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A Stroll Down the Dollar Street: Teaching Per-Capita GDP Using Internationally Comparable Photographs

We propose an activity that draws on over 44,000 internationally comparable photographs (of households and their living conditions) that help students connect cross-country differences in real per-capita GDP with differences in living conditions. First, students virtually visit approximately twenty households across five countries (four of their choice and the United States) and document their living conditions. Second, students collect real GDP per capita data for these countries, compare it, and link it to the observed differences in living conditions. Ultimately, this process allows the students to understand how differences in real GDP per capita relate to the differences in living conditions and learn some of the advantages and disadvantages of using real per-capita GDP to measure living conditions.

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1. Introduction

Real gross domestic product (GDP) per capita is arguably one of the most important concepts in economics principles courses. If, in these courses, the focus is placed predominantly on how real GDP per capita is constructed and calculated, the concept (and the data underlying it) may be disconnected from what students know (e.g., a home and its defining characteristics, the availability of utilities, occupants' health and hygiene, quality of food, etc.) or can relate to (e.g., educational attainment, political regime characteristics, crime rates, access to electricity and sanitation, pollution levels, etc.). Such disconnect may render the concept of real GDP per capita less understandable, less memorable, and, most likely, less consistent with the macroeconomic reality. After all, what can first-time principles students infer about the living conditions and the level of development in a country where the real GDP per capita is $1,000, $10,000, or $50,000 per year? Therefore, recognizing the extent to which real GDP per capita captures the living conditions or individual well-being within a country matters, because cross-country differences in real GDP per capita are often used as proxies for cross-country differences in living conditions.

Considering the above, we build on Gapminder Project's Dollar Street platform and propose an image-based activity that allows students to discover the extent to which real GDP per capita captures the living conditions within and across countries. The activity requires students to record living conditions for households of various income levels by investigating a set of images that depict bedrooms, kitchens, bathrooms, health/personal hygiene of household members, and the next "big thing" they plan to buy. Students then link the households' characteristics with the data on real GDP per capita through a series of exercises in order to reveal the extent to which real GDP per capita captures the living conditions within and across countries.

Connecting the abstract concept of real per-capita GDP with unique, vivid, and easy-to-remember images provides a robust comparison of the living conditions within and across countries and outlines the advantages and disadvantages of real GDP per capita in capturing such differences. Indeed, visual representations of course material amount to knowledge structures that are easy to process and that facilitate concept retention and understanding (Nilson, 2010 p. 8, 108 – 109, 115). Further, Lang (2016, p. 15), Yancy McGuire (2015, p. 27) and Bransford et al. (2000, p. 10 – 12) point out that linking course material with what students already know (i.e., images characterizing various households) facilitates concept retention, understanding, and comprehension, which, in turn, pave the way for engaging in higher-order thinking. Taylor (2000) also underscores the importance of presenting ideas in an understandable and memorable way when teaching modern macroeconomics to principles students.

The benefits of active and cooperative learning are well documented. These range from increased student engagement and enhanced learning (Buckles and Hoyt, 2006), to higher exam grades and participation rates (Deerfield, 2019; Yamarik, 2007; and Baumgardner, 2015), to reduced achievement gaps between socio-economically advantaged and disadvantaged students (Hettler, 2015a), as well as increased examination performance for international students (Johnston et al., 2000). For extended discussions about the merits of active and cooperative learning, refer to Allgood et al. (2015), Emerson et al. (2015), Hettler (2015b), McGoldrick (2011), Bartlett (2006), and Becker et al. (2006), among others. However, the adoption and implementation costs of active learning activities are frequently cited among the main deterring factors of adopting such practices (Asarta et al., 2020; Guest, 2015; Goffe and Kauper, 2014; Watts and Schaur, 2011; Watts and Becker, 2008; Becker and Watts, 1996; 2001a; 2001b; Bonwell and Eison, 1991). Our assignment, therefore, seeks to expand the stock of alternatives to "chalk and talk" and reduce the cost of adopting and implementing active and

cooperative learning activities in economics courses.

This article also adds to the growing body of teaching resources that cater to active and cooperative learning and rely on the use of data and thematic data visualization. For example, Phelps and Cseh (2010) propose four applications based on Gapminder World to introduce, describe, and motivate the link between various socio-economic indicators (e.g., population and GDP per capita, or GDP per capita and the quality of life). Similarly, Wolfe (2020) proposes a series of active and team-based learning activities using Gapminder to illustrate the link between GDP per capita and indicators such as life expectancy and child mortality rate. Our article is also related to Duncan and Dowell (2016), who propose the use of live video streaming to link the concepts of GDP and GDP per capita with country-specific realities, and Suiter and Steierholz (2009), who suggest GEOFred as a tool for creating economically-themed (e.g., labor force, population, unemployment rate) maps of the United States. Our paper is also similar to Peterson (2000), who discusses the use of a geographical information system for visualizing and emphasizing differences in economic indicators across space and time, and Diduch (2012), who proposes the use of data from the Consumer Expenditure Survey to construct and compare the benefits and drawbacks of poverty thresholds.

The proposed assignment also caters to development economics courses, where forming an accurate and palpable idea about the living conditions within and across countries represents the first step towards understanding the factors that facilitate or inhibit economic growth, thereby allowing students to think about possible policies aimed at facilitating development. For such courses, the activity can be deployed as-is or as a preceding complement to the project proposed by Gundersen and Shwachman Kaminga (2019). Their project requires students to identify a precise economic issue, which pertains to a certain region/locality within a (developing) country and assemble a plan that is aimed at mitigating the issue. The authors recommend a plan which includes: (i) justifying and describing the implementation of actions, (ii) building a budget schedule and identifying funding sources, and (iii) evaluating the plan's potential effects. As part of our assignment, visiting the families residing on "Dollar Street" should aid the students to better address the first two components. Similarly, Banerjee and Duflo (2007) build on a series of surveys to document the economic lives of poor households across 13 countries. They describe the households' living arrangements, consumption choices, ownership of assets, health and well-being, and education, as well as work opportunities, infrastructure, and economic environments (e.g., credit, savings, and insurance markets). The activity presented here represents a complement for better understanding and visualizing the insight from Banerjee and Duflo (2007), which is often included on the reading list in economic development courses.

2. The Gapminder Project and the Dollar Street Platform

The GapMinder Project[1] and the Dollar Street[2] platform were created in an effort to challenge and dismiss common misconceptions that surround global issues (e.g., the "mega-misconception that the world is divided in two," rich versus poor, West versus the rest, developed versus developing, or North versus South (Rosling, 2018, p. 21 – 25)).[3] By making use

[1]The late Hans Rosling, a global healthcare researcher, lecturer, and medical doctor, started the Gapminder Project (https://www.gapminder.org/) with the goal of using data to challenge common misconceptions about how we view the world and perceive progress. Hans Rosling's son, Ola, and daughter in law, Anna Rosling Rönlund, are currently coordinating the project. The Gapminder Project bears no political, religious, or economic affiliations.
[2]Dollar Street (https://www.gapminder.org/dollar-street/matrix), an online resource created by Anna Rosling Rönlund, uses household images to document how people live across different countries and continents. Additional details about the Dollar Street are available at https://youtu.be/u4L130DkdOw.
[3]By dividing the world into four income levels, Rosling (2015, p. 33) emphasizes that most (approximately five billion) people live in the middle, on levels two and three.

of images, data, and data-visualization tools, all of which are easy to understand, comparable across countries, and publicly available, the Dollar Street platform and the Gapminder Project significantly aid the effort of bringing forward a fact-based view of the world.

The Dollar Street features 428 households from 66 countries. Households, which are described by over 44,000 photos, are placed onto a virtual street in accordance with their monthly income level[1] (i.e., from lowest to highest). A stroll down the Dollar Street allows students to "travel" around the world and "visit" households that differ in terms of monthly income, living conditions, and hopes and dreams – all from the comfort of their home or classroom. Moreover, visiting the Dollar Street helps students connect the concept of real per-capita GDP (and the data underlying it) with powerful images and family stories. Ultimately, this connection should facilitate the formation of a reality-anchored understanding about the differences in household incomes and living conditions within and across countries. The Dollar Street platform presents students with the opportunity to form opinions that go beyond various stereotypes and culture clichés. Lastly, as students stroll up and down Dollar Street and travel virtually across the world, they find that families who live abroad and on similar levels of income face living conditions that are likely much more similar to their own.

3. Activity Structure, Implementation, and Objectives

A. Activity Structure

The activity is designed to outline the strengths and weaknesses of real per-capita GDP as an indicator of living conditions through a series of within- and cross-country comparisons. The activity consists of seven parts, each described in more detail below, and is intended as a complement to the chapter introducing the concepts of GDP and GDP per capita. The activity along with a grading rubric are shown in sections A and B of the Appendix. The novelty of this activity consists of presenting the households' living conditions as an assortment of images that are easily comparable within and across countries, and as such, more relatable to the concepts students already know. For example, and for each household, the students investigate 60 to 85 photographs (i.e., images of beds, floors, hands and teeth of household members, pets, toilets, toys, kitchens, etc.) to gather an in-depth overview of its living conditions. A sample of such photographs is included in Section C of the Appendix.

The first two parts require students to create a sample of households and summarize their living conditions. Specifically, the first part prompts students to select five countries (four of their choice, plus the United States) of the 66 countries listed on the Dollar Street platform.[2] For each country choice, students select four households – one for each monthly income level (i.e., low [$60/month/adult], lower-middle [$61 - $240], upper-middle [$241 - $960], and upper income [>$960]), and enter the data into the table (one row for each of the four income levels). In the second part, the students fill out five tables (one table for each country choice) with keywords that summarize the living conditions (i.e., bedrooms/sleeping spaces, kitchens/cooking spaces and food, the next big thing to purchase, and health/personal hygiene) for each of the four households. The learning objective associated with this part is accessing, collecting, and summarizing numerical and categorical data. Since the household selection process requires students to virtually "meet" a family and "visit" their household, students find the process eye-opening as they discover how other people live.

[4]Calculating a family's monthly income relies on measuring consumption rather than salary or other earned income. The figures are reported in U.S. Dollars and are purchasing power parity (PPP)-adjusted to facilitate cross-country comparisons.

[5]The Dollar Street platform includes 18 African, 21 Asian, 18 European, and 9 South/Central American countries. More details are available at https://www.gapminder.org/dollar-street/matrix.

The third and fourth parts require students to compare households *within* and *across* countries. The third part asks the students to identify the commonalities shared by households in terms of (i) bedrooms/sleeping arrangements, (ii) kitchen spaces and food, and (iii) health/personal hygiene (e.g., access to clean drinking water and sanitation, nutritional value of food, images of individuals' hands and teeth, etc.) *within* the same country. On a country-by-country basis, the students then identify the household differences along these three dimensions. The learning objectives associated with this part of the activity include identifying and remembering the similarities in household living conditions *within* the same country, while recognizing the heterogeneity of living conditions, also *within* the same country. The fourth part is about comparing households of similar incomes *across* countries and along the three dimensions introduced above. The learning objectives associated with this part involve identifying, remembering, and recognizing the similarities in living conditions for same income level households *across* countries.

We acknowledge that living conditions for a *single* household, which is located within a given income level, may not be representative of the living conditions for *all* the households within that level. In other words, the living conditions of a low-income household (i.e., <$60/month/adult) should not be regarded as the exact same as the living conditions across the entire spectrum of households within that income level. However, the living conditions of households located within the same income level are, likely, more similar than those of households located in different income levels. Hence, the photographs, and the implied living conditions, are useful for *within*- and *cross*-country comparisons.

The fifth part requires students to find and report the latest real GDP per capita data for the four countries as well as the United States. This part of the activity requires students to construct a cross-sectional dataset of countries' real GDP per capita and report both the data source and the year for the statistic. While we have provided students with two such data sources (United Nations National Accounts and the World Bank's World Development Indicators), instructors may choose to have the students start the process of finding real GDP per capita data on their own. In this case, students should be i) prompted that the data source must remain the same for all five countries and ii) reminded of what counts/does not count as a reliable data source (e.g., data repositories of institutions such as the World Bank, International Monetary Fund, or the United Nations as opposed to random web searches). This way, students get to identify the data source on their own while bearing in mind that not all information posted online should be trusted.

The sixth part asks students to combine the data on real GDP per capita (from part five) with that on household living conditions (from parts three and four) and engage in two comparison exercises. The prompts in this part require students to analyze the data by comparing how real GDP per capita correlates with the living conditions within and across countries. Engaging in this exercise allows students to recognize that real GDP per-capita is an average statistic, which tends to mask important, *within*-country heterogeneities in living conditions. Students also observe that households located in countries with higher real GDPs per capita are less likely to experience low and very low living conditions (e.g., lack of images for households with monthly incomes below $240 in countries with high levels of real GDP per capita). Students also note that households in countries with higher levels of real GDP per capita experience better living conditions (e.g., a bedroom not exposed to the elements, a gas/electric stove and running water in the kitchen, an indoor bathroom where the toilet is linked to the sewer system), and families of comparable monthly incomes in other countries have living conditions more (as opposed to less) similar to their own.

The seventh part prompts students to evaluate the extent to which real GDP per capita

can be used as a substitute measure for capturing the similarities and differences in living conditions within and across countries. Upon completing this final part and drawing on the insight from parts five and six, students note that real GDP per capita can be, concomitantly, a strong and weak indicator of living conditions. Students also recognize that inferences about living conditions based solely on GDP per capita should be developed with care and emphasize that the concept of real GDP per capita is a good indicator for the living conditions of the "average household."

B. Activity Implementation

While the activity is relatively simple to implement, it is worth following up with three recommendations. First, we recommend that the activity follows the chapters on gross domestic product and long-run economic growth, which are usually covered at the very beginning of macroeconomics principles courses. In intermediate macroeconomic theory and economic development courses, instructors may implement the activity as they see fit (i.e., at the beginning of the semester to motivate the course or at any time throughout).

Second, while the activity may be deployed on an individual basis, we recommend that students complete it in small groups (e.g., 2-4 students). Indeed, activities that require students to tackle more complex tasks and interact with a larger number of peers (i.e., two or more) are more productive avenues of enhancing student learning (Emerson et al., 2015), hence the recommendation regarding the group size. Note, however, that the insight from Emerson et al. (2015) is based on observing cooperative learning as opposed to unstructured group activities. In addition, the group approach not only generates additional learning gains[1] but also makes it easier to provide feedback and decreases the grading time, especially in large classes. Moreover, since the concept of real GDP per capita is covered early in macroeconomics principles courses, these groups can form the basis for learning groups.

If the activity is to be used as a means of promoting cooperative learning, it is important to consider the insight of Johnson et al. (1991), who note that cooperative learning requires i) positive interdependence among members, ii) face-to-face interaction, iii) personal and individual accountability among members, iv) appropriate use of communication and interpersonal skills, and v) group process. Bartlett (2006) and McGoldrick (2011) note that students must be assigned to well-defined roles as they work towards completing a group project. Assigning roles (e.g., each student submits one country along with families included in the analysis) becomes even more desirable as it can provide a solution to the all-known free-rider problem (McGoldrick, 2011). The assignment of roles also facilitates planning, promotes individual accountability, and represents a catalyst for interdependence among members. Lastly, cooperative learning is associated with developing/improving an array of desirable skills (i.e., active and passive communication, writing, synthesis, idea formation, understanding of concepts, receiving and providing feedback, visualizing and organizing information, and understanding applications) as noted by McGoldrick (2011) as well as grades and participation rates as outlined by Baumgardner (2015).

Third, it is important to recognize that the Dollar Street photographs do not provide a full account of the living conditions within and across countries. We acknowledge that, among others, factors such as educational attainment, political regime characteristics, crime rates, access to electricity and sanitation, and environmental pollution may shape the differences in

[6]Group work facilitates peer learning and enhances understanding as students help each other understand and connect previously disconnected concepts and ideas (Lang, 2016, p. 95). Davidson and Major (2014) bring forward strong and extensive evidence that engagement in small-group work fosters knowledge development, thinking, as well as social skills, in addition to increased course satisfaction. Becker (1997) emphasizes the need for group, especially small-group, activities in economics courses.

living conditions. Therefore, we recommend that instructors follow up on the activity with a debriefing session similar to the one outlined in Section 4.

C. Activity Objectives

While the discussion in subsection 3.A notes the activity's learning objectives on a part-by-part basis, it is important to summarize these objectives and compare them with those of typical undergraduate economics courses. For example, Hansen (1986) emphasizes the following types of knowledge and skills that undergraduate students should acquire while pursuing an economics major. These are: i) accessing existing knowledge, ii) having command of existing knowledge, iii) displaying ability to draw out and interpret existing knowledge, iv) utilizing/applying existing knowledge to explore issues, and v) creating new knowledge. Hansen (2001) briefly revises the five proficiencies and adds a sixth – vi) interpret and manipulate economic data. While no formal assessment has been conducted, the activity presented here facilitates, to some extent, the development of two out of the six proficiencies listed above (i.e., iv and vi). Recall that the activity requires students to search for data on real GDP per capita and visualize it by linking it to the photographs hosted on the Dollar Street platform. Salemi and Siegfried (1999), among others, also call for more emphasis on the processes of finding, evaluating, characterizing, and using economic data. At the same time, students also get the chance to explore the concept of real per-capita GDP and discuss its benefits, drawbacks, and policy-related uses as a measure of living conditions.

In addition, when students engage with the activity in groups, the activity covers seven of the ten engagement indicators from the National Survey of Students Engagement (NSSE). The activity requires students to engage in collecting and analyzing data, which provides them with a clear and memorable demonstration that there are notable amounts of income heterogeneity regardless of a country's development level. As they seek to explain income differences within and across countries, students have the opportunity to integrate concepts from other disciplines (e.g., sociology, anthropology, history, or political science). At the same time, students engage in higher-order learning by linking and "apply[ing] facts [to] practical problems or new situations," which ultimately helps them connect their "learning to societal problems or issues." Linking pictures to data enhances students' "quantitative reasoning" abilities by matching abstract numerical figures to information (e.g., family and household photographs) that is already familiar to them. The activity's collaborative and international dimensions place an emphasis on (racial, ethnic, economic, or cultural) diversity and facilitate inclusion (especially of international students and under-represented minorities) through student-to-student interactions (i.e., peer instruction and the exchange of activity-related personal experiences). Such interactions may lead to the formation of academic support groups, which, according to Becker (1997), matter for increased retention (within the major/field).

A formal assessment (e.g., before/after, causal analysis) of the extent to which the assignment facilitated the achievement of the learning objectives has not been conducted. However, the answers submitted by students in response to the assignment's sixth and seventh questions reveal that 70% of them meet the assignment's main learning objectives (i.e., contrasting how similarities/differences in real GDP per capita correlate with similarities/differences in living conditions within and across countries, discovering and assessing the link between real GDP per capita and living conditions, and evaluating the strengths and weaknesses of real GDP per capita as a substitute measure of living conditions). Based on the 50 student responses to these two questions, 72% of them meet all three learning objectives for the sixth question, while 68% of students meet the learning objective for the seventh question.

4. Extensions and Modifications

The activity may be extended along several dimensions. First, as suggested earlier, instructors are encouraged to follow up with an in-class debriefing discussion once the activity is complete. The discussion should focus on the instances in which real GDP per capita can be an accurate and reliable indicator of household living conditions. Given that raw comparisons of real GDP per capita may be somewhat simplistic, the discussion may focus on identifying other metrics (e.g., Human Development Index,[1] educational attainment,[2] political regime characteristics,[3] crime rates,[4] access to electricity and water/sanitation, environmental pollution,[5] and/or consumption prices[6]) that may complement real GDP per capita statistics in explaining differences in household living conditions within and across countries.

The debriefing exercise can also be conducted through a series of brief but structured reports or in-class presentations that identify such complementary metrics.[7] The reports/presentations may focus on answering a two-part question such as "a) Based on your findings, what other information may be useful in explaining a household's living conditions but is not captured by the real GDP per capita?" and "b) Does such information exist and, if so, where can it be found?" Extending the activity this way undoubtedly requires additional resource expenditure. However, this extension comes with the added benefit of allowing students to develop research skills and is notably streamlined if completed by groups (e.g., 2-4 students). This way, each group will deliver a short report/presentation about their findings while the instructor will follow up by summarizing and adding to these insights. Moreover, this extension provides students with the opportunity of accessing existing knowledge, finding and interpreting existing knowledge, and/or utilizing/applying existing knowledge to explore

[1]The Human Development Index (HDI) combines three aspects of human development: "a long and healthy life, access to knowledge, and a decent standard of living." More details about the HDI's construction and country-specific data are available at http://hdr.undp.org/en/content/human-development-index-hdi.

[2]The Barro and Lee (2013) dataset includes information about completion and attainment rates, as well as average years of schooling for primary, secondary, and tertiary education. The data are available at http://www.barrolee.com/.

[3]The Integrated Network for Societal Conflict Research (INSCR) and the Center for Systemic Peace provides country-specific democracy indexes as part of the Polity 5 Dataset. The dataset is available at https://www.systemicpeace.org/inscrdata.html. The indexes account for "institutions and procedures through which citizens can express effective preferences about alternative policies and leaders," "the existence of institutionalized constraints on the exercise of power by the executive," and "civil liberties to all citizens in their daily lives and in acts of political participation."

[4]The United Nations Office on Drugs and Crime (UNODC) publishes data on a wide array of crimes, which range from wildlife crimes to corruption/bribery to financial crimes for 201 countries. The UNODC also publishes countries' crime profiles. The data are available at https://dataunodc.un.org.

[5]The World Bank's World Development Indicators (WDI) includes data on air pollution and mortality rates attributed to air pollution. The data are available at https://databank.worldbank.org/reports.aspx?source=world-development-indicators. The Environmental Accounts of the World Input Output Database contain data on industry-level energy use and emissions to air for eight pollutants. The data are available at https://dataverse.nl/api/access/datafile/199110. In addition, the WDI includes the share of population with access to electricity, safely managed drinking water, sanitation services, and the share of electricity produced using fossil fuels and renewables. The data on these indicators are available at https://datatopics.worldbank.org/world-development-indicators/themes/environment.html#electricity-production.

[6]The WDI also contains data on purchasing power parity indexes, which convert country-specific currencies into a common currency by taking into account the differences in price levels between countries.

[7]Howard (2015, p. 5-8) and Hansen and Salemi (2011) underline the importance of structured discussion by emphasizing the positive effects of this instructional approach on the formation and development of higher order thinking skills. Albeit in the context of class experiments, Cartwright and Stepanova (2012) find that students who write a follow-up report turn in better answers on test questions. In addition, their grades tend to be 20% higher, on average, which amounts to a 40-60% increase in the overall test grade.

issues, thereby taking them closer to meeting proficiencies i), iii), and iv) that were outlined by Hansen (2001, 1986).

The activity may also be extended to include a post-completion presentation, especially if students engage with the activity as part of a group or if the class size is small enough such that individual presentations do not require a significant time commitment. In this regard, each group/individual may prepare and deliver a seven-slide (i.e., one slide for each part of the activity) presentation of their findings. The presentations may be shortened by focusing only on the activity's last three parts and the key ideas they bring about. This way, the activity's reach is expanded in that it provides students with the opportunity to develop and improve their skills of distilling their research into key ideas and delivering this insight to an audience. According to Carenvale et al. (2020) and Hellier et al. (2004), both of these skills are valued by employers.

Finally, the activity can be structured such that it is completed during class, as opposed to being assigned as homework. The main benefit of this approach involves the facilitation of in-class student-instructor interaction and, if the activity is completed as a group, active cooperation among students. A secondary benefit includes the in-person delivery of guidance and feedback, which could be less time-consuming and more efficient than guidance/feedback provided through other media. The obvious cost of this approach is the class time diverted towards the in-class completion of the activity and away from other course aspects.

5. Conclusion

Comparisons of real GDP per capita data can be useful for emphasizing within- and cross-country differences in productivity and incomes. However, while instructive to a certain extent, these comparisons are rather simplistic and tell little about the cross-country differences in living conditions and the socio-economic realities behind the data.

We therefore propose an image- and data-based assignment that requires students to engage in the analysis of the household living conditions within and across countries. Specifically, students construct a cross-sectional dataset of households across countries using the image bank provided by Gapminder Project's Dollar Street platform. The students then analyze this dataset and underline the differences and similarities in living conditions across (i.e., holding household income level constant) and within countries (i.e., holding real GDP per capita constant). Finally, the students collect real GDP per capita data for the countries in the dataset to contrast and assess how similarities/differences in real GDP per capita correlate with similarities/differences in living conditions across and within countries.

A stroll down the Dollar Street allows students to discover (on their own) the merits and drawbacks of real GDP per capita as a means to assess differences in living conditions across and within countries. Furthermore, the activity presents the students with the opportunity to travel virtually around the globe with their colleagues and form opinions that go beyond various stereotypes and culture clichés.

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Appendix A: The Dollar Street Assignment

The Dollar Street Assignment

1. Visit Dollar Street on Gapminder website using the following link https://www.gapminder.org/dollar-street/matrix

On the top left from the drop-down arrow, where it says "World," please select and list in the blank space provided below:

a) ONE country from Asia _____

b) ONE country from Africa _____

c) ONE country from Europe _____

d) ONE country from South/Central America _____

e) U.S. will be your control/comparison country.

2. For each individual country you have selected and listed above, you will investigate the lives of four households/families who live on four different income levels within and across countries. Households/families will be compared on different scales, relating to life opportunities and general living conditions.

(Data) Learning Objective #1: accessing, collecting, and summarizing numerical and categorical data.

For each country choice (i.e., 1. (a) – 1. (e)), you will select four households/families (i.e., four families for your country choice for Asia, Africa, Europe, and South America).

The first household/family should be from "Level 1" or living on less than $60/month. The second household/family should be from "Level 2" or living on an income of $61 – $240 dollars/month. The third household/family should be from "Level 3" or living on an income of $241 – $960/month. Finally, the fourth family/household should be from "Level 4" or living with more than $960/month. This means that for each country choice, you will have four families representing four different income levels for each country you have selected. **When an income category is missing, just leave it blank.**

Once you select the income level you will see the photos of a family or many families who live on this income level. Click on the photo of the family you like, and on the page that opens, click on "visit this home" (right-hand side of the screen next to the photo). This will give you a more detailed description of the family, their income, and various photos related to their daily life and access (or lack of access) to many necessities. Based on your selections, fill out the tables below. For each cell in the tables below, fill out exact information whenever possible (i.e., country, family size, income) and write **key words (e.g., no fridge, no processed food)** that capture some of the relevant information about the families in terms of the other key characteristics (i.e., bedroom, kitchen/food, next big thing to purchase, health/personal hygiene).

a) Asian Country	Monthly Income:	Family Size:	Bedroom:	Kitchen / Food:	Next Big Thing to Purchase:	Health / Personal Hygiene:
		(e.g., 2 adults, 5 children)	(e.g., no bedroom / one room household; no bed)	(e.g., no fridge, no processed food)	(e.g., bicycle)	(e.g., no running water)
Family #1 (Level 1 Income/ </or $60/ month)						
Family #2 (Level 2 Income/ $61 – $240/ month)						
Family #3 (Level 3 Income/ $241 – $960/ month)						
Family #4 (Level 4 Income/ >$960/ month)						

b) African Country	Monthly Income:	Family Size:	Bedroom:	Kitchen / Food:	Next Big Thing to Purchase:	Health / Personal Hygiene:
		(e.g., 2 adults, 5 children)	(e.g., no bedroom / one room household; no bed)	(e.g., no fridge, no processed food)	(e.g., bicycle)	(e.g., no running water)
Family #1 (Level 1 Income/ </or $60/ month)						
Family #2 (Level 2 Income/ $61 – $240/ month)						
Family #3 (Level 3 Income/ $241 – $960/ month)						
Family #4 (Level 4 Income/ >$960/ month)						

c) European Country	Monthly Income:	Family Size:	Bedroom:	Kitchen / Food:	Next Big Thing to Purchase:	Health / Personal Hygiene:
		(e.g., 2 adults, 5 children)	(e.g., no bedroom / one room household; no bed)	(e.g., no fridge, no processed food)	(e.g., bicycle)	(e.g., no running water)
Family #1 (Level 1 Income/ </or $60/month)						
Family #2 (Level 2 Income/ $61 – $240/ month)						
Family #3 (Level 3 Income/ $241 – $960/ month)						
Family #4 (Level 4 Income/ >$960/ month)						

d) South American Country	Monthly Income:	Family Size:	Bedroom:	Kitchen / Food:	Next Big Thing to Purchase:	Health / Personal Hygiene:
		(e.g., 2 adults, 5 children)	(e.g., no bedroom / one room household; no bed)	(e.g., no fridge, no processed food)	(e.g., bicycle)	(e.g., no running water)
Family #1 (Level 1 Income/ </or $60/month)						
Family #2 (Level 2 Income/ $61 – $240/ month)						
Family #3 (Level 3 Income/ $241 – $960/ month)						
Family #4 (Level 4 Income/ >$960/ month)						

e) United States of America	Monthly Income:	Family Size:	Bedroom:	Kitchen / Food:	Next Big Thing to Purchase:	Health / Personal Hygiene:
		(e.g., 2 adults, 5 children)	(e.g., no bedroom / one room household; no bed)	(e.g., no fridge, no processed food)	(e.g., bicycle)	(e.g., no running water)
Family #1 (Level 1 Income/ </or $60/month)						
Family #2 (Level 2 Income/ $61 – $240/month)						
Family #3 (Level 3 Income/ $241 – $960/month)						
Family #4 (Level 4 Income/ >$960/ month)						

3. **Based on your observations, country, and family selection, answer the following four questions.**

Learning Objective #1: identifying and remembering the similarities in living conditions across households within the same country.

Learning Objective #2: recognizing the heterogeneity of living conditions within the same countries.

a) What do the kitchens of households across the four different income levels within the same country have in common? *Identify* these commonalities below.

b) What do the bedrooms of households across the four different income levels within the same country have in common? *Identify* these commonalities below.

c) What do the households across the four different income levels within the same country have in common regarding health/personal hygiene? *Identify* these commonalities below.

d) Use the insight from a), b), and c) above to *summarize/report* the difference in living conditions for households across the four different income levels *within the same country*.

4. **Based on your observations, country, and family selection, tackle the following exercise.**

Learning Objective #1: identifying and remembering the similarities in living conditions for same income level households across countries.

Learning Objective #2: recognizing the similarities in living conditions for the same income level households across countries.

Use the data collected in question #2 parts (a) through (e) above to *summarize/report* the similarities and differences in living conditions for same income level households *across countries*. In doing so, you might find it helpful to think along the lines of the similarities shared by kitchens, bedrooms, and health/personal hygiene for same income level households across countries.

5. ***Find* the latest real GDP per capita data for each of the five countries included in your analysis and *report* them in Panel A of the table below. In addition, you must *report* the data source and the year to which the data refers in Panel B of the table below.**

The United Nations National Accounts (available at https://unstats.un.org/unsd/snaama/Basic) and the World Bank's World Development Indicators (available at https://databank.worldbank.org/source/world-development-indicators) are excellent sources.

To make sure that you are consistent across country choices, you must use the same data source and year for all countries.

Learning Objective #1: constructing a dataset of countries and their real GDP per capita in a given year.

(Data) Learning Objective #1: finding and reporting real GDP per capita data across countries in a given year.

Panel A	
	Real GDP per capita (USD/person)
[add country in Asia]	[add real GDP/capita]
[add country in Africa]	[add real GDP/capita]
[add country in Europe]	[add real GDP/capita]
[add country in Central/South America]	[add real GDP/capita]
the United States of America	[add real GDP/capita]

Panel B	
Data Source (e.g., UN, WB WDI)	[add data source]
Year	[add year]

6. ***Combine the data on real GDP per-capita (question #5) with that on living conditions that you have observed (questions #3 and #4) and analyze it to discover and assess the link between real GDP per capita and living conditions.***

Learning Objective #1: combining and analyzing the data on real GDP per capita and living conditions.

Learning Objective #2: contrasting how similarities/differences in real GDP per capita correlate with similarities/differences in living conditions within and across countries.

Learning Objective #3: discovering and assessing the link between real GDP per capita and living conditions.

Specifically,

a) *contrast* how similarities/differences in real GDP per capita *correlate* with similarities/differences in living conditions *within* countries? Hint: compare households located on different income levels within the same country.

b) *contrast* how similarities/differences in real GDP per capita *correlate* with similarities/differences in living conditions *across* countries? Hint: compare households located at the same income level across countries.

7. ***Evaluate* the extent to which real GDP per capita can be used as a substitute measure for capturing the similarities/differences in living conditions *across* countries.**

Learning Objective #1: evaluating the strengths and weaknesses of real GDP per capita as a substitute measure of living conditions.

Specifically,

a) *Argue* against the use of real GDP per capita as a substitute measure for living conditions.

b) *Argue* in favor of using real GDP per capita as a substitute measure for living conditions.

Appendix B: The Dollar Street Activity Grading Rubric

The Dollar Street Assignment Rubric

Question #) (Weight)	Ratings			
	Proficient	**Competent**	**Beginner**	**Novice**
Q1) (5%) Completeness of country selection.	Four countries (excluding the United States) are indicated in the space provided. (100%)	(0%)	(0%)	Three or less countries are indicated in the space provided. (0%)
Q2) Part 1 (5%) Selecting households on each of the four income levels (when available).	One household for each income level is selected for all five countries considered. (100%)	One household for each income level is selected for four of the five countries considered. (80%)	One household for each income level is selected for three of the five countries considered. (60%)	One household for each income level is selected for two (or less) of the five countries considered. (0%)
Q2) Part 2 (15%) Recording the household characteristics.	Characteristics are recorded accurately and thoroughly enough to facilitate a detailed and meaningful comparison of households within and across countries. (100%)	Characteristics are recorded inaccurately or not thoroughly enough to facilitate a detailed and meaningful comparison of households within and across countries. (80%)	Characteristics are recorded inaccurately and not thoroughly enough to facilitate a detailed and meaningful comparison of households within and across countries. (60%)	Characteristics are recorded inaccurately or not thoroughly enough to facilitate a comparison of households within and across countries. (30%)

Q3) a) (3%) What do the kitchens of households across the four different income levels within the same country have in common? Identify these commonalities below.	The discussion is clear, articulate, thorough, and demonstrates a good understanding of the similarities across households. (100%)	The discussion is unclear, not articulate, brief, or does not demonstrate a good understanding of the similarities across households. (75%)	The discussion is unclear, not articulate, brief, and does not demonstrate a good understanding of the similarities across households. (50%)	The discussion is missing altogether. (0%)
Q3) b) (3%) What do the bedrooms of households across the four different income levels within the same country have in common? Identify these commonalities below.	The discussion is clear, articulate, thorough, and demonstrates a good understanding of the similarities across households. (100%)	The discussion is unclear, not articulate, brief, or does not demonstrate a good understanding of the similarities across households. (75%)	The discussion is unclear, not articulate, brief, and does not demonstrate a good understanding of the similarities across households. (50%)	The discussion is missing altogether. (0%)
Q3) c) (3%) What do the households across the four different income levels within the same country have in common regarding health/ personal hygiene? Identify these commonalities below.	The discussion is clear, articulate, thorough, and demonstrates a good understanding of the similarities across households. (100%)	The discussion is unclear, not articulate, brief, or does not demonstrate a good understanding of the similarities across households. (75%)	The discussion is unclear, not articulate, brief, and does not demonstrate a good understanding of the similarities across households. (50%)	The discussion is missing altogether. (0%)

Q3) d) (6%) Use the insight from a), b), and c) above to summarize/report the difference in living conditions for households across the four different income levels within the same country.	The discussion is clear, articulate, thorough, and provides a good summary of the differences across households. (100%)	The discussion is unclear, not articulate, brief, or does not provide a good summary of the differences across households. (75%)	The discussion is unclear, not articulate, brief, and does not provide a good summary of the differences across households. (50%)	The discussion is missing altogether. (0%)

Q4) (10%) Use the data collected in question #2 parts a) through e) to summarize/report the similarities and differences in living conditions for same income level households across countries.	The discussion is clear, articulate, thorough, and demonstrates a good understanding of the similarities and differences between households of similar incomes and across different countries. (100%)	The discussion is unclear, not articulate, brief, or does not demonstrate a good understanding of the similarities and differences between households of similar incomes and across different countries. (75%)	The discussion is unclear, not articulate, brief, and does not demonstrate a good understanding of the similarities and differences between households of similar incomes and across different countries. (50%)	The discussion is missing altogether. (0%)
Q5) (10%) Find the latest, real GDP per capita data for each of the five countries included in your analysis and report them in Panel A of the table below. In addition, you must report the data source and the year to which the data refers in Panel B of the table below.	PPP-adjusted, real GDP per capita data are reported accurately, was collected from a reputable source for all five countries considered, and the data source is indicated. (100%)	PPP-adjusted, real GDP per capita data are reported accurately for all five countries considered. However, the data source is missing. (80%)	PPP-adjusted, real GDP per capita data are reported accurately for no more than three countries. In addition, the data source is missing. (50%)	PPP-adjusted, real GDP per capita data are reported accurately only for one or two countries. In addition, the data source is missing. (50%)
Q6) a) (10%) Contrast how similarities/ differences in real GDP per capita correlate with similarities/ differences in living conditions within countries? Hint: compare households located on different income levels within the same country.	The discussion is clear and articulate enough to emphasize the idea of living standards heterogeneity within countries. (100%)	The discussion is not clear nor articulate enough to emphasize the idea of living standards heterogeneity within countries. (80%)	The discussion does not emphasize the idea of living standards heterogeneity within countries. (50%)	The discussion is missing altogether. (0%)

Q6) b) (10%) Contrast how similarities/ differences in real GDP per capita correlate with similarities/ differences in living conditions across countries? Hint: compare households located at the same income level across countries.	The discussion is clear and articulate enough to emphasize that i) households in countries with higher real GDPs per capita tend to have higher living standards and ii) households in countries with different real GDPs per capita, but of similar income levels, face comparable living standards. (100%)	The discussion is not clear nor articulate enough to emphasize that i) households in countries with higher real GDPs per capita tend to have higher living standards and ii) households in countries with different real GDPs per capita, but of similar income levels, face comparable living standards. (80%)	The discussion is not clear and not articulate enough to emphasize that i) households in countries with higher real GDPs per capita tend to have higher living standards and ii) households in countries with different real GDPs per capita, but of similar income levels, face comparable living standards. (50%)	The discussion is missing altogether. (0%)
Q7) (20%) Evaluate the extent to which real GDP per capita can be used as a substitute measure for capturing the similarities/ differences in living conditions across countries.	The discussion is creative, clear, and articulate enough to emphasize the strengths and weaknesses of using real GDP per capita as a measure of living standards. (100%)	The discussion is not creative, unclear, or not articulate enough to emphasize the strengths and weaknesses of using real GDP per capita as a measure of living standards. (80%)	The discussion is not creative, unclear, and not articulate enough to emphasize the strengths and weaknesses of using real GDP per capita as a measure of living standards. (50%)	The discussion is missing altogether. (0%)

Appendix C: Living Conditions Across the Four Income Levels

Figure 1 Beds/Bedrooms; Source: Gapminder Dollar Street; This work is licensed under a Creative Commons Attribution 4.0 International License

Figure 2 Kitchens; Source: Gapminder Dollar Street; This work is licensed under a Creative Commons Attribution 4.0 International License

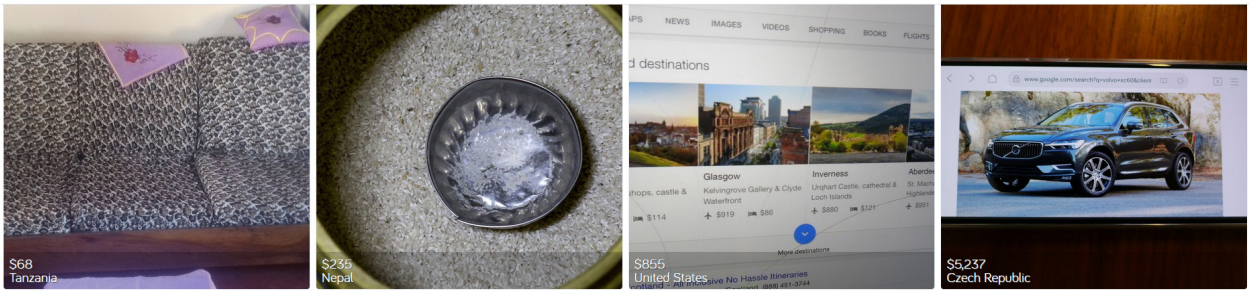

Figure 3 Next Big Thing to Purchase; Source: Gapminder Dollar Street; This work is licensed under a Creative Commons Attribution 4.0 International License

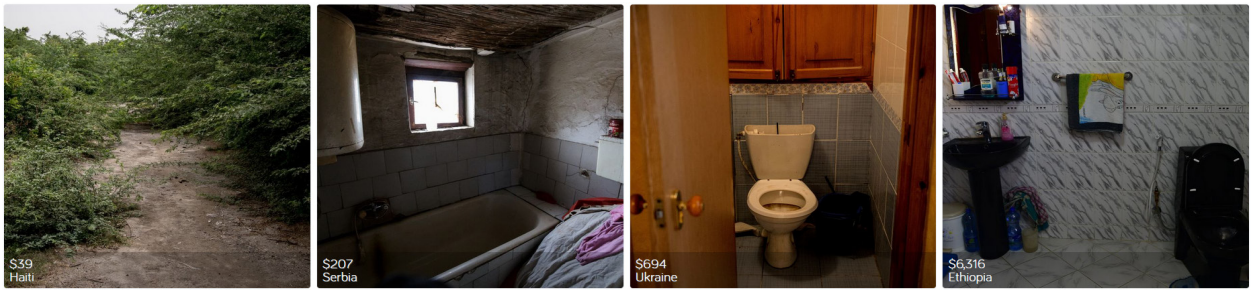

Figure 4 Bathrooms; Source: Gapminder Dollar Street; This work is licensed under a Creative Commons Attribution 4.0 International License

Figure 5 Health/Personal Hygiene; Source: Gapminder Dollar Street; This work is licensed under a Creative Commons Attribution 4.0 International License