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Lab 2: Measuring Upward Mobility Using the National Longitudinal Survey

Intergenerational mobility refers to the relationship between income of parents and their children when they grow up (or grandparents and their grandchildren, etc.). There are a number of different statistics that we have seen to describe this relationship.

1. **Statistic 1: Absolute Mobility at the 25th Percentile**. In the rank-rank graph, we can calculate the predicted rank of a child ($rank_k$) for a given parents' income rank, and for this statistic we set it equal to the 25th percentile $rank_p = 25$:

$$\begin{aligned} \widehat{rank_k} &= \alpha + \beta \cdot rank_p \\ &= \alpha + \beta \cdot 25 \end{aligned}$$

2. **Statistic 2: Relative Mobility.** In the rank-rank graph, we can use the slope as a measure of *relative mobility*: the difference in predicted rank for kids at the very top of the income distribution minus the predicted rank for children at the very bottom of the income distribution:

$$\begin{aligned} \Delta\widehat{rank_k} &= \{\alpha + \beta \cdot 100\} - \{\alpha + \beta \cdot 0\} \\ &= 100 \cdot \beta \end{aligned}$$

3. **Statistic 3: Horatio Alger measure of the American Dream.** We can also measure intergenerational mobility as the fraction (or probability) of children reaching the top 5th of the income distribution if their parents were in the bottom 5th of the national income distribution when they were kids:

$$\Pr(rank_k > 80 | rank_p < 20)$$

   which captures the Horatio Alger "rags to riches" concept of the American Dream.

4. **Statistic 4: Absolute mobility.** The fraction (or probability) of 30 year olds who make more in dollars (Y_k) than their parents did when they were age 30 (Y_p):

$$\Pr(Y_k > Y_p)$$