Batch 5 - Capstone - client briefing

# Email from your head of engineering

Dear new employee

Welcome to the team, and congratulations on passing the gruelling interview process! We’re glad to have you as the newest member of our team here at Lisbon Data Science’s *Awkward Problem Solutions™.* As I’m sure you know from the interview process, we are a consultancy that tackles the hard data science problems no one else will touch.

We have been tasked to deal with a sensitive and important issue, whose ramifications might have severe consequences. The Hazel and Bazel Hospital, in Los Angeles, California, has contacted us regarding suspicion of malpractice and is currently under investigation by the Fair Medical Practices Bureau. Situations have come to light where patients have been wrongfully medically discharged, resulting in severe health consequences for the patient. Our main objective is to identify patients who are likely to return to the hospital in less than 30 days, for which the hospital might be liable for wrongful discharge before due time.

The reasons for this are still unknown, and investigation into this matter is required. It is unknown if this is a demographic-specific issue or specific to any of the medical specialities/services. Additionally, they want us to create and deploy a REST API endpoint for patient discharge verification. This will be integrated directly into the hospital’s system to be triggered every time the medical dismissal information for a patient is filled in in their system. You will be responsible for setting this system up and running it for a year.

Due to the sensitivity of this issue, you’ll be working directly with Dr Agnes Crumplebottom, the Hazel and Bazel Hospital medical director. Dr Crumplebottom will be your only point of contact during this project. Due to the sensitive nature of the project, information might be limited.

As you may imagine, this project is a huge deal for our consultancy, we’re counting on you to deliver on this one. Naturally, if you have any questions you can ask me, but I’m counting on you to lead and execute from start to finish. You can find Dr Crumplebottom email attached below.

Yours,

Aveline

VP of Data Science

*Awkward Problem Solutions™.*

# Email from Dr Agnes Crumplebottom

Aveline

I can’t stress enough how important the matter we have at hand is. I’m under enormous pressure from the board to initiate a thorough investigation, and some funders are threatening to withdraw funding which is vital for the renovation of my office. You have guaranteed the confidentiality of our communications so I’ll speak frankly to you. If the money we are spending with your firm is an indication of your secrecy, this might be better than confessing to the Pope.

I’ll cut to the chase and talk frankly to you. The situation appears to be dire. We’ve received private, but trustworthy, information that the Fair Medical Practices Bureau is currently investigating our hospital and that a class-action lawsuit is currently in the works. Apparently, according to these “officers”, we’ve been providing subpar treatment to our patients. As you know, our Hospital focuses on diabetes, a pervasive and lucrative epidemic. Funny that when confined, people still tend to overeat. But I digress. We offer premium quality services, tailored to diabetic patients so that they receive the best care for their unique condition. Of course, we don’t promise a cure, as that would be counter-intuitive for our interests, but our care practices are both extensive and in-depth, insurance allowing.

The main suspicion is our number of returning patients after a very short time after discharge. To me, this is a sign that we provide such good care that they just want more. But some hold other opinions. The board has forced me to procure an external party to investigate and present an objective report. I am trusting you, and your firm, with this task. You promised me the best of your people, and I’m counting on it.

I have discussed this matter extensively with our head of IT, which will be expecting a service to be integrated into our own internal system for medical discharge approval, so all we need is a REST API that our own code can call. We won’t be sending you any requests from recent events, as naturally, we wouldn’t know the outcome.

Regarding data, we are providing you with our patient information since 2012. The head of IT has provided you with a field description [in this link.](https://docs.google.com/spreadsheets/u/0/d/1zpxPakMRluIC-D4zZ3YOTdO2VGH14n7w9V_3BlHe7ts/edit) The [**training dataset**](https://drive.google.com/file/d/1EJTwkK4xq3hK1e1jMgxtKL8zkr1fSTir/view) has approximately 81,411 observations, I expect this should be enough.

Regarding the analysis, we want you to search for evidence that any of our services may be discriminating on gender, ethnicity or age regarding who they chose to dismiss from our care. We are particularly interested in knowing if any of our specialities or admission sources are responsible for the unexpected patient discharge rate. Additionally, some questions regarding our care for uninsured patients have been brought up. I denied these offensive insinuations but the board is of the unanimous opinion that this is a matter to be considered.

As you may imagine these are sensitive topics, with many jobs, one of them my own, on the line. We, therefore, need you to propose what metrics would suggest that anything unacceptable is being observed. Some training and changes of staff and/or policy may impact the data over time.

The report will be read both by me and by the members of our board. I expect this report to be well straight-forward and structured. I’m paying you enough for it. After the analysis is completed and your report has been understood, we will run a proof of concept with your company for the use of your API in integration with our hospital patient record management system. It is imperative that we succeed in ending these insinuations that we do not provide the necessary medical care to as many patients as possible. If during the investigation it is observed that we are failing to provide care to a patient that needs it, the consequences for us and for your company will be dire. Nevertheless, we don't have the monetary, personal and infrastructural resources to retain all patients indefinitely. We expect that your API should be able to signal potential wrongful discharges with all of these requirements.

From your last email, I understand you’ve hired a specialist to deal with this project. I’m very much looking forward to working with them, and am of course available to answer their questions as they occur. But please be mindful that my time is limited. And more important than yours.

Best regards

Agnes Crumplebottom, MD PhD

*Medical director*

*Hazel and Bazel Hospital*