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# Import libraries
import matplotlib.pyplot as plt
import numpy as np

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# Background:
# This figure compares participants' average Likert-scale responses to
three core survey questions under two conditions:
# extreme heat and fair weather. It visualizes how physical fatigue,
recovery time, and motivation levels shift with temperature.
#
# Survey Questions Represented:
# 1. "How physically fatigued do you feel after work on a typical hot
day?" (1 = Not fatigued, 5 = Extremely fatigued)
# 2. "How long does it take you to feel fully recovered after work?" (1 =
Immediate, 5 = More than 12 hours)
# 3. "How motivated do you feel to engage in activities after work?" (1 =
Not at all, 5 = Extremely motivated)
#
# Purpose:
# The chart was designed to support claims that extreme heat impacts not
only physical health but also
# cognitive and emotional well-being. It serves as visual evidence to
complement statistical comparisons made in the paper.
# -----

# Data
categories = ['Fatigue', 'Recovery Time', 'Motivation']
heat_scores = [4.1, 4.0, 3.2]
fair_weather_scores = [2.1, 2.2, 3.5]

x = np.arange(len(categories)) # X-axis positions
width = 0.35 # Bar width

# Plot
fig, ax = plt.subplots(figsize=(10, 6))
bars1 = ax.bar(x - width/2, heat_scores, width, label='Extreme Heat',
color='#3B0F70')
bars2 = ax.bar(x + width/2, fair_weather_scores, width, label='Fair
Weather', color='#12A89F')

# Labels and formatting
ax.set_ylabel('Average Score (1-5)', fontsize=12)
ax.set_title('Participant Scores for Fatigue, Recovery, and
Motivation\nUnder Extreme Heat and Fair Weather Conditions', fontsize=13)
ax.set_xticks(x)
ax.set_xticklabels(categories)
ax.legend()
ax.set_ylim(0, 5)

# Annotate values
for bar in bars1 + bars2:
    height = bar.get_height()

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ax.annotate(f'{height:.1f}',
            xy=(bar.get_x() + bar.get_width() / 2, height),
            xytext=(0, 3),
            textcoords="offset points",
            ha='center', va='bottom', fontsize=10)

plt.tight_layout()
plt.show()

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