

# Age-Labor Income Profile

## Predicting Income

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# Research Question

¿How does wage vary with age in Bogota?

In Bogota, wages tend to increase with age until a mid-life point and then decrease.

This is consistent with the **human capital theory**:

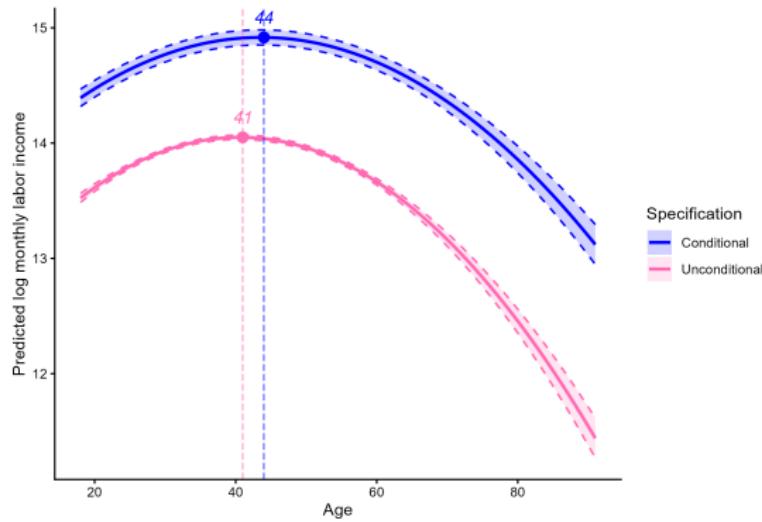
- ▶ Wages increase at a decreasing rate.

# Data

Estadísticas descriptivas relevantes

# Results

Figure 1: Age-labor Income profiles



# Results

|                           | Linear<br>(1)         | Log Monthly Labor Income<br>Quadratic (Unconditional)<br>(2) | Quadratic (Conditional)<br>(3)        |
|---------------------------|-----------------------|--|---------------------------------------|
| Constant                  | 14.0***<br>(0.023)    | 12.4***<br>(0.064)   | 12.8***<br>(0.070)                    |
| Age                       | -0.003***<br>(0.0006) | 0.084***<br>(0.003)  | 0.070***<br>(0.003)                   |
| Age squared               |                       | -0.001***<br>$(3.76 \times 10^{-5})$                         | -0.0008***<br>$(3.43 \times 10^{-5})$ |
| Total hours worked        |                       |  | 0.013***<br>(0.0004)                  |
| = Private sector employee |                       |  | -0.756***<br>(0.034)                  |
| = Self-employed           |                       |  | -1.24***<br>(0.035)                   |
| = Domestic worker         |                       |  | -1.45***<br>(0.047)                   |
| = Employer                |                       |  | -0.529***<br>(0.049)                  |
| = Other                   |                       |  | -1.94***<br>(0.281)                   |
| = Day laborer             |                       |  | -1.41*<br>(0.790)                     |
| Number of observations    | 14,764                | 14,764   | 14,764                                |
| R <sup>2</sup>            | 0.00187               | 0.05000  | 0.22643                               |
| Adjusted R <sup>2</sup>   | 0.00180               | 0.04987  | 0.22596                               |
| Root Mean Squared Error   | 0.89556               | 0.87370  | 0.78841                               |

# Discussion

## 1. Evidence of a Non-Linear and Concave Age–Income Profile

The quadratic specifications show a positive coefficient on age and a negative coefficient on age<sup>2</sup>, generating a **concave age–earnings profile**, consistent with human capital theory. There is clear evidence of an **earnings peak within the observed age range**, around 40 years.

In contrast, the linear model fails to capture this non-linearity and exhibits very low explanatory power.

## 2. Effect of Conditioning on Hours Worked and Employment Type

Including controls for hours worked and employment type shifts the estimated **earnings peak to slightly older ages (approximately 41–43 years)** and substantially improves model fit.

This suggests that part of the observed non-linearity is driven by differences in labor intensity and occupational structure, rather than solely by human capital accumulation.

# Discussion

## 3. Economic Interpretation in the Context of Bogotá's Labor Market

The results support the theoretical prediction of a concave life-cycle earnings profile. However, the shape of the profile is influenced by labor market characteristics such as occupational heterogeneity and variation in working hours.

Overall, the observed age-income pattern reflects both experience accumulation and structural labor market factors.