



We are glad to continue the recruitment process for the Product Analyst position with you.

Before we meet for the 2nd interview, we have a task for you as your first assignment. This would help us evaluate your practical skills. Please note that we will discuss your solution only as part of this recruitment process.

Task #1: New app feature analysis

Description:

You're evaluating the effectiveness of a new appointment reminder feature in a healthcare app. The task involves analyzing patient data, conducting A/B testing, validating hypotheses, building funnels, and examining traffic sources. Your findings will help determine how the new feature impacts appointment confirmations and overall patient engagement.

Data Files Provided:

1. `appointments_data.csv`

- **Fields:**

- `patient_id`: Unique identifier for each patient.
- `age`: Age of the patient.
- `gender`: Gender of the patient.
- `doctor_name`: Name of the doctor the appointment is with.
- `appointment_reason`: Reason for the appointment (e.g. Annual Exam, Screening for COVID, Asthma, Allergy Injection etc).
- `appointment_date`: Date of the scheduled appointment.
- `appointment_status`: Whether the appointment was attended or not.

2. `ab_test_data.csv`

- **Fields:**

- **patient_id**: Unique identifier for each patient.
- **group**: A/B testing group (Control or Test).

"Control" and "Test" are the two groups into which patients are divided to measure the impact of a change or new feature. Description of each:

Control Group:

- **Purpose:** The control group serves as the baseline for comparison. Patients in the control group do not experience the new feature or change being tested.
- **In this task:**
 - Patients in the control group do not receive a reminder about their appointment.
 - Their appointment attendance is tracked without any intervention.
 - The data collected from this group helps us understand the natural behavior of patients without the reminder influence.

Test Group:

- **Purpose:** The test group experiences the new feature or change being introduced. The results from this group are compared against the control group to determine the effectiveness of the change.
- **In this task:**
 - Patients in the test group receive a reminder about their appointment.
 - The data collected includes whether they viewed the reminder, confirmed their appointment, and eventually attended it
 - This group allows the analysis of the app reminder's impact on appointment attendance.
 - **event_name**: Name of the event related to the appointment process (e.g., reminder_sent, reminder_viewed, appointment_confirmed, attended_appointment).
 - **event_datetime**: Timestamp of when the event occurred.
 - In the Test group, patients receive reminders via the app. The sequence of events is as follows:
 - **reminder_sent**: The reminder is sent to the patient via the app.
 - **reminder_viewed**: The patient views the reminder in the app.
 - **appointment_confirmed**: The patient confirms the appointment.
 - **attended_appointment**: The patient attends the appointment.

3. `app_data.csv`

- **Fields:**
 - `patient_id`: Unique identifier for each patient.
 - `traffic_source`: The source through which the patients downloaded app from (e.g., Organic Search, Meta Ads, Google Ads, Referral, Direct).
 - `device`: The device type used by the patient (e.g., IOS 18.1, Android 9.3)

Tasks:

1. **Data Exploration and Cleaning:**
 - Load the datasets and explore the data to understand its structure and see if there're any inconsistencies or missing values. Perform any necessary data cleaning.
2. **A/B Testing Analysis:**
 - Conduct an A/B test analysis to determine whether the app reminder feature in the Test group leads to a higher rate of appointment confirmations compared to the Control group.
 - Use appropriate statistical methods (e.g. t-tests, chi-square tests) to validate your findings.
3. **Hypothesis Testing:**
 - Formulate and test hypotheses related to the effectiveness of the app reminders. For example:
 - Hypothesis 1: "Patients in the Test group are more likely to confirm their appointments within 1 hour of viewing the reminder compared to the Control group"
 - Hypothesis 2: "Young patients that use newer device versions are more likely to view and respond to reminders promptly"
4. **Funnel Analysis:**
 - Build a funnel to analyze the patient journey from reminder sent to attending the appointment. Identify any significant drop-offs or conversion points.
 - Provide insights into where the process can be improved to increase appointment attendance
5. **Traffic Source Analysis:**
 - Determine which traffic sources are most effective in bringing patients who engage with the app reminders.
 - Provide a breakdown of the performance of different paid ad platforms (e.g., Meta Ads, Google Ads, Apple Ads) compared to organic and referral sources.
6. **SQL Queries:**
 - Use duckdb to assume that the provided CSV files are stored in a relational database. Write SQL queries to:
 - Retrieve patients who confirmed their appointment within 5 minutes of viewing the reminder.
 - Identify the most common traffic sources for patients who attended their appointments.
 - Calculate the average time between reminder viewing and appointment confirmation for different age groups

Expected output from candidate for Product Analyst role:

- A report summarizing your findings, including:
 - A/B test results and hypothesis testing outcomes.
 - Funnel analysis with visualizations.
 - Insights from the traffic source analysis.
 - SQL queries.
 - Any recommendations based on your analysis.
 - Answer questions:
 1. What inconsistencies in data you found?
 2. What other patients' data do you wish is present in CSV files so you could perform a deeper analysis?
- Python code or Jupyter Notebook used for the analysis.

Task #2: R&D Product Analysis

Description: conduct a research on how the business of selling Kyla's lab tests (https://kyla.com/labs?product_analyst_test_task) and other At-Home Lab Tests solutions are organized, and compile a "OKR Tree" with an argument for its application to this type of business.

Expected output from candidate for Product Analyst role:

The solution should consist of 2 parts:

- Tree of Product Metrics.
- Analysis and argumentation of the built solution.

Note: use the tool you prefer for graphical representation of OKR Tree (for example, it can be Figma)