

Airbnb Sr. Manager, Advanced Analytics Interview Preparation Guide

Role Overview & Key Requirements

Position: Senior Manager, Advanced Analytics, Growth
Reports to: Head of Advanced Analytics and Data Science
Team: Lead team of Advanced Analysts
Focus: Growth marketing, product analytics, experimentation, causal inference

Core Requirements Alignment

- ✓ 12+ years industry experience (You have 15 years)
 - ✓ 8+ years management experience (You have team leadership at Adobe)
 - ✓ Quantitative degree with advanced degree (MS Business Analytics from ASU)
 - ✓ Marketplace experience (Shopify, Adobe, Credit Sesame)
 - ✓ Deep technical expertise in experimentation and causal inference
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Interview Structure & Preparation Areas

1. SQL Technical Assessment

Expected Proficiency Level: Advanced (window functions, CTEs, optimization)

Core SQL Concepts to Master

- **Window Functions**
 - ROW_NUMBER(), RANK(), DENSE_RANK()
 - LAG/LEAD for cohort analysis
 - Moving averages with OVER clauses
 - Percentile calculations
- **Complex Joins & Subqueries**
 - Self-joins for user behavior patterns
 - Correlated subqueries
 - LATERAL joins for marketplace metrics
- **CTEs & Recursive Queries**
 - Multi-step data transformations
 - Hierarchical data structures
 - User journey mapping

Practice Problems - Marketplace Specific

1. Booking Funnel Analysis



sql

-- Calculate conversion rates at each funnel stage

```
WITH funnel_stages AS (  
  SELECT user_id,  
         MAX(CASE WHEN event = 'search' THEN 1 ELSE 0 END) as searched,  
         MAX(CASE WHEN event = 'view_listing' THEN 1 ELSE 0 END) as viewed,  
         MAX(CASE WHEN event = 'book' THEN 1 ELSE 0 END) as booked  
  FROM events  
  GROUP BY user_id  
)  
SELECT  
  COUNT(*) as total_users,  
  SUM(searched) / COUNT(*) as search_rate,  
  SUM(viewed) / NULLIF(SUM(searched), 0) as view_rate,  
  SUM(booked) / NULLIF(SUM(viewed), 0) as booking_rate  
FROM funnel_stages;
```

2. Host Performance Metrics

3. Guest Lifetime Value Calculation

4. Market Cannibalization Analysis

5. Search Ranking Effectiveness

2. Experimentation & Causal Inference

Key Concepts

- **A/B Testing Framework**
 - Power analysis and sample size calculation
 - Multiple testing corrections (Bonferroni, FDR)
 - Network effects in marketplace experiments
 - Spillover effects and SUTVA violations
- **Causal Methods**
 - Difference-in-Differences (DiD)
 - Instrumental Variables (IV)
 - Regression Discontinuity (RD)
 - Synthetic Control Methods
 - Propensity Score Matching

Airbnb-Specific Scenarios

- Two-sided marketplace experiments (host vs. guest side)
- Geographic spillover in pricing experiments
- Time-based seasonality adjustments
- Long-term vs. short-term metric trade-offs

3. Marketing Analytics Deep Dive

Attribution & Measurement

- **Multi-Touch Attribution (MTA)**
 - Data-driven attribution models
 - Time decay modeling
 - Cross-device attribution challenges
- **Media Mix Modeling (MMM)**
 - Adstock and carryover effects
 - Saturation curves
 - Budget optimization across channels

Growth Metrics Framework

- **Acquisition Metrics**
 - CAC by channel and segment
 - Payback period analysis
 - Channel incrementality testing
- **Retention & Engagement**
 - Cohort retention curves
 - Resurrection campaigns ROI
 - Frequency and recency modeling

4. Statistical Methods & Machine Learning

Core Statistical Concepts

- **Hypothesis Testing**
 - Type I/II errors in business context
 - Sequential testing for continuous monitoring
 - Bayesian A/B testing approaches
- **Predictive Modeling**
 - Customer lifetime value prediction
 - Churn prediction models
 - Demand forecasting for inventory

ML Applications

- Propensity modeling for marketing
- Recommendation systems basics
- Anomaly detection for fraud
- NLP for review analysis (LLM familiarity)

5. Business Strategy & Product Analytics

Marketplace Dynamics

- **Supply & Demand Balance**
 - Market liquidity metrics
 - Geographic expansion strategies
 - Category growth opportunities
- **Pricing Strategy**
 - Dynamic pricing models
 - Price elasticity analysis
 - Competitive intelligence

Product Analytics Framework

- **Feature Impact Measurement**
 - Pre/post analysis
 - Holdout groups
 - Gradual rollout strategies
- **User Segmentation**
 - Behavioral clustering
 - Value-based segmentation
 - International market differences

6. Leadership & Team Management

Behavioral Questions Prep

Use STAR Format (Situation, Task, Action, Result)

Team Building

- "Describe building your analytics team at Adobe"
- Focus on: Hiring philosophy, skill development, retention

Stakeholder Management

- "Example of influencing without authority"
- Your Adobe \$800M revenue story is perfect here

Strategic Thinking

- "How you've evolved analytics strategy"
- Credit Sesame scaling from \$15M to \$25M narrative

Conflict Resolution

- "Disagreement with stakeholder on metrics"
- Prepare examples of metric alignment challenges

Leadership Scenarios

1. Prioritizing team's project portfolio
2. Balancing technical depth vs. business impact
3. Developing junior analysts
4. Cross-functional collaboration challenges

7. Tools & Technical Stack

Expected Proficiencies

- **Analytics Platforms:** Amplitude, Mixpanel (you have both!)
 - **Visualization:** Tableau, Looker (strong match)
 - **Programming:** Python, SQL (covered)
 - **Cloud/Big Data:** Snowflake, BigQuery, Airflow (all in your skillset)
 - **Experimentation:** Optimizely or similar platforms
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Hands-On Practice Resources

SQL Practice

1. **LeetCode Database Problems** (Medium/Hard)
2. **HackerRank SQL Domain** (Focus on Advanced Join, Window Functions)
3. **Mode Analytics SQL Tutorial** (Marketplace examples)
4. **DataLemur** (FAANG SQL questions)

Experimentation & Statistics

1. **Coursera: A/B Testing by Google**
2. **"Trustworthy Online Controlled Experiments" by Kohavi**
3. **Evan Miller's A/B Testing Tools**
4. **Uber's Experimentation Platform Papers**

Marketplace Analytics

1. **Airbnb Engineering Blog** (Data Science posts)
2. **"The Cold Start Problem" by Andrew Chen**

Mock Interview Questions

Technical Round 1: SQL & Data Analysis

1. "Write a query to find the top 10% of hosts by revenue in each market"
2. "Calculate the average booking lead time by user segment"
3. "Identify potential fraud patterns in booking data"

Technical Round 2: Experimentation

1. "Design an experiment to test a new search ranking algorithm"
2. "How would you measure the impact of a host incentive program?"
3. "Explain network effects challenges in marketplace experiments"

Business Case: Growth Strategy

1. "How would you approach entering a new geographic market?"
2. "Develop a framework for marketing budget allocation"
3. "Identify growth opportunities using data"

Leadership Round

1. "How do you balance speed vs. rigor in analytics?"
 2. "Describe your approach to stakeholder education on statistics"
 3. "How would you structure a 10-person analytics team?"
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Your Unique Value Propositions

Highlight These Achievements

1. **Scale Experience:** Credit Sesame 10M→100M users
2. **Revenue Impact:** Adobe \$800M incremental revenue
3. **ROI Excellence:** Shopify 6.5% ROAS increase
4. **Team Leadership:** Managed 7-person team at Adobe
5. **Technical Depth:** MTA/MMM implementation experience
6. **Marketplace Experience:** Multiple marketplace/platform companies

Differentiators vs. Other Candidates

- Rare combination of technical depth + business impact
- Proven scale experience (100M+ users)

- Both startup and enterprise experience
 - Current consulting gives fresh perspective
 - Strong attribution modeling expertise (critical for Airbnb)
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Interview Day Checklist

Pre-Interview (1 Week Before)

- ☐ Review Airbnb's recent quarterly earnings
- ☐ Read 3-5 recent Airbnb Engineering blog posts
- ☐ Practice 10 SQL problems daily
- ☐ Review your major project metrics/impacts
- ☐ Prepare 10 thoughtful questions about the role

Day Of

- ☐ Have specific examples ready with metrics
- ☐ Prepare virtual whiteboard for technical discussions
- ☐ Have paper/pen for live coding if needed
- ☐ Test video/audio setup 30 min before
- ☐ Have water and backup computer ready

Questions to Ask Them

1. "What are the biggest analytics challenges in Airbnb's growth strategy?"
 2. "How does the team balance long-term strategic projects vs. tactical requests?"
 3. "What's the relationship between this team and the Data Science team?"
 4. "How are LLMs being integrated into the analytics workflow?"
 5. "What would success look like in this role after 6 months?"
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Final Tips

1. **Be Specific:** Use exact metrics from your experience
2. **Show Thought Process:** Verbalize your analytical approach
3. **Ask Clarifying Questions:** Especially in ambiguous problems
4. **Connect to Business Impact:** Always tie analytics to outcomes
5. **Demonstrate Learning Agility:** Show how you've adapted to new tools/methods

Remember: They're looking for someone who can both lead a team AND maintain technical excellence. Your background shows you've done both successfully!