**STAGE – 1 TASK 2**

**SUMMARY ON OPIOID EPIDEMIC**

The deaths related to opioid overdose are 78 each day and the prescriptions on opioid are more than 650,000 per day in the USA. Out of all the opioid related deaths one third of the deaths are due to the commonly prescribed opioid drugs. The control in the prescriptions of opioid can reduce the deaths related to them as the past data shows that the increase in the prescriptions lead to more opioid related deaths. However many other factors other than the prescription of opioids needs to be considered to make significant impact in decreasing the mortality related to opioid. In the paper the study was carried out to co analyze the nationwide opioid prescription Medicare part D data with the socio-economic factors and opioid related mortality data to get the connections between them at a county level.

The authors of the paper have extracted information on the number of claims, generic drug name, number of Medicare beneficiaries, category and specialty of practitioner and ZIP code of each healthcare provider, as reported in the 2013 and 2014 Medicare Part D Opioid Prescriber Summary Files. The 2010 ZIP Code Tabulation Area (ZCTA) to County Relationship File was used to assign the opioid claims to the county. From the ‘Multiple Cause of Death 1999–2014 dataset published by the Centers for Disease Control and Prevention (CDC) WONDER Online Database’ the data related to opioid mortality were extracted for analysis. The ICD – 10 coding system was used to encode the type of drug that was used, this coding system has four categories. The total opioid mortality rate was calculated as opioid related deaths by summing up all the four mortality rates that were obtained for each group. Similarly, the mortality rate per each opioid class was calculated as the total deaths divided by the size of population residing in a county or state.

Socio economic data was obtained from the ACS 5 year estimates dataset provided by the US Census Bureau. In this the data is divided with respect to state with county level data. The variables such as percentage of people living under the poverty line, percentage of Black, Hispanic or White population, percentage of males, percentage of population aged C65 years, population density, and number of Medicare enrolled opioid prescribing physicians per county population were included in the analysis.

Statistical analysis such as Multivariable linear regression was implemented to predict county opioid-related mortality based on the aggregate opioid prescription rate per county, percentage of people living under poverty line, gender and race distribution in each county. The dependent and independent variables were rescaled to have a mean of zero and standard deviation of 1. Data processing and statistical analyses were performed using MATLAB 2016a.

The paper selected for report is ‘The burden of Opioid related mortality in the United States’. This paper discusses the public health problems related to Opioid prescriptions and overdoses in North America. In this paper the burden of opioid related mortality across the US over time was examined. The results obtained were as follows, between 2001 and 2016 opioid related deaths increased by 345% (9489 to 42,245). In 2016 men accounted for 67.5% of deaths and the median age was 40 years. The burden of opioid was highest in the age group of 24 to 35 years (this group has 20% of total deaths in 2016). The burden was estimated on the years of life lost (YLL). One study measuring the burden of opioid addiction globally in 2010 found that opioid dependence was responsible for nearly 1 million disability-adjusted life-years annually in US. In 2016, years of life lost was 5.2 per 1000 population related to opioid deaths. Age group of 25 to 34 years had 12.9 years of life lost per 1000 population, and 9.9 years of life lost per 1000 population in those aged 35 to 44 years.

From these results it can be said that premature deaths due to opioid related issues has an enormous effect on the heath care system and imposes a great burden on public health across the United States. The increasing trend each year highlights the need for policies and programs targeting especially improving addiction care and harm reduction measures in the high-risk areas.