Development and Validation of a Search Filter in PubMed MEDLINE for Immigrant Health Disparities

#### INTRODUCTION

As part of a larger series focusing on assessing or creating filters for health disparities, this Galter Health Sciences Library & Learning Center project focused on immigrant health disparities.

We identified a need for a comprehensive filter to retrieve literature on health disparities related to immigration.



## OBJECTIVE

Word cloud generated with Tagxedo.com.

Our aim was to design and validate a search filter for PubMed MEDLINE, beginning with establishment of a development set and ending with the validation set of articles (the gold standard) used to test the sensitivity, specificity, precision, and accuracy of the immigrant health disparities filter created.

Keywords for future consideration, identified from expert feedback.

Health disparities is a complex topic with many domains. Our current focus is immigration and language proficiency.

# **Domains**

- Immigration
- Language proficiency
- Disability
- Race & ethnicity
- Sex or gender
- Sexual orientation
- Geography
- Income

Which domains would you include?

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#### **METHODS**

The flow-chart below outlines the 5-step method we followed to develop a preliminary filter.

# DEFINE

Define "immigrant health" to inform inclusion/exclusion criteria.

We asked experts on immigrant health disparities to define the topic and identify relevant terms.

We applied expert feedback to the creation of our inclusion/exclusion criteria.

## 2. IDENTIFY

Identify records for a development set.

We utilized terms for "preventive" medicine" to locate a random set of citations to be screened for development set inclusion.

We screened 3523 records in Rayyan and identified 86 records for inclusion.

## 3. GENERATE

Generate a search strategy to capture the development set.

We each scanned accepted title/abstracts | We applied keyword ranking to generate for relevant keywords. We used PubReminer to identify applicable MeSH terminology.

a search filter of keywords and MeSH terminology.

## 4. ESTABLISH

Establish a set of records to validate the search strategy.

We performed title/abstract screening of all 1871 PubMed results from the Journal of Immigrant and Minority Health.

We applied our inclusion/exclusion criteria and selected a total of 1056 citations for inclusion in our final validation set.

# 5. TEST

Test the performance of the validation set against our developed search strategy.

We assessed the performance of our development set against our validation set to determine the sensitivity, precision, specificity, and accuracy of the filter.

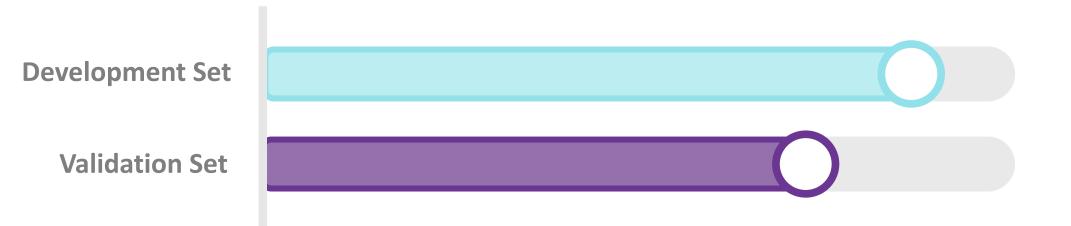
#### RESULTS

The table below reports the performance measures for the Immigrant Health Disparities filter.

#### Validation Set

References Retrieved								
Total	Correct Inclusion	Incorrect Inclusion	Correct Exclusion	Incorrect Exclusion	Sensitivity (%)	Specificity (%)	Accuracy (%)	Precision (%)
1871	1028	391	424	28	97	52	78	72

# Accuracy Measurement





#### Development set

The search string to retrieve the development set identified 80 of 86 records. Six records from the development set were deemed as "acceptable losses" resulting search strategy produced by the development set having an accuracy of 93%.

**NNR** 1.38

#### Number Needed to Read (NNR)

The number of records that need to be read in order to identify a relevant result. This assesses the filter in the context of the resulting workload.

## DISCUSSION

## Author Responsibility

"Acceptable loss" records met inclusion criteria, but lacked appropriate terms. A degree of responsibility lies with authors to increase discoverability by using targeted terminology in the title and abstract.

## Considerations

- Relevant terminology (e.g. "displaced persons") not captured by small development set
- Geographic and language-specific terms as qualifiers
- Limited phrase searching and lack of proximity
  Explore geographic and operators in PubMed
- Focused on populations in the United States

#### Conclusions

The filter requires further development:

- Add terms using expert opinion and topic research
- language qualifiers

Improve specificity

## REFERENCES

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# FILTER

"Emigrants and Immigrants" [mesh] OR "Emigration and Immigration" [mesh] OR "Transients and Migrants" [mesh] OR "Foreign Medical Graduates" [mesh] OR "Language" [mesh] OR "Multilingualism" [mesh] OR "Acculturation" [mesh] OR antiimmigra\* [tiab] OR emigrat\* [tiab] OR foreign born [tiab] OR foreign birth [tiab] OR home countr\*[tiab] OR migrant\*[tiab] OR migrat\*[tiab] OR non citizen\*[tiab] OR permanent resident\*[tiab] OR Refugee\*[tiab] OR language barrier\*[tiab] OR language related barrier\*[tiab] OR "English as a second language"[tiab] OR English language proficiency[tiab] OR English proficiency[tiab] OR (fluent[tiab] AND in English[tiab]) OR (language\*[tiab] AND (mexico[tiab] OR hispanic\*[tiab] OR spanish[tiab])) OR linguistic factors[tiab] OR parent language\*[tiab] OR primary language\*[tiab] OR Spanish speak\*[tiab] OR acculturat\*[tiab] OR (born in[tiab] AND (China[tiab] OR Southeast asia[tiab] OR Hong kong[tiab]))