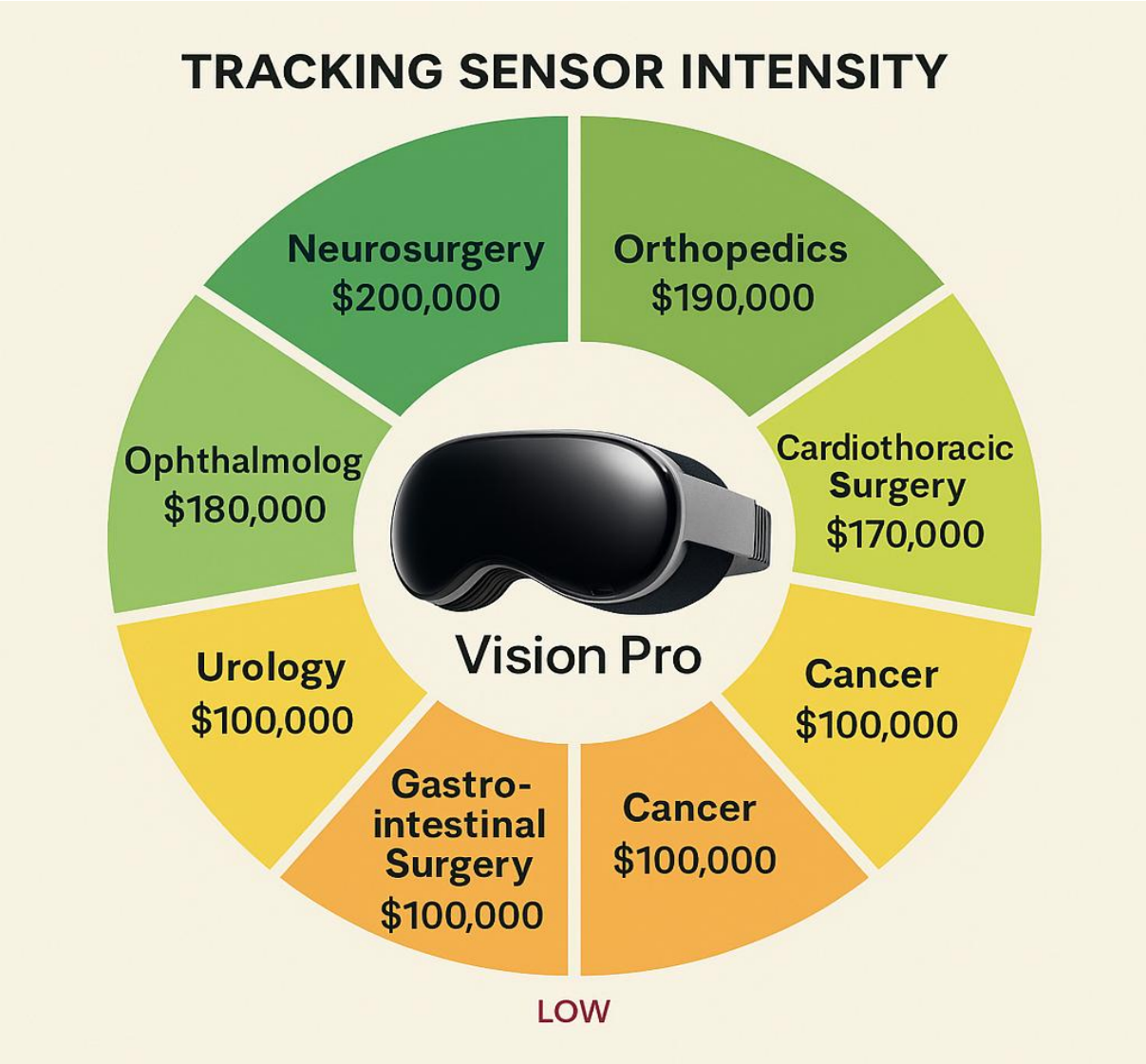

🟦 **High Use (Green)**
- **Neurosurgery ($200,000)**
- **Orthopedics ($190,000)**
- **Ophthalmology ($180,000)**

These specialties rely heavily on **precision navigation and tracking sensors** (optical, electromagnetic, or eye-tracking).

🟨 **Moderate Use (Yellow)**
- **Cardiothoracic Surgery ($170,000)**
- **Vascular Surgery ($160,000)**
- **Cancer ($100,000)** *(depends on the surgery type —brain/breast/prostate use more sensors, others less)*

These use tracking sensors in certain procedures (catheter navigation, robotic surgery, tumor resections), but not as universally as high-use fields.

🟥 **Low Use (Orange/Red)**
- **Gastrointestinal Surgery ($100,000)**
- **Urology ($100,000)**

These rely more on laparoscopic/robotic visualization and less on dedicated tracking sensors, though robotics adds some tracking indirectly.

Sensor Tracking Usage

✅ **Surgeries that rely heavily on tracking sensors**

•**Neurosurgery ($200,000)**

Uses neuronavigation systems with optical or electromagnetic tracking sensors to precisely guide instruments relative to brain structures. This is one of the most sensor-intensive fields.

•**Orthopedics ($190,000)**

Joint replacements (hip, knee, shoulder) often use optical or robotic navigation systems with tracking sensors to ensure implant alignment and bone cuts are exact.

•**Ophthalmology ($180,000)**

Eye-tracking sensors are essential in laser surgeries (e.g., LASIK, cataract surgery), ensuring lasers or tools follow micro-movements of the eye.

•**Cardiothoracic Surgery ($170,000)**

Increasingly uses sensors for catheter navigation, robotic surgery systems (like Da Vinci), and 3D heart mapping during minimally invasive heart procedures.

✅ **Most sensor-intensive:** Neurosurgery, Orthopedics, Ophthalmology

⚠️ **Moderate use:** Cardiothoracic, Vascular, Cancer (depending on type)

❌ **Lower use:** Gastrointestinal, Urology

⚠️ **Sometimes use tracking sensors (depending on approach/tech)**

•**Vascular Surgery ($160,000)**

Endovascular procedures often rely on fluoroscopy and imaging, but advanced labs may incorporate electromagnetic tracking sensors for catheter and stent navigation.

•**Cancer ($100,000)**

Depends on the surgery type. Tumor resections (brain, breast, prostate) often use tracking sensors for image-guided navigation, but systemic cancer surgeries (like open abdominal resections) rely less on them.

Limited or indirect use of tracking sensors

•**Gastrointestinal Surgery ($100,000)**

Most GI surgeries rely on laparoscopic or robotic visualization rather than dedicated tracking sensors, though robotic platforms may include instrument tracking.

•**Urology ($100,000)**

Robotic prostatectomy or kidney surgery uses robotic arms with tracking, but not as sensor-intensive as neurosurgery or orthopedics.