

UW Food Source by Distance and Carbon Output

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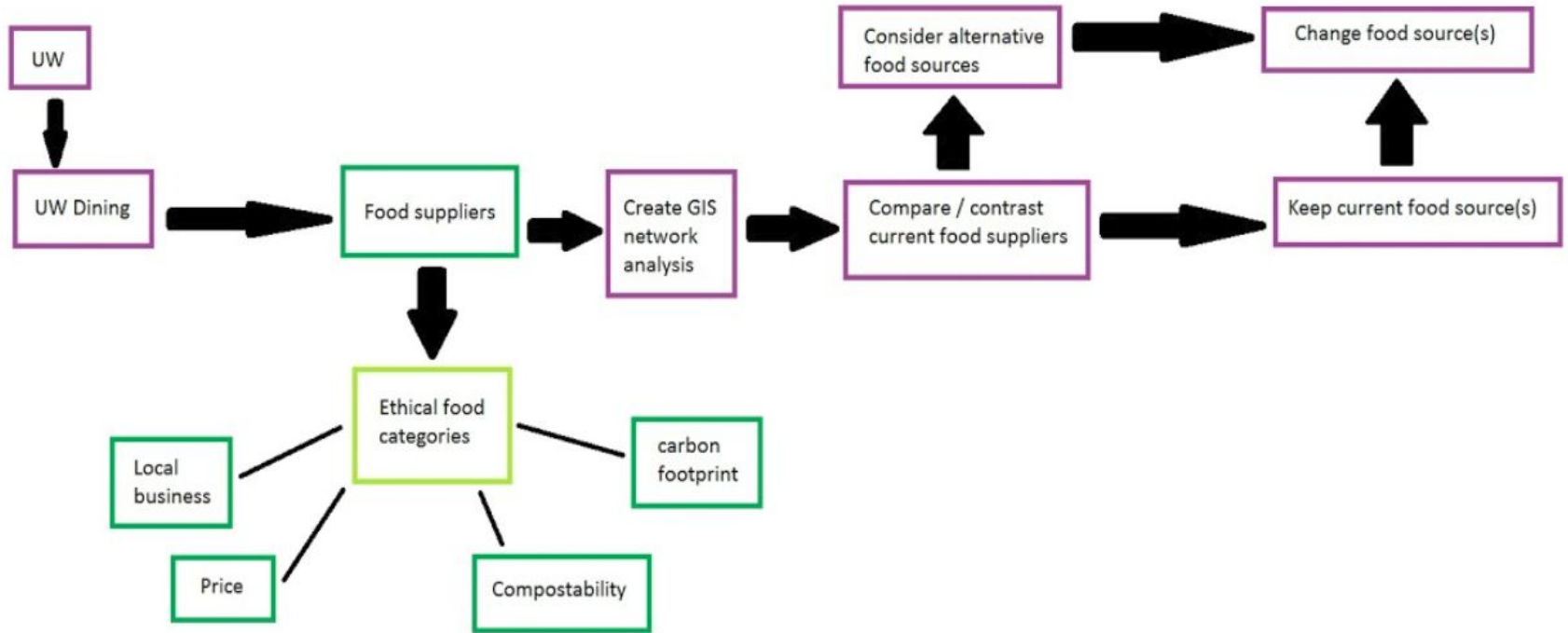
Research Question

Is UW purchasing from ethical food sources with its considerably large food budget? In FY15 UW Dining spent **\$16 million** on food products

Our group narrowed down “ethical” food into the **food miles** and estimate **carbon output** due to time considerations and data availability.



Conceptual Model





Data

Had a meeting with Kara Carlson from UW Dining to talk about the project

A spreadsheet of purchases from FY15 & FY16

Uploaded GIS files from WAGDA, King County, Snohomish County, City of Seattle

Contacted companies and distribution centers, by phone and email, for information about food source locations (farms, mills, etc.)

Audit July 1, 2015 - June 30, 2016 UW DI				
1				
2	Vendor	Notes	Purchases FY15	Purchases FY16
3	FSA	NW based distributor - 40% local - cag	\$5,328,116.94	\$5,635,104.00
4	Harbor Wholesale	some local products - natural - organi	\$1,684,499.15	\$2,055,192.24
5	Charlies Produce	Seattle family owned - DM organic - in	\$1,365,757.47	\$1,923,938.45
6	Coca Cola	organic tea - bottler in Bellevue - hydr	\$1,443,671.69	\$1,158,280.05
7	Bay Laurel To Go	organic bread - compostable packagin	\$760,086.50	\$613,798.34
8	Merlino	Local products	\$605,641.45	\$560,613.93
9	Essential Baking Company	Local natural organic	\$327,585.26	\$220,011.00
10	Medosweet	Local products - Tude Juice - Local dair	\$431,915.75	\$598,880.75
11	Blue C Sushi	sustainable fish - local	\$330,267.30	\$356,922.55
12	Franz Bakery	local - some organic	\$267,019.00	\$289,527.00
13	Starbucks Licensed Store	Local	\$0.00	\$265,953.90
14	Odwalla		\$383,437.00	\$346,747.37
15	Interbay	some grass fed, steroid free, local me	\$387,872.20	\$381,309.08
16	JFC	International products	\$180,021.57	\$220,345.86
17	Food Services Inc - Subway		\$178,835.59	\$1,133.24
18	UNFI	organic, natural foods distributor	\$218,534.06	\$249,076.57
19	Blazing Bagels	local - shepherd's grain	\$170,887.65	\$162,033.27
20	Marsee Bakery	local - shepherd's grain	\$136,020.69	\$156,999.72
21	EK Beverage	Locally bottled - some organic	\$170,511.08	\$126,569.46
22	Transcold - ice cream		\$160,702.81	\$162,713.79
23	Husky Grind	Local roast - green bean variety we se	\$78,005.84	\$83,715.98
24	Frito Lay	local produced in Vancouver WA - som	\$167,028.36	\$164,500.23
25	Pagliacci Commissary		\$133,820.52	\$141,524.81
26	US Foodservice - freshens		\$86,279.84	\$173,285.00
27	Sunrice	local vegan organic	\$115,376.00	\$115,141.25
28	Tim's Cascade	locally produced - local ingredients - r	\$86,004.75	\$85,169.00
29	Petersons	organic cheeses - local artisan distrib	\$100,203.37	\$107,437.18
30	Ocean Beauty	sustainable fish - local	\$68,583.06	\$82,966.31
31	COGO	local organic juice	\$46,485.15	\$45,322.05
32	Cougar Mountain	local - shepherd's grain	\$49,996.10	\$57,605.95
33	Dairy Fresh/Nestle		\$33,603.57	\$58,063.86
34	Aiki bakery	Local - Shepherd's Grain flour	\$183,728.35	\$279,300.14
35	Lime Green Grocers - Neato Bu	Local - vegan - veg	\$56,011.15	\$34,533.45
36	Ahab	local - shepherd's grain - mighty o	\$25,935.74	\$19,430.55
37	Theo Chocolate	FTO from Fremont	\$29,870.10	\$17,757.72
38	Grand Central Baking	Local - Shepherd's Grain flour	\$22,808.18	\$39,280.65
39	Puget Consumer Coop - PCC	local production - all natural	\$20,425.30	\$0.00
40	R & K distribution	cold product distribution	\$27,730.73	\$9,462.64
41	Flying Apron	Local - Gluten Free Bakery	\$12,859.24	\$23,666.10
42	Shinka	U District - small ethnic business own	\$13,509.19	\$1,042.54
43	Cupcake Royal	Local - Shepherd's Grain flour	\$22,208.08	\$0.00
44	Trophy Cupcakes	Local	\$0.00	\$6,682.00
45	Republic of Tea	eco	\$2,436.64	\$11,028.78
46	Corfini Gourmet	Local grass fed beef - poultry	\$27,165.01	\$18,917.21
47	Alternative Baking Co.	vegan cookies - natural	\$5,674.20	\$631.90



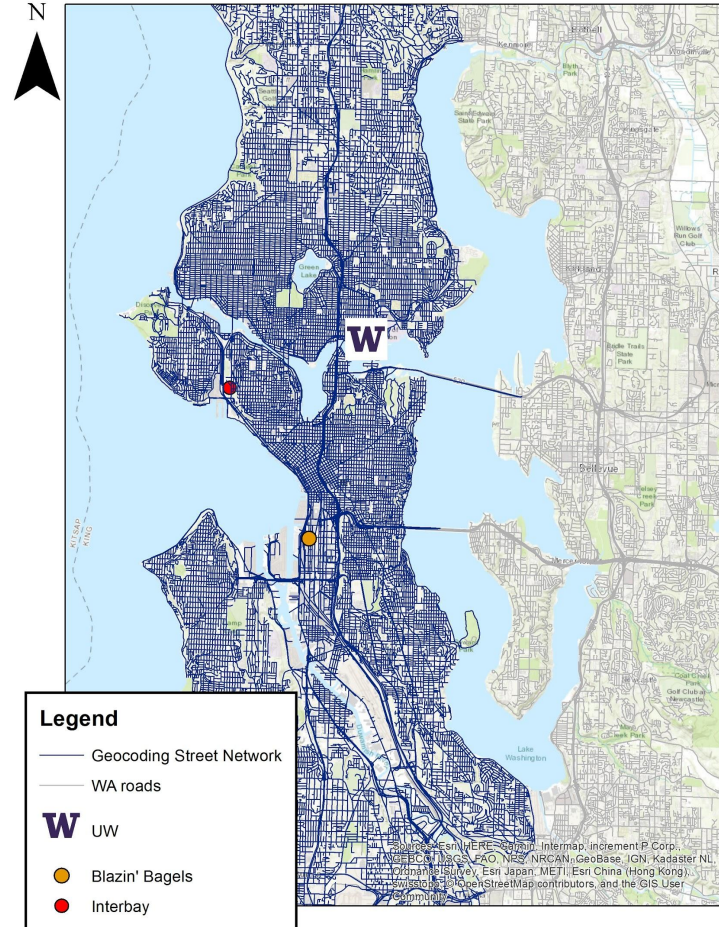
Methods

Downloaded shapefiles for:

1. Seattle Geospatial Street Network:
Shapefile: function locatate address.
2. Washington State roads Shapefile:
Function is to locate address
3. Road Shapefile from the WA Office
of Financial Management

Plotted Addresses from:

1. King County Addresses Shapefile
2. Washington State Addresses
Shapefile





Methods

Data Organization

	FID	Shape *	Id	Name	Type	FoodID	Address	City	Country	State	MealID	FoodName
	0	Point	0	Bukonzo Co-op Coffee	FARM	0		Kasese	Uganda		0	Coffee
	1	Point	0	Cargrain Farms Inc	FARM	1		Reardan	United States	Washington	0	Bagel
	2	Point	0	Diamond-S Farms	FARM	1		Colton	United States	Washington	0	Bagel
	3	Point	0	Mark and Becky Sheffels Farm	FARM	1		Lincoln County	United States	Washington	0	Bagel
	4	Point	0	ADM Milling	MILL	1		Cheney	United States	Washington	0	Bagel
	5	Point	0	Meadowsweet Farms	Distribut	2	915 1st Ave	Kent	United States	Washington	0	Cream Chees
	6	Point	0	Laglers Dairy Farm	Farm	2	15317 Old S	Brush Prarie	United States	Washington	0	Cream Chees
	7	Point	0	Naturipe Raspberries	Farm	3		Michoacan	Mexico		1	Fruit Salad
	8	Point	0	Naturipe Bleberries	Farm	3		Chillan	Chile		1	Fruit Salad
	9	Point	0	Dumex Superfresh Growers	Farm	3		Cowiche	United States	Washington	1	Fruit Salad
	10	Point	0	Amalgamated Plantations	Farm	4		Jorhat	India	Assam	1	Tea
	11	Point	0	Essential Bakery	Bakery	5	1604 N 34th	Seattle	United States	Washington	1	Toast
	20	Point	0	Fairhaven Mill	Mill	5	808 N Hill Bl	Burlington	United States	Washington	1	Toast
	21	Point	0	Essential Bakery	Bakery	5	1604 N 34th	Seattle	United States	Washington	1	Toast
	23	Point	0	Northwest Grain Growers	Farm	5		Walla Walla	United States	Washington	1	Toast
	12	Point	0	Florida Citrus	Farm	6		Hopewell	United States	Florida	2	Orange Juice
	13	Point	0	Ticofrut	Farm	6		Carmen	Costa Rica		2	Orange Juice
	14	Point	0	Minute Maid	Proces	6		Leesburg	United States	Florida	2	Orange Juice
	15	Point	0	Interbay Food Co	Distribut	7	19210 144th	Woodinville	United States	Washington	2	Breakfast Sa
	16	Point	0	Hidden River Farms	Farm	7	627 Wynoo	Montesano	United States	Washington	2	Breakfast Sa
	17	Point	0	Stiebrs Farm	Farm	7		Yelm	United States	Washington	2	Breakfast Sa
	18	Point	0	Citrosuco	Farm	6		Bocaina	Brazil		2	Breakfast Sa
	19	Point	0	Fairhaven Mill	Mill	7	808 N Hill Bl	Burlington	United States	Washington	2	Breakfast Sa
	22	Point	0	Northwest Grain Growers	Farm	7		Walla Walla	United States	Washington	2	Breakfast Sa
▶	24	Point	0	Blazing Bagels	Bakery	1	1911 1st Av	Seattle	United States	Washington	0	Bagel



Food Items Studied

Coffee + Bagel + Cream Cheese

- Coffee: Bokonzo co-op uganda
- Bagel: Blazing Bagels - ADM milling co - [many farmers](#)
- Cream Cheese: Meadowsweet

Fruit Salad + Tea + Croissant

- Fruit Salad
 - Raspberries: Natureripe - Michoacan, Mexico
 - Blueberries: Natureripe - Chillan, Chile
 - Apples: Domex Superfresh Growers - Cowiche, WA
- Tea: Amalgamated Plantations - Assam, India
- Toast: Essential Bakery - Seattle

OJ + Breakfast Sandwich

- OJ: Minute Maid - Juice from Brazil, US, Costa Rica
- Breakfast Sandwich
 - Bacon: Interbay (local)
 - Eggs: Stiebrs Farm - Yelm WA
 - English Muffin: Essential Bakery - fairhaven mill - walla walla farm

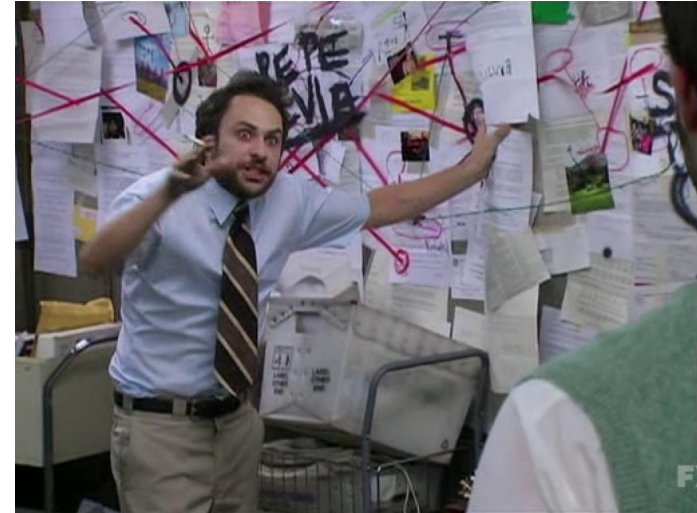


Methods

Network Analysis

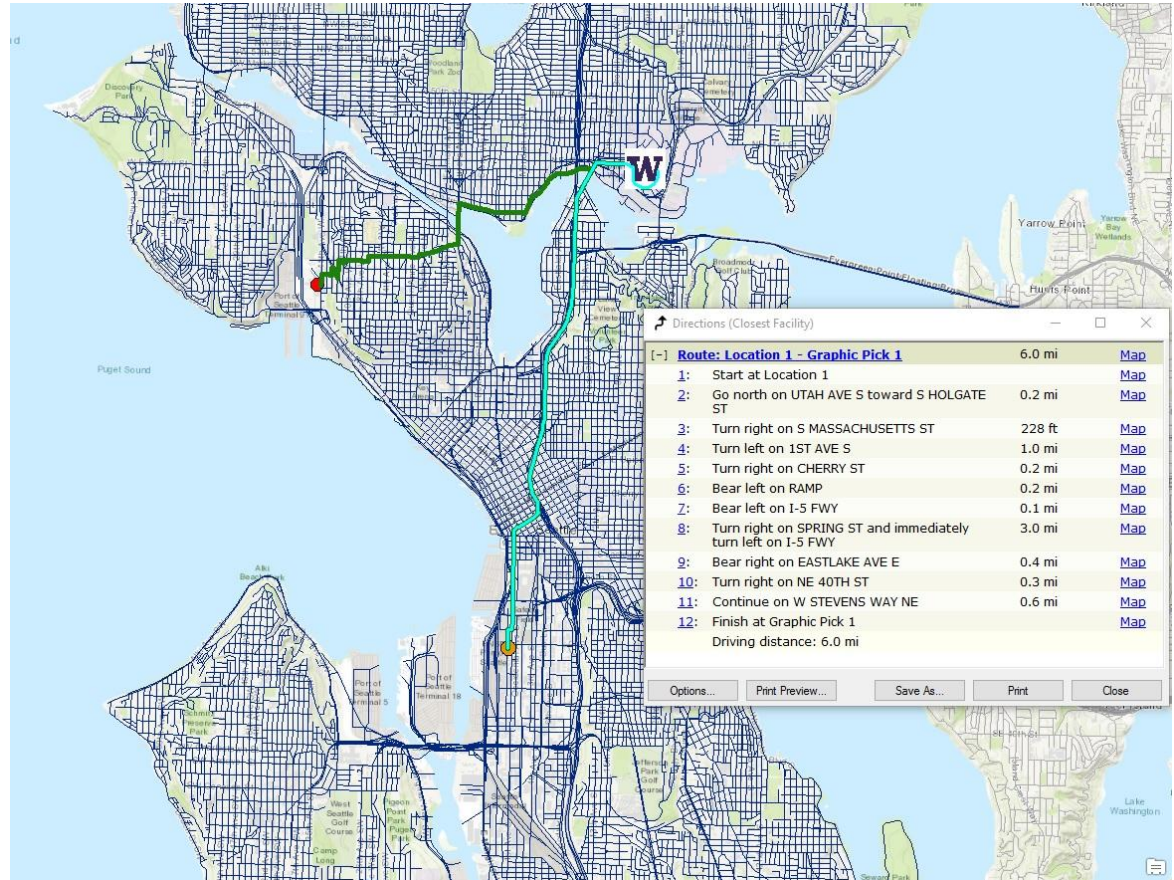
In order to find the street networks from point to point we:

1. Opened extension in “customize”
2. Then turned on the “network analysis”
3. Right-clicked the shapefile in catalog
4. Chose “network analysis”
5. Then chose closest facility in the Network Analyst menu
6. Plotted location for faculties and incidents
7. Then clicked solve



Results

Distance and directions
from different points in our
dataset

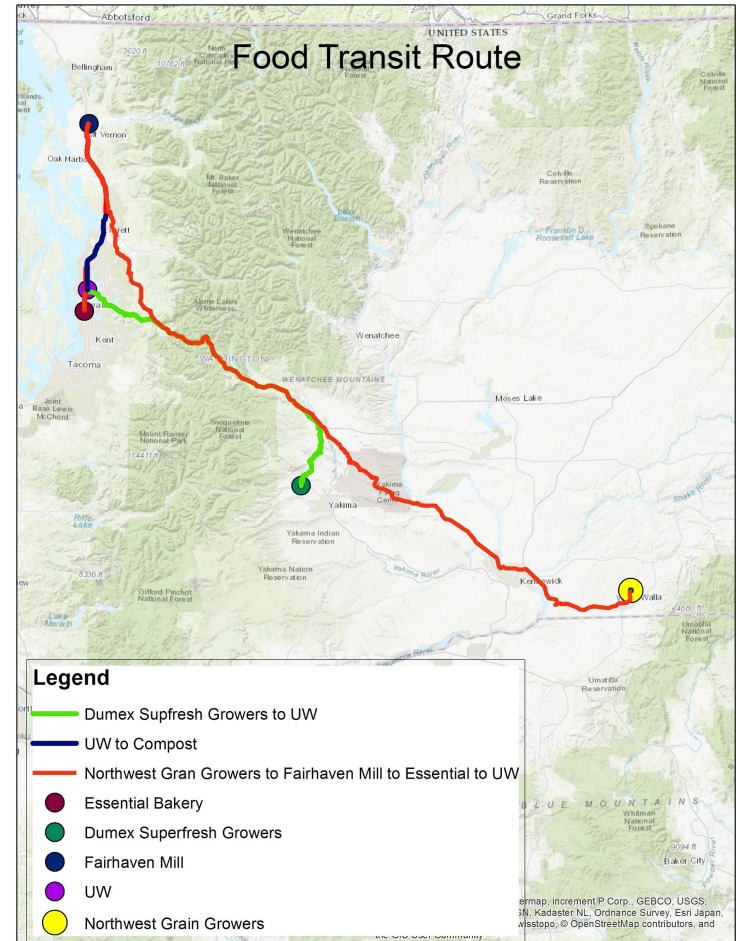


Results

Meal 2

- Fruit salad
- Toast
- Tea

19,135 total miles

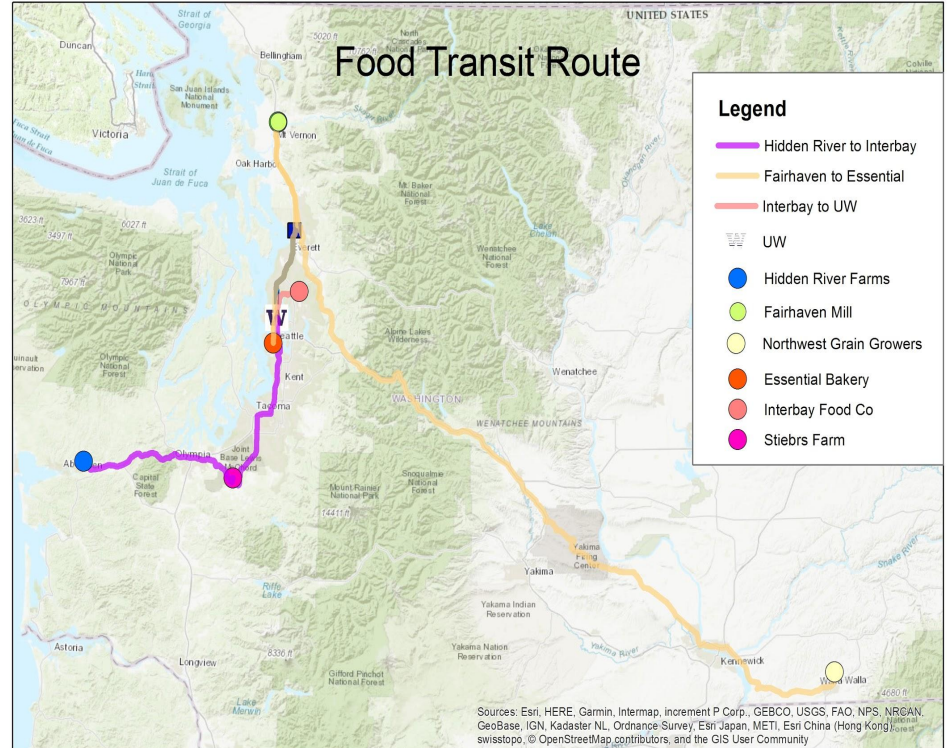


Results

Meal 3

- Breakfast sandwich (egg, bacon, english muffin)
- Orange juice

Total miles 4,528





Food Miles by Item

Meal 1

Coffee	9262
Bagel	419
Cream Cheese	170

Meal 2

Tea	6952
Fruit Salad	11795
Rasberries	2356
Blueberries	9300
Apples	139
Toast	396

Meal 3

Orange Juice	4012
Breakfast Sandwich	516

Results: carbon emissions

1



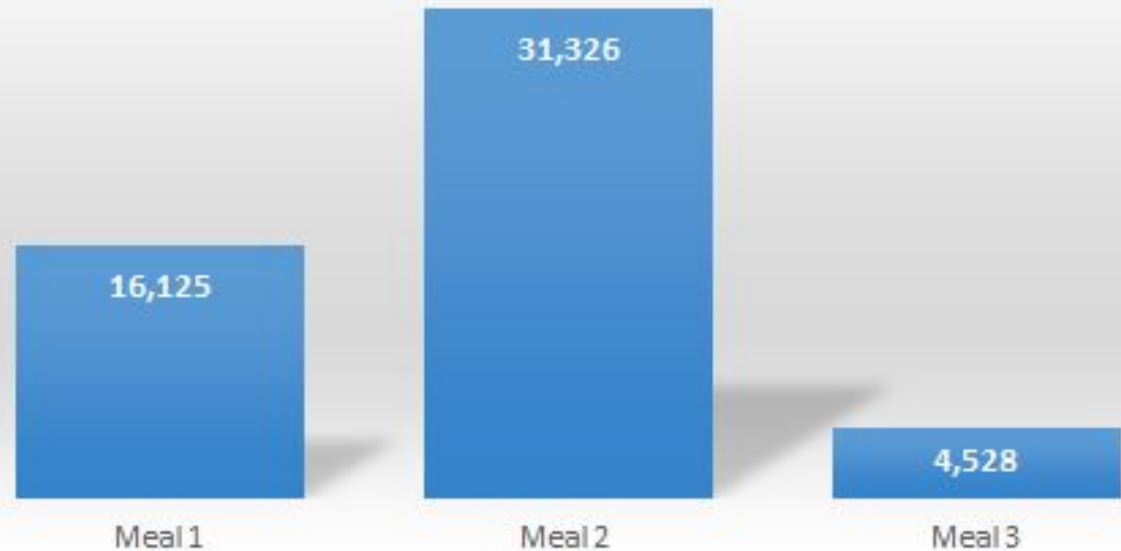
2



3



Carbon dioxide output (metric tons)





Limitations

- Lack of geospatial data for the state of Washington. The biggest challenge was collecting sufficient data to map out intended goal.
- UW Dining's information only showed parse data: Name of company, a few random notes, and total dollar amount spent in a fiscal year. UW Dining lacked the adequate data to generate a launching pad or detailed information. As a result, we had to make some assumptions and do research beyond what we expected.
- With more time we could have done a comprehensive ethical food analysis.
- Calculating the carbon output generates an estimate because it was using a standardized measurement system. Also, it is limited in terms of knowing the exact weight of the semi-truck, the type of semi-truck, or even the exact route taken.

Implications

By generating a map which displays the transit life of food that UW buys, we can see:

- the food's total carbon emissions generated by transit
- how much of the food that UW Dining purchases is locally sourced



The food's carbon footprint can be estimated by multiplying weight times distance for a freight truck to get total carbon emissions with

<http://www.freightemissionscalculator.com/>