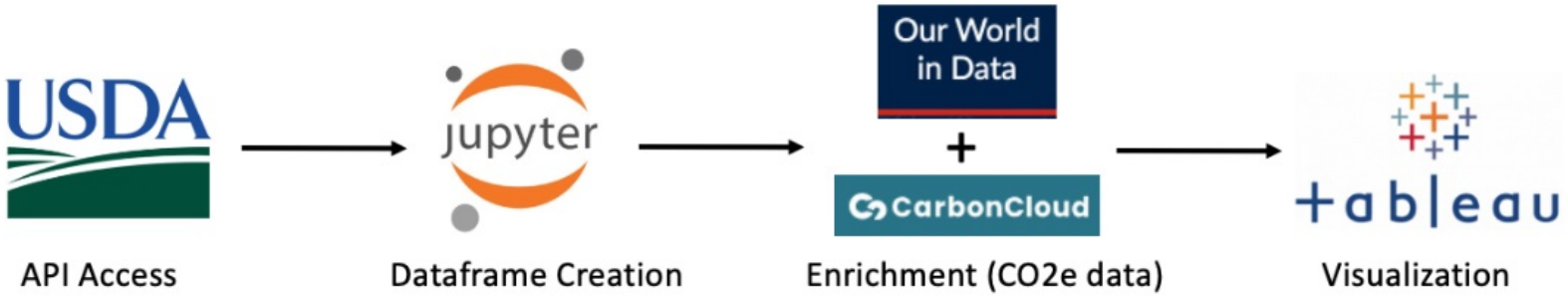
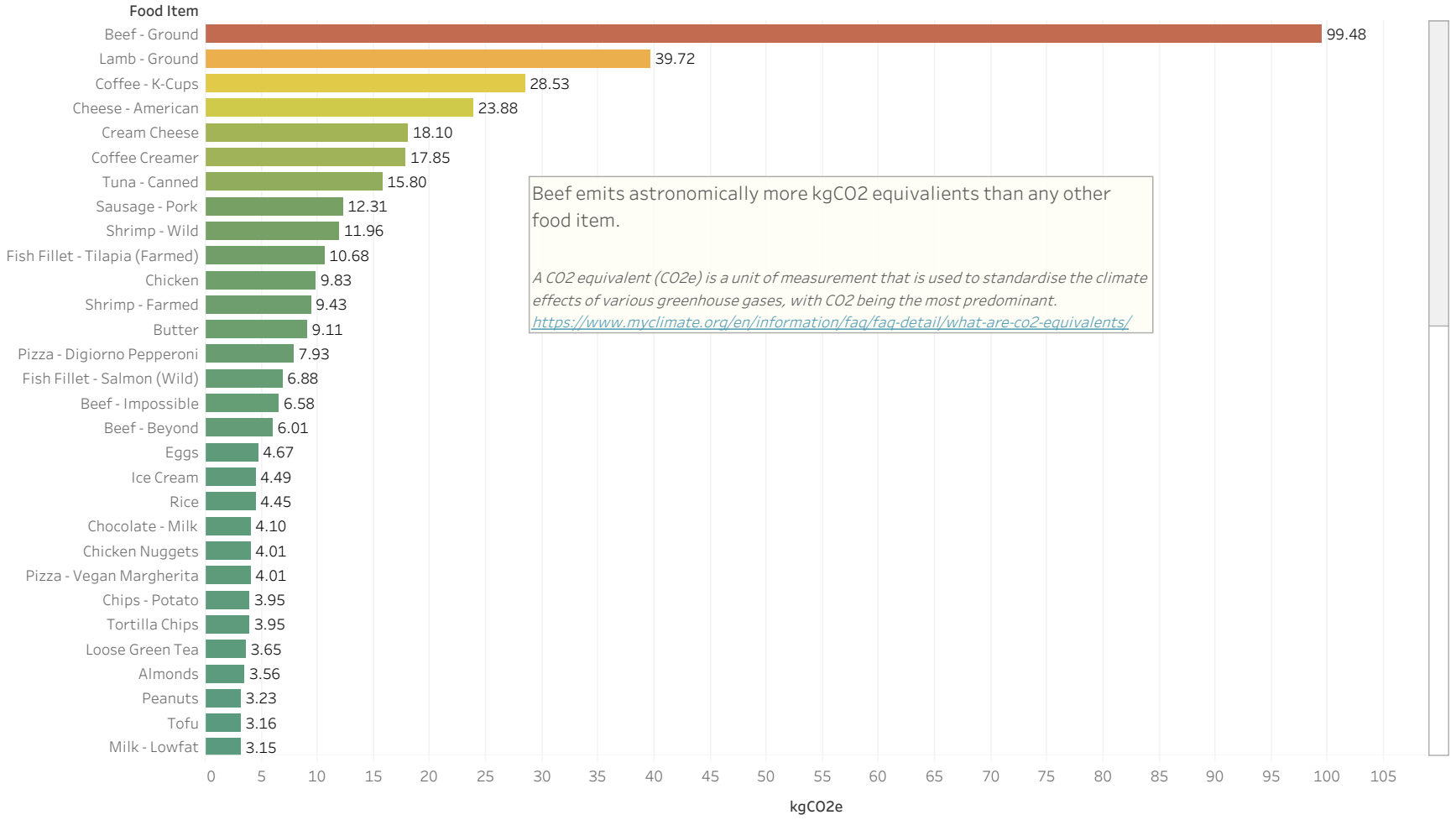
Grocery Item GhG Labeling - Project Workflow



kgCO2e per kgFood

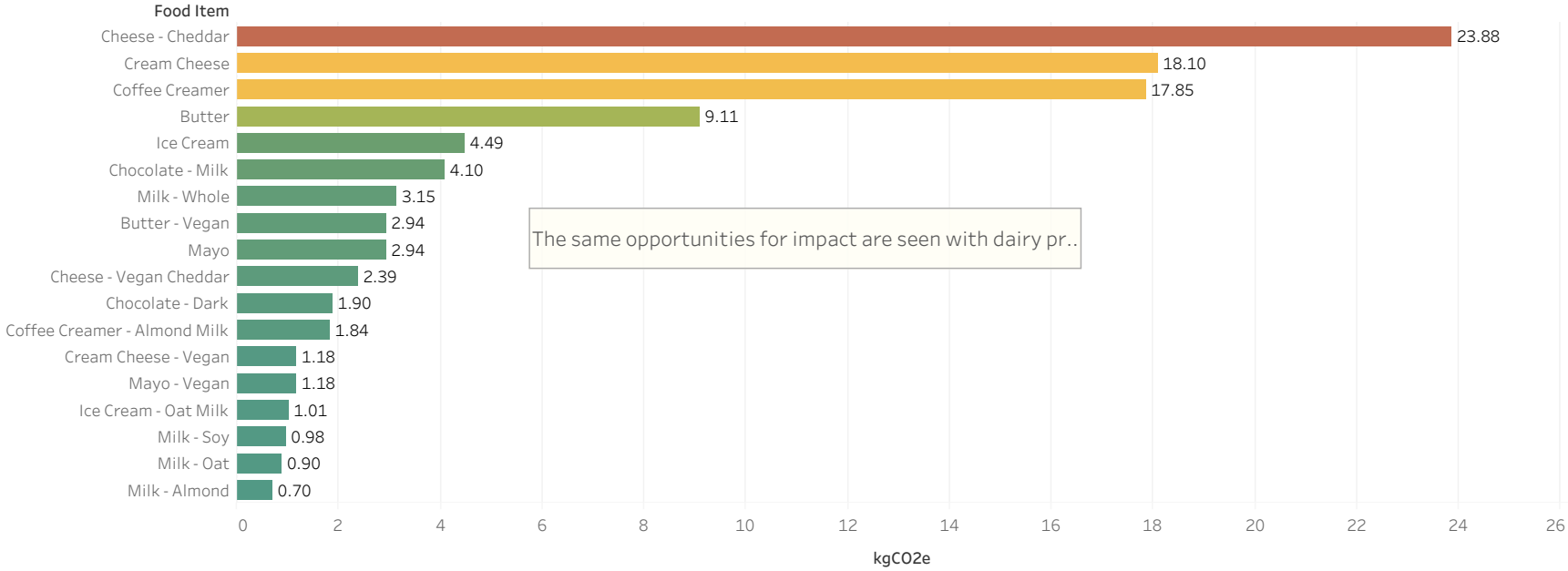


Protein

kgCO2e per kgFood

Dairy

kgCO2e per kgFood



Convert CO2e's

(kg of CO2e per Grocery item package weight in kg)

Food Item	Description	Brand Owner	kgCO2e (Unpackaged)	Package Weight (kg)	
Beef - Ground	Cargill Meat Solutions Corp., Lean Groun..	Cargill Meat Solutions Corporation	99.48	0.454	
Lamb - Ground	Ground Lamb	Marcho Farms, Inc.	39.72	0.454	
Coffee - K-Cups	Cafe Bustelo Beverage Mix K-Cup Pods, C..	The J.M. Smucker Company	28.53	0.126	
Cheese - American	American Cheese Slices	Kraft Heinz Foods Company	23.88	0.34	
Cheese - Cheddar	Sliced Cheddar Cheese	Wegmans Food Markets, Inc.	23.88	0.34	
Cheese - Parmesan	Parmesan Cheese	Belgioioso Cheese, Inc.	23.88	0.227	
Cream Cheese	Cream Cheese	Whole Foods Market, Inc.	18.1	0.227	
Coffee Creamer	Coffee Creamer	Coffee- Mate	17.85	0.751	
Tuna - Canned	365 Everyday Value, Chunk White Albaco..	Whole Foods Market, Inc.	15.8	0.142	2.24
Sausage - Pork	Pork Breakfast Sausage, Pork	Whole Foods Market, Inc.	12.31	0.397	4.89
Shrimp - Wild	Perfect Prawns	High Liner Foods (Usa) Incorporated	11.96	0.908	10.86
Fish Fillet - Tilapia (Farme..	Tilapia Fillets	Beaver Street Fisheries Inc.	10.68	0.454	4.85
Chicken	Tyson Boneless, Skinless Chicken Breast	Tyson Foods Inc.	9.83	0.454	4.46
Shrimp - Farmed	Farmed Raw Shrimp	Encore Seafoods, Inc.	9.43	0.908	8.56
Butter	Butter	Prairie Farms Dairy, Inc.	9.11	0.453	4.13
Pizza - Digiorno Pepperoni	Pepperoni With Mozzarella, Parmesan, A..	Nestle Usa Inc.	7.93	0.729	5.78
Fish Fillet - Salmon (Wild)	Salmon Filets	Beaver Street Fisheries	6.88	0.454	3.12
Beef - Impossible	Beef Made From Plants	Impossible Foods Inc.	6.58	0.34	2.24
Beef - Beyond	Beyond Beef Plant-Based Ground	Beyond Meat, Inc.	6.01	0.454	2.73
Eggs	Eggs	Costco Companies Inc.	4.67	0.68	3.18
Ice Cream	Ice Cream	Prairie Farms Dairy, Inc.	4.49	0.414	1.86
Rice	Rice	Weis Markets, Inc.	4.45	0.454	2.02
Chocolate - Milk	39% Cacao Milk Chocolate Bars	Whole Foods Market, Inc.	4.1	0.1	0.41
Chicken Nuggets	Chicken Nuggets	Tyson Foods, Inc.	4.01	0.624	2.50
Pizza - Vegan Margherita	Margherita Plant-Based Vegan Artisan S..	Zaahh Inc.	4.01	0.729	2.92
Chips - Potato	Potato Chips	Cape Cod Potato Chips Inc.	3.95	0.397	1.57
Tortilla Chips	Tostitos Cantina Traditional Tortilla Chip..	Pepsico Inc.	3.95	0.312	1.23
Loose Green Tea	Jasmine Green Loose Leaf Tea, Jasmine	The Kroger Co.	3.65	0.11	0.40
Almonds	Almonds	Whole Foods Market, Inc.	3.56	0.34	1.21
Peanuts	Dry Roasted & Salted Peanuts, Dry Roast..	Whole Foods Market, Inc.	3.23	0.34	1.10
Tofu	Tofu	Nasoya Foods Usa, Llc	3.16	0.454	1.43
Milk - Lowfat	1% Lowfat Milk	Whole Foods Market, Inc.	3.15	1.538	4.84

By converting the raw food item kgCO2 equivalients into kgCO2 equivalents of specific grocery item packages, we can get an idea of the impact of a single purchase of a particular grocery item.

Label Examples

Food Item	Description	Brand Owner
Beef - Ground	Cargill Meat Solutions Corp., Lean Ground Beef	Cargill Meat Solutions Corporation
Lamb - Ground	Ground Lamb	Marcho Farms, Inc.
Coffee Creamer	Coffee Creamer	Coffee- Mate
Shrimp - Farmed	Farmed Raw Shrimp	Encore Seafoods, Inc.
Milk - Lowfat	1% Lowfat Milk	Whole Foods Market, Inc.
Beef - Impossible	Beef Made From Plants	Impossible Foods Inc.
Milk - Oat	The Original Oat- Milk, Original	Oatly, Inc.
Coffee Creamer - Almond Milk	Almond Milk Creamer	Califia Farms, Lp

kg CO2e/kg
1.38 30.00

You may have already seen kgCO2e labeling on certain items at the grocery store, like on Oatly products, for example.

I believe if all items in a grocery store had such labeling, and there was a standardized color scale to the emissions numbers, consumers would better understa..

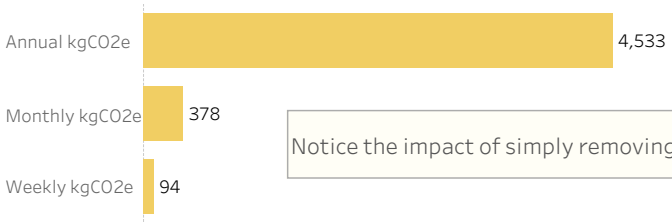
Here are three example shopper profiles that demonstrate varying levels of reactivity to the proposed GhG labeling,..

Shopper A: Average shopper, chooses all typical protein and dairy options regardless of GhG labeling

Food Item	Weekly kgCO2e	Monthly kgCO2e	Annual kgCO2e
Grand Total	181.74	726.97	8,723.6
Beef - Ground	45.16	180.66	2,167.8
Lamb - Ground	18.03	72.13	865.5
Coffee Creamer	13.41	53.62	643.4
Shrimp - Wild	10.86	43.44	521.2
Cheese - American	8.12	32.48	389.7
Cheese - Cheddar	8.12	32.48	389.7

Shopper B: Climate conscious, avoids red meats, uses GhG labeling to compare items and choose some alternative protiens and dairy options

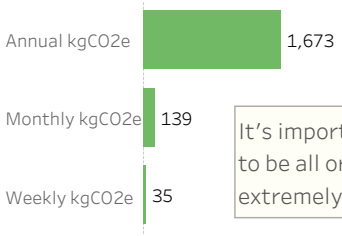
Food Item	Weekly kgCO2e	Monthly kgCO2e	Annual kgCO2e
Grand Total	94.43	377.72	4,532.6
Shrimp - Wild	10.86	43.44	521.2
Shrimp - Farmed	8.56	34.25	411.0
Cheese - Cheddar	8.12	32.48	389.7
Pizza - Digiorno Pe..	5.78	23.12	277.4
Cheese - Parmesan	5.42	21.68	260.2
Fish Fillet - Tilapia ..	4.85	19.39	232.7



Notice the impact of simply removing red meats and choosin..

Shopper C: Plant-based diet, uses GhG labeling to minimize their footprint

Food Item	Weekly kgCO2e	Monthly kgCO2e	Annual kgCO2e
Grand Total	34.85	139.40	1,672.7
Pizza - Vegan Marg..	2.92	11.69	140.3
Beef - Beyond	2.73	10.91	130.9
Rice	2.02	8.08	96.9
Chips - Potato	1.57	6.27	75.2
Milk - Soy	1.51	6.03	72.3
Tofu	1.43	5.74	68.8
Milk - Oat	1.38	5.54	66.4



It's important to note that climate conscious behavior and impacts don't have to be all or nothing. Periodic avoidance of high-impact products is still extremely beneficial to the environment, especially when considering this co..

Citations:

USDA API: https://fdc.nal.usda.gov/api-guide.html

Primary CO2e Data:
https://ourworldindata.org/environmental-impacts-of-food#explore-data-on-the-environmental-impacts-of-food
**Poore, J., & Nemecek, T. (2018). Reducing food's environmental impacts through producers and consumers. Science. [original data].*
- https://ourworldindata.org/grapher/ghg-per-kg-poore
- https://ourworldindata.org/grapher/food-emissions-supply-chain
- https://ourworldindata.org/grapher/environmental-footprint-milks
- https://ourworldindata.org/grapher/ghg-emissions-seafood
- https://ourworldindata.org/food-choice-vs-eating-local

Secondary CO2e Data:
https://apps.carboncloud.com/climatehub/

Other CO2e Data:
-Alternative Beef: https://consumerecology.com/
-Chocolate: https://link.springer.com/article/10.1007/s11367-020-01817-6
-Nuts https://www.healabel.com/carbon-footprints-of-food-list/
-Just Egg https://www.ju.st/learn

Climate Footprint Label Example - Oatly:
https://www.bloomberg.com/news/articles/2023-01-31/oatly-launches-climate-footprint-labels-in-the-us

Author:

Code: https://github.com/nsuthe09/GhGlabeling

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