

# YOLO Model Testing Report

<b>Model:</b>	yolov9t
<b>Model Size:</b>	4.7 MB
<b>Parameters:</b>	2.1 M
<b>FLOPs (640x640):</b>	8.48 GFLOPs
<b>Run Name:</b>	yolov9t_testing_20251127_220424
<b>Timestamp:</b>	2025-11-27 22:19:45
<b>Dataset:</b>	bdd100k_yolo_limited - test split
<b>Images Processed:</b>	20000
<b>Total Execution Time</b>	99.42s
<b>IoU Threshold:</b>	0.5

## Inference Performance

Metric	Value
Average Inference Time	1.63 ms per image
FPS (Frames Per Second)	615.12

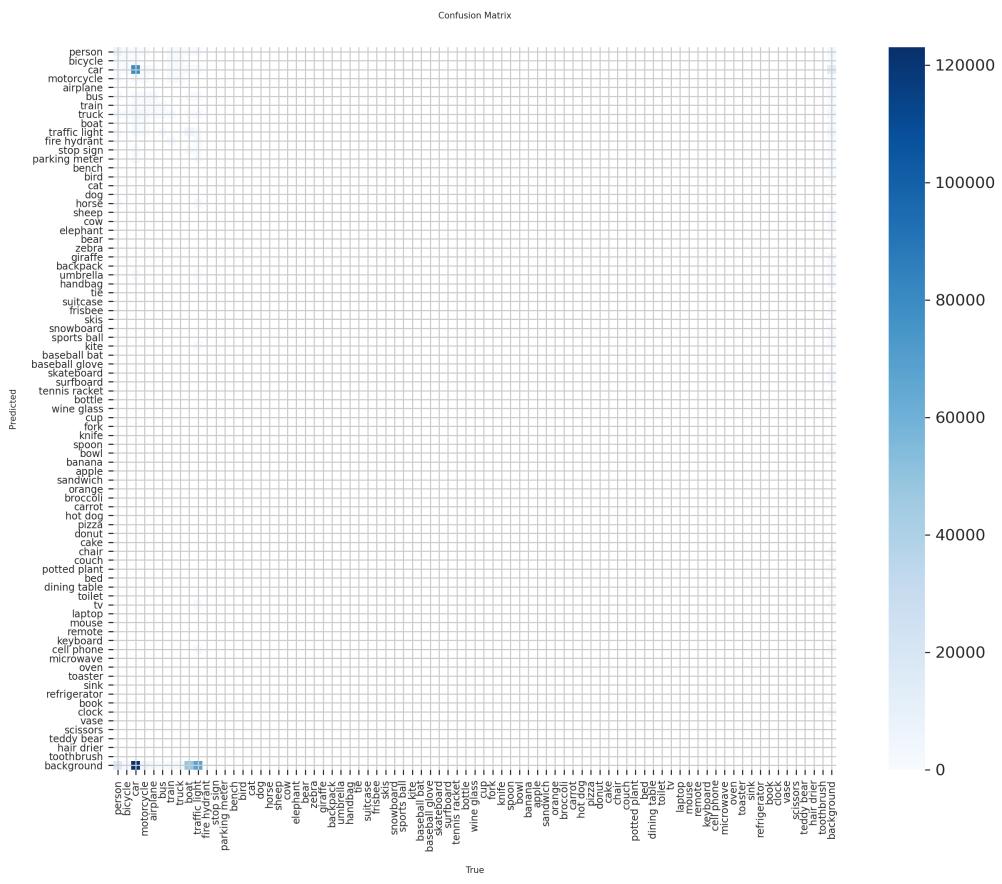
Note: Inference time includes preprocessing, model inference, and postprocessing.

## Overall Accuracy Metrics

Metric	Value
Precision	0.2373
Recall	0.7095
F1-Score	0.3556
mAP@0.5	0.0950
mAP@0.5:0.95	0.0497
True Positives	87248
False Positives	280479
False Negatives	35715

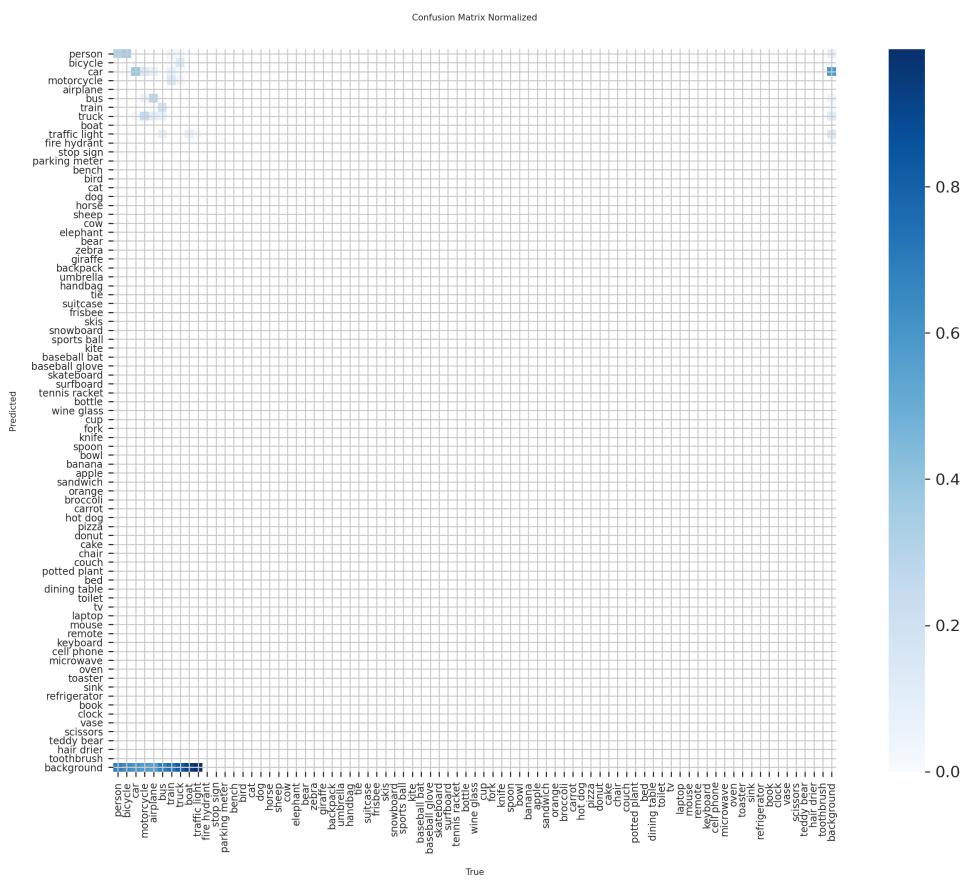
# Confusion Matrices

## Confusion Matrix (Counts)



Note: Shows raw prediction counts for each class combination.

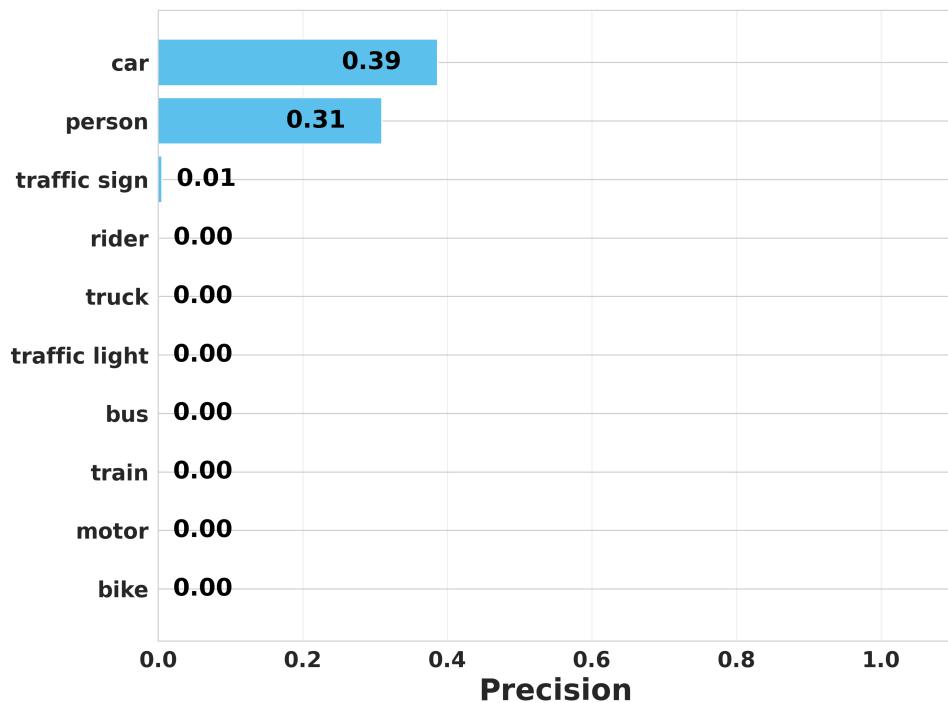
## Confusion Matrix (Normalized)



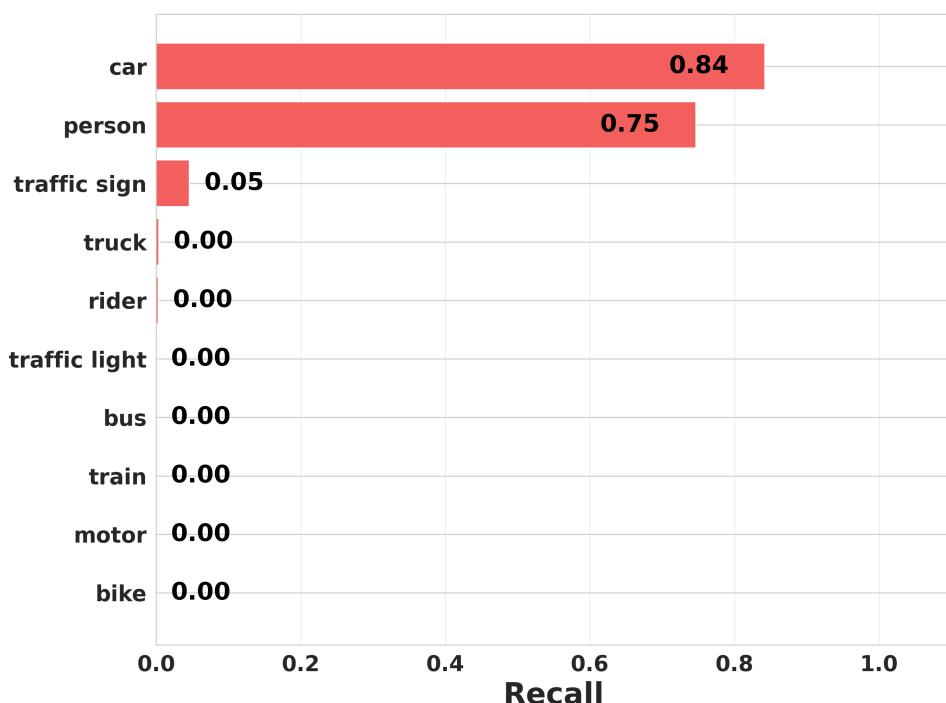
Note: Values are normalized by the number of ground truth instances per class. Shows the proportion of correct vs incorrect classifications.

# Performance Visualizations

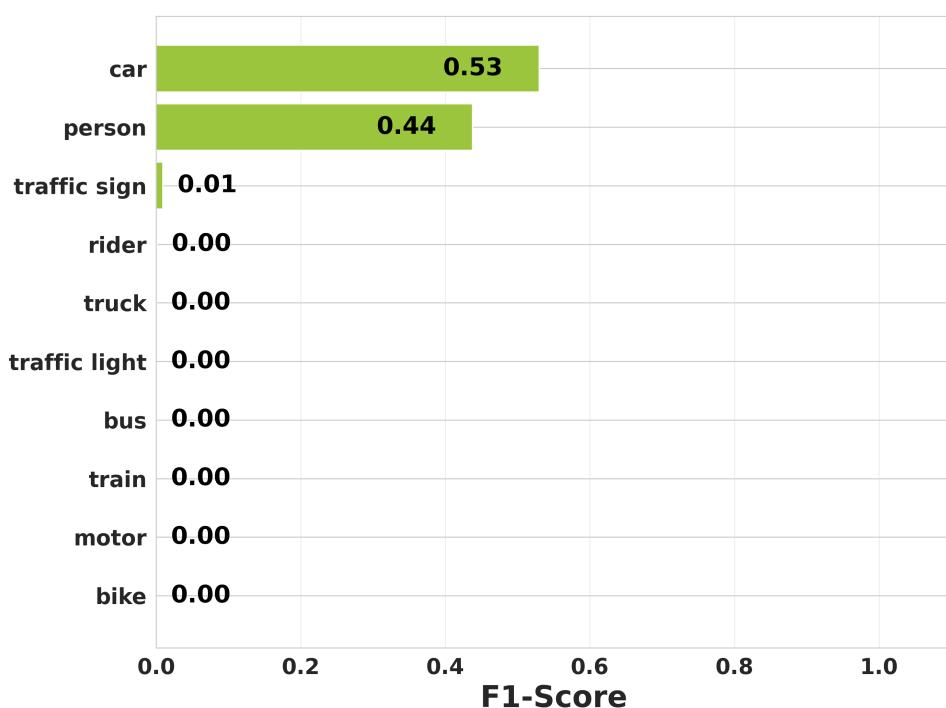
## Precision by Class



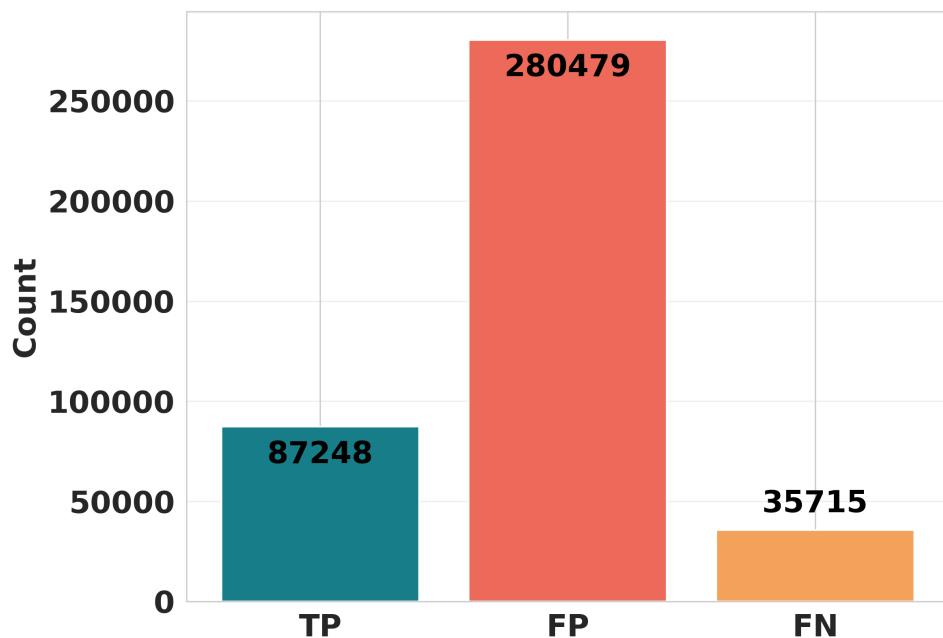
### Recall by Class



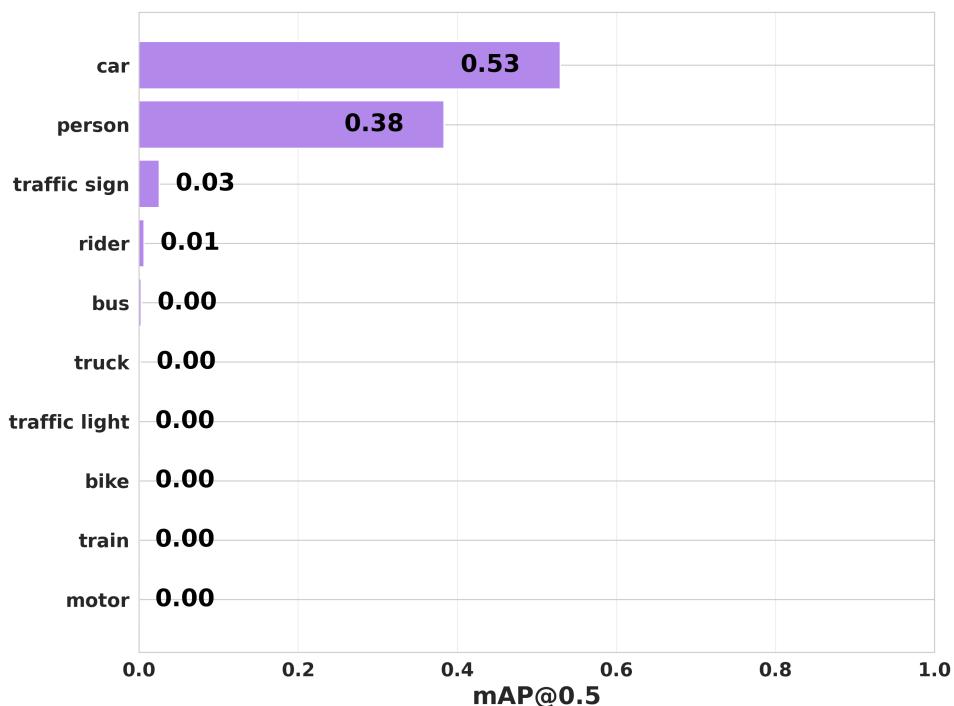
### F1-Score by Class



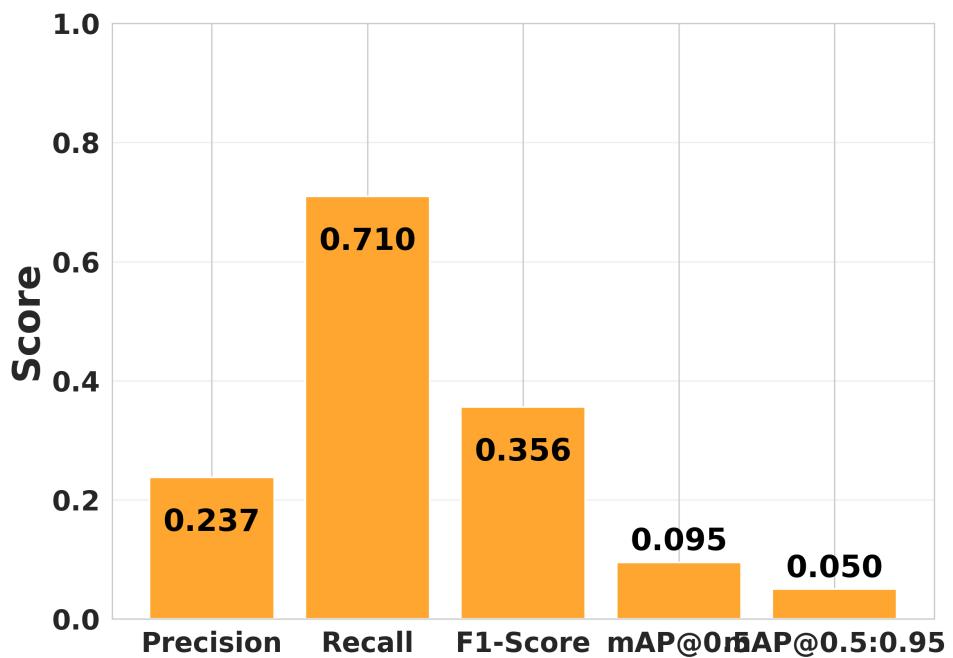
## Overall Detection Outcomes



## mAP@0.5 by Class



## Overall Metrics



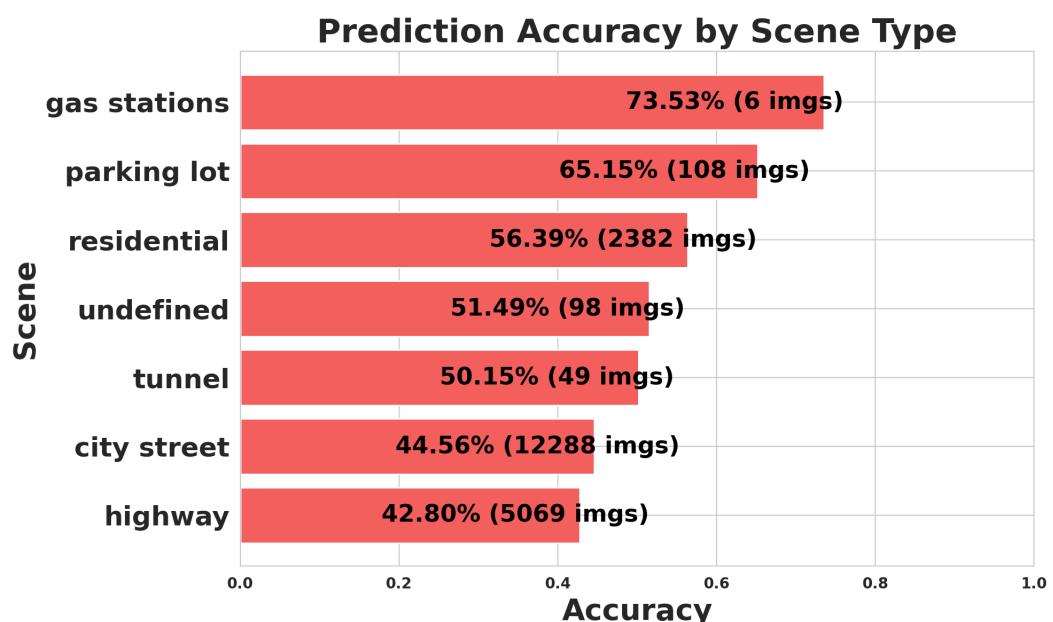
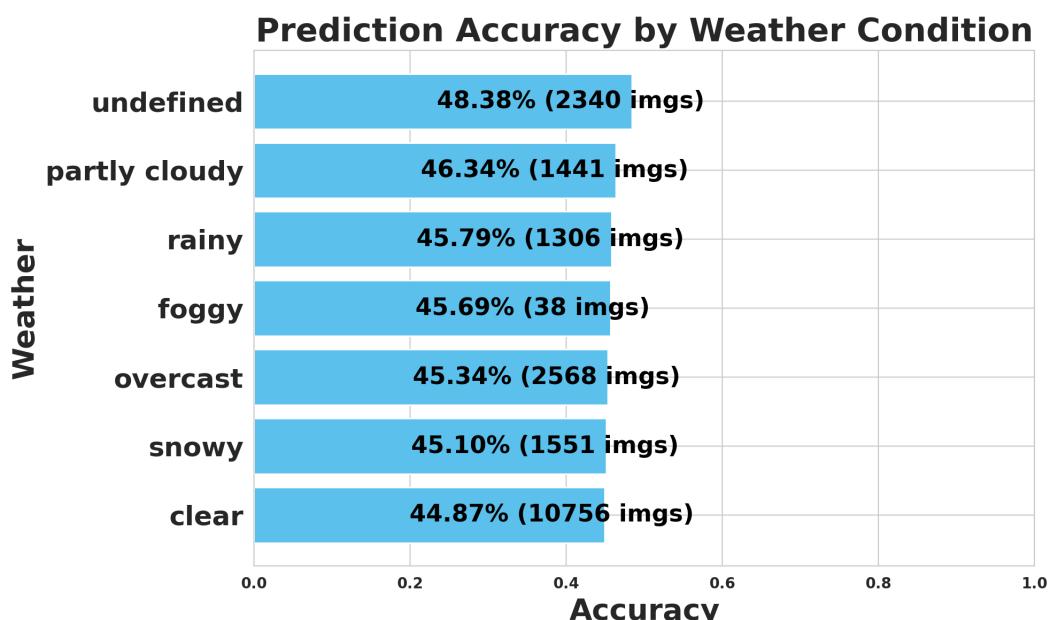
## Per-Class Performance

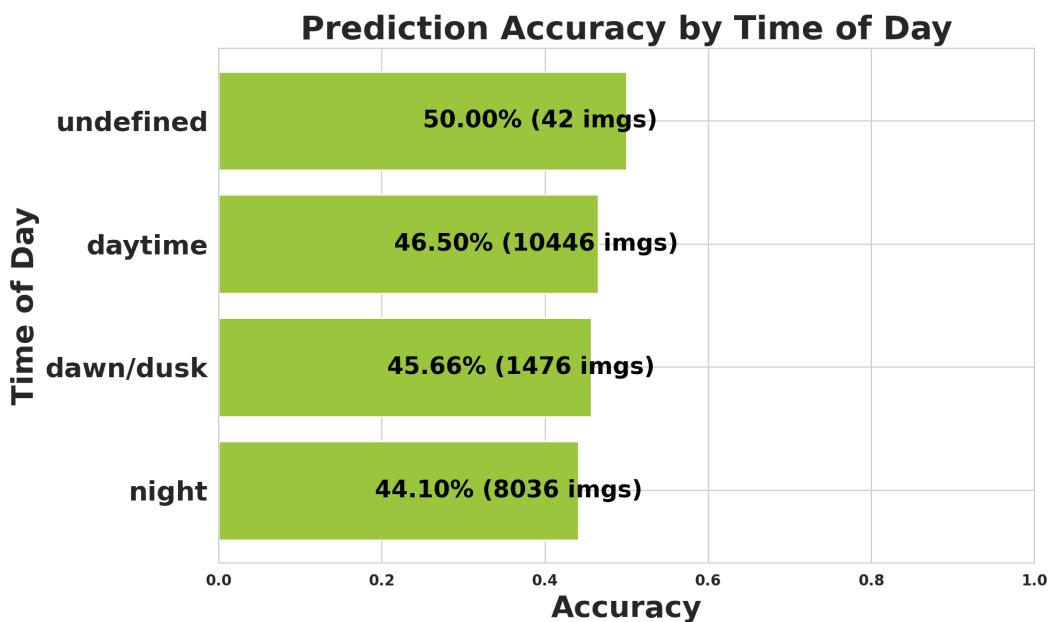
Class	TP	FP	FN	Precision	Recall	F1-Score	mAP@0.5
person	7631	17019	2589	0.3096	0.7467	0.4377	0.3832
rider	1	1293	331	0.0008	0.0030	0.0012	0.0064
car	79269	125880	14839	0.3864	0.8423	0.5298	0.5295
truck	1	8703	257	0.0001	0.0039	0.0002	0.0017
bus	0	3217	31	0.0000	0.0000	0.0000	0.0027
train	0	28	2739	0.0000	0.0000	0.0000	0.0002
motor	0	841	185	0.0000	0.0000	0.0000	0.0001
bike	0	1998	7578	0.0000	0.0000	0.0000	0.0002
traffic light	0	52840	13	0.0000	0.0000	0.0000	0.0002
traffic sign	346	68660	7153	0.0050	0.0461	0.0090	0.0256

# Comprehensive Failure Analysis

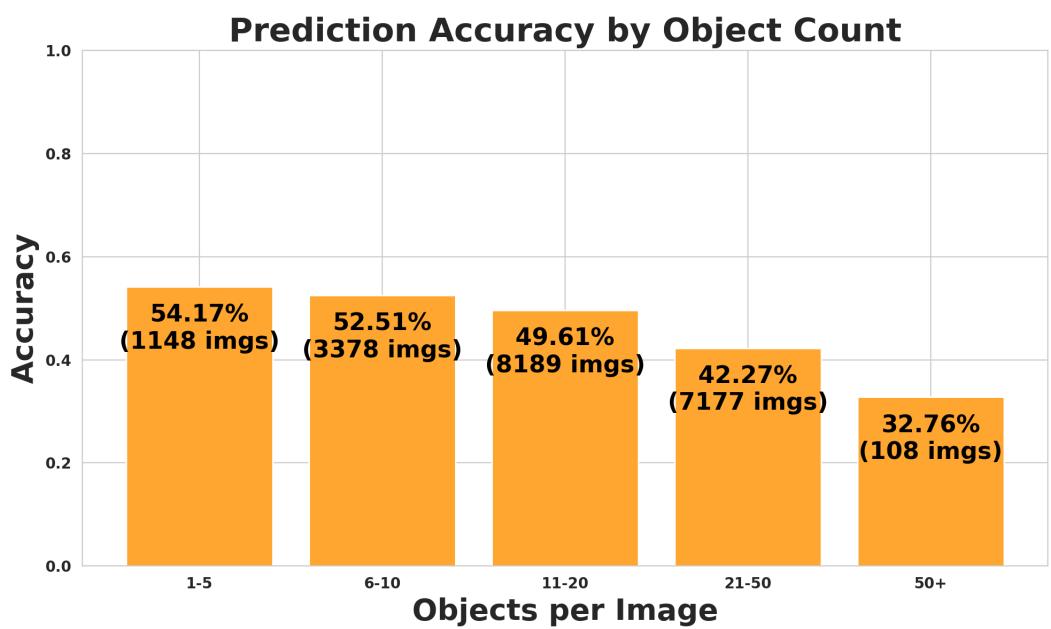
Metric	Value
Total Images Analyzed	20000
Total Expected Objects	367728
Total Matched Objects	167600
Overall Accuracy	45.58%

## Accuracy by Environmental Attributes

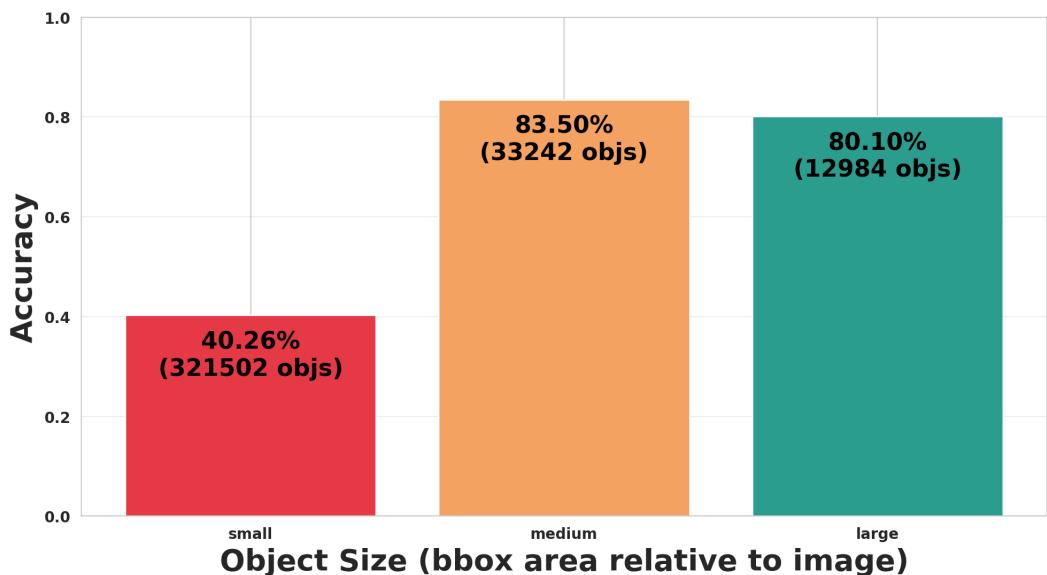




## Accuracy by Object Characteristics

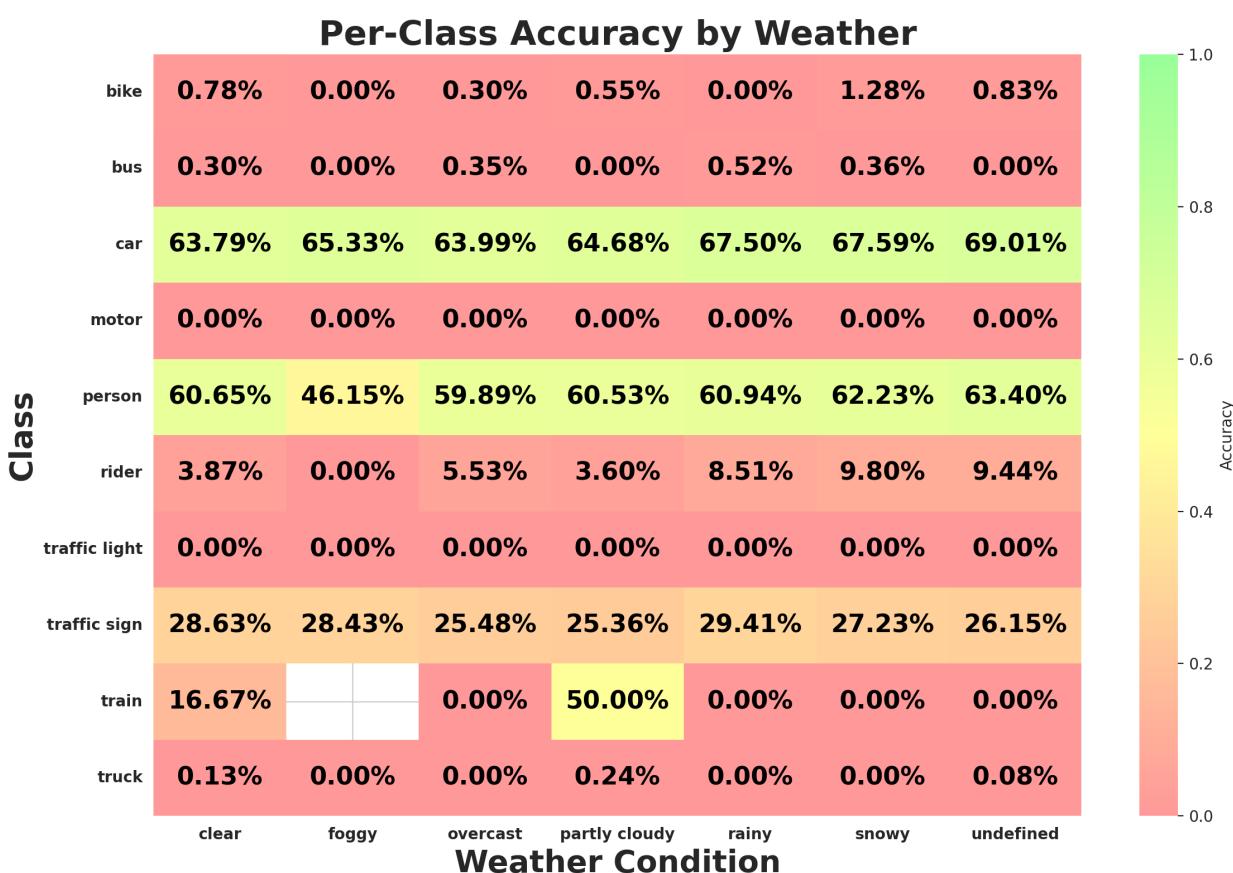
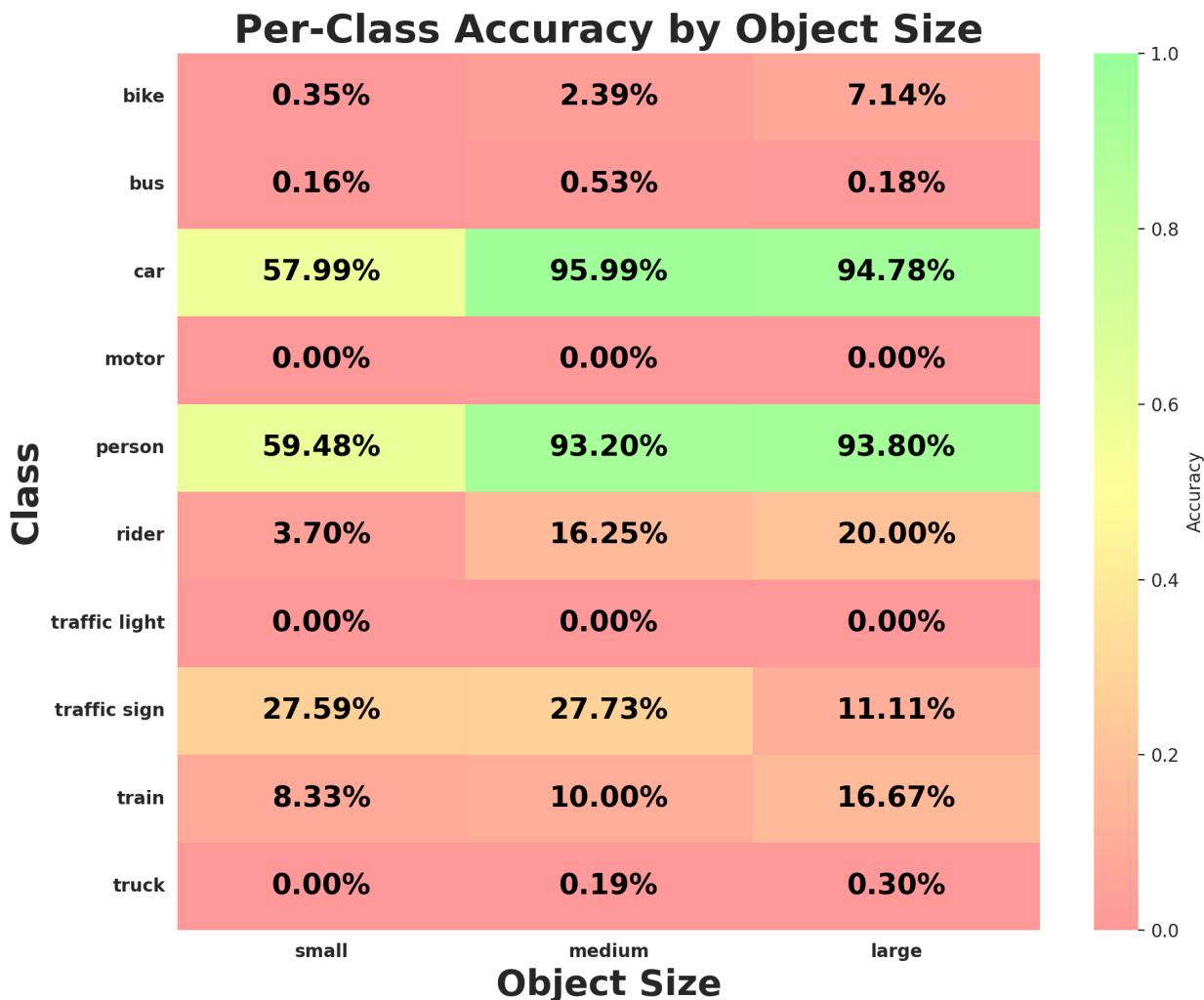


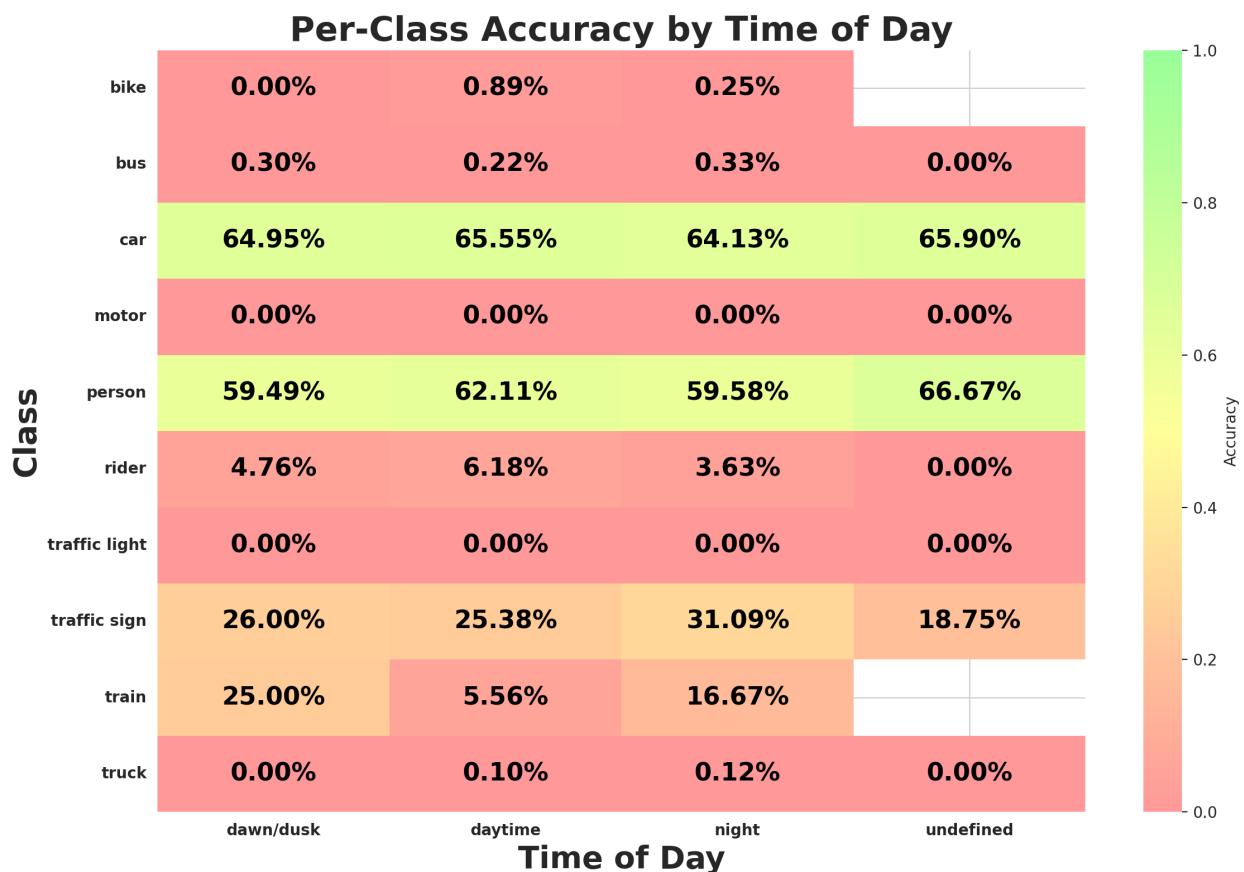
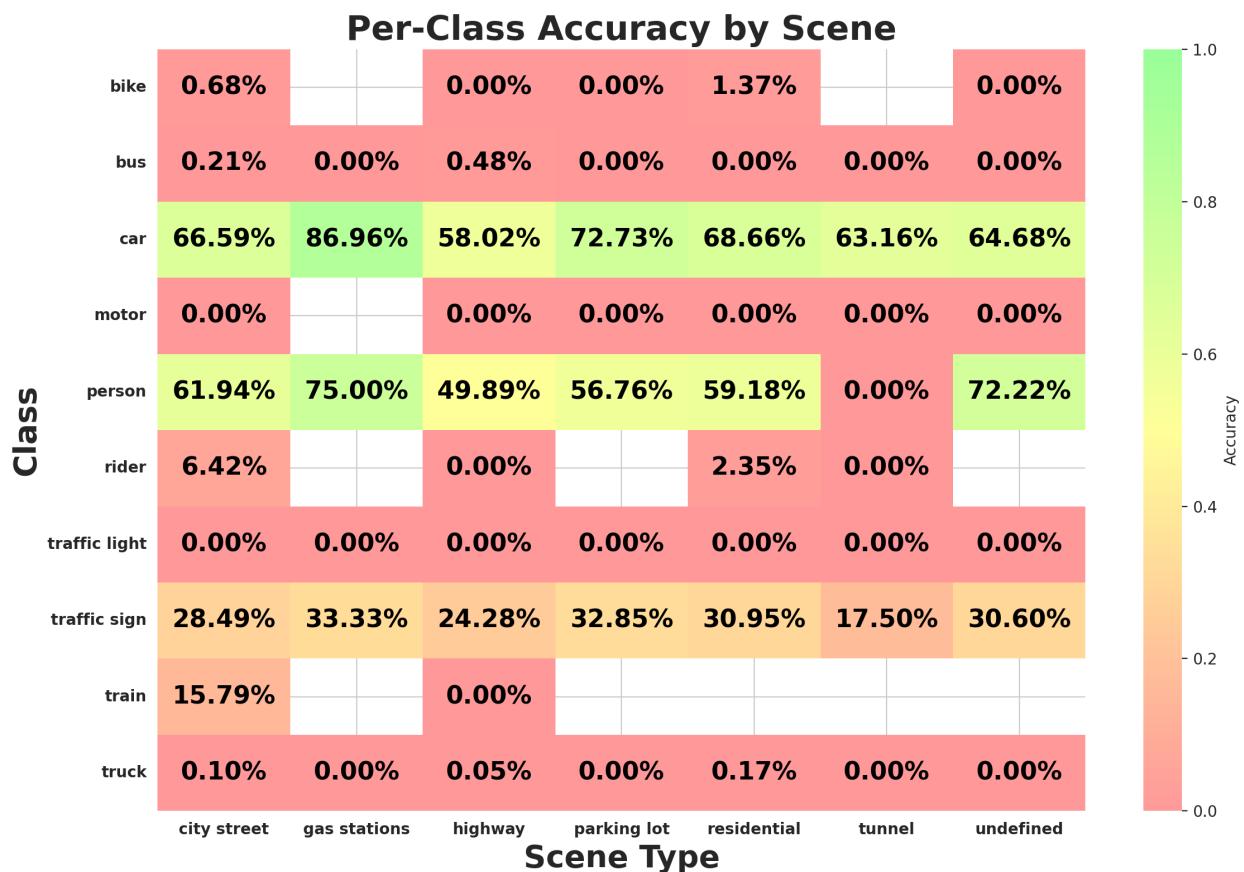
### Prediction Accuracy by Object Size



**Note:** Object size categories are defined based on bounding box area as a percentage of total image area: **Small** objects occupy less than 1% of the image (typically distant or small objects), **Medium** objects occupy between 1% and 5% of the image (moderate-sized objects at medium distances), and **Large** objects occupy more than 5% of the image (close or large objects). These thresholds help identify how object scale affects detection accuracy.

# Per-Class Performance Analysis

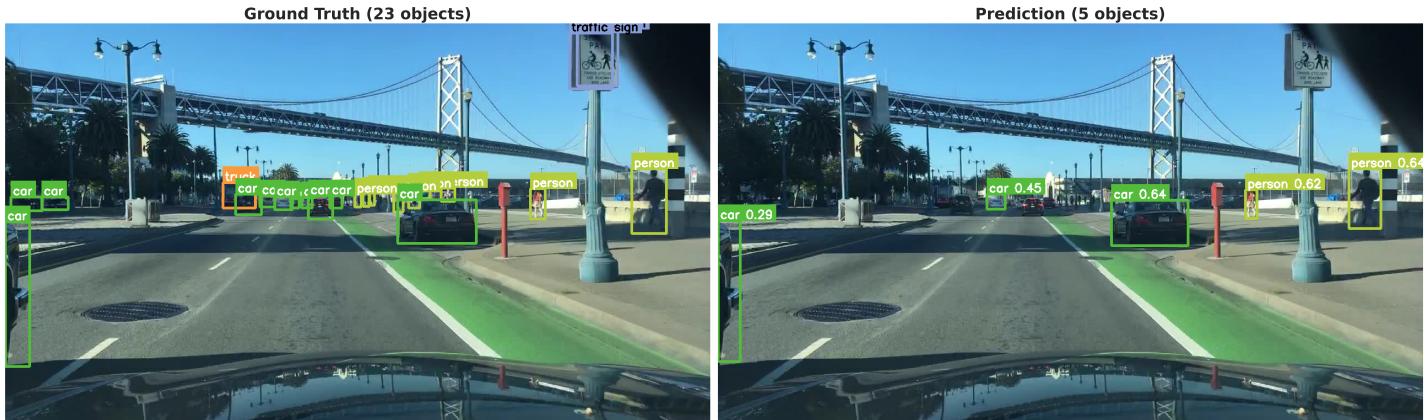




# Sample Predictions: Ground Truth vs Model

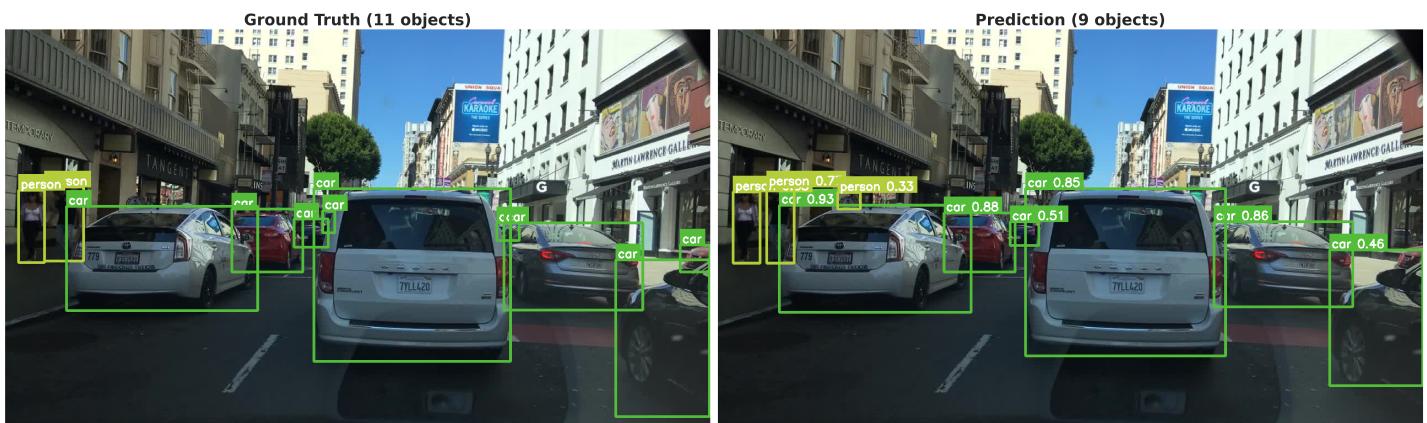
## Sample #1: dc267d6d-f3edf149.jpg

Ground Truth Objects: 23 | Predicted Objects: 5  
Weather: clear | Scene: city street | Time of Day: daytime



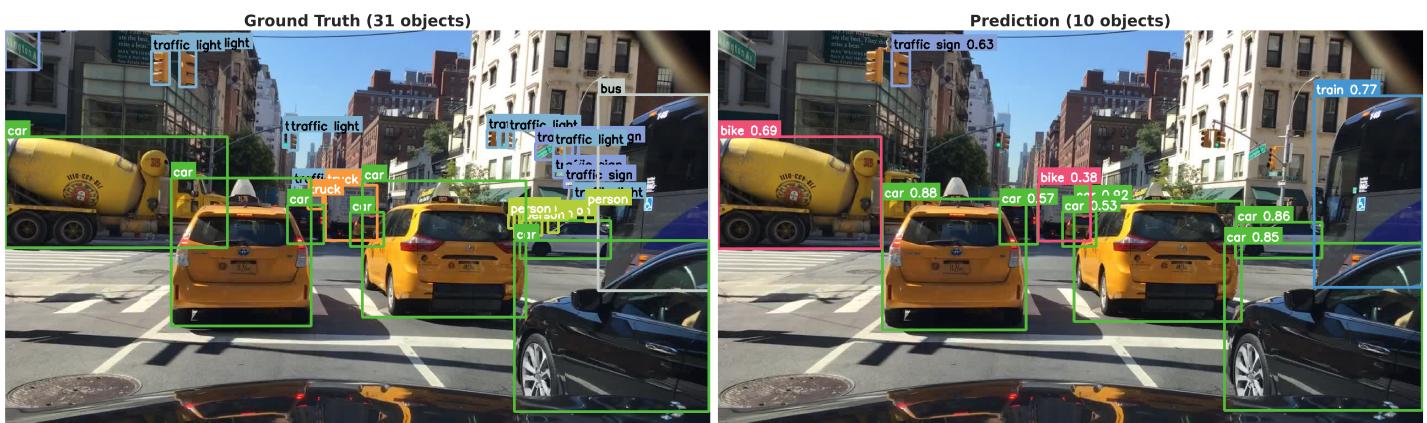
## Sample #2: dc68037d-190c146a.jpg

Ground Truth Objects: 11 | Predicted Objects: 9  
Weather: clear | Scene: city street | Time of Day: daytime



## Sample #3: ef5f41ab-ae8b38af.jpg

Ground Truth Objects: 31 | Predicted Objects: 10  
Weather: clear | Scene: city street | Time of Day: daytime



## Sample #4: cf426ff7-edfec89.jpg

Ground Truth Objects: 11 | Predicted Objects: 8  
Weather: overcast | Scene: city street | Time of Day: daytime



**Sample #5: d58809ad-c653a6d9.jpg**

Ground Truth Objects: 10 | Predicted Objects: 1  
Weather: clear | Scene: highway | Time of Day: daytime



**Sample #6: dc4627a7-9a90f3dc.jpg**

Ground Truth Objects: 5 | Predicted Objects: 4  
Weather: clear | Scene: highway | Time of Day: night



Generated by YOLO Testing Pipeline