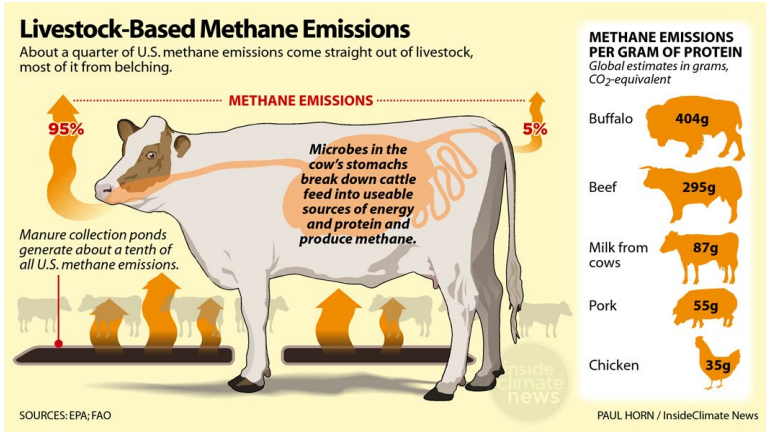
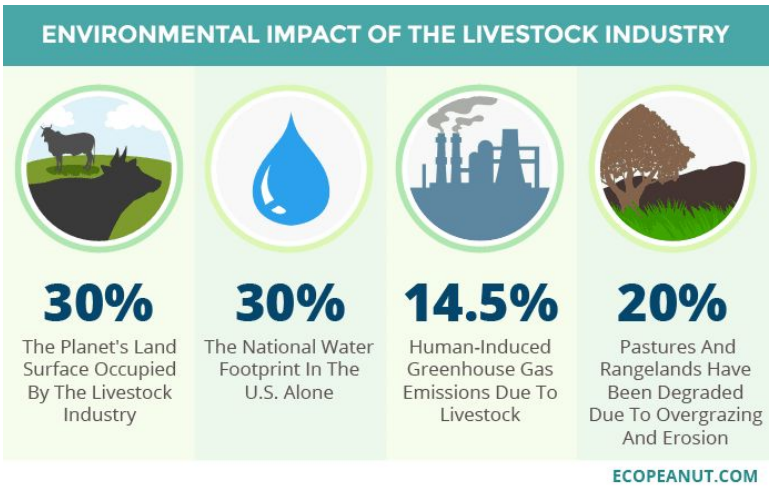
How can UMass mitigate red meat consumption and advocate for less red meat consumption?- Grant Proposal

iCons 1 - Independent Case Study





(Gustin and "The Shocking Truth Of Meat Consumption And Production. Everything You Need To Know Is Right Here!")

Team Letter: N
Team Member Names: Ariel Fine, Jake Talmer, and Thuy-Tam Vo

I. Project Summary

How can UMass mitigate red meat consumption and advocate for less red meat consumption?

In an ever adapting world, humanity faces its greatest challenge yet. Climate change is expected to impact every form of life on earth at a rapidly growing pace in the near century. As a primarily human derived issue, our quest for a more sustainable future starts with our individual habits as people. What we consume and how we consume it is ultimately the driver of this problem. As a major contributor to climate change and other environmental issues, the meat industry is one we currently rely on as a society. Specifically, red meat consumption uses more essential resources like land, water, and energy and emits more harmful byproducts like greenhouse gases such as methane and carbon dioxide than any other type of meat. Our goal is to tackle the issue of meat consumption by bringing it to our home front at UMass Amherst. Through carefully analyzing **what we consume, why we consume it, and what we know surrounding the issue of meat consumption as a community at UMass**, we can build a foundation to ultimately prove or disprove our team's hypothesis: If the UMass community were more aware of the effects of the production and consumption of red meat, then people would be more inclined to change or limit their red meat consumption habits.

In our first survey, we will ask UMass community diners about their habits concerning red meat and what they already know about the subject. After four weeks of an information campaign, there will be a second survey asking the same questions and some more about how their consumption habits have changed. Using the responses to the first and second survey, we will compare the answers and see how the responses have changed to determine if informing a young community is an effective tool in inspiring change.

II. Background

As an increasingly popular issue, meat consumption and its effects on the environment are being studied further. Researchers from around the world are analyzing meat production and consumption in their respective communities, and are finding out an inconvenient truth. The meat industry is one of the leading contributors to our environmental crisis, from both a resource footprint perspective and byproduct emittance (Carrington). More than 80% of farmland is used for livestock, and furthermore it is very inefficient, as it only produces 18% of all food calories and just 37% of all edible protein. Livestock also consume more water per acre than any other growable food crop. Not to mention, growing livestock feed alone requires 167 million pounds of pesticides annually along with 17 million pounds of synthetic fertilizer ("How Does Meat in the Diet Take an Environmental Toll?"). That's right, it takes that much and even more just to produce the food livestock eat themselves.

Imagine if we took all the grain we used to feed livestock and fed it to people instead, we could feed nearly 800 million ("How Does Meat in the Diet Take an Environmental Toll?"). To put that in perspective, the Food Aid Foundation reports that nearly 795 million people worldwide "do not have access to enough food". Ultimately, if we were to supply that quantity of grain to people, we could potentially stunt a vast majority of world hunger with grain alone.

Besides just sheer resource depletion, meat production comes with other negative effects on the environment. Since 2009, it is estimated that nearly four-fifths of all deforestation across the Amazon Rainforest is linked to cattle production, satisfying a worldwide demand ("How Does Meat in the Diet Take an Environmental Toll?"). We are now beginning to understand the true magnitude of this issue, our global demand for meat has caused this production scale to only magnify over time (Finke). It is time we call for reform in our consumption habits to mitigate these detrimental impacts to our environment. In an attempt to do so, our team is looking to see how the UMass Community can do it's part in reducing its demand for red meat and ultimately meat as a whole. Of course making such changes don't come by the flick of switch, and people still reserve the right to choose what and how much they eat. That being said, what strategies and tools would be useful in inspiring such change? How can UMass mitigate red meat consumption and advocate for less red meat consumption? By raising awareness and enlightening our community about the issue, we can likely induce some effective change. If the UMass community were more aware of the effects of the production and consumption of red meat, then people would be more inclined to change or limit their red meat consumption habits.

III. Methods

Overview of your study design:

To assess the red meat consumption habits at UMass, we are proposing a survey study, which we will use to see what people will answer, in relation to their red meat consumption. We will ask people in the UMass community about their red meat consumption habits and their knowledge of the consequences of red meat. We plan to focus on their knowledge of red meat consumption, their consumption habits of red meat and their opinions regarding their consumption. Our intended survey would be on google forms to ask the UMass community about their preferences, habits and opinions. Some example questions will be: How often do you eat at UMass dining?; How would you describe your eating habits? (Vegan, vegetarian, limited meats, white meat only, etc.); What protein substance do you prefer? (Vegan, White meat, Red meat, mix, other); If you considered how red meat affects the environment, would that change your red meat consumption?; Which option is a main concern for you about red meat consumption?. The survey will be subjective data based on the people that respond. Then, we will inform people of the effects of red meat using an information campaign, involving advertisements, prints, and more. All the dining halls will receive the same information and in the same quality. Following that, we will have a new survey asking people questions on how their red meat consumption habits have changed. Some example questions on the second survey will be: How has your red meat consumption changed in the past several weeks?; What do you think about the production and consumption effects of red meat?; How would you describe your eating habits? (Vegan, vegetarian, limited meats, white meat only, etc.); What protein substance do you prefer? (Vegan, White meat, Red meat, mix, other). We will compare the data from the two surveys and see what has changed in the responses. The objective of the first study will be to determine how the UMass community tends to dine. The objective of the second study is to observe and analyze the change due to the information campaign.

Data collection procedures

We will collect our data using the responses to our survey through Google Forms. Between the two forms, we will compare the answers to see what factors have changed. The variables can be the differences in red meat consumption habits. We are looking to observe what UMass students know about the effects of meat consumption, and how much they consume/their opinions regarding consumption. This data would come in the form of open response and multiple choice answers. We expect that 10,000 will answer the survey.

We will control the information campaign by having the information in each dining hall be the same in quality and quantity. We will be including information about how red meat is detrimental to the environment with carbon dioxide emissions and more. We will include this information on print and advertisements during the campaign. Over the four week campaign, the UMass community diners will be able to see the information and it may affect their opinion.

Potential Sources of Error

A big source of error could come from our sample size; not reaching enough students could misrepresent our conclusions drawn from the survey. Considering this topic is relatively subjective, our responses could widely vary, and there could be errors in interpreting vast amounts of open response answers. In addition, this survey is to be quite thorough; to attain the data we want, we won't have a simple 5 question survey that requires 5 taps to finish, the longer the survey, the less attractive it is to people to complete thoroughly and truthfully. Since we are doing two surveys, we have to account for the different people that are responding. The same people may not be responding to the survey and may have different responses to other people that answered in the previous one.Responders can be biased to their answers; they may just write what they want their opinions and consumption habits to be like to seem different or omit any opinions that are unpopular. With a sample size like this, people may just say answers that they think we want to hear.

Assumptions

We are assuming every person answering the survey is a UMass student or faculty member, and eats at UMass Dining outlets (we will also measure how often they eat on a relative scale to see how much their answers impact the overall demand for change or lack thereof). We assume that many UMass dining consumers will see that information about red meat consumption and want to change their habits.

Data Analysis - How you will analyze and interpret the data you collect

Our data collection/analysis will ultimately be centralized through our google form that was distributed throughout the UMass Community. We are looking to observe what UMass students know about the effects of meat consumption, and how much they consume/their opinions/reasoning regarding consumption. This data would come in the form of open response and multiple choice answers, through the survey.

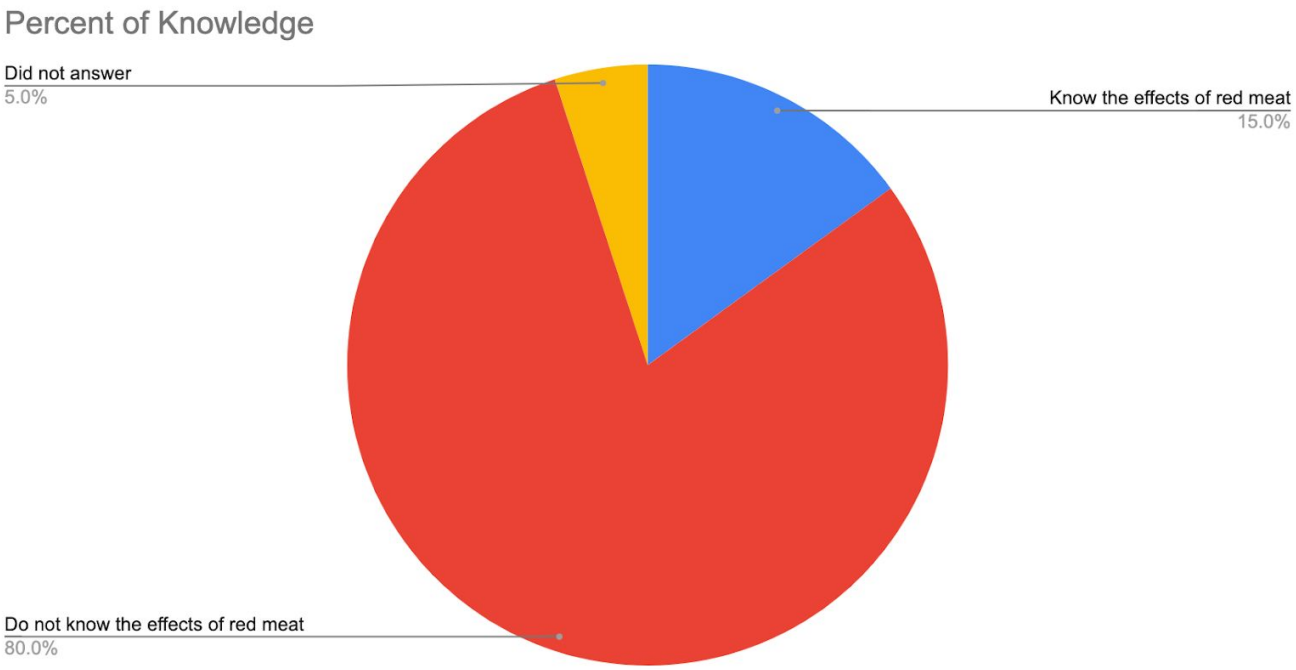
We will use the community's response to the survey to graph their changes in diet. We will be able to see how many people have shifted their diets to more or less meat based using their responses. Bar graphs can be used to measure how many chose the answer to the multiple choice question and how many answered to a changed opinion. Circle graphs/Pie charts can be used if we are looking at statistics. Using the results, we will be able to visualize what percentage of the sampled population had a specific opinion or choice in answer. The null hypothesis can be disproved by showing results from people answering that they would change their habits from learning about the consequences of red meat.

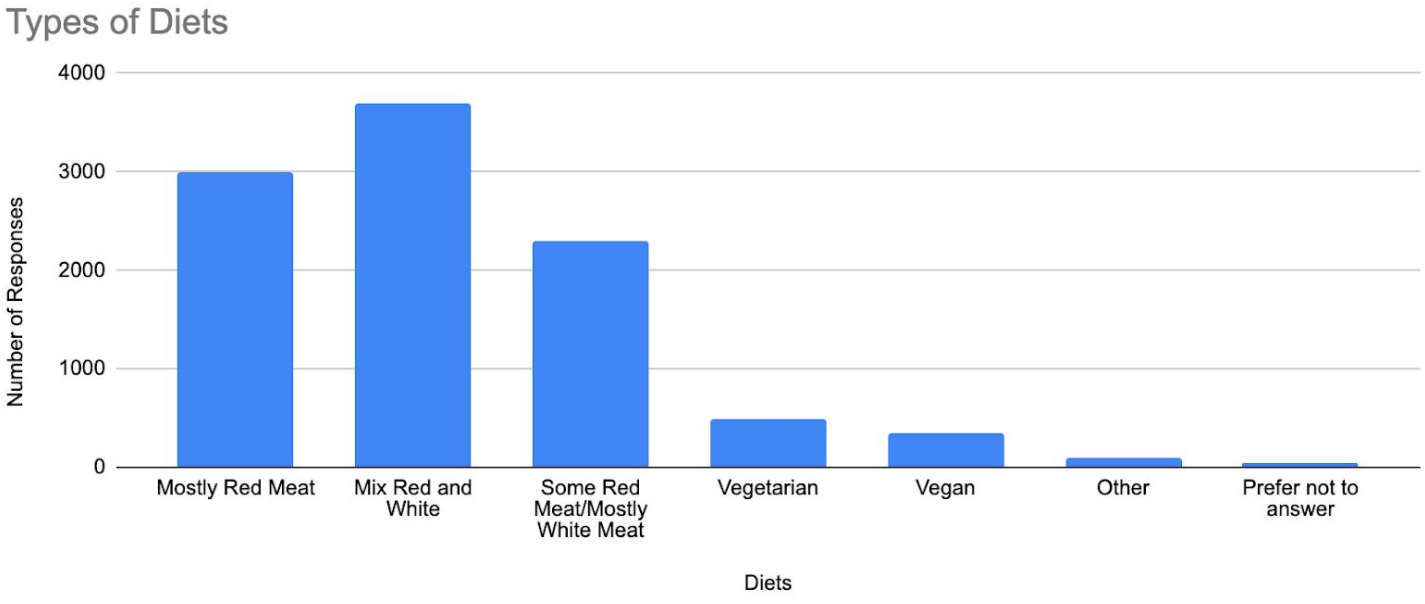
IV. Anticipated Results

We expect to find results somewhere on the spectrum of there either being more red meat consumption than we thought, in which our information and advocacy would have more potential, or that there is less red meat consumption than we thought, in which case we are closer to our goal. We expect people to change their opinion of red meat consumption due to the information. However, we expect less people to change their red meat consumption habits. This comparison will come from the differences between the first and second survey. We expect

Data from Survey 1:

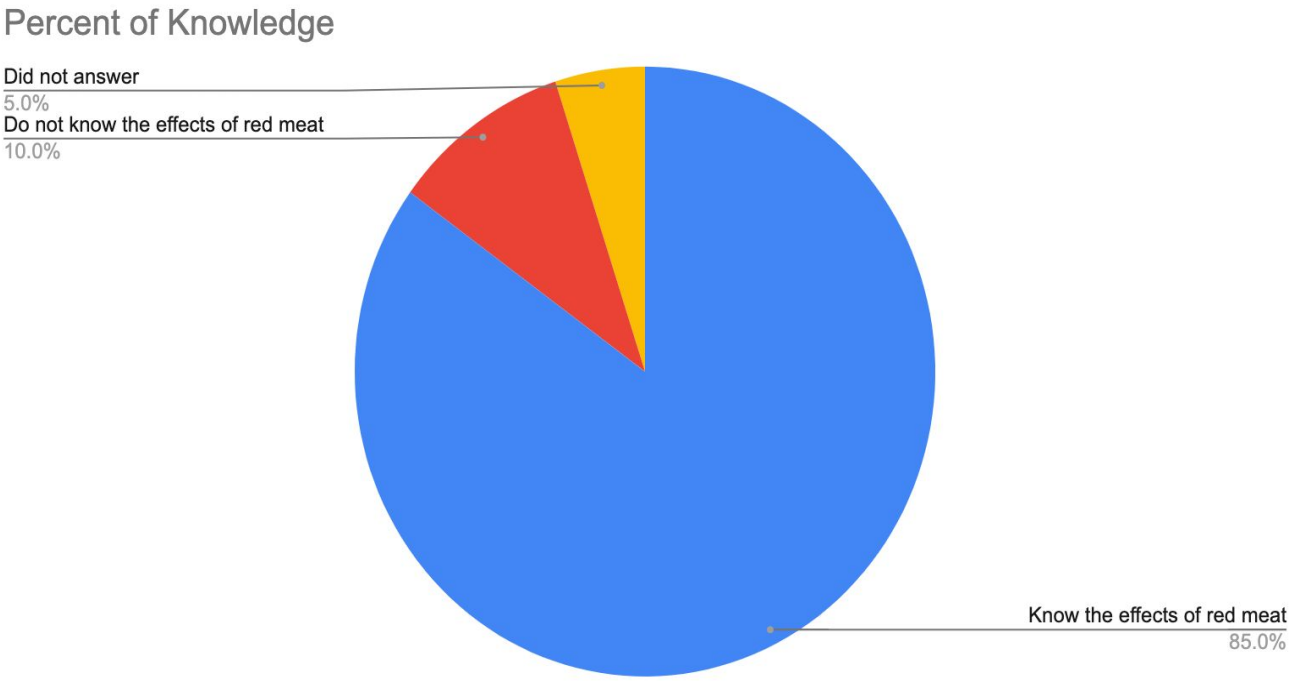
People	Percent
Know the effects of red meat	15%
Do not know the effects of red meat	80%
Did not answer	5%
Diets	Number of Responses
Mostly Red Meat	3000
Mix Red and White	3700
Some Red Meat/Mostly White Meat	2300
Vegetarian	500
Vegan	350
Other	100
Prefer not to answer	50

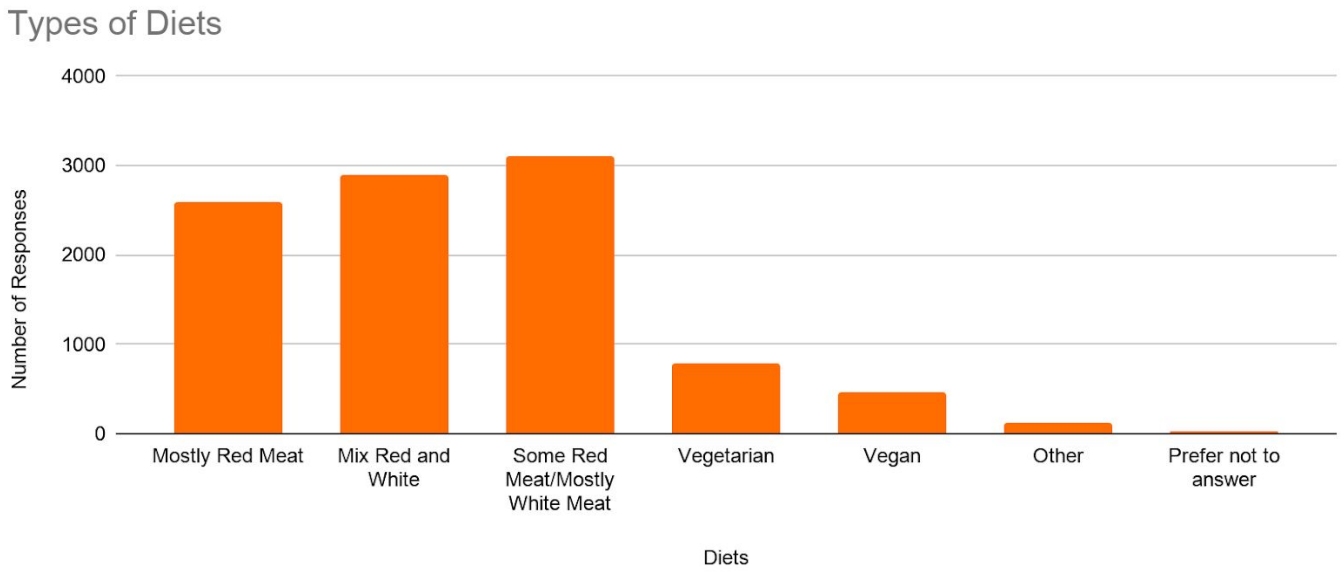

Percent of Knowledge
Did not answer
5.0%
Know the effects of red meat
15.0%
Do not know the effects of red meat
80.0%


Types of Diets
4000
3000
2000
1000
0
Number of Responses
Mostly Red Meat
Mix Red and White
Some Red Meat/Mostly White Meat
Vegetarian
Vegan
Other
Prefer not to answer
Diets

Data from Survey 2:

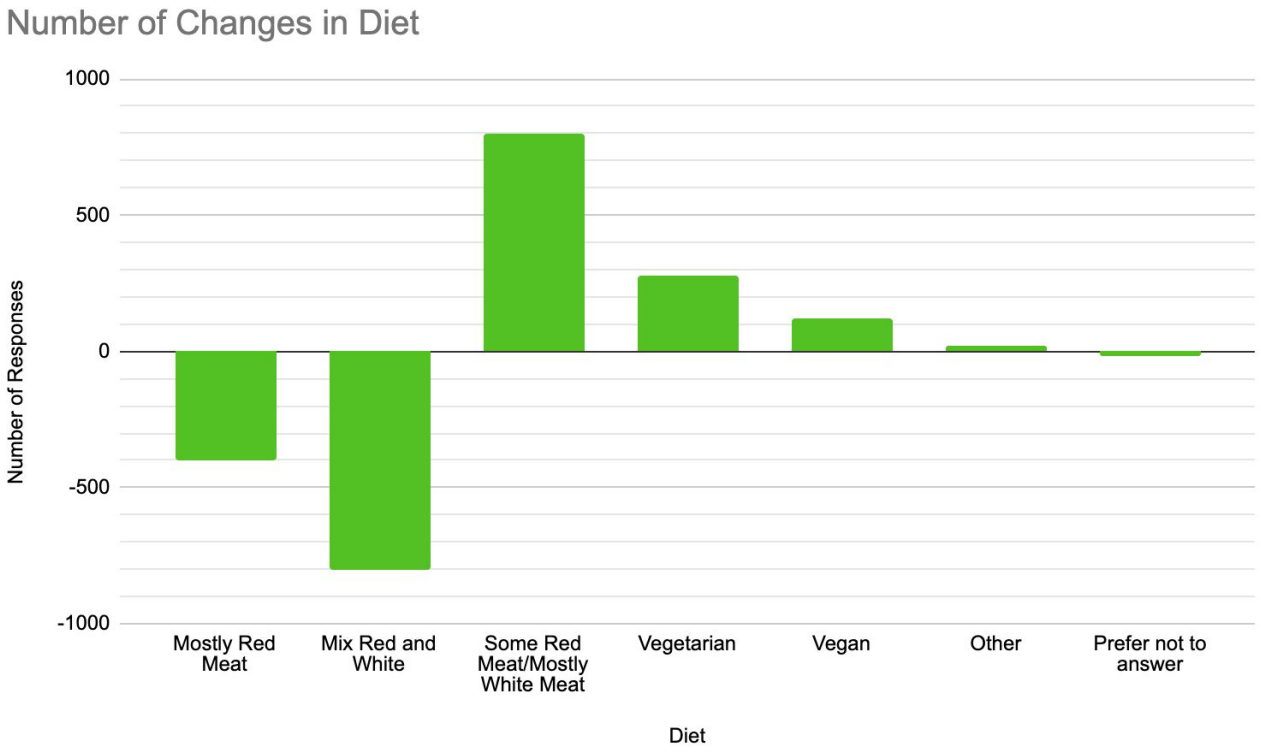
People	Percent
Know the effects of red meat	85%
Do not know the effects of red meat	10%
Did not answer	5%
Diets	Number of Responses
Mostly Red Meat	2600
Mix Red and White	2900
Some Red Meat/Mostly White Meat	3100
Vegetarian	780
Vegan	470
Other	120
Prefer not to answer	30





Changes in Responses:

Diet	Change
Mostly Red Meat	-400
Mix Red and White	-800
Some Red Meat/Mostly White Meat	800
Vegetarian	280
Vegan	120
Other	20
Prefer not to answer	-20


Number of Changes in Diet
1000
500
0
-500
-1000
Number of Responses
Mostly Red Meat
Mix Red and White
Some Red Meat/Mostly White Meat
Vegetarian
Vegan
Other
Prefer not to answer
Diet

V. Timeline

Our project is feasibly done in a 9 week time frame. We will send out our first survey and gather data for the first 2 weeks, which will flow into the start of the information campaign which is expected to last for 4 weeks: setting up posters, table cards, and informative labelling at meat serving stations (assuming we receive the consent of UMass Dining to do so in all 4 of their main dining halls). The information vehicles will be static throughout the 4 weeks. In the next 2 weeks, we will be dedicated to measuring how effective the information campaign was, sending out a second survey to see how people's habits and opinions have changed as a result from exposure to the information we supply at the dining halls. The last week of the project will be strictly for analysis, where we compare our first survey results to the second survey results and see if we sparked a change throughout the community. Furthermore, we will analyze the efficacy of potentially doing a similar campaign again in the future, or consulting UMass dining to see if infrastructural dining changes can be made to mitigate meat consumption even more.

Phase	WEEK 1	WEEK 2	WEEK 3	WEEK 4	WEEK5	WEEK 6	WEEK 7	WEEK 8	WEEK 9
First Survey Circulation-Gathering Data									
Information Campaign									
Second Survey Circulation-Gathering Data									
Final Efficacy Analysis									

VI. Materials and Budget

Here is where you list supplies, equipment, personel, etc…will you need to execute your study. List these in a table and make a ballpark estimate of cost. This does not need to be exact, but will be helpful for a funder to have a rough idea of how expensive your study will be.

Item	Description	Cost ($)
Survey Incentives	Four $50 amazon gift cards to raffle, one for each dining hall	200
Information Campaign	Posters, flyers, cards, printing money	100
Total		**300**

VII. Key Personnel

As a group, we will analyze the responses and compare them between surveys. We will each help spread information and advertisements in the dining halls. We will make conclusions using the results as a team. With our combined skills, we have the necessary traits to run this project.

Ariel Fine is an Industrial Engineering major at UMass Amherst. As a part of the iCons program at UMass, Ariel is determined to help fight the climate crisis as his passion as an engineer and problem solver. Being a member of the UMass community and having made the switch to reduce his red meat consumption, Ariel understands the social perspective behind its eating habits, and can use his social charisma and networking to help facilitate a helpful case study tailored to a social experiment. Having previous experience in designing surveys for product design challenges, he has the skills and passion necessary to help execute and optimize the process of designing and distributing a survey along with designing a meaningful information campaign.

Jake Talmer is a class of 2023 Mechanical Engineering major at UMass. He is a member of the iCons program to pursue his passion of helping the climate change crisis facing the world. He has observed and studied strategies of engineering workplaces that specialize in the discipline of renewable energy and applied them to the creation and analysis of the project. He has personally undergone the challenge of mitigating red meat and dairy from his diet throughout the semester to test its ability to be achieved at UMass, eating only from the dining program.

Thuy-Tam Vo is a Biochemistry and Molecular Biology and Economics major at UMass. She joined the iCons program to help solve problems threatening the world around her. She has analytical and computational skills related to laboratory work. She can use the results in an analysis and discussion. In the past, she has run surveys asking people in her community questions about their habits and opinions. She has designed several surveys and collected their results to form a discussion and pieces of writing. She has developed two experiments and wrote papers to help the environment, one with the leakage of excessive carbon dioxide into the environment and the other about oil spills in the ocean. She has collected and analyzed data and results many times in scientific and other related fields. She is passionate about the environment and what humanity can do to save the Earth.

VIII. Relevance of Proposed Study and Broader Impacts

We expect our work to have the scientific and societal value of further analyzing the mass meat consumption in our society and its negative effects, as well as compare that to the emissions of red meat alternatives on a per person scale to show the giant proportions of pollution that is created.

We expect everyone who dines at UMass to benefit from the outcome of our work. From simply being more knowledgeable and able to convert to a healthier, more environmentally conscious diet to a large scale benefit of doing our part to alleviate the environmental pressure that our meat consumption as a school currently puts on the industry.

Similarly, our work may be meaningful as it'll have an impact on behalf of the UMass population on the environmental emissions, as well as hopefully carrying on into information and change beyond just UMass, to other universities and groups as a whole. By setting a standard for other universities, we can show how bulk dining and large scale nutrition can be adjusted and enhanced to reduce our negative impact.

We will start by communicating our findings with representatives of UMass Dining and hopefully through their cooperation with our studies, we will inform through them and through ourselves straight to the public on our findings of the usage and effects of meat consumption. Ideally, we will be able to set up an event at each dining hall emphasizing the benefits of lean white meat as well as vegetarian and other meat-free diets similarly to Peanut and Cranberry night sponsored by UMass dining to raise awareness on the options and benefits of said diets.

IX. References

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