**Edit:**

Reducing the scope of this project to new data question:

What is the environmental and financial impact of food transportation?

Examining the carbon emissions, fuel consumption and financial cost of transporting food across distance by different methods of transport

Data I plan to use:

<https://github.com/owid/co2-data> - Data from Our World in Data along with the Global Carbon project – Carbon Emissions data

US Dept. of Energy: multiple datasets on fuel consumption and efficiency

<https://afdc.energy.gov/data/search?q=transit>

<https://www.bts.gov/content/energy-consumption-mode-transportation>

Bureau of Transportation Statistics

<https://lib.dr.iastate.edu/leopold_pubspapers/3/>

Food, Fuel, and Freeways – an Iowa perspective on how far food travels, fuel usage, and greenhouse gas emissions

<https://data.bts.gov/stories/s/5bfv-z8ek>

Sales price of fuel by mode

Given the limited time to work and the nearly limitless scope this project could entail, my focus will be on environmental and economic impact of food transportation by method and distance. I may expand this to include wishlist items below, depending on time and data available.

**Executive Summary**

Born from a desire to understand why there aren’t more highly-visible, sustainability-focused restaurants in Nashville, when there’s a strong national trend and interest within the foodie community toward sustainable efforts, this project seeks both to shed some light on the need for local restaurants to take sustainability into consideration in the structure of their business models, and to examine the profitability of following this less conventional path toward sourcing their ingredients and serving their customers. All this is done in hopes of inspiring potential restauranteurs and investors to adopt a more sustainable approach to the building and marketing of their future restaurant businesses in Nashville.

**Motivation**

The subject of “Food” is something of a passion of mine. Not just in regards to recipes and restaurant trends, but also in the topics of gastro-anthropology, accessibility, sustainability, and the socio-ethics of food production and distribution.

In the articles and research I follow, I see a growing concern with and trend toward more sustainable methods of food production and distribution, and I see it becoming more of a mainstream thing in grocery stores and food markets that I’ve visited across Tennessee, as well as on popular food-centric television programming. But when I look at the restaurants and restaurant menus in Nashville, I don’t see much visible movement toward or emphasis on sustainability. And I can’t help but wonder why.

It is my hope that, through this project, I can gain a better understanding of the challenges that businesses face when it comes to transitioning toward a more sustainable model, or that a new restaurant would face when being conceptualized with sustainability in mind. Ultimately, as well as feeding my own curiosity on the subject, I hope to be able to encourage my friends, neighbors, and community to invest more effort in the procurement of sustainable products and the building and promotion of sustainable businesses – specifically, in restaurants.

**Data Question**

The core question that I am seeking to answer is if a restaurant is able to be both sustainable and profitable – and affordable. How much would the restaurant need to charge in order to offset the costs of sustainability – assuming there are extra costs.

**Minimum Viable Product (MVP)**

My imagined target audience is a prospective restauranteur, or investor, who is curious about whether or not this sustainability trend is worth their consideration.

I foresee a dynamic presentation aimed at convincing them to focus their business model on providing a sustainability-focused menu to their customers.

I intend to first spend a little time establishing the need for sustainability. Taking a quick look at how many of the most popular foods in the world impact the environment, the communities that grow them, and the nutritional needs of their customers.

From there, I would like to delve into what some alternatives are. Comparing the environmental impact of locally sourced products compared to imported ones. Defining what constitutes “local” and seeking to find a sweet spot in terms of distance to maximize their options. I would like to offer solid alternatives to many of the most popular but least sustainable ingredients that they may be looking to source.

I would like to compare the price differences between global commercial food distribution companies and locally sourced ingredients. I intend to examine the standard profit margins restaurants can anticipate, and use that as a foundation to suggest a pricing model for their prospective business – to take a look at what they might need to charge in order to make a profit, and whether they can expect to be competitive with other businesses in the Nashville area with their pricing.

And finally, I would like to examine some ways that other sustainability focused restaurants have tackled this challenge, how a restauranteur might seek to adopt those practices themselves, and how much it might cost them to do so. Things like growing their own ingredients, or maintaining a rotational, seasonal menu come immediately to mind.

My ultimate goal is to provide some clear facts, data, financial calculations, and real world resources and examples to a prospective restauranteur, in the hopes that they will consider adopting at least some aspects of sustainability in their business model.

**Schedule (through <date of demo day>)**

1. Get the Data (13 November 2021)
2. Clean & Explore the Data (4 December 2021)
3. Create Presentation of your Analysis (15 December 2021)

* Should be a presentation, but could include a Jupyter Notebook or dashboard in Excel, Tableau, or PowerBI

1. Internal demos (18 December 2021)
2. Demo Day!! (6 January 2022)

**Data Sources**

UN data: <https://data.un.org/>

Environment data:

Land  
 CO2 emissions  
 Water supply

Food supply data:

Agricultural production indices

World Food Program (UN program): <https://www.wfp.org/>

The Humanitarian Data Exchange: <https://data.humdata.org/>

Global food prices database: <https://data.humdata.org/dataset/global-wfp-food-prices>

Food and Agriculture Organization (FAO) – UN : <https://www.fao.org/statistics/en/>

Microdata catalogue: <https://www.fao.org/food-agriculture-microdata/en/> (for global trends toward sustainability, as well as local data within the US)

AMIS (Agricultural Market Information System): <http://www.amis-outlook.org/>

International Monetary Fund (possibly needed to clean UN datasets): <https://www.imf.org/external/np/fin/data/param_rms_mth.aspx>

Our World in Data: <https://ourworldindata.org/>

Environmental impacts of food production: <https://ourworldindata.org/environmental-impacts-of-food> (looks promising – also looks like I need to examine it closely to see where the data is coming from and how it’s assembled)

Food supply: <https://ourworldindata.org/food-supply>

(unsure I’ll need these sources for the scope of my project, but have them bookmarked)

TasteAtlas: <https://www.tasteatlas.com/nashville>

(unsure I’ll need the reference – but reliable source of info concerning food trends regionally and globally)

USDA: <https://www.usda.gov/> and <https://www.usda.gov/content/usda-open-data-catalog>

ARMS (Agricultural Resource Management Survey) Farm Financial and Crop Production Practices

Environmental impact of agriculture in the US: <https://www.ers.usda.gov/data-products/ag-and-food-statistics-charting-the-essentials/land-and-natural-resources/>

Food market and prices: <https://www.ers.usda.gov/data-products/#!topicid=14834&subtopicid>=

Local food systems: <https://www.ers.usda.gov/topics/food-markets-prices/local-foods/>

Food distribution report/information: <https://evolve-systems.com/foodservice-distributors-report-2019/>

Has a list of top 10 food distribution companies globally. Would like to access a pricing catalogue of at least one of these companies (Sysco would be my preference because of Nashville area visibility) and compare their globally sourced pricing to locally sourced pricing options

Sysco: <https://www.sysco.com/>

US Foods: <https://www.usfoods.com/>

Potential sources of information (follow-up needed):

The Nashville Food Project – <https://www.thenashvillefoodproject.org/learn-more>

their webpage contains information on food waste and sustainability projects in Nashville. May be willing to share their data/sources if I ask?

Nashville Grown: <http://www.nashvillegrown.org/why>

An organization focused on local food production, challenges, and pricing. May have data they can share if I ask?

**Known Issues and Challenges**

* The UN and its associate organizations are a very good resource of information and data regarding the environmental impacts of global food production – but their data is very messy and there’s a lot of it.
  + My plan is first to maintain clear focus and direction on what I’m looking for as I select my data. There’s a lot of it – I need to keep my focus steady on the ingredients or countries I’m most interested in for my presentation.
  + I need to apply that same focus while cleaning my data. Some of the datasets I’ve peeked at are substantial with more information there than I’m going to need for just what I’m doing. As this is a topic of passionate interest for me, the temptation to get lost in the subject is high – I need to ask myself how each thing I work on fits into my final presentation to keep myself from wasting time on distracting subjects of interest.
* Gaining prices for cost comparisons is going to be a challenge.
  + Many of these catalogues are not available online, rather only to customers
  + Global food prices are constantly shifting. Can I create a costing tool that uses live data? Or do I need to select a historical time window and base my calculations and conclusions on that?
  + Finding pricing information for local resources to compare to the larger global companies will be a challenge as their prices are not standardized. My plan at present is to reach out to local nonprofits that are focused on Nashville-centric sustainability measures and find out what resources they might suggest to obtain some of this data.
* Narrowing my definitions of what constitutes “sustainable” and “profitable” in the parameters of my presentation will be key
* Much of my personal and professional experience is as a researcher – I find reliable sources of information, compare what they have to say, and support my conclusions based upon what other field experts have to say on the subject, rather than looking at the original raw data myself and drawing my own conclusions based upon my own analysis.
  + It is going to be a challenge to me to strike a balance between data analysis and peer reviewed articles, as there is plenty of both available on this subject.
  + I need to keep in mind not only the end product of my presentation, but also my goal of proving myself a capable analyst, vs. a capable researcher. I need to remember to not just rely on what others say, but to dig into the data myself and prove that I can do the work from the ground up.