For the blog post related to this technical appendix, please see: "Loss of Maternity Care and Mental Health Coverage Would Burden Those in Greatest Need," *To the Point,* The Commonwealth Fund, June 19, 2017.

Technical Appendix

Loss of Maternity Care and Mental Health Coverage Would Burden Those in Greatest Need

By Christine Eibner and Christopher Whaley

To estimate the effects of removing essential health benefit (EHB) service categories, this analysis uses data from the 2014 Medical Expenditure Panel Survey (MEPS).[1] MEPS is a nationally representative survey on medical spending, utilization, and health status. Data from MEPS have been used previously to measure trends in health care spending, utilization, and well-being. MEPS collects detailed information on insurance status and sources of insurance coverage. Starting in 2014, MEPS began collecting information on enrollment in state- and federal-run health insurance marketplaces. For the main analysis in the blog post, we focus on 15,477 MEPS respondents under age 65 who were enrolled in any private insurance (employer coverage, marketplace coverage, or individual market coverage outside of the marketplaces). We eliminate respondents who reported coverage through TRICARE or the Department of Veterans Affairs. The EHB applies to all nongrandfathered individual and small-group plans, which is a subset of all private plans. We focus the analysis on enrollees in all private plans because we cannot accurately identify all affected plans in MEPS,[2] and because using enrollees in all private plans increases our analytic sample. In sensitivity analyses discussed at the end of this technical appendix, we show results for marketplace enrollees. While the sample size for marketplace enrollees is small, we know for certain that the EHB applies to marketplace plans.

Spending on Maternity Services

We identified maternity services as any inpatient, outpatient, emergency department, or office-based service with primary Clinical Classification Codes (CCS) related to pregnancy or delivery. We used the MEPS Office-Based Medical Provider Visits, Outpatient Visits, Emergency Room Visits, and Hospital Inpatient Stays files. The CCS codes include 190 (Fetal distress and abnormal forces of labor), 191 (Polyhydramnios and other problems of amniotic cavity), 192 (Umbilical cord complication), 193 (OB-related trauma to perineum and vulva), 194 (Forceps delivery), 195 (Other complications of birth; puerperium affecting management of mother), 196 (Normal pregnancy and/or delivery), 218 (Liveborn), 219 (Short gestation; low birth weight; and fetal growth retardation), 220 (Intrauterine hypoxia and birth asphyxia), 221 (Neonatal respiratory distress syndrome), 222 (Hemolytic jaundice and perinatal jaundice), 223 (Birth trauma), and 224 (Other perinatal conditions).[3] High-need pregnancies and deliveries were defined by inpatient, outpatient, emergency room, or office visits with CCS codes 190-195 and 219-224.

[1] *Medical Expenditure Panel Survey (MEPS)* (Agency for Healthcare Research and Quality, 2017).

[2] Specifically, we cannot identify grandfathered plans, nor can we reliably differentiate small- and large-group plans, particularly in cases where spouses work for firms of different sizes.

[3] A full list of the International Classification of Disease (ICD) codes that link to these CCS codes is provided by MEPS at: https://meps.ahrq.gov/data_stats/download_data/pufs/h144i/h144ia1.shtml.

For these services and sites of care, we identified total expenditures, total patient expenditures, and total private insurer expenditures. We then summed total maternity spending across each site of service and CCS classification.

Spending on Mental Health and Substance Abuse Services

We identified mental health and substance abuse services as any office-based, outpatient, inpatient, or emergency department visit with a primary CCS code of 656 (Impulse control disorders), 657 (Mood disorders), 658 (Personality disorders), 659 (Schizophrenia and other psychotic disorders), 660 (Alcohol-related disorders), 661 (Substance-related disorders), 662 (Suicide and intentional self-inflicted injury), 663 (Screening and history of mental health and substance abuse codes), and 670 (Miscellaneous disorders).

For each of the sites of care, we identified total expenditures and spending by patients/families and private insurers. For each payer, we calculated the total spending on mental health and substance abuse services across all sites of care. We defined high-need mental health and substance abuse as any inpatient visit with CCS codes of 656-663 or 670.

Spending on Prescription Drugs

To identify spending on prescription drugs, we used the MEPS Prescribed Medicines File. For the main analysis, we did not identify prescription drugs used for specific conditions, but instead identified total prescription drug expenditures, spending by patients and families, and spending by private insurers. We defined high-need spending on prescription drugs as prescription drug spending by patients who report any chronic condition in 2014 (cancer, diabetes, emphysema, high cholesterol, coronary heart disease, arthritis, ADHD, asthma) or who report a previous myocardial infarction or stroke.[4]

Spending on All Other Services

To calculate insurers spending on all other services, we subtracted spending on the three categories of services identified above from total insurer spending in the consolidated MEPS 2014 file.

Calculating Change in Spending

For each EHB category, we estimated the potential changes in insurer spending by calculating the reduction in private insurance spending if EHB services were no longer covered. We similarly calculated the increase in patient spending conditional on service use by calculating the increase in patient spending if patients were responsible for the entirety of EHB spending. We did not estimate any changes in utilization because of changes in insurance coverage, so our results should be interpreted as the change in spending that could be expected if people continued to use the same amount of services despite the elimination of the EHB. Previous studies that have examined the effect of insurance coverage on health care utilization suggest that any utilization effect is likely to be small.[5] Further, to the extent that the actual effect on spending were lower than what we estimate, it is possible that this could be driven by people forgoing needed care, an effect that we do not analyze in the blog post. Focusing on

[4] In the MEPS data, these conditions are defined by the following variables: CANCERDX, DIABDX, EMPHDX, CHOLDX, CHDDX, MIDX, OHRTDX, STRKDX, ARTHDX, ADHDADDX, and ASTHDX.

[5] W. G. Manning, J. P. Newhouse, N. Duan et al., "Health Insurance and the Demand for Medical Care: Evidence from a Randomized Experiment," *American Economic Review,* June 1987 77(3):251–77.

out-of-pocket spending assuming utilization remains constant shows the value of care that would be paid for out-of-pocket or forgone as a result of the elimination of the EHB.

Sample Sizes and Confidence Intervals

Appendix Table A1 provides unweighted and weighted samples sizes for the 2014 MEPS samples used for analysis in our blog post.

Appendix Table A1. Unweighted and Weighted Sample Sizes, All Privately Insured Enrollees, MEPS 2014

	Unweighted	Weighted
All privately insured	15,447	176,370,353
With positive spending on maternity care	316	3,348,463
High-need maternity care users	16	275,868
With positive spending on mental health and substance abuse treatment	401	5,246,949
High-need mental health and substance abuse treatment users	18	235,290
With positive spending on prescription drugs	8,453	105,541,252
High-need prescription drug users	4,395	54,742,762

Notes: High-need maternity care users are women who had a complicated pregnancy or delivery; high-need mental health and substance abuse treatment users are those who had a hospital inpatient stay related to a mental health or substance abuse condition; high-need prescription drug users are prescription drug users with cancer, diabetes, emphysema, high cholesterol, coronary heart disease, arthritis, ADHD, asthma, a previous heart attack (myocardial infarction) or stroke.
Data: Analysis is based on the Medical Expenditure Panel Survey, 2014.

Expanded Tables

Appendix Tables A2 and A3 show the findings reported in Exhibits 1 and 2 of our blog post, adding 95 percent confidence intervals. Because the MEPS data represent a sample of the overall U.S. population, it is possible that, if we drew a different sample, we would get a different result. The confidence interval conveys the likely range of estimates that we could get if we drew different samples.

Appendix Table A2. Annual Per Capita Insurer Spending by Essential Health Benefits Category, 2014

	Spending	Share of total spending
Maternity care	$156 ($116–$195)	4% (3%–5%)
Mental health and substance abuse treatment	$56 ($36–$76)	1% (1%–2%)
Prescription drugs	$872 ($705–$1,038)	22% (20%–25%)
All other services	$2,809 ($2,868–$2,931)	72% (70%–75%)
Total	$3,892 ($3,597–$4,187)	100%

Notes: Data include 15,447 individuals with any private coverage, weighted to represent 176 million individuals. Ninety-five percent confidence intervals are shown in parentheses.
Data: Analysis is based on the Medical Expenditure Panel Survey, 2014.

In Appendix Table A3, the confidence interval on the increase in out-of-pocket costs for high-need maternity care users (women who had a complicated pregnancy or delivery) crosses zero. This means that we have little statistical confidence that we have estimated the true change in out-of-pocket spending for women in this category. While on average we estimate that out-of-pocket spending for high-need users would increase by $9,284 if maternity coverage were eliminated, the range of the

estimated change is anywhere from -$6,009 (a reduction in spending) to $24,576 (a massive increase). This statistical imprecision is likely because of the extremely small number of women with pregnancy or delivery complications—as Appendix Table A1 indicates, there are only 16 such women in our data set. The confidence interval for the estimated change in out-of-pocket spending for high-need mental health and substance abuse treatment users is also very wide, however it does not cross zero.

Appendix Table A3. Estimated Average Consumer Out-of-Pocket Spending in 2014, With and Without Essential Health Benefits (EHB), Among Those Who Used Selected Services

	(1) All consumers who use selected benefits	(2) Consumers in high need
Out-of-pocket spending on maternity care		
Current law	$644	$325
Maternity care removed from EHB	$7,546	$9,609
Difference	$6,902 ($5,237–$8,567)	$9,284 (-$6,009–$24,576)
Out-of-pocket spending on mental health and substance abuse treatment		
Current law	$382	$1,450
Mental health and substance abuse treatment removed from EHB	$1,715	$13,711
Difference	$1,333 ($722–$1,944)	$12,261 ($27–$24,495)
Out-of-pocket spending on prescription drugs		
Current law	$217	$331
Prescription drugs removed from EHB	$1,220	$1,694
Difference	$1,003 ($737–$1,269)	$1,363 ($1,010–$1,716)

Notes: Analysis focuses on enrollees who used each service under consideration. Ninety-five percent confidence intervals are shown in parentheses. High-need maternity care users are women who had a complicated pregnancy or delivery; high-need mental health and substance abuse treatment users are those who had a hospital inpatient stay related to a mental health or substance abuse condition; high-need prescription drug users are prescription drug users with cancer, diabetes, emphysema, high cholesterol, coronary heart disease, arthritis, ADHD, asthma, a previous heart attack (myocardial infarction) or stroke.
Data: Analysis is based on the Medical Expenditure Panel Survey, 2014.

Results for Marketplace Enrollees

Because there are relatively few marketplace enrollees in MEPS, the main text of the blog post focuses on all privately insured individuals. However, marketplace enrollees are of particular interest because these plans were required to offer the EHB, and because—prior to the Affordable Care Act—it was common for individual market plans to exclude maternity care, mental health and substance abuse treatment, and prescription drug coverage.[6] In Appendix Table A4 we report insurer spending for marketplace enrollees. The results are similar to those presented for the overall population, although the share of spending allocated to prescription drugs is substantially higher. However, because of the small number of records reporting marketplace coverage (n=566), these results are likely highly imprecise. Sample size is a particular concern for those with spending on the selected EHBs under

[6] U.S. Department of Health and Human Services, Assistant Secretary for Planning and Evaluation, *Essential Health Benefits: Individual Market Coverage* (DHHS, ASPE, Dec. 16. 2011), https://aspe.hhs.gov/system/files/pdf/76356/ib.pdf.

consideration. As shown in Appendix Table A5, there are only 10 marketplace-enrolled MEPS observations with positive spending on maternity care, and only 23 with positive spending on mental health and substance abuse treatment.

Appendix Table A4. Per Capita Insurer Spending by Essential Health Benefits Category 2014, Marketplace Enrollees

	Spending	Share
Maternity care	$65 ($4–$126)	1% (<1%–2%)
Mental health and substance abuse treatment	$70 (-$4–$143)	1% (<1%–2%)
Prescription drugs	$2,477 (-$650–$5,604)	48% (-33%–67%)
All other services	$2,531 ($2,471–$2,591)	49% (31%–126%)
Total	$5,143 ($1,956–$8,329)	100%

Notes: Data include 566 marketplace-enrolled individuals weighted to represent 5.5 million enrollees. Ninety-five percent confidence intervals are in parentheses.
Data: Analysis is based on the Medical Expenditure Panel Survey, 2014.

Appendix Table A5. Unweighted and Weighted Sample Sizes, Marketplace Enrollees, MEPS 2014

	Unweighted	Weighted
All privately insured	566	5,501,229
With positive spending on maternity care	10	79,454
With positive spending on mental health and substance abuse treatment	23	261,041
With positive spending on prescription drugs	330	3,531,042

Note: Data include 566 marketplace-enrolled individuals weighted to represent 5.5 million enrollees.
Data: Analysis is based on the Medical Expenditure Panel Survey, 2014.