COVID-19 Analytics

Los Angeles Mayor's Office Innovation Team

Supervisors: Jonathan Cheung and Diamond James

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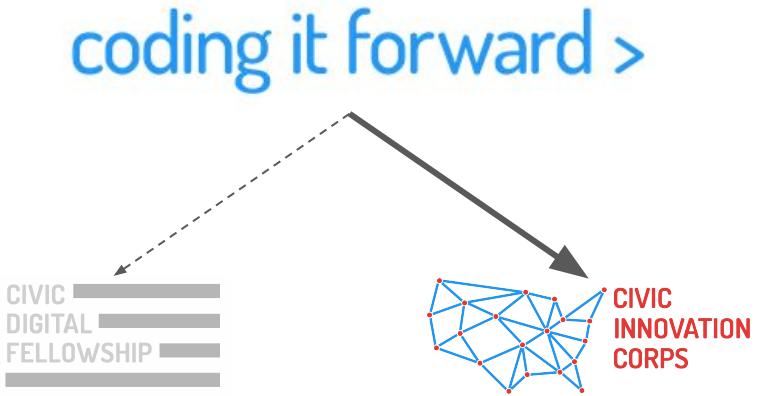
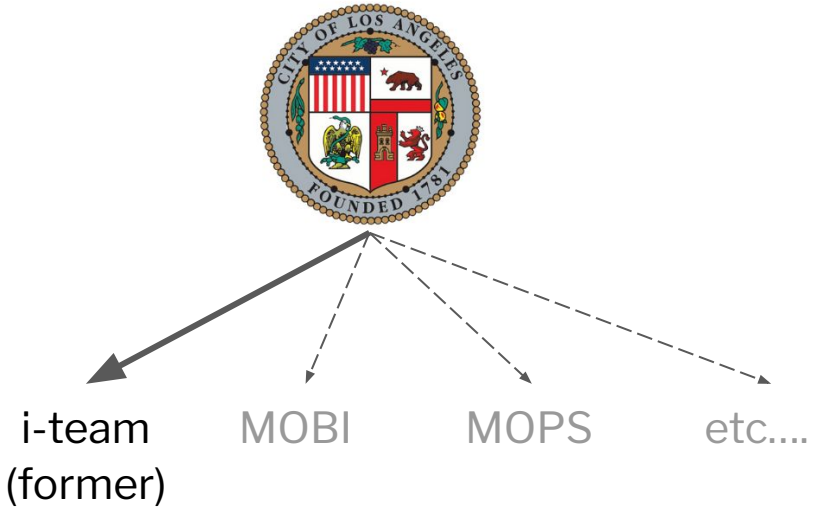
Introductions!





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Internship Overview

- Coding It Forward!
- Data Analyst Intern at the Los Angeles Innovation Team (i-team)
- 10 weeks - June 13th to August 19th
- Covid-19 Data
    - Weekly tasks
    - Quality improvement
    - Research and exploration
- Some helping out in other places - Gender Equity Scoring, data portal discussion

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Impact

- ‘Making a difference’
- Be the ~~change~~ support I want to see
- Impact through information

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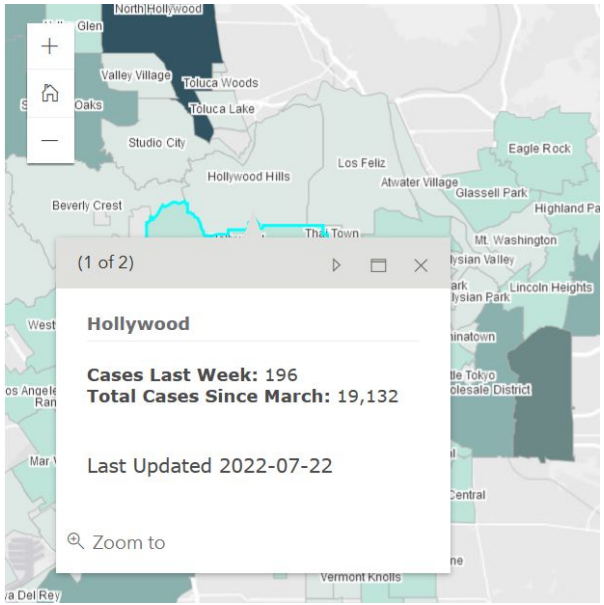
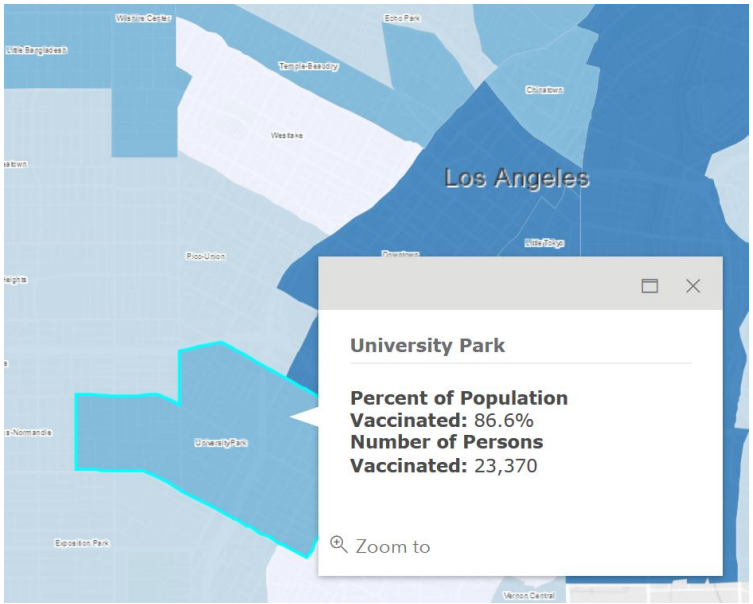
Neighborhood Maps





Cases and vaccination maps for LA's Neighborhoods

https://coronavirus.lacity.org/Map

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Organization

- First work experience
- Not large in-house internship program
- Working in a ‘Swiss army knife’ team
- Collaboration with other departments

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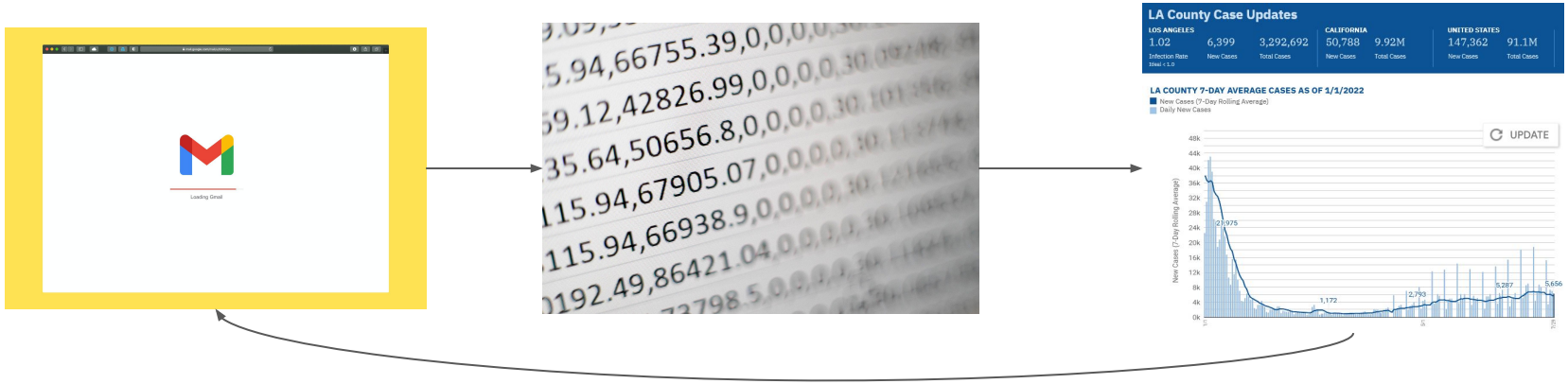
Data Deck



Workflow for creating bi-weekly data deck

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Photos by Solen Feyissa and Mika Baumeister on Unsplash

Efficiency

- First three weeks were busiest of fellowship
- Improve everything
- Systems efficiency

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Automating

Auto-launching of browser to download and process data

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Refactoring

```
#Loop through and set new values
for v in county.values:
    [f for f in update_features if f.attributes['COMTY_NAME']==v[0]][0].attributes["New_Cases"]= v[4]
    [f for f in update_features if f.attributes['COMTY_NAME']==v[0]][0].attributes["New_Deaths"]= v[5]
    [f for f in update_features if f.attributes['COMTY_NAME']==v[0]][0].attributes['Two_Week_Crude_IR__per_100k_'] = v[1]
    [f for f in update_features if f.attributes['COMTY_NAME']==v[0]][0].attributes['adj_case_rate'] = v[2]
    [f for f in update_features if f.attributes['COMTY_NAME']==v[0]][0].attributes['Cumulative_Confirmed_Case_Count'] = v[7]
    [f for f in update_features if f.attributes['COMTY_NAME']==v[0]][0].attributes['Cumulative_Death_Count'] = v[8]
    [f for f in update_features if f.attributes['COMTY_NAME']==v[0]][0].attributes['Date_1'] = v[3]
    [f for f in update_features if f.attributes['COMTY_NAME']==v[0]][0].attributes['top_trends_cases'] = v[20]
    [f for f in update_features if f.attributes['COMTY_NAME']==v[0]][0].attributes['top_new_cases'] = v[21]
    [f for f in update_features if f.attributes['COMTY_NAME']==v[0]][0].attributes['vax_rate'] = v[11]
    [f for f in update_features if f.attributes['COMTY_NAME']==v[0]][0].attributes['persons_vaccinated'] = v[10]
    [f for f in update_features if f.attributes['COMTY_NAME']==v[0]][0].attributes['youth_vaccinated'] = v[12]
    [f for f in update_features if f.attributes['COMTY_NAME']==v[0]][0].attributes['seniors_vaccinated'] = v[13]

#edit features to match the updated features
for f in update_features:
    layer.edit_features(updates=[f])

# Update Hyde Park
hp_feature = [f for f in update_features if f.attributes['OBJECTID'] == 75][0]
hp_edit = hp_feature
hp_edit.attributes["New_Cases"]= hp_tb.iloc[0,4]
hp_edit.attributes["New_Deaths"]= hp_tb.iloc[0,5]
hp_edit.attributes['Two_Week_Crude_IR__per_100k_'] = hp_tb.iloc[0,1]
```

```
# Convert the dataframe with features into a list of dictionaries.
feature_list = df.to_dict(orient='records')

# Update GIS features with the processed values from testing_neighborhoods
for feature in update_features:
    # Account for Hyde Park and Temple-Beaudry (skip duplicates)
    if feature.attributes["OBJECTID"] in [5, 35]:
        continue
    for value in feature_list:
        if feature.attributes["COMTY_NAME"] == value["COMTY_NAME"]:
            feature.attributes.update(value)
```

```
# # Edit features to match the updated features
for f in update_features:
    layer.edit_features(updates=[f])
```

Old code vs. my new code

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Legacy

- What difference did I make?
- Will I leave the mayor's office having contributed something better?
- Who is going to do my work after me?

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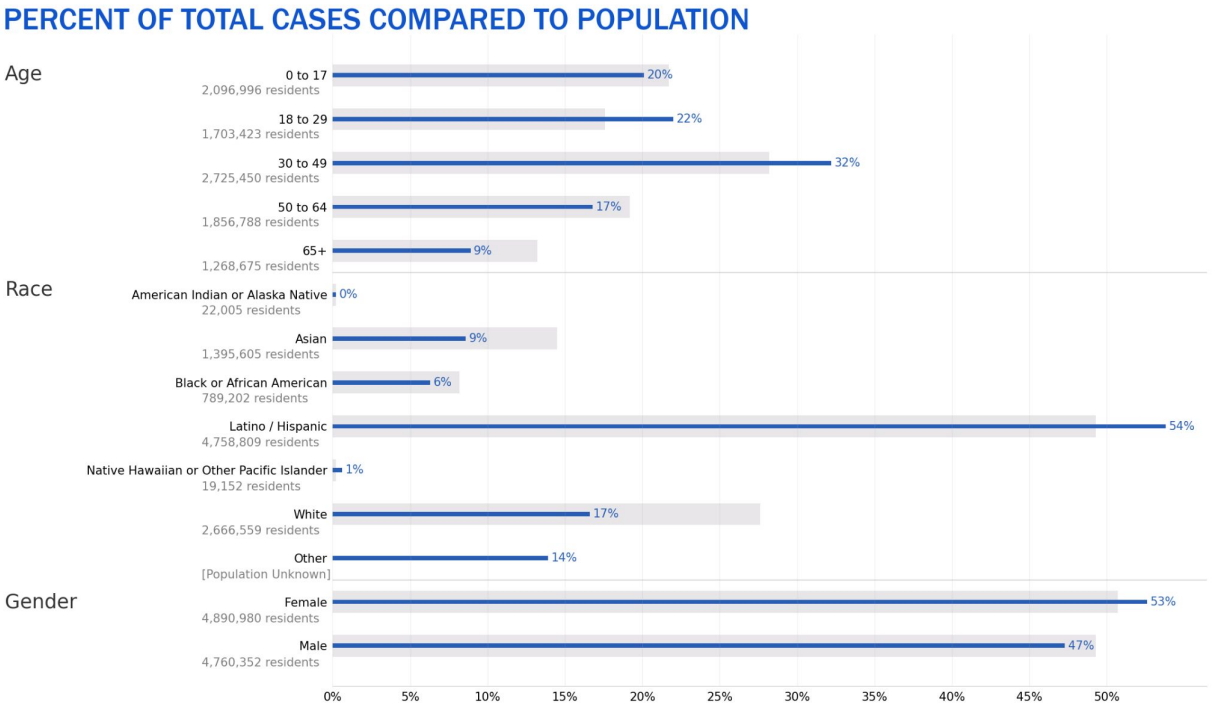
Demographics Chart



Demographics chart re-created in Python

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Documentation

What I'll be working on in my remaining days here!

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Questions?

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Innovation

- What's next, what's new?
- Where is the 'innovation' part of the Innovation Team?
- How do I use my skills to innovate?

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Gender Equity Scoring

How do you take purely qualitative assessment and quantify it?

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Data Driven The goal includes a tangible and measurable metric that will allow for change to be assessed and tracked over time	**Attainable** It's reasonable to believe this goal can be achieved if the department allocates the appropriate resources within a two-year timeframe. ***Tip**: This criteria is intended to encourage departments to think about the resources required to achieve this goal. Ideally, the department will craft goals leveraging the department's current resources.*	**Feasible** The goal focuses on improving an area that the department actually has influence or jurisdiction over. ***Tip**: This criteria is intended to encourage departments to think about the resources required to achieve this goal. Ideally, the department will craft goals leveraging the department's current resources.*
Rooted in Equity The goal is centered in deliberate action to address specific groups' historic lack of access to resources or opportunities resulting from legacies of unjust laws, institutional policies, or societal values.	**Clear Benefit to Individuals of Diverse Genders** The identified outcomes enhance the positive experiences and/or opportunities of cisgendered women and girls, trans women and trans girls, trans men and trans boys, non-binary people, gender nonconforming people and those who are otherwise marginalized.	**Innovative** The goal is innovative because it promotes a process improvement to an existing function, **or** the development of a new initiative. ***Tip:** Departments are not expected to launch new initiatives. Rather, departments should seek to assess and improve their operations, processes or services.*

Wastewater Research

Los Angeles Hyperion Water Treatment Plant

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Photo from http://inframanage.com/

Strengths

- Low-cost
- More representative of entire community
- Useful for detecting relative incidence of variants
- Privacy - not invasively swabbing people

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Weaknesses

- Sampling techniques vary
- Data impacted by numerous factors so can be inconsistent
- Shedding various across variants
- Can’t be used to estimate prevalence - better for trends and incidence

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Other examples

[Houston Wastewater Monitoring Dashboard]

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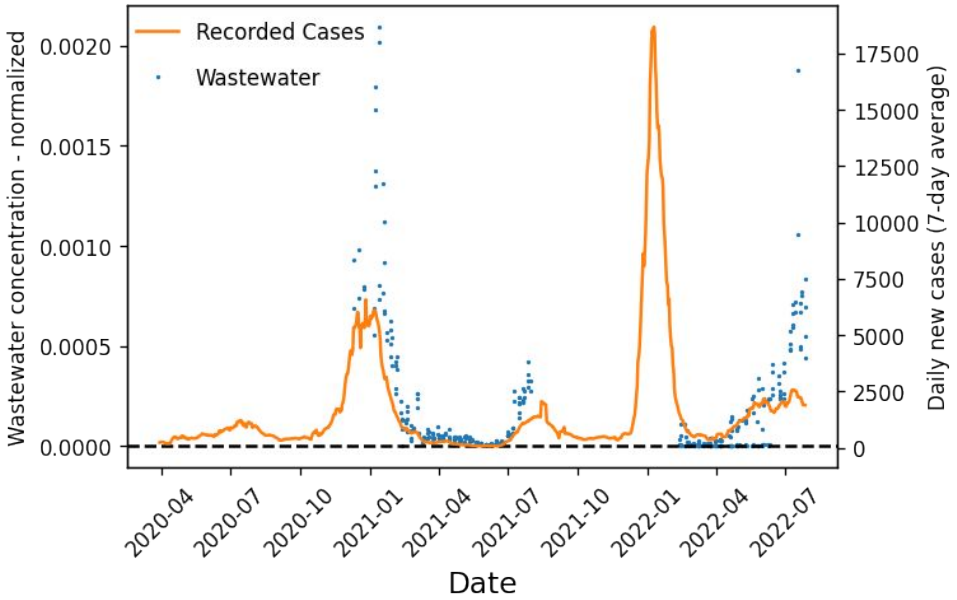
What does this mean for LA?



Viral concentrations in LA Hyperion vs. recorded city daily average cases

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Recommendations

Now:

- Incorporate wastewater analysis into city's overall COVID-19 analysis
- Build reliable data pipeline between those who collect the data for LA Hyperion (LA Sanitation?) and public health/emergency response.

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Recommendations

Further along:

- Expand wastewater to more localized monitoring such as manholes like Houston/Chicago
- Collaborate with local colleges to collect and analyze wastewater data

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Thank you!

Questions?

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