Major Salary Comparison & Career Analytics Platform

🎯 Core Concept

A comprehensive decision-support tool that helps students, parents, and career-changers make data-driven choices about college majors by analyzing financial outcomes, location factors, and long-term career trajectories.

📊 Core Features

1. Major-to-Salary Comparison Engine

- **Real-time salary data** from BLS, Glassdoor, Payscale, and LinkedIn
- **Major-to-career mapping** with multiple career path options per major
- **Side-by-side comparisons** of up to 5 majors simultaneously
- **Percentile breakdowns** (25th, 50th, 75th, 90th percentiles)

2. Customizable Location Adjustments

- **Cost of Living Calculator**
  - Housing, transportation, taxes, healthcare costs
  - City-to-city comparison tool
  - "Equivalent salary" calculator (e.g., "$80K in Austin = $145K in San Francisco")
- **Regional Demand Analysis**
  - Job concentration heatmaps by major
  - Location-specific salary premiums
  - Remote work adjustments by field

3. ROI Calculators

- **Educational Investment Analysis**

  - Tuition costs (by institution type)
  - Student loan simulation with repayment projections
  - Breakeven analysis (when earnings surpass investment)
  - Net Present Value (NPV) calculations for degree choices
- **Opportunity Cost Calculator**
  - Earnings lost during study years
  - Alternative career path comparisons
  - Early career vs. delayed earning scenarios

4. Career Trajectory Projections

- **Earnings Growth Curves**
  - Year-by-year salary projections (0-30 years)
  - Promotional timeline expectations by field
  - Industry growth/decline projections
- **Skill Development Pathways**
  - Certifications and additional training ROI
  - Advanced degree impact analysis
  - Specialization premium calculators

5. Industry & Economic Forecasting

- **Automation Risk Assessment** by major/career
- **Industry growth projections** (next 5-10 years)
- **Emerging field identification**
- **Recession resilience scores** by career type

🎨 User Experience

Personalized Dashboard

- Career interest assessment integration
- Saved comparison scenarios
- Progress tracking against projections

Interactive Visualizations

- Earnings timeline graphs
- Geographic opportunity maps
- ROI waterfall charts
- Probability-weighted outcome ranges

Scenario Builder

- "What-if" analysis tools
- Custom variable adjustments
- Risk tolerance settings
- Multiple outcome simulations

🔧 Technical Implementation

Data Pipeline

1. **Data Aggregation Layer**
    - Government databases (BLS, Census)
    - Private salary surveys
    - University career outcome reports
    - Real-time job posting analysis

2. **Normalization Engine**
    - Geographic adjustment algorithms
    - Inflation adjustments
    - Data quality scoring
    - Confidence interval calculations
3. **Prediction Models**
    - Machine learning trajectory projections
    - Economic modeling integration
    - Monte Carlo simulations for uncertainty

Technology Stack

- **Frontend**: React/Vue.js with D3.js for visualizations
- **Backend**: Python (FastAPI/Django) with pandas/numpy
- **Database**: PostgreSQL + Redis cache
- **Analytics**: ML models (scikit-learn, TensorFlow)
- **Deployment**: Cloud-native (AWS/Azure) with containerization

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📈 Business Model

Primary Revenue Streams

1. **Freemium Model**
    - Basic comparisons free
    - Advanced analytics subscription ($9.99-$29.99/month)
2. **Institutional Licensing**
    - University career centers

   - High school guidance departments
   - Corporate HR teams
3. **Partnerships**
   - Student loan providers
   - Educational institutions
   - Recruitment platforms

Market Positioning

- **Target Users**: High school seniors, college students, career changers, parents, guidance counselors
- **Differentiation**: Combines location, ROI, and trajectory analytics in one platform
- **Scalability**: Major expansion to graduate degrees, vocational training, international markets

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🚀 Development Roadmap

Phase 1 (MVP - 6 months)

- Core major-to-salary comparisons
- Basic location adjustments
- Simple ROI calculations
- 100 major database

Phase 2 (Year 1)

- Career trajectory projections
- Advanced scenario builder
- Mobile application
- Integration with job markets

Phase 3 (Year 2)

- AI-powered personalized recommendations
- International expansion
- Institutional portal development
- API for third-party integrations

🛡 Risk Mitigation

Data Challenges

- Multiple source verification
- Transparent methodology documentation
- Regular data updates and refreshes
- Handling incomplete/missing data

Ethical Considerations

- Avoiding reinforcement of existing biases
- Including non-financial factors (job satisfaction, work-life balance)
- Accessibility across socioeconomic groups
- Transparent limitations disclosure

Competitive Landscape

- Continuous feature differentiation
- Focus on integrated experience (vs. point solutions)
- Building network effects through institutional partnerships

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✸ Vision & Impact

Long-term Vision

Become the definitive career decision-making platform that democratizes access to labor market intelligence, helping individuals make informed education and career choices aligned with their financial goals and lifestyle preferences.

Success Metrics

- User decision confidence improvement
- Reduction in student loan default rates
- Improved career-starting salary outcomes
- Institutional adoption rates

💼 Immediate Next Steps

1. **Market Validation**
    - Survey target users about pain points
    - Analyze competitor gaps
    - Prototype testing with focus groups
2. **Data Partnerships**
    - Secure initial data sources
    - Develop data normalization methodology
    - Build minimum viable dataset
3. **Technical Prototyping**
    - Build core comparison algorithm
    - Create basic visualization framework
    - Develop initial user interface mockups

This platform addresses a critical information gap in education and career decision-making, transforming scattered data points into actionable, personalized insights. The integration of financial, geographic, and temporal dimensions creates a uniquely comprehensive tool for one of life's most significant investments.

please provide Major Salary Comparison pack with customizable location adjustments, ROI calculators, and career trajectory projections for data-driven major decisions. Please write in document form in text i will integrate it accordingly, NO CODING simple text (data in tabular format where required)

MAJOR SALARY COMPARISON & CAREER ANALYTICS PACK

Version: 1.0

Document Type: Requirements & Data Framework

Date: [Current Date]

1.0 EXECUTIVE SUMMARY

This document outlines the data structure, calculators, and projection frameworks for a tool designed to compare college majors based on financial outcomes, location-adjusted salaries, return on investment (ROI), and long-term career trajectories. All data is presented in text and table formats for easy integration into your platform.

2.0 CORE SALARY COMPARISON BY MAJOR

This section provides baseline national median salary data for entry-level (0-5 years) and mid-career (10+ years) for common majors. *Note: All figures are national annual medians in USD.*

Table 2.1: Major vs. Salary Benchmarks

Major Category	Specific Major Example	Entry-Level Median	Mid-Career Median	Common Career Paths
Engineering	Computer Engineering	$80,000	$130,000	Software Developer, Hardware Engineer, Systems Architect
Engineering	Civil Engineering	$65,000	$105,000	Civil Engineer, Project Manager, Construction Manager
Computer Science	Computer Science	$85,000	$125,000	Software Engineer, Data Scientist, DevOps Engineer
Business	Finance	$60,000	$110,000	Financial Analyst, Investment Banker, Portfolio Manager
Business	Marketing	$55,000	$95,000	Marketing Manager, Brand Strategist, Digital Marketing Lead
Health Sciences	Nursing (BSN)	$75,000	$90,000	Registered Nurse, Nurse Practitioner, Nurse Manager
Humanities	English Literature	$48,000	$75,000	Editor, Technical Writer, Content Strategist, Professor
Social Sciences	Psychology	$45,000	$80,000	Counselor, Human Resources, UX Researcher, Therapist (requires grad degree)

3.0 CUSTOMIZABLE LOCATION ADJUSTMENTS

Location significantly impacts salary and cost of living. Use the framework below to adjust national salary figures.

3.1 Location Adjustment Multipliers

To get a location-adjusted salary: **National Salary × Location Multiplier = Local Equivalent**.

Table 3.1: Geographic Salary & Cost Multipliers

Metro Area	Salary Multiplier	Cost of Living Index (US Avg = 100)	Notes
San Francisco, CA	1.40	185	Very high tech premium.
New York, NY	1.35	175	High finance & business premium.
Austin, TX	1.05	105	Growing tech hub, moderate cost.
Chicago, IL	1.10	115	Broad industry representation.
Atlanta, GA	0.98	100	Near national average.
Dallas, TX	1.02	103	Slight premium for business/energy.
Columbus, OH	0.92	90	Below-average cost, slight salary adjustment.
National Average	**1.00**	**100**	Baseline for comparison.

Example Calculation:

A Computer Science grad's national mid-career median is $125,000.

- In **San Francisco**: $125,000 × 1.40 = **$175,000**
- In **Columbus, OH**: $125,000 × 0.92 = **$115,000**

3.2 Cost of Living & "Real Salary" Calculator

A high salary in a costly city may buy less. Calculate **Purchasing Power Parity (PPP) Salary**.

Formula:

PPP Salary = (National Salary × Location Salary Multiplier) × (100 / Local Cost Index)

Example: Comparing two locations for a $125,000 national salary.

- **Austin:** ($125,000 × 1.05) × (100 / 105) = $131,250 × 0.952 = **$125,000 PPP**
- **SF:** ($125,000 × 1.40) × (100 / 185) = $175,000 × 0.541 = **$94,675 PPP**

Interpretation: The "real" purchasing power of the SF salary is lower than in Austin despite the higher nominal pay.

4.0 ROI CALCULATORS

Return on Investment (ROI) factors in education costs and lost wages.

4.1 Educational Cost Inputs

Cost Factor	Public In-State	Public Out-of-State	Private University
Annual Tuition & Fees	$12,000	$28,000	$45,000
Annual Room & Board	$12,000	$12,000	$15,000
Total Annual Cost	**$24,000**	**$40,000**	**$60,000**
4-Year Degree Cost	**$96,000**	**$160,000**	**$240,000**

4.2 ROI Calculation Formula

Simple ROI Timeline:

1. **Total Investment =** Degree Cost + (Lost Wages from not working full-time during school).
2. **Lost Wages Estimate =** 4 years × Median High School Grad Salary ($35,000) = $140,000.
3. **Total 4-Year Investment (Private Univ.) =** $240,000 + $140,000 = **$380,000**.

4. **Annual Salary Premium =** Major Starting Salary − High School Grad Salary ($35,000).
5. **Years to Break Even =** Total Investment / Annual Salary Premium.

Example: Computer Science (Private University)

- Investment: $380,000
- Annual Premium: $85,000 - $35,000 = **$50,000**
- **Years to Break Even:** $380,000 / $50,000 = **7.6 years**

Example: Psychology (Public In-State)

- Investment: $96,000 + $140,000 = $236,000
- Annual Premium: $45,000 - $35,000 = **$10,000**
- **Years to Break Even:** $236,000 / $10,000 = **23.6 years**

Table 4.1: Sample ROI Comparison

Major (School Type)	Total 4-Yr Cost	Est. Break-Even Point	Notes
Comp Sci (Private)	$380,000	7-8 years	High premium speeds ROI.
Nursing (Public In-State)	$236,000	5-6 years	High starting salary, lower cost.
Business-Finance (Public Out-of-State)	$300,000	10-12 years	Dependent on career progression.
English (Private)	$380,000	38+ years	Low premium extends ROI significantly.

5.0 CAREER TRAJECTORY PROJECTIONS

Salary growth is not linear and varies by field.

5.1 Growth Trajectory Templates

Apply these **multipliers** to the entry-level salary to project future earnings.

Table 5.1: Career Growth Multipliers by Field

Years Exp.	Tech/Engineering	Business/Finance	Healthcare	Humanities/Arts
0 (Entry)	1.00x	1.00x	1.00x	1.00x
5 years	1.50x - 1.80x	1.60x - 2.00x	1.30x - 1.50x	1.20x - 1.40x
10 years	1.90x - 2.50x	2.10x - 3.00x	1.60x - 2.00x	1.40x - 1.80x
20 years	2.20x - 3.50x	2.50x - 4.50x*	2.00x - 2.80x	1.60x - 2.20x

**Finance has high ceiling but high variance; includes executive/partner tracks.*

Example Projection for Computer Science (Entry $85k):

- Year 5: $85,000 × 1.65 = **$140,250**
- Year 10: $85,000 × 2.20 = **$187,000**
- Year 20: $85,000 × 2.85 = **$242,250**

5.2 Advanced Degree Impact Table

Base Major	Advanced Degree	Typical Added Time	Salary Premium (vs. Bachelor's)	Notes
Psychology	Master's (Therapy)	+2-3 years	+40% - 60%	Often required for licensure.
Psychology	PhD/PsyD	+5-7 years	+70% - 100%	For clinical practice, research.
Biology	MD	+8 years + residency	+200% - 400%	Very high ceiling, high debt.

Business	MBA (Top Tier)	+2 years	+50% - 120%*	*Highly dependent on pre-MBA experience and school rank.
Computer Science	Master's	+1-2 years	+20% - 35%	Faster progression to specialized roles.
Engineering	Master's	+1-2 years	+15% - 30%	For R&D or management tracks.

6.0 INTEGRATED DECISION-MATRIX FRAMEWORK

Guide users to score majors based on personal weights.

Table 6.1: Decision Factor Weighting & Scoring (Example)

Decision Factor	Weight (Assign 1-5)	Major A: Comp Sci	Major B: Finance	Major C: English
Starting Salary	5	5 (High)	4 (Med-High)	2 (Low)
Long-Term Earnings	4	5	5	2
Job Market Stability	4	4	3	3
Education Cost (ROI)	3	4 (Good ROI)	3 (Moderate)	1 (Poor)
Interest/Passion	5	4	5	5
Work-Life Balance	3	3	2	4
Weighted Score	**TOTAL**	**4.2**	**3.9**	**2.9**

Weighted Score Calculation for Comp Sci:

[(5*5)+(4*5)+(4*4)+(3*4)+(5*4)+(3*3)] / (5+4+4+3+5+3) = 101 / 24 = 4.2

7.0 GLOSSARY OF KEY TERMS

- **Location Multiplier:** Factor to adjust a national salary to a specific metro area.
- **Cost of Living Index:** Comparative measure of costs (housing, food, transport) vs. national average (100).
- **PPP Salary (Purchasing Power Parity):** Salary adjusted for both local pay rates and local costs, showing "real" purchasing power.
- **Salary Premium:** The additional annual income earned compared to a baseline (e.g., a high school graduate).
- **Break-Even Point:** The number of years of working required for the cumulative salary premium to equal the total educational investment.
- **Career Trajectory Multiplier:** A factor applied to an entry-level salary to estimate earnings at a future career stage.

8.0 DATA SOURCES & ASSUMPTIONS (For Disclosure)

Note to Integrator: Include this disclaimer prominently.

Sample Data Sources:

- U.S. Bureau of Labor Statistics (BLS) Occupational Outlook Handbook
- National Center for Education Statistics (NCES)
- Salary aggregation sites (Glassdoor, Payscale, LinkedIn Salary)
- Cost of living indices (Council for Community & Economic Research)

Critical Assumptions:

1. Salaries are **national medians**; individual outcomes vary based on institution, skill, networking, and economic conditions.
2. **Growth projections are estimates** based on field averages, not guarantees.
3. **ROI calculations** simplify "lost wages" and do not account for taxes, interest on loans, or investment returns.
4. This tool provides **financial guidance only**. Passion, skills, and job satisfaction are critical unquantifiable factors.

Recommendation: Use this tool for scenario exploration and initial research, not as a sole decision-maker. Consult with career advisors and professionals in fields of interest.

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