

# YOLO Model Testing Report

<b>Model:</b>	yolo12s
<b>Model Size:</b>	18.1 MB
<b>Parameters:</b>	9.3 M
<b>FLOPs (640x640):</b>	21.69 GFLOPs
<b>Run Name:</b>	yolo12s_testing_20251128_011819
<b>Timestamp:</b>	2025-11-28 01:31:27
<b>Dataset:</b>	bdd100k_yolo_limited - test split
<b>Images Processed:</b>	20000
<b>Total Execution Time</b>	111.43s
<b>IoU Threshold:</b>	0.5

## Inference Performance

Metric	Value
Average Inference Time	2.13 ms per image
FPS (Frames Per Second)	470.51

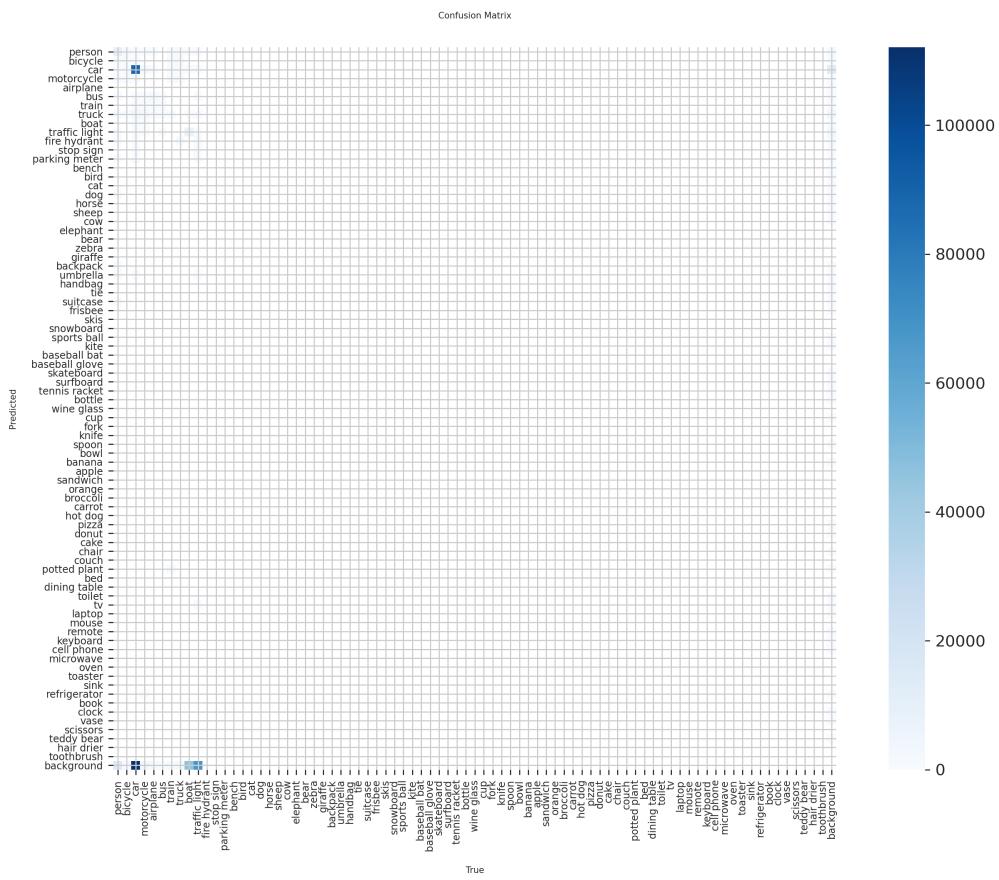
Note: Inference time includes preprocessing, model inference, and postprocessing.

## Overall Accuracy Metrics

Metric	Value
Precision	0.2689
Recall	0.7131
F1-Score	0.3906
mAP@0.5	0.1131
mAP@0.5:0.95	0.0610
True Positives	98896
False Positives	268831
False Negatives	39789

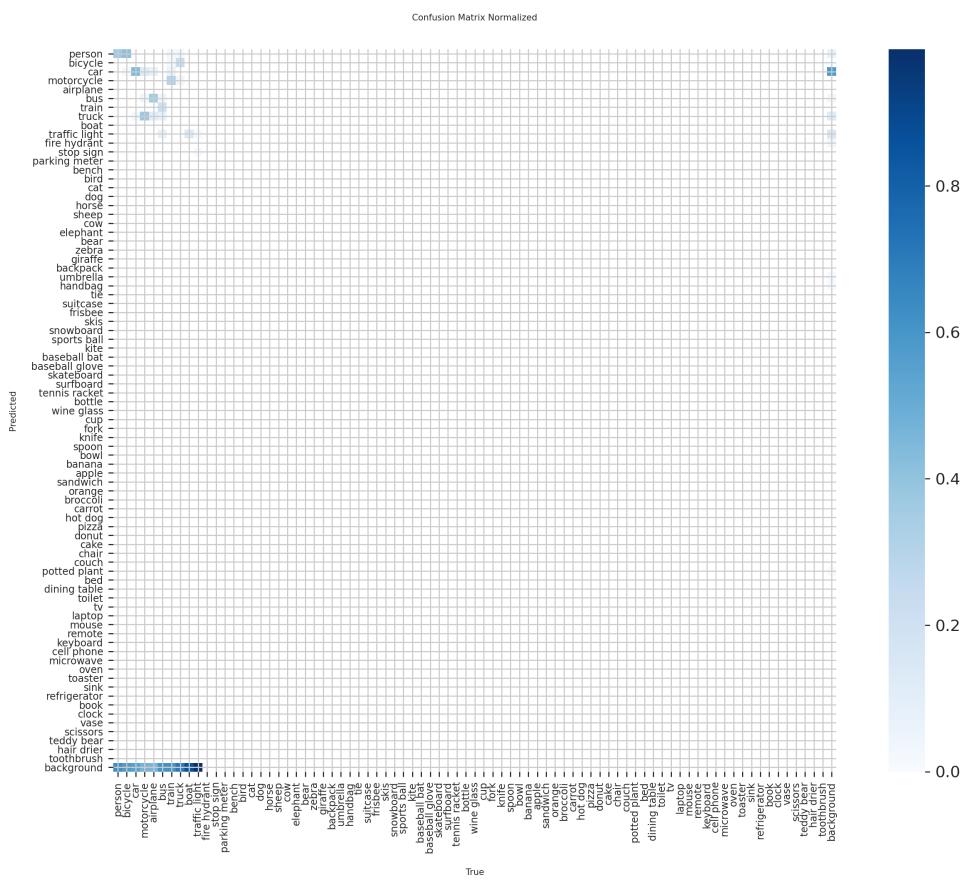
# Confusion Matrices

## Confusion Matrix (Counts)



Note: Shows raw prediction counts for each class combination.

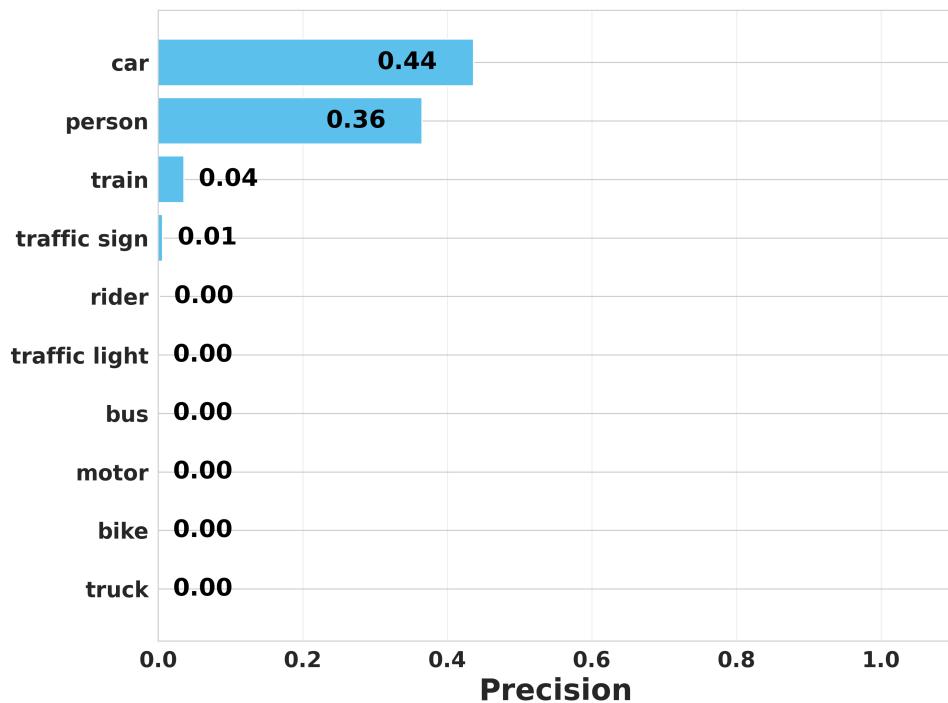
## Confusion Matrix (Normalized)



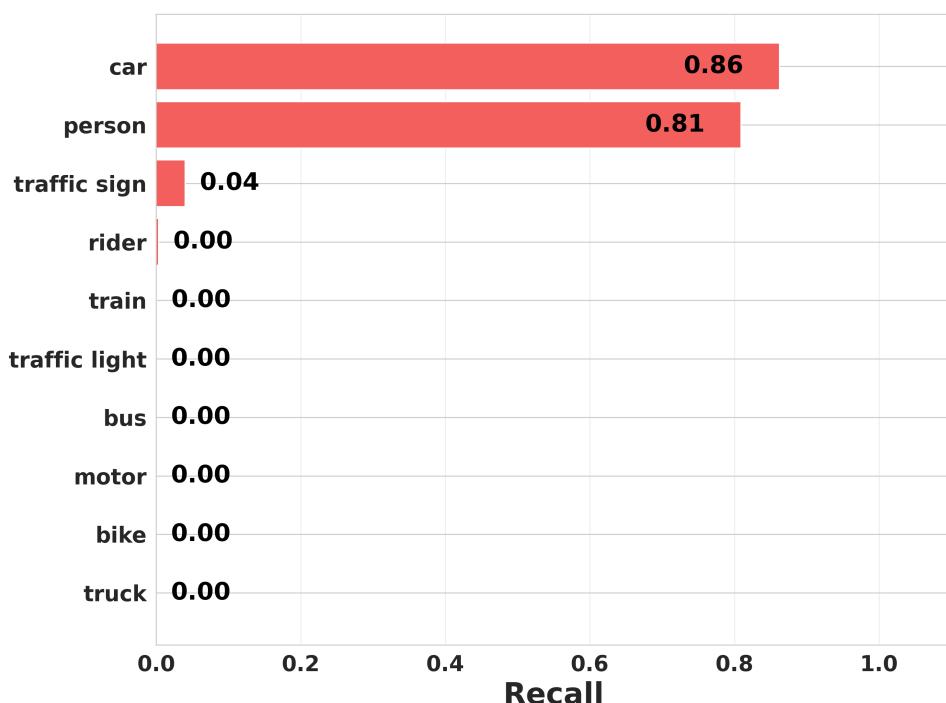
Note: Values are normalized by the number of ground truth instances per class. Shows the proportion of correct vs incorrect classifications.

## Performance Visualizations

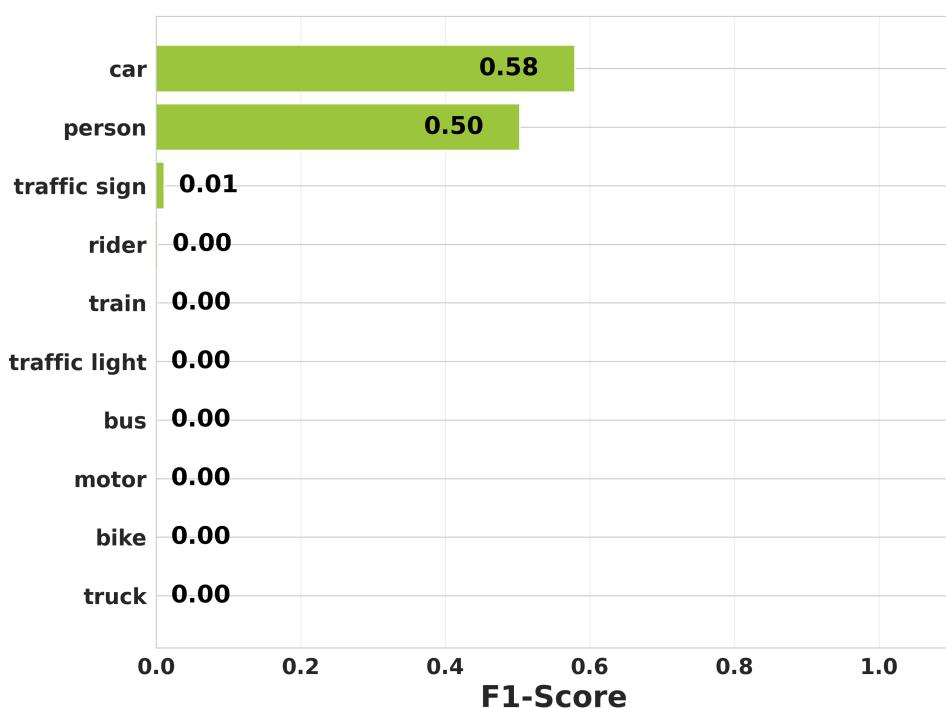
**Precision by Class**



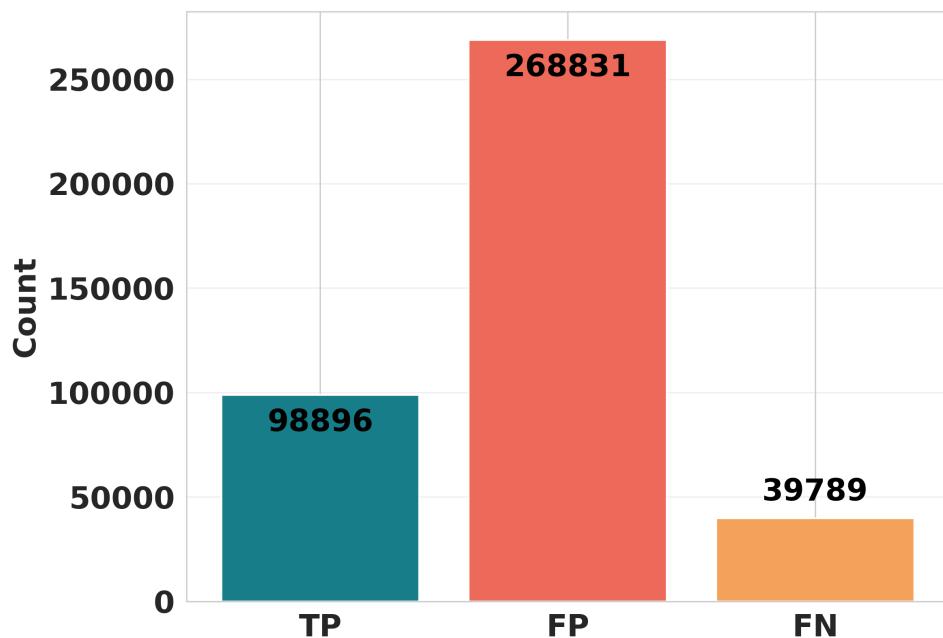
### Recall by Class



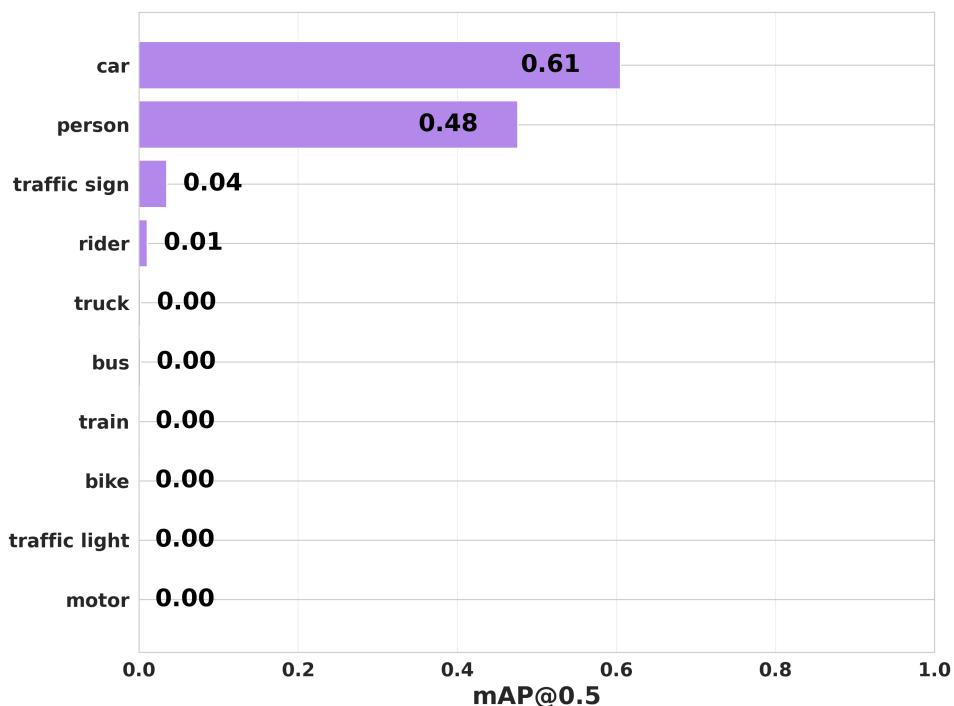
### F1-Score by Class



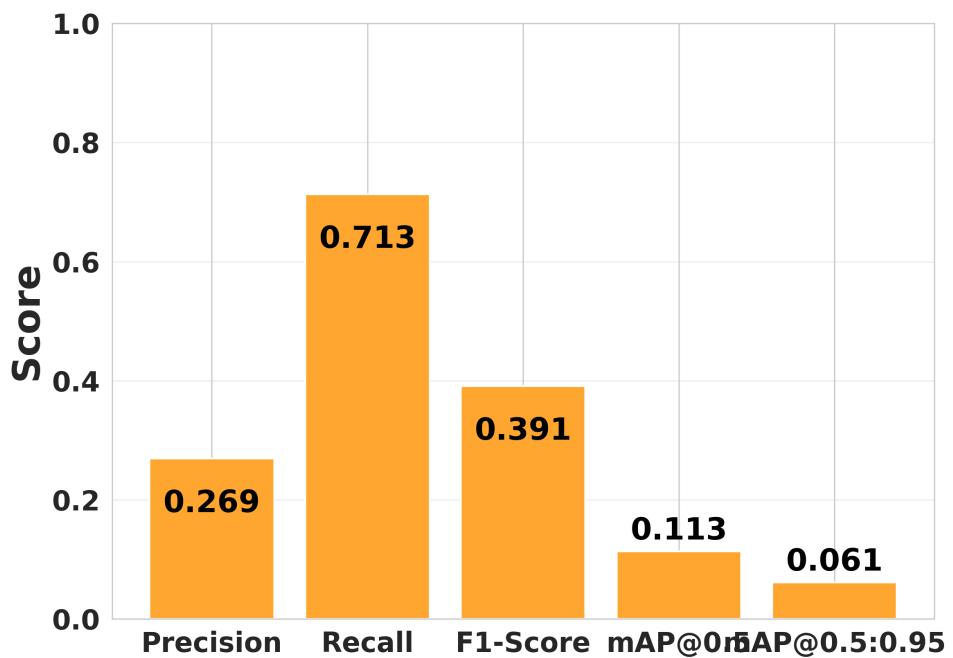
## Overall Detection Outcomes



## mAP@0.5 by Class



## Overall Metrics



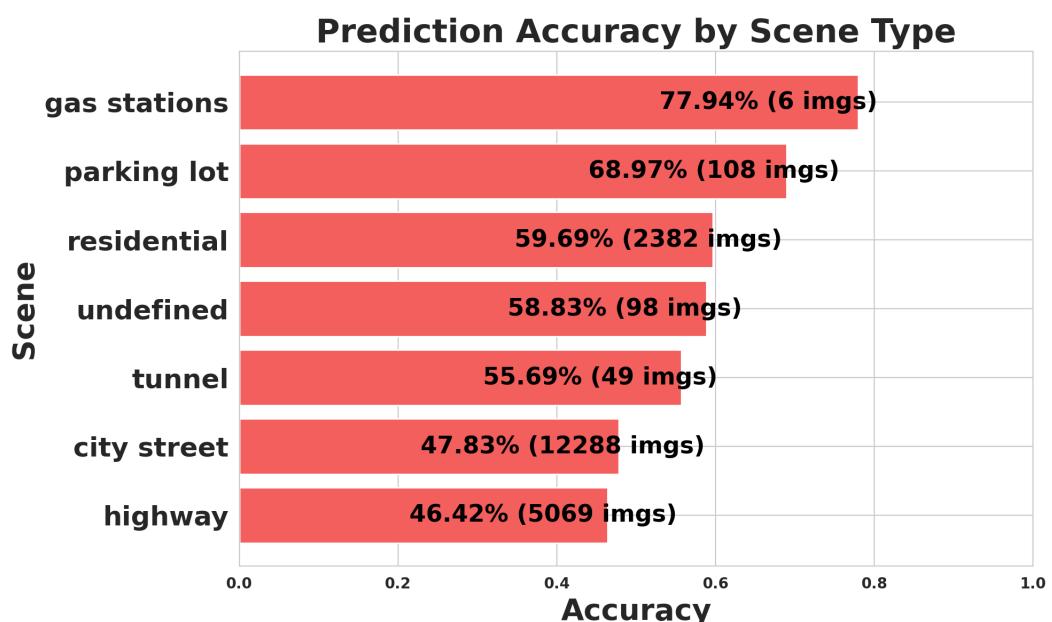
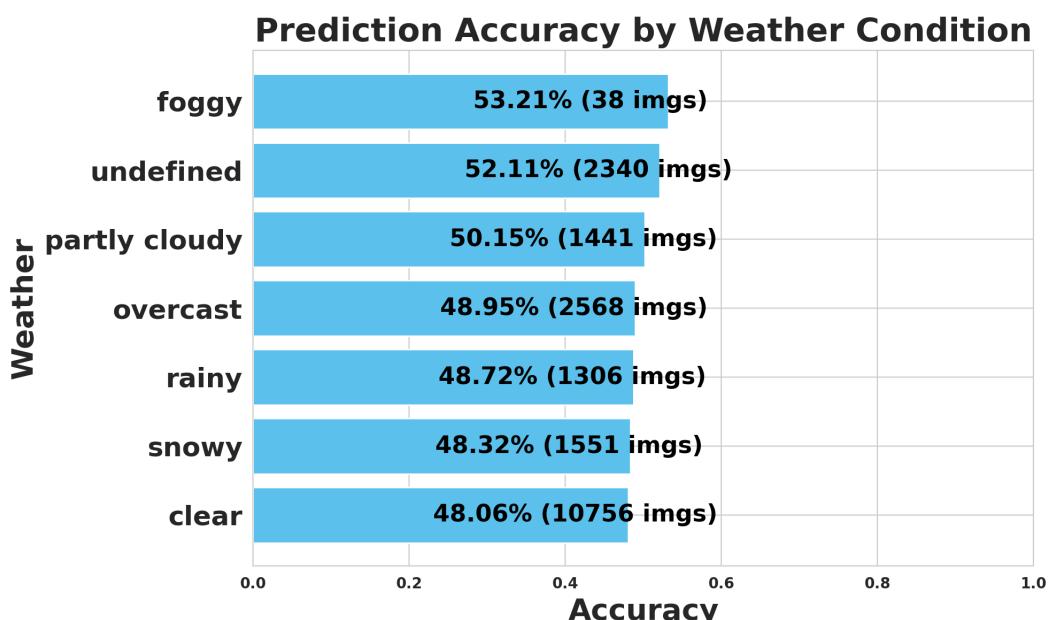
## Per-Class Performance

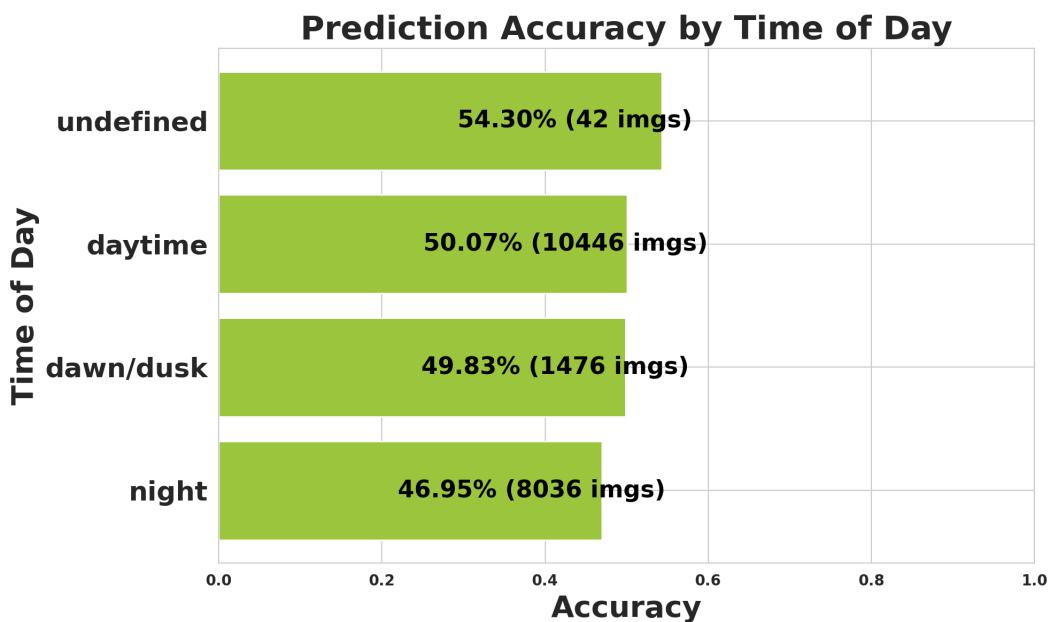
Class	TP	FP	FN	Precision	Recall	F1-Score	mAP@0.5
person	8995	15655	2124	0.3649	0.8090	0.5029	0.4762
rider	2	1292	577	0.0015	0.0035	0.0021	0.0104
car	89466	115683	14240	0.4361	0.8627	0.5793	0.6052
truck	0	8704	450	0.0000	0.0000	0.0000	0.0019
bus	0	3217	14	0.0000	0.0000	0.0000	0.0018
train	1	27	2483	0.0357	0.0004	0.0008	0.0003
motor	0	841	94	0.0000	0.0000	0.0000	0.0000
bike	0	1998	9419	0.0000	0.0000	0.0000	0.0002
traffic light	0	52840	8	0.0000	0.0000	0.0000	0.0000
traffic sign	432	68574	10380	0.0063	0.0400	0.0108	0.0351

# Comprehensive Failure Analysis

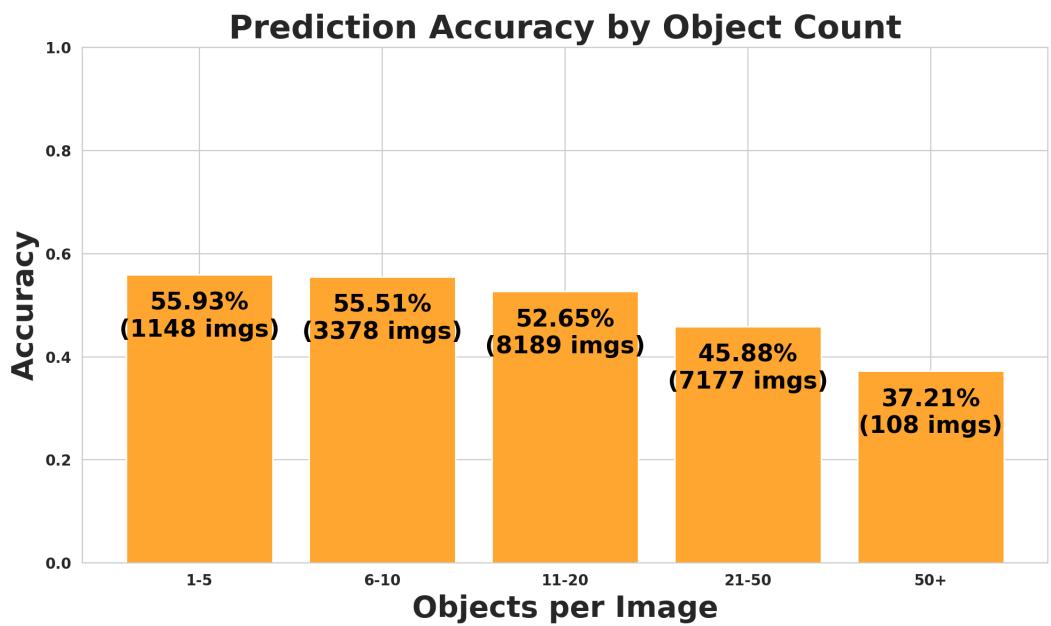
Metric	Value
Total Images Analyzed	20000
Total Expected Objects	367728
Total Matched Objects	179950
Overall Accuracy	48.94%

## Accuracy by Environmental Attributes

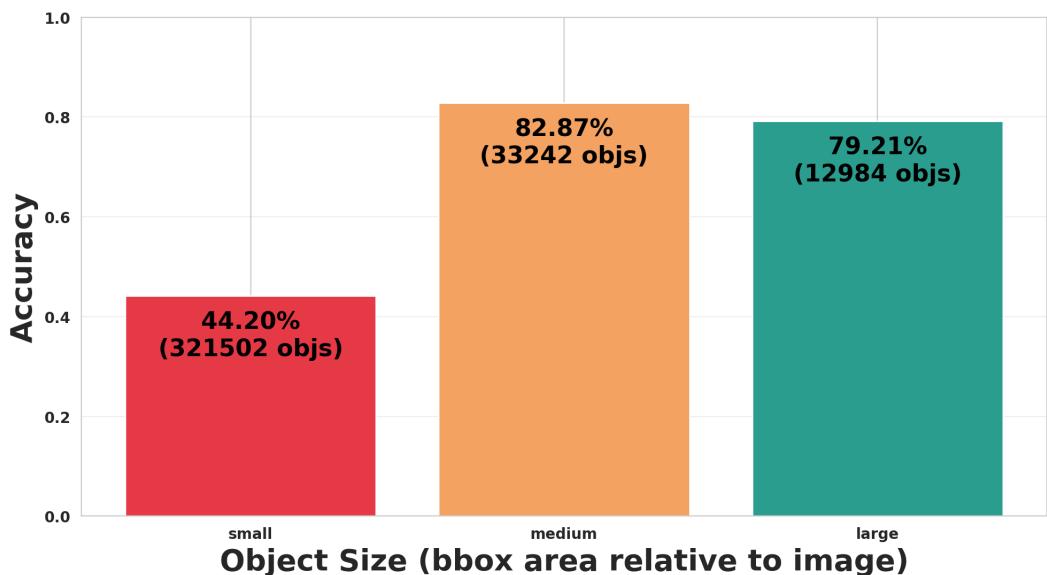




## Accuracy by Object Characteristics

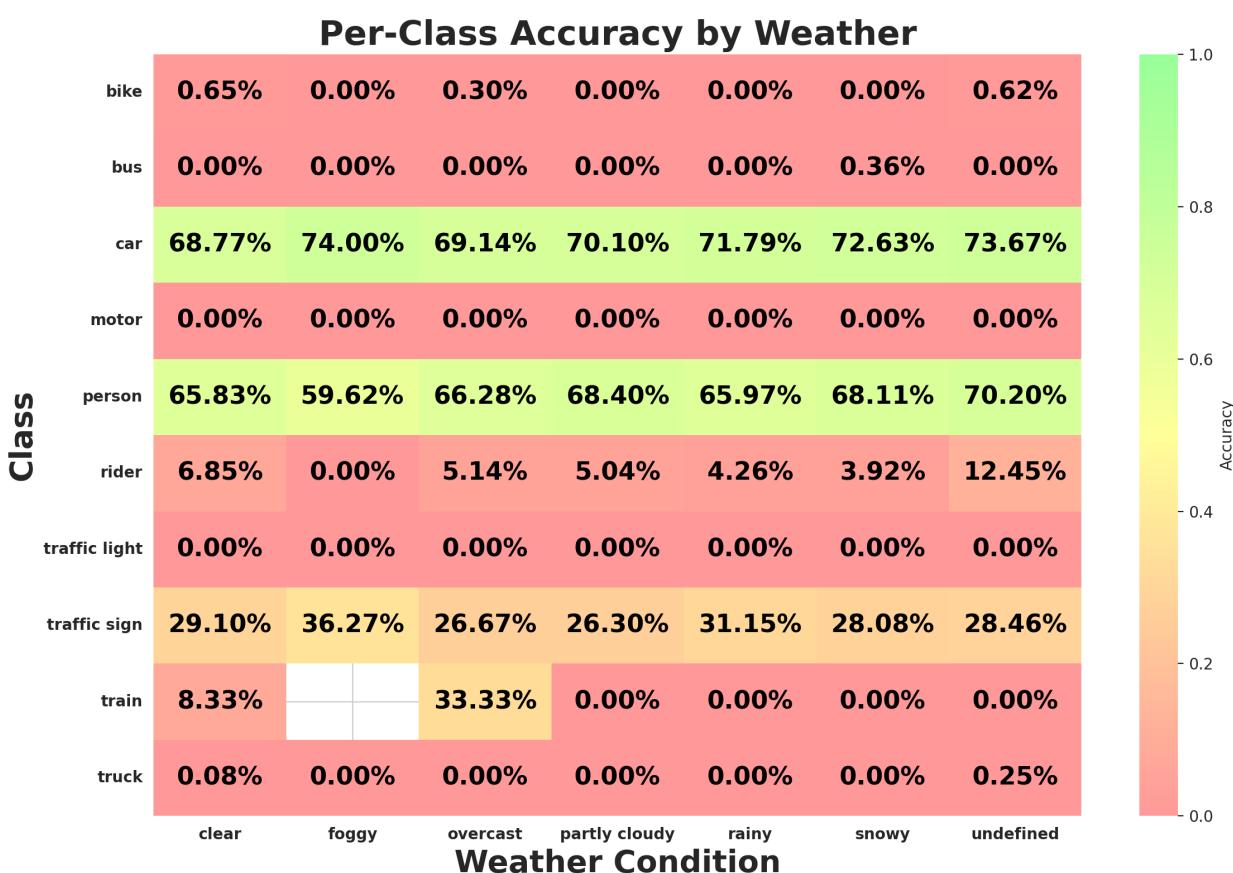
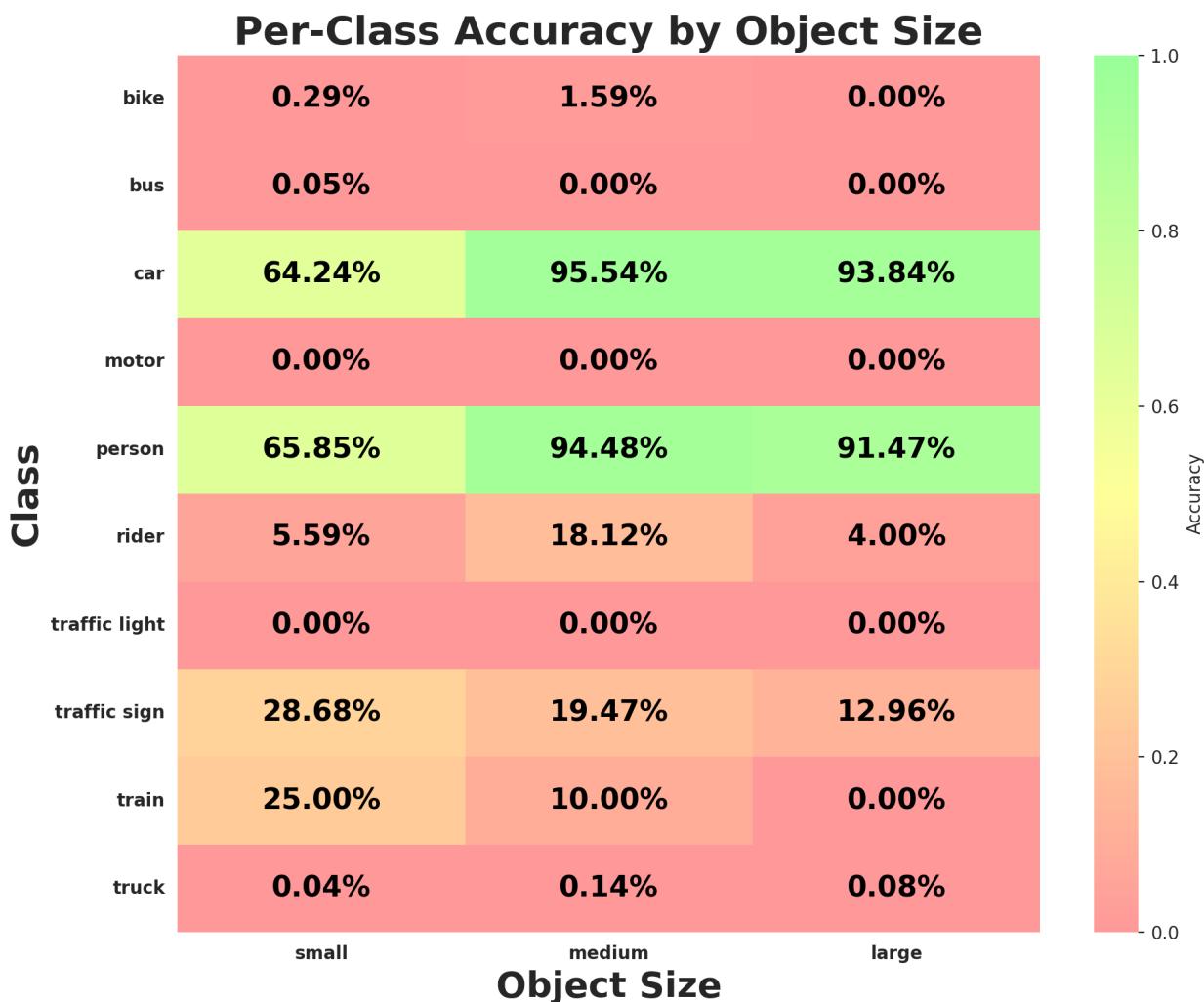


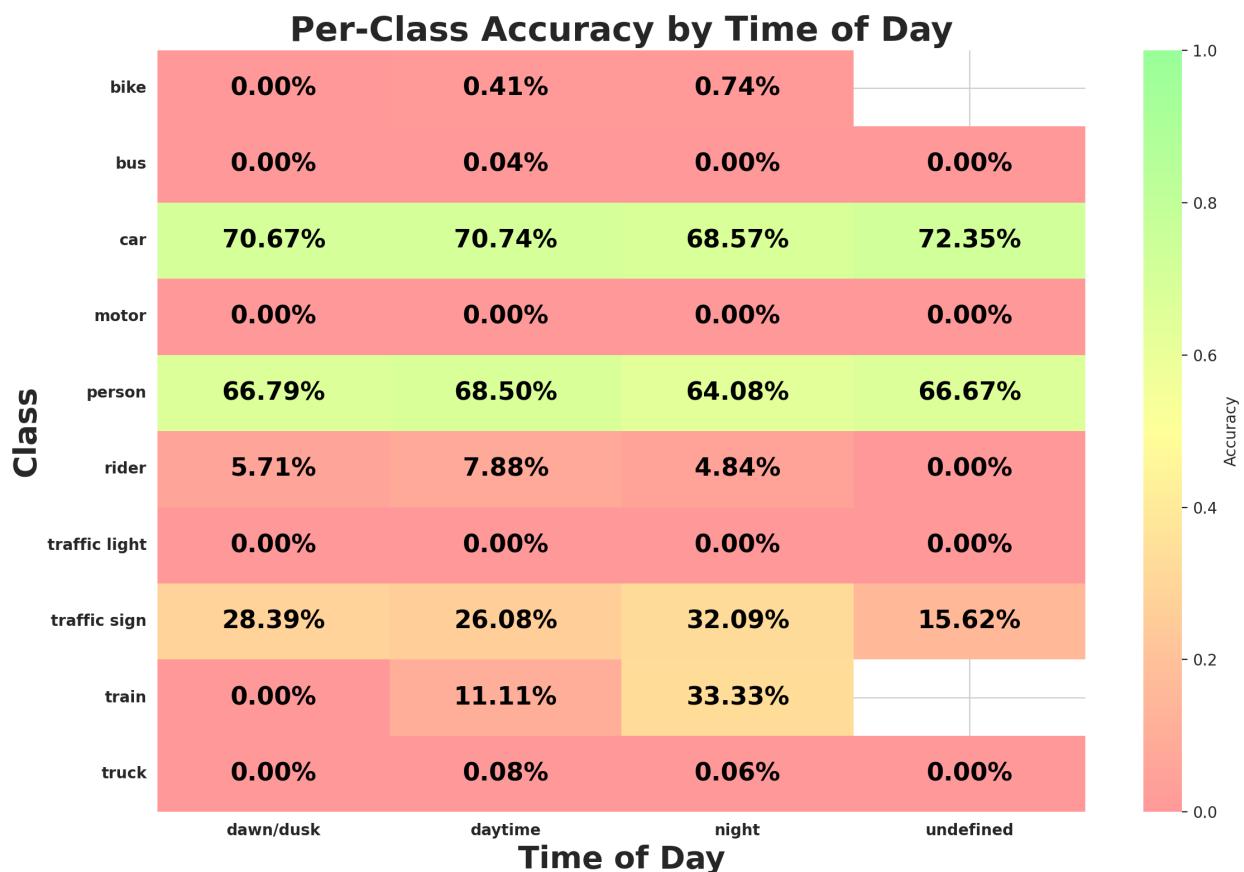
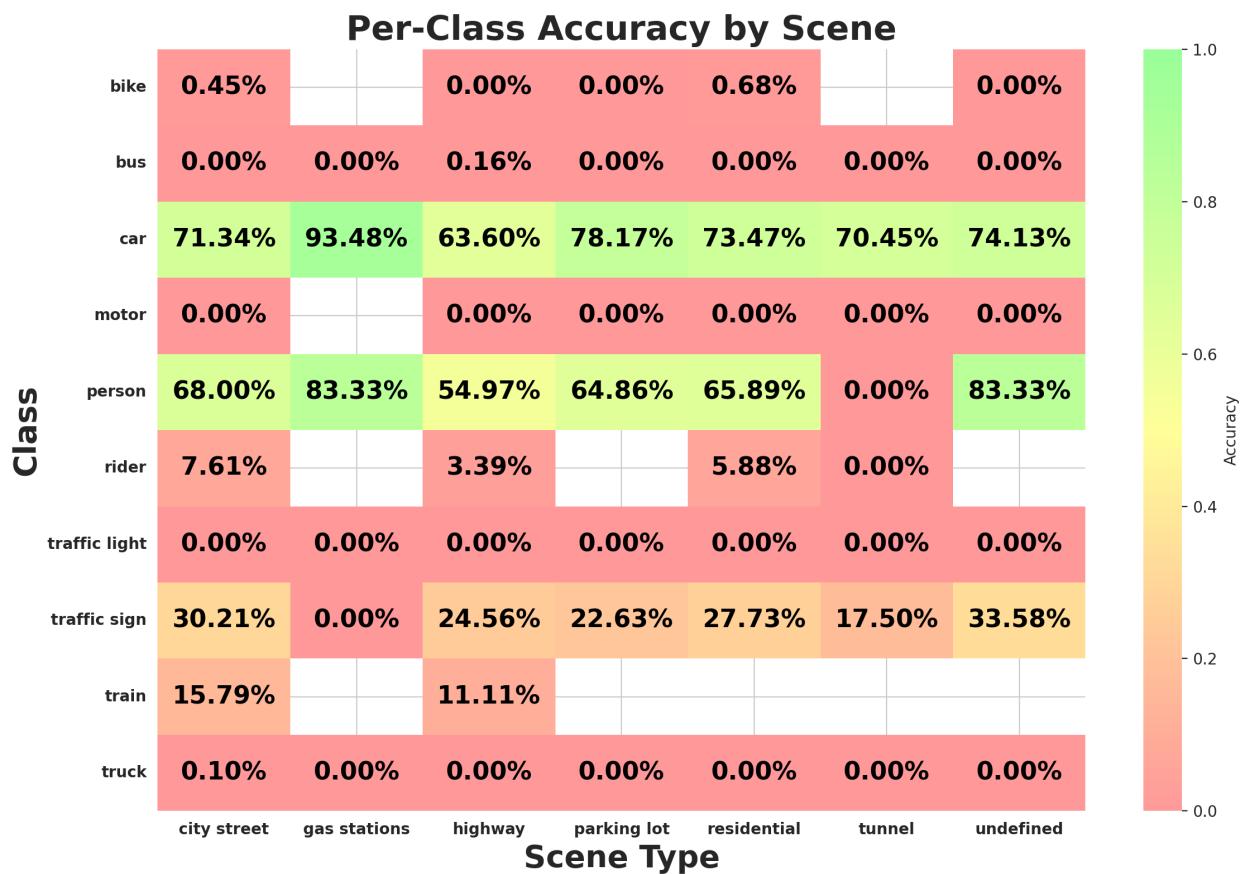
### Prediction Accuracy by Object Size



**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



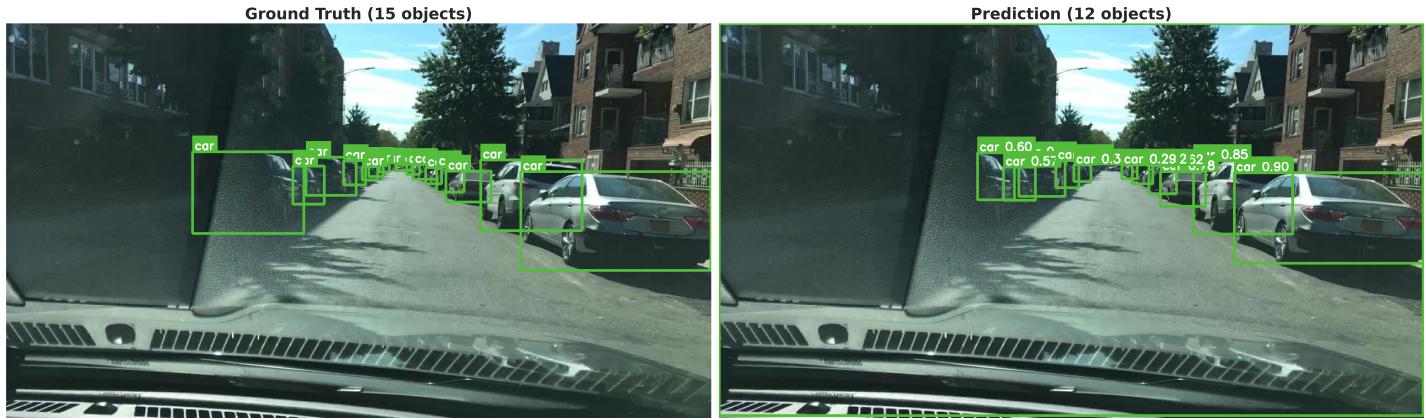


# Sample Predictions: Ground Truth vs Model

## Sample #1: d7f26f08-c10e4ba8.jpg

Ground Truth Objects: 15 | Predicted Objects: 12

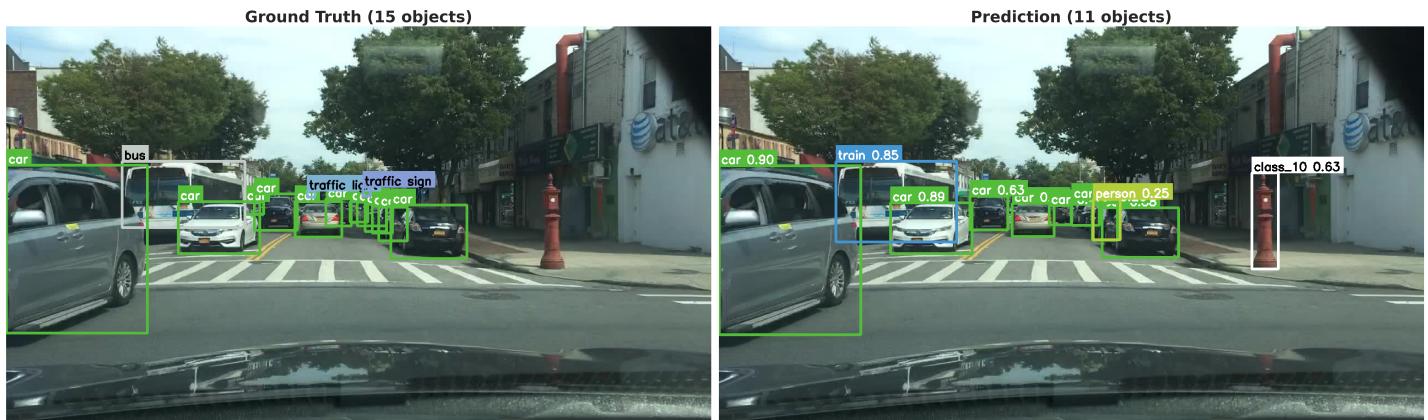
Weather: partly cloudy | Scene: residential | Time of Day: daytime



## Sample #2: f18bad6e-c6cf8fb9d.jpg

Ground Truth Objects: 15 | Predicted Objects: 11

Weather: clear | Scene: city street | Time of Day: daytime



## Sample #3: f7379b95-bae15b41.jpg

Ground Truth Objects: 11 | Predicted Objects: 3

Weather: overcast | Scene: highway | Time of Day: daytime



## Sample #4: ccd901f5-e45892d1.jpg

Ground Truth Objects: 10 | Predicted Objects: 5

Weather: clear | Scene: city street | Time of Day: daytime



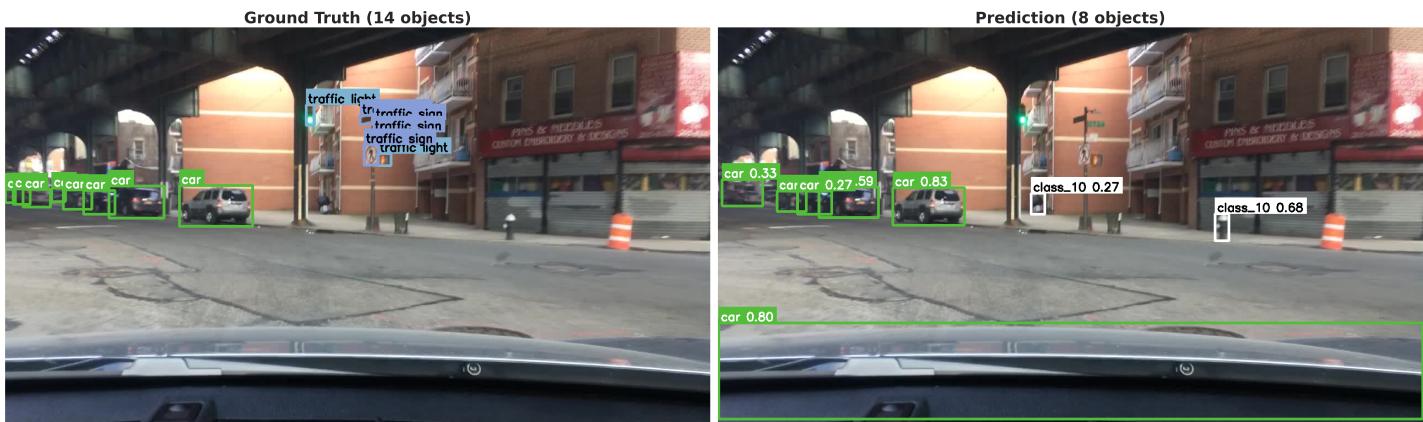
**Sample #5: cdcd8d61-52ae1094.jpg**

Ground Truth Objects: 13 | Predicted Objects: 7  
Weather: clear | Scene: residential | Time of Day: daytime



**Sample #6: cd611cfb-c2b429c0.jpg**

Ground Truth Objects: 14 | Predicted Objects: 8  
Weather: undefined | Scene: city street | Time of Day: daytime



Generated by YOLO Testing Pipeline