



Active Learning Project Exploring the Functionalities, Data and Interfaces of a Modern Online Advertising System

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Associated MIT SERC Case Study:

[Identity, Advertising, and Algorithmic Targeting: Or How \(Not\) to Target Your “Ideal User”](#)

Kant, T. (2021). Identity, Advertising, and Algorithmic Targeting: Or How (Not) to Target Your “Ideal User.” *MIT Case Studies in Social and Ethical Responsibilities of Computing*, (Summer 2021). <https://doi.org/10.21428/2c646de5.929a7db6>

Overview:

The last two decades of digital transformation have revealed our broad societal dependence upon data-rich, “Big Tech” firms. From seemingly humble beginnings to present-day backlash and congressional scrutiny, these companies have weathered good and bad times alike. Facebook is, perhaps, the epitome of this Big Tech archetype. The company capitalizes on its users' time, selling advertising space for its Facebook, WhatsApp, and Instagram platforms. As you'll notice in the following lab, Facebook is relevant in digital advertising for many types of organizations, including small and medium-sized businesses, Fortune 500s, restaurants, and political campaigns.

As we explore the ethical implications of digital advertising, it's particularly helpful to **concretely identify the functionalities, data, and interfaces** driving ad systems in the modern era. The following lab focuses on Facebook's Ads Manager with this in mind.

Imagine, for the next hour, that you're the owner of Beurre Bakery, a bakery and cafe chain with multiple locations throughout Boston and Cambridge. As owner, you've been reticent to transform the local, grassroots marketing that has been so effective over the past decade; however, competition has been intensifying, so you've decided to explore Facebook's Ads offering. Explore the following lab, revamping Beurre's digital marketing with an eye toward the societal and ethical implications of the data platform.

Step 1: Enter [Facebook Business's Ads Manager](#) with the following login information.

We can use one account for several different pages/businesses.

- Username: XYZ
- Password: ABC

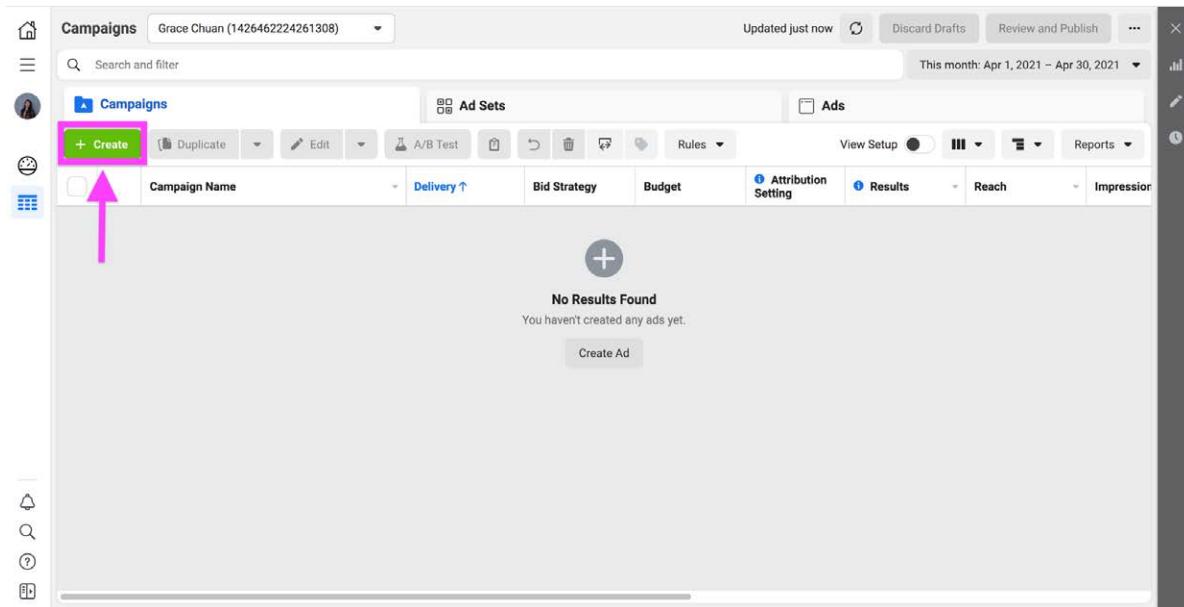
Step 2: Click on the “Ads” tab in the left-hand bar to reach the Ad Center.

The screenshot shows the Facebook Business Suite interface. On the left, a sidebar lists options: Home, Activity, Inbox, Posts, Ads (which is highlighted with a pink box and has a pink arrow pointing to it), Insights, and More Tools. The main content area is for the 'MIT Undergraduate Economics Association' Facebook Page. It includes sections for 'Updates', 'Comments', and 'Recent Posts'. To the right, there is an 'Insights' panel showing trends and audience data.

Step 3: Click “Ads Manager.”

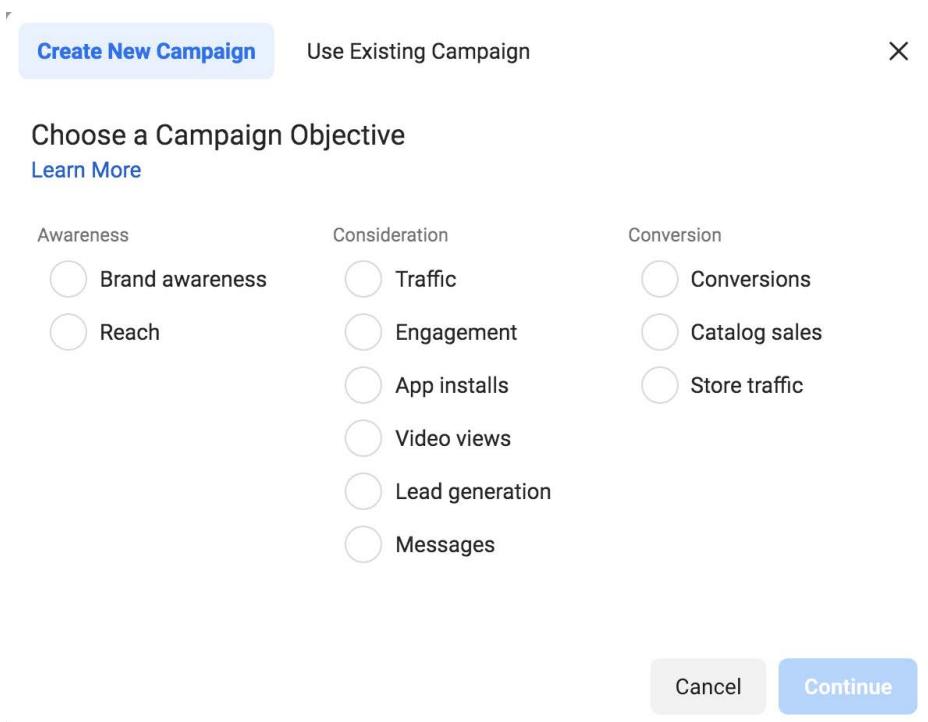
The screenshot shows the Ad Center interface. The left sidebar has icons for Home, Activity, Inbox, Posts, Ads Manager (which is highlighted with a pink box and has a pink arrow pointing to it), Insights, and More Tools. The main area displays a message: 'View Results' followed by 'Metrics for individual ads will appear here once you get started.' Below this, there is a link 'Show more details in Ads Manager >'. A large pink arrow points upwards from the bottom towards the 'Ads Manager' link.

Step 4: Within Ads Manager, click the green “Create” button.



The screenshot shows the Facebook Ads Manager interface. At the top, there's a navigation bar with tabs for 'Campaigns' (selected), 'Grace Chuan (1426462224261308)', and other account details. Below the navigation is a search bar and a date range selector ('This month: Apr 1, 2021 – Apr 30, 2021'). The main content area is titled 'Campaigns' and contains a table with columns: 'Campaign Name', 'Delivery ↑', 'Bid Strategy', 'Budget', 'Attribution Setting', 'Results', 'Reach', and 'Impressions'. A large green button labeled '+ Create' is located at the top left of the table. A pink arrow points from the bottom of the previous slide towards this '+ Create' button. Below the table, a message says 'No Results Found' with the subtext 'You haven't created any ads yet.' and a 'Create Ad' button.

Step 5: You will need to choose a campaign objective from one of three broad categories: Awareness, Consideration, and Conversion.



This is a modal window titled 'Choose a Campaign Objective'. It has three tabs at the top: 'Create New Campaign' (selected), 'Use Existing Campaign', and a close button 'X'. The main content is divided into three sections: 'Awareness', 'Consideration', and 'Conversion', each with a list of objective options. At the bottom are 'Cancel' and 'Continue' buttons.

Awareness	Consideration	Conversion
<input type="radio"/> Brand awareness	<input type="radio"/> Traffic	<input type="radio"/> Conversions
<input type="radio"/> Reach	<input type="radio"/> Engagement	<input type="radio"/> Catalog sales
	<input type="radio"/> App installs	<input type="radio"/> Store traffic
	<input type="radio"/> Video views	
	<input type="radio"/> Lead generation	
	<input type="radio"/> Messages	

- Q1: What differentiates these three categories?
- Q2: In what situations would you select each category over the others?

- **Q3:** Under “Awareness”, there are two objectives: “Brand awareness” and “Reach.” How might these two objectives target audiences differently?

Step 6: Select “Brand awareness” as your campaign objective.

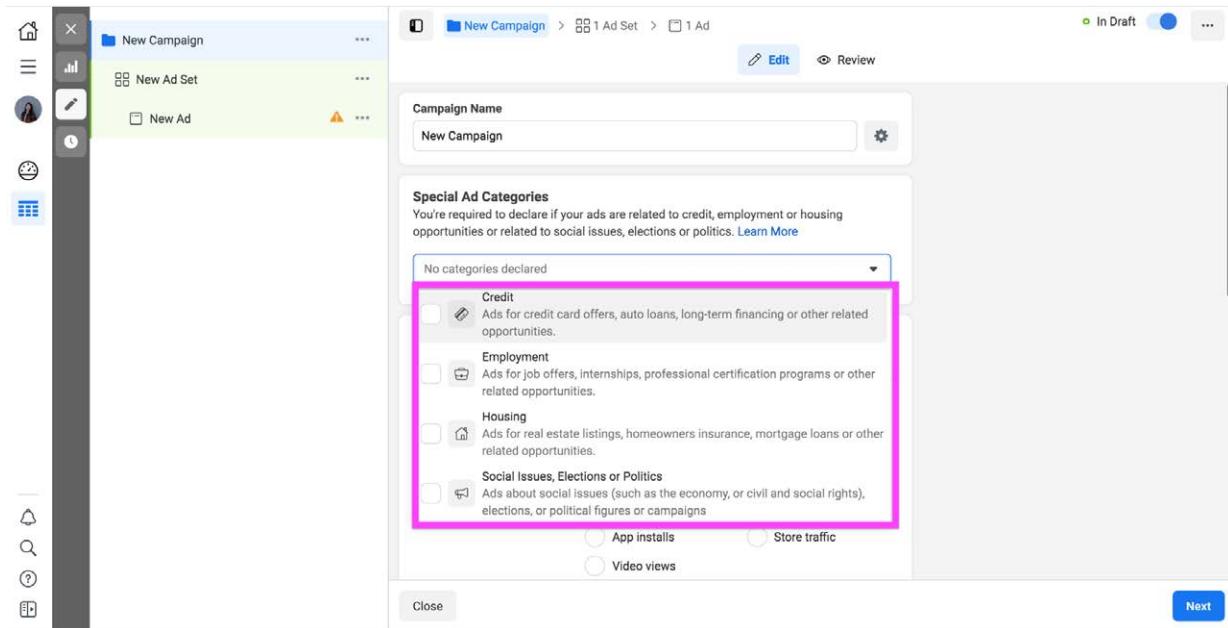
Step 7: Name your campaign!

The screenshot shows the Facebook Ads Manager interface for creating a new campaign. On the left, there's a sidebar with icons for Home, Ads, Audience, and Metrics. The main area shows a breadcrumb path: New Campaign > 1 Ad Set > 1 Ad. The top right has status indicators: In Draft, Review, and three dots. The main form fields include:

- Campaign Name:** New Campaign (highlighted with a pink box).
- Special Ad Categories:** A note about declaring ads related to credit, employment, or housing opportunities, with a "Learn More" link.
- No categories declared:** A dropdown menu.
- Campaign Details:** Set to Auction, with the Campaign Objective set to Brand awareness. There's a "Show More Options" link.
- A/B Test:** A note about testing campaigns against each other.

At the bottom, there are "Close" and "Next" buttons, with a message "All edits saved" between them.

Step 8: Scroll through the special ad categories. You will see four different options.



- **Q4:** What is the purpose of selecting a special ad category, and why might Facebook ask advertisers to do so if they have an ad that falls under one of these four categories?
- **Q5:** Choose two of the four categories, and provide real-world examples of how running an ad within each of them might lead to unintended social impacts.
- **Q6:** For ads that fall under the first three categories listed, some targeting features are disabled, such as “Look-Alike audiences,” which allows the user to target audiences by age, gender, ZIP code, or other demographic identifiers. Why do you think Facebook made this a choice for these three categories specifically?
- **Q7:** In addition to Look-Alike audiences, there also exists a “Special Ad Audience” feature that determines an audience based on similarities in online behavior and activity. Do you think this is a better alternative to a Look-Alike audience from an advertising and/or ethical standpoint? Why or why not?
- **Q8:** Refer to section “Database Ethics: Targeting from the Developer’s Perspective” in the case study. Based on Kant’s discussion of session-based

recommendation vs. traditional identity profiling, what are the tradeoffs of an advertiser deciding to implement one over the other?

Excerpt from the [WSJ, April 10, 2021](#):

"If [Apple](#) is King Kong and [Facebook](#) is Godzilla, mom-and-pop online merchants are worried they're the screaming, scattering citizens who are about to get stomped as these two giants battle it out.

What's at issue is a [seemingly small change](#) to the iPhone and iPad operating system that upends the past decade of the online ad industry, by prompting users to choose whether or not they'd like to be tracked by the apps they use.

Before, even the smallest business could throw as little as a hundred bucks at a tiny ad campaign on Facebook or Instagram, and get detailed and immediate feedback. Now they will have to spend substantially more—thousands of dollars at least—to show their ads to a larger audience, because the targeting will be less precise, says Christian Lovrecich, founder of [PixelFeed Media](#), an e-commerce marketing agency.

Much of this targeting is driven by Facebook's "look-alike audiences" feature, a [complicated algorithm](#) that uses artificial intelligence to generate a pool of people who resemble, in ways that affect how they're likely to spend, an existing pool of customers or prospects provided by a merchant. For example, a merchant that already has a mailing list of customers for its [adult onesies](#) can feed that to Facebook, and Facebook's algorithm will allow them to find yet more fully grown humans who are likely to wear children's pajamas. These could be obvious similarities, like age, and not so obvious, such as having a job in an industry that allows working from home. The more data Facebook can feed this algorithm, the more correlations it can look for.

This situation highlights a fundamental trade-off between two countervailing trends in technology as a whole: consumers' desire for privacy and their desire for experiences tailored just to them..." Read the full story [here](#).

Step 9: Click "Next" to reach the next page, "New Ad Set."

- An ad set is a specific ad you are designing for an ad campaign; therefore, one campaign can run multiple ad sets. Ad sets can target different audiences and be scheduled to appear on feeds at different times.

Step 10: Name your ad set!

Step 11: Click "Learn More" in the "Dynamic Creative" section, and read the article provided.

Ad Set Name
New Ad Set

Dynamic Creative Off

Provide creative elements, such as images and headlines, and we'll automatically generate combinations optimized for your audience. Variations may include different formats or templates based on one or more elements. [Learn More](#)

Budget & Schedule

Budget
Daily Budget \$5.00 USD
Actual amount spent daily may vary.

Schedule
Start Date Apr 30, 2021 11:02 PM Eastern Time
End · Optional Set an end date

Audience Definition
Your audience selection is fairly broad.
Potential Reach: 230,000,000 people

Estimated Daily Results
Reach 2.2K - 6.3K

The accuracy of estimates is based on factors like past campaign data, the budget you entered, market data, targeting criteria and ad placements. Numbers are provided to give you an idea of performance for your budget, but are only estimates and don't guarantee results.

Were these estimates helpful?

About Dynamic Creative

Dynamic creative doesn't work with ads in multiple languages or asset customization or ads with political content.

Dynamic creative takes multiple ad components (such as images, videos, titles, descriptions and CTAs) and then optimizes them to deliver efficient results for each impression served. These help you create personalized creative variations for each person viewing your ad, with performance that scales.

Dynamic creative is a great optimization tool when you're unsure what creative resonates with different audiences. Since you will only be able to see aggregate performance of all delivered variations, we don't recommend dynamic creative as a substitute for split testing. Learn more about ad formats and best practices for split testing your ads.

- Q9: The dynamic creative feature is still a form of targeting, but is less explicitly focused on identifying features such as race or gender. What are some possible drawbacks or limitations to this approach?

Step 12: Within the “Audience” section, select “Create New → Lookalike Audience.”

Audience
Define who you want to see your ads. [Learn More](#)

Create New Audience Use Saved Audience ▾

Custom Audiences Create New ▾

Search existing audiences

Exclude

Locations
Location:
• United States

Age
18 - 65+

Audience Definition
Your audience selection is fairly broad.
Potential Reach: 230,000,000 people

Custom Audience
Reach people who've already interacted with your business.

Lookalike Audience
Reach new people on Facebook who are similar to your most valuable audiences.

The accuracy of estimates is based on factors like past campaign data, the budget you entered, market data, targeting criteria and ad placements. Numbers are provided to give you an idea of performance for your budget, but are only estimates and don't guarantee results.

Step 13: Click on “Create New Source → Custom Audience with LTV.” A custom audience allows Facebook to construct an audience for your ad based on the customer dataset

you provide and your choices about which features to optimize for. This audience will be composed of individuals outside your own customer list.

The screenshot shows the 'Create a Lookalike Audience' interface. Step 1: 'Select Your Lookalike Source' (dropdown menu: 'Create New Source'). Step 2: 'Custom Audience' (description: 'Create an audience of your existing customers or prospects who interacted with your business.') Step 3: 'Custom Audience With LTV' (description: 'Create a lookalike of your most valuable customers by including customer lifetime value (LTV) in your Custom Audience.'), which is highlighted with a pink box. Below is a slider for 'Number of lookalike audiences' set to 1%, with a range from 0% to 10%. A note below says: 'Audience size ranges from 1% to 10% of the combined population of your selected locations. A 1% lookalike consists of the people most similar to your lookalike source. Increasing the percentage creates a bigger, broader audience.' At the bottom are 'Cancel' and 'Create Audience' buttons.

Step 14: Upload the provided .csv as your customer list.

The screenshot shows the 'Add Customer List' interface. Step 1: 'Prepare a List' (radio buttons: 'Map Identifiers', 'Upload Your List', 'Confirmation'). Step 2: 'Download File Template (.csv)' (button). Step 3: 'Choose Your Customer Value Column' (description: 'Select the column in your list that represents customer value. You can get better results if you provide a varied range of customer values.'), with a dropdown menu 'Select value column'. Step 4: 'Name Your Audience' (text input field with placeholder '0/50', 'Add Description' button). A note at the top says: 'Before uploading your list, make sure you have enough identifiers in the correct format. The list needs to be in a CSV or TXT format.'

- **Q10:** What are the ethical implications of businesses being able to target audiences who resemble individuals described in this customer list by the features included?

The key feature in this dataset is the “Customer Value” column. The customer value is a numeric representation of the net profit you predict will be attributable to a given customer over the duration of your relationship with them. The Lookalike Audience feature will target more people who are similar to the individuals with the highest customer values.

- **Q11:** What are three different ways of potentially measuring customer value, and the ethical implications of each?

Step 15: Select the “Customer Value” column and name the customer list to move on to the next page.

The screenshot shows a user interface for creating an audience from a list. On the left, a sidebar lists steps: 'Create Audience From a List', 'Prepare a List' (selected), 'Map Identifiers', 'Upload Your List', and 'Confirmation'. The main area is titled 'Add Customer List' with a note about file format. A download link for a template (.csv) is available. A file named 'example_value_based_audience_file (2).csv' is listed. Below, a section titled 'Choose Your Customer Value Column' asks to select the column representing customer value. A dropdown menu shows 'Select value column' with two options: 'uid,1234567890,1443637309,1234567892,1234567890' and 'value,20.1,1342.8,600,505', with the second one highlighted by a pink rectangle. Under 'Identifiers', there are three options: 'doby,1968,1978,1982,1978', 'age,48,38,33,38', and another 'value' option which is also highlighted by a pink rectangle. At the bottom right are 'Back' and 'Next' buttons.

Step 16: After clicking “Next,” be sure to assign the correct identifiers to each column of the dataset.

Create Audience From a List

Prepare a List

Map Identifiers

Upload Your List

Confirmation

Map Identifiers

Map your columns to identifiers to upload your list. Your data will be hashed before it's uploaded. [Learn More](#)

18 columns are mapped and will be uploaded. Please correct the errors before continuing.

Map Column to Identifier	Formatting Guidelines	Example
value 20.1 1342.8 600 505	<input checked="" type="checkbox"/> Customer Value	We support a numeric value, such as customer lifetime value or predictive lifetime value. 0 0.1 3 20
email elizabetho@fb.com andrewj@fb.com margaretj@fb.com johnrd@fb.com	<input checked="" type="checkbox"/> Email	We accept email addresses in up to three separate columns. Only one email can go in each cell. All universal email formats are... Emily@example.com John@example.com Helena@example.com
email olene@fb.com jamisona@fb.com johnsonm@fb.com doe@fb.com	<input checked="" type="checkbox"/> Email	We accept email addresses in up to three separate columns. Only one email can go in each cell. All universal email formats are... Emily@example.com John@example.com Helena@example.com
email ankeni@fb.com	<input checked="" type="checkbox"/> Email	We accept email addresses in up to three separate columns. Only one email can go in each cell. All universal email formats are... Emily@example.com

Mapped (18) ⚠ Action needed (1)

Back **Import & Create**

Step 17: Upload the list. Facebook is now hashing the data.

Create Audience From a List

Prepare a List

Map Identifiers

Upload Your List

Confirmation

Upload

Upload in Progress

Your data is being hashed. Don't close this window until it's fully uploaded, or it may stop this process. [Learn More](#)

0%

0 rows uploaded

When you upload your customer list in Ads Manager to create a Custom Audience, the information in your list is hashed before it's sent to Facebook. *Hashing* is the application of cryptographic primitives to map data to representative numerical values. Facebook's hash functions are *one-way functions*: you cannot recover the original data from the hashed data.

Facebook uses this hashed information and compares it to the company's own hashed information. Then, Facebook builds your audience by finding the **Facebook**

profiles that match the specified criteria, and creates a Custom Audience from those matches. After your Custom Audience is created, the matched and unmatched hashed information is deleted.

- **Q12:** How does hashing individuals' data and then deleting it potentially preserve (or not preserve) people's privacy? Do you think hashing makes a difference in ameliorating the negative implications of targeting? Why or why not?

Step 18: Complete the process of selecting your lookalike source.

Step 19: Select an audience location based on where you think your ad would be most impactful given your business description.

Step 20: Select an audience size – the larger the percentage, the broader the audience.

- **Q13:** What are the equity implications of selecting a broader or narrower audience?

The screenshot shows a user interface for creating a lookalike audience. At the top, there is a header 'Create a Lookalike Audience' with a close button 'X' and a 'Show Tips' link. Step 1, 'Select Your Lookalike Source', is shown with a dropdown menu labeled 'Select an existing audience or data source' and a 'Create New Source' button. Step 2, 'Select Audience Location', is highlighted with a pink border and contains a search bar 'Search for regions or countries' and a 'Browse' button. Step 3, 'Select Audience Size', is also highlighted with a pink border and includes a dropdown for 'Number of lookalike audiences' set to '1' and a slider for 'Audience size' ranging from 0% to 10%. A note below the slider states: 'Audience size ranges from 1% to 10% of the combined population of your selected locations. A 1% lookalike consists of the people most similar to your lookalike source. Increasing the percentage creates a bigger, broader audience.' At the bottom, there are 'Cancel' and 'Create Audience' buttons.

Step 21: Finish creating your audience and exit the window.

Step 22: Adjust age and gender group.

The screenshot shows a targeting configuration interface. At the top, there's a dropdown menu for 'Locations' set to 'People living in or recently in this location'. Below it is a section for 'United States' with a checked checkbox for 'United States'. There are buttons for 'Include' (with a dropdown arrow), 'Search Locations', and 'Browse'. A link 'Add Locations in Bulk' is visible. A pink rectangular box highlights the 'Age' and 'Gender' sections. Under 'Age', there are two dropdown menus: one for '18' and another for '65+'. Under 'Gender', the option 'All genders' is selected. Below these, the 'Detailed Targeting' section includes a link 'Include people who match ⓘ', a search bar for 'Add demographics, interests or behaviors', a 'Suggestions' button, and a 'Browse' button. An 'Exclude' button is also present. At the bottom, the 'Languages' section is shown with the option 'All languages'.

Locations

People living in or recently in this location

United States

United States

Include ▾

Add Locations in Bulk

Age

18 ▾ 65+ ▾

Gender

All genders

Detailed Targeting

Include people who match ⓘ

Languages

All languages

Step 23: Open “Detailed Targeting.”

Create New Audience Use Saved Audience ▾

Custom Audiences Create New ▾

Search existing audiences

Exclude

Locations

Location:

- United States

Age

18 - 65+

Gender

All genders

Detailed Targeting

Include people who match ⓘ

Add demographics, interests or behaviors Suggestions Browse

Exclude

Languages

All languages

This feature includes and/or excludes certain audiences into tiers. For example, you could add vegetarians to "Include/Exclude," and people who are interested in gardening to "Narrow Audience." Doing so would result in the following setup:

- Include/Exclude: Frequent travelers or vegetarians
- Narrow Audience: People interested in cooking or gardening
- Narrow Further: College grads
- One criterion from each tier must be met for inclusion/exclusion; for example, a vegetarian college graduate who is interested in gardening would be in the audience, but a frequent traveler interested in cooking who isn't a college graduate would not be.

- **Q14:** How do you think the ethics of Detailed Targeting compare to the other targeting methods we've seen so far?

Step 24: Save your ads, but **do not** hit publish!

Done!

Discussion questions:

1. What was your most surprising finding while performing the lab? How did the ad-targeting system compare to what you expected?
2. Do you feel differently about the ethics of targeted advertising depending upon the type of ad being run (e.g., fashion, politics, housing)? If so, how and why?
3. What benefits or drawbacks do you observe to Facebook's advertising model, for Facebook and/or society?
4. Is there a need for the government to intervene? If so, what role should the government play? And if not, why not?
5. What are the responsibilities of employees within an organization that commits ethical violations?

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