Team 8 Experiment Proposal

1. Executive Summary

This proposal outlines a targeted email marketing experiment designed to increase enrollment in the Wisconsin School of Business's (WSB) Actuarial Science Capstone Certificate Program. The campaign will test the effectiveness of financial opportunity messaging in motivating interest and engagement. Using cluster randomization, two groups of graduates (2016–2020) will receive emails with different subject lines: one emphasizing financial benefits and another focusing on program details. Outcome metrics such as open rates, click-through rates, and cookie-based engagement will be analyzed to measure success.

This experiment provides stakeholders with actionable insights into marketing strategies that effectively attract prospective students & optimizes resources within a $5,000 budget – while offering a scalable framework for future campaigns.

2. Marketing Strategy Overview

- **Objective:** Increase enrollment in the Actuarial Science Capstone Certificate Program by leveraging email marketing to engage recent graduates and test the impact of financial incentive messaging.
- **Justification:** Financial opportunity messaging aligns with behavioral economics principles, suggesting individuals are more likely to respond to perceived financial gains. By analyzing response rates to different messaging, this strategy directly addresses how to best appeal to WSB's target audience, ensuring efficient allocation of marketing resources.
- **Expected Impact:** The campaign will provide measurable insights into message framing and audience behavior. It aligns with WSB's goal of enhancing program visibility and enrollment while ensuring compliance with data privacy regulations. The results will guide future marketing decisions and demonstrate the value of targeted, evidence-based strategies.

3. Experimental Design

A. Experiment Type

This email marketing campaign is a mechanism test we will evaluate over the course of one year. Our experiment seeks to identify the causal mechanism in which financial opportunity messaging influences recipients. Specifically, we are interested in whether or not financial opportunity messaging will increase interest in WSB's Capstone Actuarial Certificate.

B. Units of Randomization

We plan on having a sample size of 8,904 emails[1] (collected from the roster of alumni). This number represents the total number of bachelor's degrees awarded to both the Wisconsin School of Business and College of Engineering combined between 2016 to 2020 (targeting alumni with business/STEM background). Given graduation year as a natural cluster, we will randomize units through cluster randomization. This means we will stratify by school (Business vs. Engineering) within each graduation year and randomize treatments within each graduation year to ensure that the proportion of students in each school receiving treatment is balanced.

Randomization is essential to eliminate selection bias and unknown confounding variables. This means that participants are assigned to treatment solely by chance not choice, and potential confounders such as GPA and gender are evenly distributed across both treatments. The balance in pre-treatment variables across treatment and control will ensure that any differences in outcome can be attributed to the type of treatment rather than a pre-existing difference between the groups.

C. Treatments

The email marketing campaign will have the following two treatments:

- **Treatment group:** "Fast-track your actuarial certification and earn $100,000+ annually."
- **Control group:** "Earn your actuarial certification with WSB in just one year."

D. Outcome Metrics

1. **Email Open Rate:** Percentage of recipients who open the email
2. **Cookie-Based Tracking:** Captures indirect engagement (it allows us to see people who open the email and visit the page without clicking the link)
3. **Click-Through Rate:** Percentage of recipients who click the link in the email
4. **Enrollment**: Collect emails within the application and match them with email addresses targets in the email campaign.

Outcome Metric Justification:

The email open rate combined with cookie-based tracking will allow us to both directly and indirectly (creating a holistic view) capture the initial engagement with each treatment. Ultimately, these two metrics highlight the interest generated from the email subject line (treatment).

Regarding the click-through rate, we must re-emphasize that only the email subject line will differ between treatment and control, and within each email will be a "click to learn more link".

[1] UW-Madison Office of the Registrar

This means that if one treatment has a higher CTR, it suggests that the subject line may be more effective at generating interest in the program.

Lastly, enrollment directly measures the ultimate goal and success of our campaign - our ability to convert email recipients into students of the program.

Projected Outcome Metric Cost: $2,280 ($190/month for 12 months).

We will utilize the email marketing service - Mailchimp[2], to track our outcome metrics. Mailchimp's standard monthly plan is $190/month, includes the ability to track all of our desired metrics, and allows us to send 12x the contact list/month (106,848 monthly emails).

4. Anticipated Challenges and Mitigation Strategies

1. Recruitment and Sampling Challenges

- **Explanation:**
  Outdated or inactive email addresses could result in a reduced sample size or an unrepresentative audience. Additionally, spam filters may block some emails from reaching recipients.
- **Impact:**
  A smaller, biased sample could limit the generalizability of the results and reduce statistical power.
- **Mitigation:**
  Use email verification tools to check deliverability and update alumni contact details through networks and institutional records.

2. Low Engagement Rates

- **Explanation:**
  Graduates might not open or interact with emails due to lack of interest, poorly timed campaigns, or email fatigue.
- **Impact:**
  Low engagement reduces the experiment's ability to test the hypothesis effectively and draw actionable conclusions.
- **Mitigation:**
  Use attention-grabbing, personalized subject lines and schedule emails for optimal engagement times based on industry benchmarks.

[2] Intuit Mailchimp Price: https://mailchimp.com/pricing/marketing/

3. Data Privacy Concerns

- **Explanation:**
  Tracking user interactions and using personal data for marketing purposes could raise privacy issues, especially under regulations like GDPR or FERPA.
- **Impact:**
  Non-compliance could lead to legal repercussions and damage the institution's reputation.
- **Mitigation:**
  Ensure compliance by anonymizing data, obtaining proper consent where necessary, and providing clear opt-out mechanisms for recipients.

4. Budget Constraints

- **Explanation:**
  A $5,000 budget limits the scale and variety of marketing channels, as well as the resources available for tools and data analysis.
- **Impact:**
  The limited budget may reduce the campaign’s reach or make it harder to test additional hypotheses.
- **Mitigation:**
  Prioritize high-impact strategies like targeting the most responsive audience and use free or affordable platforms for email distribution and analytics.

5. Misinterpretation of Results

- **Explanation:**
  External factors like economic conditions or competitor campaigns might influence enrollment, making it difficult to attribute changes solely to the marketing strategy.
- **Impact:**
  Misattribution could lead to incorrect conclusions and ineffective recommendations for scaling.
- **Mitigation:**
  Use statistical techniques to control confounders and clearly outline potential external influences in the analysis report.

5. Statistical Power and Informative Value

Based on information we have received from stakeholders, the current annual enrollment for this program is 5-10 students from the Midwest. The variance of such a small number will make it extremely difficult to achieve statistical significance. To detect a meaningful effect with statistical significance at such a small baseline number, we need either a larger effect size such as a 100%+ increase or a longer observation period to accumulate more data. This program expansion aims to double the number of enrolled students (10-20 students). So, the difference to detect: 10 students. Using a paired sample formula (comparing before vs after): $n = (Z\alpha/2 + Z\beta)^2\sigma^2/d^2$ Where: d = 10 (target difference) ,$Z\alpha/2 = 1.96$ ($\alpha = 0.05$), $Z\beta = 0.84$ (80% power).

For different σ values:

- If $\sigma = 1$ (very little variation): $n = (1.96 + 0.84)^2(1)^2 / 10^2$ $n = 7.84 / 100$ n = 0.08 years of data
- If $\sigma = 2$ (moderate variation): $n = (1.96 + 0.84)^2(2)^2 / 10^2$ $n = 31.36 / 100$ n = 0.31 years of data
- If $\sigma = 3$ (high variation): $n = (1.96 + 0.84)^2(3)^2 / 10^2$ $n = 70.56 / 100$ n = 0.71 years of data

Based on the above calculations, we could conclude that more variation requires longer observation time. With small variation (σ=1), we need only 1 month, however, with high variation (σ=3), we need about 9 months to ensure that our experiment has 80% power. The power calculation was based on enrolled students (10 to 20) because this is directly related to the project goals. An inappropriate power calculation may not produce statistically significant results, leading us to misjudge marketing effectiveness and possibly prolonging the experiment without bringing additional value.

6. Implementation Plan

Month 1:

1. Recruitment and Preparation (Week 1)

- Clean and verify email lists for graduates (2016–2020).
- Ensure privacy compliance and tracking setup.
- **Deliverable:** Verified email list and compliance documentation.

2. Experimental Setup (Week 2)

- Randomize recipients into treatment and control groups.
- Design and approve email templates with different messages.
- **Deliverable:** Randomized email list and finalized templates.

3. Email Deployment (Week 3)

- Launch email campaign with tracking (e.g., UTM codes).
- Test emails with a small subset before full deployment.
- Send emails on every Wednesday once every two weeks.
- **Deliverable:** Successful email distribution with functional tracking.

4. Data Collection and Monitoring (Week 4)

- Track open rates, clicks, and website visits for each month.
- Ensure enrollment inquiries are logged accurately.
- **Deliverable:** Real-time engagement metrics.

Months 2-12:

5. Continued Data Collection and Monitoring

- Continue to track outcome metrics
- **Deliverable**: Final Project Report and stakeholder presentation.