

Appendix A: Inclusive growth score methodology

To assess performance across periods in this analysis, we scored metrics using a composite indicator composed of 17 inputs:

- 1) The 12 indicators tracked in the Metro Monitor across 2011 to 2019 and 2019 to 2021 (see Figure 1)
- 2) The share of positive indicators in each measurement category (growth, prosperity, overall inclusion, and racial inclusion)
- 3) The overall share of positive indicators

To calculate the share of positive indicators, we counted the number of positive indicators in each category and divided by the total number of available indicators in that category. Alternatively,

$$growth_+ = \frac{gdp(x)+jobs(x)+entrp(x)}{gdp(y)+jobs(y)+entrp(y)}$$

$$prosperity_+ = \frac{wages(x)+prod(x)+sol(x)}{wages(y)+prod(y)+sol(y)}$$

$$inclusion_+ = \frac{empratio(x)+medearn(x)+pov(x)}{empratio(y)+medearn(y)+pov(y)}$$

$$rinclusion_+ = \frac{empgap(x)+earngap(x)+povgap(x)}{empgap(y)+earngap(y)+povgap(y)}, \text{ and}$$

$$total_+ = \frac{gdp(x)+jobs(x)+entrp(x)+wages(x)+prod(x)+sol(x)+empratio(x)+medearn(x)+pov(x)+empgap(x)+earngap(x)+povgap(x)}{gdp(y)+jobs(y)+entrp(y)+wages(y)+prod(y)+sol(y)+empratio(y)+medearn(y)+pov(y)+empgap(y)+earngap(y)+povgap(y)}$$

where $x = 1$ for positive indicators and $y = 1$ for non-missing indicators. For negative and missing values, x and y were set equal to 0. The inclusion of these five additional inputs reduced the compounded effects of GDP on growth and prosperity, and allowed us to account for the diversity of each metro area's economic growth in this scoring methodology, rather than solely measuring magnitude.

Scores were developed for each value i , where, for each metro:

$$i = \left\{ \begin{array}{l} \text{Total share of positive indicators (**total**$_+$)} \\ \text{Share of positive growth indicators (**growth**$_+$)} \\ \text{Share of positive prosperity indicators (**prosperity**$_+$)} \\ \text{Share of positive overall inclusion indicators (**inclusion**$_+$)} \\ \text{Share of positive racial inclusion indicators (**rinclusion**$_+$)} \\ \text{Change in real economic output (**gdp**)} \\ \text{Change in employment (**jobs**)} \\ \text{Change in jobs at firms 0 – 5 years old (**entrp**)} \\ \text{Change in average annual wages (**wages**)} \\ \text{Change in output per worker (**prod**)} \\ \text{Change in output per person (**sol**)} \\ \text{Change in employment rate (**empratio**)} \\ \text{Change in real median earnings (**medearn**)} \\ \text{Change in relative income poverty rate (**relpov**)} \\ \text{Change in employment rate gap between whites and people of color (**empgap**)} \\ \text{Change in real median earnings gap between whites and people of color (**earngap**)} \\ \text{Change in relative income poverty rate gap between whites and people of color (**povgap**)} \end{array} \right.$$

We developed preliminary scores by comparing the value of each input (a_i) to the median (a_{med}), and dividing their difference by the distance between the 90th percentile (a_{90}) and the 10th percentile (a_{10}) of that indicator across all metro areas, resulting in a z-score value of:

$$z_i = \frac{a_i - a_{med}}{a_{90} - a_{10}}$$

To allow for comparisons across indicators, we normalized these z-scores onto a continuous scale from 0 to 1 by comparing each z-score (z_i) to the minimum value of each indicator (z_{min}), and dividing their difference by the distance between the indicator's maximum (z_{max}) and minimum values:

$$n_i = \frac{z_i - z_{min}}{z_{max} - z_{min}}$$

Then, to reduce the influence of outliers, we adjusted these normalized scores with a positive constant by adding 1 to each normalized value (n_i) and subtracting the minimum normalized value (n_{min}), then taking the natural log of the adjusted values:

$$score_i = \ln(1 + n_i - n_{min}).$$

These final standardized scores were summed into single composite score for each period, normalized to account for missing values in the sample, and rank-ordered from smallest to largest.