Weighted Average - Multidimensional Poverty Index (MPI)

Deadline: November 10th, 2019

Winners Announcement: December 1st, 2019

The winners will receive their prizes at the Award Ceremony.

Location: Library - Ivy Tech-Bloomington

Date: December 12th, 2019

Time: 12:00 pm

Guidelines:

“Eradicating poverty in all its forms and dimensions is one of the greatest global challenges and indispensable requirement for sustainable development and there is a clear need for concerted, creative, and rigorous efforts to measure and reduce multidimensional poverty in a way that ensures that no one is left behind.” Oxford Poverty and Human Development Initiative (2018).

In this project, you will create an Excel spreadsheet that can calculate Multidimensional Poverty Index (MPI). You will then write a reflection paper answering several questions regarding your project.

In this project you are required to do the following:

1. Create an Excel spreadsheet that will be capable of calculating several Multidimensional Poverty Index (MPI). Data set is at the end of the document. Keep in mind that weighting is involved in determining the Multidimensional Poverty Index (MPI).

   Your Excel spreadsheet should contain the following:

   1. Your name, course name and project name.
   2. The scores provided on the next page
   3. Dimensions and Indicators averages
   4. The weights below used to determine the Multidimensional Poverty Index (MPI).
5. A labeled cell with the Multidimensional Poverty Index (MPI) that uses a formula to calculate the weighted average MPI. *If a value is changed in your spreadsheet, your final calculation should recalculate.* Please limit your use of Excel functions to those used in the course-packet (for a list see the ‘Excel Reference sheet’ in Ivy Learn’s ‘Excel Help’ in the Resources Module.

6. In addition to correctly calculating the Multidimensional Poverty Index (MPI), your spreadsheet should be easy to read. Make sure the spreadsheet it is well-organized, with clear labels, and helpful formatting.

Your Word file should contain the following:

1. Write a typed reflection paper (minimum two pages). Remember that we are looking for responses that are backed by values that support your statements. The explanations should be clear to a broad audience. The paper must include the following information:
2. Your **name**, course name and project name.
3. An explanation of how the Multidimensional Poverty Index (MPI) is calculated and how Excel is used in this process.
4. Analyze and reflect on the results for the MPI data provided. What are the **final** Multidimensional Poverty Indices you determined based on the initial data provided? What the MPI is this per country? If the Nutrition (Weight=1/6) value for Vietnam is missing, use the countries’ Nutrition values and use the average excel command to calculate the MPI for Vietnam. Do you think this value would be a good estimator? If not, explain why?
5. Some people argue that the weigh for Education indicators should be higher. Based on your experiences, how would you change the weights and what portion you will give to both: Years of Schooling and School attendance. Provide an example using one country.
6. Researchers wish to know what modifications you could have made to improve the accuracy of the Multidimensional Poverty Index (MPI). Could the countries receive a better Index when you changed the weights? If it is possible, what was the **maximum weight** that would decrease Multidimensional Poverty Index? Use the figure below and
indicate the weight for each indicator. **Consider at least two scenarios** to answer this question. If not possible, explain why.

7. Assume that you decide to remove one indicator of Living Standard. Create a new weighting system to adjust for this change. Explain why/how you chose your new weights. How would the MPI be impacted by this change?

8. You will find below the USA Multidimensional Poverty Indices in 2016 by state. Assume that all the MPI you calculated are for 2016. Compare the MPI of Indiana and identify the country that has the closer MPI to Indiana.

9. Based on the Indiana MPI = 4.9 to 5.2 estimation in 2016 (map), construct the Index for Indiana considering the ten Indicators. What are the numbers for each indicator to get the MPI = 4.9 to 5.2? Explain how you construct the index base on your experience living in Indiana.
10. Reflect on the results of your project. What have you learned from doing this project?
11. Assume you can help to reduce poverty at your community, what kind of indicators you 
will consider first to reduce the Poverty Index?

**In addition to addressing the given statements, your project should:**
12. Contain a paper that is well organized and in paragraph form (not just bulleted answers!).
13. Contain a paper that is clear to someone who is not familiar with the project. (i.e. don’t 
assume that you are writing this to your instructor, make sure anyone could understand 
your statements.)
14. Give specific values (i.e. quantify statements).
15. Provide support for your statements (e.g. explain how values were found and justify 
statements).
16. Contain a spreadsheet using the original MPI values given below.
17. Use appropriate representations (tables, color, formatting) that will help the reader 
understand the project. Explore references as suggestions.
18. Project should make use of Excel **functions**.
19. **Project should be your original work.** This project is to be completed by individual 
students. Copying someone else’s work is cheating. Sharing your work with 
someone else is cheating.
20. **Submit both an Excel and Word file following your instructor’s directions for submission.** *These instructions cover the MINIMUM expectations of this project.*
21. **Use the following parameters and scores in your Excel spreadsheet**

Refer to your Math-123 syllabus for specific grading information and use this in your 
calculations (below).

**Method 2** uses percent weights, where the sum of the weights must be 100%. Multiply each value 
by its weight and add. Write the percent weight in decimal form in this calculation.

\[ \text{Value} \times \text{Weight}\% + \text{Value} \times \text{Weight}\% + \text{Value} \times \text{Weight}\% \ldots \]
### Math-123 Project #1 - Multidimensional Poverty Index

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<thead>
<tr>
<th>Year and survey</th>
<th>Nutrition (Weight=1/6)</th>
<th>Child mortality (Weight=1/6)</th>
<th>Years of schooling (Weight=1/6)</th>
<th>School attendance (Weight=1/6)</th>
<th>Cooking fuel (Weight=1/18)</th>
<th>Sanitation (Weight=1/18)</th>
<th>Drinking water (Weight=1/18)</th>
<th>Electricity (Weight=1/18)</th>
<th>Housing (Weight=1/18)</th>
<th>Assets (Weight=1/18)</th>
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<td>Bangladesh 2014</td>
<td>25.6</td>
<td>2.3</td>
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<td>9.6</td>
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<td>30.7</td>
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### References:

- [https://www.irp.wisc.edu/publications/dps/pdfs/dp142715.pdf](https://www.irp.wisc.edu/publications/dps/pdfs/dp142715.pdf)