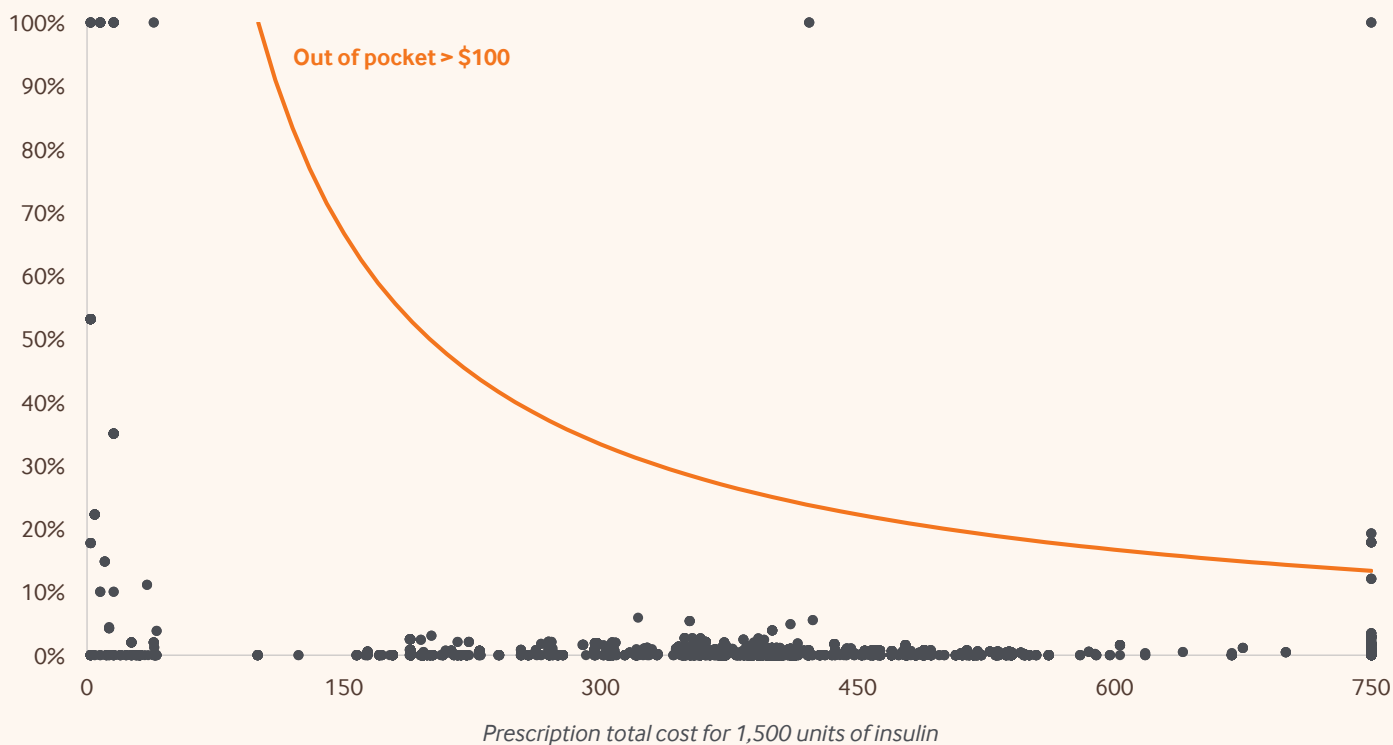


These appendices are supplemental to a Commonwealth Fund publication, Sherry Glied and Benjamin Zhu, *Not So Sweet: Insulin Affordability over Time* (Commonwealth Fund, Sept. 2020), available on the Fund’s website at <https://www.commonwealthfund.org/publications/issue-briefs/2020/sep/not-so-sweet-insulin-affordability-over-time>.

APPENDIX Exhibit 1. Percentage Paid Out-of-Pocket Versus Full Cost of Insulin by Insurance Coverage, Medicaid

Percent paid out of pocket



Data: Medical Expenditure Panel Survey, 2014–2017.

APPENDIX Exhibit 2. Distribution of Primary Insurance Held by Insulin Users, 2014–2017

Insurance	Percentage of all insulin users	Percentage of insulin users who paid full price for a \$100+ 1,500-unit equivalent insulin prescription	Percentage of insulin users who paid full price for a \$500+ 1,500-unit equivalent insulin prescription
Uninsured	6%	26%	43%
One-month gap	11%	25%	37%
Private	46%	30%	4%
Medicaid	12%	2%	2%
All other	6%	10%	3%

Data: Medical Expenditure Panel Survey, 2014–2017.

APPENDIX Exhibit 3. Mean Out-of-Pocket and Total Cost per 1,500-Unit Equivalent Prescription

	Out-of-pocket cost	Total cost
All insurance	\$32	\$314
Private	\$42	\$317
Medicaid	\$2	\$361
Uninsured	\$81	\$205
One-month gap	\$42	\$301
Other	\$31	\$310

Note: We divided the out-of-pocket (or total) cost in 2017 dollars by the number of milliliters in the prescription to obtain a cost per milliliter. We converted this cost per milliliter to a cost per unit and then multiplied the cost per unit by 1,500, the most common quantity in our sample. We then determined the mean by insurance status.

Data: Medical Expenditure Panel Survey, 2014–2017.

APPENDIX Exhibit 4. Patterns of Payment over a Year for Prescriptions Among Regular Users of Insulin Formulations with a Total Reimbursed Cost of More Than \$500, 2014–2017

	Full-year private insurance (group and individual)	Full-year Medicaid	Full-year uninsured	All
Percentage who paid full price at any point during the year	9%	1%	70%	15%
Median out-of-pocket cost for 1,500-unit equivalent insulin (all prescriptions)	\$13	\$0	\$16	\$4
Average out-of-pocket costs for insulin over the year	\$800	\$27	\$1,925	\$537
Average out-of-pocket costs for all prescriptions	\$1,291	\$123	\$2,500	\$919
75th percentile out-of-pocket costs for all prescriptions	\$1,433	\$159	\$2,587	\$1,282

Note: Regular users are those with four or more prescriptions in a year.

Data: Medical Expenditure Panel Survey, 2014–2017.

HOW WE CONDUCTED THIS STUDY

We analyzed Medical Expenditure Panel Survey (MEPS) and National Health Interview Survey (NHIS) data from 2014–2017 and 2007–2017, respectively. We then broke these years into three periods: 2014–2017, 2010–2013, and 2007–2009. From the MEPS, we merged the full-year consolidated files, which contained demographic and insurance information, with the prescribed medicines files, which contained information about drug-specific spending. We then took these files and kept all observations of insulin prescriptions to calculate the distribution of insulin out-of-pocket and total costs, both per prescription and overall, for holders of various insurance types in each period. We inflation-adjusted all cost dollar amounts to 2017 dollars, the final year included in our study, and excluded prescriptions to individuals younger than age 18 and older than age 64, or to Medicare patients.

Insulin is sold in varying package sizes and dosages. To facilitate comparisons, we standardized our costs to the cost of a standard 1,500-unit equivalent prescription, using the MEPS variables for drug quantity and strength, and MEPS variables for quantity and strength units. We excluded prescriptions when drug quantity and strength were recorded as unknown.

We report all dollar estimates in 2017 dollars, the final year of our analysis. In some of our analyses, we restricted our

sample to regular users of insulin, whom we define as those who filled the equivalent of four or more 1,500-unit equivalent prescriptions for insulin in a year, each with a total reimbursed cost of at least \$100 or \$500.

To classify private insurance holders into copayment-only, coinsurance-only, and unclassified groups, we looked at out-of-pocket spending on each individual prescription. We defined copayments as any out-of-pocket payment between \$5 and \$100 that was a multiple of five. Coinsurance payments were defined as any out-of-pocket payments that were not copayments and that accounted for less than 50 percent of the total costs paid out of pocket. We then defined all out-of-pocket payments as payments where the total cost of the prescription was paid completely out of pocket, and we defined zero out-of-pocket payments as prescriptions where the out-of-pocket cost was equal to zero.

For the NHIS files, we merged the sample adult files, person files, and family files from each of the aforementioned periods. The sample adult files contained information about drug affordability and diabetic status, the person files contained insurance information, and the family files contained information about income. After merging these files, we restricted the sample to those who reported being told they had diabetes, and then we examined the relationship between familial income and insurance status in this group.