

## Supplementary Data

### Appendix Methods: OptumLabs® Data Warehouse

OptumLabs is an open, collaborative research and innovation center found in 2013 as a partnership between Optum and Mayo Clinic. Its core-linked data assets include deidentified claims data for privately insured and Medicare Advantage enrollees in a large, private, U.S. health plan. The database contains longitudinal health information on enrollees and patients, representing a diverse mixture of ages, ethnicities, and geographical regions across the United States. This includes medical claims, pharmacy claims, race/ethnicity, income level, and geographic information.<sup>A1</sup>

By 2014, OptumLabs Data Warehouse (OLDW) included longitudinal claims data for over 144 million people. This represents 19% of the total U.S. commercially insured population (30.6 million people in total) and 19% of the total U.S. Medicare Advantage population (3.2 million people in total). It includes people of all ages: 12% are between 0 and 9 years, 11% are between 10 and 17 years, 10% are between 18 and 24 years, 18% are between 25 and 34 years, 17% are between 35 and 44 years, 17% are between 45 and 54 years, 13% are between 55 and 64 years, and 4% are older than 65 years. OLDW has good geographic reach, with 20% of enrollees from Western U.S., 24% from the Midwest, 38% from the South, and 18% from the Northeast.<sup>A2</sup>

Detailed description of the OLDW data asset can be found at [https://www.optum.com/content/dam/optum/resources/productSheets/5302\\_Data\\_Assets\\_Chart\\_Sheet\\_ISPOR.pdf](https://www.optum.com/content/dam/optum/resources/productSheets/5302_Data_Assets_Chart_Sheet_ISPOR.pdf)<sup>A2</sup>

### Appendix References

- A1. OptumLabs: OptumLabs and OptumLabs Data Warehouse (OLDW) Descriptions and Citation. Cambridge, MA: OptumLabs, 2019.
- A2. Optum: Optum Research Data Assets. Optum. [https://www.optum.com/content/dam/optum/resources/productSheets/5302\\_Data\\_Assets\\_Chart\\_Sheet\\_ISPOR.pdf](https://www.optum.com/content/dam/optum/resources/productSheets/5302_Data_Assets_Chart_Sheet_ISPOR.pdf) (accessed July 16, 2019).

APPENDIX TABLE A1. CLASSES  
OF GLUCOSE-LOWERING MEDICATIONS

<i>Medication class</i>	<i>Included agents</i>
Biguanides	Metformin
Sulfonylureas	Acetohexamide
	Chlorpropamide
	Glimepiride
	Glipizide
	Glyburide
	Tolazamide
	Tolbutamide
Glitazones	Pioglitazone
	Rosiglitazone
	Troglitazone
DPP-4 inhibitors	Alogliptin
	Linagliptin
	Sitagliptin
	Saxagliptin
	Lixisenatide
GLP-1 receptor analogs	Exenatide
	Liraglutide
	Albiglutide
	Dulaglutide
	Semaglutide
SGLT2i	Canagliflozin
	Empagliflozin
	Dapagliflozin
Glinides	Nateglinide
	Repaglinide
Amylin analogs	Pramlintide
$\alpha$ -Glucosidase inhibitors	Acarbose
	Miglitol
Insulin	Regular
	Aspart
	Lispro
	Glulisine
	Inhaled powder insulin
	Neutral Protamine
	Hagedorn
	Determir
	Glargine
	Isophane
	Degludec

Combination medications were considered as separate agents belonging to each ingredient class.

SGLT2i, sodium-glucose cotransporter-2 inhibitors.