**ANALISIS KINERJA PUTAR BALIK (*U-TURN*)**

**DI RUAS JALAN PAHLAWAN**

**KOTA SAMARINDA**

**DERRY IRAWAN**

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**ABSTRACT**

Growth in the number of vehicle wheels 2 (R2) and 4-wheel vehicles (R4) in Samarinda City continues to increase every year. However, it is not accompanied by increments of roads or road capacity significantly. Consequently, the delay often occurs especially during rush hour (peak hour). This is because the need for the movement of traffic is greater than the level of service of the existing road infrastructure. One of the bottlenecks which are felt by people in Samarinda occurred at Jalan Pahlawan that its land use is commercial environment that is the center of the market activities as well as some educational facilities. Facilities reverse the direction of rotation (U-Turn) in Jalan Pahlawan adjacent to the educational facilities market activity and this causes the vehicle speed when the vehicle stops what did reverse the direction of rotation (U-Turn). The presence of U-Turn This causes delays to vehicles traveling in the direction of the straight.

The intent of this research was to determine the performance due to turn around the direction (U-turn) against traffic in JL. Pahlawan Samarinda

Results of the analysis of a U-turn (U-Turn) in two (2) points Jalan Pahlawan Samarinda namely;

1. The time between the vehicle with another vehicle (time headway) on average for motorcycles (MC) of 0.501 seconds and the light vehicle (LV) of 6.059 seconds.

2. When turning the vehicle will perform round-turn (U-Turn) average of motorcycles (MC) of 5.674 seconds and the light vehicle (LV) of 9.602 seconds

3. Service queues round-turn (U-Turn) using the First In First Out (FIFO) averaging motorcycles (MC) amounted to 12.768 and light vehicle (LV) of 1,670 where ρ> 1.0 that occurred queues round reverse direction (U-Turn).

Keywords : *Putar Balik (U-Turn), Time headway, Antrian metode FIFO*

**PENGANTAR**

Perkembangan kegiatan yang sangat pesat pada dewasa ini membawa dampak yang sangat besar pada perkembangan kebutuhan pergerakan dan pelayanan prasarana transportasi, Kemacetan merupakan gejala konsekuensi logis dari bergesernya, keseimbangan antara permintaan pelayanan pergerakan dan sediaannya. Gangguan tersebut akan terasa sekali pada jaringan jalan perkotaan yang diperlihatkan dengan banyaknya titik rawan kemacetan dan tingginya angka

kecelakaan. Gejala persoalan tersebut salah satu penyebabnya adalah adanya titik konflik dan perlambatan pada saat ada kendaraan yang melakukan putaran balik arah (*U-Turn*) pada fasilitas bukaan median.

Penyediaan fasilitas jalur untuk melakukan putaran balik arah yang tidak menimbulkan konflik belum biasa terpenuhi disemua jaringan jalan, karena akan membutuhkan biaya yang sangat besar. Untuk memenuhi kebutuhan akan putaran balik arah lalu lintas maka putaran balik arah U merupakan jawaban yang masih

mungkin untuk saat ini. Akibatnya, seringkali terjadi tundaan terutama pada saat jam-jam sibuk (*peak hour*). Hal ini dikarenakan kebutuhan akan pergerakan lalu lintas lebih besar daripada tingkat pelayanan dari prasarana jalan yang ada. Salah satu kemacetan yang sangat dirasakan oleh masyarakat Kota Samarinda terjadi pada ruas Jalan Pahlawan yang tata guna lahan nya merupakan lingkungan komersial yaitu adanya pusat kegiatan pasar serta beberapa fasilitas pendidikan. Fasilitas putaran balik arah (*U-Turn*) yang ada di ruas Jalan Pahlawan yang berdekatan dengan aktifitas pasar dan fasilitas pendidikan ini menyebabkan kecepatan kendaraan terhenti apa bila ada kendaraan yang melakukan putaran balik arah (*U-Turn*). Adanya *U-Turn* ini menyebabkan tundaan terhadap kendaraan yang melakukan perjalanan ke arah lurus.

**MAKSUD DAN PEMBAHASAN PENELITIAN**

Maksud dari peneltian ini adalah mengetahui kinerja akibat putar balik arah (*U-turn*) terhadap lalu lintas di ruas Jalan Pahlawan kota Samarinda

Tujuan penelitian adalah :

1. Mengetahui waktu antara kendaraan dengan kendaraan lain (*time headway*)
2. Mengetahui waktu memutar kendaraan yang akan melakukan putaran balik arah (*U-Turn*)
3. Mengetahui pelayanan antrian putaran balik arah (*U-Turn*) dengan menggunakan metode *First In First Out* (FIFO)

Kesimpulan dari pembahasan Hasil analisis putar balik (*U-Turn*) di 2 (dua) titik ruas Jalan Pahlawan Kota Samarinda dapat disimpulkan sebagai berikut :

1. Waktu antara kendaraan dengan kendaraan lain (*time headway*) adalah

* Rata-rata untuk Hari Senin, Selasa, Rabu, Kamis, Sabtu dan Minggu ke arah Utara di lokasi U-Turn 1

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 06:00 - 07.00 | ,MC = | 0,971 | detik | , LV = | 9,152 | detik |
| 07.00 - 08.00 | ,MC = | 0,371 | detik | , LV = | 7,411 | detik |
| 08.00 - 09.00 | ,MC = | 0,516 | detik | , LV = | 7,004 | detik |
| 11.00 - 12.00 | ,MC = | 0,405 | detik | , LV = | 4,786 | detik |
| 12.00 - 13.00 | ,MC = | 0,380 | detik | , LV = | 4,532 | detik |
| 13.00 - 14.00 | ,MC = | 0,503 | detik | , LV = | 5,540 | detik |
| 16.00 - 17.00 | ,MC = | 0,444 | detik | , LV = | 5,321 | detik |
| 17.00 - 18.00 | ,MC = | 0,379 | detik | , LV = | 5,154 | detik |
| 18.00 - 19.00 | ,MC = | 0,539 | detik | , LV = | 5,631 | detik |
| Rata-rata | ,MC = | 0,501 | detik | , LV = | 6,059 | detik |
|  |  |  |  |  |  |  |

* Rata-rata untuk Hari Senin, Selasa, Rabu, Kamis, Sabtu dan Minggu ke arah Selatan di lokasi U-Turn 1

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 06:00 - 07.00 | ,MC = | 1,059 | detik | , LV = | 10,042 | detik |
| 07.00 - 08.00 | ,MC = | 0,393 | detik | , LV = | 6,346 | detik |
| 08.00 - 09.00 | ,MC = | 0,511 | detik | , LV = | 5,778 | detik |
| 11.00 - 12.00 | ,MC = | 0,463 | detik | , LV = | 4,347 | detik |
| 12.00 - 13.00 | ,MC = | 0,384 | detik | , LV = | 3,923 | detik |
| 13.00 - 14.00 | ,MC = | 0,564 | detik | , LV = | 5,717 | detik |
| 16.00 - 17.00 | ,MC = | 0,488 | detik | , LV = | 5,354 | detik |
| 17.00 - 18.00 | ,MC = | 0,435 | detik | , LV = | 6,107 | detik |
| 18.00 - 19.00 | ,MC = | 0,534 | detik | , LV = | 5,782 | detik |
| Rata-rata | ,MC = | 0,537 | detik | , LV = | 5,933 | detik |
|  |  |  |  |  |  |  |

* Rata-rata untuk Hari Senin, Selasa, Rabu, Kamis, Sabtu dan Minggu ke arah Utara di lokasi U-Turn 2

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 06:00 - 07.00 | ,MC = | 0,967 | detik | , LV = | 10,111 | detik |
| 07.00 - 08.00 | ,MC = | 0,545 | detik | , LV = | 6,656 | detik |
| 08.00 - 09.00 | ,MC = | 0,681 | detik | , LV = | 7,206 | detik |
| 11.00 - 12.00 | ,MC = | 0,488 | detik | , LV = | 5,240 | detik |
| 12.00 - 13.00 | ,MC = | 0,467 | detik | , LV = | 4,624 | detik |
| 13.00 - 14.00 | ,MC = | 0,663 | detik | , LV = | 5,827 | detik |
| 16.00 - 17.00 | ,MC = | 0,465 | detik | , LV = | 5,276 | detik |
| 17.00 - 18.00 | ,MC = | 0,446 | detik | , LV = | 5,620 | detik |
| 18.00 - 19.00 | ,MC = | 0,566 | detik | , LV = | 6,765 | detik |
| Rata-rata | ,MC = | 0,587 | detik | , LV = | 6,369 | detik |
|  |  |  |  |  |  |  |

* Rata-rata untuk Hari Senin, Selasa, Rabu, Kamis, Sabtu dan Minggu ke arah Selatan di lokasi U-Turn 2

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 06:00 - 07.00 | ,MC = | 0,880 | detik | , LV = | 8,021 | detik |
| 07.00 - 08.00 | ,MC = | 0,719 | detik | , LV = | 7,222 | detik |
| 08.00 - 09.00 | ,MC = | 0,803 | detik | , LV = | 6,431 | detik |
| 11.00 - 12.00 | ,MC = | 0,576 | detik | , LV = | 4,825 | detik |
| 12.00 - 13.00 | ,MC = | 0,664 | detik | , LV = | 5,830 | detik |
| 13.00 - 14.00 | ,MC = | 0,786 | detik | , LV = | 6,649 | detik |
| 16.00 - 17.00 | ,MC = | 0,568 | detik | , LV = | 6,964 | detik |
| 17.00 - 18.00 | ,MC = | 0,544 | detik | , LV = | 7,808 | detik |
| 18.00 - 19.00 | ,MC = | 0,529 | detik | , LV = | 7,735 | detik |
| Rata-rata | ,MC = | 0,674 | detik | , LV = | 6,832 | detik |

1. Waktu memutar kendaraan yang akan melakukan putaran balik arah (*U-Turn*) adalah

* Rata-rata untuk Hari Senin, Selasa, Rabu, Kamis, Sabtu dan Minggu ke arah Utara di lokasi U-Turn 1

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 06:00 - 07.00 | ,MC = | 5,154 | detik | , LV = | 9,197 | detik |
| 07.00 - 08.00 | ,MC = | 4,962 | detik | , LV = | 8,195 | detik |
| 08.00 - 09.00 | ,MC = | 5,759 | detik | , LV = | 10,302 | detik |
| 11.00 - 12.00 | ,MC = | 5,658 | detik | , LV = | 10,031 | detik |
| 12.00 - 13.00 | ,MC = | 5,737 | detik | , LV = | 8,337 | detik |
| 13.00 - 14.00 | ,MC = | 5,766 | detik | , LV = | 9,743 | detik |
| 16.00 - 17.00 | ,MC = | 6,714 | detik | , LV = | 10,966 | detik |
| 17.00 - 18.00 | ,MC = | 5,967 | detik | , LV = | 10,589 | detik |
| 18.00 - 19.00 | ,MC = | 5,346 | detik | , LV = | 9,060 | detik |
| Rata-rata | ,MC = | 5,674 | detik | , LV = | 9,602 | detik |
|  |  |  |  |  |  |  |

* Rata-rata untuk Hari Senin, Selasa, Rabu, Kamis, Sabtu dan Minggu ke arah Selatan di lokasi U-Turn 1

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 06:00 - 07.00 | ,MC = | 4,891 | detik | , LV = | 9,350 | detik |
| 07.00 - 08.00 | ,MC = | 4,676 | detik | , LV = | 9,044 | detik |
| 08.00 - 09.00 | ,MC = | 5,134 | detik | , LV = | 10,612 | detik |
| 11.00 - 12.00 | ,MC = | 5,420 | detik | , LV = | 11,629 | detik |
| 12.00 - 13.00 | ,MC = | 6,196 | detik | , LV = | 11,665 | detik |
| 13.00 - 14.00 | ,MC = | 5,275 | detik | , LV = | 11,129 | detik |
| 16.00 - 17.00 | ,MC = | 5,797 | detik | , LV = | 11,313 | detik |
| 17.00 - 18.00 | ,MC = | 5,083 | detik | , LV = | 10,801 | detik |
| 18.00 - 19.00 | ,MC = | 4,767 | detik | , LV = | 10,290 | detik |
| Rata-rata | ,MC = | 5,249 | detik | , LV = | 10,648 | detik |
|  |  |  |  |  |  |  |

* Rata-rata untuk Hari Senin, Selasa, Rabu, Kamis, Sabtu dan Minggu ke arah Utara di lokasi U-Turn 2

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 06:00 - 07.00 | ,MC = | 5,280 | detik | , LV = | 10,418 | detik |
| 07.00 - 08.00 | ,MC = | 5,599 | detik | , LV = | 10,876 | detik |
| 08.00 - 09.00 | ,MC = | 6,452 | detik | , LV = | 11,690 | detik |
| 11.00 - 12.00 | ,MC = | 6,530 | detik | , LV = | 11,891 | detik |
| 12.00 - 13.00 | ,MC = | 5,324 | detik | , LV = | 8,994 | detik |
| 13.00 - 14.00 | ,MC = | 5,466 | detik | , LV = | 10,423 | detik |
| 16.00 - 17.00 | ,MC = | 5,443 | detik | , LV = | 10,945 | detik |
| 17.00 - 18.00 | ,MC = | 5,449 | detik | , LV = | 10,619 | detik |
| 18.00 - 19.00 | ,MC = | 5,385 | detik | , LV = | 10,784 | detik |
| Rata-rata | ,MC = | 5,658 | detik | , LV = | 10,738 | detik |
|  |  |  |  |  |  |  |

* Rata-rata untuk Hari Senin, Selasa, Rabu, Kamis, Sabtu dan Minggu ke arah Selatan di lokasi U-Turn 2

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 06:00 - 07.00 | ,MC = | 6,337 | detik |  |  |  |
| 07.00 - 08.00 | ,MC = | 6,599 | detik |  |  |  |
| 08.00 - 09.00 | ,MC = | 7,457 | detik |  |  |  |
| 11.00 - 12.00 | ,MC = | 7,504 | detik |  |  |  |
| 12.00 - 13.00 | ,MC = | 6,365 | detik |  |  |  |
| 13.00 - 14.00 | ,MC = | 6,513 | detik |  |  |  |
| 16.00 - 17.00 | ,MC = | 6,510 | detik |  |  |  |
| 17.00 - 18.00 | ,MC = | 6,486 | detik |  |  |  |
| 18.00 - 19.00 | ,MC = | 6,426 | detik |  |  |  |
| Rata-rata | ,MC = | 6,689 | detik |  |  |  |

3. Pelayanan antrian putaran balik arah (*U-Turn*) dengan menggunakan metode *First In First Out* (FIFO) adalah

* Rata-rata untuk Hari Senin, Selasa, Rabu, Kamis, Sabtu dan Minggu ke arah Utara di lokasi U-Turn 1

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 06:00 - 07.00 | , ρ MC = | 5,483 | >1,0 | , ρ LV = | 1,013 | >1,0 |
| 07.00 - 08.00 | , ρ MC = | 13,679 | >1,0 | , ρ LV = | 1,108 | >1,0 |
| 08.00 - 09.00 | , ρ MC = | 11,731 | >1,0 | , ρ LV = | 1,482 | >1,0 |
| 11.00 - 12.00 | , ρ MC = | 14,659 | >1,0 | , ρ LV = | 2,062 | >1,0 |
| 12.00 - 13.00 | , ρ MC = | 15,591 | >1,0 | , ρ LV = | 1,819 | >1,0 |
| 13.00 - 14.00 | , ρ MC = | 12,096 | >1,0 | , ρ LV = | 1,738 | >1,0 |
| 16.00 - 17.00 | , ρ MC = | 15,142 | >1,0 | , ρ LV = | 2,082 | >1,0 |
| 17.00 - 18.00 | , ρ MC = | 16,279 | >1,0 | , ρ LV = | 2,120 | >1,0 |
| 18.00 - 19.00 | , ρ MC = | 10,251 | >1,0 | , ρ LV = | 1,610 | >1,0 |
| Rata-rata | , ρ MC = | 12,768 | >1,0 | , ρ LV = | 1,670 | >1,0 |
| Arti ; ρ > 1,0 bahwa terjadi antrian putaran balik arah (*U-Turn*) | | | | | | |

* Rata-rata untuk Hari Senin, Selasa, Rabu, Kamis, Sabtu dan Minggu ke arah Selatan di lokasi U-Turn 1

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 06:00 - 07.00 | , ρ MC = | 3,109 | >1,0 | , ρ LV = | 1,075 | >1,0 |
| 07.00 - 08.00 | , ρ MC = | 8,304 | >1,0 | , ρ LV = | 1,626 | >1,0 |
| 08.00 - 09.00 | , ρ MC = | 7,017 | >1,0 | , ρ LV = | 2,216 | >1,0 |
| 11.00 - 12.00 | , ρ MC = | 8,484 | >1,0 | , ρ LV = | 3,122 | >1,0 |
| 12.00 - 13.00 | , ρ MC = | 12,128 | >1,0 | , ρ LV = | 3,673 | >1,0 |
| 13.00 - 14.00 | , ρ MC = | 7,288 | >1,0 | , ρ LV = | 2,275 | >1,0 |
| 16.00 - 17.00 | , ρ MC = | 9,824 | >1,0 | , ρ LV = | 2,453 | >1,0 |
| 17.00 - 18.00 | , ρ MC = | 10,222 | >1,0 | , ρ LV = | 2,136 | >1,0 |
| 18.00 - 19.00 | , ρ MC = | 7,775 | >1,0 | , ρ LV = | 2,069 | >1,0 |
| Rata-rata | , ρ MC = | 8,239 | >1,0 | , ρ LV = | 2,294 | >1,0 |
| Arti ; ρ > 1,0 bahwa terjadi antrian putaran balik arah (*U-Turn*) | | | | | | |
|  | | | | | | |

* Rata-rata untuk Hari Senin, Selasa, Rabu, Kamis, Sabtu dan Minggu ke arah Utara di lokasi U-Turn 2

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 06:00 - 07.00 | , ρ MC = | 6,297 | >1,0 | , ρ LV = | 1,119 | >1,0 |
| 07.00 - 08.00 | , ρ MC = | 11,442 | >1,0 | , ρ LV = | 1,767 | >1,0 |
| 08.00 - 09.00 | , ρ MC = | 10,627 | >1,0 | , ρ LV = | 1,738 | >1,0 |
| 11.00 - 12.00 | , ρ MC = | 13,476 | >1,0 | , ρ LV = | 2,302 | >1,0 |
| 12.00 - 13.00 | , ρ MC = | 11,930 | >1,0 | , ρ LV = | 1,974 | >1,0 |
| 13.00 - 14.00 | , ρ MC = | 8,406 | >1,0 | , ρ LV = | 1,802 | >1,0 |
| 16.00 - 17.00 | , ρ MC = | 12,817 | >1,0 | , ρ LV = | 2,207 | >1,0 |
| 17.00 - 18.00 | , ρ MC = | 12,773 | >1,0 | , ρ LV = | 1,939 | >1,0 |
| 18.00 - 19.00 | , ρ MC = | 9,857 | >1,0 | , ρ LV = | 1,609 | >1,0 |
| Rata-rata | , ρ MC = | 10,847 | >1,0 | , ρ LV = | 1,829 | >1,0 |
| Arti ; ρ > 1,0 bahwa terjadi antrian putaran balik arah (*U-Turn*) | | | | | | |
|  | | | | | | |

* Rata-rata untuk Hari Senin, Selasa, Rabu, Kamis, Sabtu dan Minggu ke arah Selatan di lokasi U-Turn 2

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| 06:00 - 07.00 | , ρ MC = | 8,630 | >1,0 |  |  |  |
| 07.00 - 08.00 | , ρ MC = | 9,355 | >1,0 |  |  |  |
| 08.00 - 09.00 | , ρ MC = | 10,327 | >1,0 |  |  |  |
| 11.00 - 12.00 | , ρ MC = | 13,121 | >1,0 |  |  |  |
| 12.00 - 13.00 | , ρ MC = | 10,376 | >1,0 |  |  |  |
| 13.00 - 14.00 | , ρ MC = | 8,607 | >1,0 |  |  |  |
| 16.00 - 17.00 | , ρ MC = | 12,166 | >1,0 |  |  |  |
| 17.00 - 18.00 | , ρ MC = | 12,435 | >1,0 |  |  |  |
| 18.00 - 19.00 | , ρ MC = | 12,172 | >1,0 |  |  |  |
| Rata-rata | , ρ MC = | 10,799 | >1,0 |  |  |  |
| Arti ; ρ > 1,0 bahwa terjadi antrian putaran balik arah (*U-Turn*) | | | | | | |

4. Banyaknya kendaraan terganggu karena ada kendaraan yang melakukan U-turn, sebagai berikut ;

* Volume lalu lintas Rata-rata untuk Hari Senin, Selasa, Rabu, Kamis, Sabtu dan Minggu
* ke arah Utara di lokasi U-Turn 1, sebesar ;

|  |  |  |  |
| --- | --- | --- | --- |
| Sepeda Motor (MC) | = | 8232 | Kend/Jam |
| Kendaraan Ringan (LV) | = | 655 | Kend/Jam |

* ke arah Selatan di lokasi U-Turn 1, sebesar ;

|  |  |  |  |
| --- | --- | --- | --- |
| Sepeda Motor (MC) | = | 8366 | Kend/Jam |
| Kendaraan Ringan (LV) | = | 672 | Kend/Jam |

* ke arah Utara di lokasi U-Turn 2, sebesar ;

|  |  |  |  |
| --- | --- | --- | --- |
| Sepeda Motor (MC) | = | 7201 | Kend/Jam |
| Kendaraan Ringan (LV) | = | 638 | Kend/Jam |

* ke arah Selatan di lokasi U-Turn 2, sebesar ;

|  |  |  |  |
| --- | --- | --- | --- |
| Sepeda Motor (MC) | = | 6091 | Kend/Jam |
| Kendaraan Ringan (LV) | = | 584 | Kend/Jam |

* Banyaknya kendaraan yang melakukan manuver U-Turn Rata-rata untuk Hari Senin, Selasa, Rabu, Kamis, Sabtu dan Minggu
* ke arah Utara di lokasi U-Turn 1, sebesar ;

|  |  |  |  |
| --- | --- | --- | --- |
| Sepeda Motor (MC) | = | 494 | Kend/Jam |
| Kendaraan Ringan (LV) | = | 39 | Kend/Jam |

* ke arah Selatan di lokasi U-Turn 1, sebesar ;

|  |  |  |  |
| --- | --- | --- | --- |
| Sepeda Motor (MC) | = | 502 | Kend/Jam |
| Kendaraan Ringan (LV) | = | 40 | Kend/Jam |

* ke arah Utara di lokasi U-Turn 2, sebesar ;

|  |  |  |  |
| --- | --- | --- | --- |
| Sepeda Motor (MC) | = | 432 | Kend/Jam |
| Kendaraan Ringan (LV) | = | 38 | Kend/Jam |

* ke arah Selatan di lokasi U-Turn 2, sebesar ;

|  |  |  |  |
| --- | --- | --- | --- |
| Sepeda Motor (MC) | = | 365 | Kend/Jam |
| Kendaraan Ringan (LV) | = | 35 | Kend/Jam |
|  |  |  |  |

* Banyaknya kendaraan terganggu karena ada kendaraan yang melakukan U-turn, di rata-rata untuk Hari Senin, Selasa, Rabu, Kamis, Sabtu dan Minggu adalah
* ke arah Utara di lokasi U-Turn 1, sebesar ;

|  |  |  |  |
| --- | --- | --- | --- |
| Sepeda Motor (MC) | =  = | (8232 – 494)/2  3869 | Kend/Jam  Kend/Jam |
| Kendaraan Ringan (LV) | =  = | (655 – 39)/2  616 | Kend/Jam  Kend/Jam |

* ke arah Selatan di lokasi U-Turn 1, sebesar ;

|  |  |  |  |
| --- | --- | --- | --- |
| Sepeda Motor (MC) | =  = | (8366 – 502)/2  3932 | Kend/Jam  Kend/Jam |
| Kendaraan Ringan (LV) | =  = | (672 – 40)/2  316 | Kend/Jam  Kend/Jam |

* ke arah Utara di lokasi U-Turn 2, sebesar ;

|  |  |  |  |
| --- | --- | --- | --- |
| Sepeda Motor (MC) | =  = | (7201 – 432)/2  3385 | Kend/Jam  Kend/Jam |
| Kendaraan Ringan (LV) | =  = | (638 – 38)/2  300 | Kend/Jam  Kend/Jam |

* ke arah Selatan di lokasi U-Turn 2, sebesar ;

|  |  |  |  |
| --- | --- | --- | --- |
| Sepeda Motor (MC) | =  = | (6091 – 365)/2  2863 | Kend/Jam  Kend/Jam |
| Kendaraan Ringan (LV) | =  = | (584 – 35)/2  275 | Kend/Jam  Kend/Jam |

**Saran**

1. Perlu kajian lanjutan terhadap hubungan antara kecepatan arus menerus terhadap variabel waktu putar kendaraan yang melakukan U-Turn

2. Perlu dilakukan penelitian pada bukaan median lainnya, terutama pada lokasi yang mempunyai karakteristik lalu lintas yang berbeda untuk pengalihan arah lalu lintas kendaraan.

**DAFTAR PUSTAKA**

Abubakar, Iskandar. (1995), **Menuju Lalu Lintas dan Angkutan Jalan yang Tertib,** Direktorat Jenderal Perhubungan Darat, Jakarta.

Adris Ade Putra, Ady Sarwono Sorewo, (2008), **Pengaruh Pergerakan U-Turn (Putaran Balik Arah) Terhadap Kecepatan arus lalu lintas Menerus (Studi Kasus Jalan Brugjen Myoenoes, Kota Kendari)**, Jurnal Media Komunikasi Teknik Sipil.

Clarkson, H. Oglesby dan R. Gary Hicks. (1993), **Teknik Jalan Raya,** Jilid 1, Edisi Keempat.

Hobbs, F.D.,(1995), **Perencanaan dan Teknik Lalu Lintas**, Gajah Mada University Press, Yogyakarta.

May, A.D., (1990). **Traffic Flow Fundamentals** , Prentice Hall, New Jersey.

**Manual Kapasitas Jalan Indonesia 1997 (MKJI’97)**, Direktorat Jenderal Bina Marga, Departemen Pekerjaan Umum.

Morlok, Edward K, (1994), **Pengantar Teknik dan Perencanaan Transportasi**, Erlangga, Jakarta.

**Profil Daerah** (2012) Bappeda Kota Samarinda

**Rencana Induk Transportasi pada Kawasan Kota Samarinda dan Sekitarnya** (2010), Direktorat Bina Sistem Transportasi Perkotaan Direktorat Jenderal Perhubungan Darat Kementrian Perhubungan

Tamin, O.Z., (2003), **Perencanaan dan Pemodelan Transportasi Contoh Soal dan Aplikasi** , Edisi I, ITB, Bandung.

Weka Indra Dharmawan, Devi Oktarina, (2013), **Kajian Putar Balik (U-Turn) terhadap kemacetaan Ruas Jalan di Perkotaan (Studi Kasus Ruas Jalan Teuku Umar dan Jalan ZA. Pagar Alam Kota Bandar Lampung)**, Konferensi Nasional Teknik Sipil 7 (KoNTekS 7) Universitas Sebelas Maret (UNS) Surakarta 24-26 Oktober 2013