

Income Distribution

AP Microeconomics | Unit 6 | quintiles, the Lorenz curve, the Gini coefficient

1. Five equal groups

Line up all households from poorest to richest and cut the line into five equal groups (**quintiles**, 20% of households each). Then find each group's share of total income.

group of households	share of all income	cumulative share
poorest 20%	5%	5%
second 20%	10%	15%
middle 20%	15%	30%
fourth 20%	25%	55%
richest 20%	45%	100%

Cumulative is the running total: the poorest 40% together receive $5\% + 10\% = 15\%$.

2. The Lorenz curve

Lorenz curve

Horizontal axis: cumulative % of households. Vertical axis: cumulative % of income.

- The diagonal is the **line of equality** (20% of households have 20% of income).
- The Lorenz curve joins the cumulative points: here (20, 5), (40, 15), (60, 30), (80, 55), (100, 100). It always runs from (0, 0) to (100, 100).
- **The further the curve sags below the line, the more unequal the distribution.**

3. The Gini coefficient

Let A be the area between the line of equality and the Lorenz curve, and B the area under the curve.

$$\text{Gini} = \frac{A}{A + B}$$

0 is perfect equality (the curve lies on the line); 1 is perfect inequality (one household has everything).

Example: $A = 0.19$, $B = 0.31$, so $\text{Gini} = 0.19/0.50 = 0.38$.

If taxes and transfers move the Lorenz curve closer to the line, A shrinks and the Gini coefficient **falls**.

4. Why incomes differ, and what taxes do

Sources of inequality: human capital (education, training, experience), the demand for different skills, inherited wealth and ownership of capital, discrimination, market power, luck.

tax as a share of income	\$20,000	\$100,000	effect on inequality
progressive (rate rises)	10%	30%	reduces it
proportional (same rate)	20%	20%	unchanged
regressive (rate falls)	10%	2%	increases it

A flat \$2,000 from everyone is *regressive*: 10% of \$20,000 but 2% of \$100,000. Judge a tax by the percentage of income, not the dollars.

Where students lose points

1. Plotting each group's own share: the Lorenz curve uses cumulative shares.
2. Reading a point wrong: (40, 15) means the poorest 40% have 15% of income.
3. Reversing Gini: closer to 0 is more equal, closer to 1 is less equal.
4. Gini as A/B : it is $A/(A + B)$.
5. Judging a tax by dollars paid: progressive and regressive are about the rate.

Now practise it

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