Abstract: With the limited resources for state Departments of Transportation (DOT), the focus of roadway improvements have been to increase the efficiency of the existing infrastructure. The increasing need for roadway capacity in many areas of the United States (US), specifically urbanized areas, is addressed with a traffic management strategy called part-time shoulder use (PTSU). This strategy adds capacity to the roadway by utilizing the shoulder as a travel lane during high congestion periods, typically commuting hours. PTSU has been found to have a range of improvement on the capacity of the roadway but benefit of PTSU on the mainline pavement is not fully understood. With major traffic volumes being distributed differently during significant loading periods during the day, the mainline pavement experiences lesser loads. The proposed research focuses on a sensitivity analysis on the pavement effects of PTSU on full depth paved shoulders, shoulders with the same pavement cross section to the mainline traffic lanes that are typical in urbanized areas. Utilizing representative data from across the nation, these effects are simulated for the four major climate zones within the US through the AASHTOWare Pavement ME Design software. The results indicate that in certain regions of the US, the use of PTSU can have significant benefit to the service life of the roadway pavement while in others the effects are relatively minimal. Higher benefit of PTSU are observed for higher volume interstates in most of the US with higher benefit for lower volume National Highway System roadways mainly in areas with no freeze-thaw cycle, such as Texas or Georgia.

Bio: Sean Coffey is a third year Ph.D. student in Civil Engineering with an emphasis on Transportation Engineering. He is advised by Dr Seri Park. He received his M.S. (2014) in Civil Engineering and B.S. in Civil and Environmental Engineering from Rowan University where he was a recipient of the 2013 Outstanding Student of the Year Award for his region from the United States Department of Transportation for his research in the field.

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