**Applications of Epidemiology**

Student's Name

Instructor's Name

Course

Date

**Applications of Epidemiology**

**Uses and Applications of Epidemiology**

Epidemiology plays a vital role in public health since it helps to establish patterns and causes of health and disease in a given population. Some important application areas of epidemiology are determining the population's health condition, identifying the factors that cause diseases, and measuring the effectiveness of healthcare systems (Sims & Kasprzyk-Hordern, 2020). First, epidemiology evaluates the condition of society about the rates of diseases as well as disease occurrences, which is helpful in risk authority and priority setting. Likewise, chronic diseases can be monitored, such as the number of patients with hypertension in this community, and in turn, can direct necessary resources for the prevention and treatment programs. Secondly, it aims to determine the cause of diseases using epidemiological research techniques such as cohort studies or case-referent research guides to make causal relationships between exposures and results, such as linking high cholesterol levels with heart diseases. Lastly, epidemiology assesses the efficiency of health interventions by comparing results obtained from prevalence studies before and after the health interventions have been initiated, incorporates decisions on the reformation of the health programs, and ensures the appropriateness of resource utilization.

**Use of Descriptive Epidemiology**

Descriptive epidemiology deals with person, place, and time characteristics and is best suited for finding health trends and future health potentials (Fox et al., 2022). The 'person' aspect entails reviewing facets such as age, gender, and career to discover who is most impacted by cause-specific diseases, for instance, elderly candidates for cardiovascular diseases. The "place" component looks at regional differences in the prevalence of diseases, emphasizing social and environmental aspects such as greater incidence of asthma in places with poor air quality. Lastly, the 'time ' presents the disease dynamics within specified periods, for example, daily, weekly, monthly, and yearly, and identifies disease trends, epidemics, or changes, like the trends of type 2 diabetes within the past few decades. Understanding these patterns would enable the trained health personnel to forecast probable future outbreaks, fashion out how to counteract them, and channel resources to health compartments that require it most to prevent and control community diseases. Descriptive epidemiology is an instrumental tool in public health planning and response.

**Reference**

Fox, M. P., Murray, E. J., Lesko, C. R., & Sealy-Jefferson, S. (2022). On the need to revitalize descriptive epidemiology. *American journal of epidemiology*, *191*(7), 1174-1179.

Sims, N., & Kasprzyk-Hordern, B. (2020). Future perspectives of wastewater-based epidemiology: monitoring infectious disease spread and resistance to the community level. *Environment international*, *139*, 105689.