Low Risk Research Ethics Approval

Project title

Analysis and Early Detection of Respiratory Illness-Related Cases Using UK Air Quality and Hospital Data

Record of Approval

Principal Investigator's Declaration

I request an ethics peer reviewI confirm that I have answered all relevant questions in this application honestly	X
I confirm that I will carry out the project in the ways described in this application. I will immediately suspend research and request an amendment or submit a new application if the project subsequently changes from the information I have given in this application.	X
I confirm that I, and all members of my research team (if any), have read and agree to abide by the code of research ethics issued by the relevant national learned society.	X
I confirm that I, and all members of my research team (if any), have read and agree to abide by the University's Research Ethics Policies and Processes.	X
I understand that I cannot begin my research until this application has been approved and I can download my ethics certificate.	X

Name: Kapil Srivastava (7150CEM)

Date: 17/06/2025

Student's Supervisor (if applicable)

I have read this checklist and confirm that it covers all the ethical issues raised by this project fully and frankly.I also confirm that these issues have been discussed with the student and will continue to be reviewed in the course of supervision.

Name: Dr. Omid Chatrabgoun

Date: 18/06/2025

Reviewer (if applicable)

Date of approval by anonymous reviewer: -

Low Risk Research Ethics Approval Checklist

Project Information

Project Ref	P187137
Full name	Kapil Srivastava
Applicant type	Taught student
Semester	May
Area	CU Group - CU Coventry
Sub Area	Engineering and Digital Technologies
Supervisor	Dr. Omid Chatrabgoun
Module Code	7150CEM
EFAAF Number	
Project title	Analysis and Early Detection of Respiratory Illness-Related Cases Using UK Air Quality and Hospital Data
Date(s)	17 Jun 2025 - 03 Aug 2026
Created	16/06/2025 14:03

Project Summary

This project aims to analyze patterns and develop early warning models for surges in specific respiratory illnesses—acute bronchiolitis, influenza-like illness (ILI), scarlet fever, and acute respiratory infections (ARI)—in the West Midlands region. By linking environmental air quality data with hospital case trends, this system seeks to support timely public health responses and improve resource readiness in healthcare systems.

Names of Co-Investigators and their organisational affiliation(place of study/employer)		
Full name	Notified	Accepted

Is this project externally funded?	No
Are you required to use a Professional Code of Ethical Practice appropriate to your discipline?	No
Have you read the Code?	No
Will this project involve international engagement or partnerships?	
Does your research fall within at least one of the 17 sensitive areas of the economy?	

Project Details

What are the aims and objectives of the project?	Aims and Objectives: * Analyze daily trends of respiratory illnesses (bronchiolitis, ILI, ARI, and scarlet fever) in the West Midlands. * Correlate air quality data (PM2.5, PM10, NO, O3) with illness case spikes. * Develop predictive models to detect early warning signs of illness surges. * Identify key pollutants influencing each illness type using feature importance methods. * Support healthcare planning and public health alerts through data-driven insights.
Provide a summary of the research, outlining the aims and objectives and/or research questions and the proposed research design and methods	Summary of the Research: This project aims to analyze and predict surges in respiratory illnesses—specifically acute bronchiolitis, influenza-like illness (ILI), scarlet fever, and acute respiratory infections (ARI)—in the West Midlands region. By linking daily hospital case counts with environmental air quality data, the study seeks to uncover patterns and triggers that can help support early public health interventions and hospital preparedness. The research will use data from the UK Health Security Agency (UKHSA) and the DEFRA UK-AIR database, focusing on pollutants such as PM2.5, PM10, NO, and O3. Engineered features like lag effects and moving averages will be created to enhance predictive accuracy. The core research questions involve understanding how pollution levels correlate with illness trends and which environmental factors most significantly influence outbreaks. The proposed methodology includes time-series analysis, machine learning models (Random Forest, XGBoost), and SARIMAX for trend forecasting. Exploratory data analysis, model interpretation using SHAP or feature importance, and visual reporting via Tableau or Python will form key parts of the research design. The outcomes aim to inform real-time healthcare response and environmental policy decisions.
Are you proposing to use a validated scale or published research method/tool?	No

Data Analysis

Does the research seek to understand, identify, analyse and/or report on data/information on terrorism/terrorism policies?	No

Does your research seek to understand, identify, analyse and/or report on information for other activities considered illegal in the UK and/or in the country you are researching in?	No
Are you analysing Secondary Data?	Yes
Is this data publicly available?	Yes
Could an individual be identified from the data? e.g. identifiable datasets where the data has not been anonymised or there is risk of re-identifying an individual	No
Are you dealing with Primary Data involving people?	No
Are you dealing with personal data?	No
Are you dealing with special category data (formerly known as sensitive data)?	No
Will the data collection, recruitment materials or any other project documents be in any language other than English?	No
Is your research a practical media project or performance?	No

External Ethics Review

Question			Yes	No
1	Will this project be submitted for ethics review to an external organisation?			X
	Name of external organisation			
2	Are you submitting to IRAS?			
	Have you actively involved, or will you involve, patients, service users, and/or their carers, or members of the public in the design of this project?			
	Provide details of the involvement			
3	Has this project previously been reviewed by an external organisation?			