The implementation of modern roundabouts in the U.S. began in the 1990s. Since then, U.S. researchers and practitioners have continuously released and calibrated capacity estimation models that are most suited to U.S. conditions. Capacity research continues in the U.S., as it has for the past 50 years in some other countries.

Recent independent capacity research on saturated roundabouts is providing increasing support for the transferability of the U.K. empirical capacity model to U.S. conditions. This model derives capacity from a geometric basis, with six geometric parameters per leg. The wide range of all the geometric parameters encompasses the entire spectrum of modern Roundabout design. This paper provides a synthesis of the development of the U.K. empirical model and reviews recent U.S. research and data collection, comparing HCM 2010 calibration and validation and the transferability of the UK geometric capacity model to the U.S.

Methods of Capacity Measurement

1. Direct Capacity Measurement
   - Capacity is measured directly by repeatedly counting entering traffic and circulating traffic under 'at capacity' conditions. The entry capacity is determined from the regression line equation of 'at capacity' data. From this equation, the USARUM model has been derived.
   - Capacity is measured directly by continuously monitoring traffic volumes and gap intervals between vehicles entering and circulating within a roundabout. It is measured under 'at capacity' conditions, with an analysis of variance (ANOVA) test to indicate that the data is indeed 'at capacity'.

2. Indirect Capacity Measurement
   - Indirect capacity estimation depends on the gap acceptance mechanism. This allows for 'capacity' to be estimated using gap acceptance models. The empirical capacity model is based on the study of 'at capacity' conditions in the U.K.
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Validation

- The U.K. empirical model has been validated using 'at capacity' data from roundabouts in the U.K. and the U.S. The model has been validated using data from the U.K. and the U.S. and has been shown to be accurate.
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Conclusions

- This research and data on U.S. saturated roundabout capacity is needed to cover a wide range of traffic flows and geometries. To this end, a recent proposal study was conducted by FHWA called "Accelerating Roundabout Implementation in the US". It is aimed at the advancement of any issues including roundabout capacity.
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- The capacity model developed for U.S. conditions is transferable to other countries. The capacity model developed for U.S. conditions is transferable to other countries.

**Appendix**

- A Brief Overview of Roundabout Capacity
- Roundabout Capacity
- Case Study 1
- Case Study 2
- Synthesis of Roundabout Geometric Capacity Measurement; Calibration and Validation to US Field Measurements

**Abstract**

This paper provides a synthesis of the development of the UK empirical model and reviews recent US research and data collection, comparing HCM 2010 calibration and validation and the transferability of the UK geometric capacity model to the US.

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