

## INTISARI

Penelitian kualitas udara terkait pandemi Covid-19 telah dilakukan di berbagai kota di seluruh dunia, yang menemukan adanya peningkatan kualitas udara selama masa pandemi Covid-19. Beberapa penelitian membahas terkait penurunan konsentrasi polutan udara selama masa pandemi Covid-19. Namun demikian, masih belum banyak penelitian yang membahas keterkaitan antara variabel kualitas udara dan tingkat mobilitas masyarakat. Melalui penelitian ini, keterkaitan hubungan antara variabel polutan udara, faktor meteorologi, dan tingkat mobilitas masyarakat diselidiki pada tinjauan lokasi Kota Yogyakarta. Fenomena hubungan sistem kualitas udara dan mobilitas masa pandemi Covid-19 tahun 2020 terbagi dalam dua periode: (a) Pembatasan Aktivitas (April s.d. Juli 2020) dan (b) Normal Baru (Agustus s.d. Desember 2020).

Perbandingan konsentrasi polutan udara sebelum dan masa pandemi Covid-19 menunjukkan adanya perubahan berupa perbaikan kualitas udara di Kota Yogyakarta dari kategori Baik: 31,85% menjadi 90,37% ISPU (*chi-square asymp. sig. < 0,05*). Hasil yang diperoleh dari penelitian ini didapatkan polutan udara PM<sub>10</sub>, SO<sub>2</sub>, dan CO mengalami penurunan sebesar 18%, 93%, dan 74%, sedangkan O<sub>3</sub> meningkat sebesar 104% pada masa pandemi Covid-19 tahun 2020. Polutan udara primer PM<sub>10</sub>, SO<sub>2</sub>, dan CO memiliki hubungan positif terhadap faktor meteorologi penyinaran matahari, tetapi memiliki hubungan negatif terhadap polutan udara sekunder O<sub>3</sub> serta faktor meteorologi suhu udara, kelembapan udara, curah hujan, dan kecepatan angin. Hasil penelitian juga menunjukkan bahwa faktor meteorologi bulan Desember identik dengan tingginya konsentrasi O<sub>3</sub> bersamaan dengan kelembapan udara dan curah hujan.

Pembatasan aktivitas masyarakat di luar rumah secara umum menyebabkan perbaikan kualitas udara, di mana penurunan mobilitas transportasi menjadi variabel yang mempengaruhi penurunan polutan udara primer di Kota Yogyakarta. Pembatasan aktivitas mempengaruhi polutan udara sekunder, di mana kenaikan O<sub>3</sub> terjadi ketika mobilitas dalam ruangan dan transportasi meningkat.

Kata kunci: analisis regresi, *biplot*, meteorologi, mobilitas, polusi udara

## **ABSTRACT**

*Air quality research related to the Covid-19 pandemic has been carried out in various cities around the world, which found an increase in air quality during the Covid-19 pandemic. Several studies discuss the reduction in air pollutant concentrations during the Covid-19 pandemic. However, there are still not many studies that discuss the relationship between variables of air quality and level of community mobilities. Through this study, the relationship between variables of air pollutants, meteorological factors, and level of community mobilities was investigated at the location in Yogyakarta City. The phenomena of the relationship between air quality system and mobilities during the 2020 Covid-19 pandemic was divided into two periods: (a) Activity Restrictions (April to July 2020) and (b) New Normal (August to December 2020).*

*Comparison of air pollutant concentrations before and during the Covid-19 pandemic showed a change in the form of improving air quality in Yogyakarta City, from the Good category: 31.85% to 90.37% PSI (chi-square asymp. sig. < 0.05). The results obtained from this study showed that air pollutants  $PM_{10}$ ,  $SO_2$ , and CO decreased by 18%, 93%, and 74%, while  $O_3$  increased by 104% during the 2020 Covid-19 pandemic. Primary air pollutants  $PM_{10}$ ,  $SO_2$ , and CO have a positive relationship to meteorological factor of sunshine, but have a negative relationship to secondary air pollutant  $O_3$  and meteorological factors of air temperature, humidity, rainfall, and wind speed. The results also show that meteorological factors in December were identical with high concentration of  $O_3$  along with humidity and rainfall.*

*Restrictions on community activities outside the home generally led to improved air quality, where a decrease in transportation mobility became a variable that affected the decrease in primary air pollutants in Yogyakarta City. Activity restrictions affected secondary air pollutant, where an increase in  $O_3$  occurred when indoor and transportation mobilities increased.*

*Keywords: air pollution, biplot, meteorology, mobility, regression analysis*