

# YOLO Model Testing Report

<b>Model:</b>	yolov10m
<b>Model Size:</b>	32.1 MB
<b>Parameters:</b>	16.6 M
<b>FLOPs (640x640):</b>	64.48 GFLOPs
<b>Run Name:</b>	yolov10m_testing_20251127_233752
<b>Timestamp:</b>	2025-11-27 23:52:35
<b>Dataset:</b>	bdd100k_yolo_limited - test split
<b>Images Processed:</b>	20000
<b>Total Execution Time</b>	106.00s
<b>IoU Threshold:</b>	0.5

## Inference Performance

Metric	Value
Average Inference Time	1.88 ms per image
FPS (Frames Per Second)	531.69

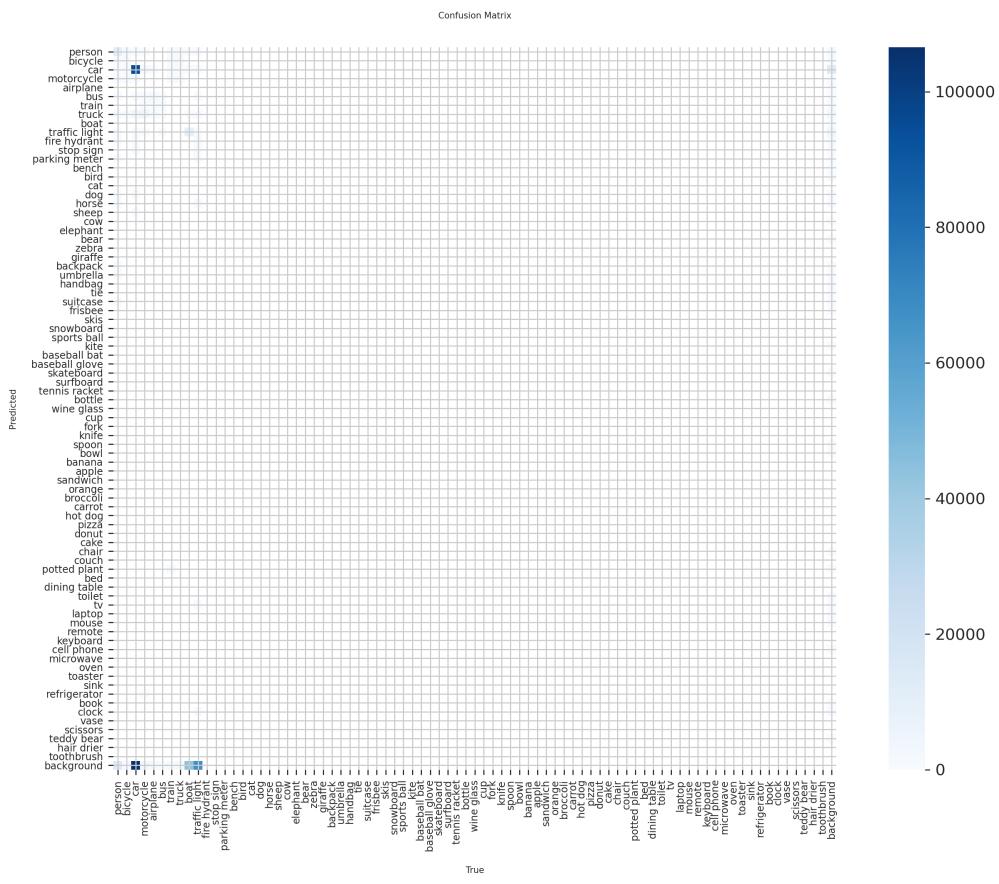
Note: Inference time includes preprocessing, model inference, and postprocessing.

## Overall Accuracy Metrics

Metric	Value
Precision	0.2876
Recall	0.7206
F1-Score	0.4111
mAP@0.5	0.1191
mAP@0.5:0.95	0.0666
True Positives	105753
False Positives	261974
False Negatives	40999

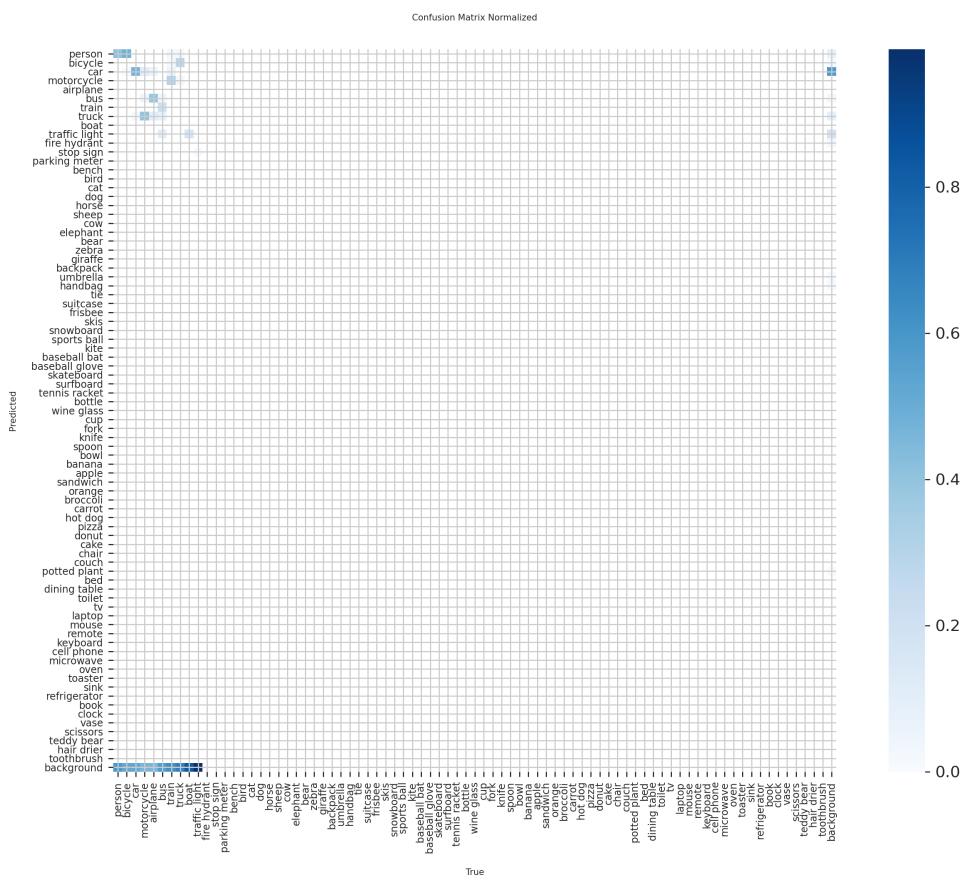
# Confusion Matrices

## Confusion Matrix (Counts)



Note: Shows raw prediction counts for each class combination.

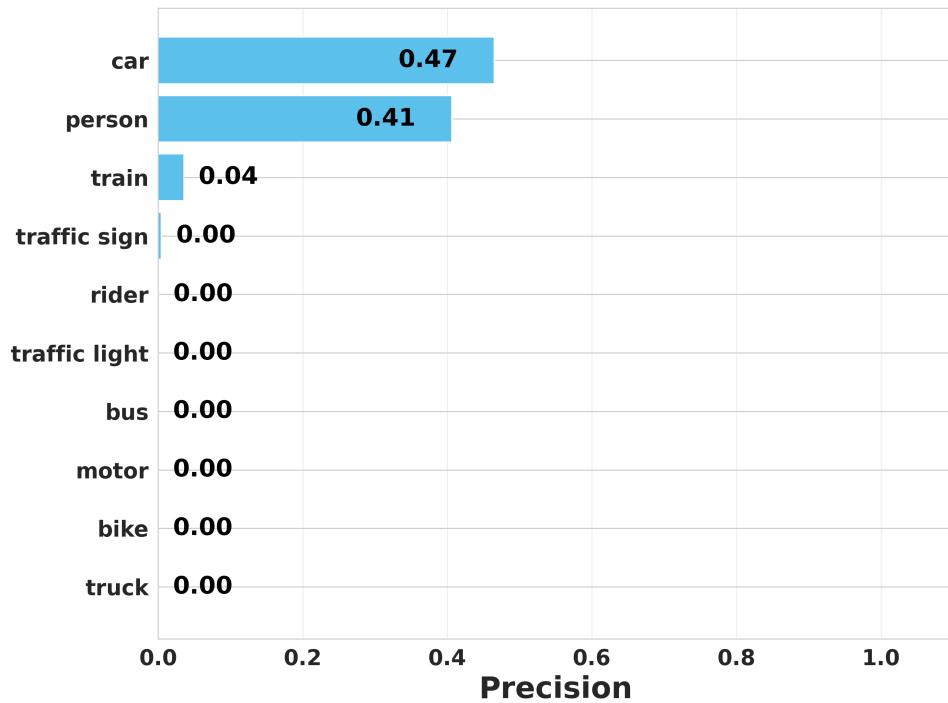
## Confusion Matrix (Normalized)



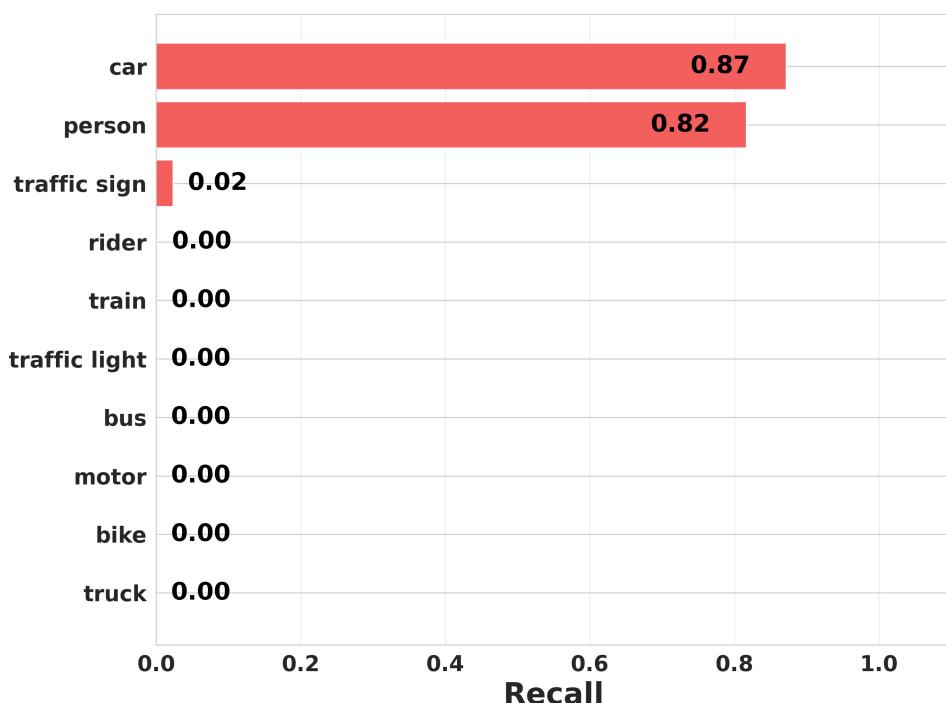
Note: Values are normalized by the number of ground truth instances per class. Shows the proportion of correct vs incorrect classifications.

# Performance Visualizations

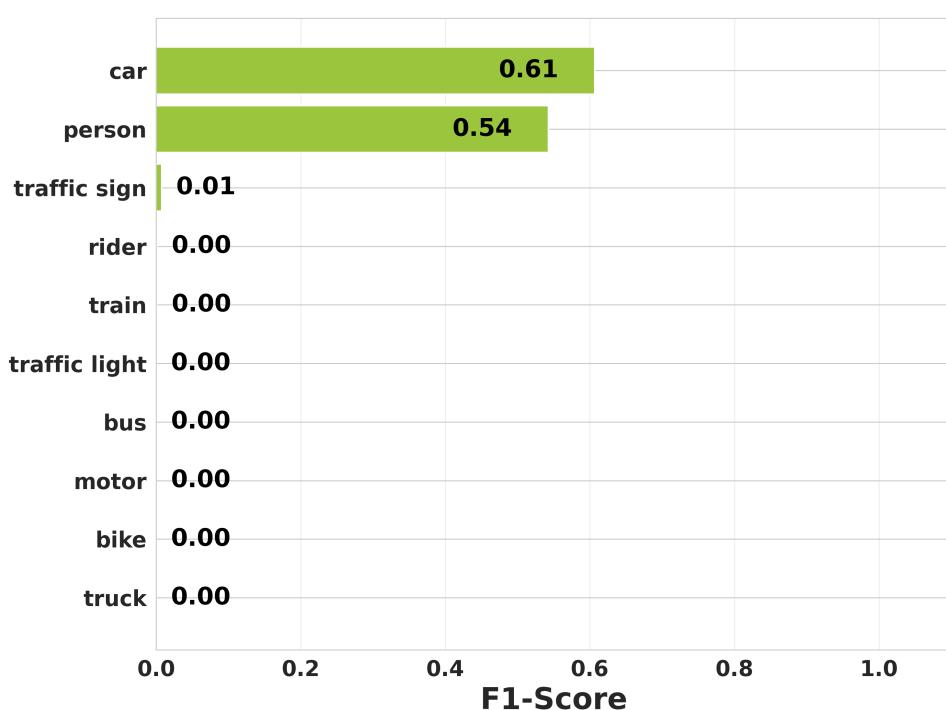
## Precision by Class



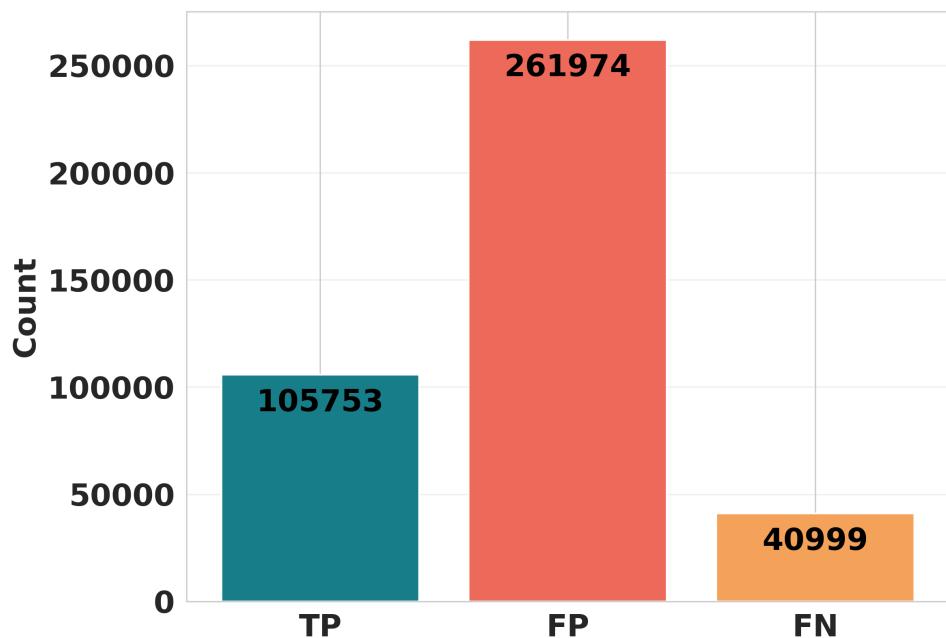
### Recall by Class



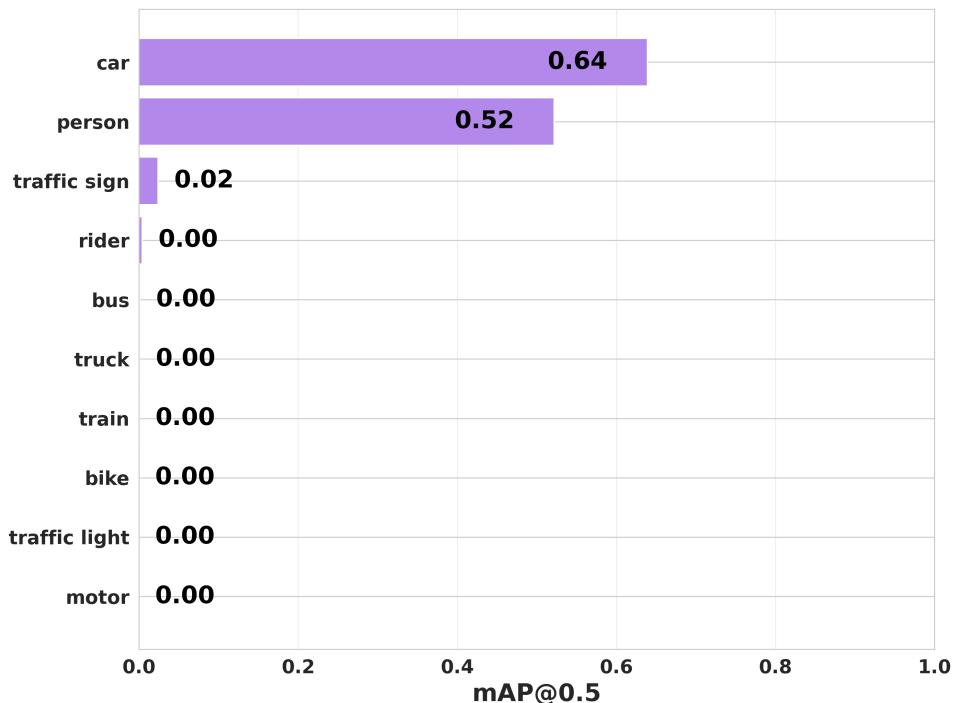
### F1-Score by Class



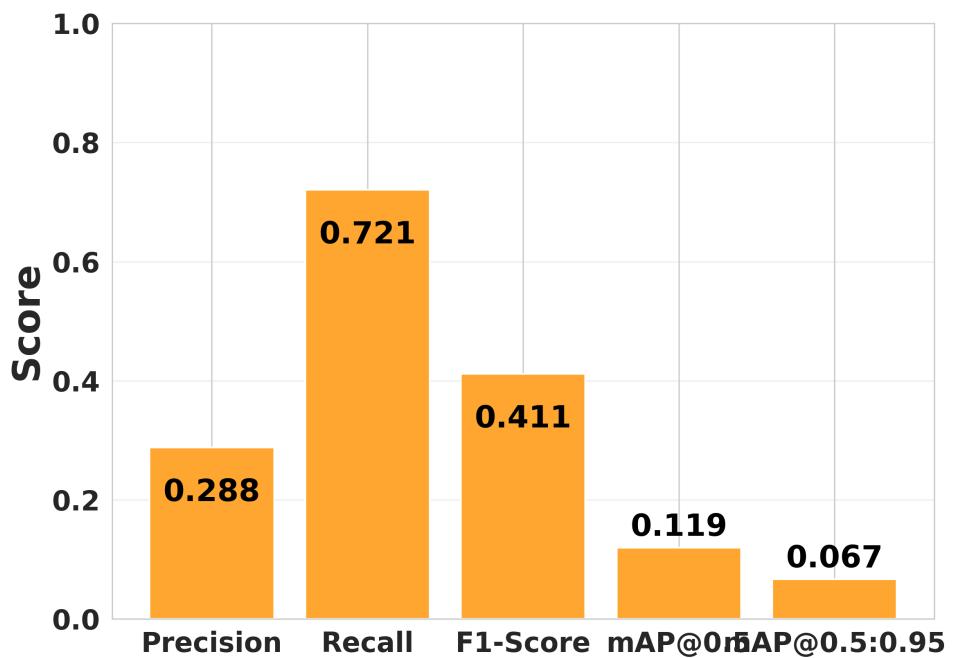
## Overall Detection Outcomes



## mAP@0.5 by Class



## Overall Metrics



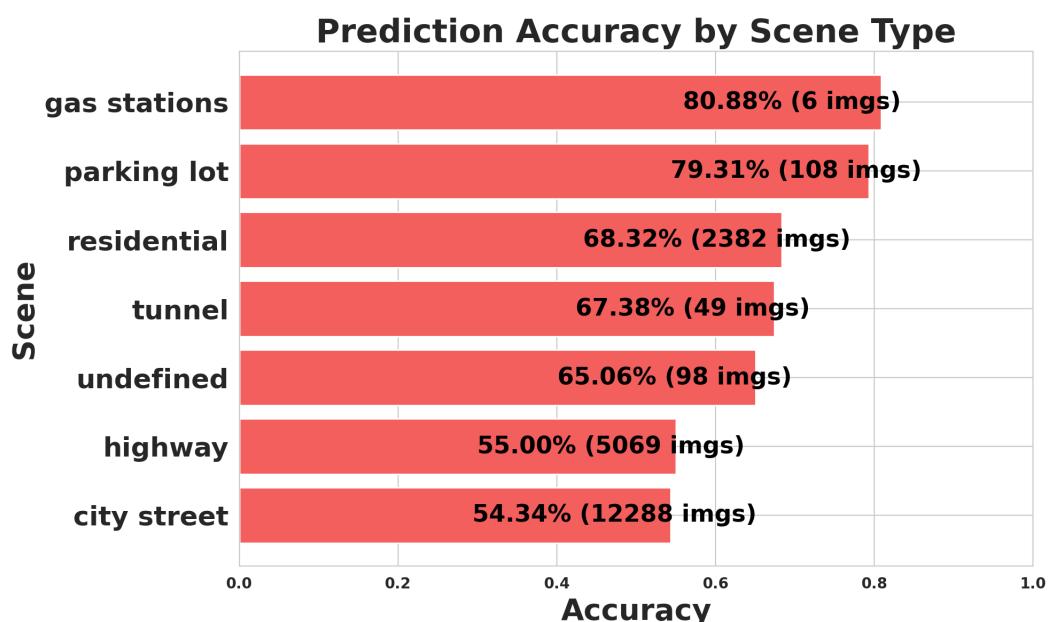
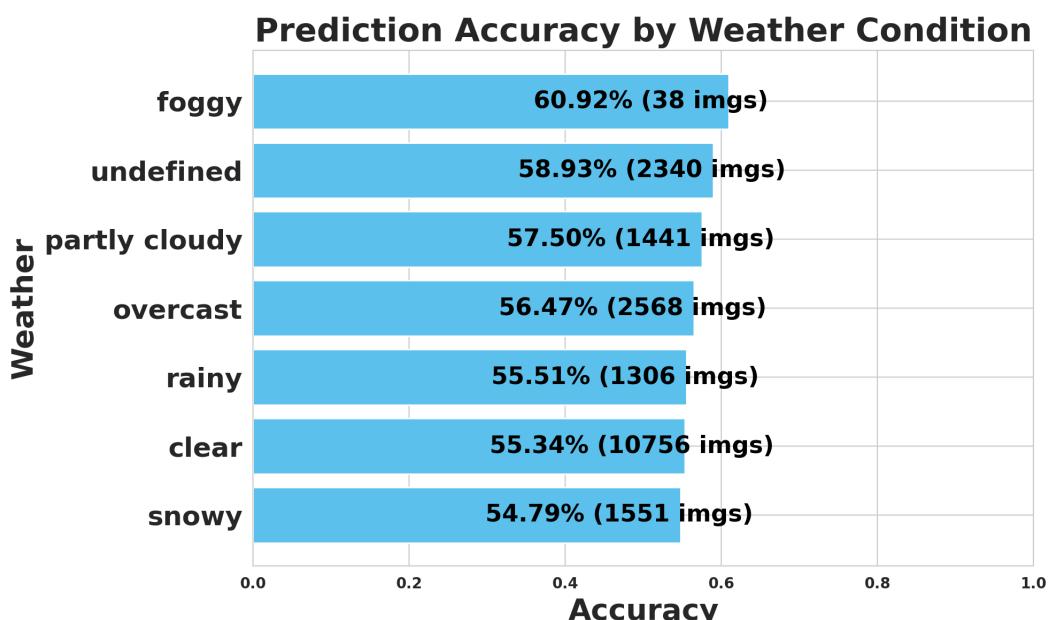
## Per-Class Performance

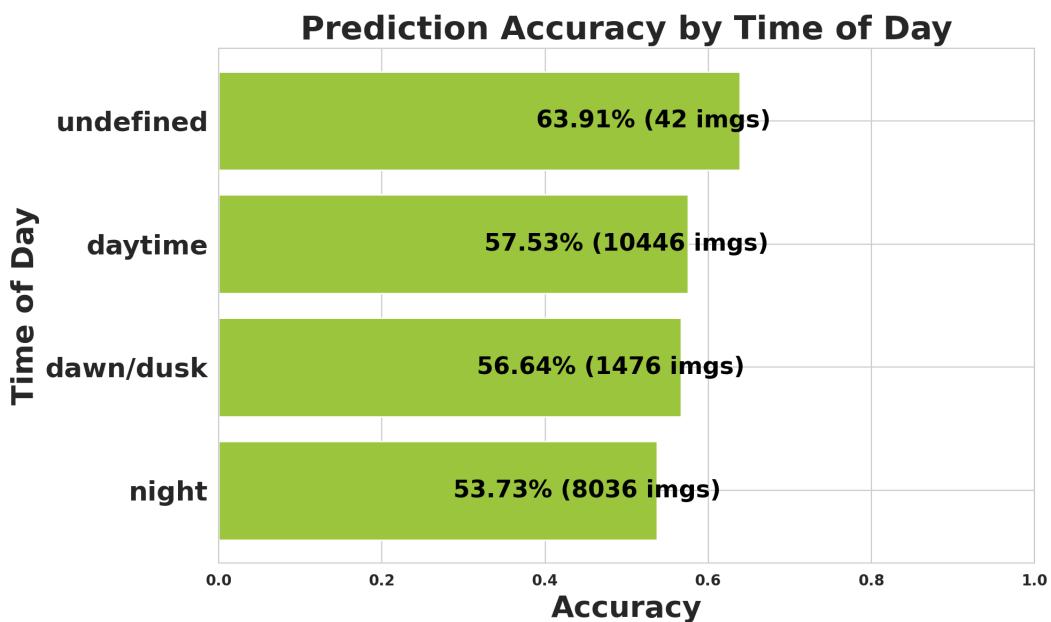
Class	TP	FP	FN	Precision	Recall	F1-Score	mAP@0.5
person	10010	14640	2247	0.4061	0.8167	0.5424	0.5218
rider	1	1293	699	0.0008	0.0014	0.0010	0.0041
car	95433	109716	14034	0.4652	0.8718	0.6067	0.6390
truck	0	8704	390	0.0000	0.0000	0.0000	0.0006
bus	0	3217	5	0.0000	0.0000	0.0000	0.0012
train	1	27	2294	0.0357	0.0004	0.0009	0.0003
motor	0	841	70	0.0000	0.0000	0.0000	0.0000
bike	0	1998	8417	0.0000	0.0000	0.0000	0.0000
traffic light	0	52840	1	0.0000	0.0000	0.0000	0.0000
traffic sign	308	68698	12842	0.0045	0.0234	0.0075	0.0240

# Comprehensive Failure Analysis

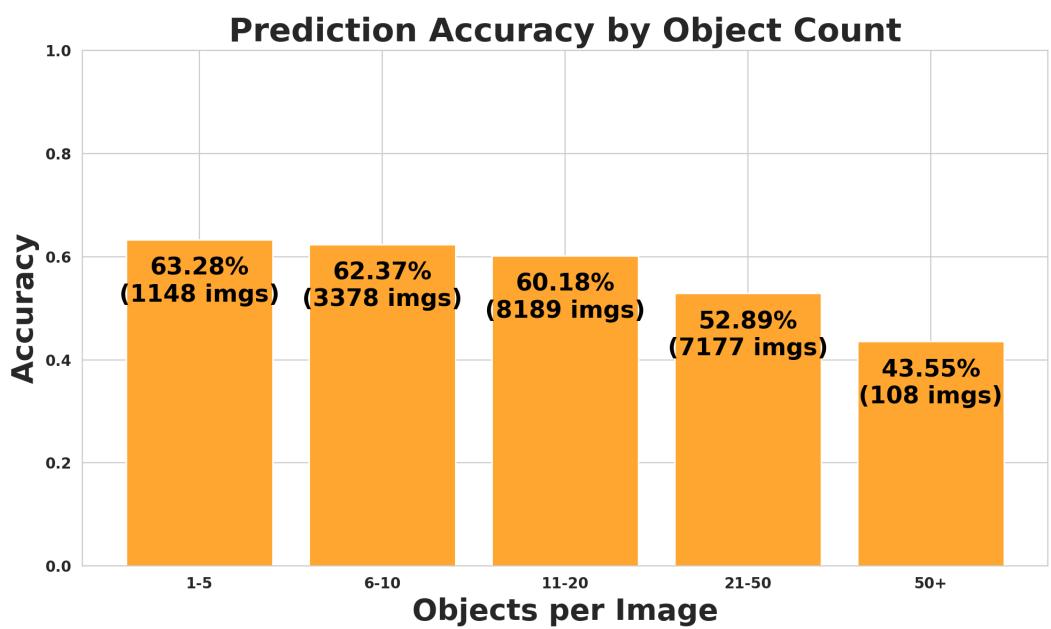
Metric	Value
Total Images Analyzed	20000
Total Expected Objects	367728
Total Matched Objects	206323
Overall Accuracy	56.11%

## Accuracy by Environmental Attributes

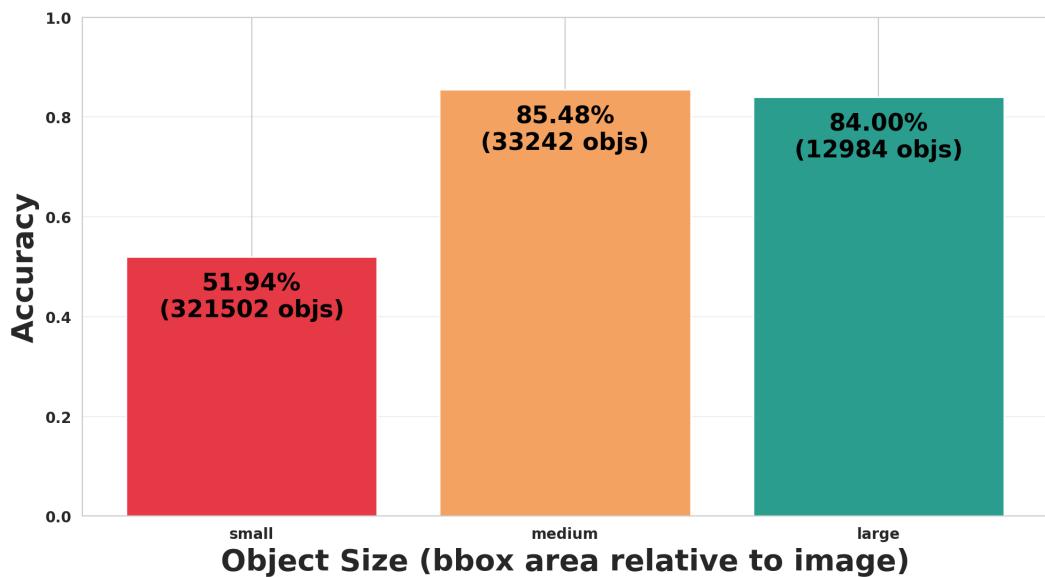




## Accuracy by Object Characteristics

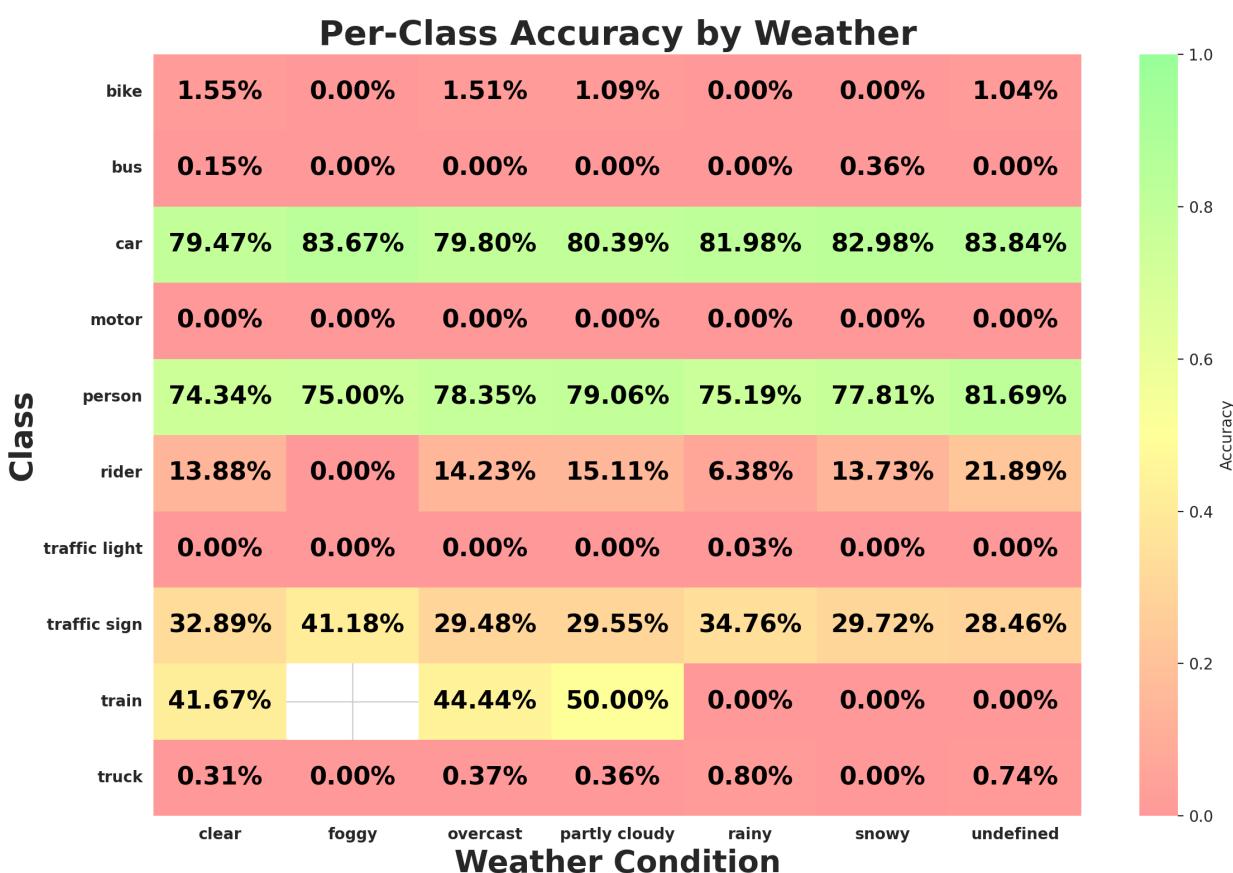
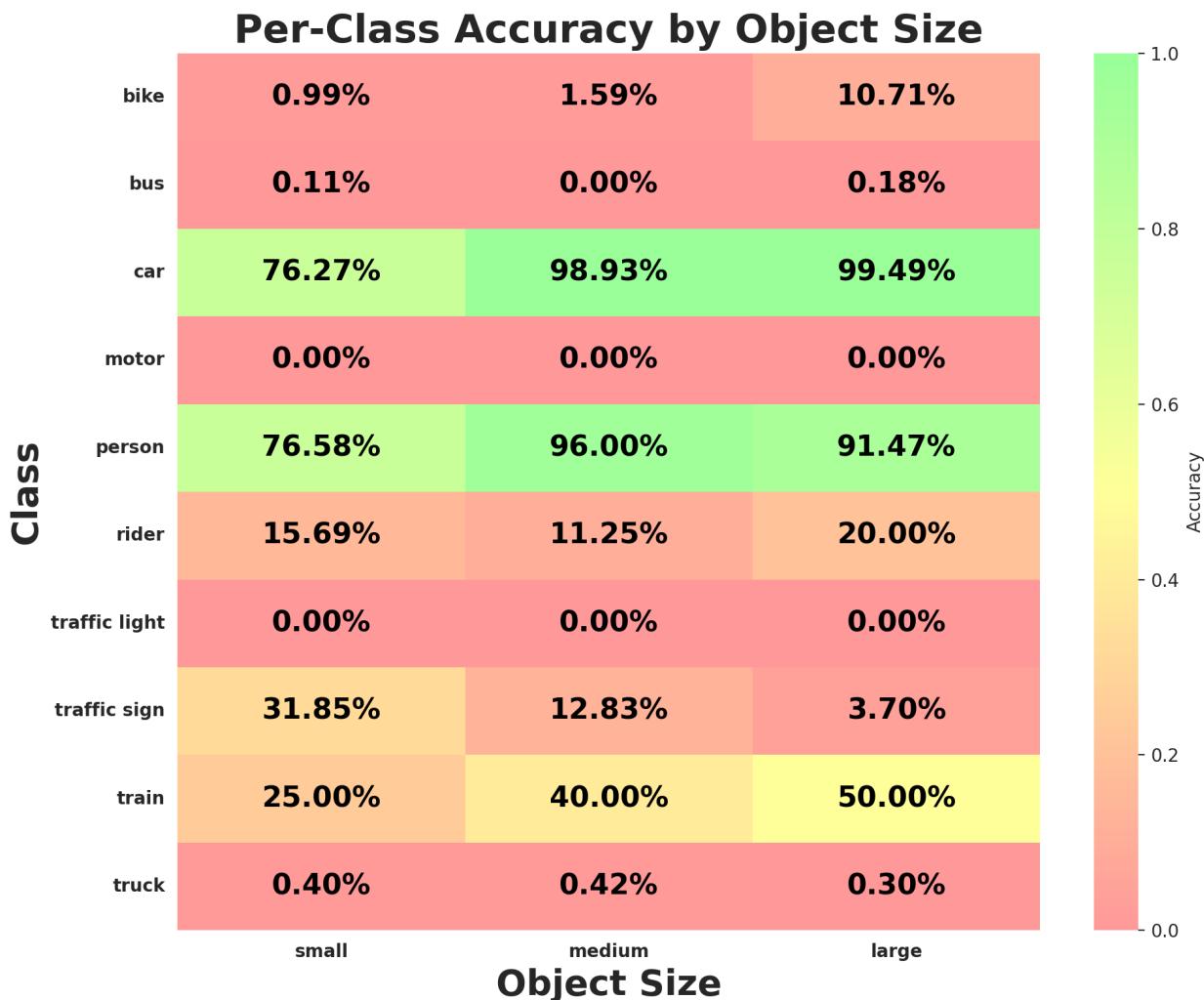


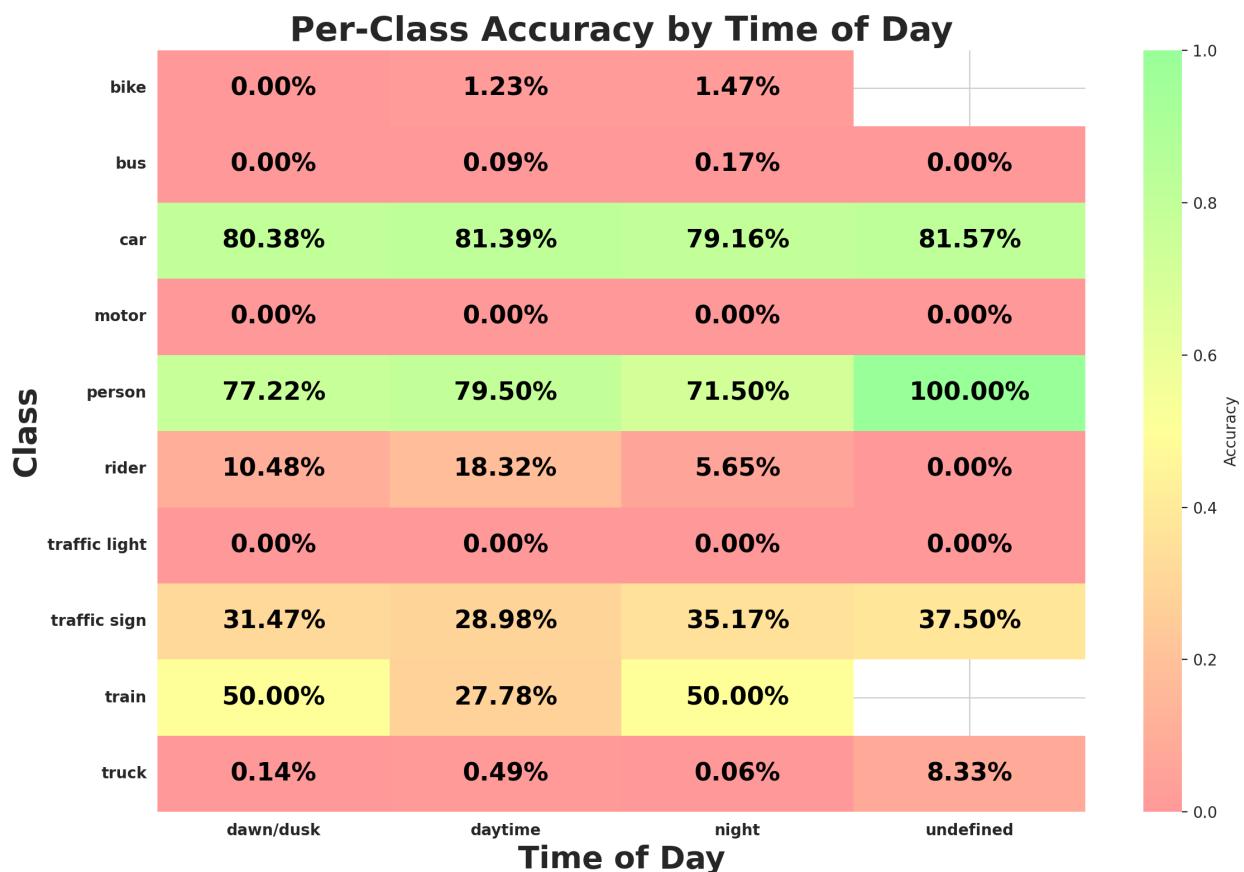
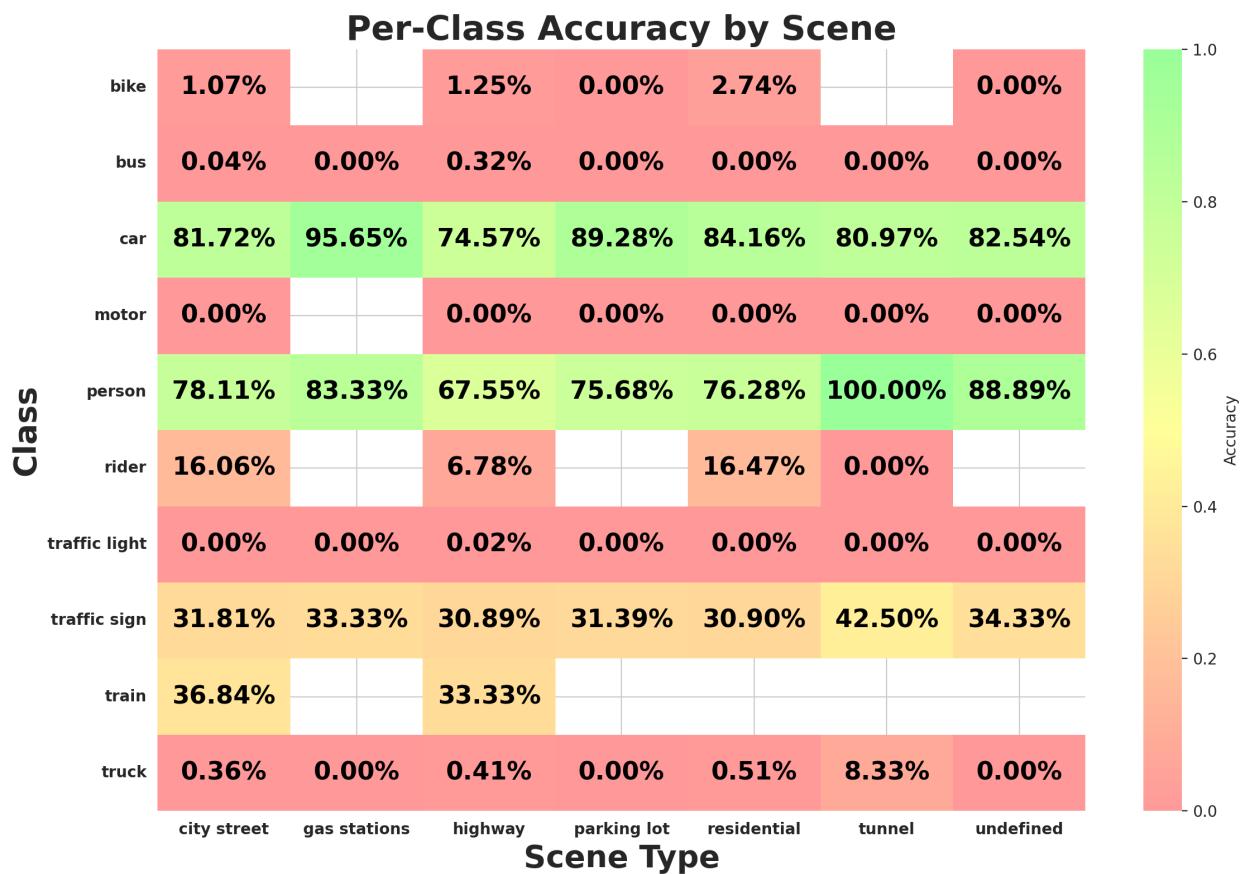
### Prediction Accuracy by Object Size



**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: f03ef8ec-230ffc7d.jpg

Ground Truth Objects: 41 | Predicted Objects: 12

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



## Sample #2: f52e364a-d7557276.jpg

Ground Truth Objects: 26 | Predicted Objects: 9

Weather: rainy | Scene: residential | Time of Day: daytime



## Sample #3: debc5560-a7774a53.jpg

Ground Truth Objects: 12 | Predicted Objects: 3

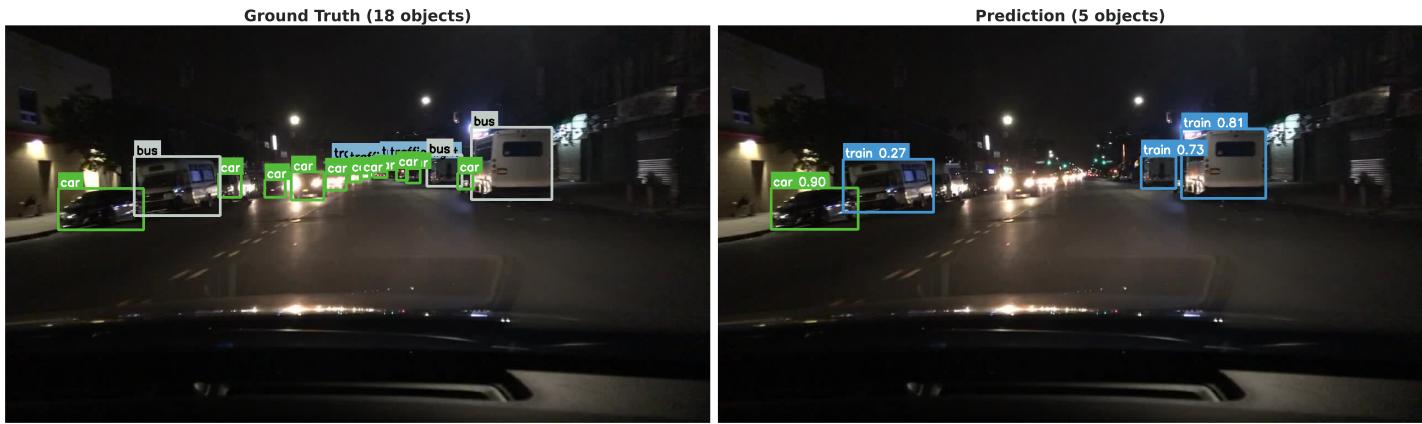
Weather: undefined | Scene: highway | Time of Day: daytime



## Sample #4: e94026cf-de3a0bd5.jpg

Ground Truth Objects: 18 | Predicted Objects: 5

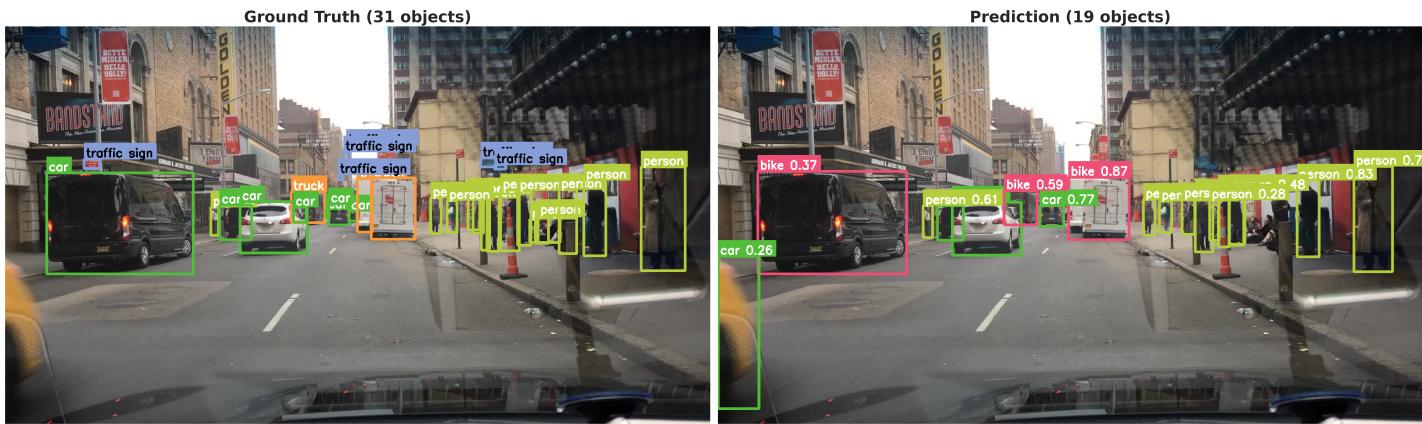
Weather: clear | Scene: city street | Time of Day: night



**Sample #5: cfc1934b-b876008c.jpg**

Ground Truth Objects: 31 | Predicted Objects: 19

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



**Sample #6: f31085fc-9ebc28c7.jpg**

Ground Truth Objects: 11 | Predicted Objects: 6

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



Generated by YOLO Testing Pipeline