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Written Assignment
Competition R-1006982
Data Scientist (Sustainability)

Instructions:

Congratulations on being selected as a candidate for the **Data Scientist (Sustainability)** position. The next step of the process is for you to complete this assignment. Your response will help us assess your writing skills and understanding of data science. You are asked to complete the assignment based on your current knowledge and experience, and we request that you not call anyone for guidance when formulating your responses. It should take approximately 2 hours to complete.

To avoid computer malfunction issues, you are encouraged to save your document as you do your work. Please save your document as "LAST NAME, FIRST NAME – Data Scientist". When completed, e-mail your document to Chad.Wasylyniuk@fcc-fac.ca. **Submission is due by Friday, February 21st at 5:00 pm (local SK time).**

If you require any special accommodation in order to complete this exercise, please let us know. Thank you for your interest in the position and good luck.

Please note that this exercise is one of several factors that will be considered in choosing the appropriate candidate.

Resource requirements:
You should be able to complete this assignment using Microsoft Excel/Apple Numbers or open-source Python software but feel free to use any software of your choosing.

Assignment:
FCC is assessing agricultural resilience and biodiversity in southern Saskatchewan. See the provided dataset that simulates land use change across 10 agricultural subdivisions over the period 2000–2020.

Dataset Description:
- **Subdivisions:** 10 distinct areas in southern Saskatchewan
- **Timeframe:** 2000–2020
- **Variables:**
  - **Land Cover Percentages:** *Cropland_pct, Grassland_pct, Forest_pct, Wetland_pct* (normalized to sum to 100%)
  - **Land Cover Areas, Biodiversity_Score**

Assignment Tasks:
1. **Data Ingestion and Quality Checks**
   - Load the provided dataset.
   - Perform data quality checks (missing values, data types) and provide summary statistics.
2. **Exploratory Data Analysis**
   - Generate relevant visualizations to identify patterns in land cover and biodiversity.
3. **Analysis and Reporting**
   - Conduct statistical analyses to assess the relationship between variables
   - Summarize findings and provide actionable recommendations.
   - Include a brief report (1000 words or less) detailing your methodology, results, assumptions, limitations, and suggested next steps.

Submission:
- Provide any code, any artificial intelligence prompts, visualizations, along with your brief report to chad.wasylyniuk@fcc-fac.ca by Friday, February 21, 5:00pm SK time.

Good luck!