Part_II_slide_deck_template

November 15, 2022

1 Part II - (Key insights behind student's Academic performance)

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1.2 Investigation Overview

In this investigation, I looked at the effect of parental background (such degree,occupational status and income.) on academic performance of students. The main focus will be on how many features contribute to student performance in their academics.

1.3 Dataset Overview

The pisa2012 dataset contains over 400,000 responses from different students with more than 600 features. But for the purpose of this analysis and visualization, I will be using 200,000 samples of the dataset with 29 features. The features are of variety of format such as nominal, continuous, text, ordinal, discrete, etc.,

```
In [3]: # import all packages and set plots to be embedded inline
        import numpy as np
        import pandas as pd
        import matplotlib.pyplot as plt
        import seaborn as sb

        %matplotlib inline

        # suppress warnings from final output
        import warnings
        warnings.simplefilter("ignore")
        plt.style.use('fivethirtyeight')
```

```
In [4]: # load in the dataset into a pandas dataframe
        pisa_df = pd.read_csv('process_data.csv')
```

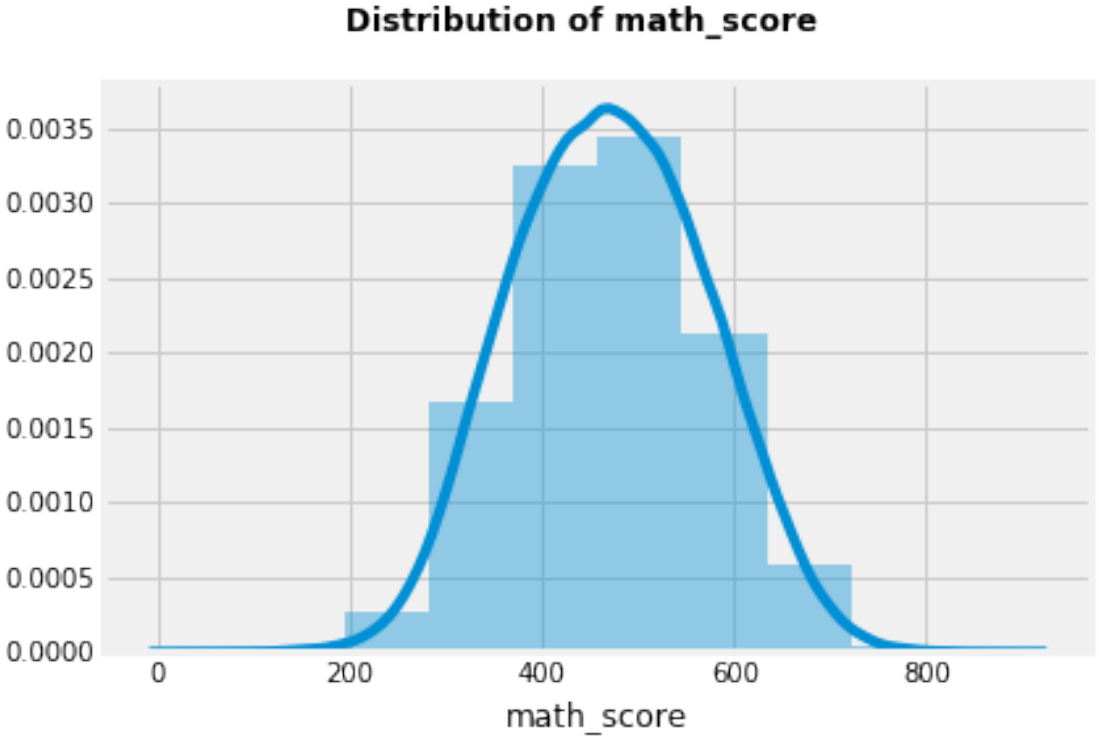
1.4 (Visualization 1)

1.4.1 Show Student score distribution in different subject

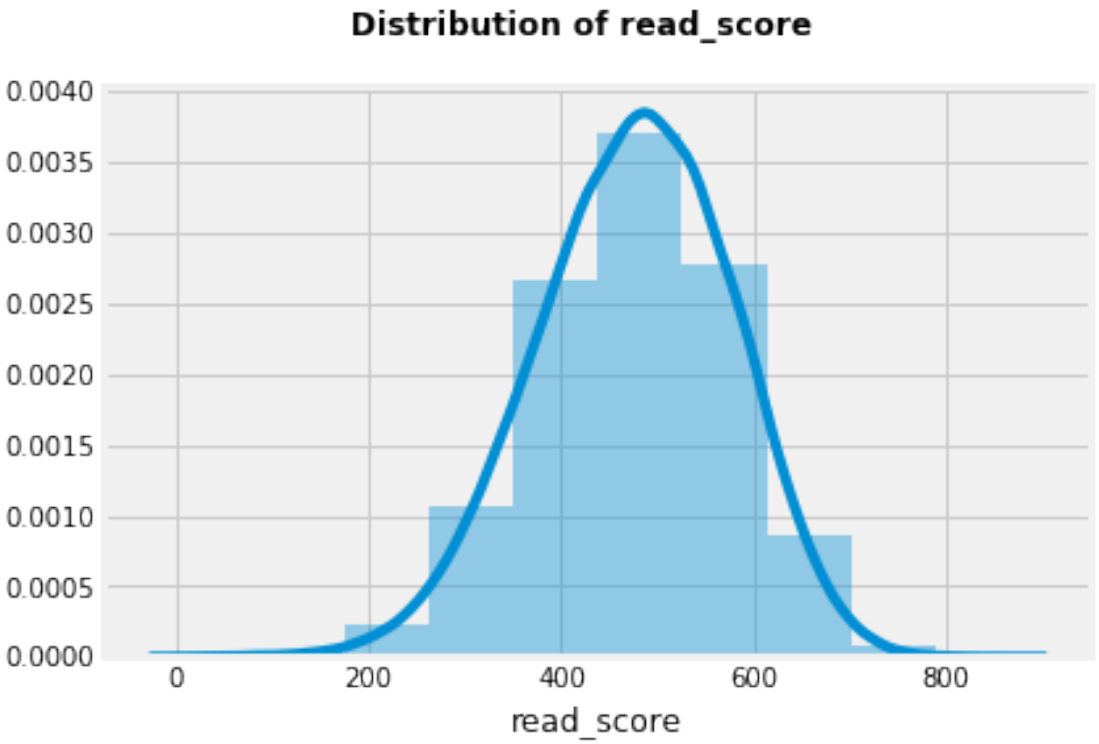
```
In [5]: def order_cat(columns: list, order: list =None):
            """Order all columns scale in the right order"""
```

```
        if not order:
            order = ['Strongly disagree', 'Disagree', 'Agree', 'Strongly agree']
        for col in columns:
            pisa_df[col] = pd.Categorical(pisa_df[col], categories=order, ordered=True)

    sch_lvl = ['She did not complete ','He did not complete ']
    for col, lvl in zip(['mother_sch_lvl', 'father_sch_lvl'], sch_lvl):
        order_cat([col], order=[lvl,'ISCED level 1', 'ISCED level 2',
                                'ISCED level 3A', 'ISCED level 3B, 3C'])

    job_status = ['mother_job_status', 'father_job_status']

    order_cat(job_status, order=['Not working, but looking for a job',
                                 'Other (e.g. home duties, retired)', 'Working part-time ',
                                 'Working full-time '])
    order_cat(['pri_sch'],
              order=['No', 'Yes, for one year or less', 'Yes, for more than one year'])

    possession = pisa_df.columns[pisa_df.columns.str.startswith('possess')]
    order_cat(possession, order=['No', 'Yes'])

    math_related = pisa_df.columns[pisa_df.columns.str.startswith('math')]
```

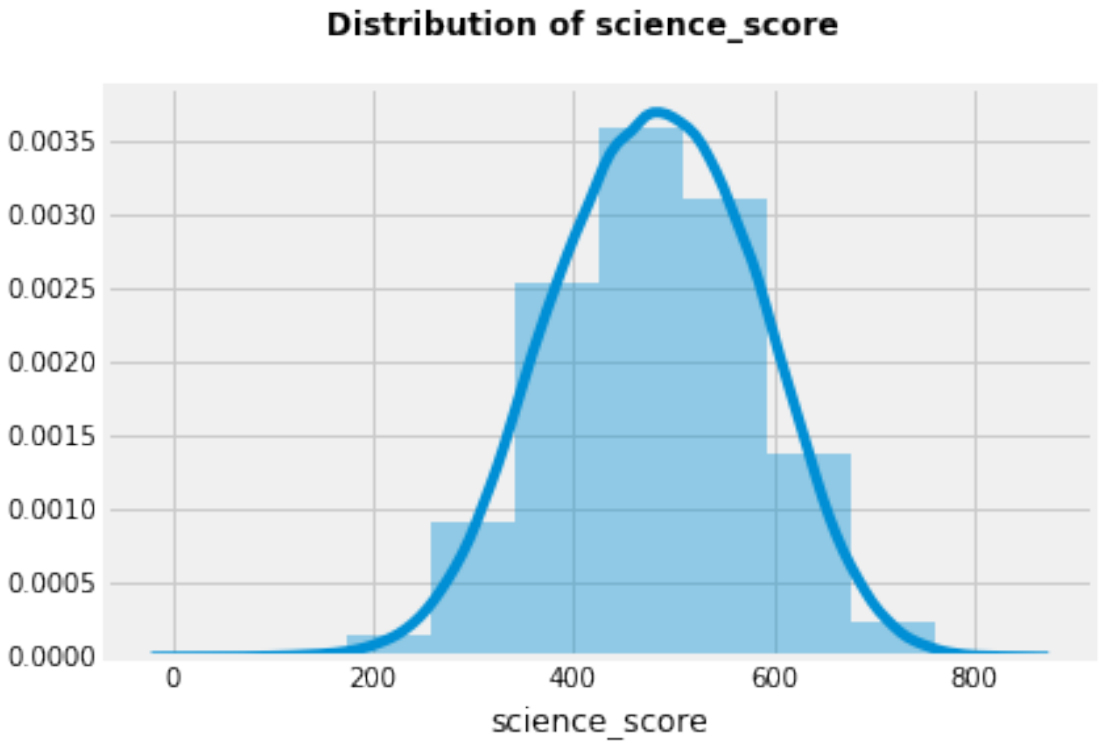
In [6]:
```
sb.distplot(pisa_df['math_score'], bins=10)
plt.suptitle('Distribution of math_score', fontweight='bold');
```



In [7]:
```
sb.distplot(pisa_df['read_score'], bins=10)
plt.suptitle('Distribution of read_score', fontweight='bold');
```



In [8]:
```
sb.distplot(pisa_df['science_score'], bins=10)
plt.suptitle('Distribution of science_score', fontweight='bold');
```



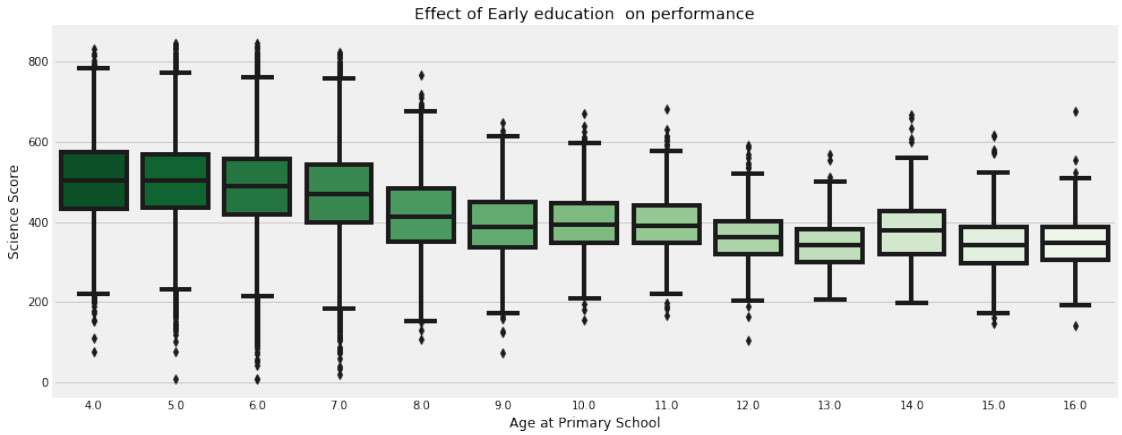
The visuals show that the highest grade foe all there subjects id between the range of 350 to 500

1.5 (Visualization 2)

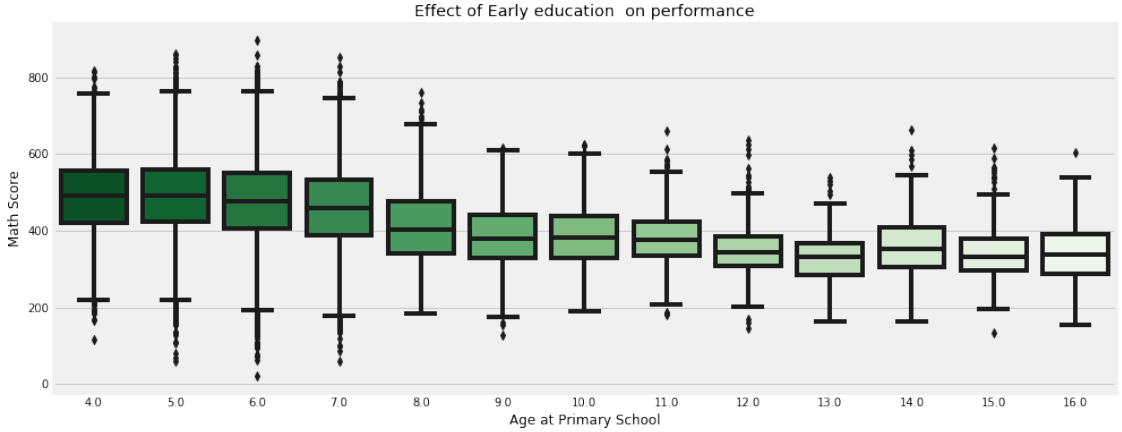
1.5.1 Effect of Early education on performance

This study has contributed to the confirmation that children perform better academically when they begin their schooling at an early age.

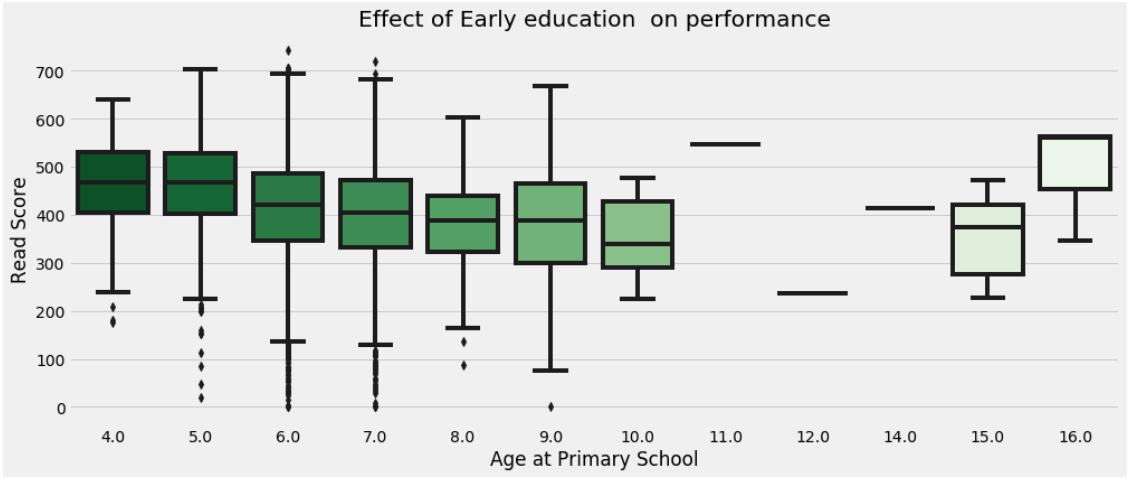
```
In [9]: def age_influence_plot(score, p='Greens_r'):
            fig, ax = plt.subplots(figsize=(15, 6))
            sb.boxplot(data=pisa_df, x='age_at_pri_sch', y=score, palette=p, ax=ax)
            plt.xlabel('Age at Primary School')
            plt.ylabel(score.replace('_', " ").title())
            plt.title("Effect of Early education  on performance")

In [10]: age_influence_plot('science_score')
```



In [11]: age_influence_plot('math_score')



In [147]: age_influence_plot('read_score')

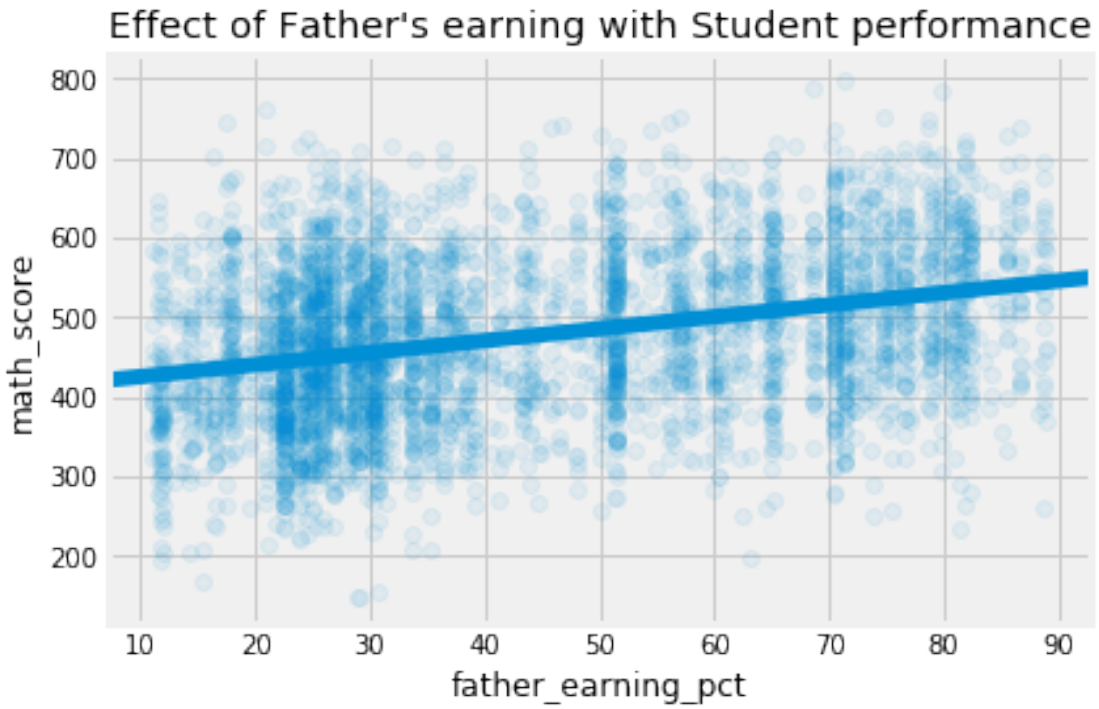


The visuals above shows that early education has a positive effect on the grades and performance of student as they progress in their academic

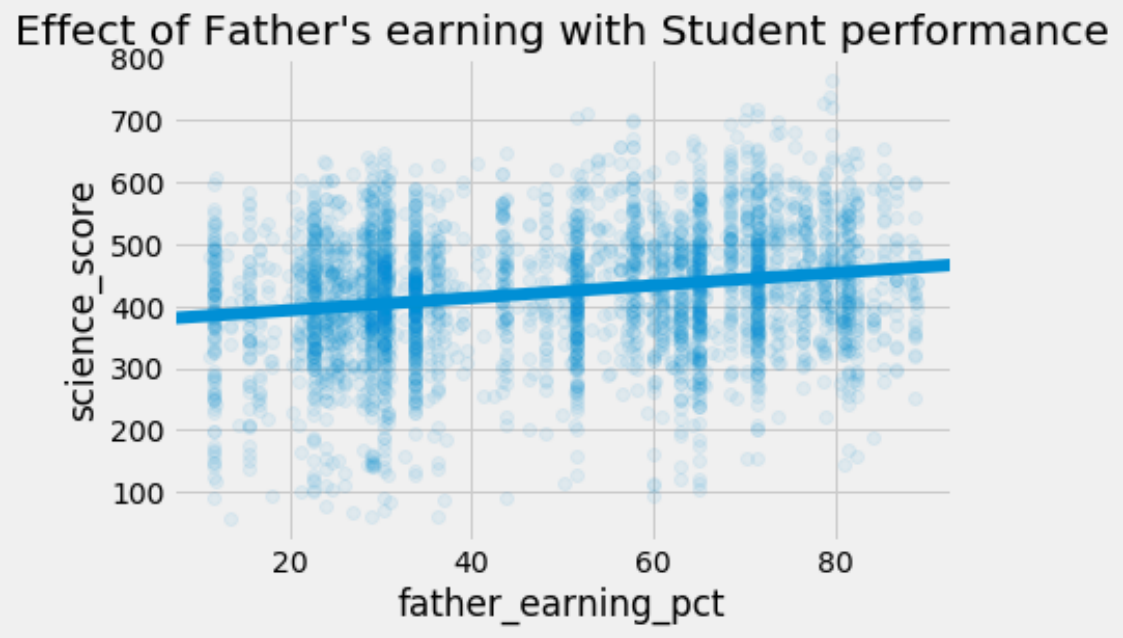
1.6 (Visualization 3)

1.6.1 Effect of Parent Earning on Student's Academic Performance

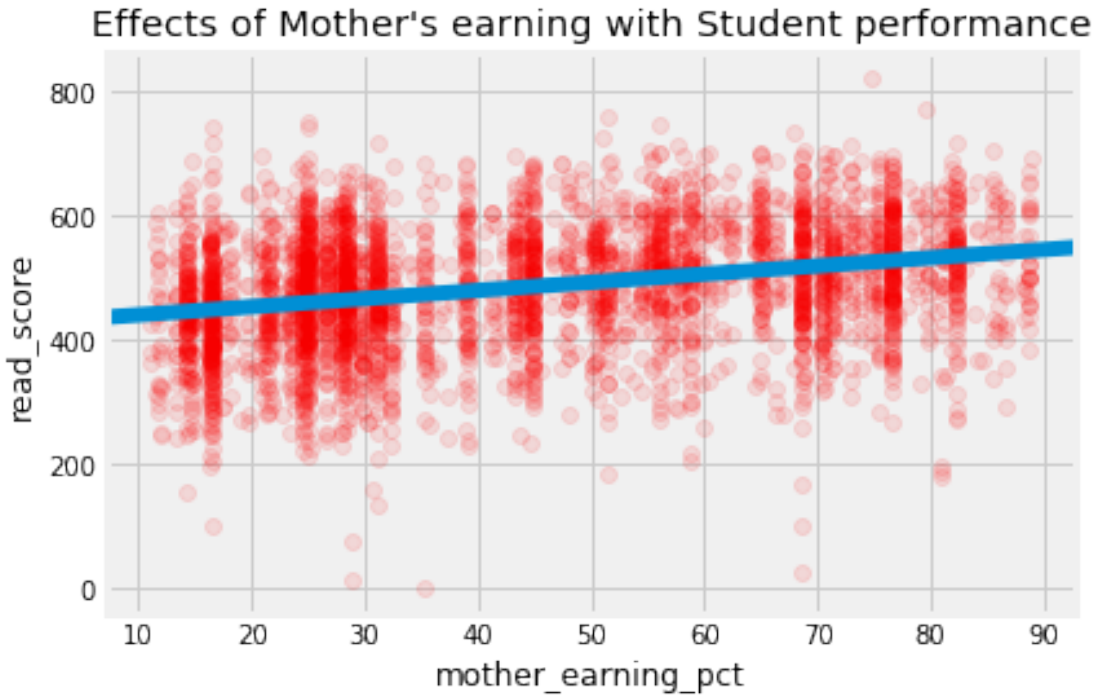
```
In [12]: sb.regplot(data=pisa_df.sample(5000), x='father_earning_pct', y='math_score', scatter_k
         plt.title("Effect of Father's earning with Student performance");
```



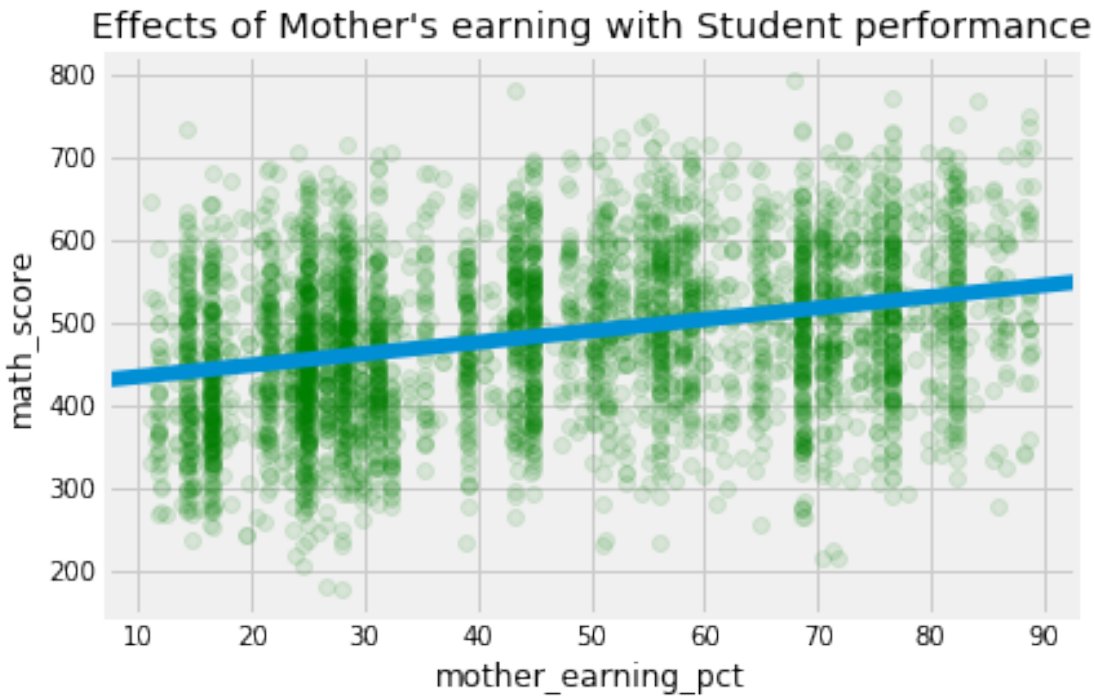

```
In [155]: sb.regplot(data=pisa_df.sample(5000), x='father_earning_pct', y='science_score', scatt
          plt.title("Effect of Father's earning with Student performance");
```




```
In [13]: sb.regplot(data=pisa_df.sample(5000), x='mother_earning_pct', y='read_score', scatter_k
         plt.title("Effects of Mother's earning with Student performance");
```



```
In [14]: sb.regplot(data=pisa_df.sample(5000), x='mother_earning_pct', y='math_score', scatter_k
         plt.title("Effects of Mother's earning with Student performance");
```



The visuals above shows a slight upward trend between parent earnings and the student's academic performance.

1.6.2 Conclusions

When a student's basic school foundation is strong, their performance will always be exceptional. This study has contributed to the confirmation that children perform better academically if the begin schooling early. Also oweing to the fact that most of the values that will contribute to knowledge demand money and exposure, parent education and occupation has a significant impact on their children's academic performance.Another fact could also be that literate parents will approach schooling very differently than uneducated parents. Most students who have access to some facilities like; a reading room, books, computer to conduct research on, and the internet for research usually do well in school and achieve higher grades in their exams due to this exposures. Notwithstanding there is a general knowledge that every student have thier individual strength which could be enhanced by some of there parameters as highlighted in this project.

Overall, parents' involvement in their children's education has a significant impact on how well they succeed.

1.6.3 Generate Slideshow

Once you're ready to generate your slideshow, use the `jupyter nbconvert` command to generate the HTML slide show.

In [ ]:
```
# The command below will generate the HTML slideshow.
!jupyter nbconvert Part_II_slide_deck_template.ipynb --to slides --post serve --no-input
```

```
[NbConvertApp] Converting notebook Part_II_slide_deck_template.ipynb to slides
[NbConvertApp] Writing 872952 bytes to Part_II_slide_deck_template.slides.html
[NbConvertApp] Redirecting reveal.js requests to https://cdnjs.cloudflare.com/ajax/libs/reveal.j
Serving your slides at http://127.0.0.1:8000/Part_II_slide_deck_template.slides.html
Use Control-C to stop this server
/usr/bin/xdg-open: 778: /usr/bin/xdg-open: x-www-browser: not found
/usr/bin/xdg-open: 778: /usr/bin/xdg-open: firefox: not found
/usr/bin/xdg-open: 778: /usr/bin/xdg-open: iceweasel: not found
/usr/bin/xdg-open: 778: /usr/bin/xdg-open: seamonkey: not found
/usr/bin/xdg-open: 778: /usr/bin/xdg-open: mozilla: not found
/usr/bin/xdg-open: 778: /usr/bin/xdg-open: epiphany: not found
/usr/bin/xdg-open: 778: /usr/bin/xdg-open: konqueror: not found
/usr/bin/xdg-open: 778: /usr/bin/xdg-open: chromium-browser: not found
/usr/bin/xdg-open: 778: /usr/bin/xdg-open: google-chrome: not found
/usr/bin/xdg-open: 778: /usr/bin/xdg-open: www-browser: not found
/usr/bin/xdg-open: 778: /usr/bin/xdg-open: links2: not found
/usr/bin/xdg-open: 778: /usr/bin/xdg-open: elinks: not found
/usr/bin/xdg-open: 778: /usr/bin/xdg-open: links: not found
/usr/bin/xdg-open: 778: /usr/bin/xdg-open: lynx: not found
/usr/bin/xdg-open: 778: /usr/bin/xdg-open: w3m: not found
xdg-open: no method available for opening 'http://127.0.0.1:8000/Part_II_slide_deck_template.sli
```

In [ ]: