Income and Utilization of GLP-1 RAs: A Role for Patient Wage in Type 2 Diabetes Management

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Study Summary

Study Question: How does annual income influence choice in GLP-1 RA therapy for patients with T2D?

Study Design:

Case Finding: 1 Jan 2018 to 31 Oct 2023
12-month Post-period
GLP-1 RA Initiation
Analysis by annual wage groups

Study Results:

Mean and Median Wage by Index Medication

	Mean Wage	Median Wage
Bydureon	$73,817	$62,865
Byetta	$83,810	$67,756
Mounjaro	$103,442	$81,794
Ozempic	$92,237	$74,152
Rybelsus	$90,005	$74,901
Trulicity	$80,757	$68,097
Victoza	$78,297	$67,000

Conclusion: There were differences in GLP-1 RA utilization across the various wage groups with higher wage individuals more likely to index on newer agents and exhibit increased adherence and persistence to the index GLP-1 RA over the 12-month post-period.

Background

- Globally, nearly 400 million patients currently have type 2 diabetes (T2D) and estimates indicate that nearly 600 million people could have T2D by 2035.[1]
- Treatment for T2D involves diet and lifestyle changes along with pharmacologic intervention.
  - There are a wide variety of therapies for T2D including oral anti-diabetic agents, injectable anti-diabetic agents, and insulin.
  - Despite the availability of various pharmaceuticals for T2D, lifestyle alterations, including weight reduction for overweight or obese patients, remain an important part of disease management.[1]
- Social determinants of health (SDoH) can influence diabetes risk and management.[2]
  - In the US, minorities and low-income individuals are at higher risk for developing diabetes.
  - Access to healthcare can also influence disease management and disease progression.
- Individual choice in treatment is driven by multiple factors including disease presentation, prior therapy, and medication access.[3-5]
  - Within the United States, insurance coverage status, medication formulary, and patient wage are all factors that influence the cost and affordability of specific medications.
- Within the past few years there has been renewed interest in the glucagon-like peptide 1 receptor agonist class (GLP-1 RAs) due to the approval of new therapies shown to both improve glycemic control and help patients lose weight; however, the cost of therapy has limited access to these medications for some individuals.[6]

Objective

- This study investigated the correlation between patient wage and medication choice, adherence, and persistence among patients with T2D newly initiating GLP-1 RAs

Methods

Data Sources

- Merative™ MarketScan® Commercial and Medicare Databases from January 1, 2017 through October 31, 2023
  - The MarketScan administrative claims databases contain data on the full healthcare experience (inpatient, outpatient, and outpatient pharmacy) and associated costs for individuals with employer sponsored commercial or Medicare insurance in the United States
  - Patient level annual wage data, as reported by employers, is available for a subset of employees in the MarketScan Databases

Study Design

- The study sample was composed of patients diagnosed with T2D newly initiating therapy with a GLP-1 RA indicated for T2D (Bydureon, Byetta, Mounjaro, Ozempic, Rybelsus, Trulicity, Victoza) on or after January 1, 2018 for whom annual wage data was available.
  - The first GLP-1 RA claim served as the index date and patients were required to have ≥12 months of continuous eligibility prior to and following the index date.
    - Rybelsus and Mounjaro were not available until 2019 and 2022, respectively.
  - Patients were required to have ≥2 claims with a diagnosis for T2D in the pre-period with ≥1 of those claims occurring in the first 6 months of the pre-period.
  - As GLP-1 RAs are usually not used as first line agents in T2D, patients were also required to have ≥1 claim for a non-GLP-1 RA or insulin in the pre-period to help ensure patients were receiving GLP-1 RAs for T2D.
  - Individuals with claims for ≥1 GLP-1RA medication on index or claims for GLP-1 RAs in the pre-period were excluded.
- Study outcomes included patient demographics assessed on the index date and GLP-1 RA utilization over the 12-month post-period. Utilization metrics reported included:
  - Specific GLP-1 RA initiated at index
  - Medication possession ratio of the index GLP-1 RA
  - Persistence to index GLP-1 RA
  - Patient out-of-pocket (OOP) costs for a 30-day GLP-1RA supply
- Outcomes were reported for the full eligible study population and annual wage-based subgroups defined by the annual wage for each patient.

Results

Study Sample and Patient Characteristics

- The eligible study sample included 18,671 patients (Table 1).
- Mean ±SD annual wage was $85,559 ±$184,120.
  - Just over 50% of patients made ≥$70,000 annually (Figure 1).
- Mean ±SD age was 52.8 ±8.6 years at the time of GLP-1 RA initiation.
  - Age was largely similar across the mean wage groups, ranging from 51.1 ±10.2 years in the $30,000 to <$50,000 subgroup to 54.9 ±6.8 years in the $200,000 subgroup.
- Within the overall eligible population, 61.3% of patients were male.
  - There were notable differences in sex observed across wage subgroups, with increasing proportions of men in higher wage groups (Figure 2).

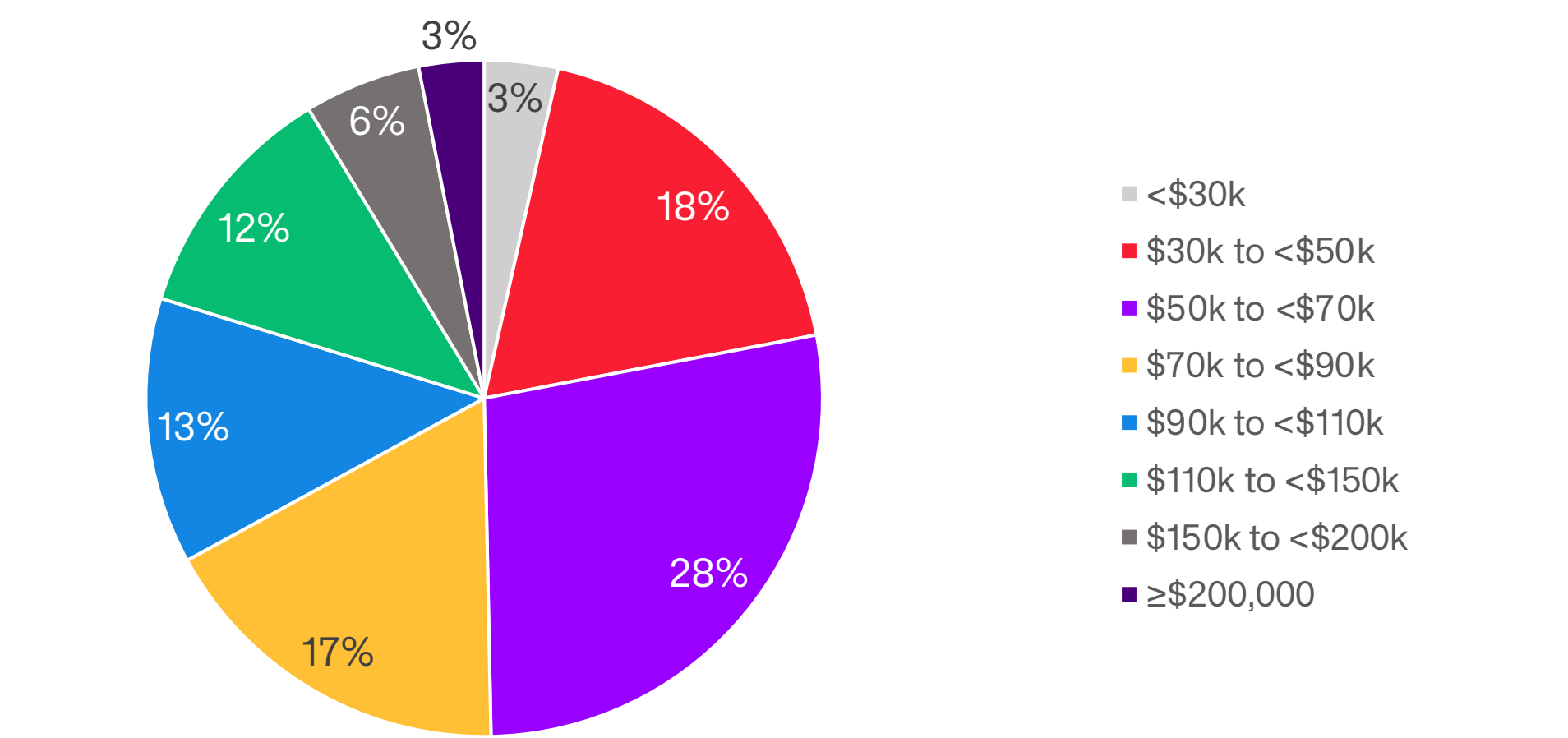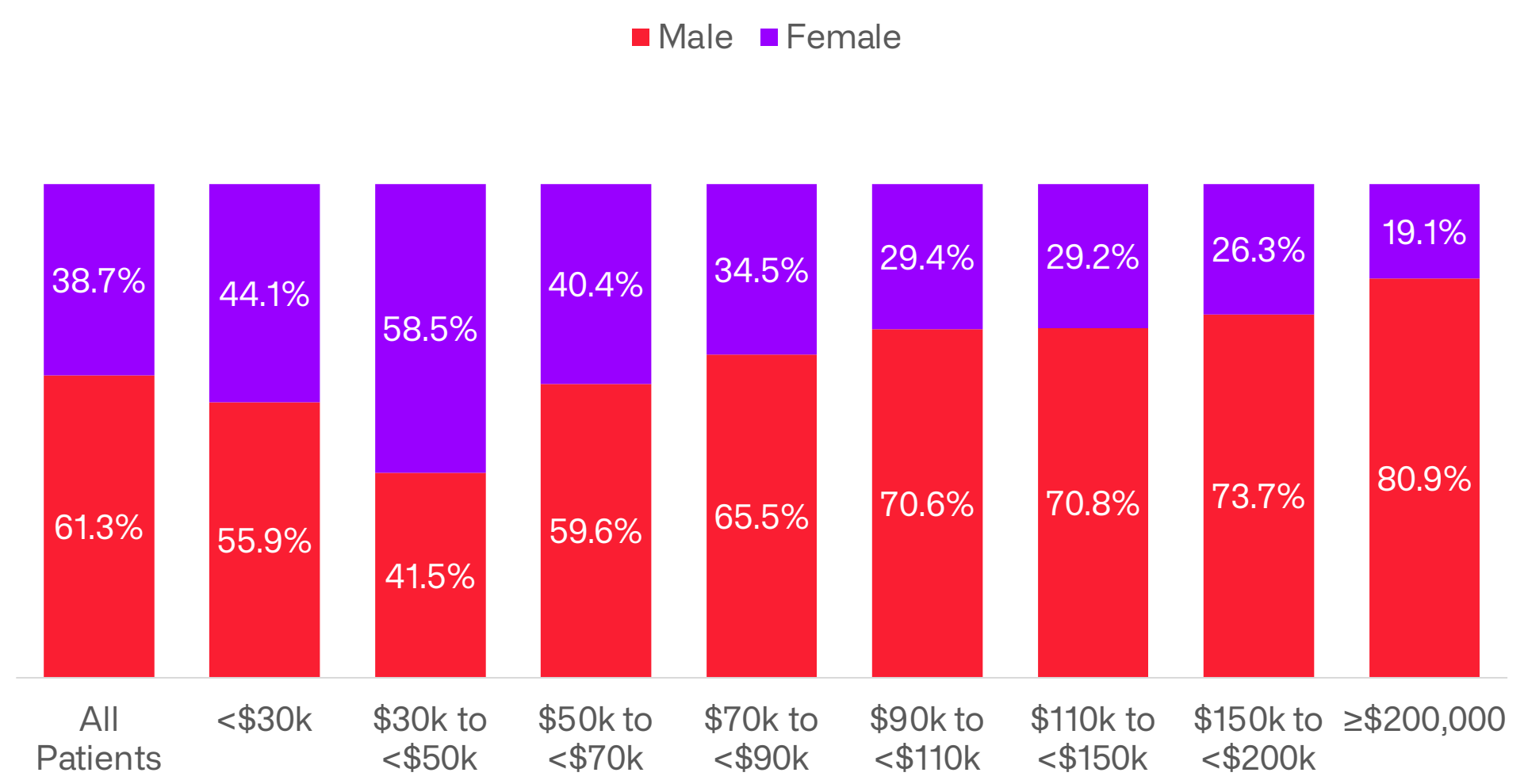Figure 1. Annual Mean Wage Groups

- <$30k: 3%
- $30k to <$50k: 18%
- $50k to <$70k: 28%
- $70k to <$90k: 17%
- $90k to <$110k: 13%
- $110k to <$150k: 12%
- $150k to <$200k: 6%
- ≥$200,000: 3%

Medication Characteristics

- Trulicity (40.2%), Ozempic (35.7%), and Rybelsus (10.7%) were the most common index agents (Figure 3A).
  - Fewer than 1% of patients indexed on Mounjaro, likely due to its recent approval in relation to the end of data; even fewer patients indexed on Byetta.
- Differences in GLP-1 RA medication use were also observed across wage groups (Figure 3B).
  - Among the three most used GLP-1 RAs, use of Trulicity decreased with increasing wage, while use of Ozempic and Rybelsus increased.
  - Slight decreases in Bydureon and Victoza utilization were also observed with increased wage.
- On average, patients paid $1.81 ±$2.65 OOP for a 30-day supply of their GLP-1 RA therapy
  - OOP costs for a 30-day supply ranged from $1.41 ±$1.63 for Victoza to $3.47 ±$5.62 for Mounjaro.

Figure 3. GLP-1 RA Medication Use

A. Index GLP-1 RA

- Trulicity: 40.2%
- Ozempic: 35.7%
- Rybelsus: 10.7%
- Victoza: 8.0%
- Bydureon: 4.2%
- Mounjaro: 0.8%
- Byetta: 0.3%

All Patients

B. Medication Use by Mean Wage

GLP-1 RA Adherence and Persistence

- Overall, 57.1% of patients were adherent to their GLP-1 RA over the 12-month post-period; mean ±SD medication possession ratio (MPR) was 0.72 ±0.33.
  - There was a slight trend towards increasing adherence with higher wage from the $30k to <$50k to the ≥$200k groups (Figure 4A).
  - Within wage groups MPR ranged from 0.66 ±0.34 in the $30k to <$50k group to 0.80 ±0.30 in the ≥$200k group.
    - Adherence for the <$30k group (0.69 ±0.34) was between that of the $30 to <$50k and $50k to <$70k groups.
- Similar trends were observed for the proportion of patients persistent at 12-months, with increasing proportions of persistent patients with increasing annual wage (Figure 4B).
  - Patients in the $30k to <$50k group were persistent for 237 ±138 days while patients in the ≥$200k group were persistent for 288 ±123 days.
    - As with adherence, persistence in the <$30k group (247 ±138) was between that of the $30 to <$50k and $50k to <$70k groups.
- Although mean OOP costs for a 30-day supply of GLP-1 RAs was highest among patients with an annual wage ≥$200k, 30-day supply OOP costs only ranged from $1.51 ±$2.31 in the $50k to <$70k group to $2.76 ±$4.81 in the ≥$200k group.

Figure 4. Adherence and Persistence to GLP-1 RAs

A. Percentage of Patients with MPR ≥0.80

Group	%
All Patients	57.1%
<$30k	52.1%
$30k to <$50k	48.0%
$50k to <$70k	54.6%
$70k to <$90k	60.1%
$90k to <$110k	60.7%
$110k to <$150k	63.4%
$150k to <$200k	66.3%
≥$200,000	69.0%

B. Percentage of Patients Persistent at 12 Months

Group	%
All Patients	54.7%
<$30k	50.8%
$30k to <$50k	45.6%
$50k to <$70k	52.7%
$70k to <$90k	57.8%
$90k to <$110k	58.2%
$110k to <$150k	59.7%
$150k to <$200k	62.9%
≥$200,000	65.4%

Table 1. Study Attrition

CRITERIA	N
Diagnosis of T2D with ≥1 fill for a GLP-1 RA (first GLP-1 RA claim serves as index)	685,191
Claim for a single GLP-1 RA on index	684,961
Continuous eligibility for ≥12 months prior to index	326,155
≥2 claims with a diagnosis of T2D in the pre-period (one must occur in the first 6-months)	228,196
No claims for GLP-1 RAs in the pre-period	220,894
≥1 claim for a non-GLP-1 RA ADM* or insulin in the pre-period	208,039
≥12 months continuous eligibility following index	112,352
Wage data available during pre-period or index year**	18,671

*ADM: anti-diabetes medication; **If wage data was available for both years, wage for the earlier year was used
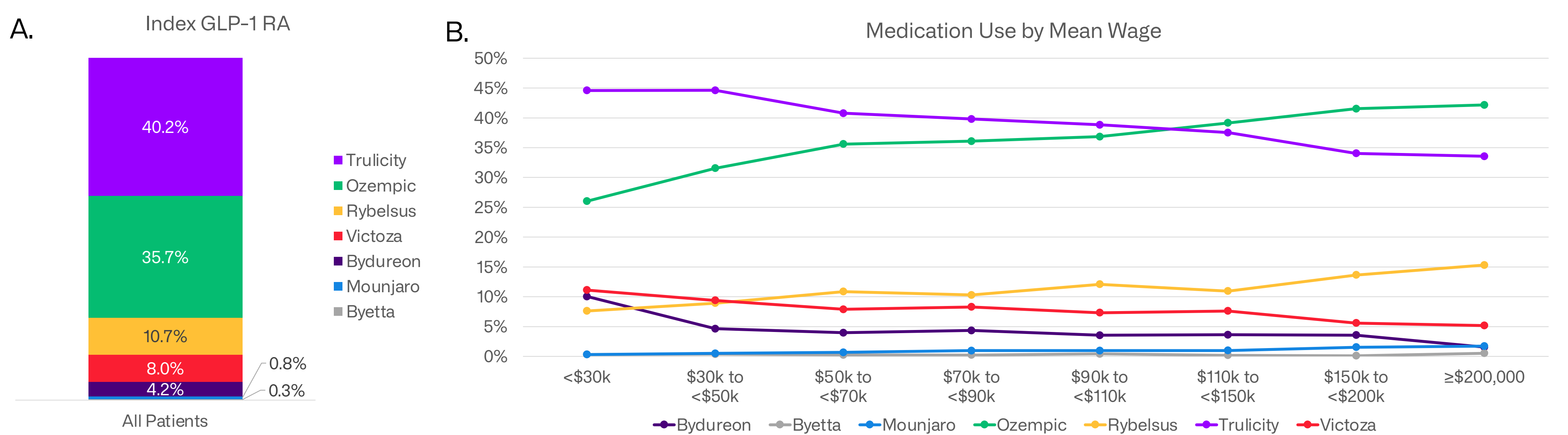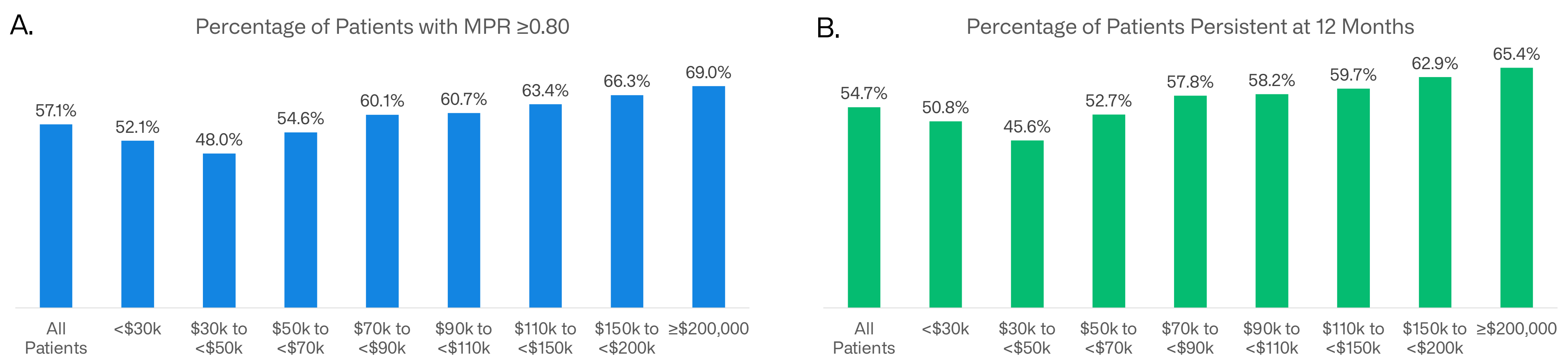
Figure 2. Sex by Annual Mean Wage Groups

Group	Male	Female
All Patients	61.3%	38.7%
<$30k	55.9%	44.1%
$30k to <$50k	41.5%	58.5%
$50k to <$70k	59.6%	40.4%
$70k to <$90k	65.5%	34.5%
$90k to <$110k	70.6%	29.4%
$110k to <$150k	70.8%	29.2%
$150k to <$200k	73.7%	26.3%
≥$200,000	80.9%	19.1%

Limitations

- Analyses were conducted among a sample of patients with commercial or private Medicare insurance; results may not extend to patients with other forms of insurance.
- Analyses assessed the association of annual wage with GLP-1 RA utilization; however, information on health plan coverage and formulary status of these medications (with the exception of patient OOP costs) was not known; therefore, other financial factors may be impacting treatment choice.
  - Similarly, it's worth noting that annual wage reflects the earning of a single individual and may not reflect household income for multi-person families.
- Only GLP-1 RA agents paid for in part by the insurance benefit are reflected; therefore, this analysis does not reflect medications obtained via other routes (e.g., complete out-of-pocket payment, compounded medication, etc.).
- Results are descriptive in nature and do not define any causal effects or relationships between annual wage and GLP-1 RA utilization

Conclusions

- Utilization of GLP-1 RAs differed across wage-based groups with:
  - Greater percentages of patients in higher wage groups initiating on new GLP-1 RAs such as Ozempic and Rybelsus.
  - Increased adherence and persistence to the index GLP-1 RA across increasing wage subgroups.
- There were limited differences in mean patient OOP costs, with 30-day supply costs ranging from $1.51 to $2.76
  - Despite notable differences in annual wages across groups, the differences in patient OOP costs alone are probably not enough to explain differences in GLP-1 RA utilization.
  - These findings suggest that factors other than wage (e.g., formulary, access to care, etc.) are playing a role in T2D medication choice and utilization.
- Choice in treatment should consider disease status, patient preference, and SDoH (e.g., medication accessibility), especially in cases where there are multiple in-class agents.

References
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