

Analyzing a Tabloid Headline with Real-World Data: A Summer Intern’s Investigation

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Background

During the second week of my summer internship at the Observational Health Data Sciences and Informatics (OHDSI) Center at the Roux Institute, I stumbled across a news article about the success of popular weight-loss drugs. The recent development of weight-management drugs, such as Ozempic, Mounjaro, Wegovy and Saxenda, has been life-changing to people struggling with obesity.^{1,2} Weight-loss has long been stigmatized, and made out to be a “mental game”.³ The development and increase in popularity of these drugs is a major breakthrough in helping these at-risk communities. While reading the article, I wondered what information I could gain from looking at this question in a real-world data set. I am not a formally trained epidemiologist or biostatistician. However, I now have access to the OHDSI Lab at Northeastern’s Roux Institute and have OHDSI open-source analytical tools at my fingertips. What can I learn about this weight-loss issue in the data I have access to?

Methods

The analysis utilized a local instance of ATLAS⁴, alongside a licensed copy of a large US administrative claims database (IQVIA PharMetrics Plus for Academics) mapped to the Observational Medical Outcomes Partnership Common Data Model (OMOP CDM). To begin, I used ATHENA⁵ (Automated Terminology Harmonization, Extraction and Normalization for Analytics) to look up terms that map to the brand names “Wegovy and Saxenda.” From there, I created a concept set for Wegovy and Saxenda which are approved for weight loss, without an indication of a type II diabetes diagnosis. I then looked up terms that map to the brand names ‘Ozempic and Mounjaro’ which are approved for diabetes but also cause weight loss.

Figure 1. Sample Concept Set: ‘Ozempic and Mounjaro’

Concept ID	Concept Code	Concept Name	Domain	Standard Concept Caption	Exclude	Descendants	Mapped
597626	47ab0499-a914-4b28-8649-e7a7a6e912b	tirzepatide 5mg/5mL / 10mg/5mL / 15mg/5mL / 2.5mg/5mL / 7.5mg/5mL / 12.5mg/5mL SUBCUTANEOUS INJECTION, SOLUTION [Inougaro]	Drug	Classification	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
597626	47ab0499-a914-4b28-8649-e7a7a6e912b	tirzepatide 5mg/5mL / 10mg/5mL / 15mg/5mL / 2.5mg/5mL / 7.5mg/5mL / 12.5mg/5mL SUBCUTANEOUS INJECTION, SOLUTION [Inougaro]	Drug	Classification	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
37003016	2398844	semaglutide 1.34 MG/ML Pen Injector [Ozempic]	Drug	Standard	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
793151	1991310	Ozempic Injectable Product	Drug	Classification	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
1992810	9794d94-0597-48ea-851c-06999a6d166	OZEMPIC - semaglutide injection, solution	Drug	Classification	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
36475274	ndec4f62-6858-4c99-91d4-531950a2a79	OZEMPIC - semaglutide injection, solution	Drug	Classification	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
597215	d2d77a5d-a0d7-4228-995f-cf7a3558c0d	MOUNJARO - tirzepatide injection, solution	Drug	Classification	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
597215	d2d77a5d-a0d7-4228-995f-cf7a3558c0d	MOUNJARO - tirzepatide injection, solution	Drug	Classification	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
597215	d2d77a5d-a0d7-4228-995f-cf7a3558c0d	MOUNJARO - tirzepatide injection, solution	Drug	Classification	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
37003617	2398842	3 ML semaglutide 1.34 MG/ML Pen Injector [Ozempic]	Drug	Standard	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
793154	1991317	1 MG Dose 1.5 ML semaglutide 1.34 MG/ML Pen Injector [Ozempic]	Drug	Standard	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
600396	00002150880	0.5 ML tirzepatide 5 MG/ML Auto-Injector [Mounjaro]	Drug	Non-Standard	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
793152	1991311	0.25 MG, 0.5 MG Dose 1.5 ML semaglutide 1.34 MG/ML Pen Injector [Ozempic]	Drug	Standard	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

A skeleton cohort definition was created looking at persons with a diagnosis of overweight and obesity and restricted to having at least 1 drug exposure of 'Ozempic and Mounjaro' for the first time in the person's history, starting between 0 days before and all days after cohort entry start date and with continuous observation of 365 days. Additional inclusion criteria of no history of type II diabetes and being at least 18+ years of age.

A second skeleton cohort definition was created looking at persons with a diagnosis of overweight and obesity and restricted to having at least 1 drug exposure of 'Wegovy and Saxenda' for the first time in the person's history, starting between 0 days before and all days after cohort entry start date and with continuous observation of 365 days. Additional inclusion criteria of no history of type II diabetes and being at least 18+ years of age.

Additional analysis will be performed using the ATLAS Incidence Rate and Characterization template to explore patterns of comorbidities, co-prescriptions, and healthcare usage within these target populations.

Results

A total of 2,900 persons met the cohort definition for 'Users of Ozempic and Mounjaro' and 3,193 persons met the cohort definition for 'Users of Wegovy and Saxenda (weight loss drugs)' in the PharMetrics Plus OMOP database I had access to. Figures 2 and 3 show the ATLAS⁴ generation screens for these cohorts of interest in my environment.

Figure 2. Cohort A – Users of Ozempic or Mounjaro

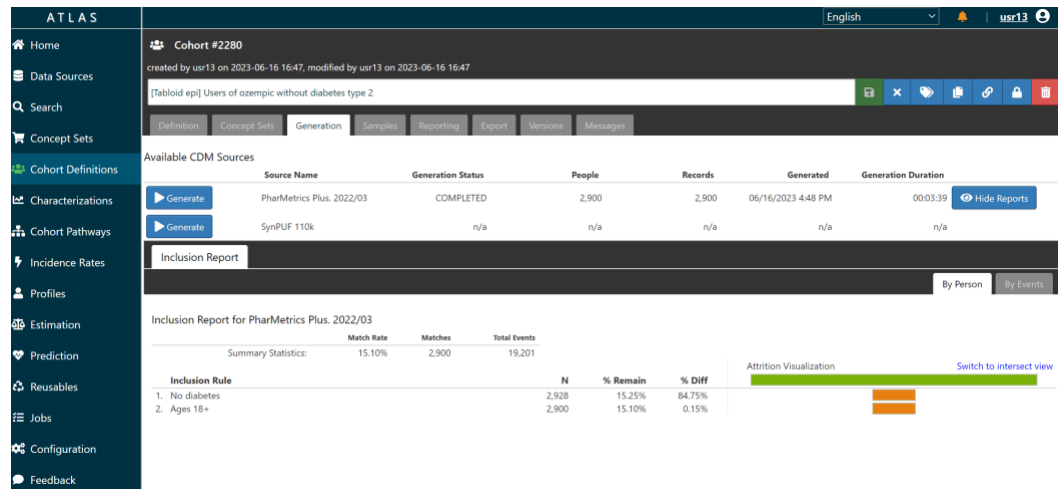
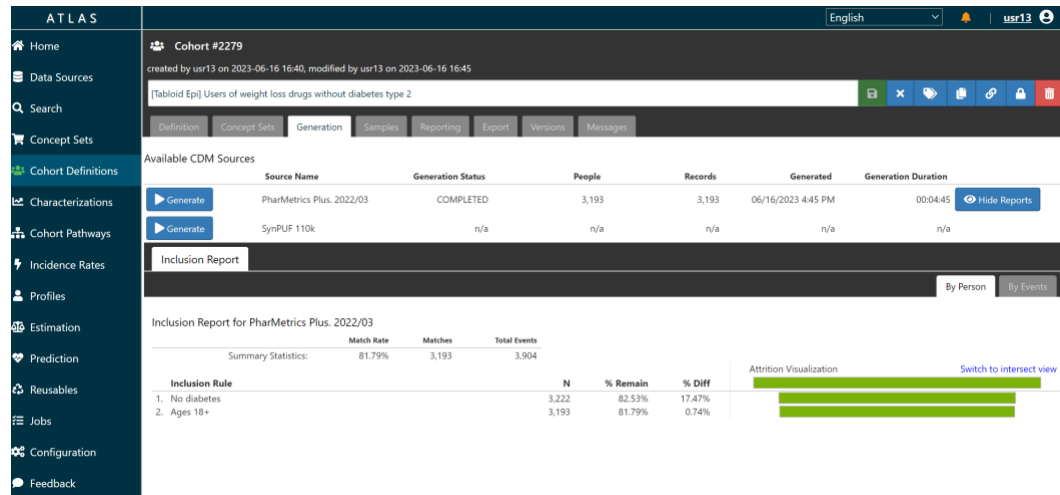


Figure 3. Cohort B – Users of Wegovy or Saxenda



Conclusion

As a newcomer to the OHDSI Community, having access to open-source tools like ATLAS⁴ made it possible to quickly interrogate a headline news story about drug exposures in my own real-world data set. The ability to quickly look up terms in the OMOP Standardized Vocabularies and create cohort definitions expedited a rapid characterization exercise on this target population. With misinformation on the rise, it is invaluable to have a toolkit to easily look up real incidence and prevalence rates of drug utilization in a US large health insurance claims database. There are many ways to characterize populations who receive these drugs of interest. Future analyses will include the opportunity to look at demographics, common comorbidities, other co-prescriptions, and healthcare utilization patterns within this target population.

References

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