

Medpace Holdings, Inc.

This free writing prospectus relates only to, and should be read together with, the preliminary prospectus dated November 27, 2017 (the "Preliminary Prospectus") relating to the public offering of the common stock of Medpace Holdings, Inc. (the "Company") by the selling shareholder named in the Preliminary Prospectus. The information in this free writing prospectus is preliminary and is subject to completion or change. This free writing prospectus updates and supplements the Preliminary Prospectus and should be read together with the Preliminary Prospectus, including the section entitled "Risk Factors" beginning on page S-14 of the Preliminary Prospectus. Capitalized terms used, but not defined, herein have the meanings set forth in the Preliminary Prospectus.

This free writing prospectus reflects the following additional disclosure under the section "Prospectus Summary":

Company Share Repurchase

We have indicated an interest to purchase from the underwriters up to 2,000,000 shares of our common stock that are subject to this offering at a price per share equal to the price per share paid by the underwriters to the selling shareholder in this offering. However, because indications of interest are not binding agreements or commitments to purchase, we may determine to reduce the amount of our purchase or elect not to purchase any shares. It is also possible that the number of shares, if any, allocated to us in the offering may be smaller than the amount of our indication of interest. We refer to this potential purchase by us in this offering as the "share repurchase."

We intend to fund the share repurchase with borrowings under our senior secured revolving credit facility. The closing of the share repurchase is contingent on the closing of this offering.

The description of and the other information in this free writing prospectus regarding the share repurchase is included solely for informational purposes. Nothing in this free writing prospectus should be construed as an offer to sell, or the solicitation of an offer to buy, any of our common stock, subject to the share repurchase.

Conforming changes will be deemed made wherever applicable in the Preliminary Prospectus to reflect the changes regarding the share repurchase, including funding the share repurchase with borrowings under our senior secured revolving credit facility as described above. Such conforming changes will be reflected in the final prospectus relating to the offering.

A registration statement on Form S-3 (including a prospectus) relating to the securities being sold in the offering to which this free writing prospectus relates has been declared effective by the Securities and Exchange Commission (the "SEC"). The Company has filed a prospectus supplement with the SEC for the offering to which this free writing prospectus relates. Before you invest, you should read the registration statement, prospectus, prospectus supplement and other documents the Company has filed with the SEC for more complete information about the Company and this offering. You may get these documents for free by visiting EDGAR on the SEC website at www.sec.gov. Alternatively, the Company, any underwriter or any dealer participating in the offering will arrange to send you the prospectus supplement if you request it from Jefferies LLC, Attention: Equity Syndicate Prospectus Department, 520 Madison Avenue, 2nd Floor, New York, NY 10022, via telephone: 1-877-821-7388, or via email: Prospectus_Department@Jefferies.com; or Credit Suisse Securities (USA) LLC, Attention: Prospectus Department, One Madison Avenue, New York, NY 10010, via telephone: 1-800-221-1037, or via email: newyork.prospectus@credit-suisse.com.