Exploring the data behind unpaid work around the world

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Critical Data Representation and Analysis

Figure 1. Eng: "What you call love is actually unpaid work"
Mural found in Buenos Aires, Argentina

1. **Context: What is the story? Is this addressing a social challenge?**

What is the problem?

When discussing gender equality, common topics include the wage gap, gender-based discrimination, and women striving to break through glass ceilings. Efforts by feminists over decades have ingrained these terms into our daily vocabulary. They feature not only in news reports, political debates, and activism campaigns but also in casual conversations, including Friday night dinners with our parents. The COVID-19 pandemic has further illuminated the challenges faced by women in their daily lives. Particularly, the pandemic has underscored the significant amount of unpaid work expected from women, encompassing services provided within households such as personal care and housework.

According to the UN, women bear the brunt of unpaid work globally, accounting for three-quarters of the world's unpaid work, totaling around 12 billion hours each day. This burden is significantly higher in low and middle-income countries, where women dedicate even more time to unpaid work compared to their counterparts in high-income countries. In the UK, women spend an average of four hours per day on unpaid work, while men contribute a little over two hours, according to the OECD. Effectively, women are balancing two full-time jobs—one paid and one unpaid. This underscores the immense and economically indispensable burden of unpaid care and domestic work carried by women.

Why this problem matters?

The issue at hand extends far beyond mere household chores or caregiving duties; it is deeply interwoven into the very fabric of our society and economy. According to the UN's agency for Women, tasks such as cooking, cleaning, and caring for children and the elderly contribute significantly to GDP, ranging from 10 to 39 percent. Astonishingly, they can surpass the contributions of manufacturing or commerce. This reliance on such work is predominantly shouldered by women, highlighting its indispensable role in sustaining economies.

The European Institute for Gender Equality (EIGE) emphasizes that the unequal distribution of paid and unpaid work serves as a fundamental cause of gender inequality, both within society and the labor market. Their Gender Equality Index of 2023 meticulously examines how time allocated to unpaid work intersects with critical aspects of life, including leisure, knowledge, power, and income. In this context, unpaid labor emerges as the underlying cause of numerous barriers that women encounter across personal, academic, and professional spheres.

The mental health implications of unpaid care work cannot be overstated. Often overlooked and undervalued in mainstream economics, unpaid domestic and care work correlates with a heavier mental health burden and adverse effects on overall quality of life, particularly evident in high-income countries. The COVID-19 pandemic has exacerbated this disparity, intensifying the time spent on care and domestic work for both men and women, with women bearing the brunt of this increase in intensity.

This situation imposes an unfair burden and unjust barrier to equal labor force participation and pay. Addressing these disparities requires a fundamental shift in societal norms surrounding caregiving responsibilities and significant investment in creating viable, well-compensated opportunities within the care economy. Recognizing and acknowledging the invaluable contributions of women across all facets of life is crucial for achieving true gender equality.

2. **Motivation: Why this story?**

The decision to focus on the issue of unpaid labor stems from a deep understanding of its origins in gender norms and its profound impact on individuals' lives from childhood through adulthood.

Unpaid labor disparities are fundamentally rooted in entrenched gender norms that shape societal expectations and behaviors. These norms, instilled from early childhood and nurtured within the family, lay the groundwork for the unequal distribution of domestic and care work. Alarmingly, globally, girls aged 5-14 spend 160 million more hours daily on unpaid care and domestic work than boys of the same age. These disparities intensify as individuals grow older, fueled by deeply ingrained beliefs about women and girls' roles and status in society.

Moreover, the unequal gendered distribution of unpaid labor serves as the foundation for numerous other sexist barriers, particularly in the temporal domain. These disparities have profound implications for children's well-being from an early age, particularly affecting girls. They limit girls' time for learning, personal growth, and leisure, depriving them of equal opportunities to flourish. These limitations persist into adulthood, shaping a woman's life trajectory and potentially impacting her socioeconomic prospects, choices, and achievements. Furthermore, these impacts extend beyond individual lives, affecting the well-being of future generations should these patterns endure.

It's crucial to acknowledge that these norms also affect boys, albeit differently. Boys may internalize distorted perceptions of the value of time, perpetuating limited roles as fathers and caregivers in the future.

In essence, the selection of unpaid labor as the focal point of this project underscores its widespread implications and the urgent need for transformative action. By illuminating the pervasive influence of gender norms and unpaid labor disparities, we aim to challenge existing paradigms, stimulate critical reflections, and inspire collective efforts toward constructing a more equitable and inclusive society. Through storytelling and advocacy, we strive to dismantle the barriers perpetuating gender inequality and pave the way for a future where every individual, regardless of gender, can fulfill their potential.

3. **Purpose: What are you trying to communicate? What is the scope of your work?**

My work has the purpose of bridging the gap between complex data analysis and everyday understanding, making intricate statistics relatable and relevant to everyone. By combining rigorous data analysis with accessible research, our goal is to make data tangible and comprehensible for people from all backgrounds.

At the heart of our work lies the creation of content that speaks to the everyday person, breaking down academic language to highlight the urgent need for societal change regarding unpaid work. We aim to transform complex datasets into engaging narratives that empower individuals with the knowledge to grasp the broader implications of gender norms and unpaid labor.

Our ultimate aim is to turn raw data into a compelling message, using statistics as a tool to underscore the critical importance of reevaluating and reshaping societal norms. It's essential to understand that data, while informative, is just a means to shed light on the multifaceted dimensions of gender inequality and the necessity for transformative action.

Through this approach, we seek to spark conversations, prompt critical thinking, and inspire collective efforts toward building a more fair and inclusive society. By harnessing the power of storytelling and data-driven insights, we aim to drive meaningful change and envision a future where unpaid work is valued, equitably shared, and liberated from outdated gender stereotypes.

4. **Audience: How is your target audience? How will this benefit them?**

To define the target audience for this data storytelling project, it's crucial to understand how the issue of unpaid work impacts individuals' lives. The burden of unpaid labor affects society at large, and gaining a deeper understanding of its implications is vital for challenging existing power dynamics.

This understanding cannot be confined to academic or political spheres; it must be accessible to the everyday person. This project aims to democratize complex data research that directly affects daily lives. Therefore, the target audience encompasses individuals with English language proficiency and internet access (as the project will ideally be hosted online).

Given the complexity of the terms involved in this issue, the audience likely possesses basic education, including proficiency in written and oral communication skills. By reaching this audience, the project aims to empower individuals with the knowledge and insight needed to recognize the significance of unpaid work in their lives and advocate for societal change. Through accessible storytelling and data-driven narratives, it aspires to engage, educate, and inspire action among a diverse audience, ultimately fostering a more equitable and inclusive society.

5. **Data: What is your data about? What is the source? Any tools used to collect data? Is this a social data?**

To get a broader vision of unpaid work across the world, I've decided to join 5 data sets.

The data I've selected covers the following dimensions of unpaid labor across several countries: domestic and care work, food subsistence production and volunteering. With the hopes of reducing the risks of an imbalanced dataset, I've selected the International Labor Organization (ILO) datasets since the extensive research they've conducted covers countries from all regions of the world. I've also complemented the ILO datasets with a dataset from the World Bank that contains the average proportion of a woman's day that is spent on unpaid domestic and care work.

The following table outlines the sources and recollection method for the data used:

Data set	Source	Original Source	Recollection Method	Link
Proportion of time spent on unpaid work	World Bank	World Development Indicators	NA	https://data.worldbank.org/indicator/SG.TIM.UWRK.FE
Number of informal care employees	ILO	Labor force and household surveys	Surveys	https://rshiny.ilo.org/dataexplorer14/?lang=en&id=FOW_TVOL_SEX_VOL_NB_A
Number of volunteers	ILO	Labor force and household surveys	Surveys	https://rshiny.ilo.org/dataexplorer14/?lang=en&id=FOW_TVOL_SEX_VOL_NB_A
Number of subsistence food producers	ILO	Labor force and household surveys	Surveys	https://rshiny.ilo.org/dataexplorer14/?lang=en&id=FOW_TVOL_SEX_VOL_NB_A

All data used comes from government or international organization surveys, none of it comes from social media platforms.

6. **Data quality: Is your data clean? What efforts were made to clean? How did you validate the quality?**

To complete the data-cleaning process, a combination of excel, visual basic and tableau prep were used.

Several steps were taken to clean data:

- Countries with only one year of data were eliminated
- Countries with
- Unnecessary columns for ILO's internal used (internal codes) were eliminated
- Columns were renamed to be read by a user
- Data types were adjusted to match the information contained by each column (geographic data, numbers or text)

The data did not contain vast amounts of null cells that could hinder results and so therefore very few rows were eliminated (less than 4% of data).

Once the data was clean and ready for processing, a brainstorming process was begun to define exactly what questions the data could potentially pose (or even answer). This was an essential step for data transformation.

While reviewing the data, it was clear that some of the most interesting information was not directly visible. For this reason, the following variables were added during data transformation:

Data set	Columns added before analysis and visualization

Proportion of time spent on unpaid work	NA
Number of informal care employees	• % of increase in workers • % of workers of each sex • % of increase in the proportion of women workers
Number of volunteers	NA
Number of subsistence food producers	• % of increase in food producers • % of producers of each sex • % of increase in the proportion of women producers

By adding these variables, the actual change in variables of interest became evident.

7. **Data Ethics: Is your data biased? Did you make any efforts to verify? Any specific measures?**

Once of the biggest take aways from this project lies in the ethics of the data used. As is common in data collected for international development purposes, there is often a bias towards representing data from certain countries in a more complete manner. While this sample of data showed information for approximately 200 countries around the world, some countries were not represented, some regions were represented more than others, and even if a country was represented, they did not all have information for the same number of years.

There are huge gaps in the data collected by some of the leading development organizations in the world.

In terms of privacy, transparency, consent, and ownership, we can assume this has been appropriately handled since the primary source is government surveys and no personal data was found in any data set.

8. **Data Analysis: Any specific analysis technique?**

From its conception, the idea behind this project was purely exploratory, not explanatory. For such a complex topic, assuming that 6 weeks of research could answer such complex questions that social scientists have grappled with for decades, would undermine the work of hundreds of researchers who work towards achieving gender equality and more specifically illuminating the evident disparity in the distribution of unpaid work.

For this reason, the data analysis conducted had the objective of posing interesting questions, not answering them.

The analysis conducted consisted of the following two components:

- Descriptive statistics between sexes, countries and regions for the topics of subsistence food production, volunteering and informal care/domestic work.

- Analyzing trends by looking at how certain variables changed through time (deltas). By doing this, it was possible to see not only the static values in gender inequality but also how they evolved through time in different countries. Please see the dashboards that appear in the Annex to visualize these results.

9. Data Visualization: rationale and purpose of each visualization, interactivity, storyboard, aesthetics and disability factors.

The visualizations were organized in the following categories:

- Provide general, big-picture ideas about unpaid work around the world as an introduction and as a final message (Dashboard 1: Map and General Points, Dashboard 4: Countries and Care)
- Show the evolution of informal care work through time for each sex (Dashboard 2: The Care Burden is Historic & Worsening)
- Show the evolution of subsistence food production through time for each sex (Dashboard 3: The Burden of Feeding the World)
- Show the additional graphs on volunteering and care work (Dashboard 5: extras)

The visualizations are interactive, the user can hover over them to get precise data, as well as actively filter and change the year for some of the visualizations.

I did not include disability factors but will add appropriate ALT texts for visually impaired users in the next attempt.

10. Conclusions

Completing this project has been very inspirational in terms of seeking a call to action to work collectively towards gender equality and the distribution of unpaid care, and domestic and subsistence food production work.

After thinking critically about the data analyzed and thinking through the insights written out in the dashboards created for this project, I have the following key conclusions:

- What can we do? Pass policies that reduce and redistribute unpaid work, such as through more paid jobs in the care economy and encourage men to share care and domestic work. Invest in systems to provide water, electricity, transportation, and other essentials that reduce household labor.
- There are huge data gaps around the world and disparities between the data available for different regions across the globe. More needs to done for ethical data sourcing to solve complex social issues related to gender inequality.
- Combining the learnings from this project with my research in Data Feminism (past essay) I also have the following conclusions:
    - Furthermore, data feminism highlights the role of emotion and embodiment in data analysis. By elevating emotional experiences and acknowledging the embodied nature of data, policymakers can create more empathetic and nuanced

approaches to data-driven decision-making. This shift away from purely rational and detached modes of analysis allows policymakers to engage more deeply with the human stories behind the data, fostering greater empathy and understanding.

- In considering context and making labor visible, data feminism reminds policymakers that behind every data point lies a story – a story of collection, analysis, and interpretation. By making this labor visible and transparent, policymakers can ensure that data-driven decision-making is accountable to the communities it seeks to serve.

11. References

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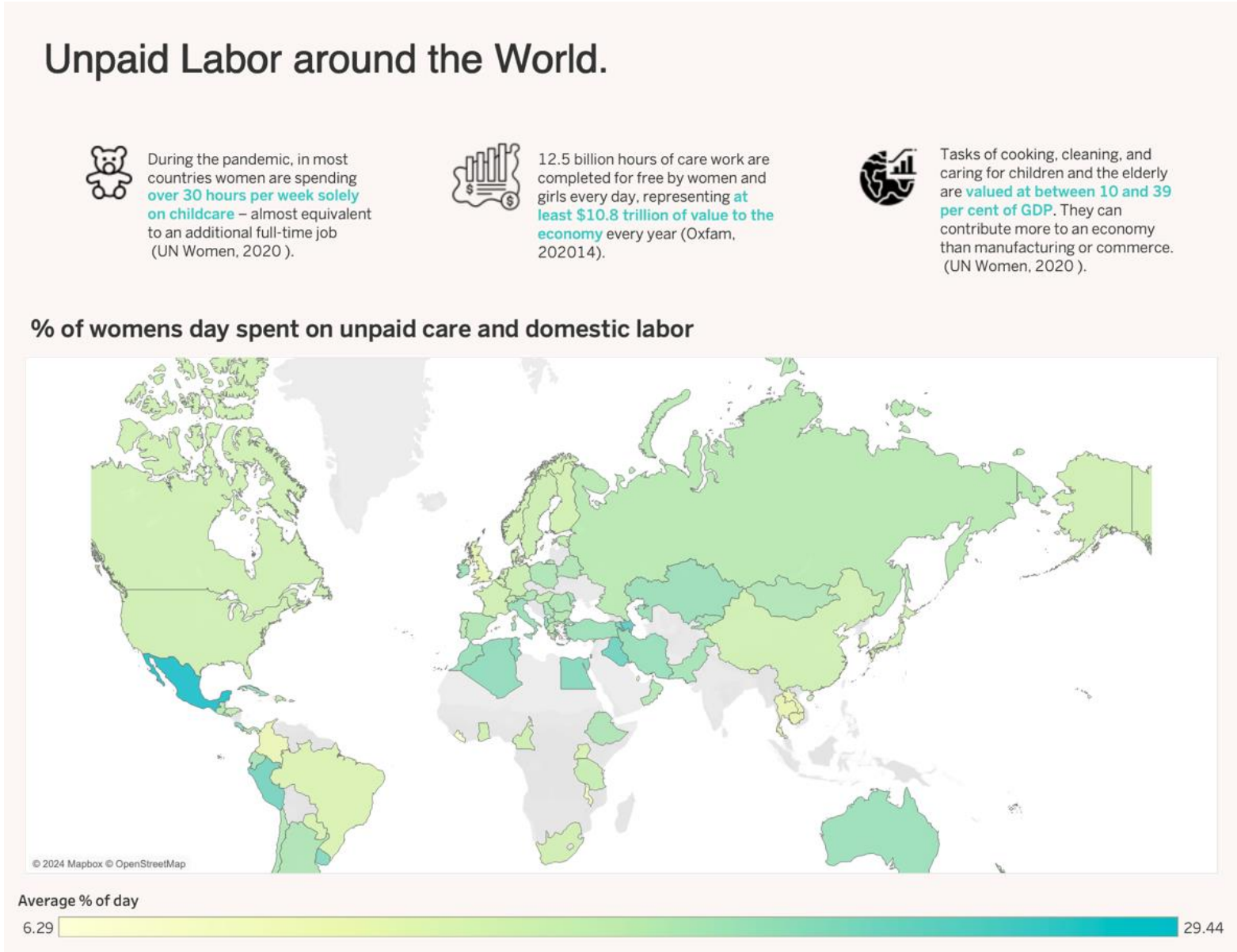
Annex 1. Screenshots of dashboards (please keep in mind that when a user scrolls over these graphs more information comes up)

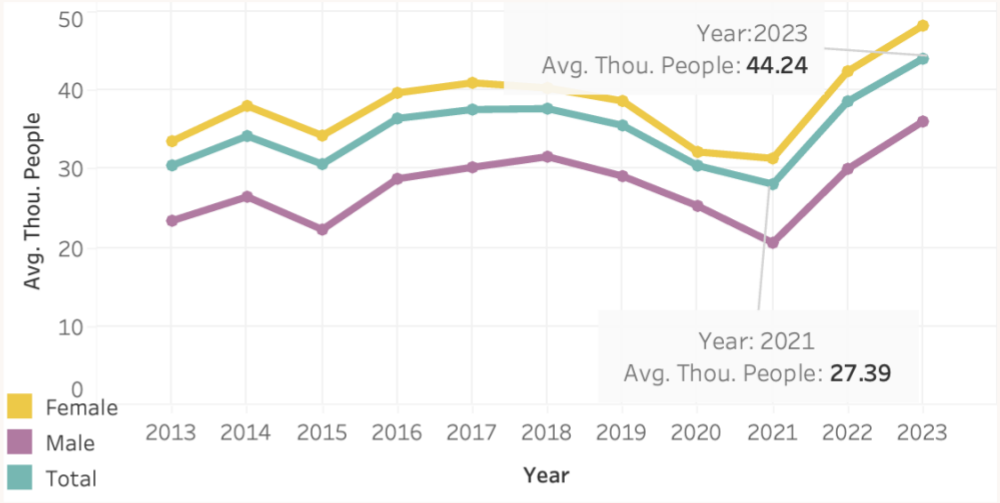


Lets take a closer look at Care Work.

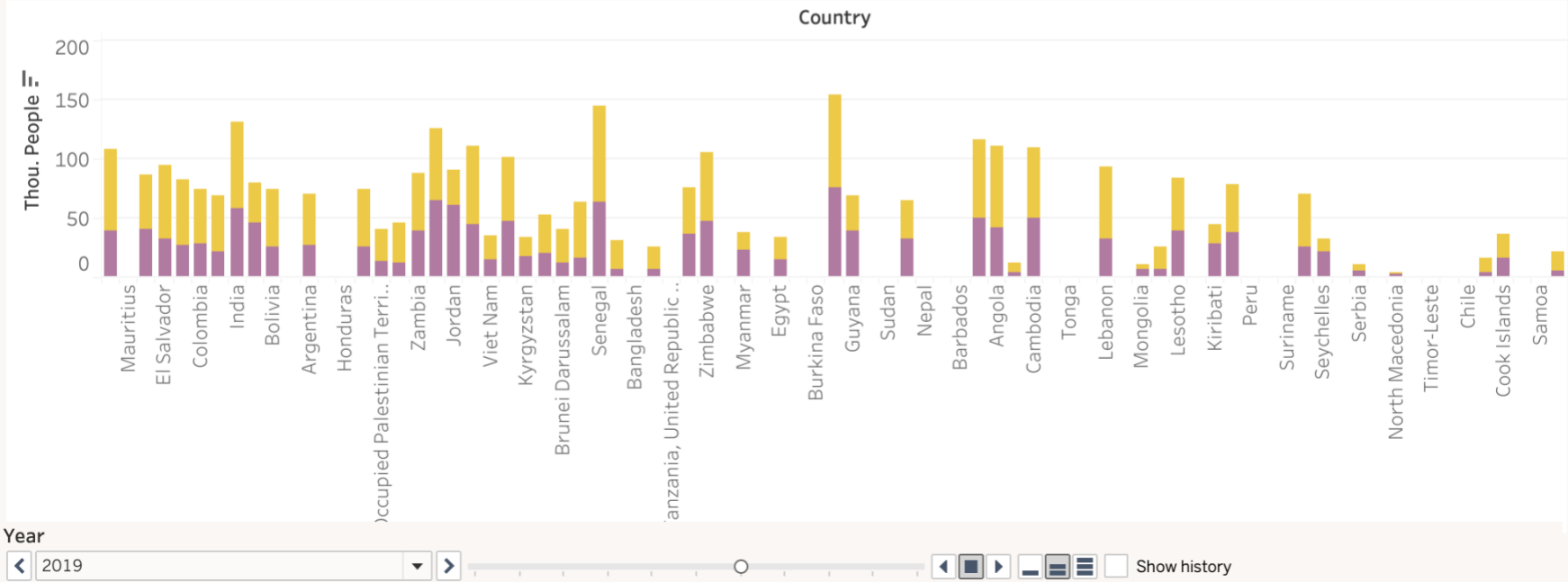
Since the pandemic, there has been an increase in informal care work. Care workers have almost doubled in a matter of just 2 years (2021-2023).

"Pre-pandemic, women undertook over 75% of the total unpaid care work globally – there is no country in the world where this is equal "(ILO, 20181).

Total Care Workers



Distribution of Care Workers over the year in 40 countries.



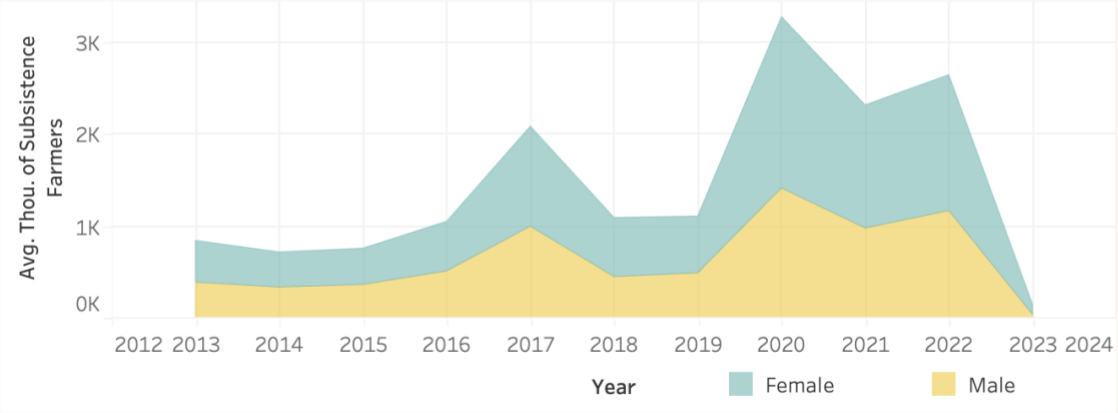
Year

2019

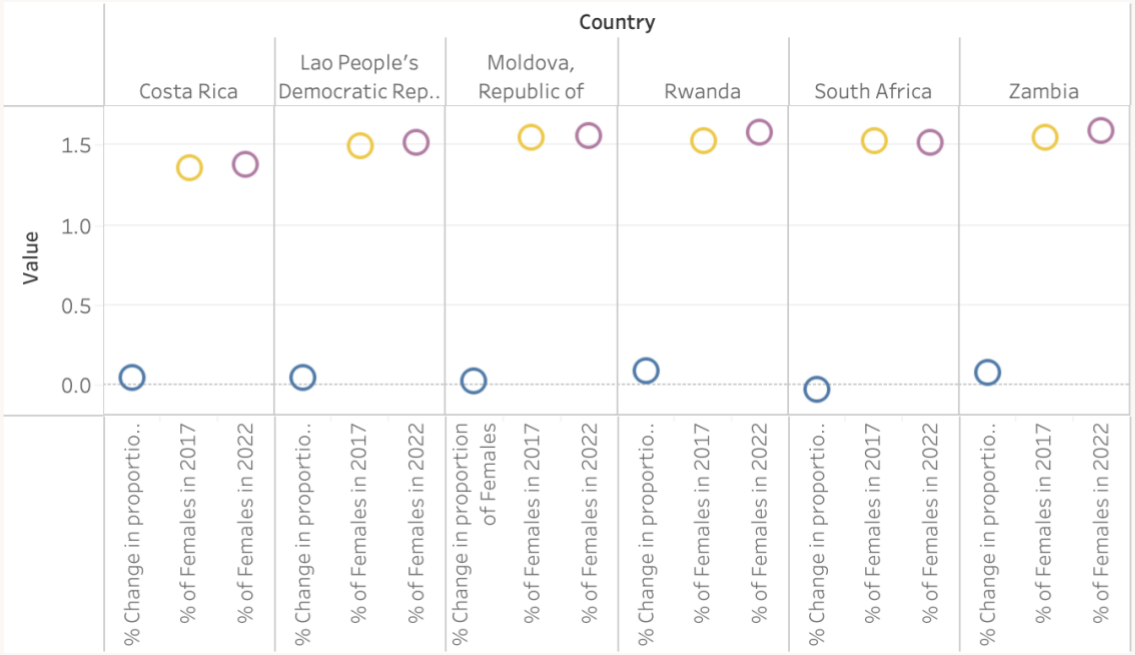
Show history

Who takes on the burden of feeding the world?

Distribution of Subsistence Food Producers Through Time



Change in proportion of subsistence farmers between 2017 and 2022



Women even carry the burden in stereotipically masculine unpaid labor like subsistence food production.

Once again we see it's getting worse. Between2017 and 2022, there is a 9% increase in the proportion of subsistence food producers that identify as women.

Of the countries with data vailable for both years, only South Africa seems to be moving towards equality.

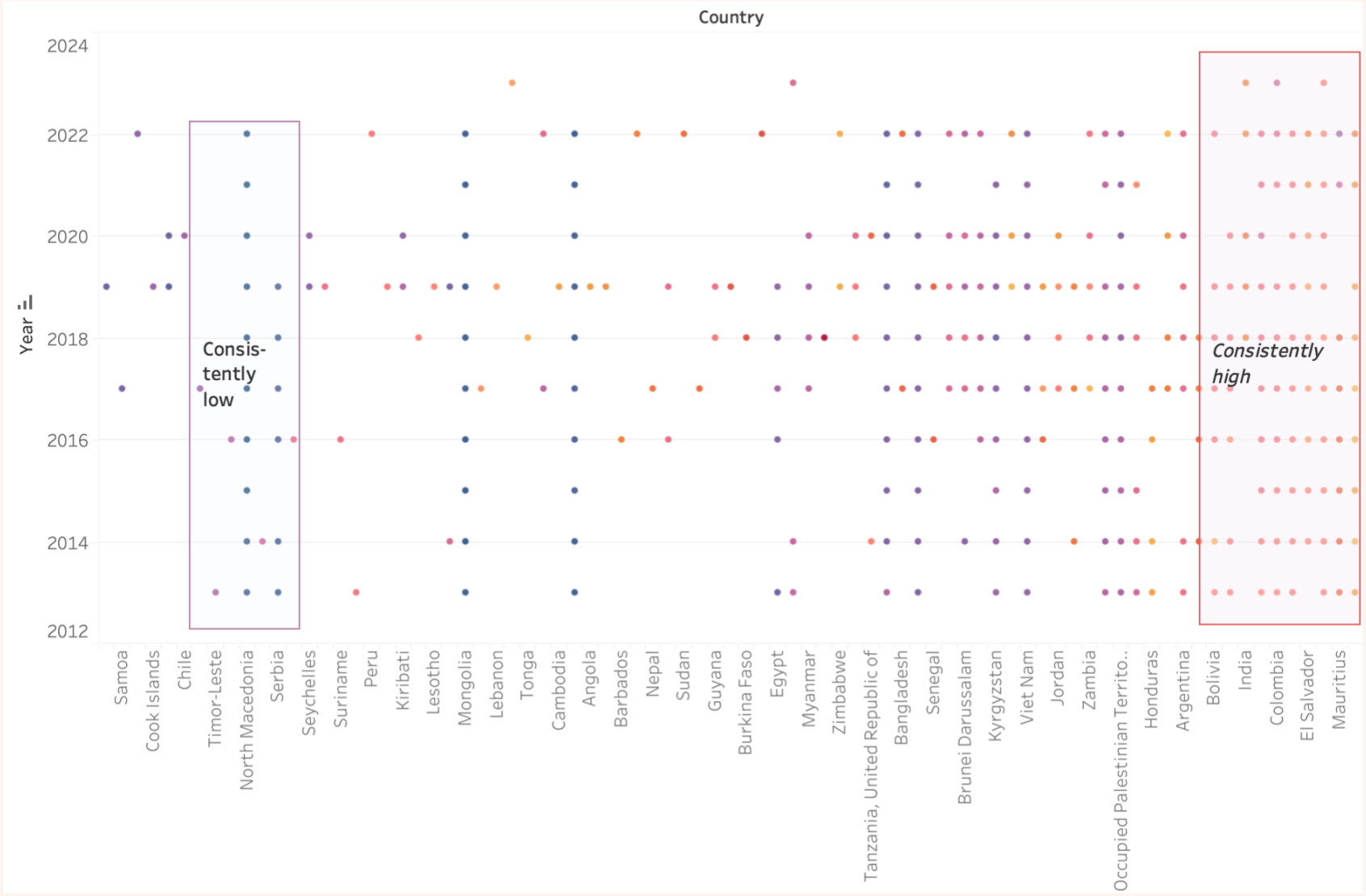
Sex

- [ ] (All)
- [x] Female
- [ ] Male
- [x] Total

Measure Names

- % Change in propo..
- % of Females in 20..
- % of Females in 20..

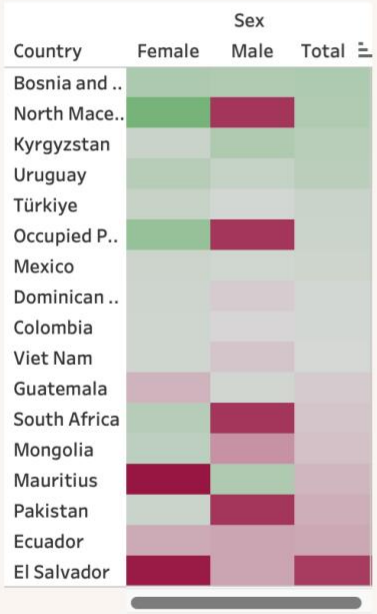
Patterns in Care Work - Countries with consistently high/low amount of informal workers through the years



Thou. People

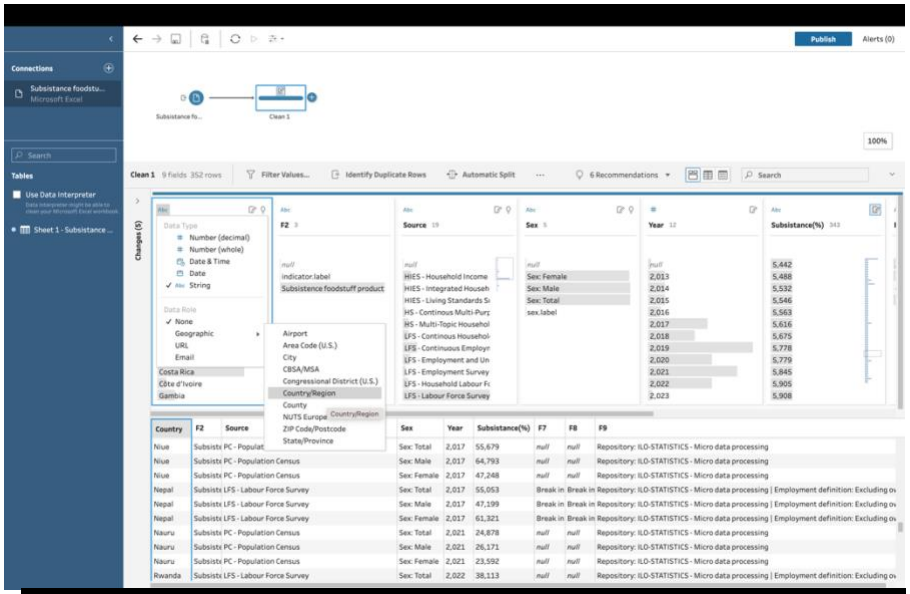
2.4 196.6

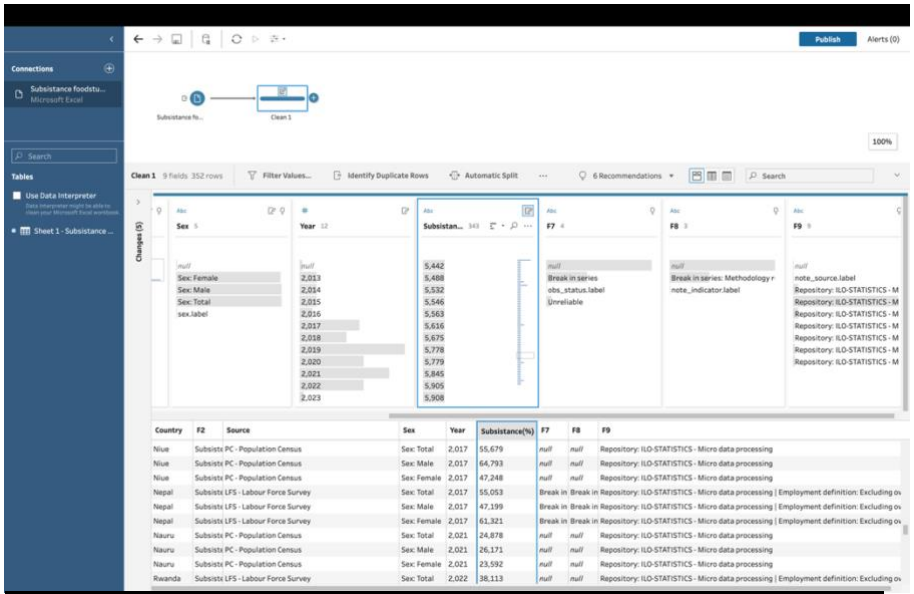
Changes in informal careworkers between 2015 and 2021

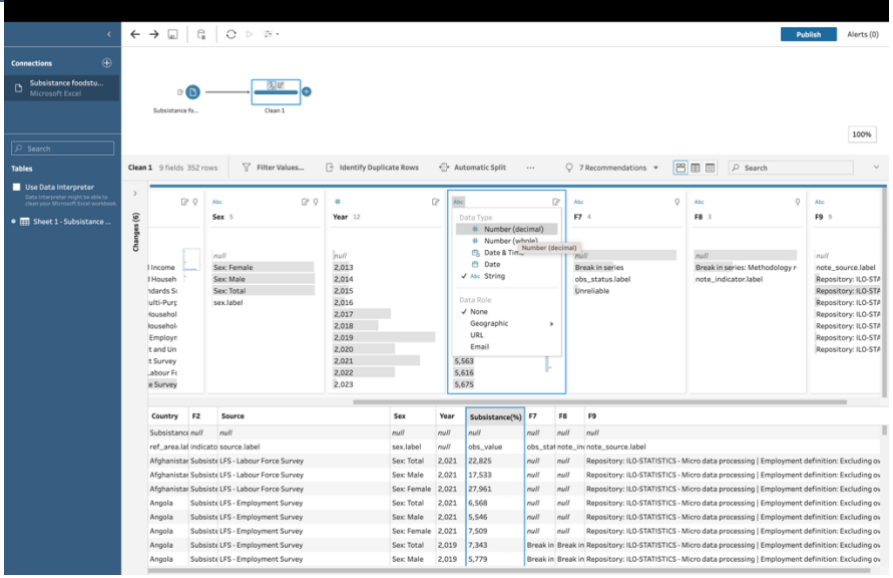


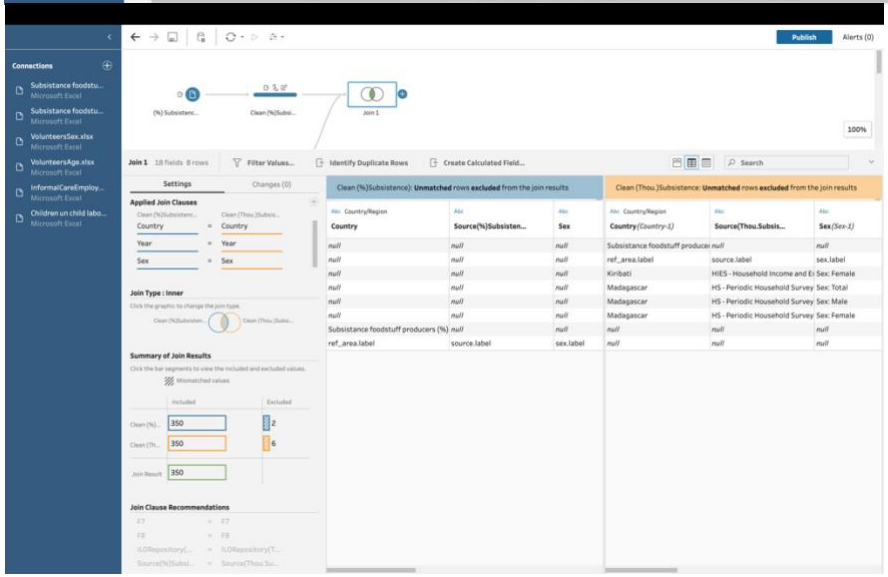
Volunteering however, we can all do.

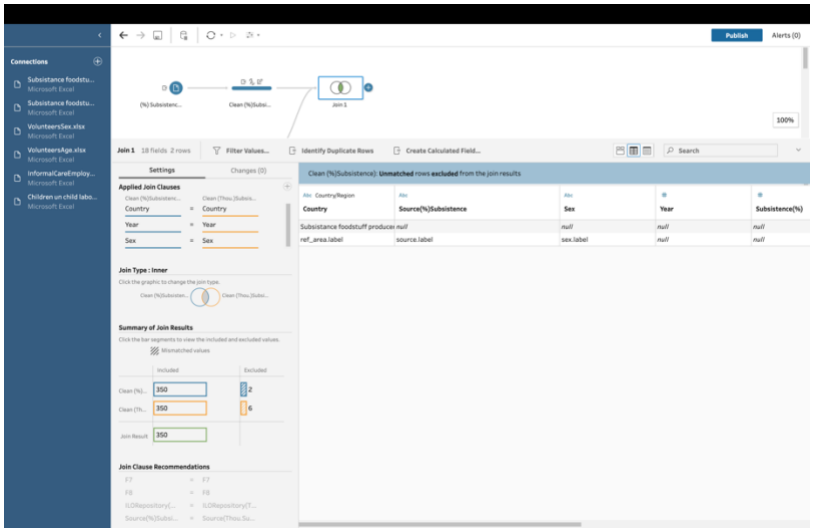
Annex 2. Screenshots of data cleaning process

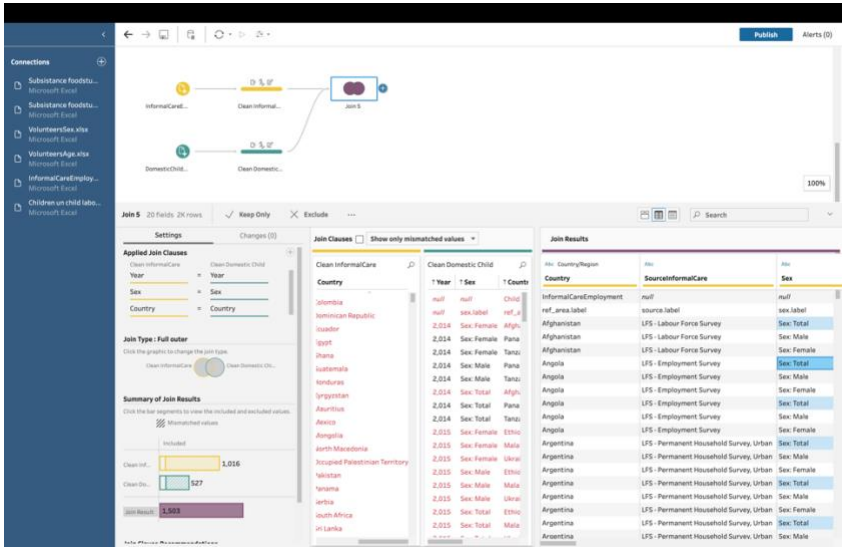


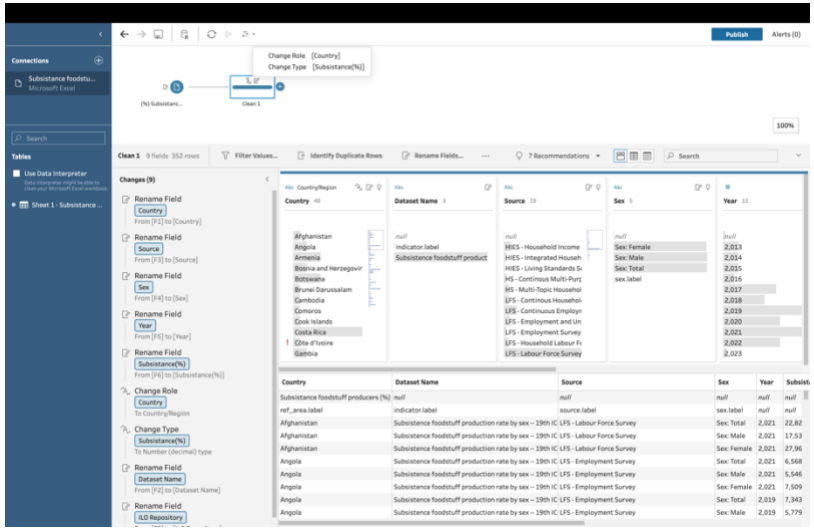


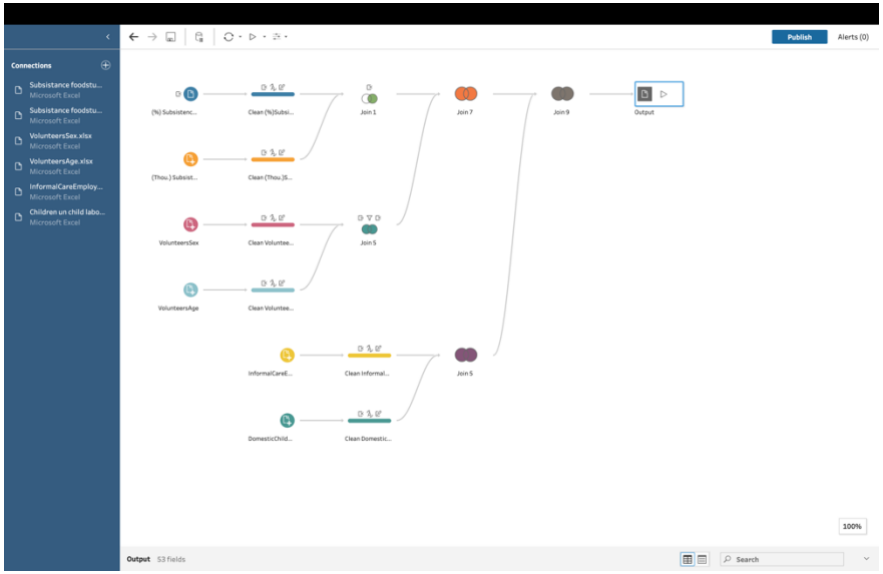


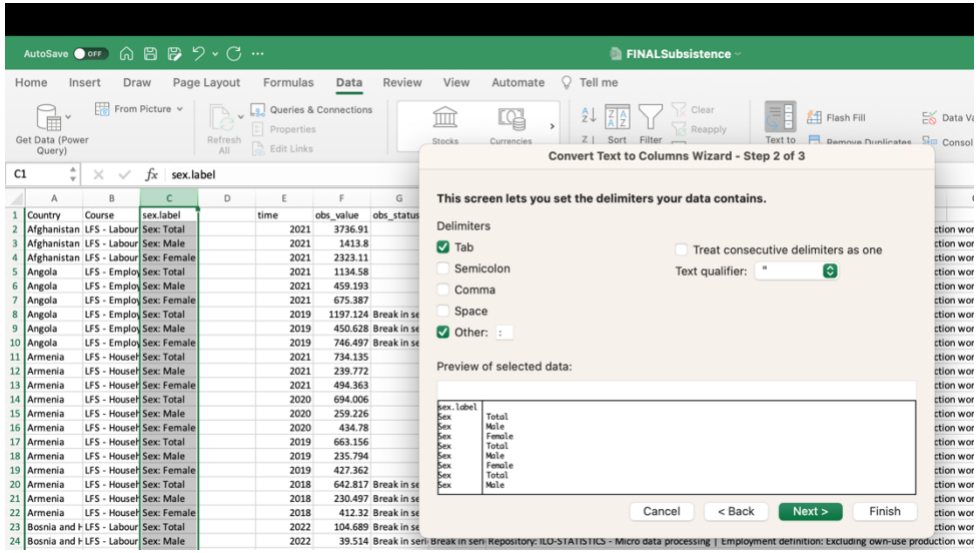


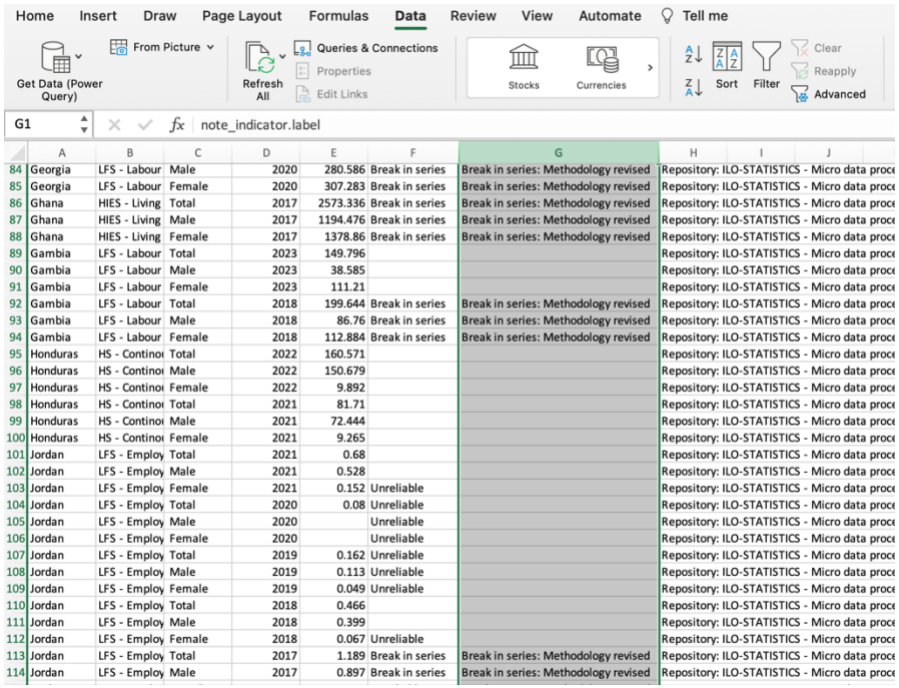












	A	B	C	D	E	F	G	H	I	J
84	Georgia	LFS - Labour	Male	2020	280.586	Break in series	Break in series: Methodology revised	Repository: ILO-STATISTICS - Micro data proce		
85	Georgia	LFS - Labour	Female	2020	307.283	Break in series	Break in series: Methodology revised	Repository: ILO-STATISTICS - Micro data proce		
86	Ghana	HIES - Living	Total	2017	2573.336	Break in series	Break in series: Methodology revised	Repository: ILO-STATISTICS - Micro data proce		
87	Ghana	HIES - Living	Male	2017	1194.476	Break in series	Break in series: Methodology revised	Repository: ILO-STATISTICS - Micro data proce		
88	Ghana	HIES - Living	Female	2017	1378.86	Break in series	Break in series: Methodology revised	Repository: ILO-STATISTICS - Micro data proce		
89	Gambia	LFS - Labour	Total	2023	149.796			Repository: ILO-STATISTICS - Micro data proce		
90	Gambia	LFS - Labour	Male	2023	38.585			Repository: ILO-STATISTICS - Micro data proce		
91	Gambia	LFS - Labour	Female	2023	111.21			Repository: ILO-STATISTICS - Micro data proce		
92	Gambia	LFS - Labour	Total	2018	199.644	Break in series	Break in series: Methodology revised	Repository: ILO-STATISTICS - Micro data proce		
93	Gambia	LFS - Labour	Male	2018	86.76	Break in series	Break in series: Methodology revised	Repository: ILO-STATISTICS - Micro data proce		
94	Gambia	LFS - Labour	Female	2018	112.884	Break in series	Break in series: Methodology revised	Repository: ILO-STATISTICS - Micro data proce		
95	Honduras	HS - Continuo	Total	2022	160.571			Repository: ILO-STATISTICS - Micro data proce		
96	Honduras	HS - Continuo	Male	2022	150.679			Repository: ILO-STATISTICS - Micro data proce		
97	Honduras	HS - Continuo	Female	2022	9.892			Repository: ILO-STATISTICS - Micro data proce		
98	Honduras	HS - Continuo	Total	2021	81.71			Repository: ILO-STATISTICS - Micro data proce		
99	Honduras	HS - Continuo	Male	2021	72.444			Repository: ILO-STATISTICS - Micro data proce		
100	Honduras	HS - Continuo	Female	2021	9.265			Repository: ILO-STATISTICS - Micro data proce		
101	Jordan	LFS - Employ	Total	2021	0.68			Repository: ILO-STATISTICS - Micro data proce		
102	Jordan	LFS - Employ	Male	2021	0.528			Repository: ILO-STATISTICS - Micro data proce		
103	Jordan	LFS - Employ	Female	2021	0.152	Unreliable		Repository: ILO-STATISTICS - Micro data proce		
104	Jordan	LFS - Employ	Total	2020	0.08	Unreliable		Repository: ILO-STATISTICS - Micro data proce		
105	Jordan	LFS - Employ	Male	2020		Unreliable		Repository: ILO-STATISTICS - Micro data proce		
106	Jordan	LFS - Employ	Female	2020		Unreliable		Repository: ILO-STATISTICS - Micro data proce		
107	Jordan	LFS - Employ	Total	2019	0.162	Unreliable		Repository: ILO-STATISTICS - Micro data proce		
108	Jordan	LFS - Employ	Male	2019	0.113	Unreliable		Repository: ILO-STATISTICS - Micro data proce		
109	Jordan	LFS - Employ	Female	2019	0.049	Unreliable		Repository: ILO-STATISTICS - Micro data proce		
110	Jordan	LFS - Employ	Total	2018	0.466			Repository: ILO-STATISTICS - Micro data proce		
111	Jordan	LFS - Employ	Male	2018	0.399			Repository: ILO-STATISTICS - Micro data proce		
112	Jordan	LFS - Employ	Female	2018	0.067	Unreliable		Repository: ILO-STATISTICS - Micro data proce		
113	Jordan	LFS - Employ	Total	2017	1.189	Break in series	Break in series: Methodology revised	Repository: ILO-STATISTICS - Micro data proce		
114	Jordan	LFS - Employ	Male	2017	0.897	Break in series	Break in series: Methodology revised	Repository: ILO-STATISTICS - Micro data proce		