provide a comparison table of jpg vs jpg xl (jxl) vs AVIF vs png

**ChatGPT said:**

Here's a detailed comparison table of **JPG**, **JPEG XL (JXL)**, **AVIF**, and **PNG**, covering various technical and practical aspects:

**📊 Image Format Comparison Table**

| **Feature** | **JPG (JPEG)** | **JPEG XL (JXL)** | **AVIF** | **PNG** |
| --- | --- | --- | --- | --- |
| **Compression Type** | Lossy | Lossy & Lossless | Lossy & Lossless | Lossless |
| **Compression Efficiency** | Moderate | Excellent (better than JPG/PNG) | Very High (best for photos) | None for photos; large files |
| **Transparency Support** | ❌ No | ✅ Yes | ✅ Yes | ✅ Yes |
| **Animation Support** | ❌ No | ✅ Yes | ✅ Yes | ✅ Yes (APNG extension) |
| **Color Depth** | 8-bit | Up to 32-bit | 8, 10, 12-bit | 8 or 16-bit |
| **HDR Support** | ❌ No | ✅ Yes | ✅ Yes | ❌ No |
| **Alpha Channel** | ❌ No | ✅ Yes | ✅ Yes | ✅ Yes |
| **File Size (for same quality)** | Larger | Smaller than JPG/PNG (~40–60%) | Smallest (~50–70% smaller than JPG) | Largest |
| **Decoding Speed** | Fast | Fast | Slower (but improving) | Fast |
| **Encoding Speed** | Very Fast | Moderate to Fast | Slow (especially with high quality) | Fast |
| **Browser Support** | ✅ All Browsers | ❌ Limited (experimental) | ✅ Most modern browsers | ✅ All Browsers |
| **Software Support** | ✅ Universal | ❌ Limited (growing) | 🟡 Moderate (growing fast) | ✅ Universal |
| **Use Case Fit** | Web images, legacy support | Future-proof photos, archiving | Modern web/photos with transparency | Graphics, transparency, UI assets |
| **Patent/License Issues** | ✅ Open standard (royalty-free) | ✅ Open standard (royalty-free) | ✅ Open (AV1 by AOMedia, royalty-free) | ✅ Open standard (royalty-free) |

**📝 Summary Notes:**

* **JPG** is universally supported but outdated in terms of compression efficiency and lacks features like transparency or HDR.
* **JPEG XL** is designed to replace both JPG and PNG with better quality, compression, and features (but still limited adoption).
* **AVIF** offers top-tier compression and modern features but is slower to encode and not yet universally supported in all software.
* **PNG** is excellent for graphics, transparency, and sharp lines but has large file sizes and no lossy mode.