Detecting Misinformation in Targeted Health Advertising



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Background & Significance

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Implications

Dignitary Harms

Unwanted disclosure of sensitive information can violate an individual's dignity



Increased Prices

Marketers charge different prices to different individuals for the same product

··· for the same product

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Targeted Advertising

Deceptive advertising can push fraud medical products or "miraculous" therapies



Discrimination

Algorithmic risk scoring discriminates against minority populations



Policy Regulation



• Current Regulation:

- 1996 Health Insurance Portability and Accountability Act
- 2009 Health Information Technology for Economic and Clinical Health Act
- Path to New Regulation:
- Penn-CMU Digital Health Privacy Initiative





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The Penn-CMU Digital Health Privacy Initiative

Addressing privacy and discrimination risks associated with the collection and use of health-related digital data through research, training, and policy.

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Project Overview and Aims

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Long Term Goals

Year

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- Documenting data collection on health related websites, phones/ apps, and location data
 - Investigating algorithmic bias

Year 02

- Determining if biased data and algorithms discriminate against unhealthy individuals and societally disadvantaged groups
 - Identifying gaps in regulation

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Methods



1. Health Ad Domains

4. Double Code



2. Flow Chart

3. Google Form

Domains Health Ad Categorizations Determined for Product and Service Ads

Product

- Biologics
- Cosmetics
- Dietary Supplements
- Drugs
- Medical Devices
- Foods and Beverages
- Radiation-emitting products
- Infant Formula

Service

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- Cancer Screenings
- Abortion Clinic
- Medical Insurance Provider
- Rehab Center
- Unproven stem cell program
- Medical Provider
- Weight loss Program
- Assisted Living Facility







NEED TO LOSE 30 POUNDS? TRY SENSA® FREE!*

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SENSA® is clinically proven to help you lose 30 lbs without dieting or spending all your time working out.** Just sprinkle on your food, eat and lose weight!

GET A GYM BODY WITHOUT GOING TO THE GYM

- NO COUNTING CALORIES
- V NO STIMULANTS
- Y NO PILLS

Doesn't change the taste of your food!



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The tool used to determine if an ad is misinformation based on the criteria from the flow chart

Who is the Coder? *
O Adanna M.
C Kathryn M.
O Saloni S.
Other
Is the ad health-related or non-health related? *
O Health Ad
O Non-Health Ad
1. What is the URL of the website where the ad was found? *
Short answer text
2. What is the URL of the ad source? *
Short answer text

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The tool used to determine if an ad is misinformation based on the criteria from the flow chart

3. What is the name of the product/ service being advertised?*

Short answer text

4. What type of health-related ad is this? *

Product (move onto questions 5)

Service (move onto question 7)

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The tool used to determine if an ad is misinformation based on the criteria from the flow chart 7. For service ads, what service is being advertised?

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Cancer Screenings (move onto question 8)

Abortion Clinic (move onto question 9)

Medical Insurance Provider (move onto question 10)

Rehab Center (move onto question 11)

Unproven stem cell program (move onto question 12)

Medical Provider (move onto question 13)

Weight loss program (move onto question 14)

Other...



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Google Form

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The tool used to determine if an ad is misinformation based on the criteria from the flow chart 14. For the weight loss program ad, are any of the following terms found from the FTC list?

1. lose weight without dieting or exercising

2. You don't have to watch what you eat to lose weight

3. If you use this product you'll lose weight permanently

4. To lose weight, all you have to do is take this pill

5. You can lose 30 pounds in 30 days

6. This product works for everyone

7. Lose weight with a patch or cream

8. "free trial" offers that ask for billing

None of the above (move onto question 16)

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The tool used to determine if an ad is misinformation based on the criteria from the flow chart 16. For products not found in a FDA fraud database/ services not detected as fraud thus far, does the ad mention any of the common terms for health scam released by the FTC?

Glucose metabolism

Thermogenesis

Insulin receptor

Nobel Prize winning technology

Live to 100

Scientific breakthrough

Secret ingredient

Exclusive product

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The tool used to determine if an ad is misinformation based on the criteria from the flow chart



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17. Is the ad categorized as misinformation?*

Yes, based on one or more of the above criteria

Yes, appears to be misifnormation but not detected by the tool

No, this is a legit ad

Other...

Double Code

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The responses from the google form are populated onto an excel sheet, where the different coder responses are compared to come to a conclusion on the ad's categorization

A1	- fx Timestamp								
	А	В	С	D	E	F	G		
1	Timestamp 	Who is the coder? 😇	1. What is the URL o $=$	2. What is the URL o $=$	3. What is the name $=$	4. What type of heali .	5. What category do		
2	7/28/2022 12:21:56	Saloni S.	https://www.google.com	http://vsingl2t.beget.tech/	Skinny Pill	Product (move onto ques	Dietary Supplements		
3	7/29/2022 19:57:08		https://google.com	http://vsingl2t.beget.tech/	F1 Keto	Product (move onto ques	Dietary Supplements		
4	7/27/2022 23:02:02	Saloni S.	https://www.usatoday.com	https://arthritis-local.life/?	arthritis treatment	Product (move onto ques	Drugs		
5	7/29/2022 19:37:27		https://www.usatoday.com	https://arthritis-local.life/?	not sure	Product (move onto ques	tions 5)		
6	7/27/2022 22:38:29	Saloni S.	https://www.nytimes.com	https://articles.compariso	Comparisons.org	Service (move onto ques	tion 7)		
7	7/28/2022 9:48:21		https://www.nytimes.com	https://articles.compariso	Comparisons.org	Service (move onto ques	tion 7)		
8	7/27/2022 22:57:57	Saloni S.	https://www.usnews.com	https://ehealthylifestyleda	Blood Sugar Pill- Striction	Product (move onto ques	Dietary Supplements		
9	7/29/2022 19:32:41		https://www.usnews.com	https://ehealthylifestyleda	StrictionD	Product (move onto ques	Dietary Supplements		



Preliminary Findings and Next Steps

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1%

Ads detected as fraud using the current FDA fraud product database

30% Ads detected as having characteristics of misinformation based off of the criteria: FTC common health term scams

50%

Overall health-related ads detected as having aspects of misinformation based on the new tool

Lessons Learned

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Lessons Learned

Learned how digital tracking shapes healthcare

Gained experience in qualitative data analysis in digital privacy

Created an experimental design for detecting misinformation in advertising



Thanks!

I would like to thank my mentors Ari and Matt, Joanne, and my fellow SUMR scholars for allowing me to grow in my research interests and for a great summer!



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The tool used to determine if an ad is misinformation based on the criteria from the flow chart

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Health Ad Fraud Method					
Note: any answer indicating health fraud should be listed as "yes, fraud detected based on above criteria" for question 16					
salonIs1231@gmail.com (not shared) Switch account Required					
Who is the Coder? *					
O Adanna M.					
C Kathryn M.					
Saloni S.					
O Other:					
Is the ad health-related or non-health related? *					
Health Ad					
O Non-Health Ad					
1. What is the URL of the website where the ad was found? *					
ww.cnn.com					