### **Documentation for the Health Device Dataset**

This document provides a detailed description of the dataset generated for analyzing health device data. The dataset is designed to simulate realistic health metrics and sleep data, focusing on granular details to support health monitoring, research, and personalized recommendations.

### **Directory Structure**

output/

└── health\_device\_MM-DD/

├── health\_device\_user\_profiles\_MM-DD.csv

├── health\_device\_sleep\_sessions\_MM-DD.csv

├── health\_device\_sleep\_stages\_MM-DD.csv

├── health\_device\_sleep\_metrics\_MM-DD.csv

├── health\_device\_vital\_readings\_MM-DD.csv

└── health\_device\_readiness\_scores\_MM-DD.csv

### **Example Prompts**

#### **1. Sleep Analysis**

* List all users with an average sleep efficiency below 85%.
* Identify the most common sleep types (e.g., long sleep, short sleep, nap) and their frequency.
* Analyze the average duration of deep sleep across all users.

#### **2. Vital Metrics**

* List all hourly heart rate readings for USER\_4b566498 during sleep session “852a8c75-f341-41d6-9ec2-338583de397a"
* Identify users with an average heart rate above 75 bpm during sleep.
* Analyze the variability in HRV (Heart Rate Variability) across different sleep types.

#### **3. Readiness and Recovery**

* Calculate the average readiness score for all users.
* Identify the top contributors to low readiness scores.
* Analyze the relationship between sleep efficiency and readiness scores.

### **Dataset Description**

#### **Health Device Data**

**Description**: Comprehensive dataset containing detailed health and sleep metrics, including sleep stages, heart rate, HRV, and readiness scores.  
 **Records**: Multiple tables with varying record counts.

### **Tables and Columns**

#### **1. User Profiles**

**Description**: Baseline information for each user.  
 **Columns**:

* user\_id: Unique identifier for each user.
* base\_heart\_rate: Baseline heart rate for the user.
* base\_hrv: Baseline heart rate variability for the user.
* typical\_bedtime: Typical bedtime for the user (HH:MM format).
* preferred\_sleep\_duration: Preferred sleep duration in minutes.

#### **2. Sleep Sessions**

**Description**: Core information about each sleep session.  
 **Columns**:

* session\_id: Unique identifier for each sleep session.
* user\_id: Unique identifier for the user.
* start\_time: Start time of the sleep session.
* end\_time: End time of the sleep session.
* type: Type of sleep (e.g., long sleep, short sleep, nap).
* algorithm\_version: Version of the sleep tracking algorithm used.

#### **3. Sleep Stages**

**Description**: Duration of different sleep stages for each session.  
 **Columns**:

* session\_id: Unique identifier for each sleep session.
* deep\_sleep: Duration of deep sleep in seconds.
* rem\_sleep: Duration of REM sleep in seconds.
* light\_sleep: Duration of light sleep in seconds.
* awake: Duration of awake time in seconds.

#### **4. Sleep Metrics**

**Description**: Aggregated metrics for each sleep session.  
 **Columns**:

* session\_id: Unique identifier for each sleep session.
* average\_heart\_rate: Average heart rate during the session.
* average\_hrv: Average heart rate variability during the session.
* efficiency: Sleep efficiency percentage.

#### **5. Vital Readings**

**Description**: Hourly heart rate and HRV readings during sleep sessions.  
 **Columns**:

* session\_id: Unique identifier for each sleep session.
* timestamp: Timestamp of the reading.
* heart\_rate: Heart rate at the given timestamp.
* hrv: Heart rate variability at the given timestamp.

#### **6. Readiness Scores**

**Description**: Readiness scores and their contributors for each session.  
 **Columns**:

* session\_id: Unique identifier for each sleep session.
* score\_type: Type of readiness score (e.g., activity\_balance, recovery\_index, sleep\_balance).
* value: Value of the readiness score.

### **Use Cases**

1. **Sleep Analysis**: Analyze sleep efficiency, duration, and stages to identify patterns and improve sleep quality.
2. **Vital Metrics Monitoring**: Track heart rate and HRV trends to assess overall health and recovery.
3. **Readiness and Recovery Insights**: Evaluate readiness scores and contributors to optimize daily performance and recovery.
4. **Personalized Recommendations**: Use baseline metrics and sleep data to provide tailored health recommendations.
5. **Temporal Trends**: Analyze changes in sleep and health metrics over time to identify long-term trends.
6. **User Segmentation**: Group users based on sleep efficiency, readiness scores, or other metrics for targeted interventions.

This documentation provides a comprehensive overview of the dataset, its structure, and potential use cases for health monitoring and analysis.