```
import folium
import pandas as pd
import random
from folium.plugins import MarkerCluster
from datetime import datetime, timedelta

# Engineering Colleges in Solapur
colleges = [
    {"name": "Walchand Institute of Technology", "lat": 17.66884, "lon": 75.92293, "image": "https://i.imgur.com/wiF0DL6.jpeg", "website": "h
    {"name": "N. B. Navale Sinhgad College of Engineering", "lat": 17.72864, "lon": 75.85171, "image": "", "website": ""},
    {"name": "A.G. Patil Institute of Technology", "lat": 17.61455, "lon": 75.91839, "image": "https://i.imgur.com/BV2xCZF.jpeg", "website":
    {"name": "VVP Institute of Engineering and Technology", "lat": 17.66237, "lon": 75.91839, "image": "https://i.imgur.com/mz3ucUM.jpeg", "w
    {"name": "N.K. Orchid College of Engineering & Technology", "lat": 17.72018, "lon": 75.91949, "image": "https://i.imgur.com/LgZ1mcb.jpeg"
    {"name": "Bharatratna Indira Gandhi College of Engineering", "lat": 17.72318, "lon": 75.85525, "image": "https://i.imgur.com/uFBGg8o.jpeg
    {"name": "Siddheshwar Women's Engineering College", "lat": 17.68767, "lon": 75.91203, "image": "https://i.imgur.com/Fu7lASE.jpeg", "websi
    {"name": "Bramhadeo Mane Institute of Technology", "lat": 17.66808, "lon": 75.80463, "image": "https://i.imgur.com/1NMnh7N.jpeg", "websit
]

# Generate locations for additional places
def generate_nearby_places(colleges, category, count, offset):
    return [
        {
            "name": f"{category} {i+1} near {college['name']}",
            "lat": college["lat"] + random.uniform(-offset, offset),
            "lon": college["lon"] + random.uniform(-offset, offset)
        }
        for college in colleges
        for i in range(count)
    ]

# Generate locations for each category
police_stations = generate_nearby_places(colleges, "Police Station", 2, 0.005)
hospitals = generate_nearby_places(colleges, "Hospital", 2, 0.005)
restaurants = generate_nearby_places(colleges, "Restaurant", 2, 0.004)
cafés = generate_nearby_places(colleges, "Café", 2, 0.004)
apartments = generate_nearby_places(colleges, "Apartment", 2, 0.006)

# Crime Data Generation
crime_types = ['Theft', 'Assault', 'Burglary', 'Robbery', 'Vandalism', 'Car Theft', 'Fraud', 'Kidnapping', 'Cybercrime', 'Drug Offense']
crime_data = [
    {
        'latitude': college['lat'] + random.uniform(-0.005, 0.005),
        'longitude': college['lon'] + random.uniform(-0.005, 0.005),
        'crime_type': random.choice(crime_types),
        'date': (datetime(2025, 3, 1) + timedelta(days=random.randint(0, 60))).strftime('%Y-%m-%d')
    }
    for college in colleges
    for _ in range(random.randint(10, 15))
]

crime_df = pd.DataFrame(crime_data)

# Initialize Map
m = folium.Map(location=[17.6599, 75.9064], zoom_start=12)

# College Markers with Image and Website
for college in colleges:
    image_url = college['image'] if college['image'] else "https://via.placeholder.com/180x100.png?text=No+Image"
    website = college['website'] if college['website'] else "#"

    html = f"""
        <div style="width:220px;">
            <h4 style='margin-bottom:5px;'>{college['name']}</h4>
            <img src="{image_url}" style="width:100%; height:auto; border-radius:8px; margin-bottom:5px;"><br>
            <a href="{website}" target="_blank" style="color:blue;">Visit Website</a>
        </div>
    """
    folium.Marker(
        location=[college['lat'], college['lon']],
        popup=folium.Popup(html, max_width=250),
        icon=folium.Icon(color="darkblue", icon="graduation-cap", prefix='fa'),
    ).add_to(m)

# Create Feature Groups for Layer Control
fg_crime = folium.FeatureGroup(name="Crime Data 🔴")
fg_police = folium.FeatureGroup(name="Police Stations 🚔")
```

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fg_hospitals = folium.FeatureGroup(name="Hospitals 🏥")
fg_restaurants = folium.FeatureGroup(name="Restaurants 🍽️")
fg_cafés = folium.FeatureGroup(name="Cafés ☕")
fg_apartments = folium.FeatureGroup(name="Apartments 🏢")

# Add Crime Data
for _, row in crime_df.iterrows():
    folium.Marker(
        location=[row['latitude'], row['longitude']],
        popup=f"<b>Crime: {row['crime_type']}</b><br>Date: {row['date']}",
        icon=folium.Icon(color="red", icon="exclamation-triangle", prefix='fa')
    ).add_to(fg_crime)

# Add Other Feature Groups
for police in police_stations:
    folium.Marker(
        location=[police['lat'], police['lon']],
        popup=f"<b>Police Station: {police['name']}</b>",
        icon=folium.Icon(color="black", icon="shield-alt", prefix='fa')
    ).add_to(fg_police)

for hospital in hospitals:
    folium.Marker(
        location=[hospital['lat'], hospital['lon']],
        popup=f"<b>Hospital: {hospital['name']}</b>",
        icon=folium.Icon(color="green", icon="plus-square", prefix='fa')
    ).add_to(fg_hospitals)

for restaurant in restaurants:
    folium.Marker(
        location=[restaurant['lat'], restaurant['lon']],
        popup=f"<b>Restaurant: {restaurant['name']}</b>",
        icon=folium.Icon(color="orange", icon="cutlery", prefix='fa')
    ).add_to(fg_restaurants)

for café in cafés:
    folium.Marker(
        location=[café['lat'], café['lon']],
        popup=f"<b>Café: {café['name']}</b>",
        icon=folium.Icon(color="brown", icon="coffee", prefix='fa')
    ).add_to(fg_cafés)

for apartment in apartments:
    folium.Marker(
        location=[apartment['lat'], apartment['lon']],
        popup=f"<b>Apartment: {apartment['name']}</b>",
        icon=folium.Icon(color="purple", icon="building", prefix='fa')
    ).add_to(fg_apartments)

# Add Feature Groups to Map
m.add_child(fg_crime)
m.add_child(fg_police)
m.add_child(fg_hospitals)
m.add_child(fg_restaurants)
m.add_child(fg_cafés)
m.add_child(fg_apartments)

# Add Layer Control
folium.LayerControl(collapsed=False).add_to(m)

# Save Map
m.save("solapur_colleges_map_with_dropdown.html")
print("✅ Map generated successfully with college images in popup!")
```

```
<ipython-input-1-af8831e3b4b4>:116: UserWarning: color argument of Icon should be one of: {'orange', 'cadetblue', 'lightgreen', 'beige',
  icon=folium.Icon(color="brown", icon="coffee", prefix='fa')
✅ Map generated successfully with college images in popup!
```

```
from google.colab import drive
drive.mount('/content/drive')
```