Production Analysis of Oilfield Data

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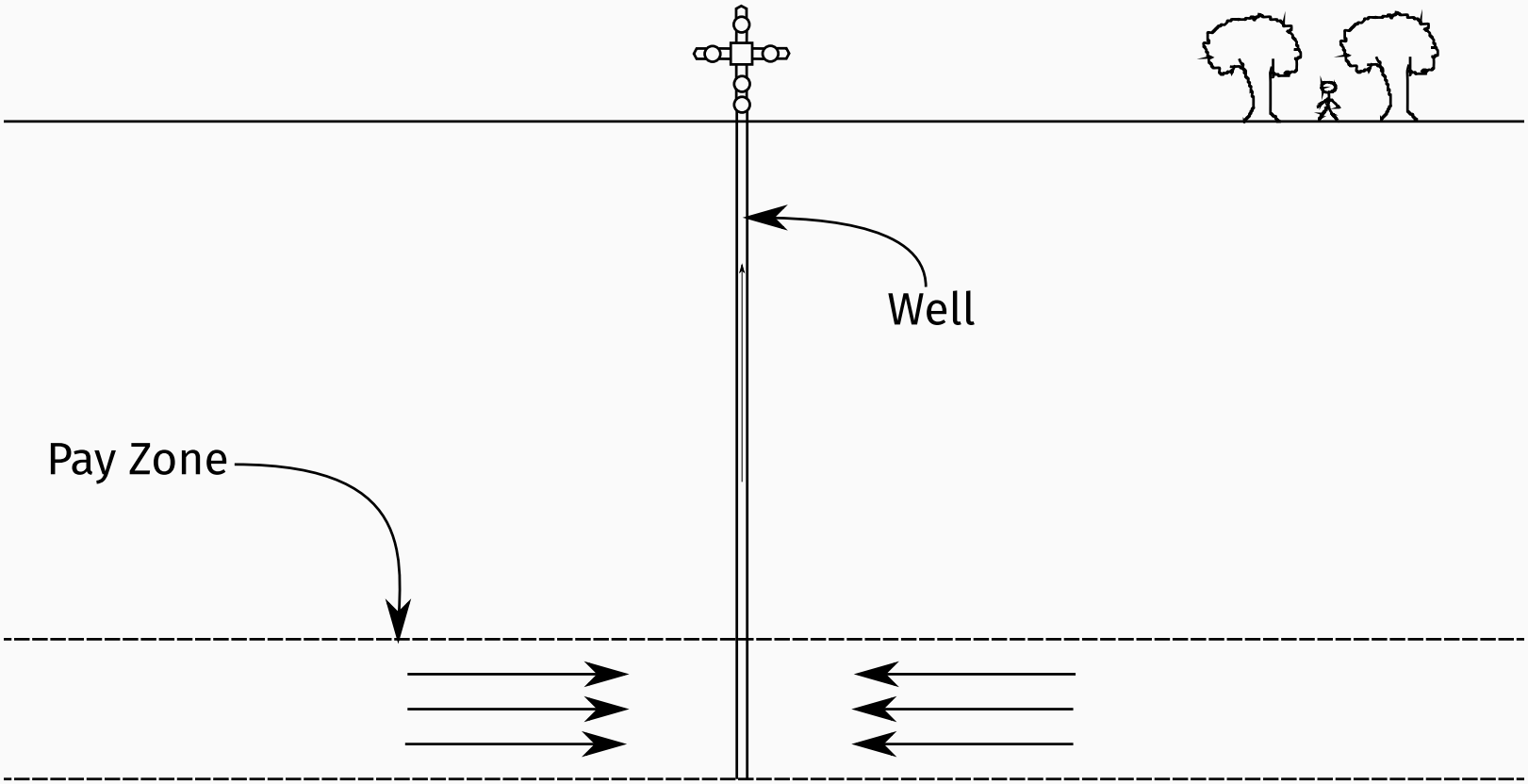
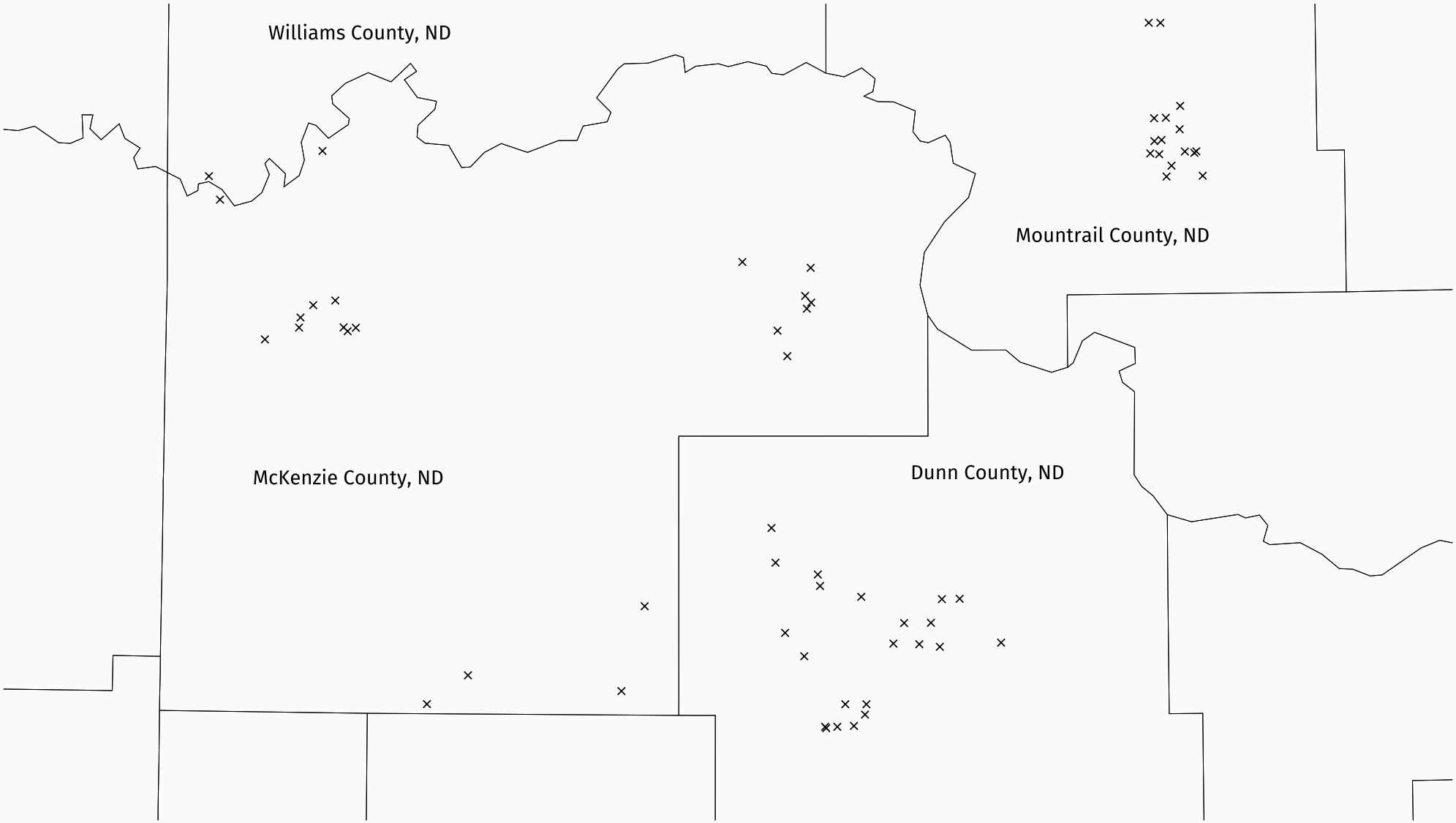
Background

- Oil and gas are present in the pores of rock, commonly ranging in depth from 2000 ft. to 14000 ft. below the surface.
- These pores range in size from 0.005 mm to greater than 2 mm.
- When we drill a well and produce the hydrocarbon, the average pressure in the pores of the rock drops.
- Consequently, the rate of oil or gas that we produce decreases over time.

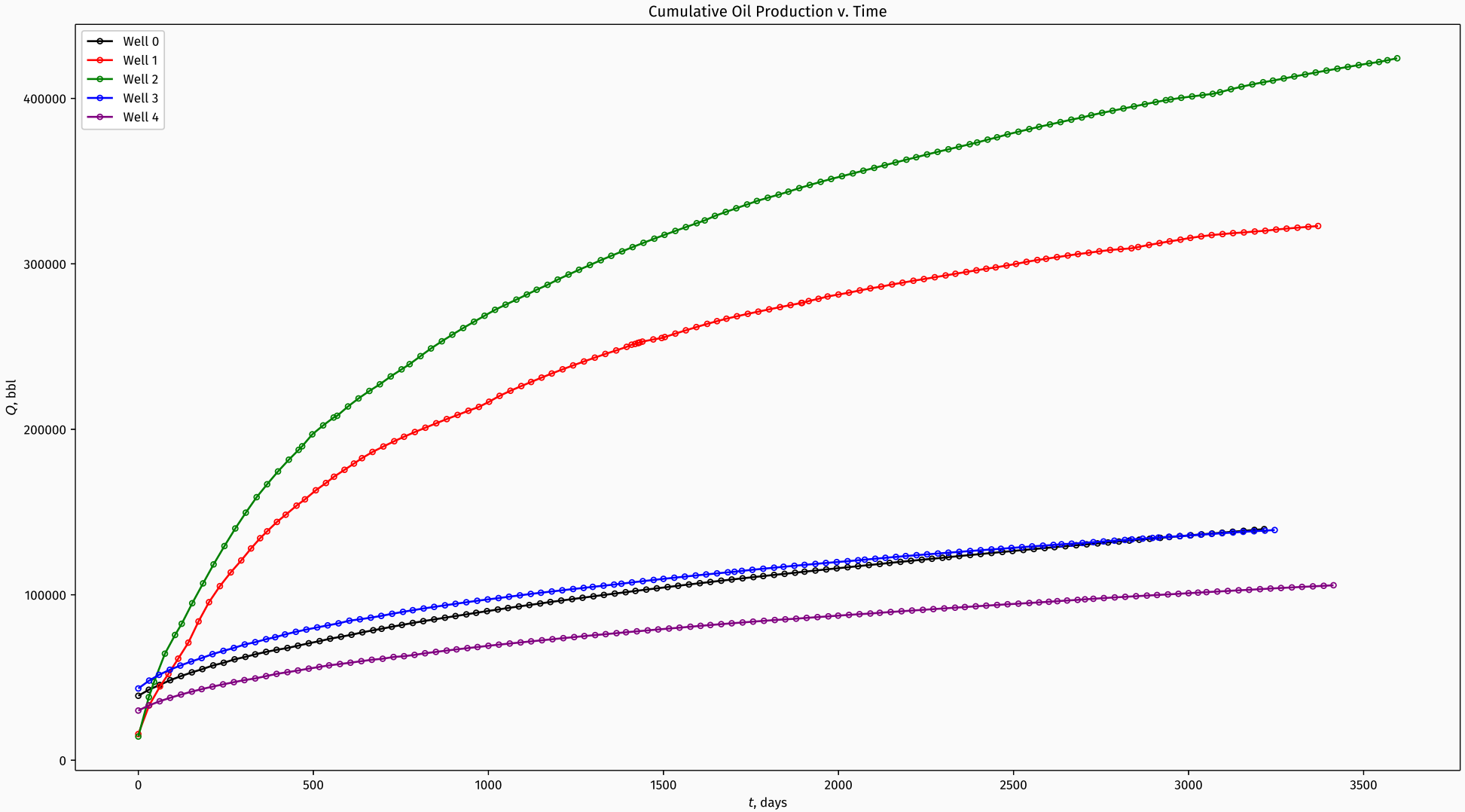
Background



Dataset


Williams County, ND
Mountrail County, ND
McKenzie County, ND
Dunn County, ND

Dataset



This shows data for 5 wells out of the 60 wells in the full dataset.

Goals

- Smoothing and removing outliers from rate data.
- Forecasting future production and calculating ultimate recovery.
- Detecting interference between wells.

Possible Issues

- Rate data is often noisy and trends can be difficult to see.
- Data are not equally spaced.
- Wells start producing at different times, and so have different observation ranges in time.