ALL OF US AND MACHINE LEARNING – AI – ARTIFICIAL NEURAL NETWORKS

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IDEAS FROM INITIAL EMAILS

1. Predict need for surgery (or cancer surgery) for XYZ conditions with AI ANN
2. Cancer overall survival predictor, or refining and improving cancer staging, with ANN
3. Survey questions data project
4. Predict need of colectomy for diverticulitis
5. Predict complications and surgery among patients who have gallstones
6. Predict need for an operation among patients with a small bowel obstruction
7. Predict women who will develop a general surgery problem during pregnancy vs. not
8. Predict pancreatic cysts that grow and will need surgery
9. Predict subjects with ADH, ALH, LCIS, who will develop breast cancer

SURVEY DATA BREAKDOWN

- **Healthcare Access & Utilization**: data on being able to afford care, delay care, or get advice from healthcare workers
- **Lifestyle**: alcohol, drugs, cigarettes
- **Overall Health**: general health, mental health, physical health, travel, pain, emotional health, general health, transplant, ovary, hysterectomy, health literacy
- **Personal and Family Health History**: extensive health conditions questionnaire
  - Red shaded: cell contains the word "cancer"
  - Purple shaded: some common general surgery conditions
- **Social Determinants of Health**: agree, strongly disagree, never etc. questions to SDOH
- **The Basics**

IDEAS AFTER LOOKING AT SURVEY DATA

1. Analysis of cancer patients vs. non cancer patients: Fitbit and sleep data?
2. Glaucoma paper: where did they extract the data from, from personal and family health history? There are glaucoma questions, but how could they tell the patient needed surgery for glaucoma or not?
3. Predict need for surgery: among gall stones patients, among diverticulitis patients, among hernia patients
4. Pancreas (or other) cancer questions: relation to lifestyle exposures, SDOH, Fitbit/Sleep, Healthcare utilization
5. AYA cancers: adolescent and young adults (<40 y.o.) cancers: hot topic right now, factors related to this, other health issues, access, SDOH, Fitbit/Sleep, compared to cancers >40 y.o.
6. Colorectal cancer: increasing in incidence and in minorities/Hispanic – data analysis on this
7. AYA breast cancer: also increasing in incidence, so analysis on <40 y.o. women with breast cancer vs. >40 y.o., overall health, lifestyle, access & utilization