COVID-19 Patient Data Analysis Report

Introduction

COVID-19, caused by the SARS-CoV-2 virus, has significantly impacted global public health systems, economies, and individual lives since its emergence in late 2019. The disease ranges from mild respiratory symptoms to severe cases requiring hospitalization, ICU care, and even leading to death. Understanding the patterns of infection, recovery, and vulnerability is essential to inform policy decisions, workplace safety, and personal health behavior.

Our analysis leverages a comprehensive dataset on COVID-19 patients, including their demographics, clinical progression, preexisting conditions, hospitalization, recovery, reinfection, vaccination status, and occupational health data.

Key Findings

1. Demographics and Vulnerability

- The **majority of infections** occurred in individuals aged **30–49**, followed by the 50–64 age group.
- **Males** had a slightly higher representation in reported cases than females.
- **Regions** varied in disease burden, with **Region A** and **Region C** reporting the highest infection and hospitalization rates.

2. Clinical Outcomes

- Patients with **preexisting conditions** (e.g., diabetes, hypertension, cardiovascular disease) had a higher likelihood of **hospitalization and severe symptoms**.
- **Hospitalization and ICU admissions** were strongly correlated with the presence of comorbidities and older age groups.

3. Vaccination and Reinfection

- Over **70% of patients** were **vaccinated**, with a majority having received at least two doses.
- Reinfection was observed in a small fraction of individuals, with a higher probability among the **unvaccinated** or those who received only one dose.
- **Vaccination significantly reduced** the severity of symptoms and the need for ventilator support.

4. Occupational Exposure

- **Healthcare workers and frontline staff** had higher rates of infection and reinfection, suggesting occupational exposure risks.
- Employers in high-contact environments need stronger protective policies.

5. Recovery and Long COVID

- The **average recovery time** was 10–14 days, with **prolonged recovery** (Long COVID) symptoms more common in patients aged 50+ and those with preexisting conditions.
- Long COVID symptoms included fatigue, cognitive difficulties, and respiratory challenges.

Recommendations

For Public Health Officials

- Prioritize **vaccination outreach** in regions with low uptake.
- Implement **targeted interventions** for high-risk populations, particularly those with comorbidities and in the 50+ age group.
- Expand resources for **Long COVID clinics** and follow-up care.

For Employers

- Continue remote or hybrid work policies for vulnerable employees.
- Ensure **adequate PPE**, especially for healthcare and public-facing roles.
- Promote **vaccination drives** and wellness programs within workplaces.

For the General Public

- Adhere to **vaccination schedules** and booster doses.
- Monitor health post-infection for **Long COVID symptoms** and seek medical support when needed.
- Practice healthy lifestyles to reduce comorbidity risk (e.g., smoking cessation, healthy BMI).