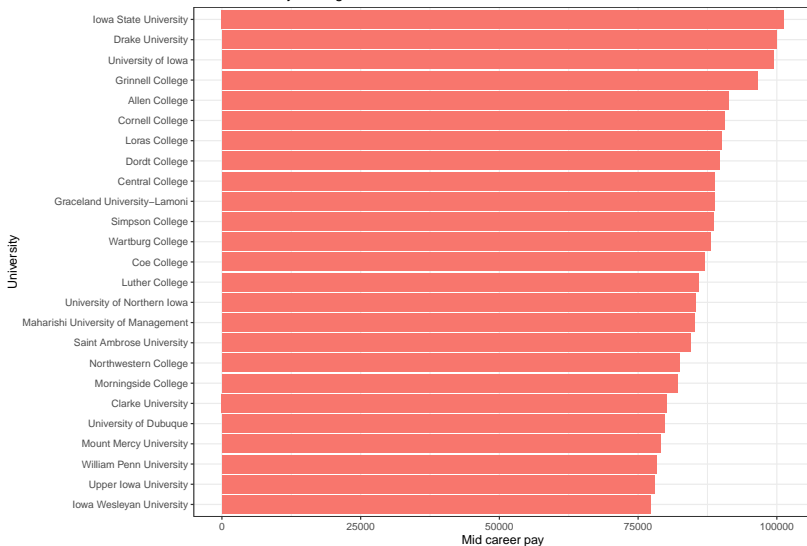
Which states have the highest/least mid career pay?



Let's take a closer look at Iowa

rank	name	state_name	early_career
1	Iowa State University	Iowa	
2	Drake University	Iowa	
3	University of Iowa	Iowa	
4	Grinnell College	Iowa	
5	Allen College	Iowa	
6	Cornell College	Iowa	
7	Loras College	Iowa	
8	Dordt College	Iowa	
9	Central College	Iowa	
10	Graceland University-Lamoni	Iowa	
11	Simpson College	Iowa	
12	Wartburg College	Iowa	
13	Coe College	Iowa	
14	Luther College	Iowa	
15	University of Northern Iowa	Iowa	
16	Maharishi University of Management	Iowa	

Potential salary among universities in Iowa



Stem percent

