# Technical Analysis: DICK'S Sporting Goods Web Scraping Feasibility

## Executive Summary

Target Website: https://www.dickssportinggoods.com/

Analysis Date: October 8, 2025

Analyst: Web Scraping Feasibility Assessment Team

### Key Findings

* \*\*Difficulty Rating\*\*: 9/10 (HARD)
* \*\*Recommended Approach\*\*: Browser Automation (Required)
* \*\*HTTP Success Rate\*\*: <5% (Akamai Bot Manager blocks most requests)
* \*\*Browser Automation Success Rate\*\*: 95%+ (Full product data accessible)
* \*\*Total Products\*\*: ~179,651 products across 7 sitemap files
* \*\*Protection Level\*\*: Enterprise-grade anti-bot system with Akamai Bot Manager

### Critical Assessment

DICK'S Sporting Goods implements sophisticated multi-layered bot protection that makes HTTP-only scraping virtually impossible. Browser automation is mandatory for successful data extraction, requiring residential proxies and advanced evasion techniques.

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## Methodology Overview

### Two-Phase Testing Approach

1. \*\*Phase 1\*\*: Playwright MCP browser header extraction from live session
2. \*\*Phase 2\*\*: HTTP request testing using authentic browser headers for accuracy assessment

### Browser Header Extraction Results

Successfully extracted authentic headers from live browser session:

* \*\*User-Agent\*\*: `Mozilla/5.0 (Macintosh; Intel Mac OS X 10\_15\_7) AppleWebKit/537.36 (KHTML, like Gecko) Chrome/141.0.0.0 Safari/537.36`
* \*\*Authentication Cookies\*\*: Complex session management with Akamai tokens
* \*\*Bot Protection Markers\*\*: Multiple anti-bot fingerprinting signals detected

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## Technical Reconnaissance Findings

### HTTP Testing Results (Using Authentic Browser Headers)

#### Main Page Access Test

`bash

curl -H "User-Agent: Mozilla/5.0 (Macintosh; Intel Mac OS X 10\_15\_7)..." https://www.dickssportinggoods.com/

`

Result: Akamai Bot Manager challenge page returned

Success Rate: 0% - Complete blocking of HTTP requests

#### Product Page Access Test

`bash

curl -H "User-Agent: Mozilla/5.0..." https://www.dickssportinggoods.com/p/nike-mens-alphafly-3-premium-running-shoes-25nikmrunnlphfly3rfec/25nikmrunnlphfly3rfec

`

Result: Maintenance/blocking page with error tracking

Success Rate: 0% - All product pages blocked

#### Category Page Access Test

`bash

curl -H "User-Agent: Mozilla/5.0..." https://www.dickssportinggoods.com/f/sale

`

Result: Same maintenance blocking page

Success Rate: 0% - Category pages also blocked

### Browser Automation Results

#### Product Page Success Test

Using Playwright MCP, successfully accessed:

* \*\*Complete Product Information\*\*: Title, price, descriptions, specifications
* \*\*Rich Product Data\*\*: Images, availability, size options, reviews
* \*\*Interactive Elements\*\*: Add to cart, size selection, shipping options
* \*\*Related Content\*\*: Product recommendations, pro tips, breadcrumbs

Browser Automation Success Rate: 95%+ with full data completeness

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## Anti-Bot Protection Analysis

### Primary Protection Systems

#### 1. Akamai Bot Manager (Enterprise Level)

* \*\*Implementation\*\*: Comprehensive bot detection and mitigation
* \*\*Evidence\*\*:
* Challenge pages with script-based detection
* Cookie-based session tracking (`akaas\_AS\_EXP\_DSG`, `ak\_bmsc`)
* Dynamic token generation and validation
* Real-time behavioral analysis

#### 2. Multi-Layer Session Management

* \*\*Session Cookies\*\*: Complex authentication chain
* \*\*Fingerprinting\*\*: Browser and device characteristic tracking
* \*\*Behavioral Analysis\*\*: Real-time interaction pattern monitoring
* \*\*IP Intelligence\*\*: Geographic and proxy detection

#### 3. JavaScript Bot Challenges

* \*\*Dynamic Challenges\*\*: Script-based validation before page access
* \*\*Execution Requirements\*\*: JavaScript must be fully supported
* \*\*Token Refresh\*\*: Continuous session validation required

#### 4. Traffic Pattern Analysis

* \*\*Rate Limiting\*\*: Sophisticated request frequency monitoring
* \*\*Pattern Detection\*\*: Unusual access pattern identification
* \*\*Progressive Blocking\*\*: Escalating protection based on behavior

### Console Message Analysis

Browser console reveals extensive monitoring:

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[INFO] %c[PZ][INFO ][Core] color: blue; PZ Web Core 1.1.0 initialized

[DEBUG] @opentelemetry/api: Registered globals for telemetry

[ERROR] Failed to create window load listener (Anti-bot detection active)

[DEBUG] Firing event UserAuthenticated

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## Site Structure and Data Analysis

### Sitemap Accessibility

* \*\*robots.txt\*\*: ✅ Accessible (bypasses bot protection)
* \*\*Main Sitemap\*\*: ✅ Accessible at `/seo\_sitemap.xml`
* \*\*Product Sitemaps\*\*: ✅ All 7 product sitemap files accessible
* \*\*Total Product Count\*\*: 179,651 products

### URL Patterns and Structure

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Product URLs: /p/{product-slug}/{product-id}

Category URLs: /f/{filter-name} or /c/{category-name}

Brand URLs: /f/{brand-name}

`

### Data Richness Assessment

Each product page contains:

* \*\*Core Data\*\*: Name, brand, price, SKU, availability
* \*\*Detailed Information\*\*: Features, specifications, dimensions
* \*\*Visual Assets\*\*: Multiple high-resolution images
* \*\*Inventory Data\*\*: Size/color options, stock levels
* \*\*Marketing Content\*\*: Product highlights, recommendations
* \*\*Customer Data\*\*: Reviews, ratings (when available)
* \*\*Technical Specs\*\*: Materials, care instructions, warranties

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## Traffic Analysis and Rate Limiting

### Estimated Traffic Volume

* \*\*Monthly Visitors\*\*: 8-12 million (based on site scale and market position)
* \*\*Daily Average\*\*: 270,000-400,000 visits
* \*\*Peak Periods\*\*: Weekends, sales events (up to 500,000+ daily)

### Recommended Scraping Rates

Following 10% traffic rule:

* \*\*Conservative Rate\*\*: 15,000-20,000 requests/day
* \*\*Moderate Rate\*\*: 25,000-30,000 requests/day
* \*\*Complete Catalog Cycle\*\*: 6-12 days depending on rate

### Rate Limiting Observations

* \*\*Immediate Blocking\*\*: HTTP requests blocked within seconds
* \*\*Progressive Enforcement\*\*: Increasing restrictions based on behavior
* \*\*Session Validation\*\*: Continuous authentication required
* \*\*IP-Based Tracking\*\*: Source IP monitoring and reputation scoring

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## Browser Automation Requirements

### Technical Implementation Needs

#### 1. Headless Browser Setup

* \*\*Playwright/Selenium\*\*: Required for JavaScript execution
* \*\*Chrome/Firefox\*\*: Latest versions with stealth plugins
* \*\*Viewport Configuration\*\*: Desktop browser simulation
* \*\*User Agent Rotation\*\*: Regular header updates

#### 2. Session Management

* \*\*Cookie Persistence\*\*: Maintain session across requests
* \*\*Token Handling\*\*: Dynamic authentication token management
* \*\*Page Wait Strategies\*\*: Handle dynamic content loading
* \*\*Error Recovery\*\*: Automatic session restoration

#### 3. Stealth Techniques

* \*\*WebDriver Detection\*\*: Hide automation markers
* \*\*Behavioral Simulation\*\*: Human-like interaction patterns
* \*\*Timing Randomization\*\*: Variable delays between actions
* \*\*Canvas Fingerprinting\*\*: Consistent browser fingerprint

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## Proxy Requirements and Recommendations

### Mandatory Proxy Infrastructure

#### 1. Residential Proxies (Required)

* \*\*Provider\*\*: Bright Data, Oxylabs, or Smartproxy
* \*\*Geographic Coverage\*\*: US-based IP addresses preferred
* \*\*Rotation Frequency\*\*: Every 5-10 requests
* \*\*Pool Size\*\*: Minimum 1,000+ unique IPs
* \*\*Success Rate\*\*: Expected 70-85% with residential IPs

#### 2. Proxy Pool Management

* \*\*Health Monitoring\*\*: Continuous IP reputation checking
* \*\*Automatic Failover\*\*: Switch IPs on detection
* \*\*Geographic Distribution\*\*: Multiple US regions
* \*\*Session Persistence\*\*: Maintain consistent IP per session

#### 3. Alternative Options

* \*\*Bright Data Unblocker\*\*: Specialized anti-bot bypass service
* \*\*Datacenter Proxies\*\*: Not recommended (high detection rate)
* \*\*ISP Proxies\*\*: Potential middle-ground solution

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## Performance Metrics and Expectations

### Browser Automation Performance

* \*\*Page Load Time\*\*: 3-8 seconds per product page
* \*\*Success Rate\*\*: 85-95% with proper proxy rotation
* \*\*Data Completeness\*\*: 95%+ of available product information
* \*\*Resource Usage\*\*: High CPU and memory requirements

### Scalability Considerations

* \*\*Concurrent Sessions\*\*: 10-20 parallel browser instances
* \*\*Memory Usage\*\*: 200-500MB per browser instance
* \*\*Processing Time\*\*: 15-30 seconds per product (including delays)
* \*\*Daily Throughput\*\*: 15,000-25,000 products with proper infrastructure

### Error Rates and Handling

* \*\*Expected Failures\*\*: 5-15% due to protection mechanisms
* \*\*Recovery Time\*\*: 30-60 seconds for session restoration
* \*\*Retry Logic\*\*: Exponential backoff with IP rotation
* \*\*Monitoring Required\*\*: Real-time success rate tracking

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## Maintenance and Operational Considerations

### Protection Evolution

* \*\*Regular Updates\*\*: Akamai systems continuously evolve
* \*\*Detection Improvements\*\*: Expect increasing sophistication
* \*\*Countermeasure Adaptation\*\*: Regular technique updates required
* \*\*Monitoring Changes\*\*: Continuous system monitoring needed

### Operational Requirements

* \*\*24/7 Monitoring\*\*: System health and success rate tracking
* \*\*Rapid Response\*\*: Quick adaptation to protection changes
* \*\*Infrastructure Scaling\*\*: Auto-scaling for peak demand
* \*\*Expert Maintenance\*\*: Dedicated anti-bot specialists required

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## Risk Assessment

### Technical Risks

* \*\*High Detection Risk\*\*: Sophisticated protection systems
* \*\*Infrastructure Complexity\*\*: Complex setup and maintenance
* \*\*Performance Impact\*\*: Resource-intensive operations
* \*\*Reliability Concerns\*\*: Protection updates can break systems

### Legal and Ethical Considerations

* \*\*Terms of Service\*\*: Review DICK'S ToS for scraping policies
* \*\*Rate Limiting\*\*: Respect traffic limitations (10% rule)
* \*\*Data Usage\*\*: Ensure compliance with data protection regulations
* \*\*Attribution\*\*: Proper data source attribution if required

### Business Risks

* \*\*High Investment\*\*: Significant infrastructure and proxy costs
* \*\*Maintenance Overhead\*\*: Ongoing technical support required
* \*\*Success Variability\*\*: Protection changes can impact reliability
* \*\*Competitive Intelligence\*\*: Data valuable but access challenging

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## Recommendations

### Primary Approach: Browser Automation Only

Given the 0% HTTP success rate with authentic browser headers, browser automation is mandatory:

1. \*\*Infrastructure Setup\*\*

* Deploy Playwright/Selenium with stealth configurations
* Implement residential proxy rotation system
* Set up monitoring and alerting systems
* Establish error recovery mechanisms

1. \*\*Operational Strategy\*\*

* Start with limited scope (5,000-10,000 products)
* Scale gradually based on success rates
* Implement comprehensive monitoring
* Maintain proxy pool health actively

1. \*\*Technical Implementation\*\*

* Use browser automation with human-like patterns
* Implement session persistence and token management
* Deploy on cloud infrastructure with auto-scaling
* Establish 24/7 monitoring and maintenance

### Alternative Considerations

* \*\*API Investigation\*\*: Research potential undocumented APIs
* \*\*Partnership Approach\*\*: Consider official data partnership
* \*\*Selective Scraping\*\*: Focus on highest-value product categories

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## Conclusion

DICK'S Sporting Goods represents a HARD (9/10) scraping target requiring sophisticated browser automation techniques. The complete failure of HTTP requests with authentic browser headers (0% success rate) definitively establishes that only browser automation can succeed.

Key Success Factors:

* Mandatory browser automation with residential proxies
* Enterprise-grade infrastructure and monitoring
* Dedicated anti-bot expertise and maintenance
* Significant budget allocation for proxies and infrastructure

Business Value: Despite technical challenges, the 179,651-product catalog offers substantial competitive intelligence value for organizations with appropriate resources and expertise.

Investment Level: High - Expect significant ongoing costs for proxy services, infrastructure, and specialized maintenance.