

# YOLO Model Testing Report

<b>Model:</b>	yolo12m
<b>Model Size:</b>	39.0 MB
<b>Parameters:</b>	20.2 M
<b>FLOPs (640x640):</b>	68.08 GFLOPs
<b>Run Name:</b>	yolo12m_testing_20251128_013147
<b>Timestamp:</b>	2025-11-28 01:45:19
<b>Dataset:</b>	bdd100k_yolo_limited - test split
<b>Images Processed:</b>	20000
<b>Total Execution Time</b>	130.26s
<b>IoU Threshold:</b>	0.5

## Inference Performance

Metric	Value
Average Inference Time	3.06 ms per image
FPS (Frames Per Second)	326.83

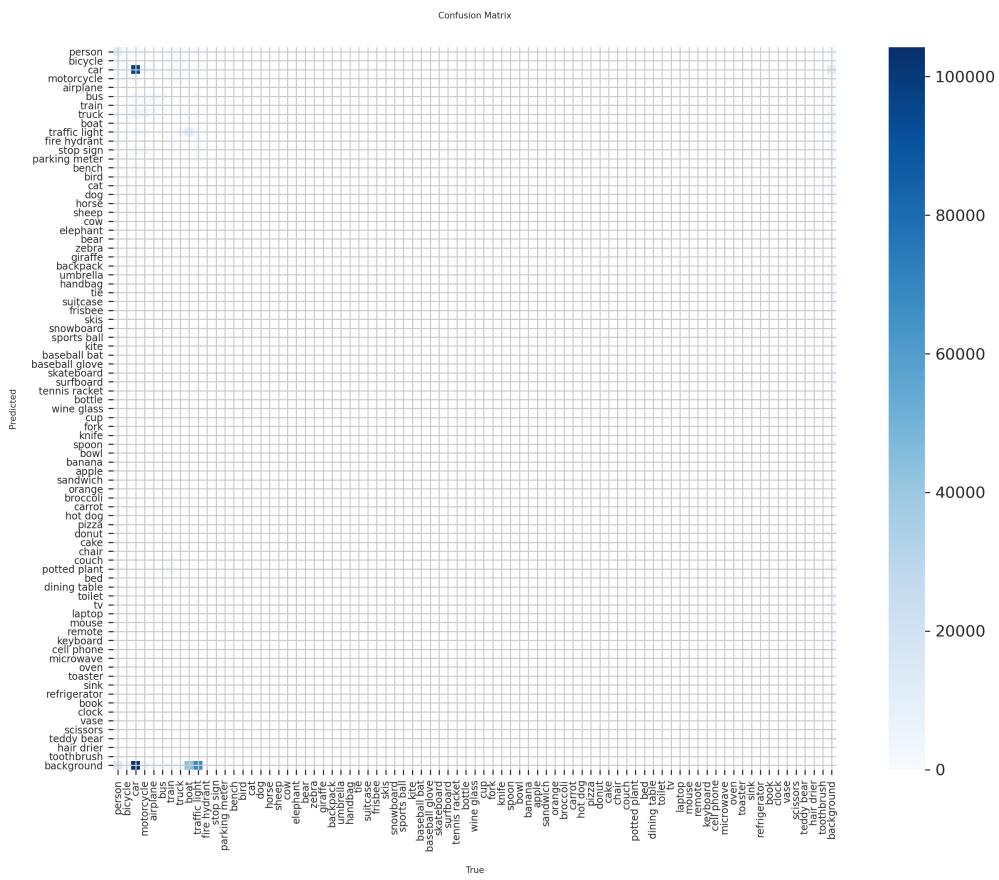
Note: Inference time includes preprocessing, model inference, and postprocessing.

## Overall Accuracy Metrics

Metric	Value
Precision	0.2931
Recall	0.7188
F1-Score	0.4164
mAP@0.5	0.1243
mAP@0.5:0.95	0.0687
True Positives	107768
False Positives	259959
False Negatives	42155

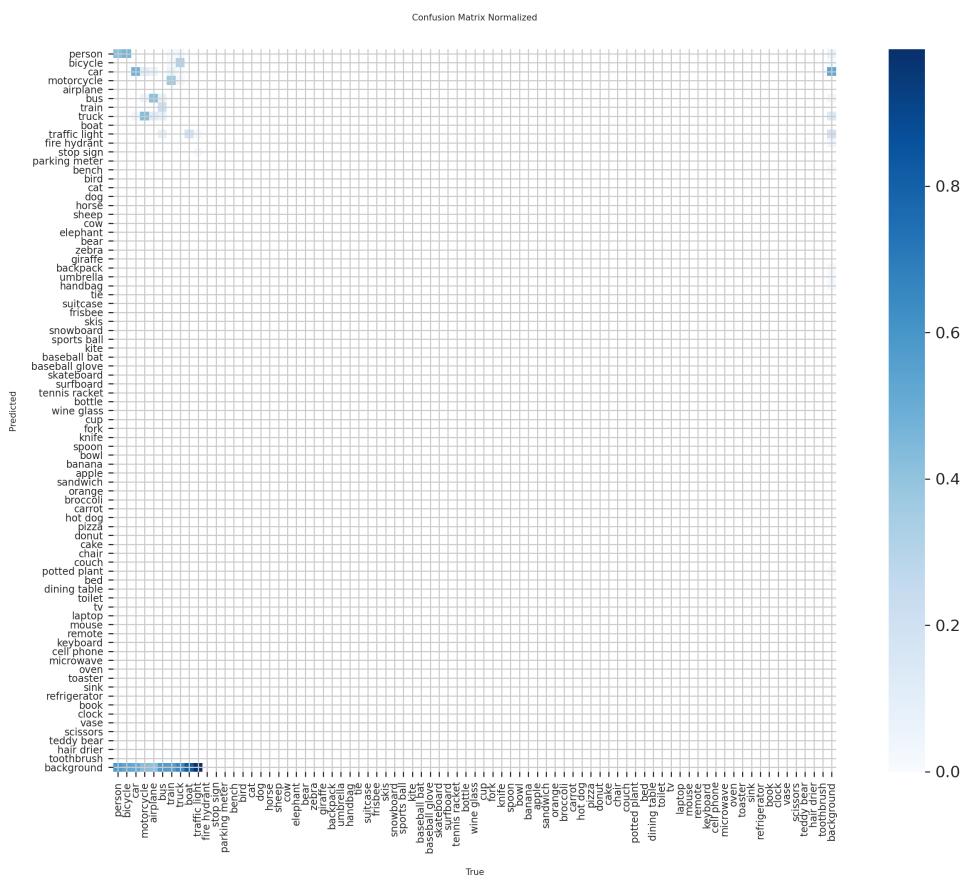
# Confusion Matrices

## Confusion Matrix (Counts)



Note: Shows raw prediction counts for each class combination.

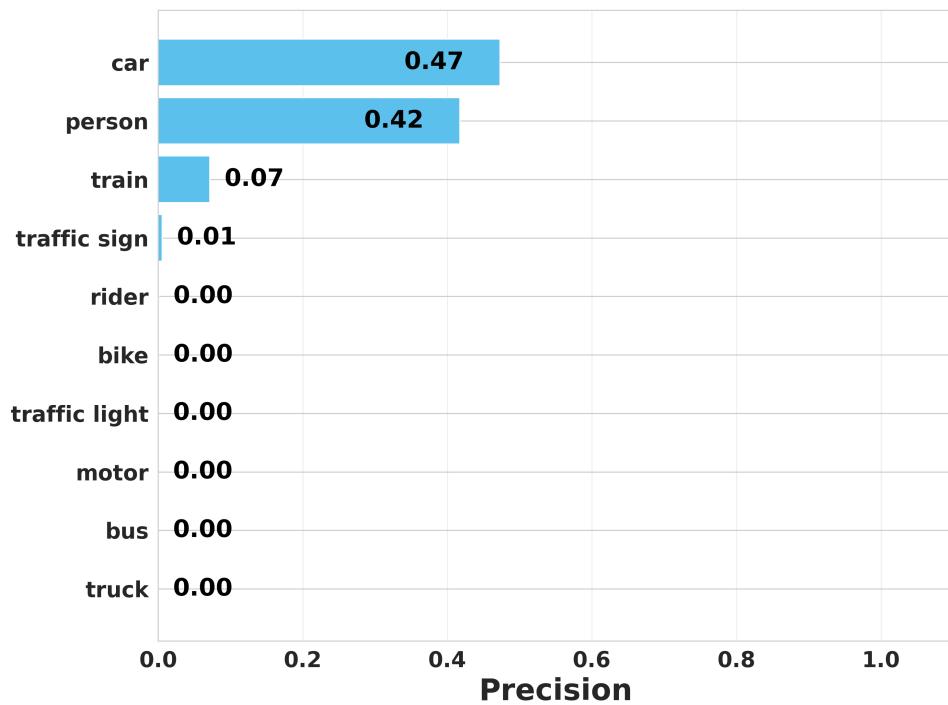
## Confusion Matrix (Normalized)



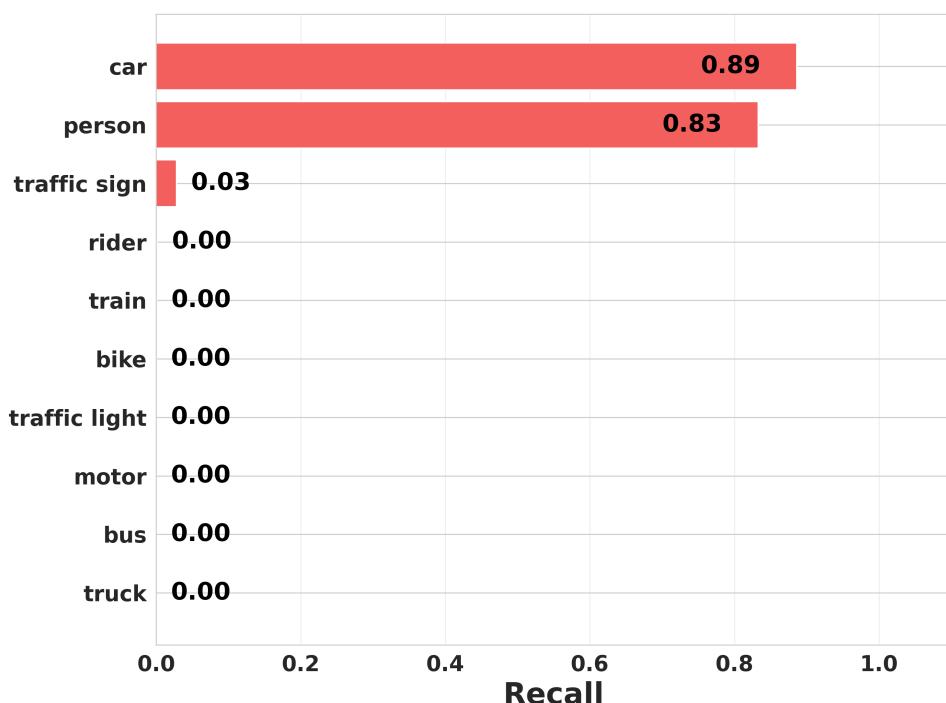
Note: Values are normalized by the number of ground truth instances per class. Shows the proportion of correct vs incorrect classifications.

# Performance Visualizations

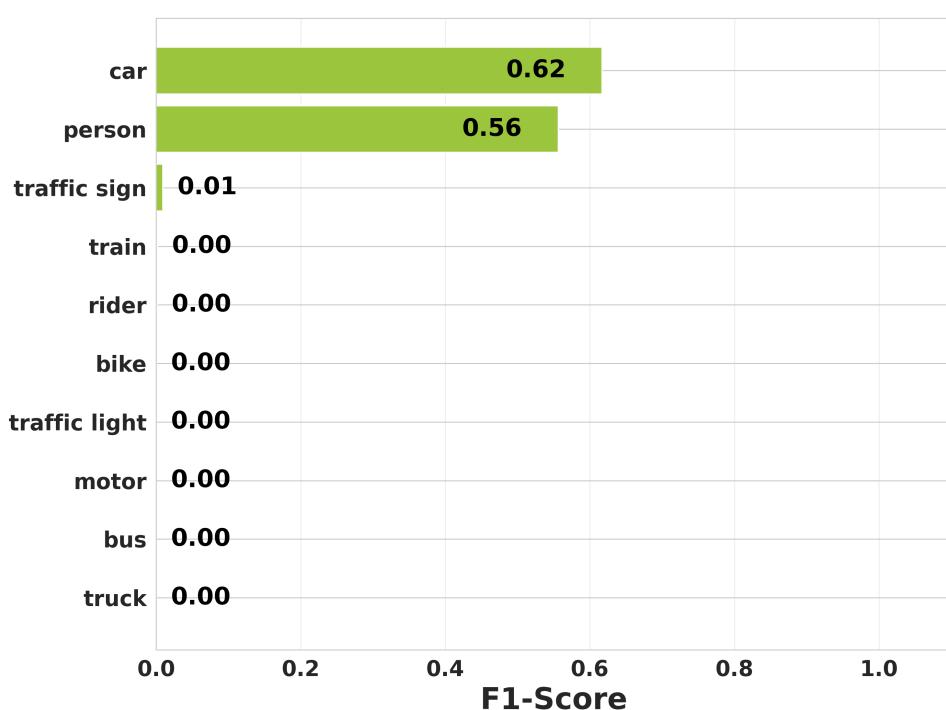
## Precision by Class



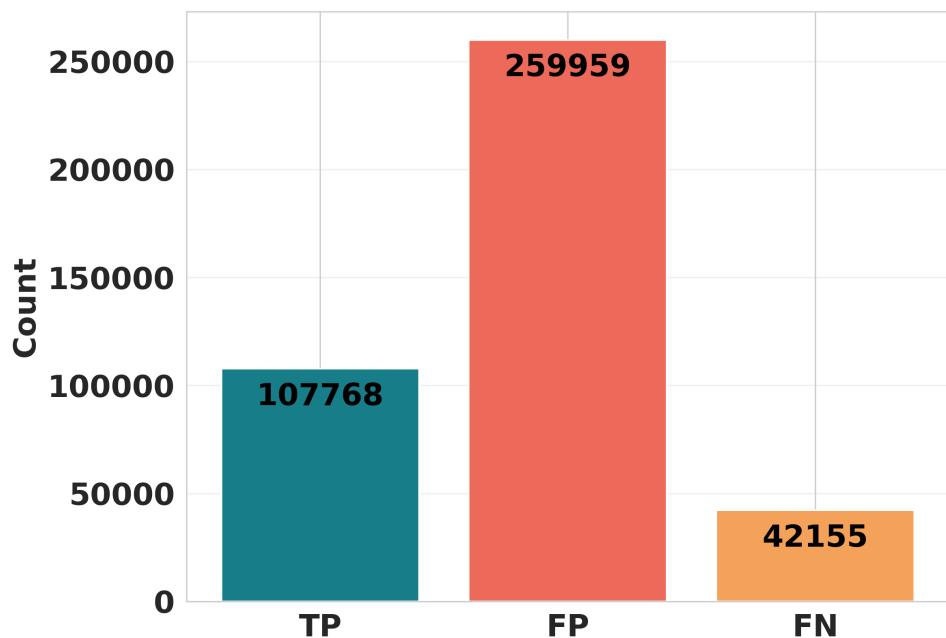
### Recall by Class



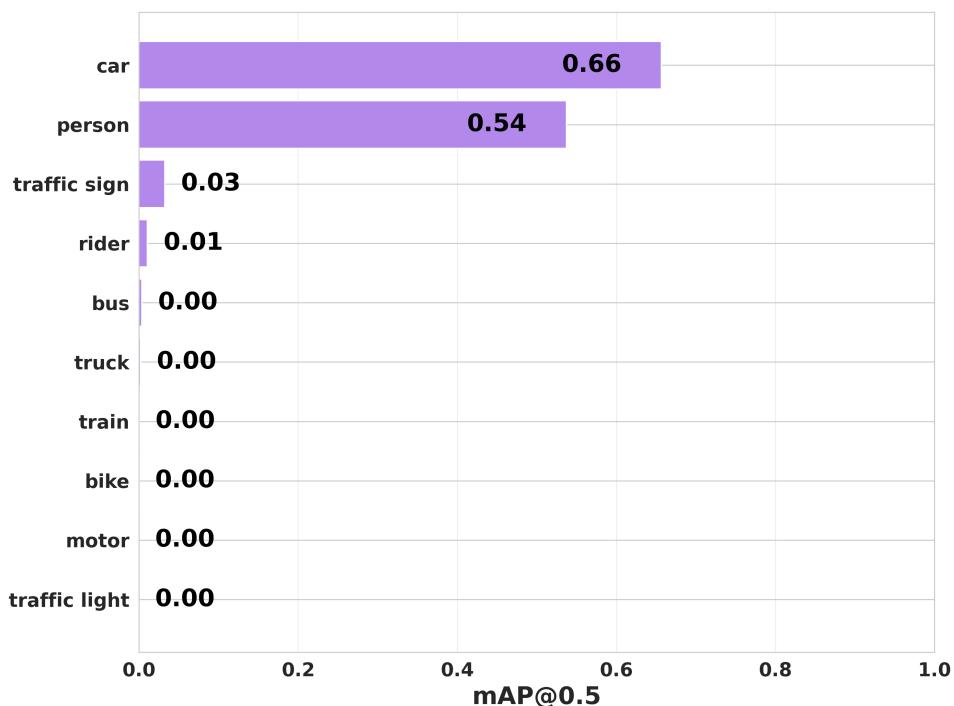
### F1-Score by Class



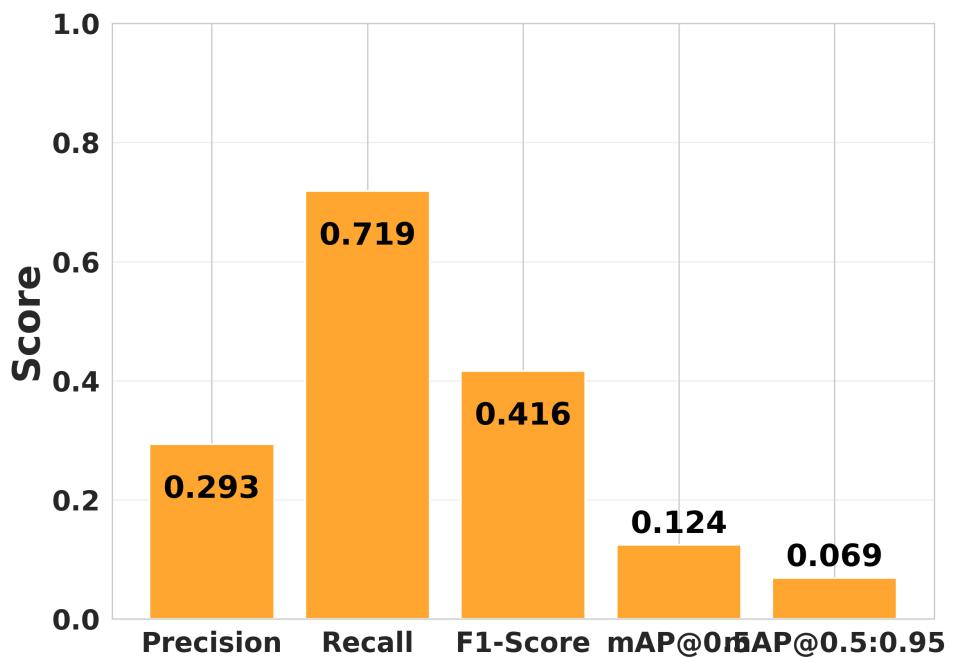
## Overall Detection Outcomes



## mAP@0.5 by Class



## Overall Metrics



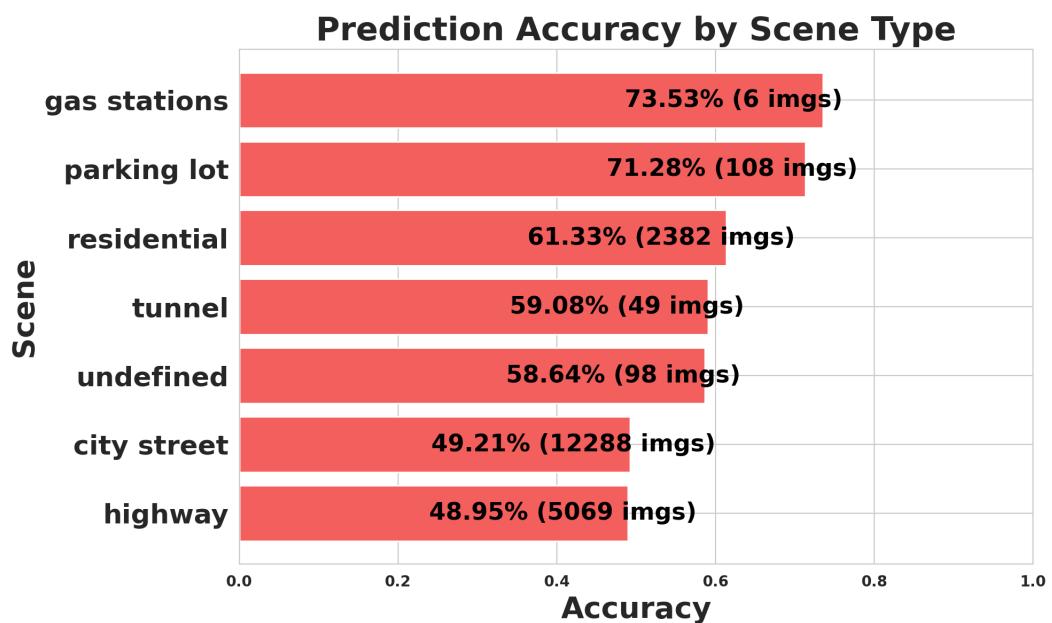
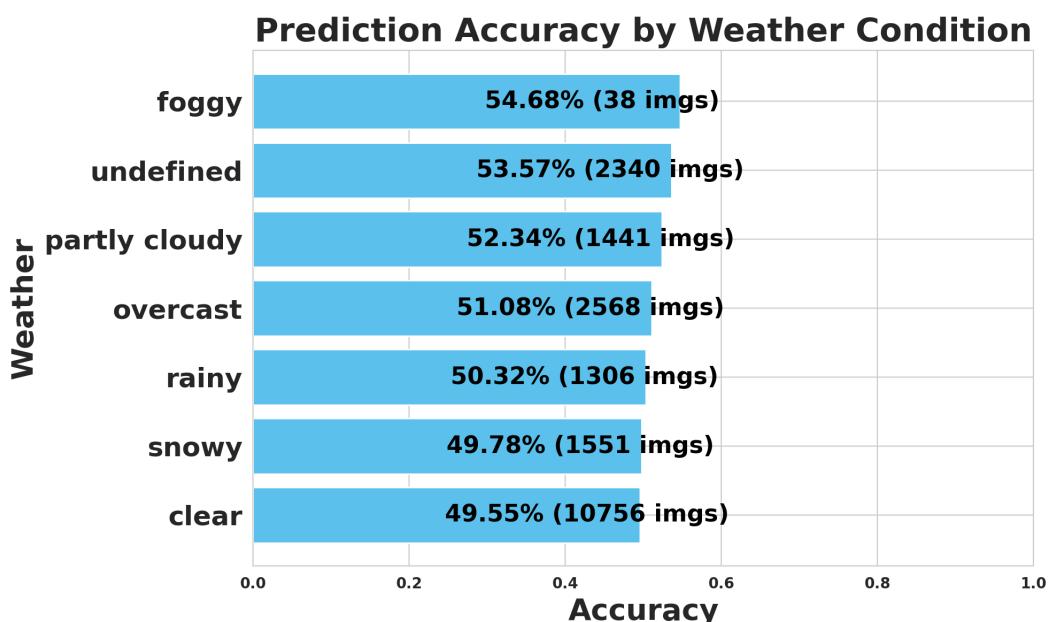
## Per-Class Performance

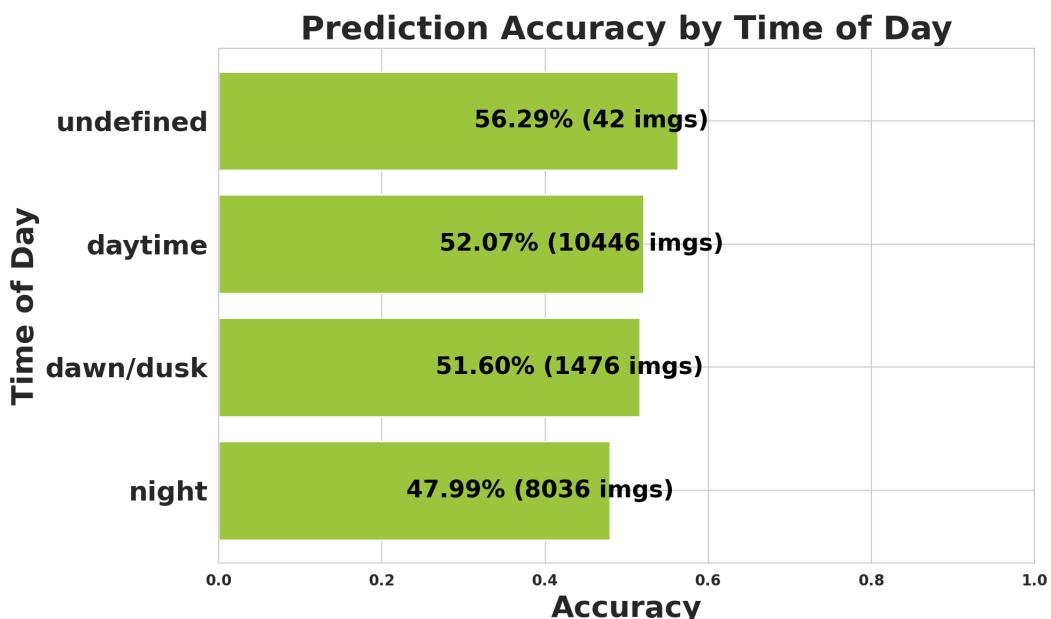
Class	TP	FP	FN	Precision	Recall	F1-Score	mAP@0.5
person	10291	14359	2063	0.4175	0.8330	0.5562	0.5373
rider	1	1293	756	0.0008	0.0013	0.0010	0.0104
car	97088	108061	12469	0.4733	0.8862	0.6170	0.6568
truck	0	8704	446	0.0000	0.0000	0.0000	0.0019
bus	0	3217	6	0.0000	0.0000	0.0000	0.0037
train	2	26	2782	0.0714	0.0007	0.0014	0.0003
motor	0	841	115	0.0000	0.0000	0.0000	0.0001
bike	1	1997	10089	0.0005	0.0001	0.0002	0.0001
traffic light	0	52840	9	0.0000	0.0000	0.0000	0.0000
traffic sign	385	68621	13420	0.0056	0.0279	0.0093	0.0327

# Comprehensive Failure Analysis

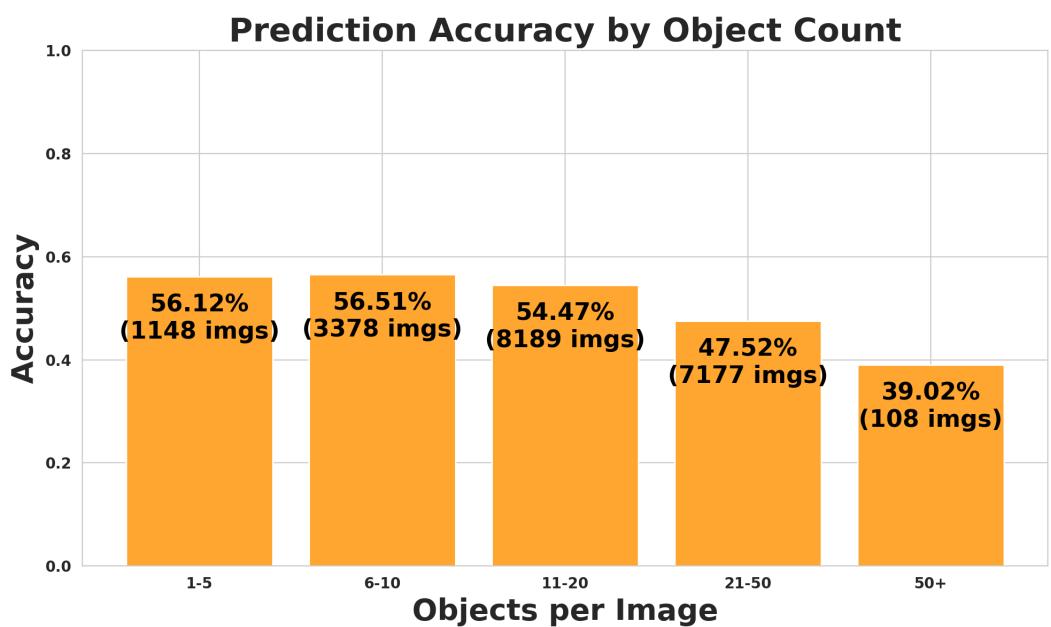
Metric	Value
Total Images Analyzed	20000
Total Expected Objects	367728
Total Matched Objects	185974
Overall Accuracy	50.57%

## Accuracy by Environmental Attributes

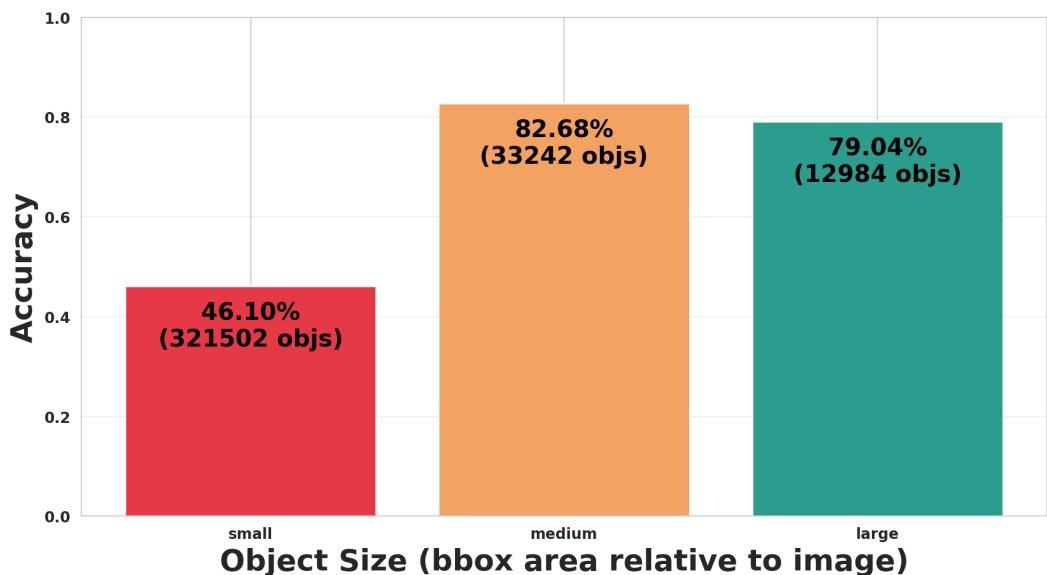




## Accuracy by Object Characteristics

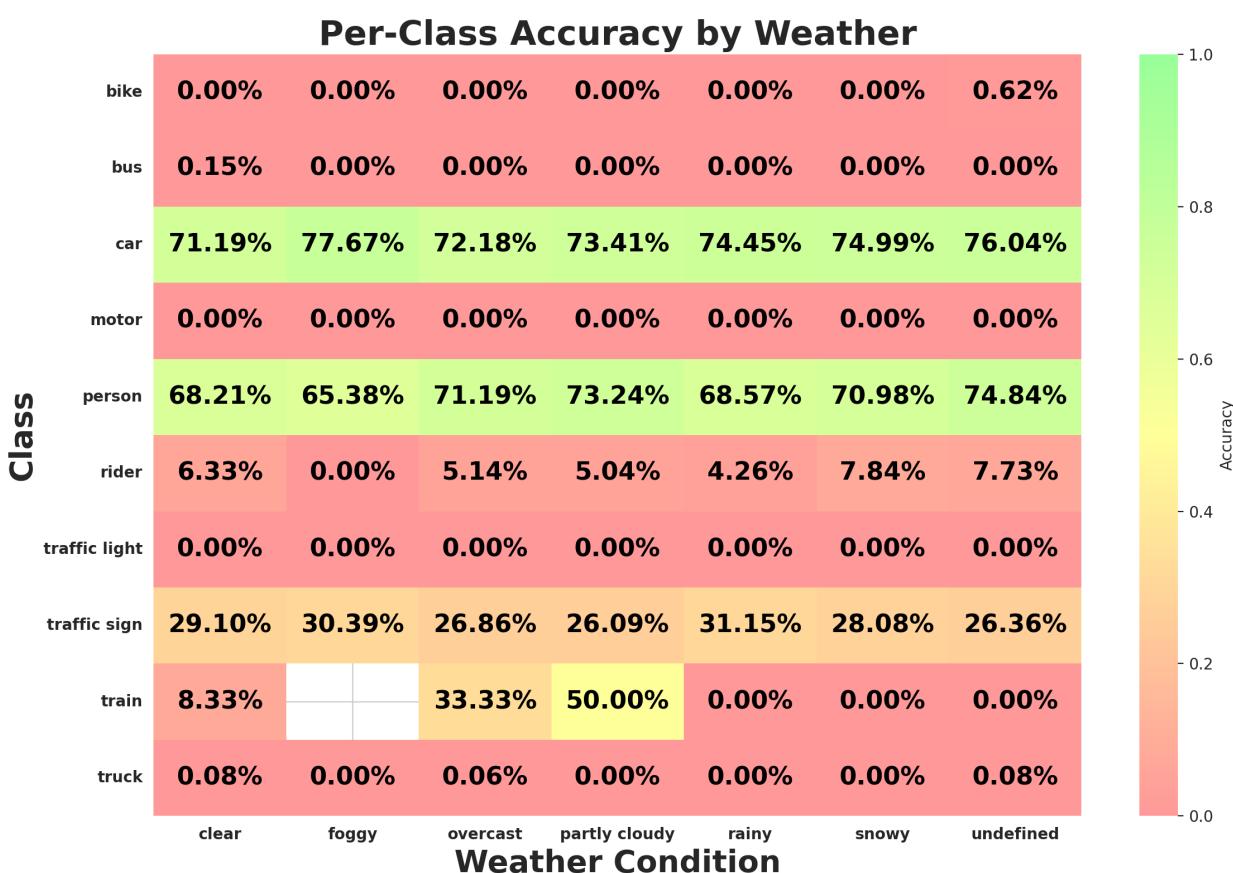
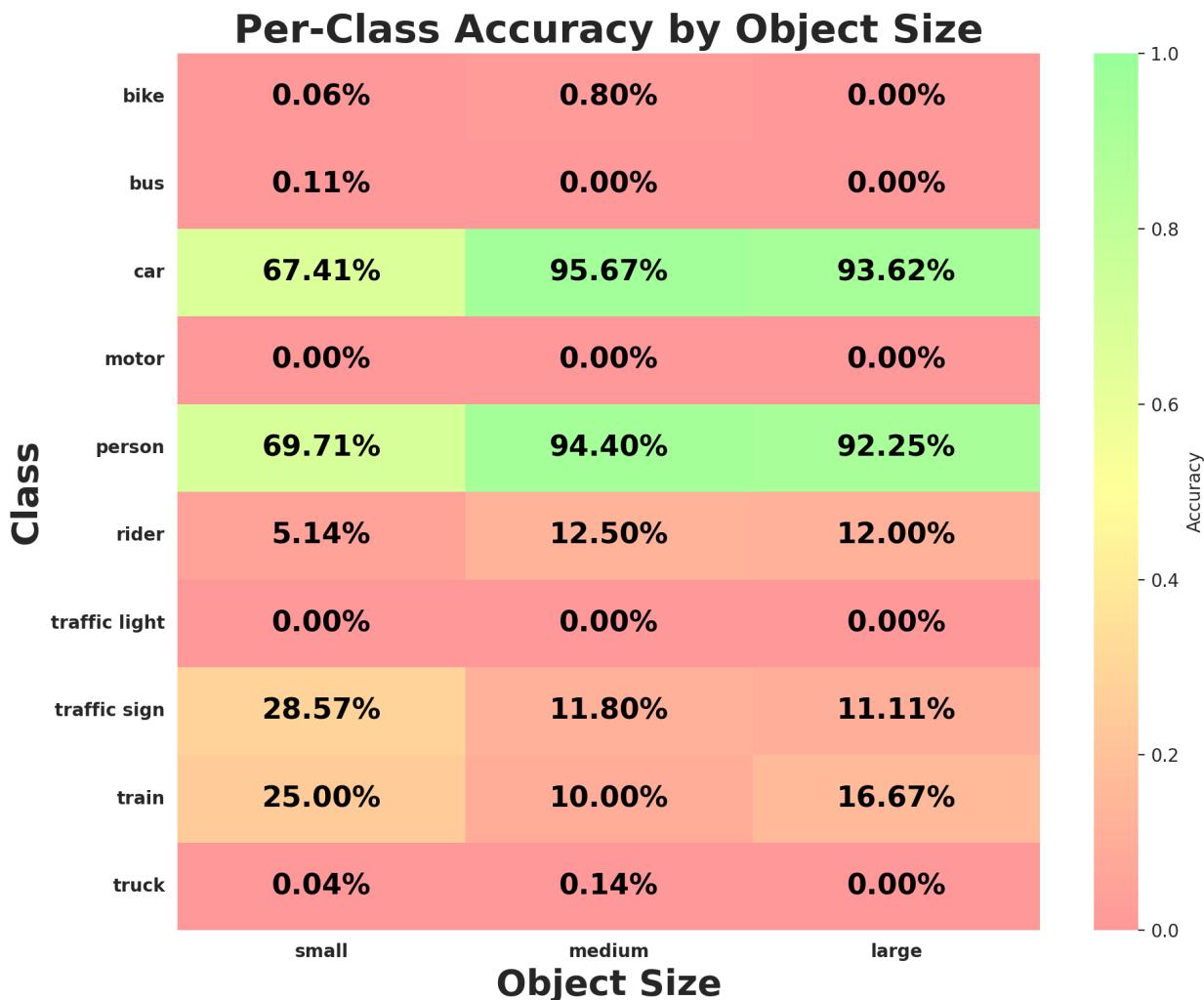


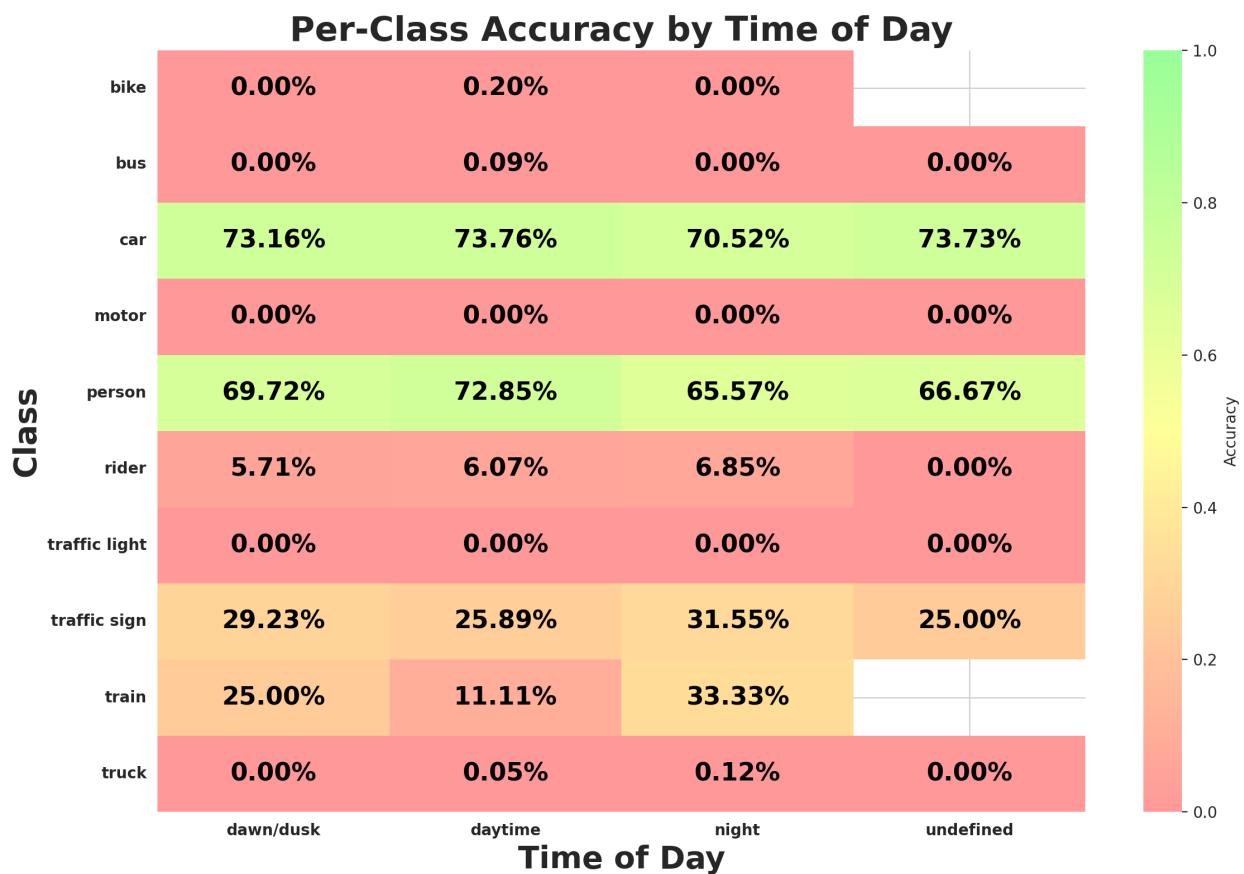
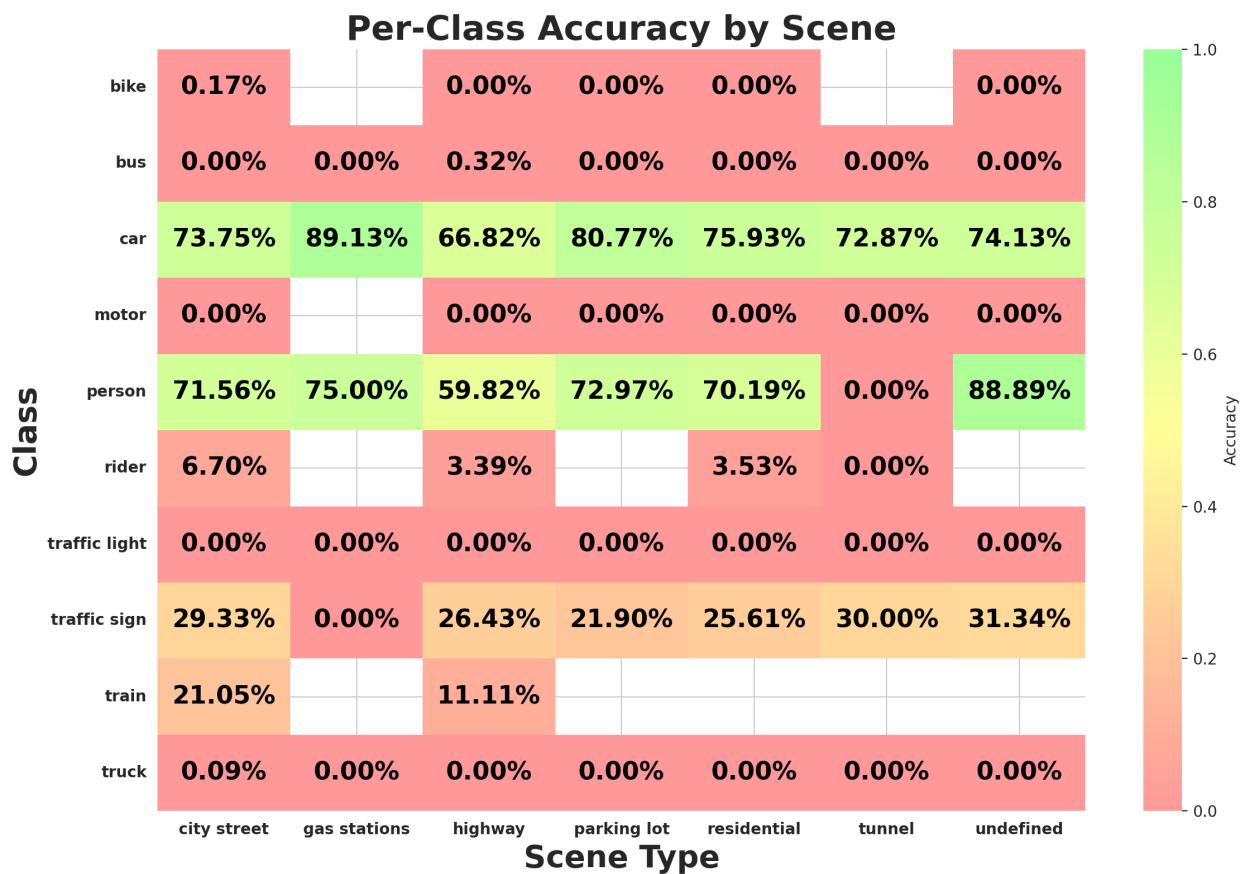
### Prediction Accuracy by Object Size



**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

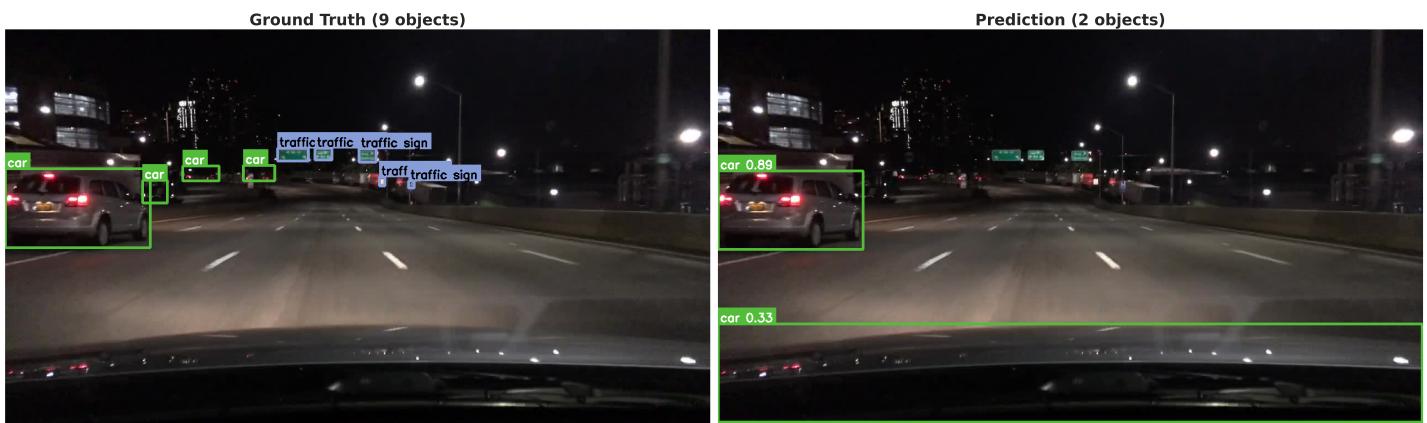
## Sample #1: e2cf66f3-9eb4405c.jpg

Ground Truth Objects: 9 | Predicted Objects: 3  
Weather: snowy | Scene: residential | Time of Day: night



## Sample #2: d0919794-dd9a8499.jpg

Ground Truth Objects: 9 | Predicted Objects: 2  
Weather: clear | Scene: highway | Time of Day: night



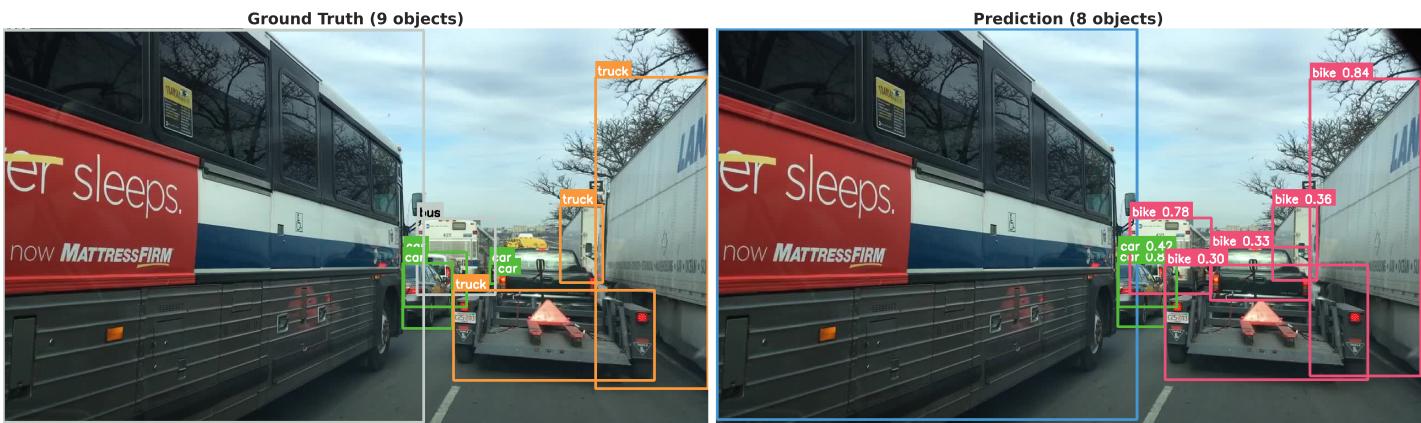
## Sample #3: f97e1e24-08501934.jpg

Ground Truth Objects: 14 | Predicted Objects: 7  
Weather: clear | Scene: highway | Time of Day: daytime



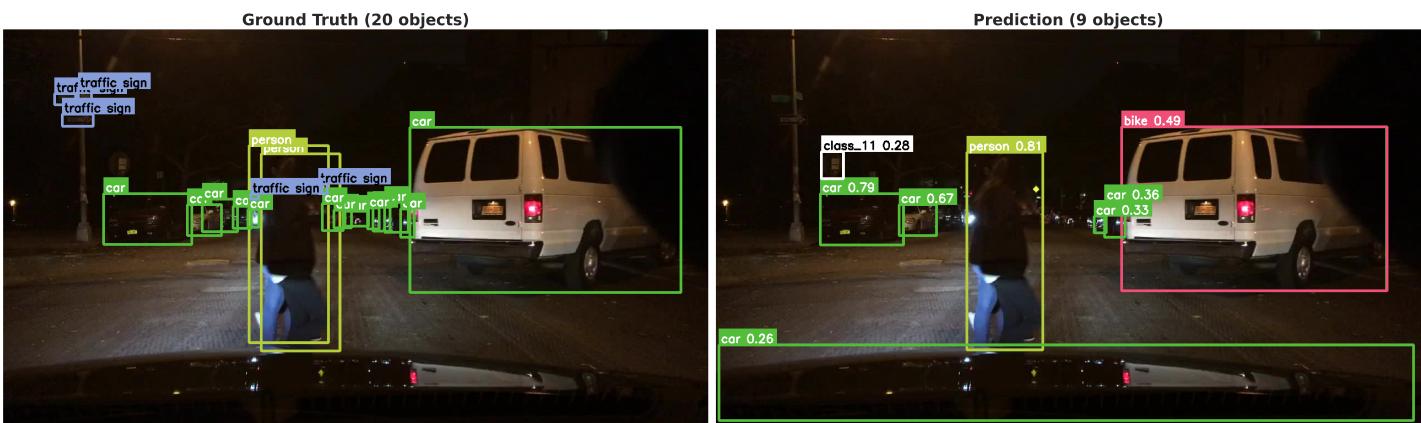
## Sample #4: cd0c8cf0-d78ca88f.jpg

Ground Truth Objects: 9 | Predicted Objects: 8  
Weather: overcast | Scene: city street | Time of Day: daytime



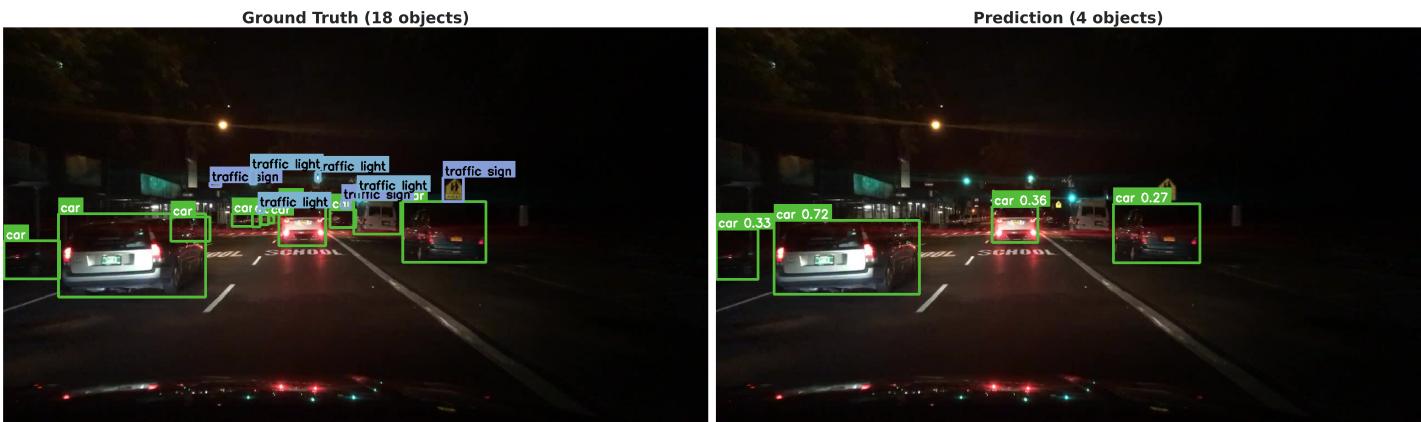
**Sample #5: dadac4d2-6e125ad4.jpg**

Ground Truth Objects: 20 | Predicted Objects: 9  
Weather: clear | Scene: city street | Time of Day: night



**Sample #6: d687fc7d-89dca92d.jpg**

Ground Truth Objects: 18 | Predicted Objects: 4  
Weather: clear | Scene: city street | Time of Day: night



Generated by YOLO Testing Pipeline