**🧭 1. Grey Bruce Public Health**

**Major cities**: Owen Sound, Walkerton, Markdale  
**Nearby PHUs**:

* ✅ Huron Perth Public Health (monitoring station: Grand Bend)
* ✅ Southwestern Public Health (monitoring station: Port Stanley)
* ✅ Simcoe Muskoka District Health Unit (monitoring station: Barrie)

**Recommendation**:  
Use average PM2.5/NO₂/O₃ values from Grand Bend or Barrie as proxies;  
Alternatively, apply distance-weighted interpolation methods such as IDW or Kriging.

**🧭 2. Haliburton, Kawartha, Pine Ridge District Health Unit**

**Major cities**: Lindsay, Cobourg, Haliburton, Port Hope  
**Nearby PHUs**:

* ✅ Peterborough Public Health (monitoring station: Peterborough)
* ✅ Durham Region Health (monitoring station: Oshawa)
* ✅ Hastings Prince Edward (monitoring station: Belleville)

**Recommendation**:  
Preferably use Peterborough’s data;  
If spatial weighting or wind direction data are available, consider supplementing with Belleville data to the southeast.

**🧭 3. Leeds, Grenville & Lanark District Health Unit**

**Major cities**: Brockville, Smiths Falls, Perth  
**Nearby PHUs**:

* ✅ Eastern Ontario Health Unit (monitoring station: Cornwall)
* ✅ Ottawa Public Health (monitoring stations: Ottawa Downtown/Central)
* ✅ Kingston PHU (monitoring station: Kingston)

**Recommendation**:  
Geographically, Brockville is located between Ottawa and Kingston;  
Use either average values from both or the nearest station as a proxy.

**🧭 4. Northwestern Health Unit**

**Major cities**: Kenora, Dryden, Fort Frances  
**Nearby PHUs**:

* ❌ Closest is Thunder Bay District Health Unit (covered by: Thunder Bay)

**Recommendation**:  
Use data from Thunder Bay as the only feasible proxy;  
Flag the estimate as high uncertainty, suitable for sensitivity analysis.

**🧭 5. Timiskaming Health Unit**

**Major cities**: New Liskeard, Temiskaming Shores  
**Nearby PHUs**:

* ✅ Sudbury PHU (monitoring station: Sudbury)
* ✅ Porcupine PHU (no station, but Timmins weather data may help)

**Recommendation**:  
Use Sudbury data for estimation;  
If available, validate using satellite-derived products (e.g., MODIS AOD or Copernicus CAMS).

**🔧 Summary of Methods for Handling Missing Data**

| **Method** | **Suitable Scenario** | **Example** |
| --- | --- | --- |
| Nearest-neighbor proxy | Nearby PHU has a monitoring station | Use Peterborough data for the Haliburton area |
| Regional averaging | Multiple neighboring stations available | Average Ottawa + Kingston values |
| Spatial interpolation | Coordinates available | Apply IDW or Kriging |
| Remote sensing support | No station in remote areas | Use MODIS AOD or CAMS data |
| Temporal extrapolation | Historical data available | Use 2020–2022 to estimate 2023 |
| Multiple imputation | Cross-regional regression models | Use temperature/seasonality for estimation |