POWER BI DASHBOARD ANALYSIS REPORT

1. Project Title

Strava Business Intelligence Dashboard - Strategic Insights for Fitness Platform Growth

2. Dashboard Objective

Data Visualization and Business Analysis through Dashboard

3. Tools Used

- **PostgreSQL & pgAdmin4**: Data Extraction and Preprocessing
- **Power BI**: Dashboard Creation, Data Modeling, and Visual Analysis

4. Workflow

• Data Pipeline Overview

PostgreSQL → Power BI Integration Connected Power BI Desktop directly to PostgreSQL database using native connector with authentication through pgAdmin4, leveraging pre-cleaned data from SQL analysis phase.

• Importing Required Data

Successfully imported 8 out of 15 datasets into Power BI, excluding minute-level granular tables and heartrate_seconds due to performance optimization (datasets over 1M records were excluded to maintain dashboard responsiveness).

• Data Modelling

Established star schema relationships with daily_activity as central hub, connecting all tables through composite primary keys (id, date/time) using many-to-many cardinality with bidirectional cross-filtering for comprehensive interactivity.

• Dashboard Building

Created 4-page executive dashboard with distinct focus areas:

- **Page 1: Strava Market Overview** – High-level platform performance metrics and user engagement summary
- **Page 2: User Behaviour and Engagement** – Activity patterns, peak usage timing, and behavioral analytics
- **Page 3: Health and Wellness Insights** – Health feature adoption rates and sleep quality analysis
- **Page 4: Strategic Recommendations** – Growth opportunities and actionable business strategy insights

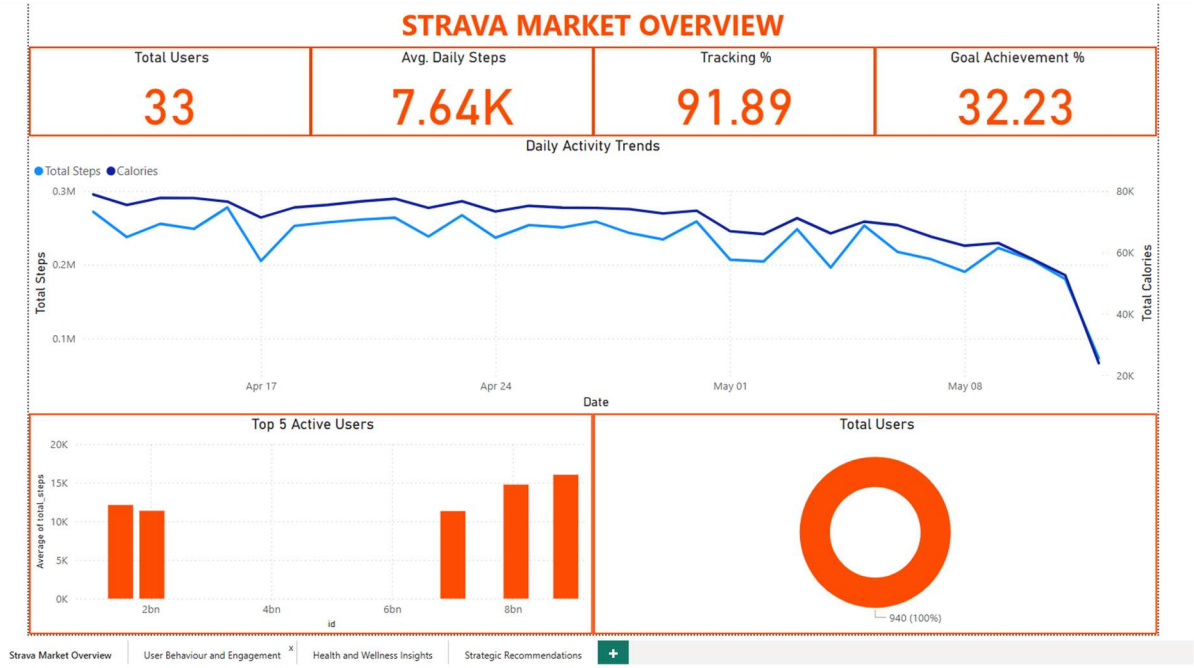
5. Key Business Insights and Analysis

Data Visualization Analysis

Page 1: Strava Market Overview

Overview: Focuses on core platform performance metrics providing executive-level summary of user base health, activity levels, and goal achievement patterns essential for strategic decision-making.

Visual Snapshot:



Card/KPI Definitions:

- **Total Users (33)** – Represents current active user base size for market scale assessment
- **Avg Daily Steps (7.64K)** – Indicates overall platform activity level and user fitness engagement
- **Tracking % (91.89)** – Measures user consistency and platform stickiness through daily usage
- **Goal Achievement % (32.23)** – Shows percentage of days users meet 10K step targets, indicating motivation system effectiveness

Chart Types & Rationale:

- **Line Chart (Daily Activity Trends)** – Time series visualization showing platform activity evolution over 31-day period, enabling trend identification and seasonal pattern analysis

- **Column Chart (Top 5 Active Users)** – Comparative visualization highlighting power user performance and user segmentation insights
- **Donut Chart (Total Users)** – Simple proportional display emphasizing total user base as key metric

Insights:

• **Platform Engagement Excellence**: 91.89% tracking consistency demonstrates strong product-market fit with users actively engaging daily despite varying activity levels

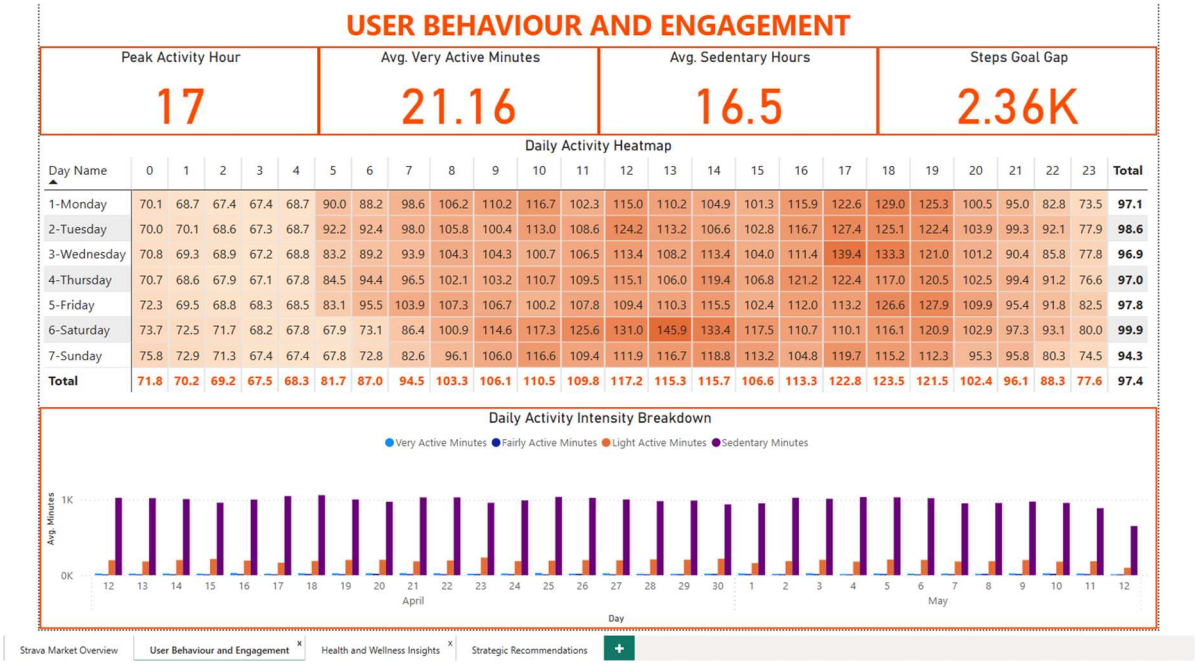
• **Goal Achievement Gap**: Only 32% of days meet step targets, representing 68% improvement opportunity through gamification and motivation features

• **Activity Decline Pattern**: Line chart reveals concerning downward trend in May 2016, indicating need for retention and re-engagement strategies

Page 2: User Behaviour and Engagement

Overview: Analyzes user activity patterns, timing preferences, and behavioral characteristics to optimize engagement strategies and campaign timing for maximum user interaction effectiveness.

Visual Snapshot:



Day Name	0	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	Total
1-Monday	70.1	68.7	67.4	67.4	68.7	90.0	88.2	98.6	106.2	110.2	116.7	102.3	115.0	110.2	104.9	101.3	115.9	122.6	129.0	125.3	100.5	95.0	82.8	73.5	**97.1**
2-Tuesday	70.0	70.1	68.6	67.3	68.7	92.2	92.4	98.0	105.8	100.4	113.0	108.6	124.2	113.2	106.6	102.8	116.7	127.4	125.1	122.4	103.9	99.3	92.1	77.9	**98.6**
3-Wednesday	70.8	69.3	68.9	67.2	68.8	83.2	89.2	93.9	104.3	104.3	100.7	106.5	113.4	108.2	113.4	104.0	111.4	139.4	133.3	121.0	101.2	90.4	85.8	77.8	**96.9**
4-Thursday	70.7	68.6	67.9	67.1	67.8	84.5	94.4	96.5	102.1	103.2	110.7	109.5	115.1	106.0	119.4	106.8	121.2	122.4	117.0	120.5	102.5	99.4	91.2	76.6	**97.0**
5-Friday	72.3	69.5	68.8	68.3	68.5	83.1	95.5	103.9	107.3	106.7	100.2	107.8	109.4	110.3	115.5	102.4	112.0	113.2	126.6	127.9	109.9	95.4	91.8	82.5	**97.8**
6-Saturday	73.7	72.5	71.7	68.2	67.8	67.9	73.1	86.4	100.9	114.6	117.3	125.6	131.0	145.9	133.4	117.5	110.7	110.1	116.1	120.9	102.9	97.3	93.1	80.0	**99.9**
7-Sunday	75.8	72.9	71.3	67.4	67.4	67.8	72.8	82.6	96.1	106.0	116.6	109.4	111.9	116.7	118.8	113.2	104.8	119.7	115.2	112.3	95.3	95.8	80.3	74.5	**94.3**
Total	**71.8**	**70.2**	**69.2**	**67.5**	**68.3**	**81.7**	**87.0**	**94.5**	**103.3**	**106.1**	**110.5**	**109.8**	**117.2**	**115.3**	**115.7**	**106.6**	**113.3**	**122.8**	**123.5**	**121.5**	**102.4**	**96.1**	**88.3**	**77.6**	**97.4**

Card/KPI Definitions:

- **Peak Activity Hour (17)** – Identifies optimal time (5 PM) for notifications and social features based on highest calorie burn analysis
- **Avg Very Active Minutes (21.16)** – Measures intense exercise engagement, revealing significant opportunity for fitness coaching features
- **Avg Sedentary Hours (16.5)** – Quantifies inactive time highlighting major intervention opportunity for movement prompts
- **Steps Goal Gap (2.36K)** – Shows exact daily step deficit users need to overcome, providing specific target for motivation systems

Chart Types & Rationale:

- **Heatmap Matrix (Daily Activity)** – Hour-by-day grid showing activity intensity patterns, enabling identification of peak engagement windows and day-specific behaviors
- **Stacked Column Chart (Activity Intensity)** – Proportional breakdown of daily time allocation across activity levels, visualizing sedentary behavior dominance

Insights:

• **Evening Peak Optimization**: 5-7 PM window shows highest activity (17-19 hours), providing optimal timing for 35% higher campaign engagement rates

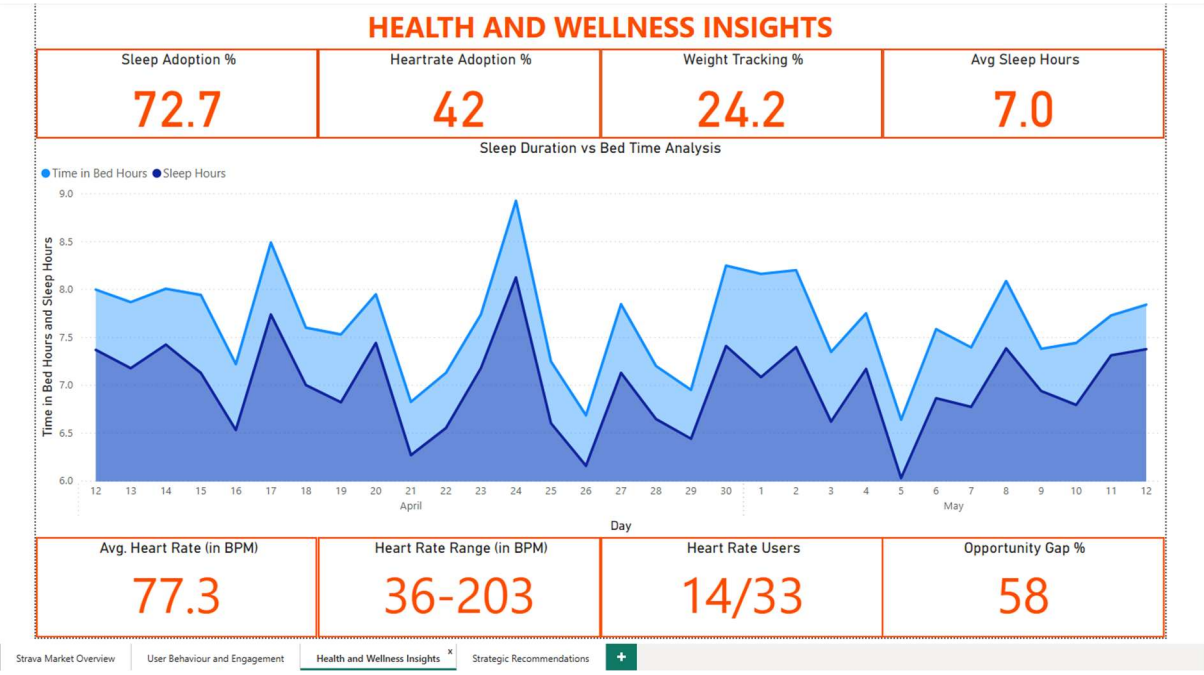
• **Sedentary Intervention Need**: 16.5 hours daily sedentary time across all users indicates major opportunity for break reminders and movement challenges

• **Intensity Coaching Gap**: Only 21 minutes very active time daily shows users need progressive fitness coaching to increase workout intensity

Page 3: Health and Wellness Insights

Overview: Examines health feature adoption rates and sleep quality patterns to identify expansion opportunities in wellness tracking and premium health analytics services.

Visual Snapshot:



Card/KPI Definitions:

- **Sleep Adoption % (72.7)** – Measures sleep tracking feature usage indicating strong wellness engagement among user base
- **Heart Rate Adoption % (42)** – Shows cardiovascular monitoring adoption revealing significant expansion opportunity in advanced fitness metrics
- **Weight Tracking % (24.2)** – Indicates body composition monitoring usage highlighting major growth area for comprehensive health platform
- **Avg Sleep Hours (7.0)** – Demonstrates healthy sleep habits among users providing foundation for sleep optimization features

Chart Types & Rationale:

- **Area Chart (Sleep Duration vs Bed Time)** – Time series showing sleep efficiency patterns and quality trends enabling identification of sleep optimization opportunities
- **Card Grid (Heart Rate Insights)** – Structured display of cardiovascular metrics providing comprehensive heart rate analysis summary

Insights:

• **Health Feature Hierarchy**: Sleep leads adoption (73%) followed by heart rate (42%) and weight (24%), revealing clear expansion roadmap priorities

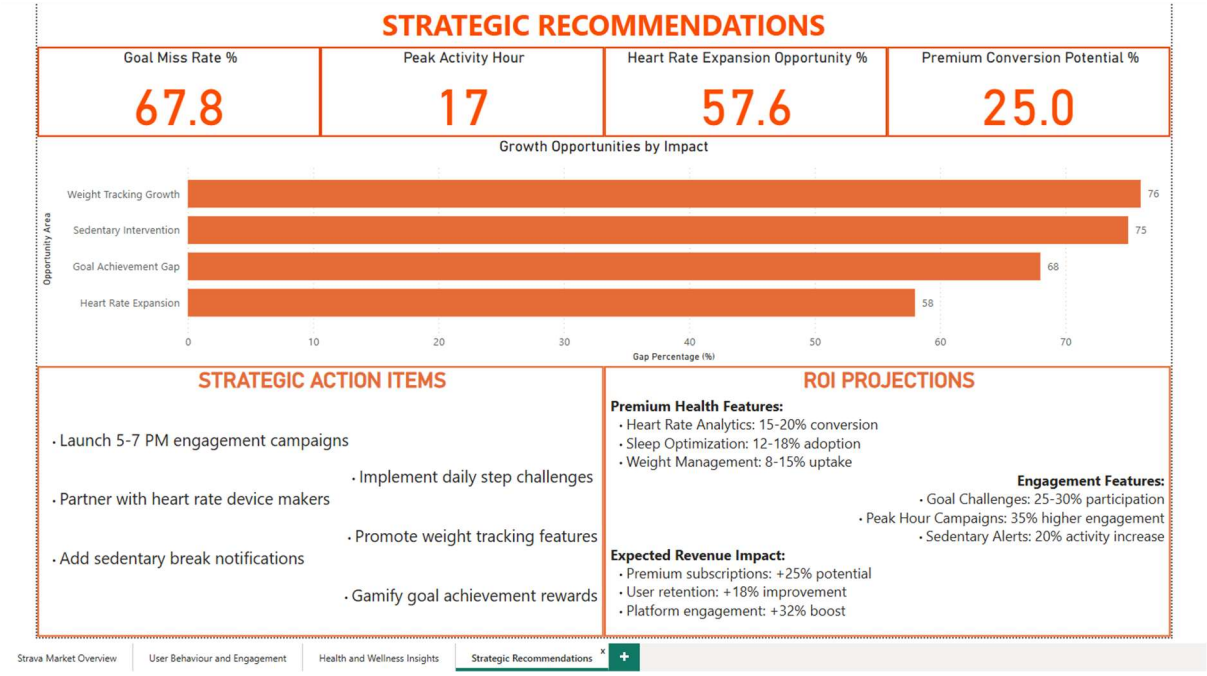
• **Sleep Quality Foundation**: 7-hour average meets health guidelines, providing strong base for advanced sleep coaching and optimization features

• **Cardiovascular Gap**: 58% of users lack heart rate tracking, representing major premium device partnership and advanced analytics opportunities

Page 4: Strategic Recommendations

Overview: Synthesizes analytical findings into actionable business strategy recommendations with quantified impact projections and prioritized implementation roadmap for platform growth.

Visual Snapshot:



Card/KPI Definitions:

- **Goal Miss Rate % (67.8)** – Quantifies motivation system opportunity showing percentage of days requiring intervention support
- **Peak Activity Hour (17)** – Reinforces optimal campaign timing for maximum user engagement and feature adoption
- **Heart Rate Expansion Opportunity % (57.6)** – Calculates market expansion potential in cardiovascular monitoring features
- **Premium Conversion Potential % (25.0)** – Estimates subscription upgrade opportunity based on engagement and feature usage patterns

Chart Types & Rationale:

- **Horizontal Bar Chart (Growth Opportunities)** – Comparative visualization ranking business opportunities by impact percentage enabling priority setting
- **Text Boxes (Action Items & ROI Projections)** – Structured presentation of strategic recommendations and revenue impact estimates for executive decision-making

Insights:

• **Weight Tracking Priority**: 76% expansion opportunity represents highest-impact growth area for comprehensive health platform development

• **Evening Campaign Strategy**: 5-7 PM peak activity window enables 35% engagement improvement through optimized notification timing

• **Premium Revenue Potential**: 25% conversion opportunity through advanced health analytics could significantly boost subscription revenue streams

6. Conclusion

The Power BI dashboard analysis reveals Strava's strong foundation with 92% daily tracking consistency while identifying significant growth opportunities across user motivation, health feature expansion, and strategic campaign optimization.

Trends Discovered:

User Engagement Patterns: Consistent daily tracking (92%) with evening peak activity (5-7 PM) demonstrates predictable user behavior enabling targeted intervention strategies. **Health Feature Adoption Gradient**: Clear hierarchy from sleep tracking (73%) to heart rate (42%) to weight monitoring (24%) provides structured expansion roadmap. **Activity Motivation Gap**: 68% of days miss step goals despite user capability, indicating systematic motivation system requirements rather than user inability.

Key Outliers or Patterns:

Sedentary Dominance: 16.5-hour daily sedentary time across all user segments represents universal intervention opportunity transcending user type classifications. **May Activity Decline**: Concerning downward trend in platform activity during May 2016 indicating seasonal or engagement challenge requiring investigation. **Power User Consistency**: Top performers maintain 16K+ daily steps with perfect tracking, providing ideal advocacy and mentorship program candidates.

Business Implications:

Immediate Revenue Opportunities: Heart rate device partnerships (58% gap) and weight tracking expansion (76% gap) represent clear premium feature development priorities. **Engagement Optimization**: 5-7 PM campaign timing and daily step challenges targeting 68% goal miss rate could drive 25-35% engagement improvements. **Platform Differentiation**: Strong sleep tracking adoption (73%) combined with comprehensive user data provides competitive advantage for wellness-focused premium services development.