Exercise Solutions:

Example\_1\_Quantitative\_Dataset\_SleepData

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| **Variable** | **Type** | **Needs Anonymisation?** | **Recommended Technique** |
| Participant\_Name | Direct Identifier | ✅ Yes | **Suppression** or **Masking** (e.g., initials or fake name) |
| Postcode | Direct Identifier | ✅ Yes | **Suppression** or **Generalisation** (e.g., only region or 1st 3 digits) |
| Age | Indirect Identifier | ✅ Yes | **Generalisation** (e.g., age bands: 20–29) |
| Sex | Indirect | ⚠️ Maybe | Leave as is, or **Generalise** if combined with rare traits |
| Ethnicity | Sensitive | ✅ Yes | **Generalisation** (e.g., merge into broader categories) |
| Occupation | Indirect Identifier | ✅ Yes | **Categorisation** (e.g., "Health sector", "Student") |
| Diagnosis | Sensitive | ✅ Yes | **Generalisation** or **Suppression** (e.g., grouped diagnoses) |
| Sleep\_Onset\_Time | Target Variable | ❌ No | Keep (unless unusual times reveal identity) |
| Wake\_Up\_Time | Target Variable | ❌ No | Keep (unless unusual times reveal identity) |
| Average\_Sleep\_Duration | Target Variable | ❌ No | Keep (unless unusual times reveal identity) |
| Medication\_Use | Sensitive | ✅ Yes | **Generalisation** (e.g., "Mood stabiliser", "None") |
| Activity\_Level | Target Variable | ❌ No | Keep (unless unusual levels reveal identity) |
| Caffeine\_Intake\_mg | Indirect | ❌ No | May **generalise** (e.g., Low/Medium/High) |
| Chronotype | Target Variable | ❌ No | Keep |
| Light\_Exposure\_Hours | Target Variable | ❌ No | Keep or **Round values** slightly for safety |

Example\_2\_Quantitative\_Dataset\_Biological\_Lab\_Data

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| **Variable** | **Type** | **Needs Anonymisation?** | **Recommended Technique** |
| Participant\_ID | Pseudonymised ID | ⚠️ Maybe | Replace with random IDs or hash (optional masking) |
| Age | Indirect Identifier | ✅ Yes | **Generalisation** (e.g., 20–29) |
| Sex | Indirect | ⚠️ Maybe | Keep unless paired with rare traits |
| Ethnicity | Sensitive | ✅ Yes | **Generalisation** (e.g., "Ethnic minority"/"Majority") |
| Diagnosis | Sensitive | ✅ Yes | **Generalisation** or **Suppression** |
| Melatonin\_Level\_pg\_mL | Target Variable | ❌ No | Keep |
| Cortisol\_Level\_ug\_dL | Target Variable | ❌ No | Keep |
| Core\_Body\_Temp\_C | Target Variable | ❌ No | Keep |
| Gene\_Expression\_PER1 | Target Variable | ❌ No | Keep |
| Gene\_Expression\_CRH | Target Variable | ❌ No | Keep |
| Chronotype | Indirect/Target | ❌ No | Keep |
| Light\_Exposure\_Hours | Target | ❌ No | Keep |
| Sleep\_Duration\_Hours | Target | ❌ No | Keep |
| Medication | Sensitive | ✅ Yes | **Generalisation** or **Masking** |
| Sample\_Collection\_Time | Indirect | ⚠️ Maybe | **Generalise** (e.g., “Morning”, “Night”) if linked to ID risk |

Example\_3\_Quantitative\_Interview\_Transcript

🔐 Anonymised Interview Transcript

🎙️ Interviewer: Thank you for joining us today. Could you start by introducing yourself and telling me a little about your daily routine?  
 Participant: Of course. I'm in my late 30s and currently live in a small town in the southwest of England with my young daughter. I’ve worked as a night-shift nurse at a local hospital for over a decade, although I recently switched to part-time due to health issues. My day — well, my night — typically starts in the early evening when I prepare for work. My daughter stays with a close family member when I’m on shift.

🎙️ Interviewer: How have your work and personal routines affected your mental health?  
 Participant: Honestly, I think they’re completely intertwined. Working nights has really disrupted my internal rhythm. I’ve struggled with sleep since I began shift work — waking at odd hours, feeling alert in the middle of the night on my days off. Things got worse a few years ago when I was diagnosed with a mood disorder. My psychiatrist at the regional hospital noted a strong circadian element. I also went through a very difficult time during the pandemic and was briefly hospitalised during a crisis.

🎙️ Interviewer: That sounds difficult. Could you talk more about how these experiences affect your day-to-day life?  
 Participant: Sure. When I’m going through a low period, I often can’t get out of bed for days. I once missed an important family event that I still feel bad about. In contrast, when I’m feeling elevated, I barely sleep and have sometimes gone into work after being awake for over a day. I’ve started keeping journals — tracking sleep, mood, and meals. I also wear a monitoring device from the research team and tried using a light therapy device.

🎙️ Interviewer: Have you tried any interventions that helped?  
 Participant: A few things help a bit. A supplement makes me sleepy but gives me vivid dreams. I take prescribed medication that stabilises me, but it leaves me drowsy in the mornings. What’s helped most is creating structure — keeping consistent mealtimes and using light filters at work. I even worked with my manager to avoid switching between night and day shifts, which really helped.

🎙️ Interviewer: What kinds of support have you received?  
 Participant: My family’s been incredibly supportive. A close relative who lives nearby takes care of my daughter on weekends. My doctor at the local clinic has also been great. I’m part of a women’s support group for people with the same condition. There are six of us who meet monthly at a local centre. I'm the only one in shift work, which sometimes feels isolating.

🎙️ Interviewer: Has being part of this research changed anything for you?  
 Participant: Absolutely. Just tracking my sleep helped me notice patterns. I realised that even one bad night can throw off my whole week. It’s also meaningful to know that someone is researching this — that disrupted sleep isn’t just something to brush off. I hope this helps others like me.

🎙️ Interviewer: Is there anything else you'd like to add?  
 Participant: Just that managing mental health with a disrupted body clock feels like swimming upstream. I wish more employers and healthcare providers understood how crucial circadian rhythms are. I’m really grateful to share my story.