

Quality Assurance - College Affordability Model Testing

Introduction

- Faculty research with Gautam Kumar, Larisa Kocsis, Professor Jim Fridley, and Professor Kelvin Sung
- Website used by state legislators to study how students can pay for college
- Responsible for creating automated testing

Problem

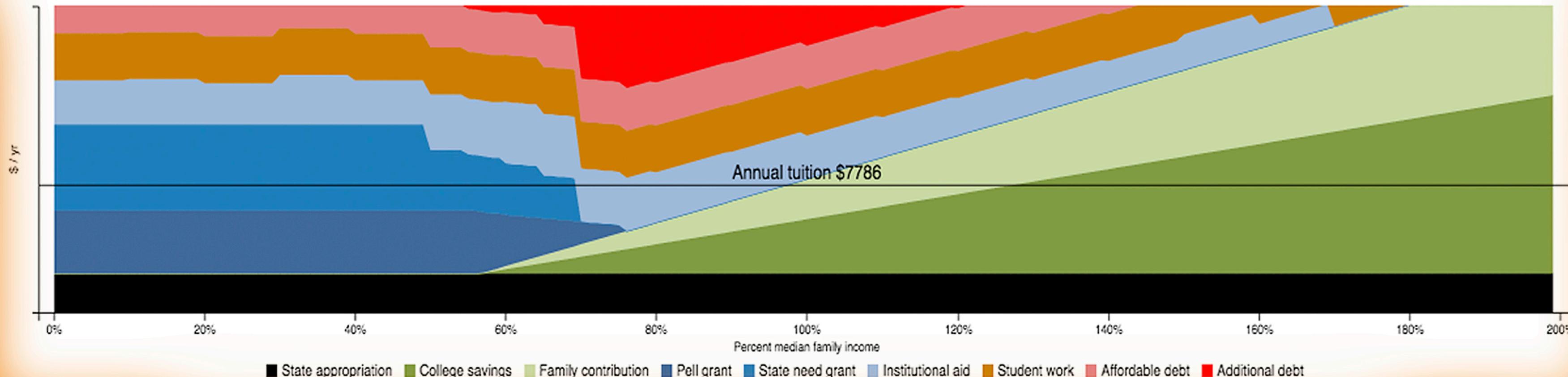
- Too many drop downs and sliders to manually test

General information	Family's share	Student's share
Academic year	Family income exclusion	Hours worked ~ \$4,136/yr
2012 - 2013	200	500 hrs / yr
State	Family income contribution	Policy change
Washington	10	Tuition adjustment
Attending	Percent disc income saved	
Public regional unive	5	
Living status		
Dependent live away		

- How is someone going to constantly test each one, especially when new ones are added?

Solution

Total cost of attending a Public Regional College or University in the state of Washington for 4 years, based on AY2013 costs and policies, is \$84,144.



```
//testAllDropDowns
//Finds all drop downs and iterates through all of its options
//Assumption: All drop downs have the tag name "select"
public void testAllDropDowns(WebDriverWait wait, WebDriver driver, JavascriptExecutor js) {
    wait.until(ExpectedConditions.visibilityOfElementLocated(By.id("ui_total_coa")));
    List<WebElement> allDropDowns = driver.findElements(By.tagName("select"));
    for (WebElement element : allDropDowns) {
        String id = element.getAttribute("id");
        List<WebElement> options = element.findElements(By.tagName("option"));
        for (WebElement option : options) {
            wait.until(ExpectedConditions.visibilityOfElementLocated(By.id("ui_total_coa")));
            String toExecute = "(" + id + ").val('" + option.getAttribute("value") + "').change();";
            js.executeScript(toExecute);
        }
    }
}
```

- Iterate through web elements and detect crashes
- Validate data
- Track traffic of requests sent to server
- Log errors into a properly formatted file

Tools Used



Results

(HAR File)

Before

```
RESPONSE
response:
500
status: INTERNAL SERVER ERROR
```

```
REQUEST
{
  "params": [
    {
      "name": "csrfmiddlewaretoken",
      "value": "0B520gr1Rvx1nTkssXptkw610nHT21",
      "fileName": "null",
      "contentType": "null",
      "comment": "null"
    },
    {
      "name": "plots",
      "value": "1",
      "fileName": "null",
      "contentType": "null",
      "comment": "null"
    }
  ],
  "files": [
    {
      "name": "plots",
      "value": "1",
      "fileName": "null",
      "contentType": "null",
      "comment": "null"
    }
  ]
}
```

```
RESPONSE
response:
500
status: INTERNAL SERVER ERROR
```

```
REQUEST
{
  "params": [
    {
      "name": "csrfmiddlewaretoken",
      "value": "yt5BoVqNR71jXldjbhjU1Fh1IAVP7Ae",
      "fileName": "null",
      "contentType": "null",
      "comment": "null"
    },
    {
      "name": "plots",
      "value": "1",
      "fileName": "null",
      "contentType": "null",
      "comment": "null"
    }
  ],
  "files": [
    {
      "name": "plots",
      "value": "1",
      "fileName": "null",
      "contentType": "null",
      "comment": "null"
    }
  ]
}
```

- Easy to use automated testing that could be run with a single click

- Dynamic code to be able to adapt to additions

Conclusion

- Selenium is an incredibly useful tool that could be used for any automation on a website
- Learned important aspect of quality assurance
- Contributed to important project
- Collaborated with a diverse team