

# YOLO Model Testing Report

<b>Model:</b>	yolo12n
<b>Model Size:</b>	5.3 MB
<b>Parameters:</b>	2.6 M
<b>FLOPs (640x640):</b>	6.65 GFLOPs
<b>Run Name:</b>	yolo12n_testing_20251128_010328
<b>Timestamp:</b>	2025-11-28 01:18:01
<b>Dataset:</b>	bdd100k_yolo_limited - test split
<b>Images Processed:</b>	20000
<b>Total Execution Time</b>	104.12s
<b>IoU Threshold:</b>	0.5

## Inference Performance

Metric	Value
Average Inference Time	1.70 ms per image
FPS (Frames Per Second)	586.86

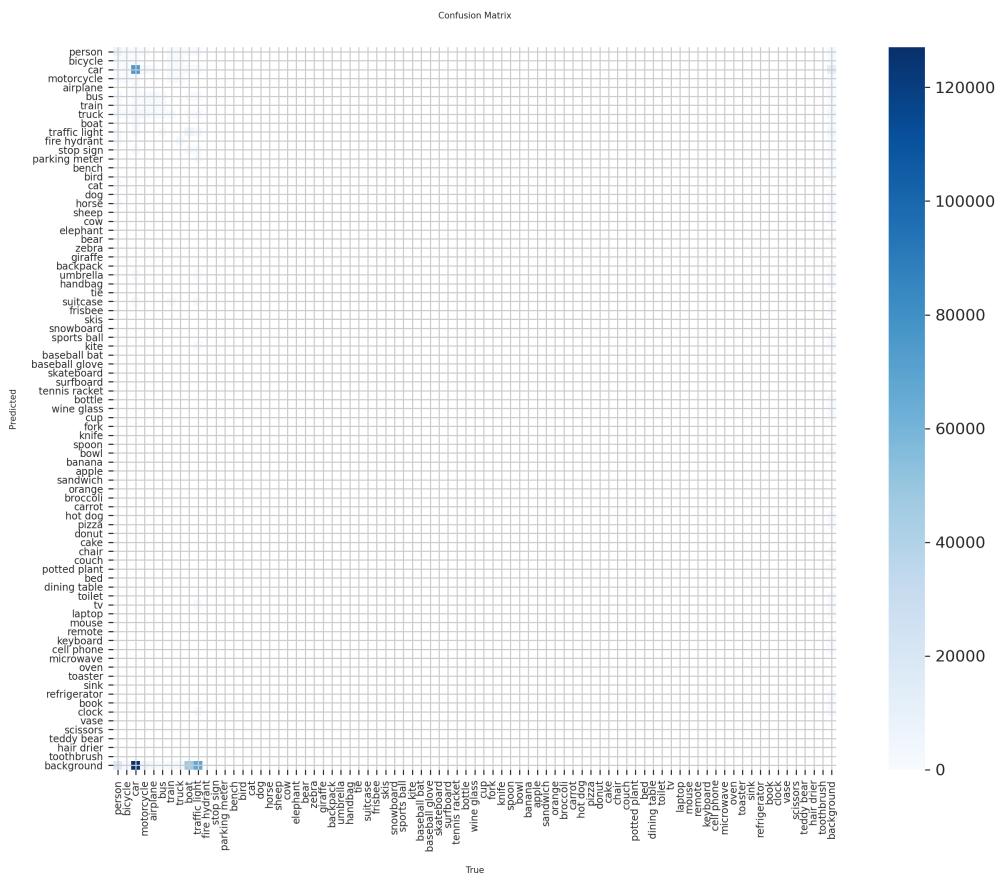
Note: Inference time includes preprocessing, model inference, and postprocessing.

## Overall Accuracy Metrics

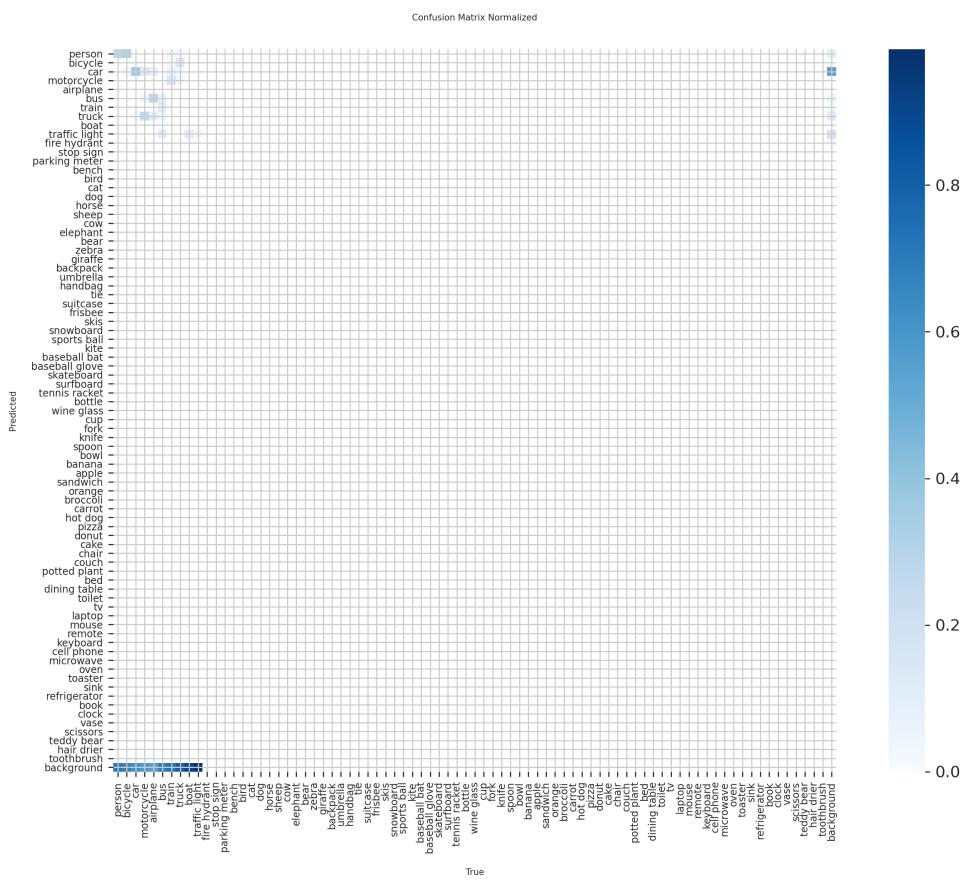
Metric	Value
Precision	0.2252
Recall	0.6995
F1-Score	0.3407
mAP@0.5	0.0941
mAP@0.5:0.95	0.0486
True Positives	82822
False Positives	284905
False Negatives	35585

# Confusion Matrices

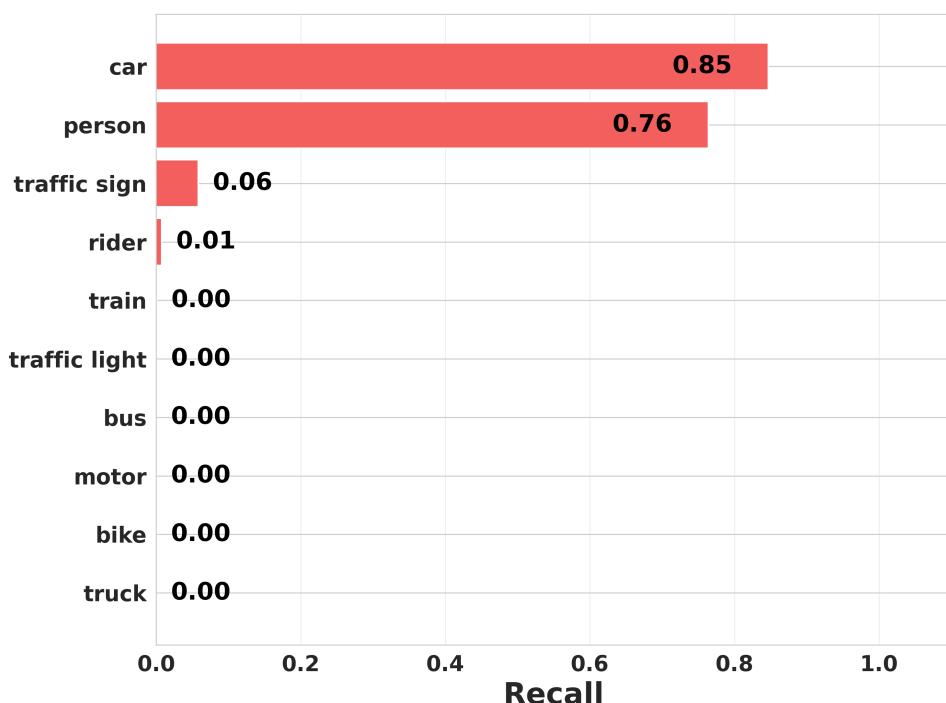
## Confusion Matrix (Counts)



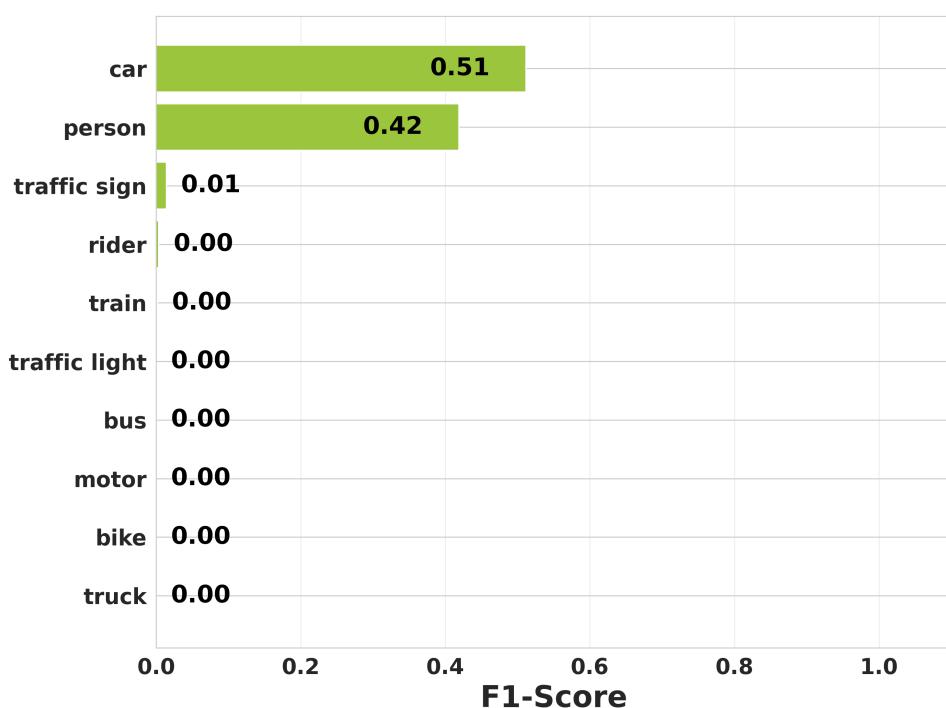
Note: Shows raw prediction counts for each class combination.



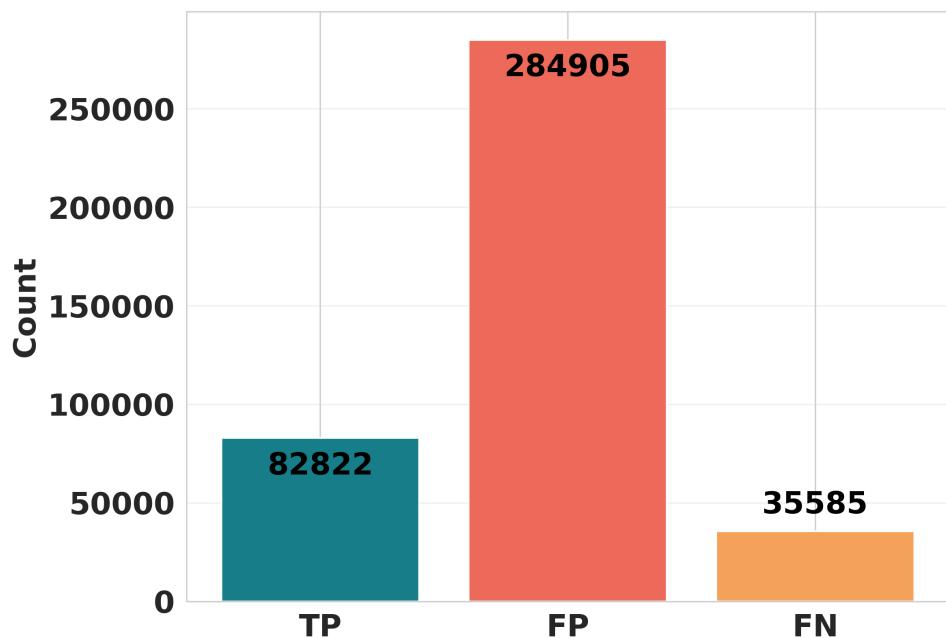
### Recall by Class



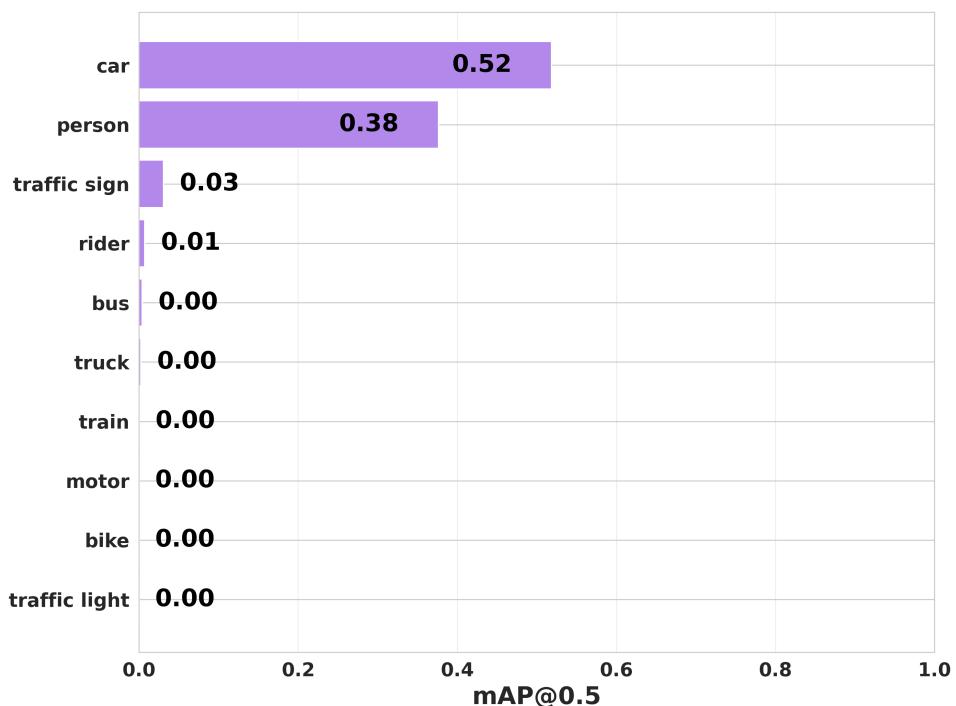
### F1-Score by Class



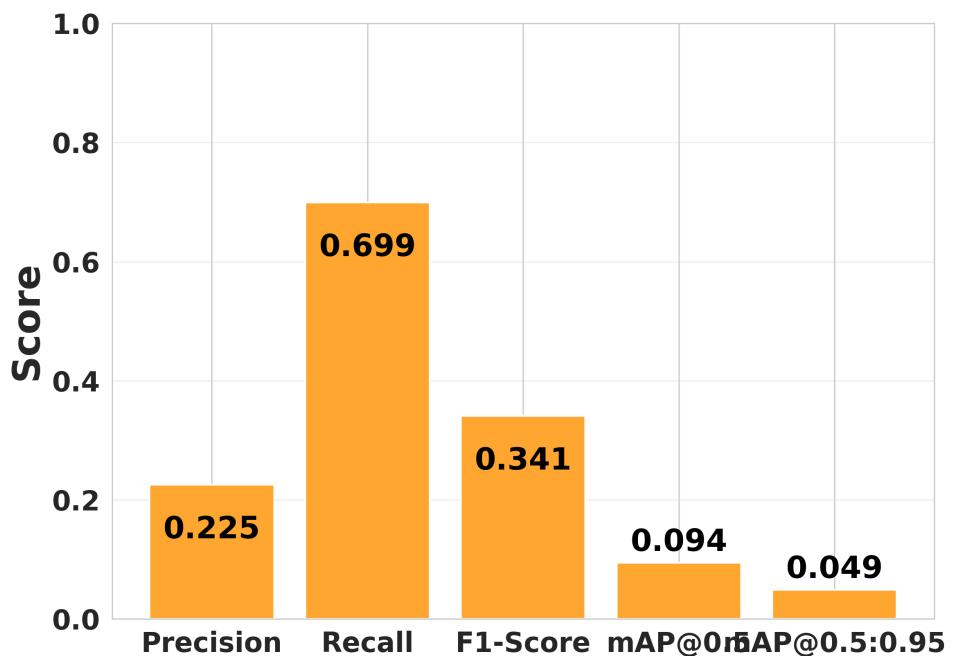
## Overall Detection Outcomes



## mAP@0.5 by Class



## Overall Metrics



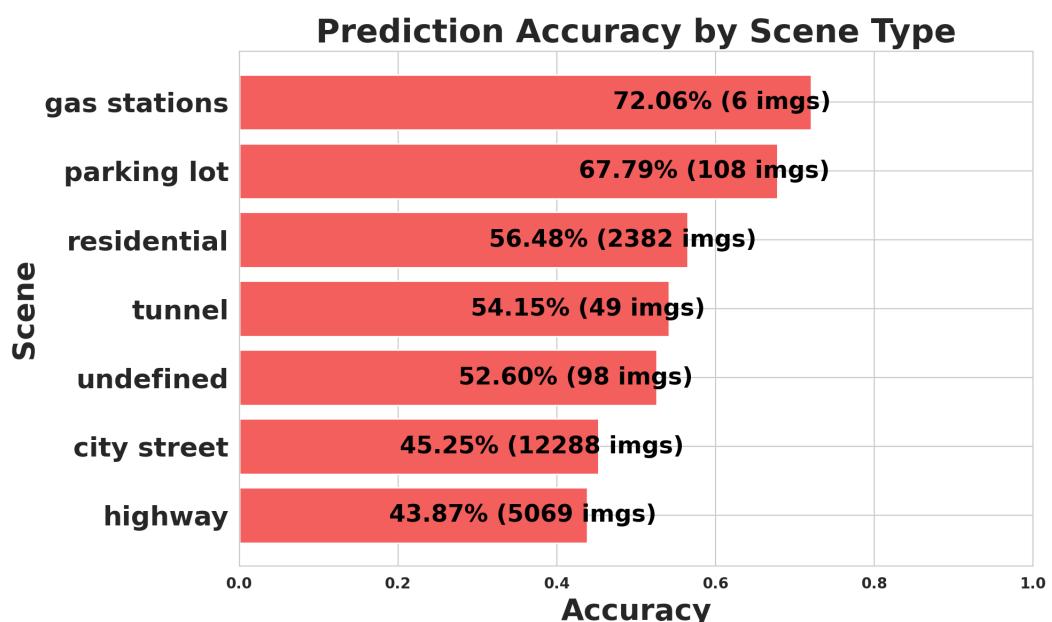
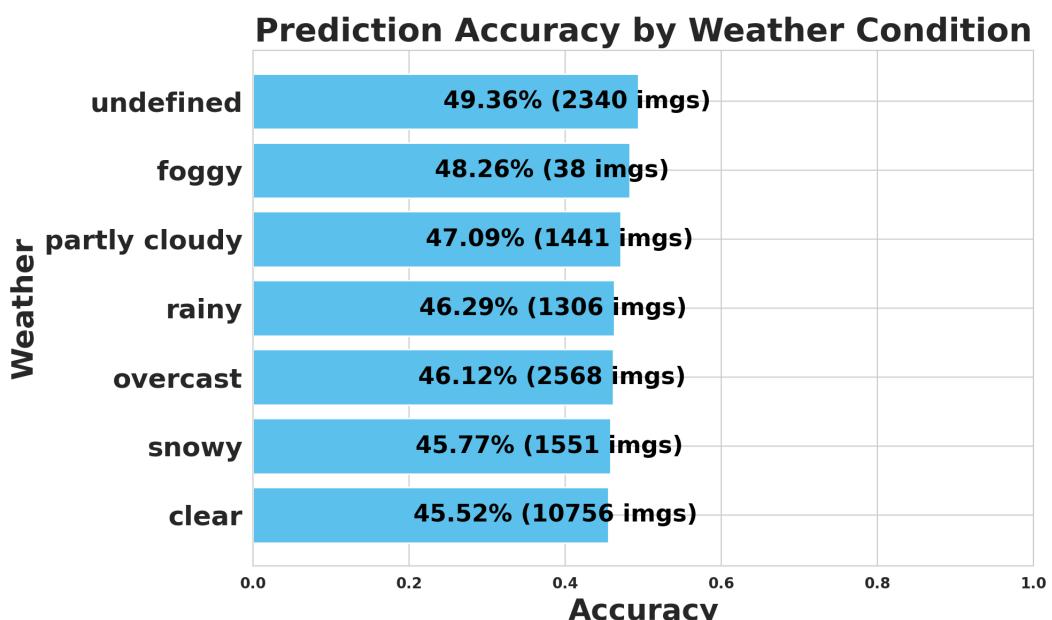
## Per-Class Performance

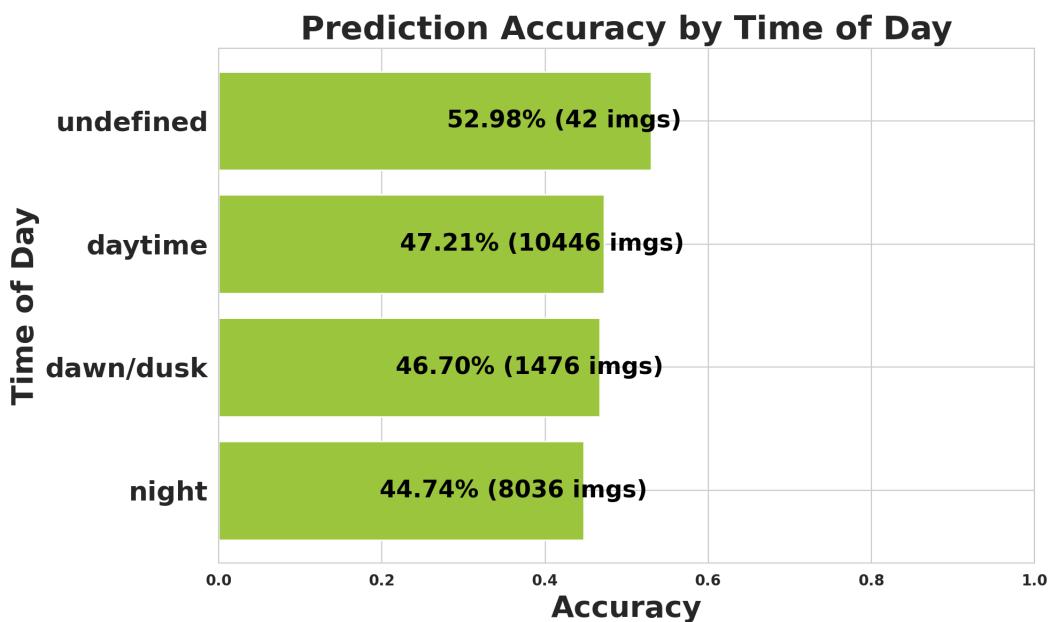
Class	TP	FP	FN	Precision	Recall	F1-Score	mAP@0.5
person	7109	17541	2197	0.2884	0.7639	0.4187	0.3767
rider	3	1291	405	0.0023	0.0074	0.0035	0.0072
car	75154	129995	13597	0.3663	0.8468	0.5114	0.5187
truck	0	8704	260	0.0000	0.0000	0.0000	0.0023
bus	0	3217	45	0.0000	0.0000	0.0000	0.0040
train	2	26	2567	0.0714	0.0008	0.0015	0.0004
motor	0	841	159	0.0000	0.0000	0.0000	0.0002
bike	0	1998	7377	0.0000	0.0000	0.0000	0.0002
traffic light	0	52840	7	0.0000	0.0000	0.0000	0.0001
traffic sign	554	68452	8971	0.0080	0.0582	0.0141	0.0310

# Comprehensive Failure Analysis

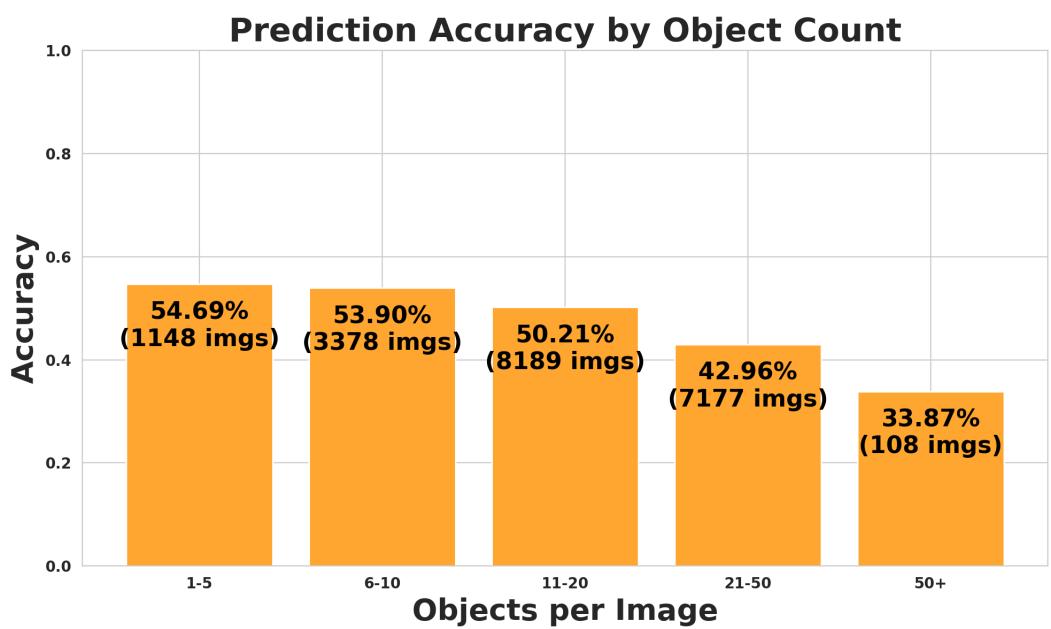
Metric	Value
Total Images Analyzed	20000
Total Expected Objects	367728
Total Matched Objects	170231
Overall Accuracy	46.29%

## Accuracy by Environmental Attributes

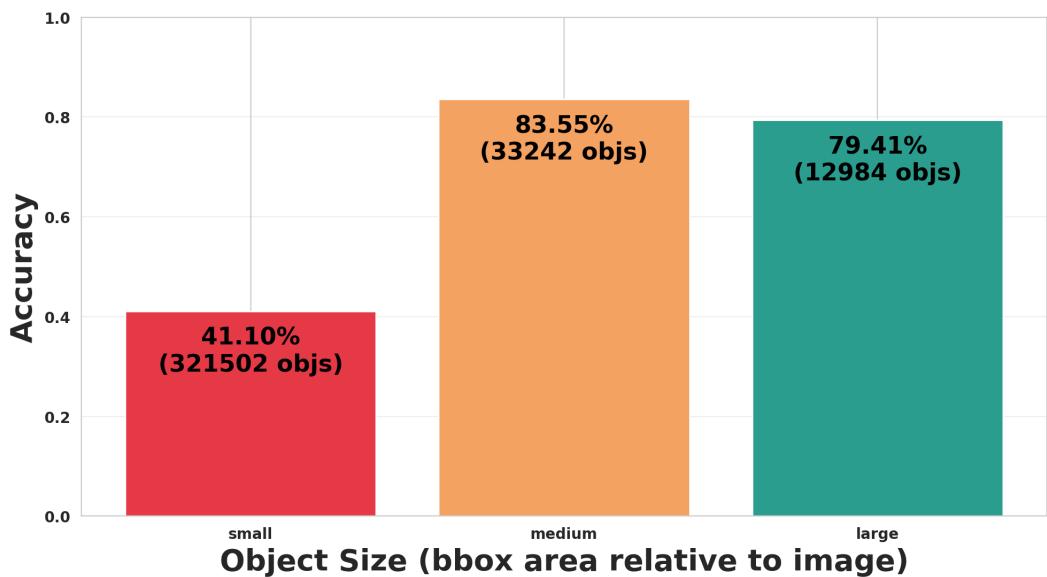




## Accuracy by Object Characteristics

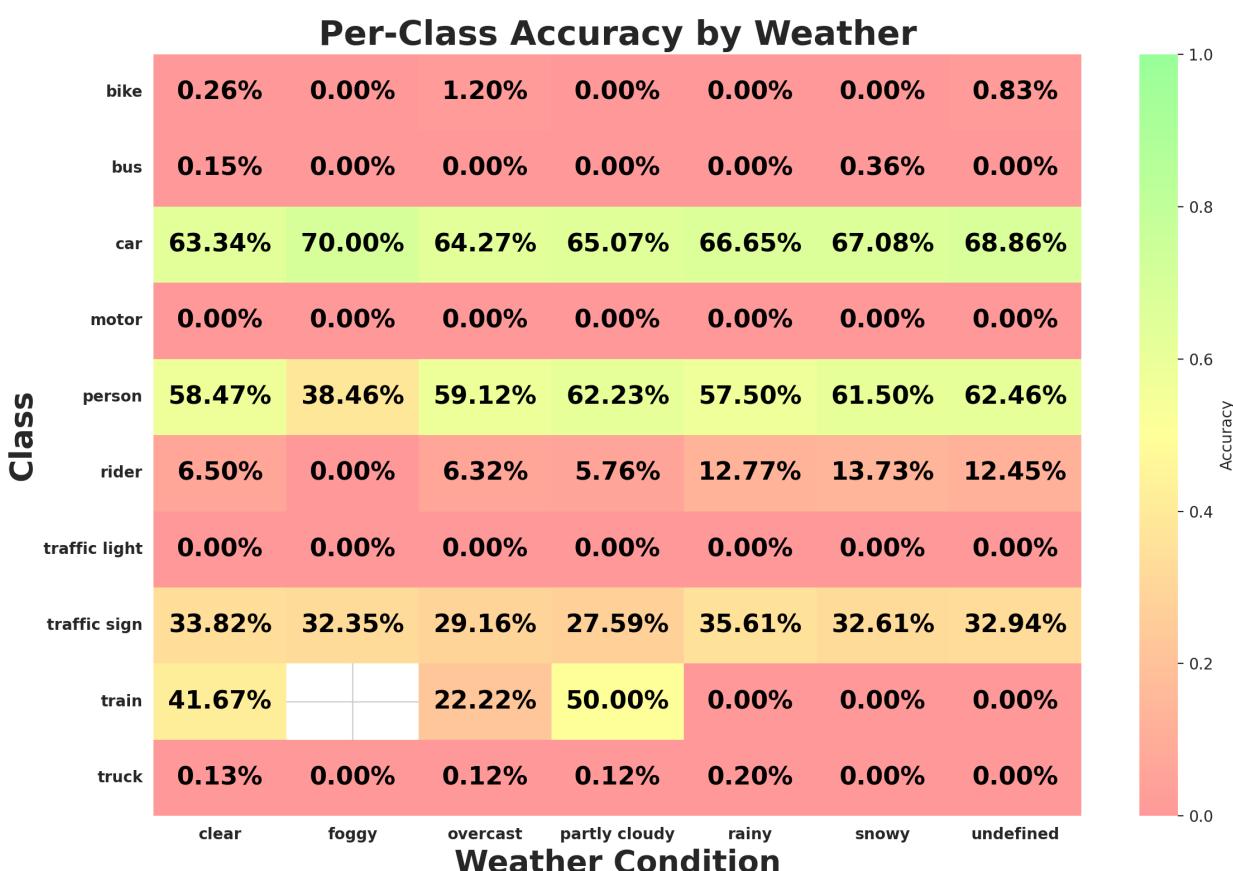
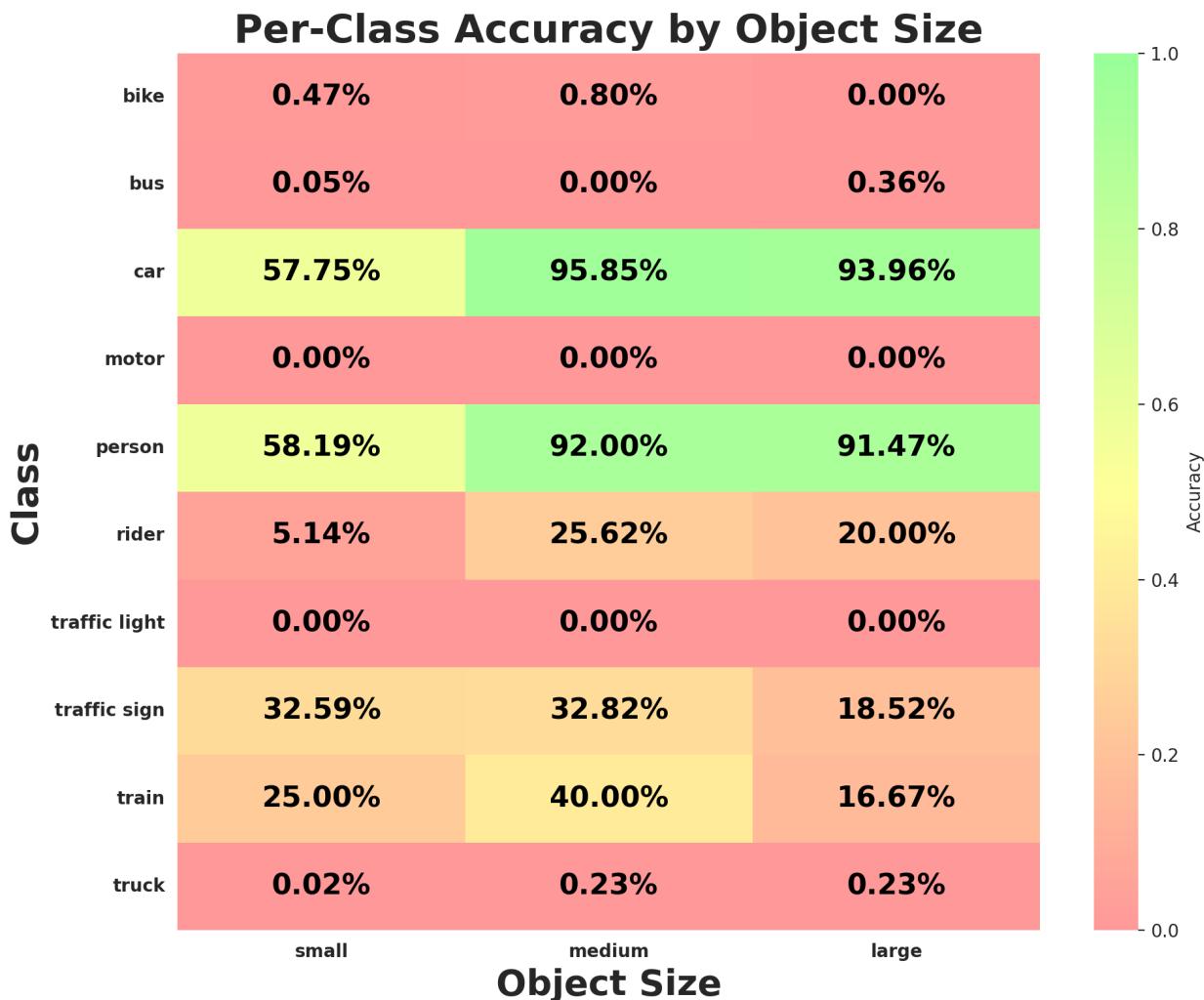


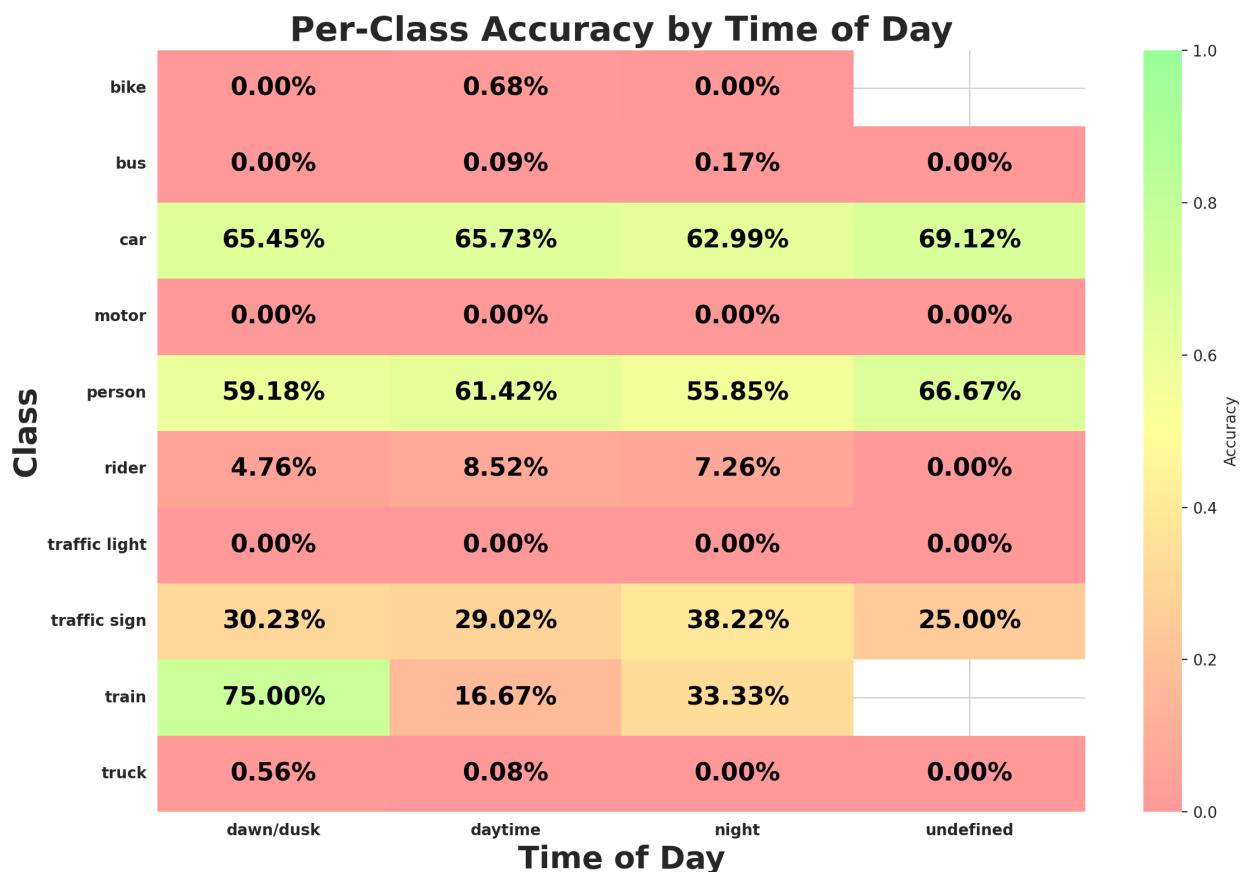
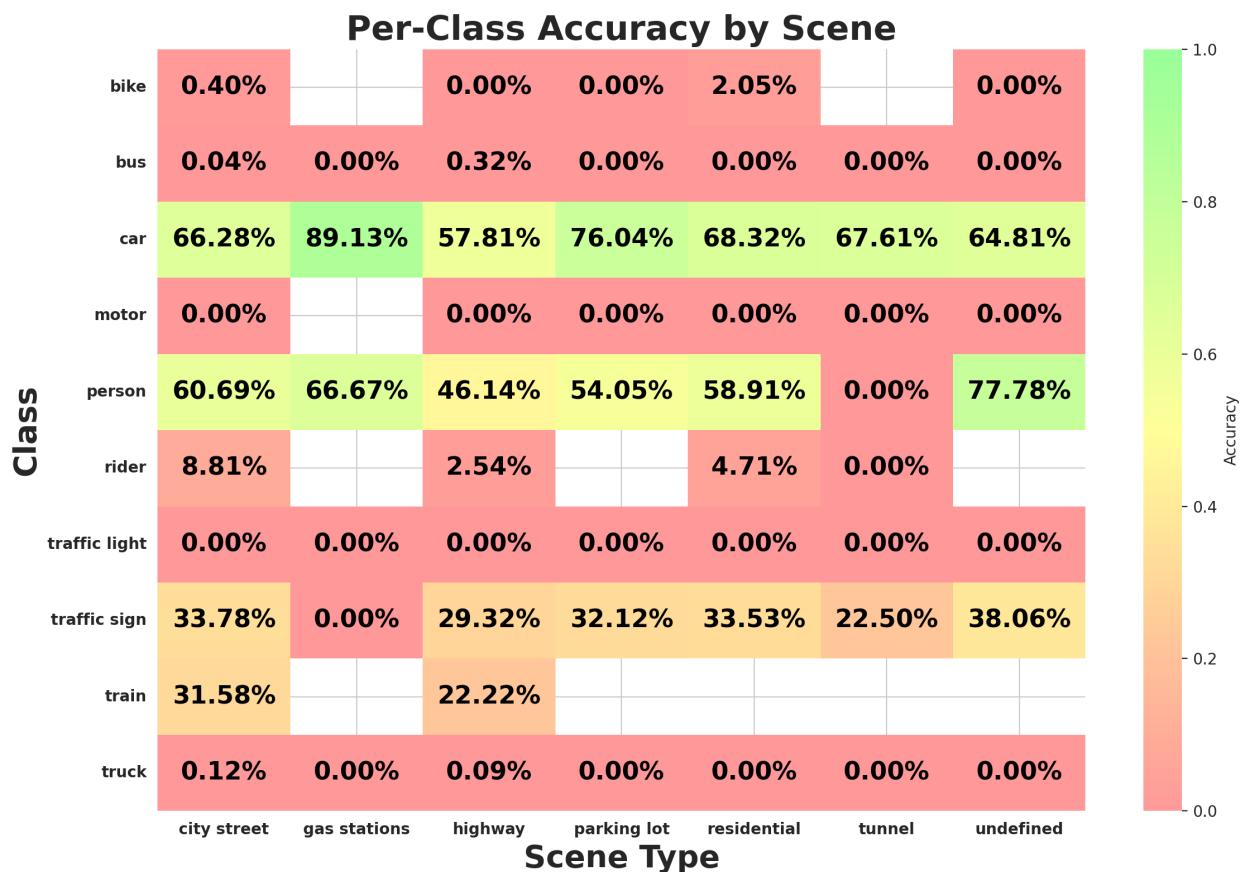
### Prediction Accuracy by Object Size



**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

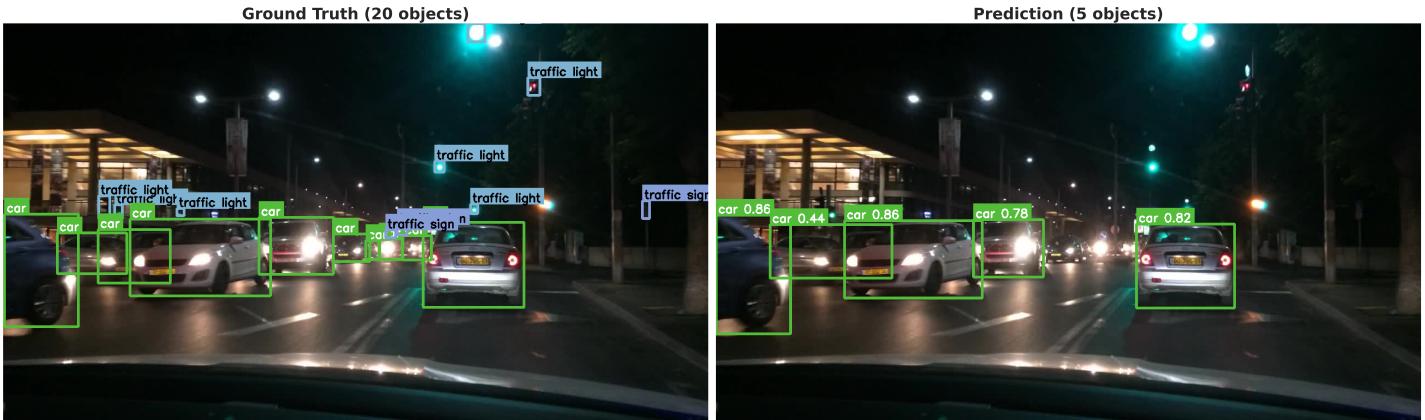




# Sample Predictions: Ground Truth vs Model

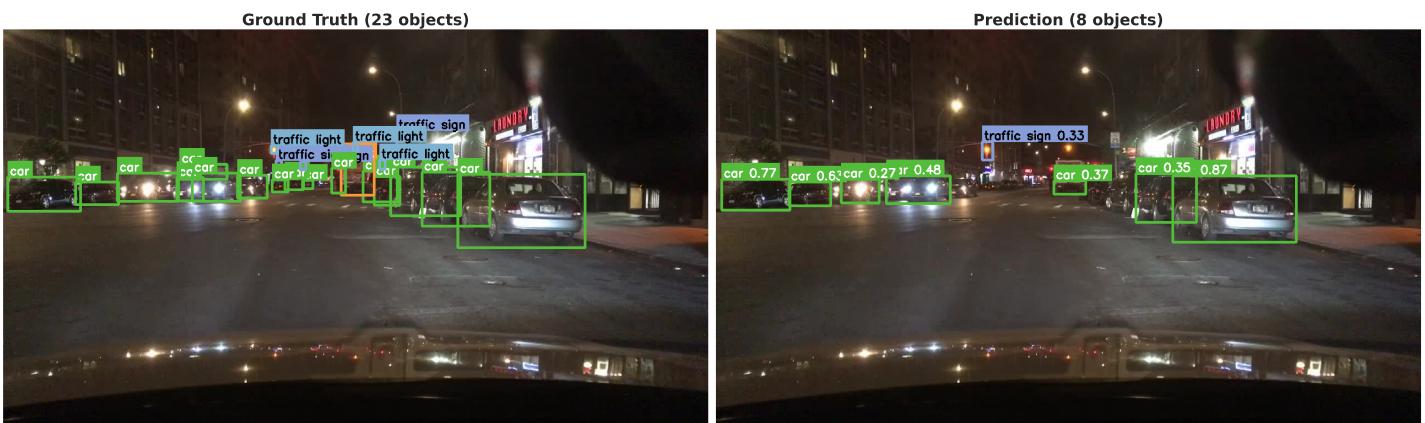
## Sample #1: f437338c-83bc4e93.jpg

Ground Truth Objects: 20 | Predicted Objects: 5  
Weather: clear | Scene: city street | Time of Day: night



## Sample #2: f40a1ff4-50411ab9.jpg

Ground Truth Objects: 23 | Predicted Objects: 8  
Weather: clear | Scene: city street | Time of Day: night



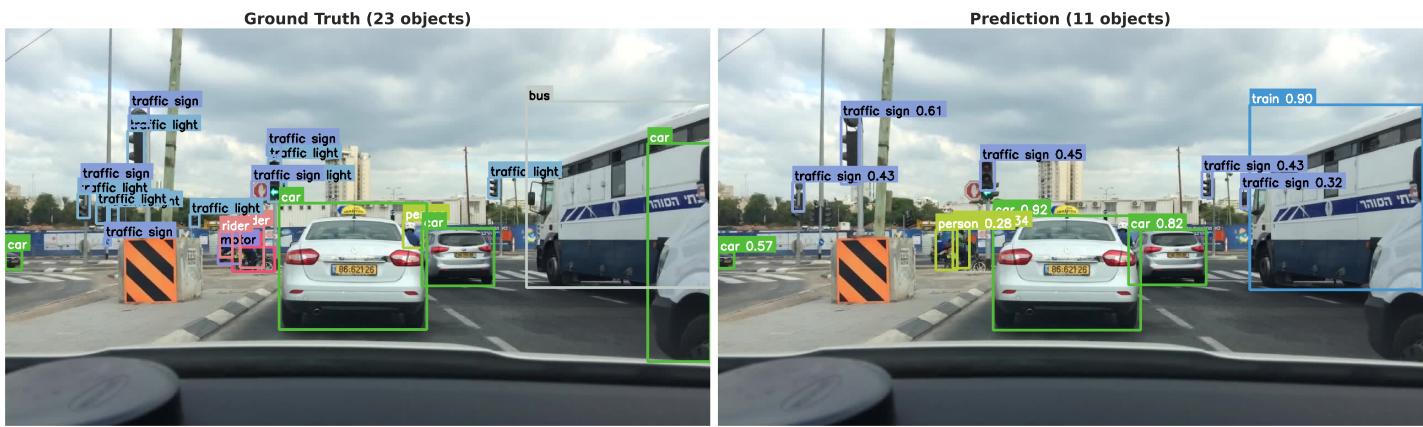
## Sample #3: d5ef7427-a67c141d.jpg

Ground Truth Objects: 14 | Predicted Objects: 5  
Weather: snowy | Scene: city street | Time of Day: dawn/dusk



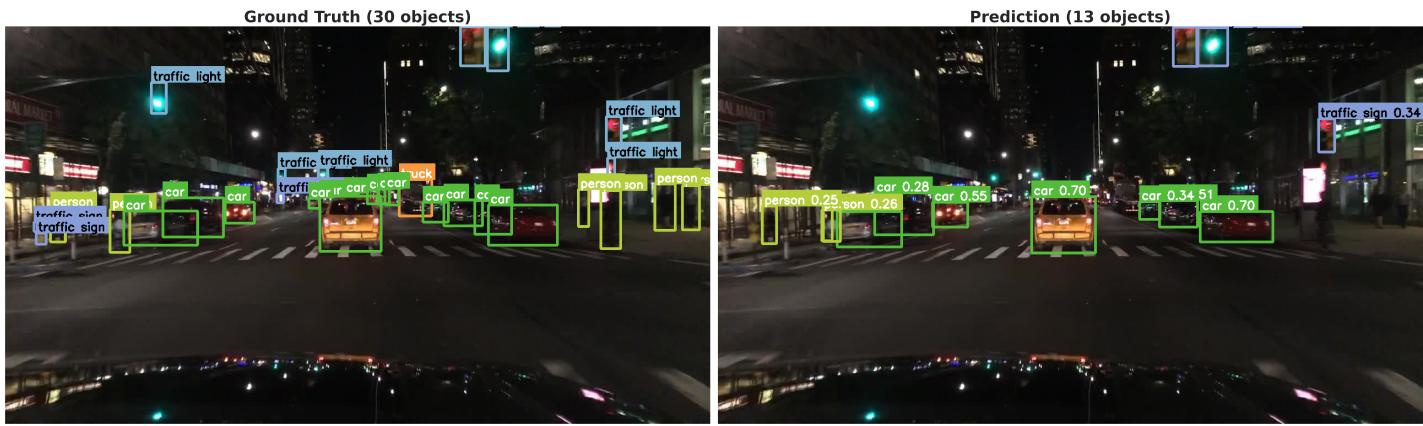
## Sample #4: fb251075-680d1272.jpg

Ground Truth Objects: 23 | Predicted Objects: 11  
Weather: overcast | Scene: city street | Time of Day: daytime



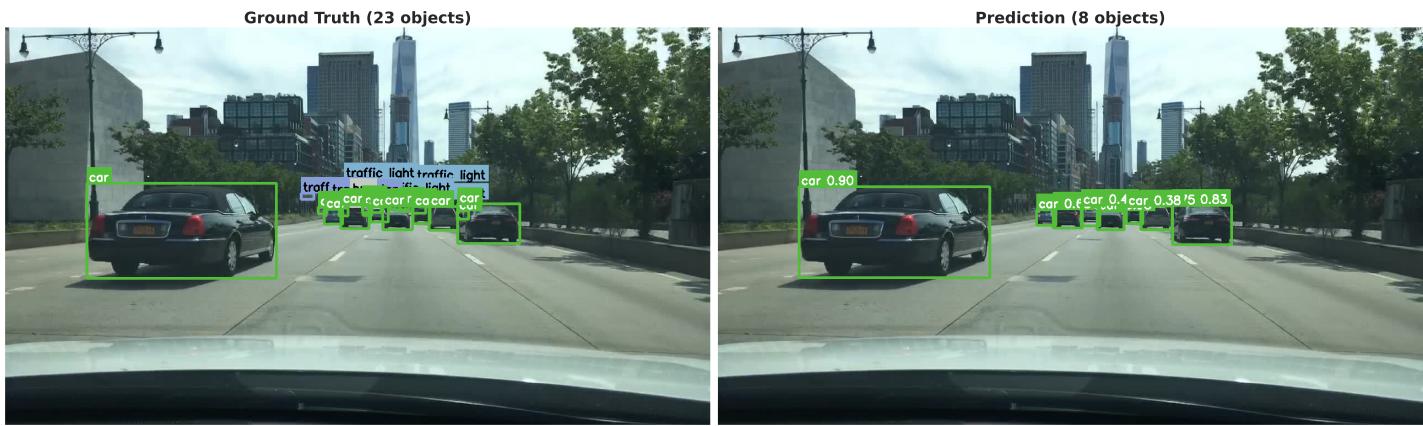
**Sample #5: d263cf26-ac6dbfc5.jpg**

Ground Truth Objects: 30 | Predicted Objects: 13  
Weather: clear | Scene: city street | Time of Day: night



**Sample #6: f5cd8181-b8cc67dd.jpg**

Ground Truth Objects: 23 | Predicted Objects: 8  
Weather: overcast | Scene: highway | Time of Day: daytime



Generated by YOLO Testing Pipeline