



# Rejoinder to Barkowski and McLaughlin

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[LINK TO ABSTRACT](#)

In the previous issue of this journal, I published “Health Insurance Mandates and the Marriage of Young Adults: A Comment on Barkowski and McLaughlin” (Gamino 2023). That piece by me is a critique of Scott Barkowski and Joanne Song McLaughlin’s “In Sickness and in Health Interaction Effects of State and Federal Health Insurance Coverage Mandates on Marriage of Young Adults,” published in the *Journal of Human Resources* (2022). The previous issue of this journal also featured a reply by Barkowski and McLaughlin (2023). I appreciate that Barkowski and McLaughlin have engaged with my commentary.

In their reply, B&M point out that I provide a minimal explanation for why I think their models are misspecified. Also, they fail to address my primary criticism about their specifications, and offer several justifications for their specifications, justifications that I consider to be inadequate. In this rejoinder, I revisit the misspecification problem and address B&M’s justifications for their model specification.

## The model’s problem restated

Barkowski and McLaughlin (2022) use IPUMS-USA 2000–2015 American Community Survey data and estimate the following “DD-style” model (equation 5 in their paper):

$$Y_{iast} = \beta_1 ELIG_{ast} \times ACA_t + \beta_2 ELIG_{ast} + X'_{iast} \gamma + a_i + \delta_{st} + u_{iast}. \quad (1)$$

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The issue with this model centers on the  $ELIG_{ast}$  term, which is an indicator taking a value of one for individuals who reside in a state with a dependent mandate in place at time  $t$  and are age-eligible for the dependent mandate. To clarify the issue, it may be helpful, in assessing state mandates, to consider the use of equation 2 here for the years before the ACA—the ACA term falls out, resulting in the following model:

$$Y_{iast} = \beta_2 ELIG_{ast} + X'_{iast} \gamma + a_a + \delta_{st} + u_{iast}. \quad (2)$$

It is now apparent that this requires a DDD setup to identify the difference in marriage due to state eligibility,  $\beta_2$ . Matching this up with the basic DDD framework, as presented by Jeff Wooldridge (2007), the necessary terms for age-by-state and age-by-year are omitted.

B&M interpret  $\beta_2$  as “the marriage gap before the implementation of the ACA between those who were eligible for state-mandated coverage and those who were not” (B&M 2023, 36). This interpretation is only valid when  $\beta_2$  is identified in a valid framework, which requires additional terms. In the base specification, where only state-by-year interactions are included,  $\beta_2$  is going to be improperly picking up differences that exist at the age-by-state and age-by-year levels. Rather than isolate the difference due to state mandate eligibility, this term estimates that along with unintended biases.

Returning to Equation 1, the addition of  $ELIG_{ast} \times ACA_t$  does not address the problems that  $\beta_2$  suffers from. The interaction of the ACA term and the problematic term  $ELIG_{ast}$  extends this problem to the intended interpretation of  $\beta_1$  as the “difference between the post-ACA and pre-ACA marriage gaps” (B&M 2023, 37). The interaction term instead measures the difference between the marriage gap due to  $\beta_2$ , a difference that does not capture the marriage gap resulting from state mandate eligibility. When the complete set of interaction terms is included, the main results on the likelihood of being married drastically differ and lose significance (Gamino 2023, 19–21).

## **Addressing B&M’s arguments for their model choice**

### **Loss of identifying variation**

B&M (2023) make two assertions relating to identifying variation. First, they assert that introducing age-by-year fixed effects absorbs the remaining identifying

variation (B&M 2023, 38–40). The standard errors obtained in the models with and without the proper set of interaction terms are consistent in size, which contradicts the claim that the additional terms absorb too much variation. The standard errors should be larger if the additional terms absorb too much variation.

Second, B&M assert that “the fixed effects are absorbing the identifying variation in one model [marital state], but not in the other [marital entry]” (B&M 2023, 40). At the age-state-year level, the identifying variation is the same for both models—namely, the variation in the mandates. That sameness can be seen by applying Theorem 1 of Andrew Goodman-Bacon (2021) to the DDD-to-DD transformation in Andreas Olden and Jarle Møen (2022). B&M state that “the variation explained in our marriage entry outcome by our DD-style models is only about 15 percent as much as the variation explained in marital state” (B&M 2023, 39). I am not sure what they are referencing by “the variation explained in our marriage entry outcome.” However, if this refers to the R-squared—a measure of how much variation in the outcome variable the model explains—that is not the same as identifying variation.

### **Bias and the “practical implementation problem”**

B&M argue that bias is introduced by the addition of age-by-year interactions and the inclusion of these interactions lead to a “practical implementation problem” (B&M 2023, 35–40). Their argument relies solely on the direction of predicted effects provided in their Table 1, for combinations of age (young or old) and state mandate status (mandate or non-mandate) (B&M 2023, 37). Despite the importance of accurately predicting the signs to justify their model choice, they do not provide a theoretical model. Instead, B&M make predictions based on a single possible mechanism: whether a spouse or parent is a source of better insurance. The marriage decision is complicated, which makes it difficult to have confidence in an argument based on one of many possible channels. In the following paragraphs, I provide cases for effects in directions other than those predicted by B&M.

First, consider the case of an older (ineligible) uninsured young adult residing in a state with a mandate. Suppose this ineligible young adult is in a relationship with a younger (eligible) adult. The decision to marry depends upon both parties. The younger individual’s disincentive to marry is lessened following the ACA because the marriage prohibition is removed. As a result, this type of couple could see an increase in the likelihood of being married. This example is at odds with B&M’s predicted effect for an older individual in a mandate state.

Next, consider the case of an older (ineligible) uninsured adult residing in a state without a mandate. After the ACA, this ineligible individual is insured and

less susceptible to negative wealth shocks from an adverse health event. It is not difficult to imagine scenarios where having increased wealth increases her likelihood of being married (e.g., her preferred ceremony remains within her budget, and she does not delay marriage; or she is likelier to marry now that she has higher levels of wealth<sup>2</sup>). Again, this example is at odds with B&M's predicted effect.

These two possible cases give rise to predicted effects opposite to those relied on by B&M, undercutting the argument justifying their model choice. Furthermore, B&M's expected increase in marriage should increase the likelihood of having coverage as a policyholder or through a spouse. In Table 4 (Gamino 2023, 23), I find no empirical support for the single channel considered by B&M. In their models, I see no changes in the likelihood of being on a spouse's ESI plan or being an ESI policyholder.

## Concluding remarks

In this rejoinder I have briefly restated the criticism in Gamino (2023) that remained unaddressed in B&M's response (2023). I demonstrate straightforwardly how their eligibility term requires a DDD framework for proper identification. I show the deficiencies in their justification for their model choice. Specifically, I point out that the additional fixed effects do not absorb the identifying variation. The weak argument that bias is introduced through additional fixed effects is based on a woefully inadequate consideration of the marriage decision.

## References

- Barkowski, Scott, and Joanne Song McLaughlin** (B&M). 2022. In Sickness and in Health Interaction Effects of State and Federal Health Insurance Coverage Mandates on Marriage of Young Adults. *Journal of Human Resources* 57(2): 637–688.
- Barkowski, Scott, and Joanne Song McLaughlin** (B&M). 2023. Response to Gamino. *Econ Journal Watch* 20(1): 34–44. [Link](#)
- Gamino, Aaron M.** 2023. Health Insurance Mandates and the Marriage of Young Adults: A Comment on Barkowski and McLaughlin. *Econ Journal Watch* 20(1): 15–33. [Link](#)
- Goodman-Bacon, Andrew.** 2021. Difference-in-Differences with Variation in Treatment Timing. *Journal of Econometrics* 225(2): 254–277.
- Olden, Andreas, and Jarle Møen.** 2022. The Triple Difference Estimator. *Econometrics*

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2. Our hypothetical individual could also be likelier to marry because she has higher health stock following an adverse event post-ACA. Such an example further illustrates that there are too many possible arguments to capture in a simple 2-by-2 table.

*Journal* 25(3): 531–553. [Link](#)

**Wooldridge, Jeff.** 2007. What's New in Econometrics?: Lecture 10 Difference-in-Differences Estimation. Presented at the NBER Summer Institute (Cambridge, Mass.), July 31. [Link](#)

## About the Author



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