

ABSTRACT

The National Health Insurance (JKN) program, managed by BPJS Kesehatan, is an initiative by the Indonesian government to provide equitable and high-quality healthcare services for all citizens. However, service time performance remains a critical issue in many healthcare facilities, often resulting in delays and inefficiencies in care delivery. This study aims to analyze service duration as a key performance indicator of healthcare operations, focusing specifically on patients diagnosed with Chronic Kidney Disease (CKD).

This research employs a comparative approach using three process mining algorithms: Fuzzy Miner for initial process exploration, Heuristic Miner for analyzing noisy event logs, and Inductive Miner for structured Petri net model generation. These models are evaluated based on fitness, precision, generalization, and simplicity. The dataset consists of 120,625 outpatient healthcare event records involving CKD cases, sourced from BPJS Kesehatan between 2015 and 2018 across ten high-volume provinces.

The analysis revealed substantial service time disparities between provinces. East Java exhibited the longest non-instantaneous activity duration of 87.6 minutes, while Banten recorded the longest inter-activity delay of 88.9 days. In contrast, most routine activities were recorded as instantaneous. These delays significantly exceed the service time thresholds outlined in Permenkes No. HK.01.07/MENKES/1634/2023, which sets standard durations for outpatient procedures.

These findings provide actionable insights for healthcare providers and policymakers to streamline workflows, reduce unnecessary delays, and standardize chronic care delivery, particularly for CKD patients under the JKN scheme.

Keywords: BPJS Kesehatan, Heuristic Miner, Inductive Miner, Fuzzy Miner, Service Time, Chronic Kidney Disease.