

# ModelBuilder: An Introduction

Patrick Benson

MSc Student: Geography, University of Montana

# GIS as Process

- Data:
  - Acquisition
  - Exploration
- Analysis:
  - Data transformation
  - Hypothesis testing
  - Understanding spatial patterns
- Visualization:
  - Cartographic elements (color, type etc)
  - Distribution

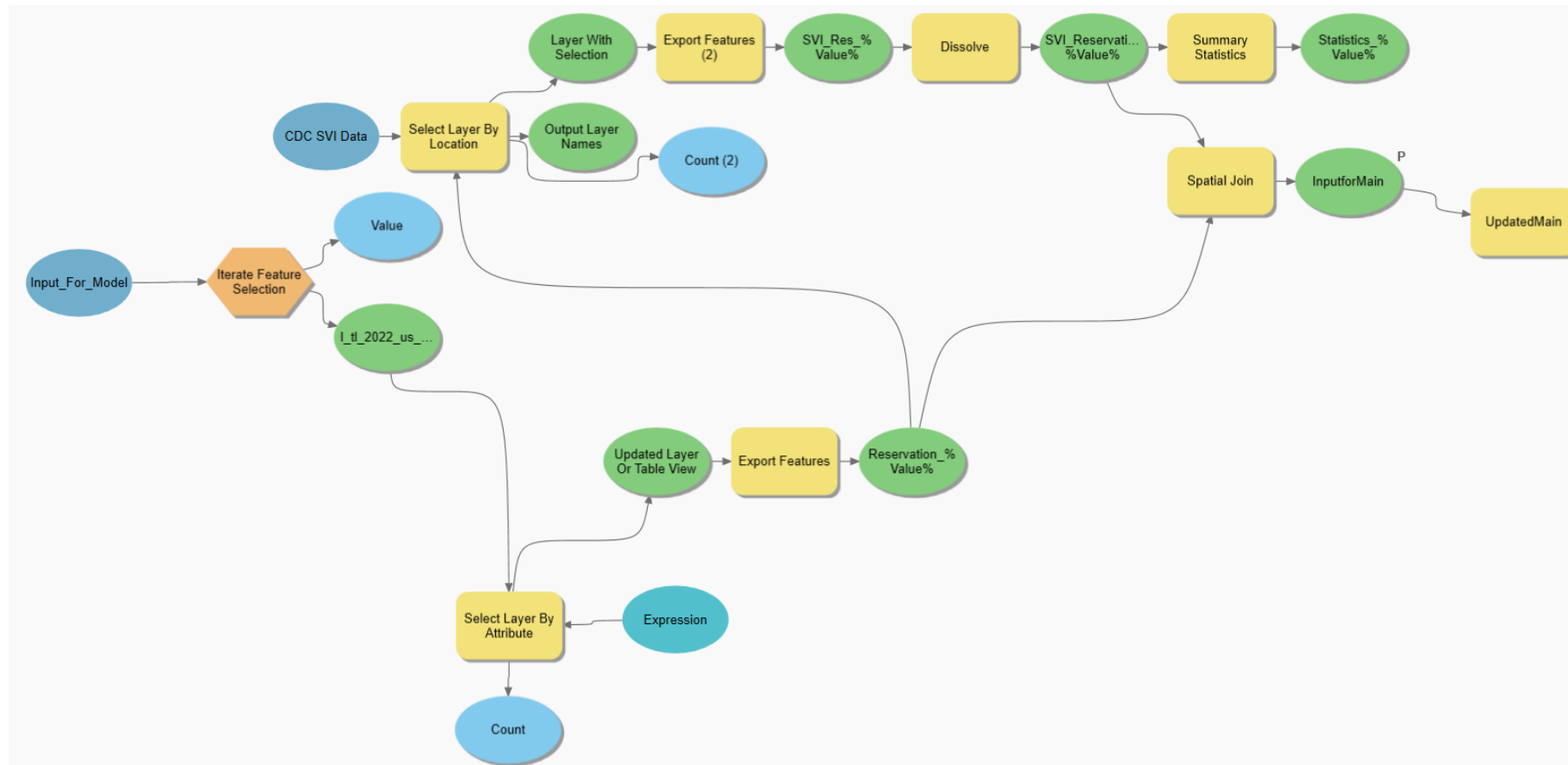
# Spatial Analysis with ModelBuilder: Understanding trends in landcover change across Kootenai area Native American Reservations

<b>Data Source:</b>	<b>Data Type:</b>	<b>Accessed from:</b>
Native American Reservation Boundaries	Vector	<a href="https://www.census.gov/cgi-bin/geo/shapefiles/index.php">https://www.census.gov/cgi-bin/geo/shapefiles/index.php</a>
National Land Cover Dataset (NLCD)	Raster	<a href="https://www.mrlc.gov/data?f%5B0%5D=category%3ALand%20Cover">https://www.mrlc.gov/data?f%5B0%5D=category%3ALand%20Cover</a>
Social Vulnerability Index (SVI)	Vector	<a href="https://www.atsdr.cdc.gov/placeandhealth/svi/data_documentation_download.html">https://www.atsdr.cdc.gov/placeandhealth/svi/data_documentation_download.html</a>

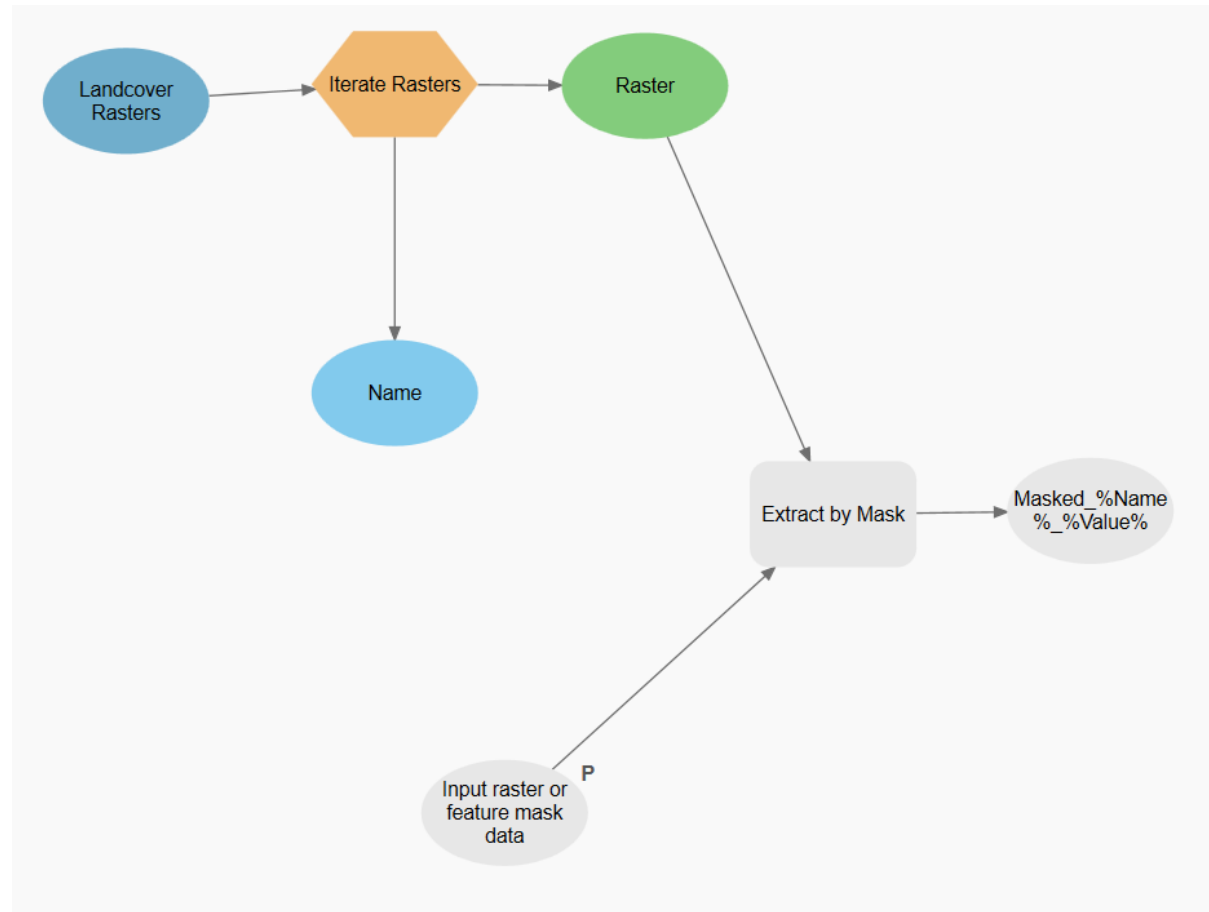
# Spatial Analysis with ModelBuilder: Understanding trends in landcover change across Kootenai area Native American Reservations

- How to take several large datasets and clip them to areas of interest?
- Repeatable analysis for each reservation, at scale
- Enter ModelBuilder

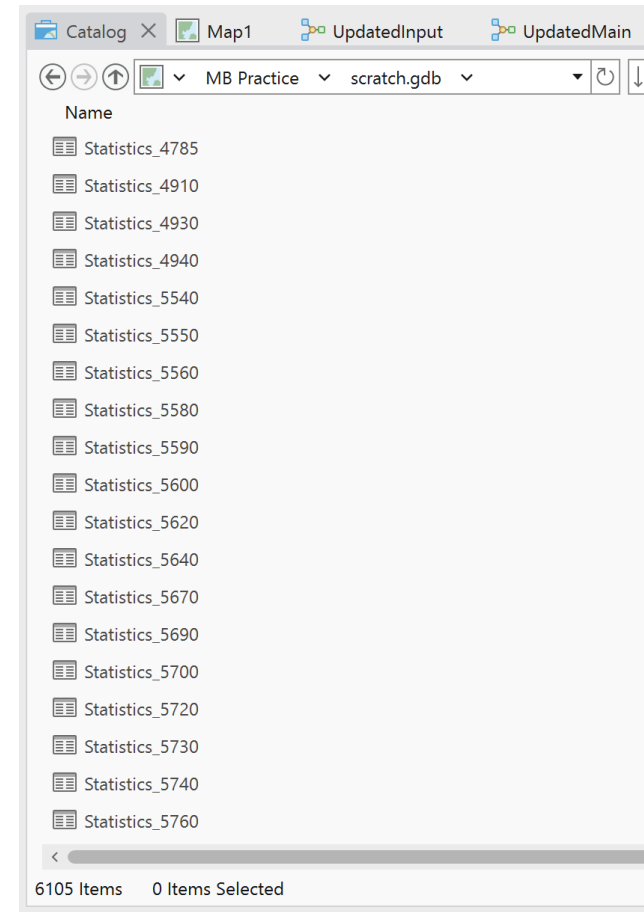
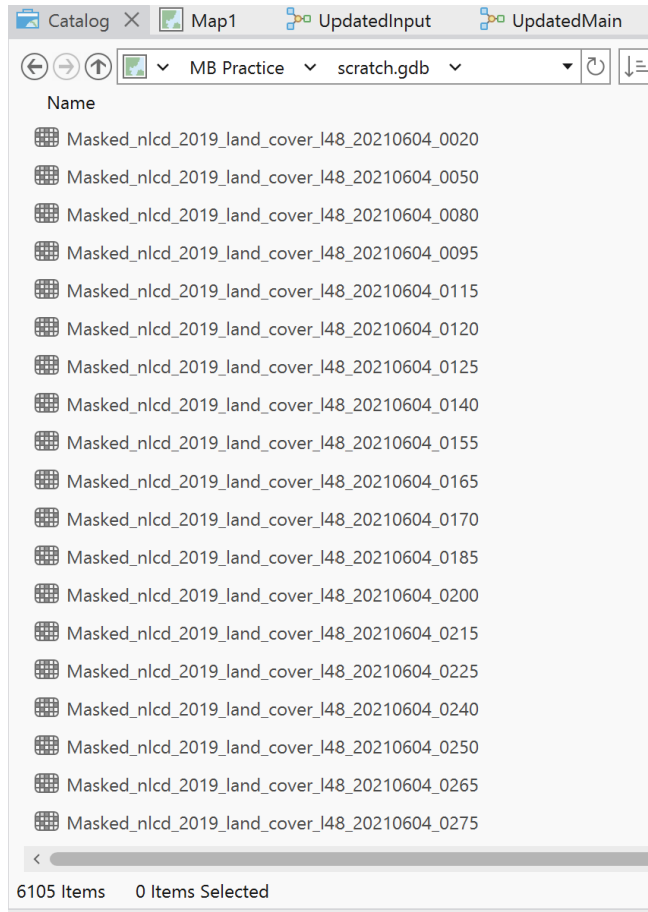
# Spatial Analysis with ModelBuilder: Understanding trends in landcover change across Kootenai area Native American Reservations



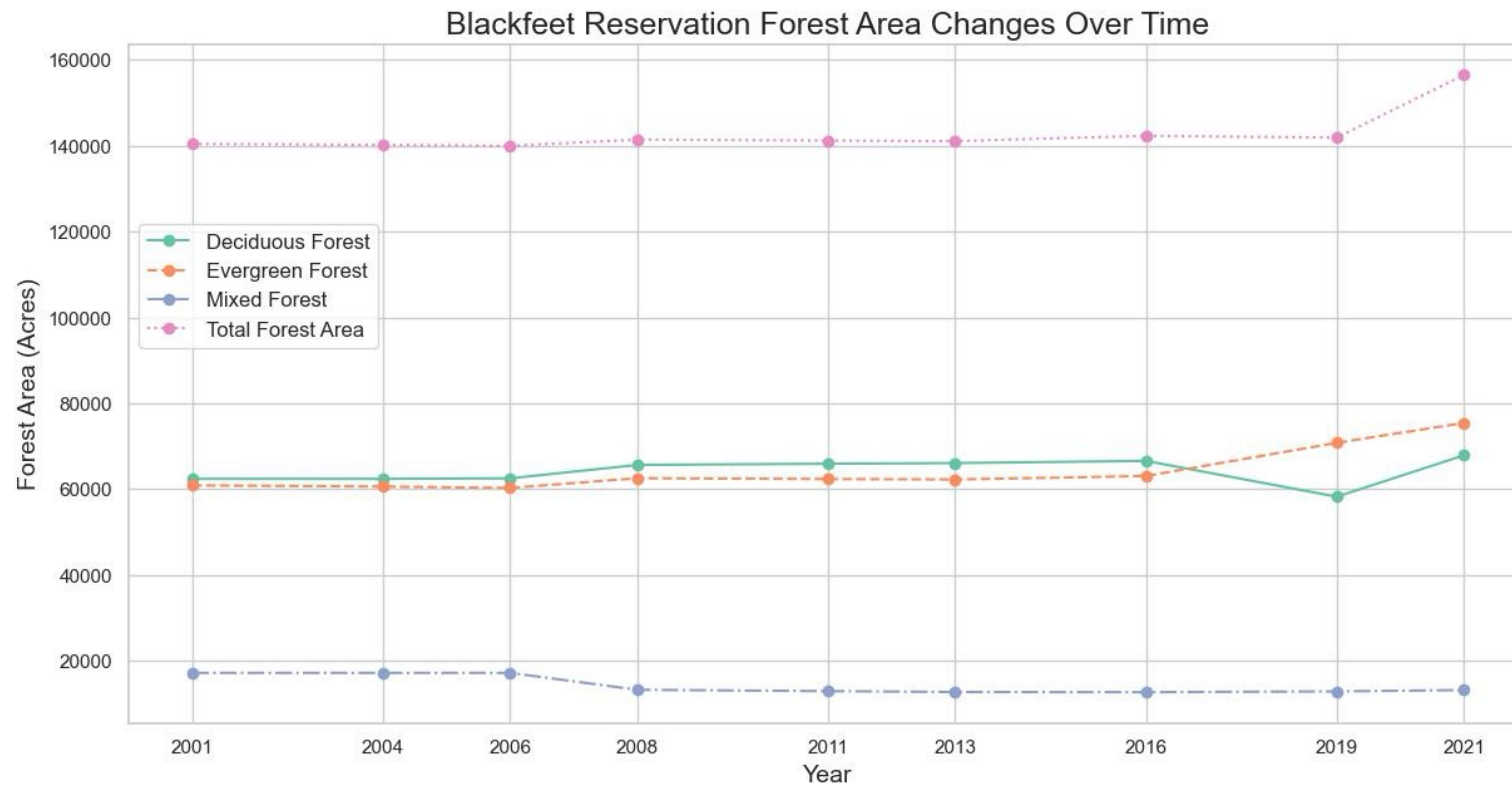
# Spatial Analysis with ModelBuilder: Understanding trends in landcover change across Kootenai area Native American Reservations



# Spatial Analysis with ModelBuilder: Understanding trends in landcover change across Kootenai area Native American Reservations



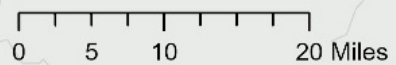
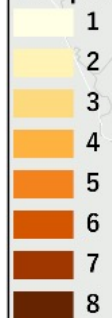
# Spatial Analysis with ModelBuilder: Understanding trends in landcover change across Kootenai area Native American Reservations



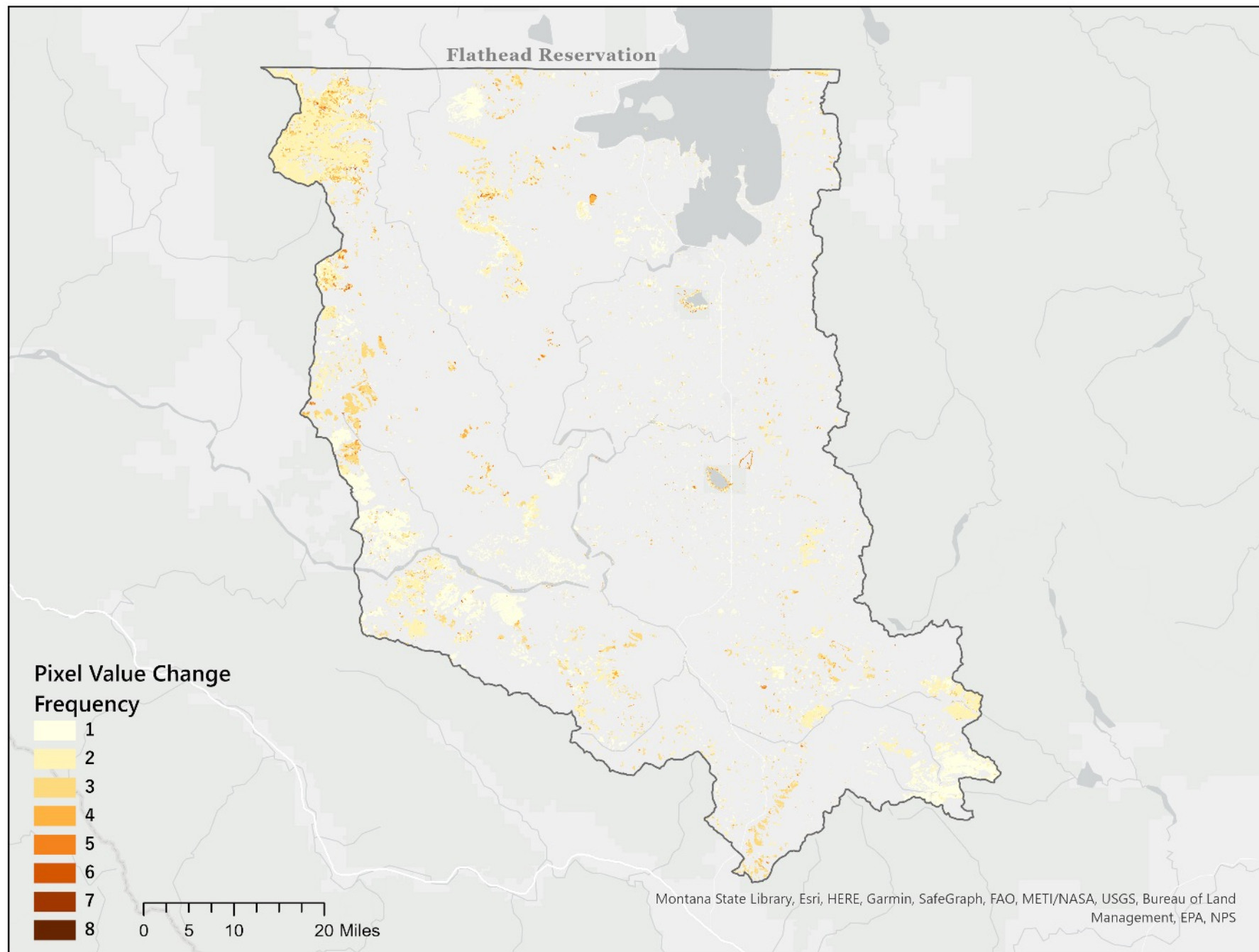


# Blackfeet Reservation

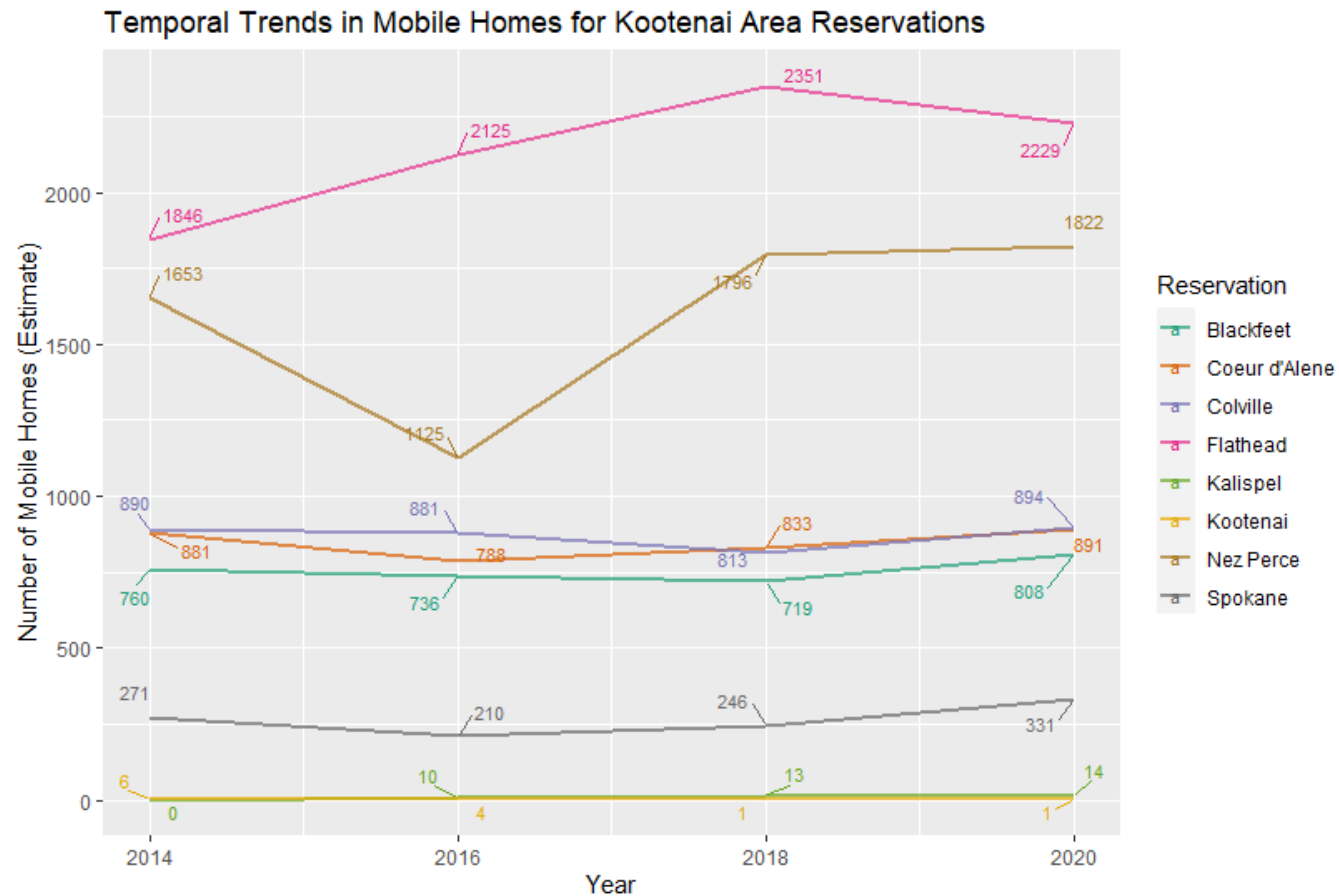
## Pixel Value Change Frequency



Montana State Library, Esri, HERE, Garmin, SafeGraph, FAO, METI/NASA, USGS, Bureau of Land Management, EPA, NPS



# Spatial Analysis with ModelBuilder: Understanding trends in landcover change across Kootenai area Native American Reservations



# Spatial Analysis with ModelBuilder: Understanding trends in landcover change across Kootenai area Native American Reservations

- Inline variable substitution:
  - Allows for unique outputs of your intermediate and final data
  - “Scratch” workspace to store intermediate data
- <https://pro.arcgis.com/en/pro-app/3.1/help/analysis/geoprocessing/modelbuilder/inline-variable-substitution.htm#:~:text=In%20ModelBuilder%2C%20you%20can%20substitute,is%20called%20inline%20variable%20substitution.>

# Introduction to ModelBuilder

- <https://www.youtube.com/watch?v=qnkew2mhtvM>

# Lab 1: Your preferred cities

