**Project Problem and Hypothesis**

* What's the project about? What problem are you solving?

Identifying abnormal spines, based on the position and curvature of each section in the patient’s spine.

* Where does this seem to reside as a machine learning problem? Are you predicting some continuous number, or predicting a binary value?

I’m predicting a binary value: normal spine or abnormal spine.

* What kind of impact do you think it could have?

Prevent chronic pain before it starts by identifying abnormal spines in patients. That way, you can teach them the proper exercises to strengthen their spine and bring it into alignment. Chronic pain is a precursor to depression, relationship problems, inflammation, and suicide, so the social implications are huge.

* What do you think will have the most impact in predicting the value you are interested in solving for?

Excessive thoracic curvature. And scoliosis.

### Datasets

* Description of data set available, at the field level (see table)

### pelvic\_incidence: measures the relative position of your sacrum to the femoral heads. Represents the angle that your body weight is transferred from the bottom of your spine to your legs.

### pelvic\_tilt: the angle of the line connecting your hip axis to the middle of the sacrum.

### Lumbar\_lordosis\_angle: the curvature from your lumbar spine: L1 to L5

### Sacral slope: the angle that your sacrum juts out, relative to 90 degrees.

### Pelvic Radius: the angle of the line from the middle of the hip axis to the top back corner of the sacrum.

### Degree\_spondylolisthesis: Spondylolisthesis is a slippage of one vertebra relative to another.

### Pelvic slope: The angle of the top plane of the pelvis, can point forward or backward.

### Direct\_tilt: Head position tilt relative to the cervical vertebrae underneath.

### Thoracic slope: The amount of curvature in your thoracic spine.

### Cervical tilt: The angle of the cervical vertebrae at the top.

### Sacrum\_angle: The angle at which the sacrum juts out.

### Scoliosis\_slope: For off-center backs, the angle at which the two most displaced vertebrae point towards each other.

### Abnormal: Whether or not the patient experiences back pain, defined as an “abnormality.” Binary.

### Domain knowledge

* What experience do you already have around this area?

Personal knowledge from working with a PT, Pilates rehabilitation specialist, and a chiropractor.

* Does it relate or help inform the project in any way?

Yes, I’m familiar with the physiology of it, the abnormalities that are most likely to block off blood flow to the sciatic nerve (this is the most common cause of chronic back pain.)

* What other research efforts exist?

Other models on Kaggle have gotten near 85% accuracy in predicting abnormal spine using the other 12 variables.