Objective
Although infrainguinal bypass surgery is one of the most common vascular procedures, geographic variations in patient risk factors and outcomes after bypass surgery have not been well studied.

Methods
All patients undergoing infrainguinal bypass surgery between 2006 and 2014 were identified in the National Inpatient Sample database. Patients were stratified into four regions: Northeast, Midwest, South, and West. Patient level covariates were evaluated including age, race, sex, and the VQI Cardiac Risk Index to predict major postoperative cardiac events after vascular surgery. The primary endpoint was inpatient mortality. Secondary endpoints included major complications. Multivariable logistic regression was performed to account for differences in demographics and risk factors.

Results
A total of 99,611 patients were identified who underwent infrainguinal bypass surgery. Demographics and outcomes are summarized in the attached table. Overall, patients in NE and West were older, admitted to hospital emergently, with a higher risk index, higher rates of CHF, AFib, ESRD, and chronic complications, liver disease, and renal failure. There was a higher rate of teaching hospitals within the NE (69%, p<0.0001). NE and West had a higher proportion of urban hospital centers and larger hospitals compared to the MW and South.

Outcomes in NE and West were worse than South and MW with higher rates of mortality (2.7% vs 2%, p<0.0001). The NE and West had higher rates of post-op MI, pneumonia, VTE, ARF, SSI, and bleeding compared to the MW and South (p<0.0001).

After multivariable regression to account for differences in age, gender, elective status, risk score, patient comorbidities, and hospital characteristics there was no significance between regional mortality risk after infrainguinal bypass (p = 0.0623).

Conclusions
There is marked regional variation in outcomes after infrainguinal bypass surgery in the United States. Patients in the Northeast and West experience higher rates of perioperative mortality and post-operative complications. This may be explained by the Northeast and West having a greater number of patients with advanced age, more severe comorbid conditions, higher risk profile, and need for emergent admission. These differences should be accounted for when comparing regional and institutional outcomes and in setting standards for quality initiatives.