system factors on emergency department (ED) bypass by residential rurality¹ Chronic condition primary diagnosis Acute condition primary diagnosis Chronic condition primary diagnosis Odds ratio of bypass, chronic vs acute condition (95% CI) No significant interaction by Odds ratio for bypass Odds ratio for bypass n (%) bypass n (%) bypass rurality (95% CI) (95% CI) 30,371 (52.3%) **Urban-residing** 85,449 (41.3%) 1 (reference) 1.50 (1.40, 1.59) 1.50 (1.40, 1.59) **Rural-residing** 4,146 (25.7%) 0.45 (0.33, 0.63) 1,043 (33.1%) 0.68 (0.49, 0.94) Payer Odds ratio of bypass, **Medicaid Coverage** Commercial only coverage commercial vs. Medicaid by rurality (95% CI) Odds ratio for bypass n (%) bypass n (%) bypass Odds ratio for bypass P(interaction)=0.03 (95% CI) (95% CI) Urban-residing 25,686 (53.5%) 90,134 (41.5%) 0.55 (0.49, 0.63) 1 (reference) 0.55 (0.49, 0.63) **Rural-residing** 773 (28.3%) 0.36 (0.27, 0.49) 4,416 (26.6%) 0.66 (0.48, 0.90) 0.72 (0.58, 0.90) Pediatric resources at closest EDs No dedicated pediatric resources **Dedicated pediatric resources** Odds ratio of bypass, pediatric resources vs none by rurality (95% CI) n (%) bypass Odds ratio for bypass n (%) bypass Odds ratio for bypass P(interaction)=0.01 (95% CI) (95% CI) Urban-residing 4,415 (67.4%) 1 (reference) 111,405 (43.1%) 0.33 (0.23, 0.48) 0.33 (0.23, 0.48) **Rural-residing** 2,701 (31.7%) 0.18 (0.11, 0.29) 2,488 (23.0%) 0.13 (0.07, 0.23) 0.72 (0.44, 1.18) Arrival type No transport by ambulance Odds ratio of bypass, no Ambulance transport transport vs transport by rurality (95% CI) Odds ratio for bypass Odds ratio for bypass n (%) bypass n (%) bypass P(interaction)=0.03 (95% CI) (95% CI) **Urban-residing** 102,133 (43.9%) 13,687 (42.1%) 1.00 (0.93, 1.07) 1 (reference) 1.00 (0.93, 1.07) **Rural-residing** 4,671 (26.5%) 0.44 (0.32, 0.60) 518 (30.9%) 0.56 (0.38, 0.84) 1.19 (1.04, 1.59) 2 or more EDs within 30-minute drive No Yes Odds ratio of bypass, 2 EDs within 30 minutes vs not (95% CI) n (%) bypass Odds ratio for bypass n (%) bypass Odds ratio for bypass No significant interaction by (95% CI) (95% CI) rurality Urban-residing 4,156 (37.6%) 111,664 (44.0%) 1.33 (0.96, 1.83) 1 (reference) 1.33 (0.96, 1.83) **Rural-residing** 2,363 (23.3%) 0.52 (0.38, 0.71) 2,826 (30.8%) 0.69 (0.41, 1.14)

Table 2. Heterogeneity of treatment effect analysis, examining modification of the effect of clinical, sociodemographic, and health

¹Odds ratios derived from logistic regression including residential state as a fixed effect and ZIP code-level clustering using generalized estimating equations to account for geographic collinearity. Interaction effects removed from the model if not statistically significant (p<0.05)