

INTISARI

Pelaksanaan manajemen lalu lintas dalam mewujudkan suatu lalu lintas yang efisien, aman, nyaman, selamat senantiasa diupayakan oleh pemerintah. Manajemen lalu lintas dapat berupa manajemen kapasitas seperti yang diterapkan di Jalan Khatib Sulaiman Kota Padang berupa pengurangan lebar median jalan dan fasilitas *u-turn*. Manajemen kapasitas tersebut berpotensi menurunkan kecepatan lalu lintas rata-rata.

Perangkat lunak mikrosimulasi *PTV Vissim* digunakan dalam penelitian ini sebagai alat dalam mereplikasi kondisi eksisting menjadi model eksisting sehingga dapat dilakukan peningkatan kinerja lalu lintas. Dalam membangun model eksisting, data yang digunakan berupa volume lalu lintas dan kecepatan lalu lintas. Metode yang digunakan yaitu *static vehicle route*. Kemudian setelah model terbangun dilakukan kalibrasi dengan parameter *driving behaviour* dan validasi dengan metode GEH dan MAPE. Setelah model terkalibrasi dan tervalidasi, model eksisting dapat digunakan. Selanjutnya dilakukan analisis alternatif dengan parameter keluaran *software Vissim* berupa tundaan rata-rata, kecepatan rata-rata dan waktu perjalanan rata-rata, parameter kapasitas jalan dengan MKJI 1997 dan parameter keselamatan lalu lintas.

Kalibrasi dilakukan *trial and error* dengan 7 kali percobaan. Validasi dengan menggunakan metode GEH menghasilkan nilai 0.67 dan 2.17 pada *trial and error* ke- 7 dengan kesimpulan model diterima. Validasi dengan menggunakan *Mean Absolute Percentage Error* (MAPE) menghasilkan nilai 2.84 persen dengan kesimpulan bernilai sangat baik. Model eksisting menunjukkan nilai tundaan rata-rata 71.60 detik, waktu perjalanan rata-rata 5.59 menit, kecepatan -rata-rata 27.56 km/jam, kapasitas jalan 3681 arah utara smp/jam dan 3841 smp/jam arah selatan, dan 4 titik potensi konflik kendaraan. Alternatif 1 menunjukkan nilai tundaan rata-rata 55.06 detik, waktu perjalanan rata-rata 5.01 menit, kecepatan -rata-rata 29.06 km/jam, kapasitas jalan 3681 smp/jam pada dua jalur, dan 3 titik potensi konflik kendaraan. Alternatif 2 menunjukkan nilai tundaan rata-rata 99.90 detik, waktu perjalanan rata-rata 5.63 menit, kecepatan -rata-rata 29.07, kapasitas jalan 3681 smp/jam pada 2 jalur, dan 4 titik potensi konflik kendaraan. Alternatif 3 menunjukkan nilai tundaan rata-rata 25.66 detik, waktu perjalanan rata-rata 4.57 menit, kecepatan -rata-rata 29.54 km/jam, kapasitas jalan 3681 smp/jam di ruas jalan dan 2454 smp/jam di segmen tiap *u-turn* arah utara dan 3841 smp/jam, di ruas jalan dan 2561 smp/jam di segmen tiap *u-turn* arah selatan dan 2 titik potensi konflik kendaraan. Perbandingan parameter kinerja lalu lintas menunjukkan alternatif 3 menjadi rekomendasi terbaik.

Kata kunci : *Manajemen Kapasitas, GEH, MAPE, Vissim, Fasilitas U-Turn.*

ABSTRACT

Implementation of traffic management in realizing efficient, safe, and comfortable, safe traffic is always sought by the government. Traffic management can be in the form of capacity management as implemented on Jalan Khatib Sulaiman, Padang City by reducing the width of the median road and u-turn facilities. Such capacity management has the potential to reduce the average traffic speed.

PTV Vissim microsimulation software is used in this study as a tool to replicate existing conditions into existing models so that traffic performance can be improved. In building the existing model, the data used were traffic volume and traffic speed. The method used is the static vehicle route. Then, after the model is built, it is calibrated with the driving behavior parameters and validated with the GEH and MAPE methods. After the model has been calibrated and validated, the existing model can be used. Then an alternative analysis was carried out with the Vissim software output parameters in the form of average delay, average speed, and average travel time, road capacity parameters with MKJI 1997, and traffic safety parameters.

Calibration was carried out by trial and error over seven attempts. Validation using the GEH method yielded values of 0.67 and 2.17 on the 7th trial and error, with the model conclusion being accepted. Validation using the mean absolute percentage error (MAPE) yields a value of 2.84 percent with a very good conclusion. The existing model shows an average delay value of 71.60 seconds, an average travel time of 5.59 minutes, an average speed of 27.56 km per hour, a road capacity of 3681 pcu per hour north direction and 3841 pcu per hour south direction, and four potential conflict points of vehicles. Alternative 1 shows an average delay value of 55.06 seconds, an average travel time of 5.01 minutes, an average speed of 29.06 km per hour, a road capacity of 3681 pcu per hour on two lanes, and 3 potential vehicle conflict points. Alternative 2 shows an average delay value of 99.90 seconds, an average travel time of 5.63 minutes, an average speed of 29.07, a road capacity of 3681 pcu/hour on 2 lanes, and 4 potential vehicle conflict points. Alternative 3 shows an average delay value of 25.66 seconds, an average travel time of 4.57 minutes, an average speed of 29.54 km per hour, a road capacity of 3681 pcu per hour on roads and 2454 pcu per hour on segments of each u-turn for north direction and 3841 pcu per hour, on the road and 2561 pcu per hour on each u-turn segment towards the south and 2 potential vehicle conflict points. Comparison of traffic performance parameters shows that alternative 3 is the best recommendation.

Keywords : Capacity Management, GEH, MAPE, Vissim, U-Turn Facility.