BUILDING HUMAN CAPITAL

Human Capital Project and Index

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May 2018

Human Capital Project

A program of advocacy and analytical work that will raise awareness and increase demand for interventions to build human capital in client countries.

Component 1: An index measuring countries' investment in the human capital of the next generation, as a tool for advocacy.

Component 2: An ambitious program to improve measurement and provide analysis to support effective investments in human capital formation.

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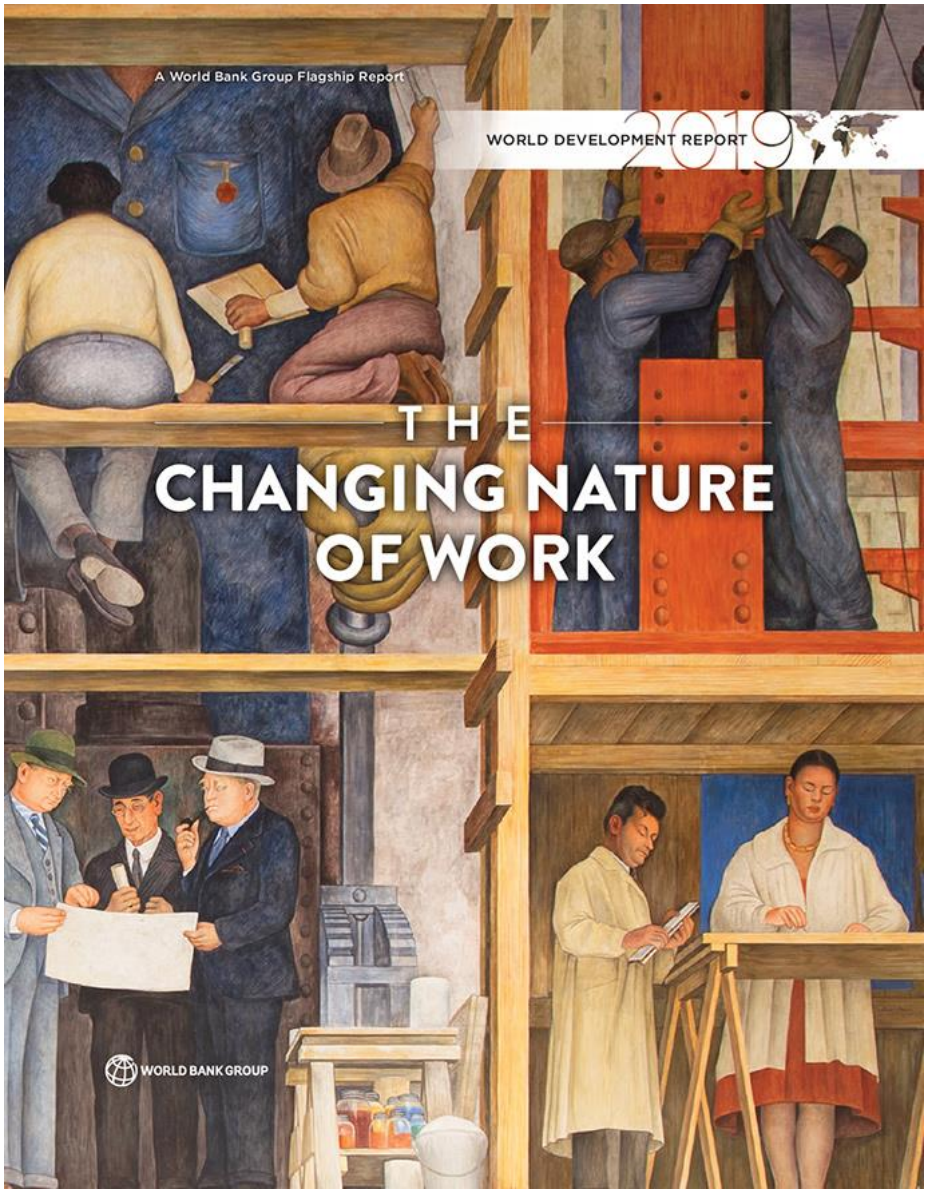
To Be Launched in World Development Report 2019



- The Human Capital Index (HCI) will be launched as a chapter in the World Development Report 2019 on the Changing Nature of Work.

  http://www.worldbank.org/en/publication/wdr2019

- The Report will be published in October 2018.

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Human Capital Index: The Story

"How much human capital will a child born today acquire by the end of secondary school, given the risks to poor health and poor education that prevail in the country where she was born?"

Three main ingredients, reflecting building blocks of the human capital *of the next generation*:

1. **Survival** – Will kids born today survive to school age?
2. **School** – How much school will they complete and how much will they learn?
3. **Health** – Will kids leave school in good health and be ready for further learning and/or work?

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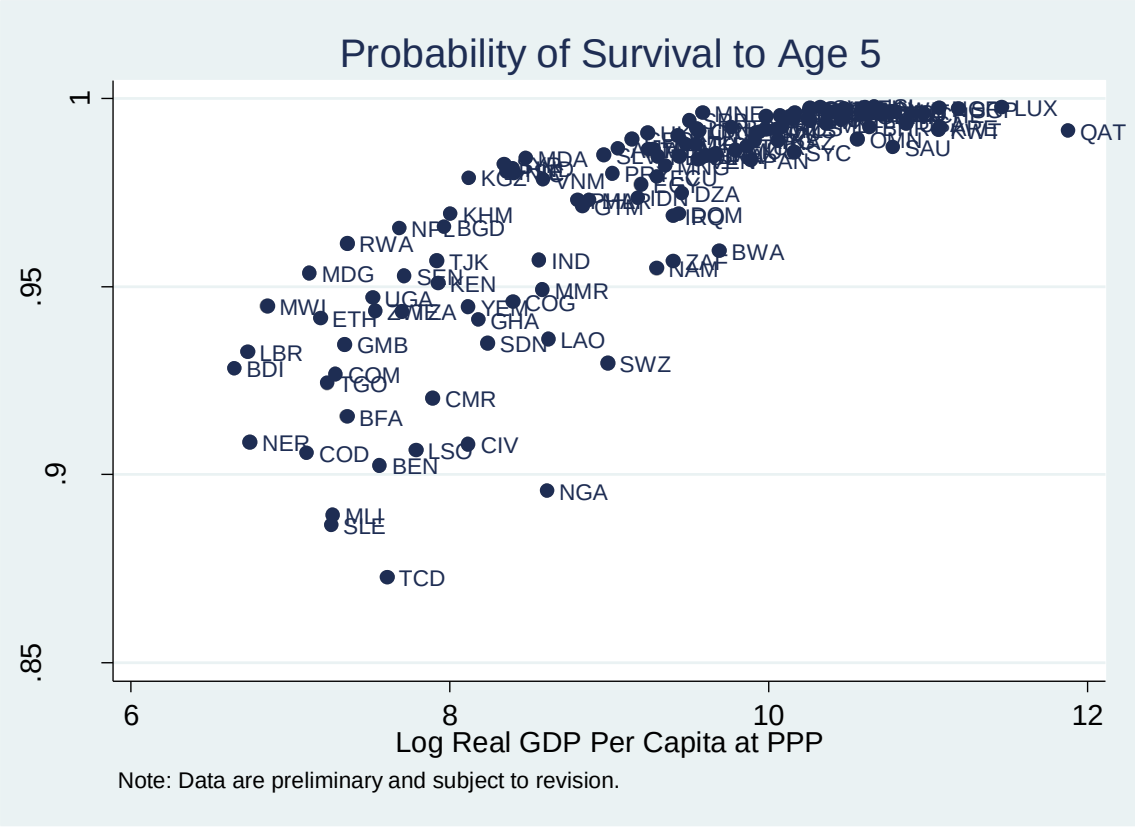
HCI Ingredient 1: Survival to Age 5

- Based on under-5 mortality rates from UN Child Mortality Estimates
- Most of variation in survival rates is driven by differences in infant mortality rates



Source: UN Interagency Group on Child Mortality Estimation.

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HCI Ingredient 2a: Expected Years of School

How many years of education can a child passing through the current school system expect to obtain given current enrollment rates?

- Answer requires chaining together gross enrollment rates at different levels of school (Pre-Primary, Primary, Lower Secondary, Upper Secondary), combined with duration of each level

Two issues with UNESCO-reported expected years of school that we are addressing:

1. Gross enrollment rates exceed 100% in many countries and levels, leading to implausibly-high expected school years (greater than total duration)
   - Solution: Calculate new measures of expected years of school using data on net enrollment rates (where available); cap gross enrollment rates at 100% if needed
2. Official duration of different levels of school varies substantially across countries, making differences in expected years harder to compare
   - Solution: Impose "*standardized duration"* of 12 years of primary and secondary, preceded by 2 years of pre-primary

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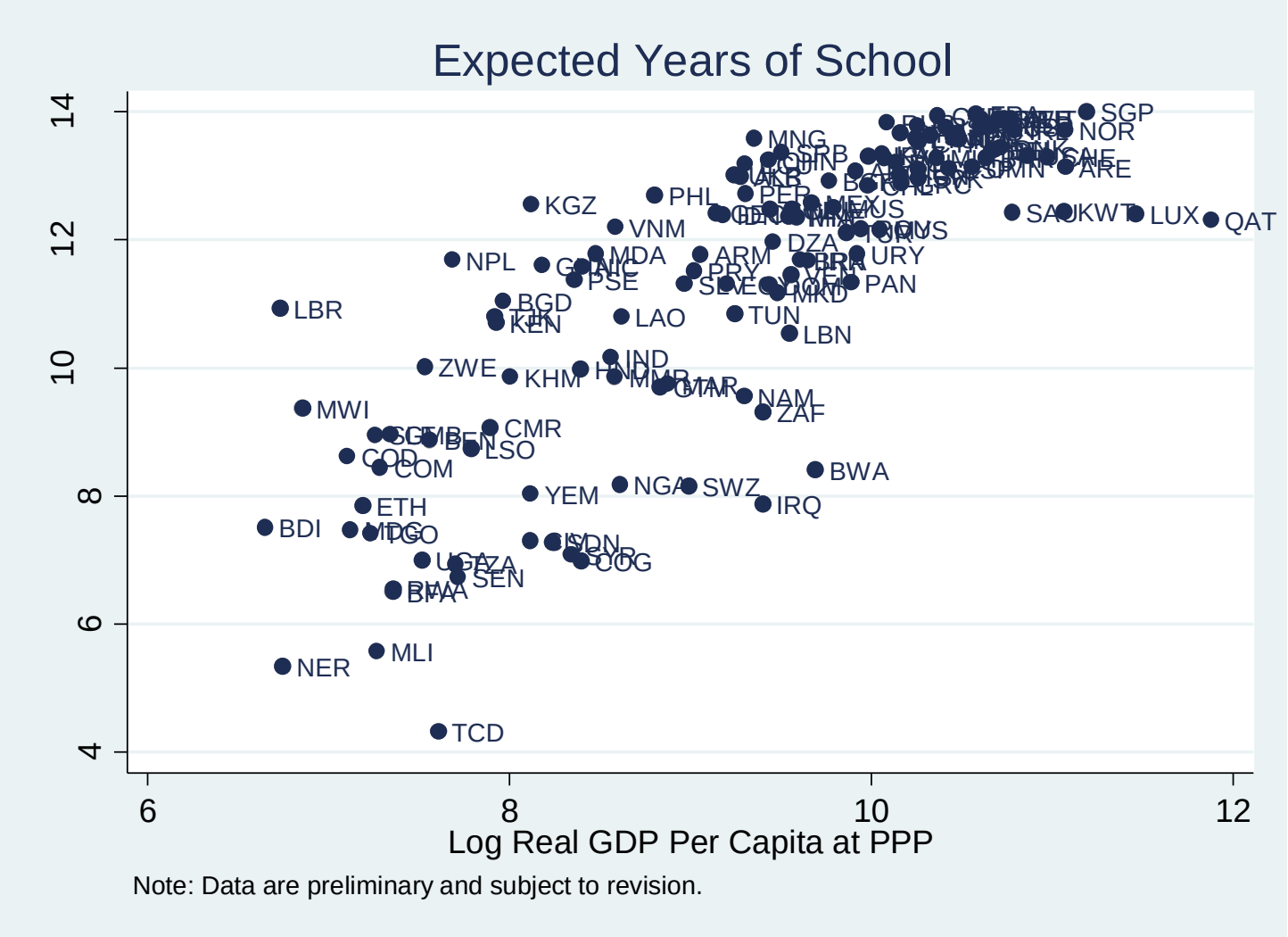
Expected Years of School



Source: World Bank staff calculations.

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HCI Ingredient 2b: Learning

New dataset of "*harmonized learning outcomes* (HLO)"

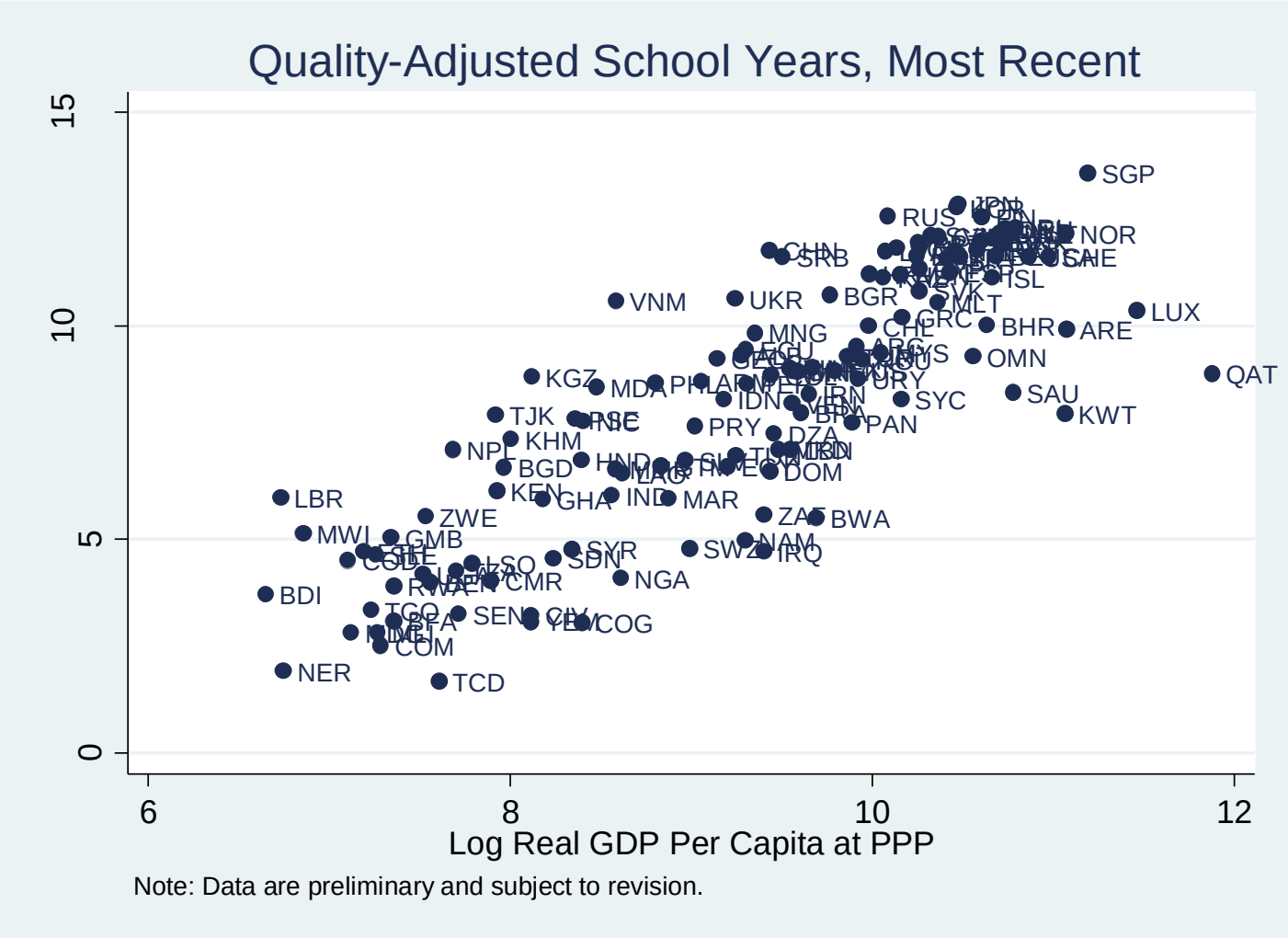
- May 2018 version: 152 countries, 98% of world population, nearly all FCV countries

Exhaustive effort to combine:

- **Major international testing programs** (e.g. OECD Program for International Student Assessment (PISA), Trends in International Math and Science (TIMSS))
- **Regional testing programs** (e.g. Latin American Laboratory for Assessment of the Quality of Education (LLECE) , Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ))
- **Other programs** (e.g. Young Lives, Service Delivery Indicators, Early Grade Reading Assessments)

HLO database is maintained in partnership with UNESCO Institute of Statistics.

Quality-Adjusted School Years



Note: Data are preliminary and subject to revision.

Source: World Bank staff calculations.

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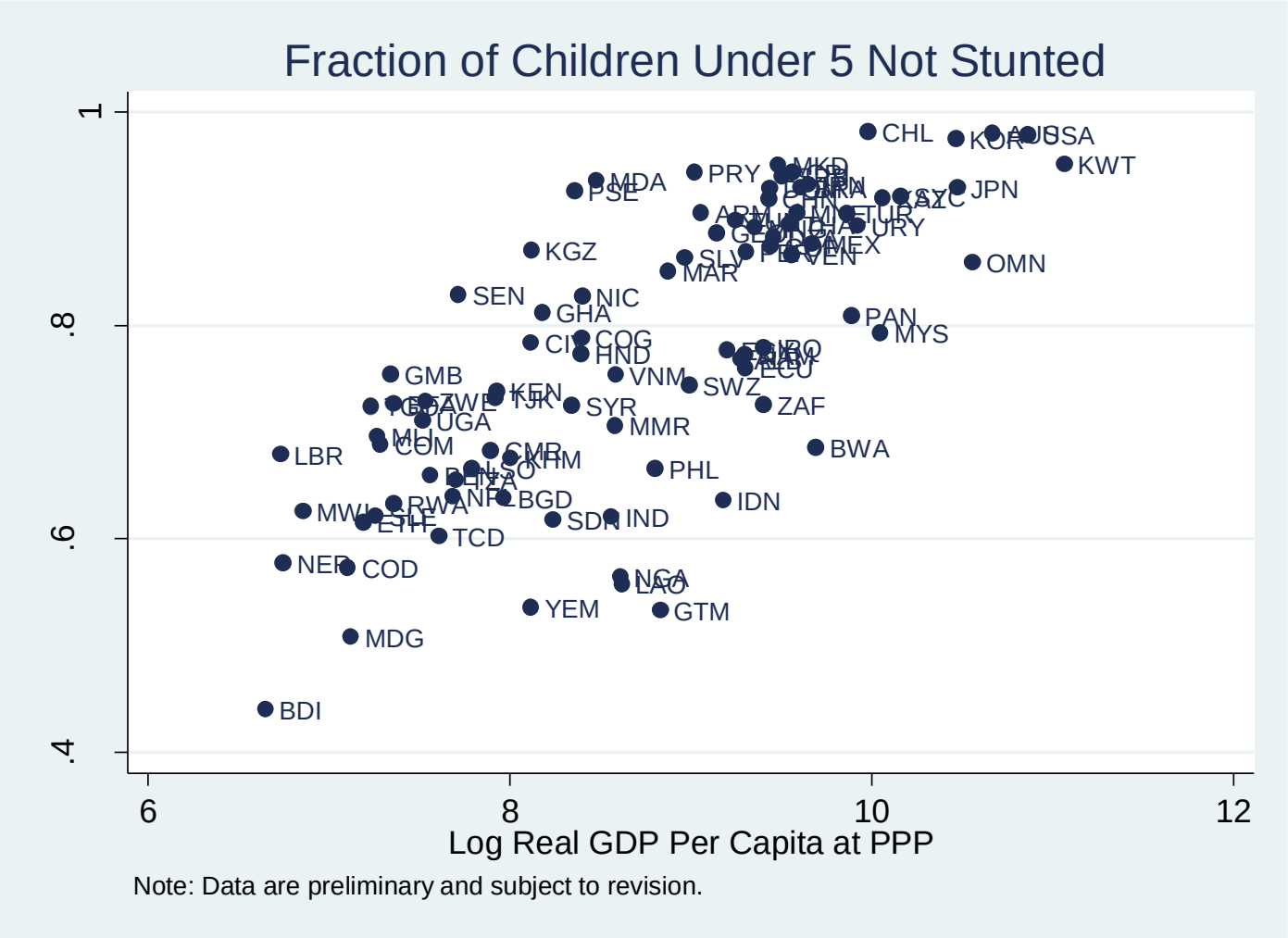
HCI Ingredient 3: Health

Health matters for kids' ability to stay in school and learn (already captured in education component of index), and also *matters directly for their eventual productivity as workers.*

HCI will use two broad indicators of overall health:

1. **Stunting Rate:** Fraction of kids under 5 more than 2 reference standard deviations below reference median height-for-age
   - WHO-UNICEF-WB Joint Malnutrition Estimates, latest May 2018 update
   - Based on direct survey measurement
2. **Adult Survival Rate:** Fraction of 15 year-olds who survive to age 60
   - UN Population Division
   - Based on vital registries (where available), otherwise estimated based on limited available mortality data and model life tables

Stunting Rates



Note: Data are preliminary and subject to revision.

Source: WHO-UNICEF-World Bank Joint Malnutrition Estimates.

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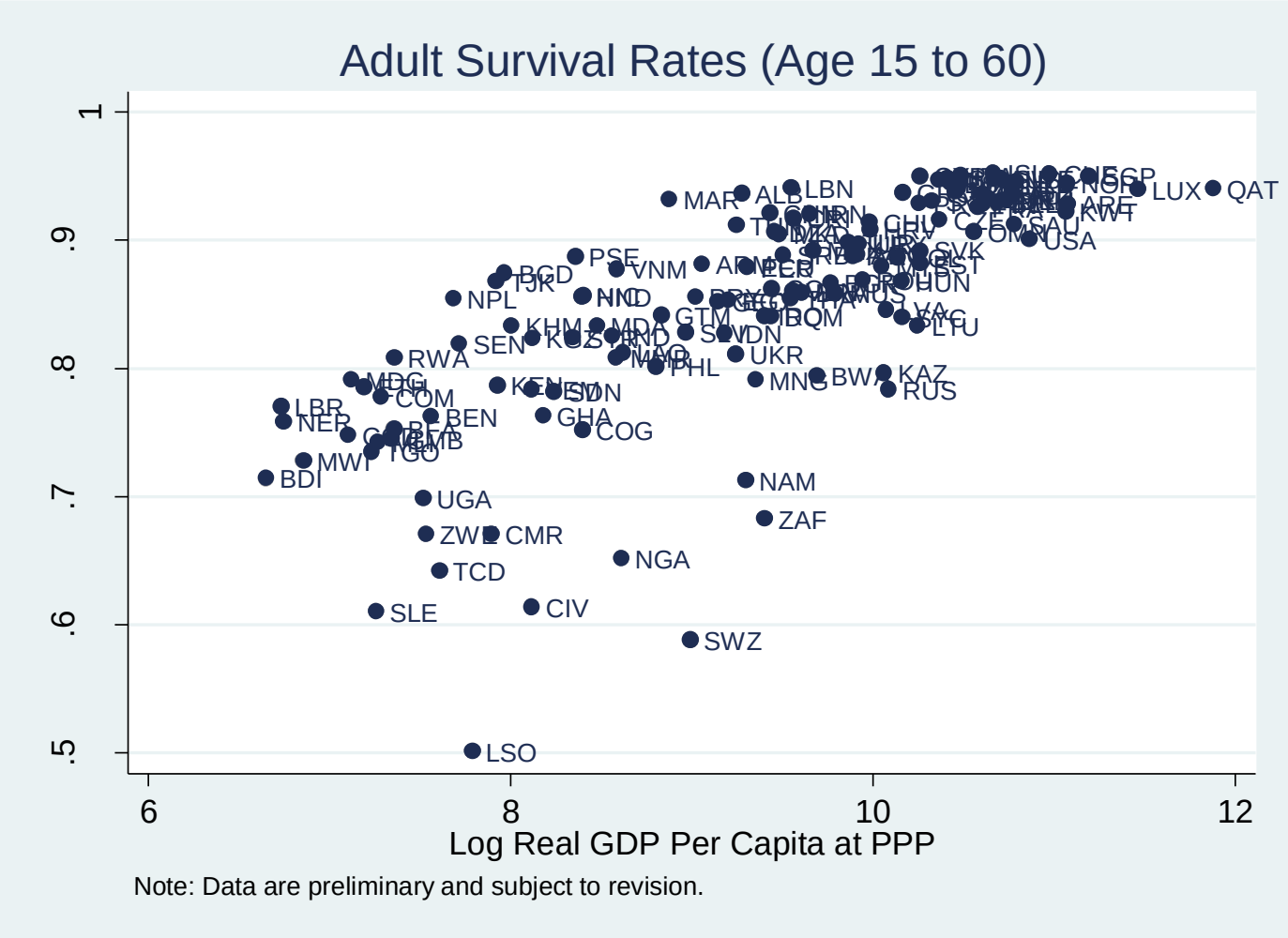
Adult Survival Rates (ASR)



Source: UN Population Division.

Why These Health Measures?

Open door to policy discussion of range of childhood *and* adult health interventions

- Combination of ASR and/or stunting is salient at all income levels.

(Reasonably) direct and frequent measurement

- ASR better measured in rich countries, stunting widely and directly measured in poor countries where ASR data is more likely to be modelled.

Informed decision *not* to use heavily-modeled YLD data

- Scarcity of primary sources and direct measurement in low-income countries
- Communications challenges around disability weights, imputation procedures
- Offsetting effects of reduced incidence but higher survival makes cross-country patterns in YLD hard to interpret.

Combining Indicators into Index

HCI/HCP is about effects of human capital investments on *future productivity*, not just their (undisputed) intrinsic value

- This is reflected in aggregation strategy that *converts indicators into contributions to the productivity of future workers.*

Express contributions to worker productivity relative to benchmark of *complete* education and *full* health

- Resulting index has values from 0 to 1;
- Value of $0 < x < 1$ means that the expected productivity as a future worker of a child born today is only a fraction x of what it would be under the benchmark of complete education and full health.

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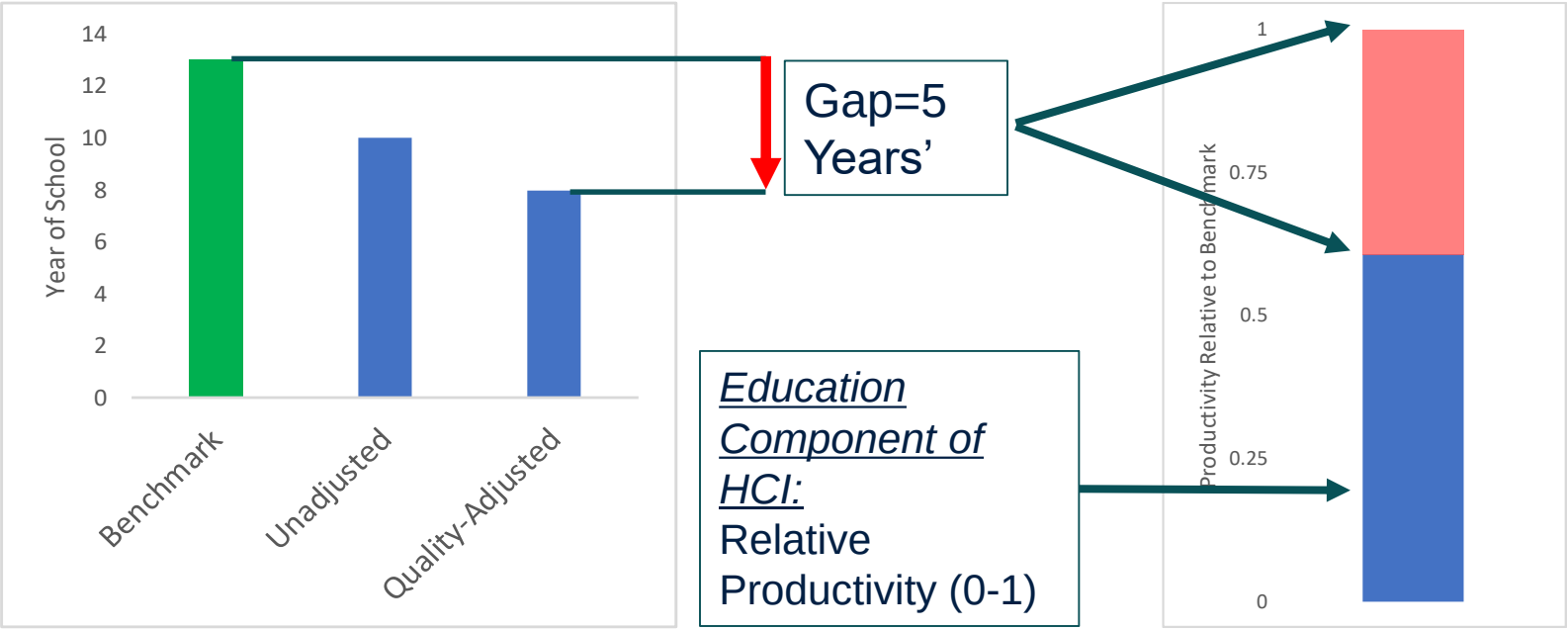
Education and Worker Productivity

- Many estimates of direct links from education to productivity based on microeconometric studies of relationship between wages and education.
- Additional year of (quality-adjusted) school raises worker productivity by ~8%.



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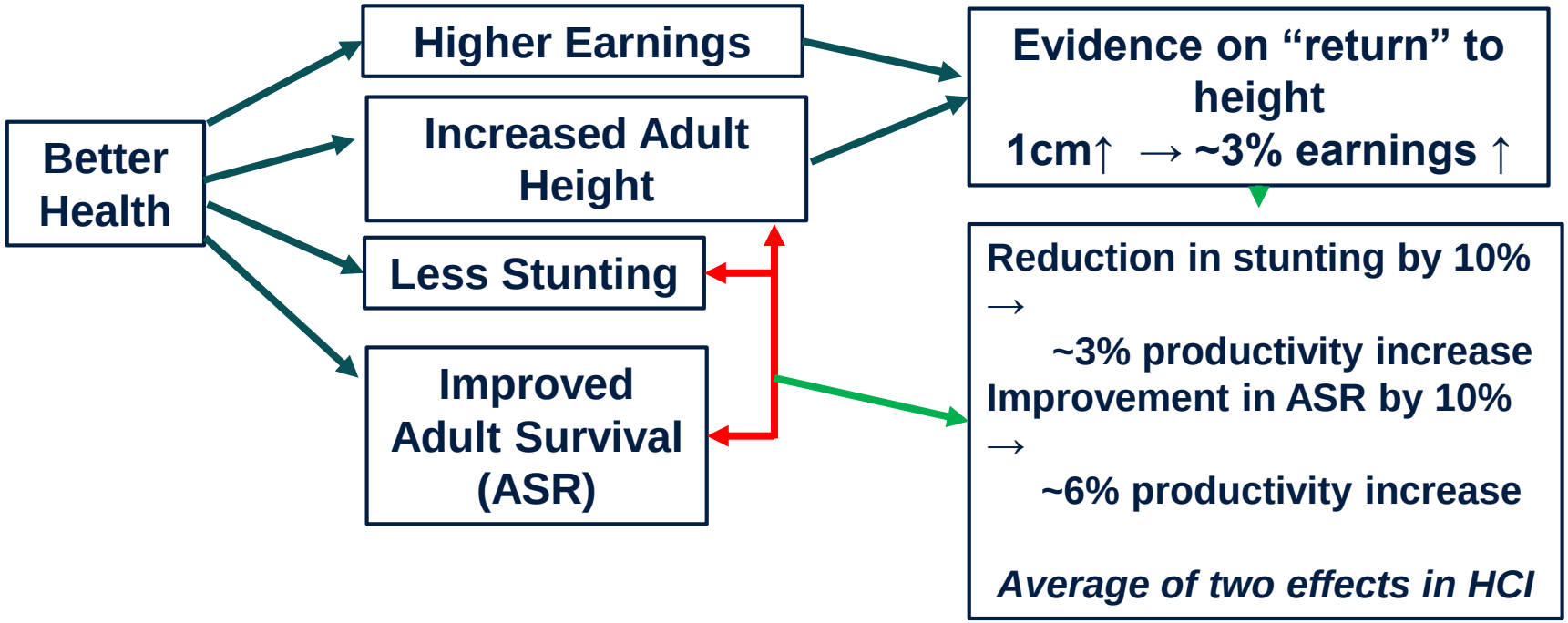
Health and Productivity

Improved health leads to *less stunting* and *higher adult survival* – convert into effects on worker productivity using microeconometric evidence on the *returns to height*



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Overall Human Capital Index

Survival		School		Health		HCI
Kids who don't survive don't grow up to become future workers	X	***Contribution of quality-adjusted years of school to productivity of future workers***	X	***Contribution of health (average of ASR and stunting) to productivity of future workers***	=	***Productivity of a future worker*** *(relative to benchmark of complete education and full health)*

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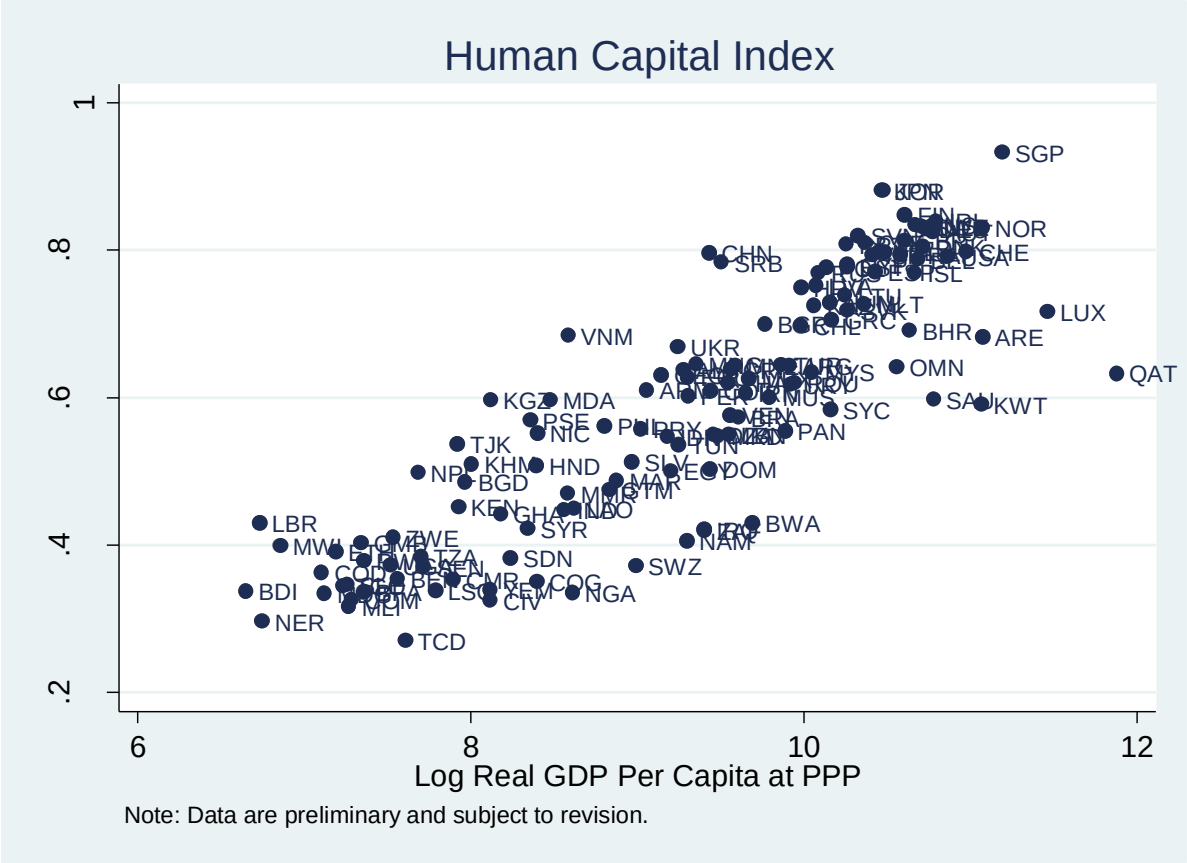
Human Capital Index



- HCI covers **141 countries** as of June 15.
- Country coverage should expand to **up to 170 countries** as remaining gaps in education and health data are filled.

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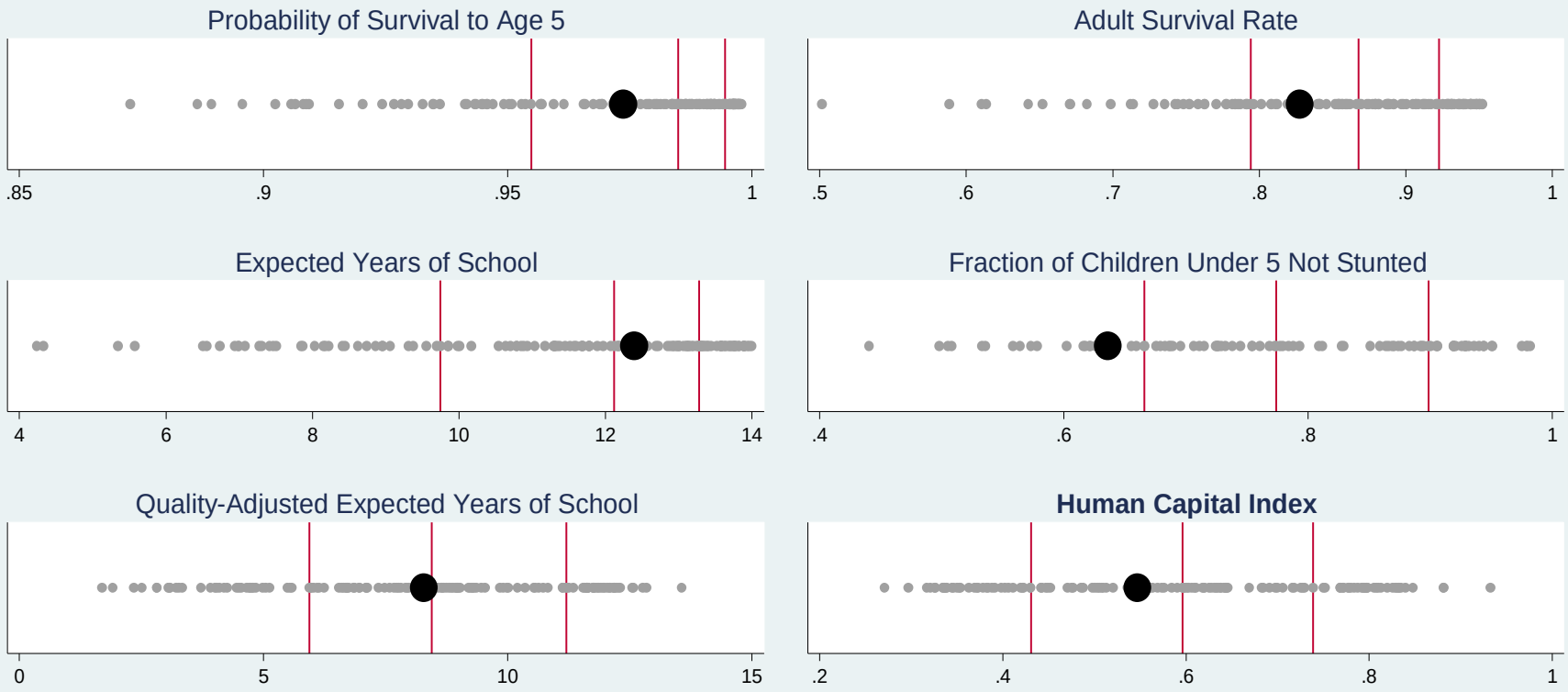
Human Capital Index and Components: Indonesia



Note: Vertical lines indicate quartiles of each variable. Data are preliminary and subject to revision.

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From Human Capital to Growth

HCI score of $x\%$ means next generation of workers will be only $x\%$ as productive as they could be with complete education and full health.

If current trends continue, eventually entire future workforce will only be $x\%$ as productive as it could be.

GDP per worker is lower than it could be with complete education and full health:

- Direct effect: less productive workers;
- Indirect effect: less capital accumulation;
- Combined effect: GDP per worker is only $x\%$ of what it could be in the long run with complete education and full health.

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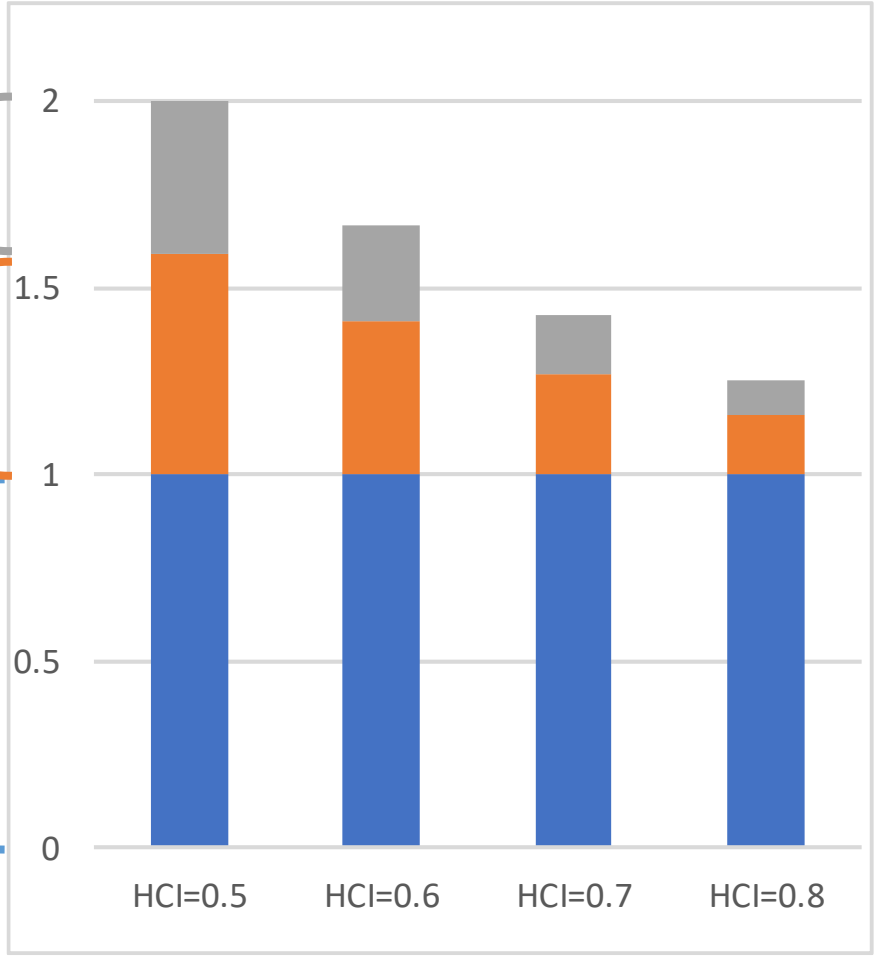
From Human Capital to Growth: Illustrative Calculation

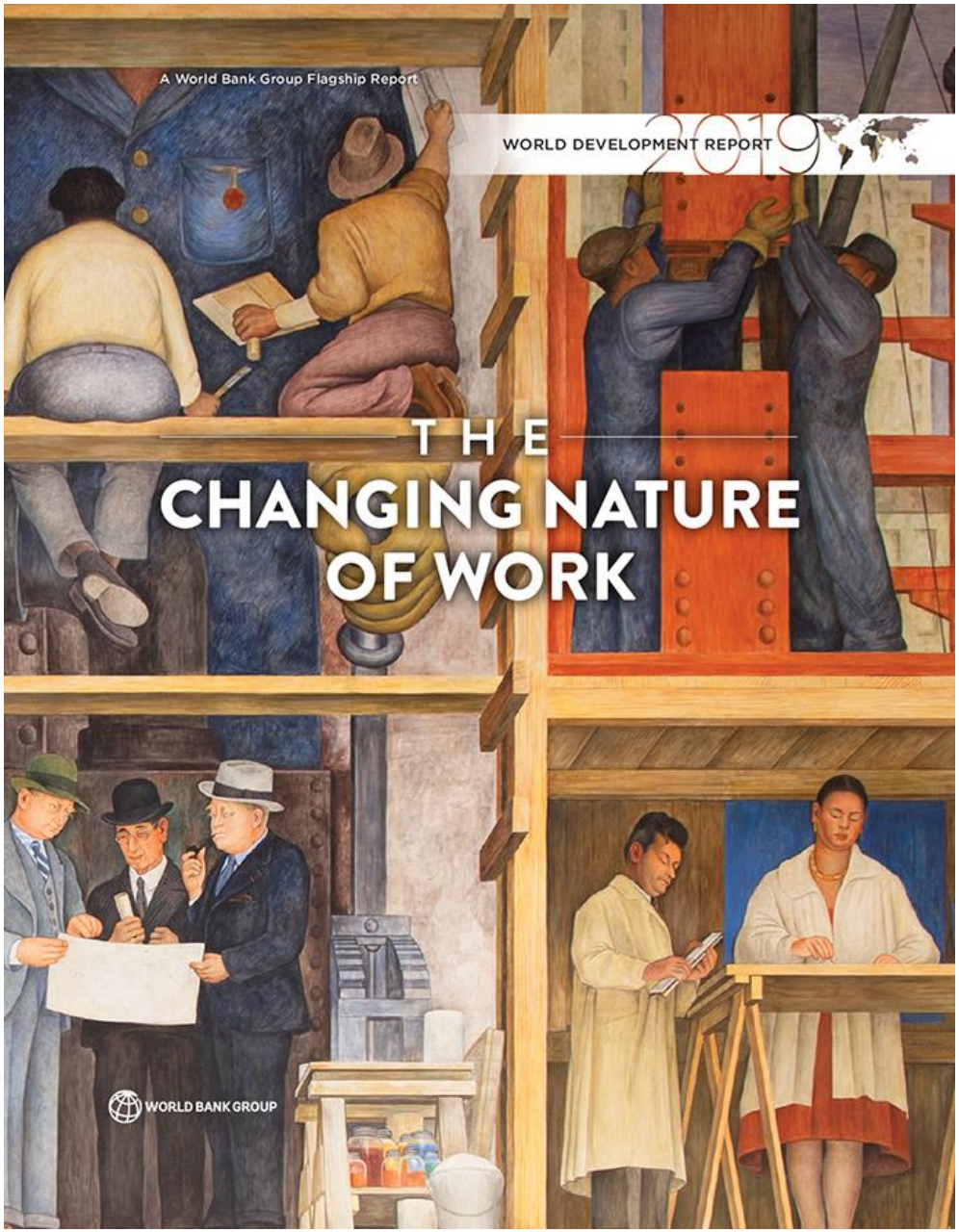
More Physical Capital (Indirect Effect)

More Human Capital (Direct Effect)

Status Quo



HCI of $x = 0.5$ means GDP per worker could be twice as high if country reached benchmark of complete education and full health – **or an extra 1.4% of annual growth over 50 years**



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