



National Data & Surveying Services

NorCal & Central CA ITE Joint Section Meeting; April 2021

Drone Usage in Traffic Data
Collection

Introduction



National Data & Surveying Services

**NORTHERN CA
AREA MANAGER**

**Steve
Sandbank**

Drone Usage in Traffic Data Collection

Overview

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- ▶ Before you fly (Laws/preparation)
- ▶ Types of studies
- ▶ Studies-Overview
- ▶ Studies-Examples
- ▶ Deliverables
- ▶ Pro's and Con's Review
- ▶ Questions

Drone Usage in Traffic Data Collection

What you need to know in advance- Legal

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Federal-FAA

- ▶ FAA Part 107 Drone License/Pilot Certification (Commercial)
- ▶ Drone Registration (Weight Limits)
- ▶ 400 Foot limit without permit
- ▶ Line of sight
- ▶ Proximity to Airport/Prison/Security locations
- ▶ Daylight hours
- ▶ Flight above persons/vehicles
- ▶ Emergency responders/situations

County/City/Local

- ▶ Most cities/counties have further ordinances
- ▶ Primarily focus on privacy concerns
- ▶ Restrictions over public parks
- ▶ Restrictions over schools
- ▶ Permit requirements

Drone Usage in Traffic Data Collection

What you need to know in advance: Location

Permits

- ▶ Know you location and requirements
- ▶ Public vs Private land
- ▶ Permissions vs Permit
- ▶ Altitude limits

Resource: FAA Before you fly

- ▶ (LAANC) FAA- Authorization for controlled airspace
- ▶ <https://b4ufly.kittyhawk.io/?lat=36.0646&long=-75.7057>

Drone Usage in Traffic Data Collection

What you need to know in advance: Location

- ▶ Weather conditions (Rain/Fog/Wind)
- ▶ Camera: Line of sight (tree canopy/overpass obstructions)
- ▶ Open takeoff/landing area
- ▶ Safe/Distracted free area for pilot to operate



Drone Usage in Traffic Data Collection

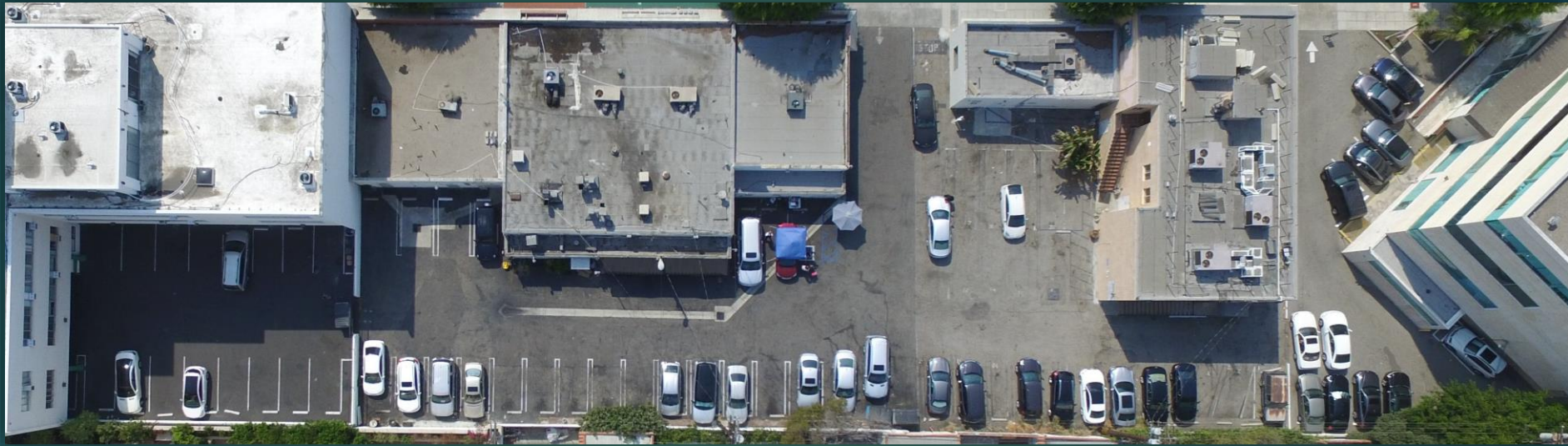
▶ **Typical Drone Study Types**

- ▶ Turning Movement Counts
- ▶ Queue and Delay Studies
- ▶ Pedestrian or any other observation study
- ▶ Origin/Destination Study
- ▶ Parking Study
- ▶ Screenline Counts
- ▶ Gap Study
- ▶ Weaving Analysis



Drone

Small Parking Lot



Drone

Large
Parking Lot

Stitching
multiple
images



Drone Usage in Traffic Data Collection

20-8034 & 8035

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- ▶ February 2020 collection in San Rafael. Queue from US 101 NB and 2nd St/Irwin Intersection. Full ITM at intersection.
- ▶ 3rd collection since 2018



Drone Usage in Traffic Data Collection

19-7200- Arden Middle School

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- ▶ Evaluation of Drop-off and Pick-up
- ▶ Track volume on southern pedestrian paths.



Drone Usage in Traffic Data Collection

19-7300 Fair Oaks Concert Impact

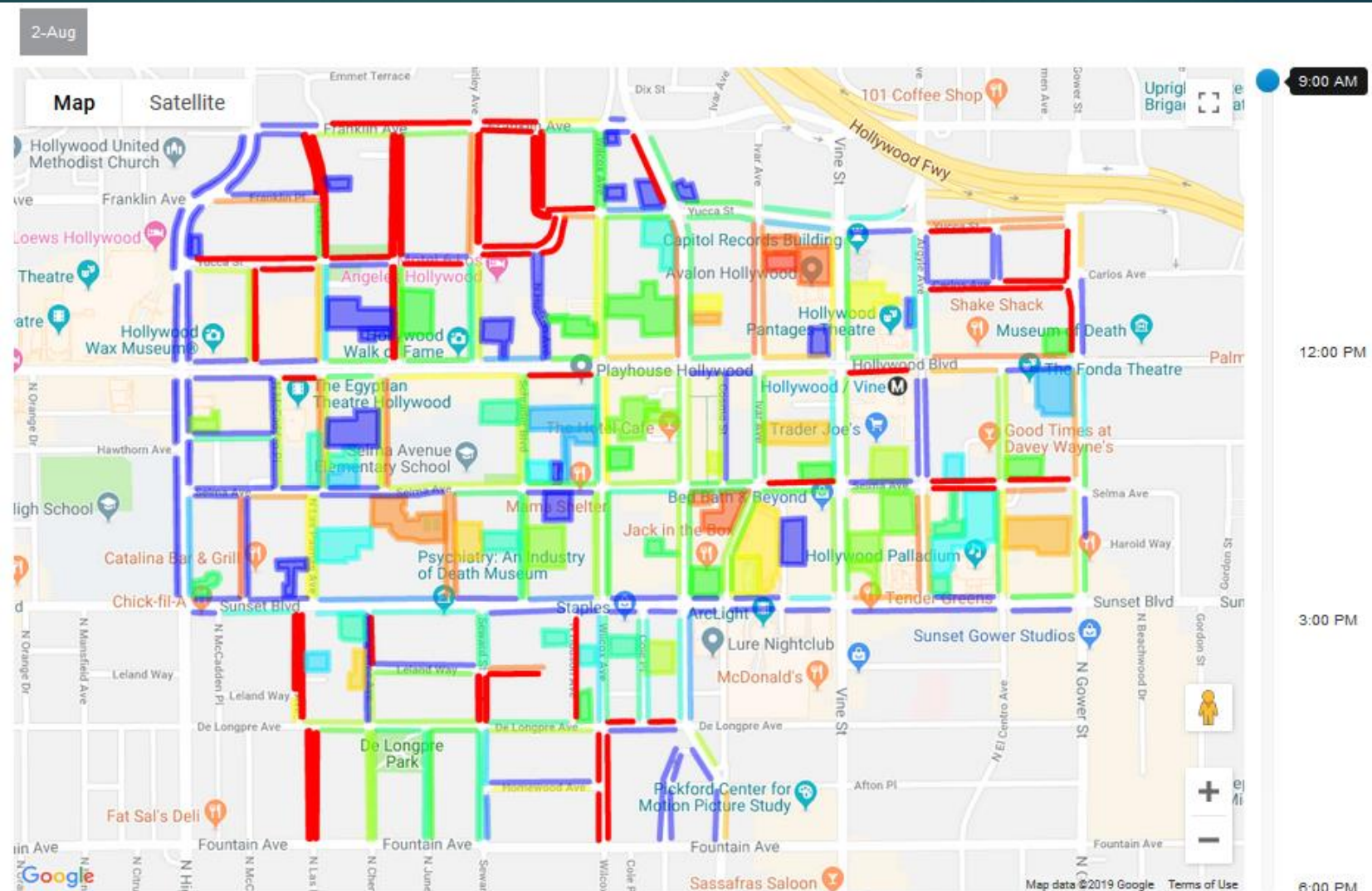
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- ▶ Video Presentation
- ▶ View impact of amphitheater concerts on surrounding intersections



Parking Heatmap



Showing 1-20 of 1,372 items.

#	Area ID	Date	Time	Occupied	
1	10	2-Aug	9:00 AM	50%	 
2	100	2-Aug	9:00 AM	75%	 

Not all data collection firms are created equally

Drone Usage in Traffic Data Collection

Pro's and Con's

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Pro

- ▶ Amazing visuals for presentation
- ▶ Full scope/overview of flow
- ▶ Multiple applications
- ▶ More than just data; impact and options often present themselves

Con

- ▶ Cost factor-dependending on application
- ▶ Potential restrictions
- ▶ Legal requirements
- ▶ Flight time/Battery swaps
- ▶ If internal; staffing skill sets
 - ▶ Potential liability
 - ▶ Pilot
 - ▶ Video editing
 - ▶ Counts

QUESTIONS????

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Follow up questions:
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