Fitts's Law - UX Design Cheat Sheet

What is Fitts's Law?

"The time to acquire a target is a function of the distance to and size of the target."

Discovered by psychologist Paul Fitts in 1954, this fundamental principle of human motor performance describes how quickly users can move to and select interface elements.

The Mathematical Formula

$MT = a + b \times \log_2(D/W + 1)$

Where:

- **MT** = Movement Time
- **a** = Start/stop time (device dependent)
- **b** = Inherent speed of device
- **D** = Distance to target
- **W** = Width of target
- **D/W** = Index of Difficulty (ID)

Core Principles

1. Size Matters

- Larger targets = Faster selection
- Smaller targets = Slower selection + higher error rates
- Double the size ≈ Reduce selection time

2. Distance Matters

- Closer targets = Faster selection
- Farther targets = Slower selection
- Distance has logarithmic impact on time

3. The Relationship

- **High difficulty**: Small targets far away
- **Low difficulty**: Large targets close by

- Optimal UX balances both factors

Practical UX Applications

Button Design

- **Primary actions**: Make them large and prominent
- **Secondary actions**: Can be smaller but still accessible
- **Destructive actions**: Size appropriately but use other visual cues for caution

Navigation Elements

- **Main menu items**: Larger, easily accessible
- **Breadcrumbs**: Adequate size for easy clicking
- **Pagination**: Large enough touch targets

Mobile Design Considerations

- **Minimum touch target**: 44px × 44px (iOS) / 48dp × 48dp (Android)
- **Thumb zones**: Place important actions within natural thumb reach
- **Edge placement**: Utilize screen edges for infinite width effect

Desktop Interface Design

- **Corner positioning**: Screen corners have "infinite" width
- **Menu bars**: Full-width provides easy targeting
- **Toolbar buttons**: Group related actions, adequate spacing

Design Strategies

Make Targets Bigger

- Increase button padding
- Use full-width buttons on mobile
- Expand clickable areas beyond visible elements

Reduce Distance

- Place actions near related content
- Use contextual menus
- Position frequently used tools prominently

Edge Advantage

- Screen edges act as infinite targets
- Corners are easiest to hit
- Utilize dock/taskbar positioning

Progressive Targeting

- **Cascading menus**: Each level gets easier to target
- **Breadcrumb trails**: Build targeting momentum
- **Wizard flows**: Guide users through optimal paths

Common Mistakes to Avoid

❌ Small Touch Targets

- Tiny buttons, especially on mobile
- Crowded interface elements
- Insufficient spacing between targets

❌ Poor Positioning

- Important actions in hard-to-reach areas
- Related actions scattered across interface
- Ignoring natural interaction patterns

❌ Inconsistent Sizing

- Mixing small and large targets randomly
- Not prioritizing by importance
- Ignoring platform conventions

Platform-Specific Guidelines

iOS

- Minimum: 44pt × 44pt
- Recommended: Consider larger for primary actions
- Respect safe areas and thumb zones

Android

- Minimum: 48dp × 48dp
- Material Design recommendations
- Consider device diversity

Web

- Minimum: 44px × 44px for touch
- Mouse interactions can be smaller
- Consider responsive breakpoints

Testing Fitts's Law

Metrics to Measure

- **Task completion time**
- **Error rates**
- **User satisfaction**
- **Accessibility compliance**

Testing Methods

- **A/B testing**: Compare different target sizes
- **Heatmap analysis**: See where users actually click
- **User observation**: Watch interaction patterns
- **Accessibility testing**: Ensure compliance with standards

Quick Reference Rules

The Bigger, The Better

- Primary actions should be largest
- Size indicates importance hierarchy
- Never make targets smaller than minimum guidelines

The Closer, The Faster

- Related actions should be grouped
- Frequent actions should be easily accessible
- Consider user's current focus point

Context Is King

- Desktop ≠ Mobile ≠ Tablet
- Consider user's situation and device
- Adapt to platform conventions

Key Takeaway

Fitts's Law isn't just about making things bigger—it's about creating efficient, intuitive interactions by strategically balancing target size and distance based on user needs and context.