

MAPS TO DOWNSIZE GLOBAL POVERTY: A GIS AND POLICY FOCUSED INVESTIGATION

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Information Technology
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OVERVIEW

personal background

abstract

introduction

background/literature review

analysis and requirements

design

implementation

demo

conclusion

PERSONAL BACKGROUND



- Interest in GIS and Data Analytics
- Passionate about social issues
- Interned with The Borgen Project for 12 weeks
- Pursuing a Master's Degree in Public Policy and Management with an emphasis in Data Analytics at Carnegie Mellon University, Fall 2022

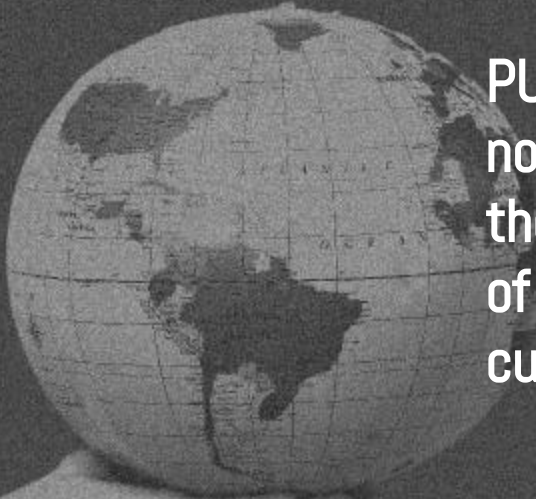
ORGANIZATION BACKGROUND



Mission Statement: The Borgen Project believes that leaders of the most powerful nation on earth should be doing more to address global poverty. We're the innovative, national campaign that is working to make poverty a focus of U.S. foreign policy

ABSTRACT

PURPOSE: to build a data visualization for a nonprofit organization that allows visitors to their website to have a better understanding of the organization's mission, goals, and current projects.





Overview of global poverty

- 736 million people live in extreme poverty. About half of the world's poor, around 368 million, [live in just five countries](#): India, Nigeria, the Democratic Republic of the Congo, Ethiopia and Bangladesh.
- In developing regions, one in 10 people [live on less than \\$1.90 a day](#).
- An estimated 2.5 billion people [lack access to improved sanitation](#) (more than 35 percent of the world's population).
- One billion people live without electricity and [hundreds of millions more](#) live with unreliable or expensive power.
- Poverty reduction rates are [expected to slow down](#) over the next decade.

Poverty is the principal cause of hunger

- As of 2018, 822 [million people are hungry worldwide](#); that's one in nine people.
- Over 2 billion people lack regular access to safe, nutritious, and sufficient food (about 18 percent).
- 785 million people drink unsafe water or have to travel more than [30 minutes to drink safe water](#).

LITERATURE REVIEW

Courses at University of La Verne

CMPS 372: *Intro to Python for computer science and data science : learning to program with AI, big data and the cloud*
by Harvey and Paul Deitel

CMPS 370: *ArcGIS Book : 10 Big Ideas about Applying the Science of Where* by Christian Harder

Other Resources:

Getting to know ArcGIS Pro 2.6 by Amy Collins and Michael Law

Collaborative cities : mapping solutions to wicked problems
by Stephen Goldsmith and Kate Markin Coleman

ANALYSIS AND REQUIREMENTS

Data Collection and Extraction

- Data exported from Our World In Data

Data Cleaning

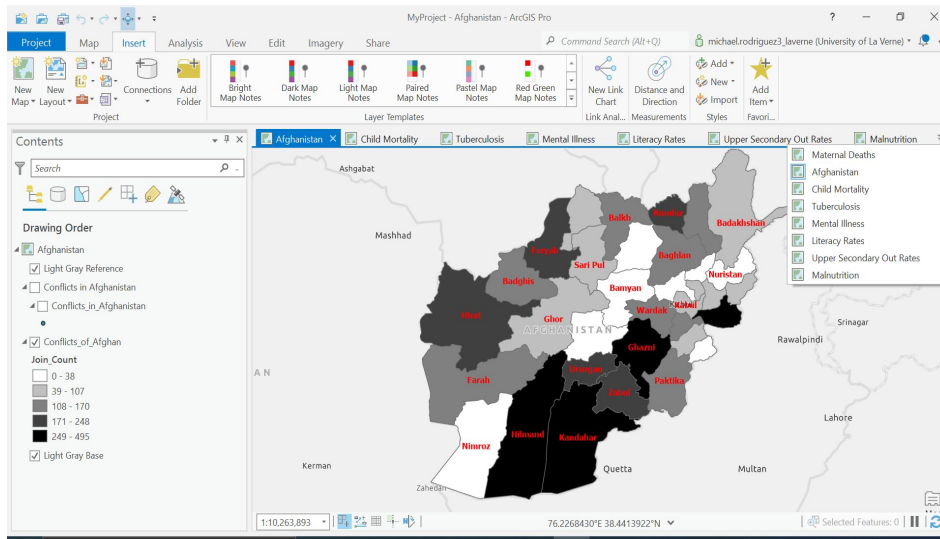
- Jupyter Notebook/Python used to clean data for relevant analysis

ArcGIS Software

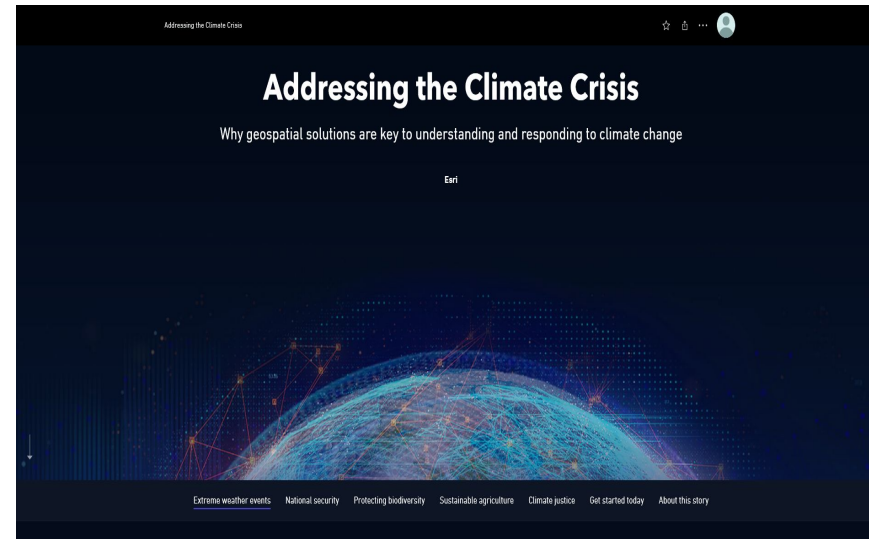
- ArcGIS Pro
- ArcGIS Online
- ArcGIS Storymaps
 - Products used to build maps and format data with shapefiles

DESIGN

ArcGIS Pro



Sample StoryMap



IMPLEMENTATION

Jupyter Notebook/Python

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Select items to perform actions on them.

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<input type="checkbox"/> 0	Downloads / SeniorProject22_Python	Name ▾	Last Modified	File size
	..		seconds ago	
<input type="checkbox"/>	childMortalityCleaning.ipynb		21 days ago	6.24 kB
<input type="checkbox"/>	conflictsCleaning.ipynb		3 minutes ago	13.8 kB
<input type="checkbox"/>	covidDataCleaning.ipynb		6 days ago	26.6 kB
<input type="checkbox"/>	hungerDataCleaning.ipynb		6 days ago	22.2 kB
<input type="checkbox"/>	IdDataCleaning.ipynb		15 days ago	34.6 kB
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ArcGIS Online Web Maps

Home
Gallery
Map
Scene
Groups
Content
Organization

Search
Notifications
User Profile

Content
My Content
My Favorites
My Groups
My Organization
Living Atlas

New Item
Create app

Search SeniorProject

Table
Date Modified
Filter

Folders
Filter folders
All My Content
SeniorProject

Filters
Item type
Maps
Layers
Scenes
Apps
Tools
Files
Insights
Notebooks
Location
Date modified
Date created

1 - 10 of 10 in SeniorProject

Title	Modified
Justice for The World's Impoverished	May 17, 2022
Global Undernourished Data	May 11, 2022
Global Covid Vaccination Rates	May 11, 2022
Tuberculosis Global Data 2020	May 11, 2022
Mental Illness Data	May 11, 2022
Global Literacy Rates	May 10, 2022
Upper Secondary Education Out of School Rates	May 10, 2022
Maternal Deaths in 2017	May 10, 2022
Child Mortality 2019	May 10, 2022
Conflicts of Afghanistan in 2019	May 10, 2022

DEMO



<https://arcg.is/1nfPry1>

CONCLUSION

What courses helped me:

CMPS 372: Intro to Python Programming

CMPS 370: Intro to GIS

What I learned:

- How to prepare and process data using python
- How to create maps with shapefile data from point data
- The different limitations of GIS software

What I would have done differently:

- Spent more time finding different sources of information
- Experimented with created aggregated data in SQL

Future student in Senior Project:

- Take lots of time to scope out your project
- Try to apply time and deadlines to yourself as if this project was for a job

Thank you to the Department of Computer Science and Engineering