

# In Depth Analysis of Poverty In Chicago

Gabriel Dominguez  
Brett Johnson  
Jack McDonnell

**Abstract:** This project gave us the opportunity to further research poverty in Chicago. We wanted to draw correlations between various poverty data sources from the Chicago Data portal. From our analysis of the effects of poverty in Chicago we were able to find correlations between Poverty, Unemployment, Violence, Assault and other correlations that can be represented and visualized with the data provided.

## Introduction:

The City of Chicago has always been dealing with poverty as a major issue and has made efforts to try and fix the poverty rate in Chicago. With more than 1/10 people living in Chicago and surrounding neighborhoods living in poverty, this is a local problem that needs to be tackled. Throughout this poster, there are regression models and visualizations that show the correlation between poverty and health/crime statistics.

## Resources Used:

Chicago Data Portal:  
Public Health  
Statistics dataset  
Below poverty by  
Community dataset

## Conclusion:

This project has helped us understand the issue of poverty in Chicago and its correlations to health and socioeconomic indicators. Through the data, we were able to identify the relationships between poverty and many other factors such as unemployment and violence. The visualizations and regression models presented make it easier to comprehend the complex issue of poverty in Chicago.

## Summary of Results:

```

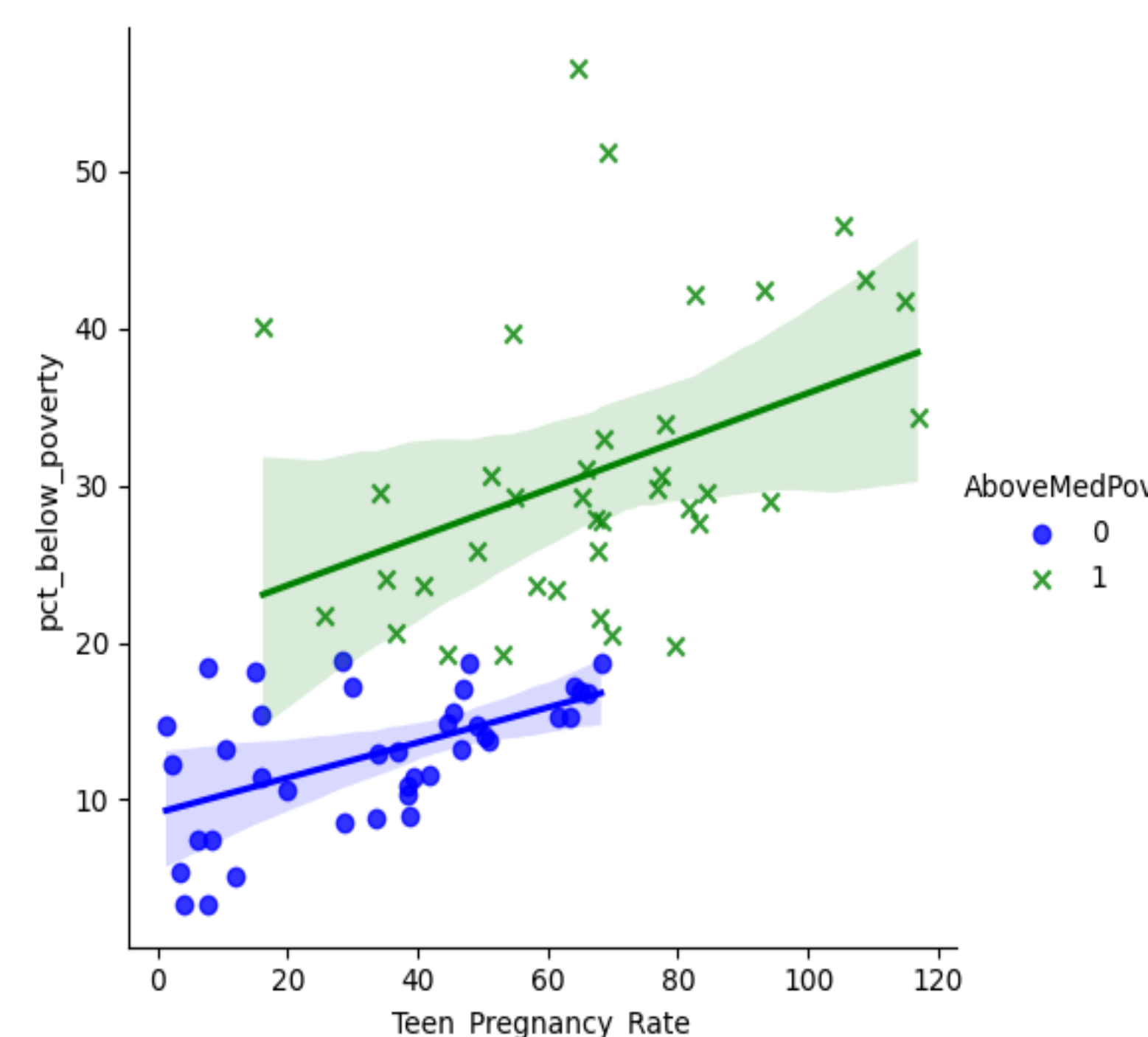
===== OLS Regression Results =====
Dep. Variable: pct_below_poverty    R-squared: 0.733
Model: OLS    Adj. R-squared: 0.714
Method: Least Squares    F-statistic: 48.94
Date: Sat, 15 Apr 2023    Prob (F-statistic): 4.82e-19
Time: 11:57:00    Log-Likelihood: -246.21
No. Observations: 77    AIC: 504.4
DF Residuals: 71    BIC: 518.5
DF Model: 5
Covariance Type: nonrobust

=====
coef    std err    t    Pr>|t|    [0.025    0.975]
-----
Intercept    13.196    3.935    3.354    0.001    5.274    20.966
percent_aged_16_unemployed    1.4668    0.187    7.860    0.000    1.434
percent_aged_25_without_high_school_diploma    0.1874    0.148    1.270    0.208    -0.108    0.482
percent_aged_under_18_or_over_64    -0.4429    0.139    -3.195    0.002    -0.719    -0.166
percent_of_housing_crowded    0.4826    0.432    1.117    0.268    -0.379    1.344
Assault_Homicide    0.2886    0.076    3.800    0.000    0.140    0.437
=====
Omnibus: 0.843    Durbin-Watson: 1.424
Prob(Omnibus): 0.611    Jarque-Bera (JB): 0.793
Skew: 0.642    Prob(JB): 0.80959
Kurtosis: 4.118    Cond. No.: 281.
=====
Notes: [1] Standard Errors assume that the covariance matrix of the errors is correctly specified.
Optimization terminated successfully:
Current function value: 0.263733
Iterations: 6

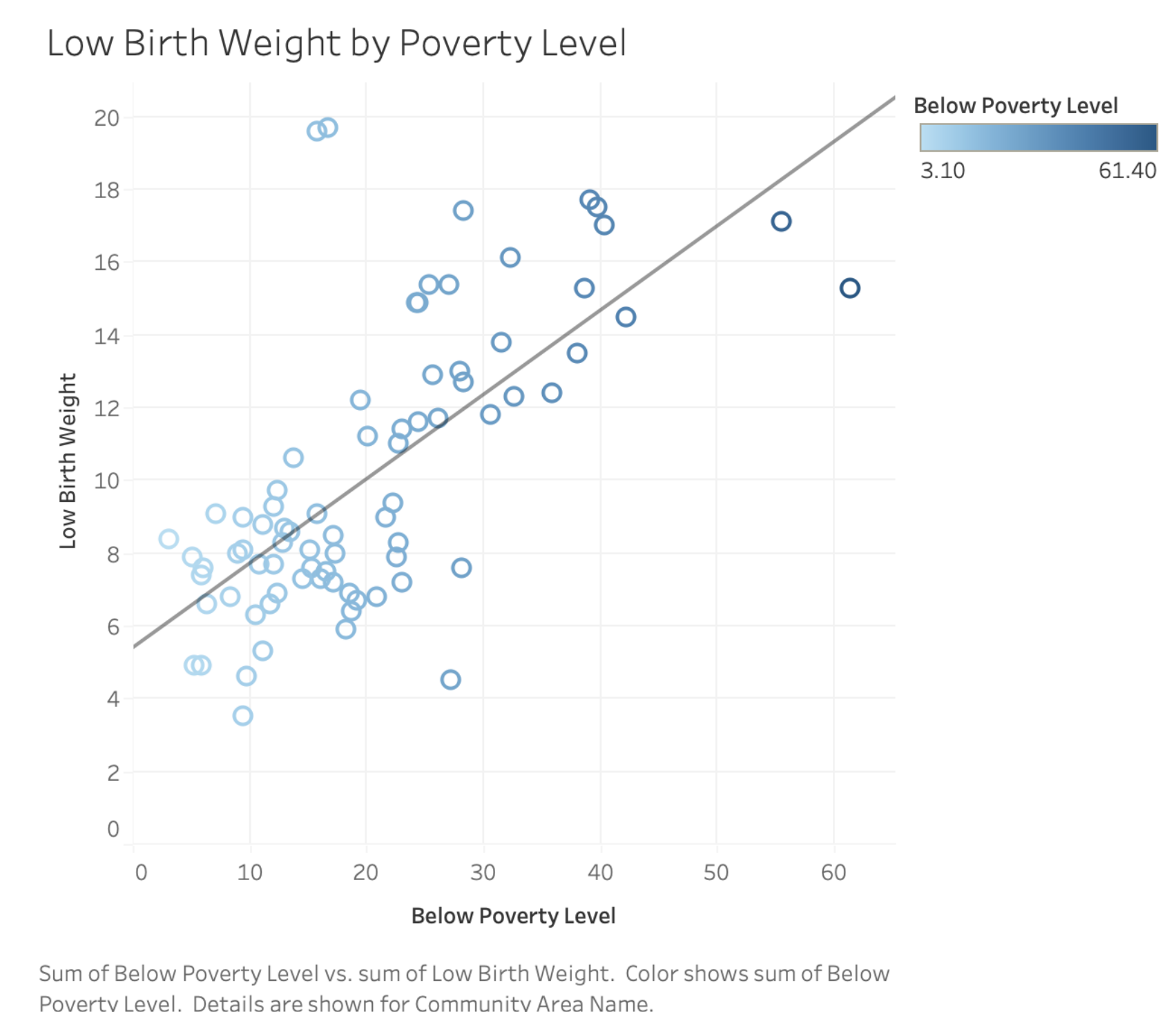
===== Logit Regression Results =====
Dep. Variable: AboveMedPov    No. Observations: 77
Model: Logit    DF Residuals: 71
Method: MLE    DF Model: 5
Date: Sat, 15 Apr 2023    Pseudo R-squ.: 0.6224
Time: 11:57:00    Log-Likelihood: -20.123
converged: True    LL-Null: -51.366
Covariance Type: nonrobust    LR P-value: 5.673e-13

=====
coef    std err    z    Pr>|z|    [0.025    0.975]
-----
Intercept    0.8870    2.142    0.414    0.679    -3.312    5.886
percent_aged_16_unemployed    0.2328    0.145    1.605    0.109    -0.049    0.518
percent_aged_25_without_high_school_diploma    0.1190    0.098    1.211    0.228    -0.058    0.296
percent_aged_under_18_or_over_64    -0.2143    0.128    -1.678    0.096    -0.468    -0.079
percent_of_housing_crowded    0.1522    0.238    0.640    0.521    -0.317    0.642
Assault_Homicide    0.1519    0.068    2.232    0.028    0.014    0.289
=====
    
```

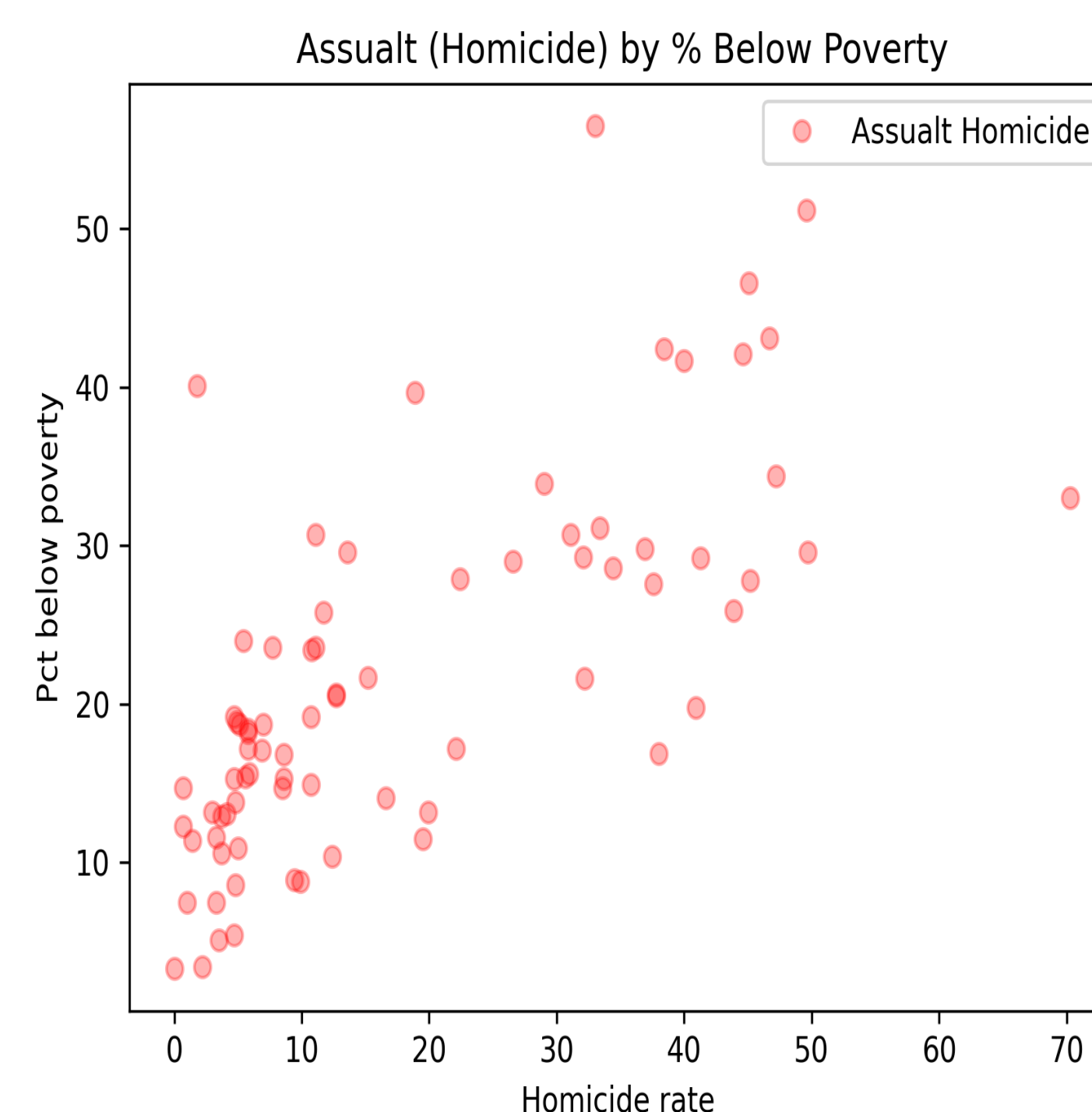
**Summary:** The above graphic displays regression results for dependent percent below poverty and above median poverty with numerous community independent variables. In the OLS regression model, the percentage of those aged 16 and up unemployed has a coefficient over 1. On the Logit regression model, the pseudo r square shows that 60% of the variables are to be above median poverty.



**Summary:** This chart shows the rate of teen pregnancy per 1000 per community for females aged 15-19. There is an above median poverty variable that group community areas based on pov. level.



**Summary:** This scatter plot was created using Tableau and shows the upward trending relationship in percentage below poverty and low birth weight rates with each circle representing a community.



**Summary:** The following scatter plot visualizes the correlation between and homicide rate with each dot representing a community area. There is an upward trend between the two variables.

