

Market Segmentation of Physicians Treating Crohn's Disease

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Executive Summary

1. Crohn's Disease and Treatment
2. Variables Influencing Prescribing Habits
3. Data and Methods for Segmentation
4. Physician Segments and Personas
5. Limitations and Future Direction



Introduction

Background

- Crohn's Disease (CD) : systemic inflammatory autoimmune disease
- Treatment guidelines: 2 first-line anti-TNF biologics, 2 second-line biologics

Objective

- Identify physician personas related to prescription of CD medications

Table 1. Biologic therapies for CD

Ranking	Year(s)	Medication
1	2015-2021	Humira (Adalimumab)
4	2015-2019	Stelara (Ustekinumab)
10	2015-2019	Remicade (Infliximab)
N/A	N/A	Entyvio (Vedolizumab)

Source: (IQVIA, 2020)

<https://www.iqvia.com/insights/the-iqvia-institute/reports/medicine-spending-and-affordability-in-the-us>



Variables of Interest

Literature

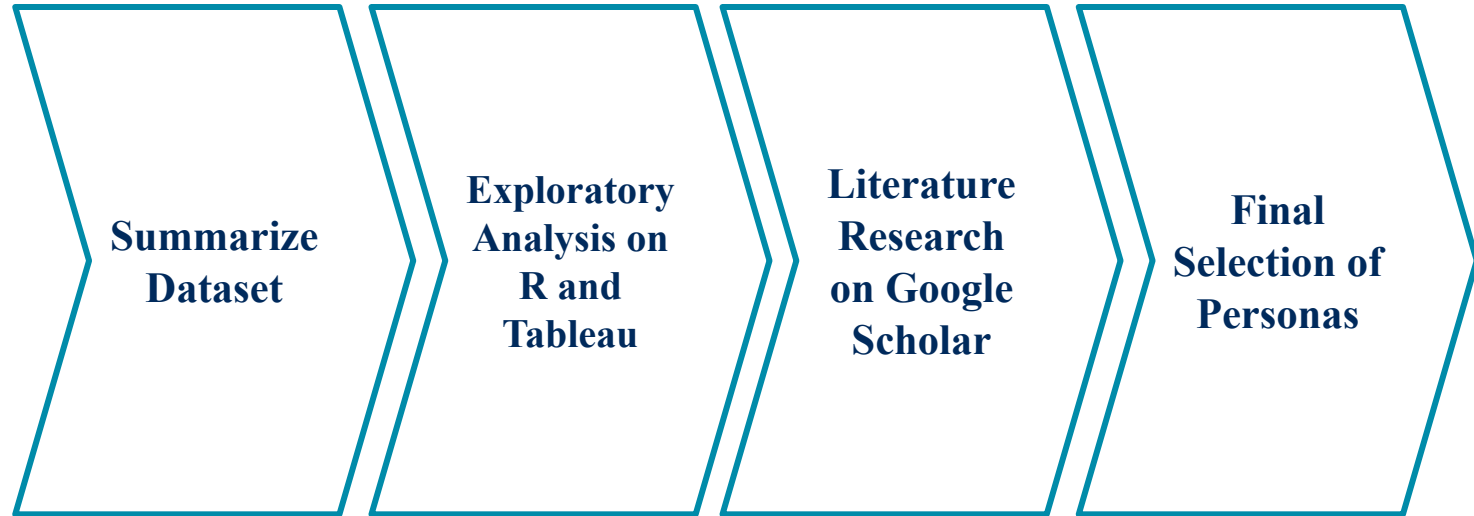
- Personal and professional attributes, interests and incentives
- Patient's disease state and medication tolerance

IQVIA Dataset

- Gender
- Office type
- Graduation year
- Age of patients
- Publishing status



Methods for Segmentation



Non-publishing, Female, Pediatric Gastroenterologists

Goal of this Segmentation

- Investigate proportional prescribing habits for first line medications

Segmenting Variables for this Plot

- Age of patients
- Active publisher since 2019

Insight

- Non-publishing physicians who treat youth are the only group to prescribe more adalimumab than infliximab

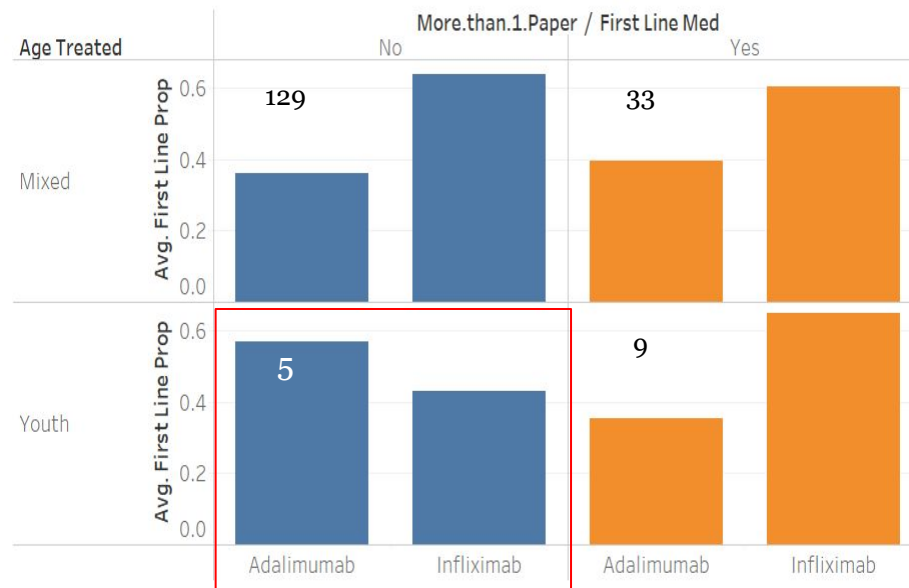


Figure 1. First line prescription proportions by age of patient and physician publishing status

Segmenting Variables for this Plot

- Physician age
- Physician gender

Insight

- Older female physicians appear to prescribe slightly more adalimumab than their younger colleagues

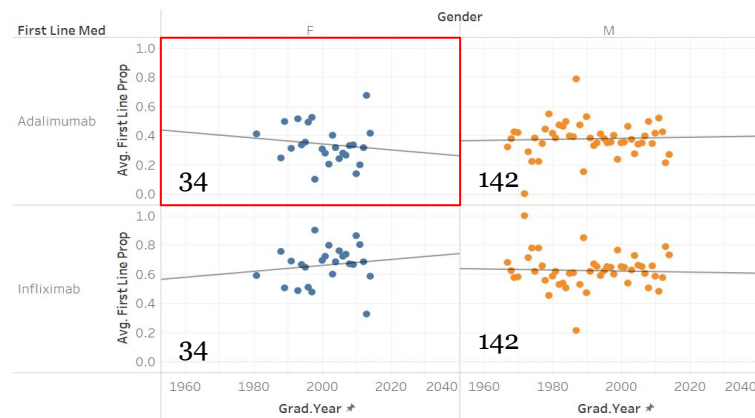


Figure 2. First line prescription proportions by physician graduation year and gender



Kelly

- Older, female, pediatric gastroenterologist
- Usually sticks to therapies she has experience with and trusts
- Cares less about conducting research and more about providing reliable care

Young, Female Physicians in Offices

Goal of this Segmentation

- Investigate proportional prescribing habits for second line medications

Segmenting Variables for this Plot

- Physician gender
- Physician office type

Insight

- Female physicians working in offices are the only group to prescribe more vedolizumab than ustekinumab

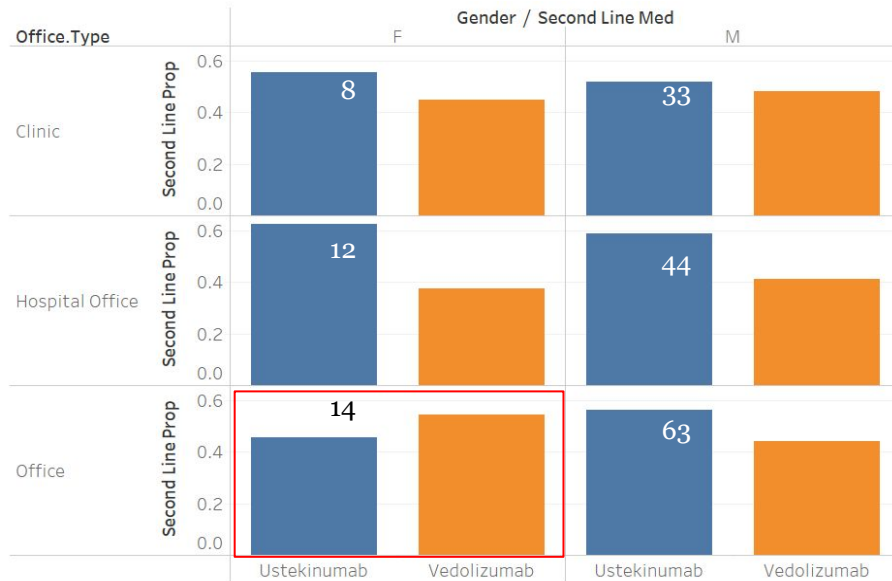


Figure 3. Second line prescription proportions by physician office type and gender

Segmenting Variables for this Plot

- Physician age
- Physician gender

Insight

- Younger female physicians appear to prescribe more vedolizumab

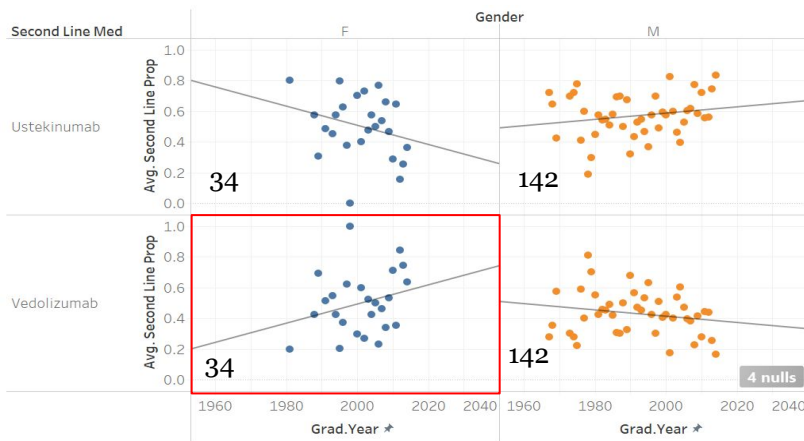


Figure 4. Second line prescription proportions by physician graduation year and gender



Cathy

- Younger, female gastroenterologist working in an office
- Office located in an area with a high prevalence of disease in the local population
- Many of her patients have comorbidities in addition to their CD

Younger, Pediatricians and Other Youth Doctors

Goal of this Segmentation

- Investigate proportional prescribing habits for first line therapies in youth patients

Segmenting Variables for this Plot

- Patient age group
- Physician graduation year

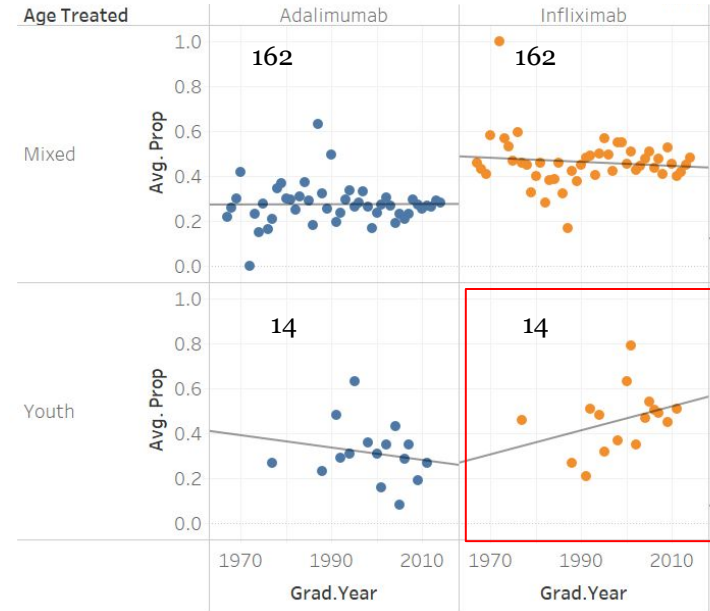


Figure 5. First line prescription proportions by physician graduation year and age of patient treated

Segmenting Variables for this Plot

- Patient age group
- Physician graduation year

Insight

- Younger doctors working with youth are more likely to prescribe Infliximab

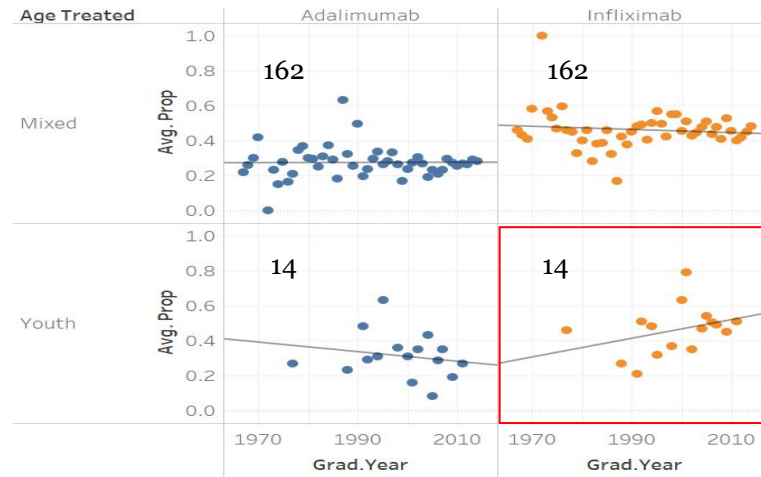


Figure 5. First line prescription proportions by physician graduation year and age of patient treated



Polly

- Younger, female family doctor working in a busy teaching hospital
- Office serves a significantly larger proportion of youth versus other practices
- Many of her younger youth patients experience fear from needles
- Tends to prescribe more Infliximab due to its less frequent administration

Limitations

- Restricted largely to South-Eastern Ontario
- Underrepresentation of French-speaking physicians
- Physician interests seems to have misleading reporting patterns
- Lack of transparency on personal information and incentives influencing physicians

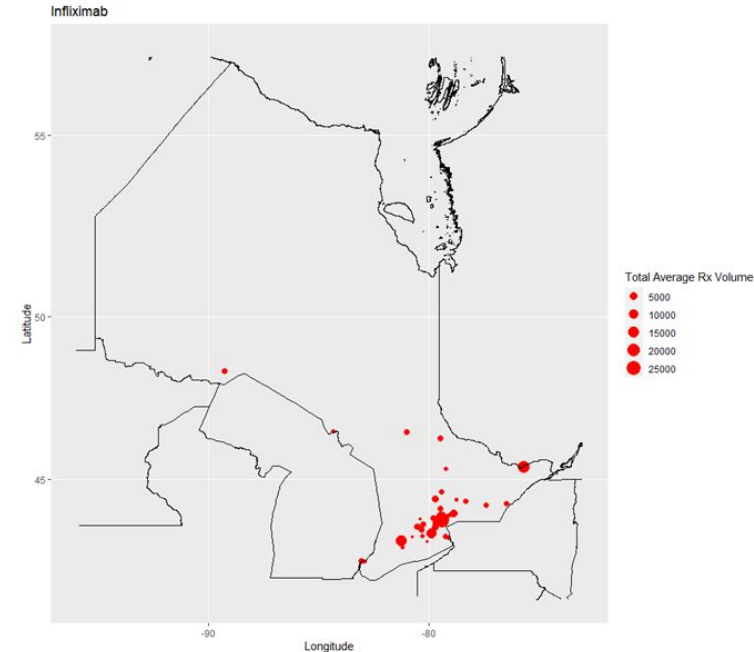


Figure 6. Total number of Infiximab prescriptions by locations in Ontario

Summary

Kelly

Older, non-publishing pediatric gastroenterologist; prefers prescribing Adalimumab over Infliximab.



Polly

Younger, youth focused physician working in a teaching hospital; oftentimes prescribes Infliximab to lower the number of visits for children.

Cathy

Younger, specialized physician working in an office; sometimes is asked to prescribe Vedolizumab due to comorbidities.



Thank You
Are there any questions?

End of Slideshow



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Supplementary Slides

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Description of Data

Table 2. Summary table of categorical variables

Variable	Count (percent)
Gender	
Male	220 (72.61%)
Female	83 (27.39%)
Office Type	
Hospital/Office	104 (34.32%)
Office	120 (39.60%)
Clinic	76 (25.08%)
Age Treated	
Youth	24 (7.92%)
Mixed	279 (92.10%)
Publishing status	
2+ since 2019	44 (25.00%)
<2 since 2019	132 (75.00%)



All Medication Prescribing Stats for All Physicians

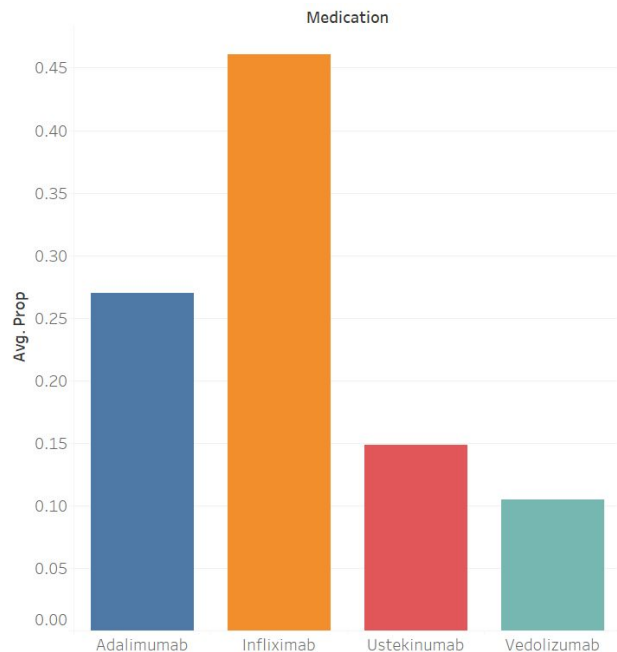


Figure 7: Prescription proportion across all medications for all physicians

Table 3. Total prescription volume

	Total Prescription Volume
Adalimumab	82, 901
Infliximab	138, 063
Ustekinumab	57, 572
Vedolizumab	33, 852

Segment 1: Total Prescription Volume of Youth Doctors Who Do Not Publish

Table 4. Average prescription volume of segment 1

	Average Prescription Volume / Physician
Adalimumab	277.60
Infliximab	455.65
Ustekinumab	190.01
Vedolizumab	111.72

Table 5. Total prescription volume of non-publishing physicians who treat youth

	Total Prescription Volume
Adalimumab	365
Infliximab	222
Ustekinumab	22
Vedolizumab	15

Segment 2: Prescription Volume of Females Working in Offices

Table 6. Total prescription volume of female physicians working in office

	Total Prescription Volume
Adalimumab	3375
Infliximab	5729
Ustekinumab	1739
Vedolizumab	1467

