Addendum to "Recent Changes in Access to Care among Adults in Rural Maine"

February 24th, 2026

An addendum to this research is to acknowledge and assess the potential impact of changes to the questionnaire structure of two core outcomes examined in this study from the Behavioral Risk Factor Surveillance System (BRFSS): health insurance coverage and having a personal doctor. Our analysis documents a substantial increase in both outcomes across the analytic period, coinciding with changes to the wording and structure of these survey questions. One concern is that the documented increases reflect changes to the survey questionnaire, rather than true improvements in access to care. This addendum assesses the potential for confounding from the questionnaire changes in two steps:

1. First, we examine whether coverage increases during this period are evident in other survey data that, to our knowledge, did not undergo questionnaire changes during this period. If similar coverage increases are evident in other surveys, this would suggest that the rise observed in the BRFSS data reflects true changes in coverage, rather than questionnaire changes.

2. Second, building on prior literature that documents significant increases in the self-reported likelihood of having a personal doctor following coverage gains, we examine whether coverage rates and having a personal doctor are correlated both nationally and within Maine during this period. We posit that, although some of the reported increase in having a personal doctor may reflect the questionnaire change, a positive correlation between these measures would be consistent with true gains in access from 2018 to 2023.

Health Insurance Coverage

Our measure of having health insurance coverage is constructed as follows:

<u>2018-2020 Health Insurance Coverage Question (HLTHPLAN)</u>

"*Do you have any kind of health care coverage, including health insurance, prepaid plans such as HMOs, or government plans such as Medicare?*"

1 = Yes

2 = No

7 = Don't know/Not sure

9 = Refused

Analytic logic: Yes = 1; No = 2.

2021-2023 Health Insurance Coverage Question (PRIMINSR)

"*What is the current primary source of your health insurance?*"

1 = A plan purchased through an employer or union (including plans purchased through another person's employer)

2 = A private nongovernmental plan that you or another family member buys on your own

3 = Medicare

4 = Medigap

5 = Medicaid

6 = Children's Health Insurance Program (CHIP)

7 = Military related health care: TRICARE (CHAMPUS)/VA health care/CHAMP-VA

8 = Indian Health Service

9 = State sponsored health plan

10 = Other government program

88 = No coverage of any type

77 = Don't know/Not Sure

99 = Refused

Analytic logic: Yes = 1, 2, 3, 4, 5, 6, 7, 8, 9, 10; No = 88.

Using data from BRFSS, we find a substantial increase in the self-reported coverage rate from 2018 to 2023 statewide and across both metro and rural areas in Maine. To assess whether these increases reflect true changes in coverage, rather than changes to the survey question during this period, we compared the BRFSS results to measures of health insurance coverage from two other surveys: the American Community Survey (ACS) and the National Health Interview Survey (NHIS). Because NHIS data are only available at the national level, we compare national coverage trends across all three surveys.

In comparing measures of coverage across the three survey data files, we document the following:

1. All three survey data files capture coverage increases from 2018 to 2023 at the national level, ranging from roughly one percentage point (ACS 5-year estimate) to nearly four percentage points (BRFSS) (Table A1). The national increase in coverage rates shown by BRFSS (3.7 percentage points) is similar to the change measured by NHIS (3.9 percentage points) during this period.

2. Relative to national trends, increases in health insurance coverage were more pronounced in Maine during this period in both the BRFSS data and the ACS data (Table A1). In BRFSS, coverage in Maine increased by 4.5 percentage points. In ACS, coverage in Maine rose by 2.9 percentage points, compared to a 1.5 percentage point nationally, highlighting stronger coverage growth in the state than nationwide.

3. Using the ACS data, Maine counties that experienced the largest coverage gains from 2018 to 2023 tended to have the lowest baseline coverage rates and to be fully rural, (defined as counties in which 100% of the population reside in rural zip codes in Table 1 of the main text) (Figure A1). These results are consistent with our BRFSS findings; the largest coverage gains occurred in rural areas of the state with the lowest baseline coverage rates in 2018.

Our analysis of the NHIS and ACS data supports our interpretation that the observed increases in self-reported health insurance coverage in the BRFSS data are most likely driven by real gains in coverage, as opposed to changes in the questionnaire structure.

Personal Doctor

Our measure of having a personal doctor is constructed as follows:

<u>2018-2020 Personal Doctor Question (PERSDOC2)</u>

"Do you have one person you think of as your personal doctor or health care provider? (If "no" then asked: Is there more than one, or is there no person who you think of as your personal doctor or health care provider?)"

1 = Yes, only one

2 = More than one

3 = No

7 = Don't know/Not sure

9 = Refused

Analytic logic: Yes = 1 or 2; No = 3.

2021-2023 Personal Doctor Question (PERSDOC3)

"Do you have one person or a group of doctors that you think of as your personal health care provider? (If "no" then asked: Is there more than one, or is there no person who you think of as your personal doctor or health care provider?)"

1 = Yes, only one

2 = More than one

3 = No

7 = Don't know/Not sure

9 = Refused

Analytic logic: Yes = 1 or 2; No = 3.

An analysis of the personal doctor question structure change by Robert Hest of the State Health Access Data Assistance Center (SHADAC) finds a large, uniform decrease in across states and population subgroups in the share of respondents reporting that they did not have a personal doctor following the 2021 questionnaire change. Based on these findings, SHADAC concludes that the 2021 BRFSS may represent a break in the data series for assessing trends in having a personal doctor over time.

Although we agree with SHADAC's interpretation that changes to the survey questionnaire likely contributed to the increase in the rate of having a personal doctor, we conducted additional analyses to assess whether the increases observed in Maine during this period are also associated with coverage gains. We identify the following:

1. A substantial body of research using pre-2021 BRFSS data documents significant increases in having a personal doctor following earlier coverage expansions, demonstrating that, historically, Medicaid expansions causally increased access to a personal doctor (Cawley et al. 2018; Monnette et al. 2020; Tummalapalli and Keyhani 2021; Ojinnaka & Suri 2020; Kino and Kawachi 2018). The findings from this literature suggest that, although the increase in having a personal doctor from 2018 to 2023 may partly reflect the 2021 BRFSS questionnaire change, increases associated with coverage gains may also capture true access improvements during this period.

2. Using national BRFSS data, we find that coverage increases across states are positively correlated with increases in the share of respondents reporting having a personal doctor from 2018 to 2023 (Figure A2). While this analysis is not intended to capture causal effects, the finding aligns with prior literature and suggests that recent increases in having a personal doctor likely reflect both questionnaire changes and true access gains.
3. Within Maine, increases in both the health insurance coverage and the likelihood of having a personal doctor from 2018 to 2023 are more pronounced among individuals aged 18 to 64 relative to adults aged 65 years and older (Tables A2 and A3). This pattern is consistent with the hypothesis that coverage gains during this period contributed to increased access to care.

While we observe a substantial increase in the rate of having a personal doctor from 2020 to 2021, coinciding with the questionnaire change and consistent with SHADAC's interpretation of an artificial increase, we also document a positive correlation between coverage rates and having a personal doctor throughout the analytic period. These findings suggest that adults in both metro and rural Maine experienced increased access gains due to coverage increases, driven by coverage increases during the analytic period; however, the magnitude of the increases in the personal doctor outcome reported in our study likely reflect both the questionnaire change and true access gains.

Table A1: Comparing Changes in Health Insurance Coverage from 2018 to 2023 in Maine and the United States across Commonly Used Datasets

Data Set	Geography	Age Group	2018 Coverage Rate (%)	2023 Coverage Rate (%)	Change (Percentage Point)
ACS 5-Year Estimates	United States	19-64	86.8	88	1.2
ACS 5-Year Estimates	Maine	19-64	88.2	90.3	2.1
ACS 1-Year Estimates	United States	19-64	87.5	89	1.5
ACS 1-Year Estimates	Maine	19-64	88.5	91.4	2.9
SAHIE	United States	18-64	87.5	89	1.5
SAHIE	Maine	18-64	88.3	91.2	2.9
BRFSS	United States	18-64	85.07	88.95	3.9
BRFSS	Maine	18-64	87.4	91.88	4.5
NHIS (2019^ to 2023)	United States	18-64	85.5^	89.2	3.7

Sources: U.S. Census Bureau (ACS 5-Year Estimates (2018 - 2023), ACS 1-Year Estimates (2018 and 2023), SAHIE (2018 and 2023)), U.S. Centers for Disease Control and Prevention (BRFSS (2018 and 2023) and NHIS (2019 and 2023)).

Table A2: Changes in Self-Reported Coverage Rates and Personal Doctor Access (Adults 18-64)

A. Currently have any health insurance coverage?

Data Year	All	Metro	Rural			
			All	Large Rural	Small Rural	Isolated Rural
2018 (%)	87.19	90.6	**85.91***	**86.33***	89.24	**82.48***
2023 (%)	91.8	93.61	91.41	92.23	**88.13***	92.32
Unadjusted Change (Percentage Point)	**4.6**[a]	**3.01**[a]	**5.5**[a]	**5.9**[a]	-1.12	**9.84**[a]
Adjusted Change (Percentage Point)	**3.8**[a]	1.93	**4.64**[a]	**4.41**[a]	0.011	**8.99**[a]
B. Do you have a personal doctor?						
2018 (%)	82.21	82.14	82.72	83.23	81.04	82.78
2023 (%)	87.63	89.04	87.74	87.58	86.09	89.61
Unadjusted Change (Percentage Point)	**5.41**[a]	**6.9**[a]	**5.02**[a]	**4.35**[a]	**5.05**[a]	**6.83**[a]
Adjusted Change (Percentage Point)	**5.01**[a]	**6.03**[a]	**4.65**[a]	**3.71**[a]	**5.81**[a]	**6.58**[a]

*****Difference relative to adults in metro areas is statistically significant at the 5 percent level.

[a] Difference in outcomes from 2018 to 2023 is statistically significant at the 5 percent level. Adjusted changes control for demographic and socioeconomic characteristics in Table 2.

Panel Questions: "Do you have any kind of health care coverage, including health insurance, prepaid plans such as HMOs, or government plans such as Medicare?" (2018, [Yes]/[No]), "What is the current primary source of your health insurance?" (2023, [Type of Plan]/[No coverage of any type]), Panel B Question: "Do you have one person you think of as your personal doctor or health care provider?" (2018 & 2023, [Yes one, Yes more than one]/[No]).

Sources: Maine Center for Disease Control and Prevention (2018 and 2023) and U.S. Department of Agriculture (2025).

Table A3: Changes in Self-Reported Coverage Rates and Personal Doctor Access (Adults 65 and older)

A. Currently have any health insurance coverage?

Data Year	All	Metro	Rural			
			All	Large Rural	Small Rural	Isolated Rural
2018 (%)	98.53	99.1	98.4	98.48	98.15	98.43
2023 (%)	99.51	99.8	99.53	99.39	99.54	99.77
Unadjusted Change (Percentage Point)	**0.98**[a]	0.72	**1.13**[a]	0.91	**1.38**[a]	**1.34**[a]
Adjusted Change (Percentage Point)	**0.89**[a]	0.62	**1.09**[a]	0.84	**1.3**[a]	**1.25**[a]

B. Do you have a personal doctor?

2018 (%)	94.63	94.9	94.69	95.52	92.97	94.47
2023 (%)	96.76	97.23	96.72	96.71	96.94	96.58
Unadjusted Change (Percentage Point)	**2.14**[a]	**2.33**[a]	**2.03**[a]	1.19	**3.97**[a]	2.11
Adjusted Change (Percentage Point)	**1.78**[a]	1.38	**1.76**[a]	1.02	**3.83**[a]	1.85

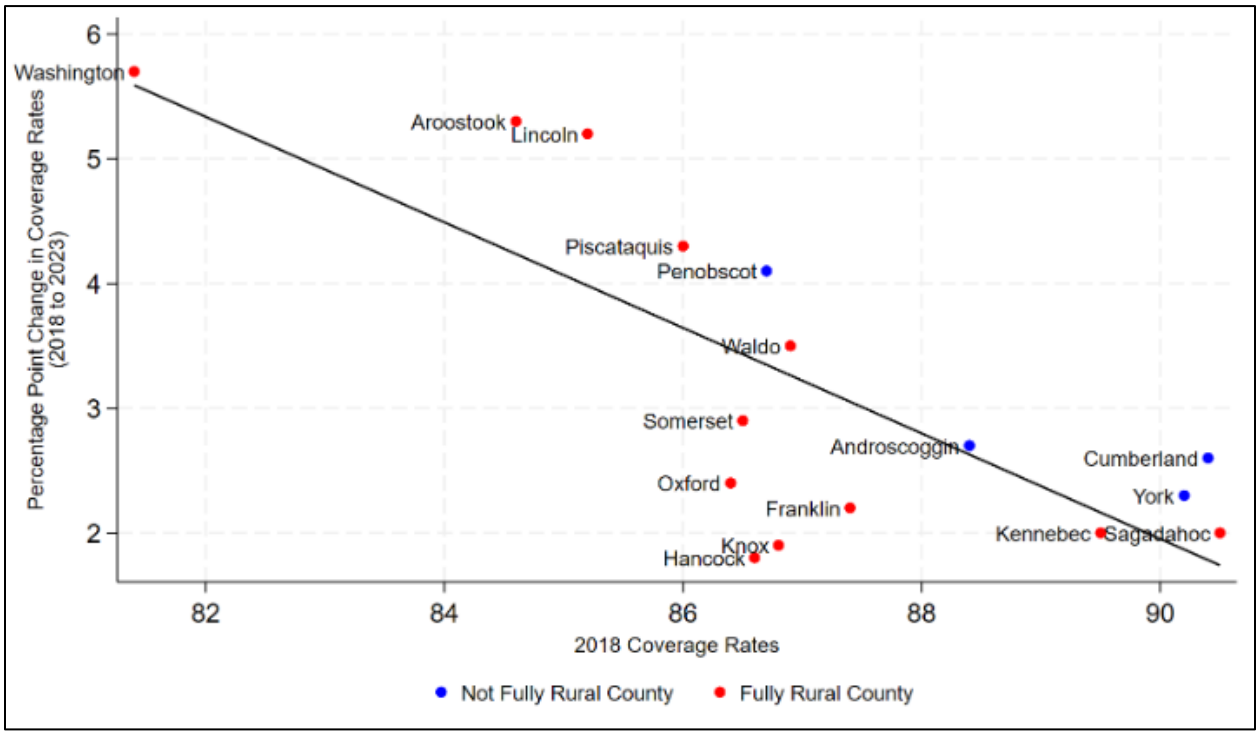
*****Difference relative to adults in metro areas is statistically significant at the 5 percent level.

[a] Difference in outcomes from 2018 to 2023 is statistically significant at the 5 percent level. Adjusted changes control for demographic and socioeconomic characteristics in Table 2.

Panel Questions: "Do you have any kind of health care coverage, including health insurance, prepaid plans such as HMOs, or government plans such as Medicare?" (2018, [Yes]/[No]), "What is the current primary source of your health insurance?" (2023, [Type of Plan]/[No coverage of any type]), Panel B Question: "Do you have one person you think of as your personal doctor or health care provider?" (2018 & 2023, [Yes one, Yes more than one]/[No]).

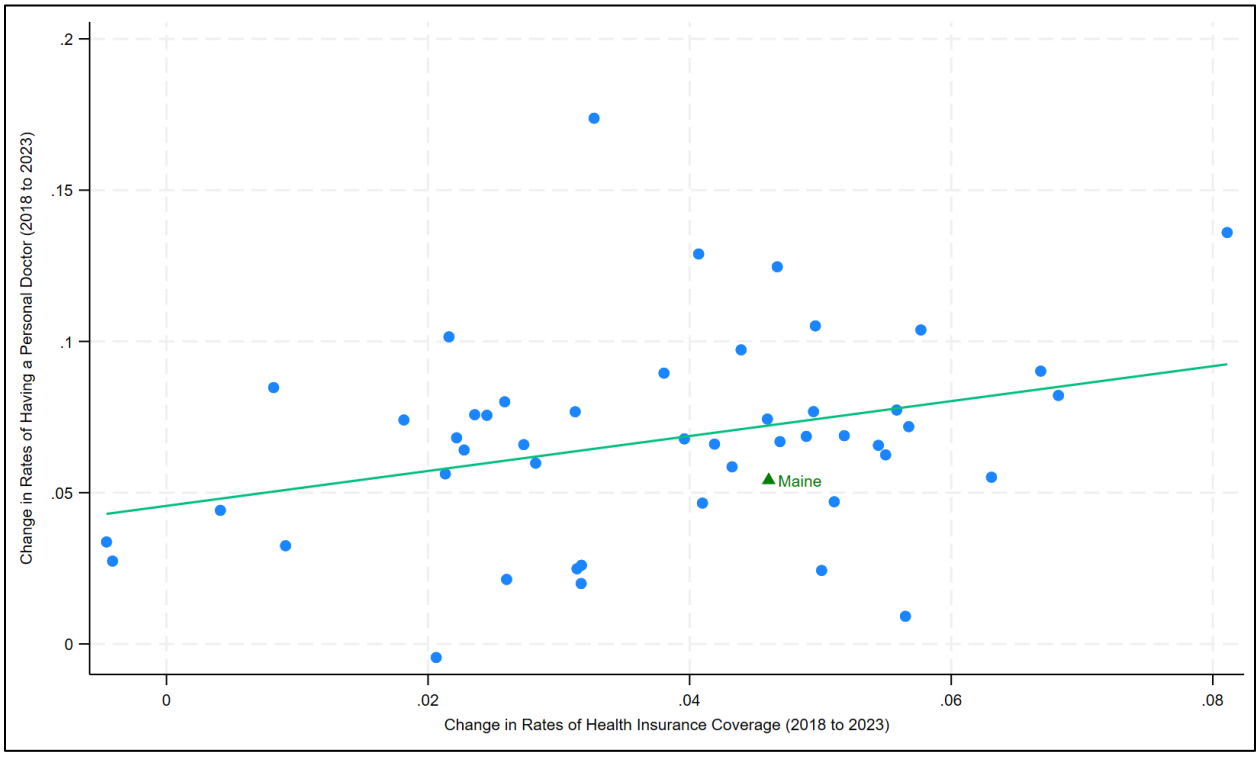
Sources: Maine Center for Disease Control and Prevention (2018 and 2023) and U.S. Department of Agriculture (2025).

Figure A1: Baseline 2018 Health Insurance Coverage Rates and Percentage Point Changes in Coverage from 2018 to 2023 in Partially Rural and Fully Rural Maine Counties



Sources: U.S. Census Bureau (SAHIE) (2018 and 2023) and U.S. Department of Agriculture (2025).

Figure A2: Changes in Rate of Coverage and Personal Doctor across States: 2018 to 2023 (Adults 18-64)



Note: Each marker denotes the relative changes across individual states.

Source: Centers for Disease Control and Prevention (2018 and 2023).

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