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### Response to Letter to the Editor

#### To the Editor:

The authors thank Dr Kawada for his interest in our study and appreciate the continued opportunity to discuss the manuscript "Dose-Response Relation Between Work Hours and Cardiovascular Disease Risk: Findings From the Panel Study of Income Dynamics."

Dr Kawada indicated that specific risk factors for cardiovascular disease (CVD) that are also associated with long work hours (LWHs) were not included in our analysis of the relationship between LWH and CVD. This was acknowledged in the manuscript as a study limitation resulting from the lack of availability of those variables in the Panel Study of Income Dynamics (PSID), which was the source of the data. The PSID did not capture variables related to sleep patterns, shift work, or workplace personal relationships. Although the PSID provided information on participants' diagnosable mental health conditions, this information lacked occupational

context, and it could not be determined whether job-related factors influenced the mental health of participants. There also was no basis for determining the relationship between sleep patterns and mental health, as the PSID did not have sleep variables.

Sleep disruption due to long work hours and contributing to the development of CVD would be an intermediate variable; similarly, poor mental health resulting from LWH and increasing the risk of poor sleep quality would be on the pathway between the exposure and outcome. As intermediaries, adjusting for either would have introduced overadjustment bias into our measures of association.<sup>1</sup> Although we appreciate Dr Kawada's suggestion of adjustment variables, we believe our model is appropriately adjusted. Although we acknowledge that residual confounding may exist in our measures of association, we do not believe the magnitude of residual confounding would nullify the observed results.

Further, it should be noted that the identification of a causal relationship between sleep duration and CVD was not a goal of this study. It also was not a goal of this study to evaluate the influence of mental health on CVD.

In summary, our analysis of panel survey data drawn from a representative sample of U.S. households allowed us to identify a dose-response relationship between increasing work hour durations and the risk of CVD, thereby contributing to the growing body of longitudinal studies demonstrating an association between working long hours and adverse health outcomes.

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#### REFERENCE

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