

Suggested Prompt for You to Use

"I have a pedestrian detection dataset and I ran visualizations (age vs crossing, gender vs crossing, distraction, hand signals, relative position, etc.). I want you to:

1. Extract the **key findings** from each visualization.
2. Turn them into **clear Q&A format** (like a quiz or discussion points).
3. Provide **concise explanations** that link the visualization to the insight.
4. Highlight **statistical evidence** (like p-values, probabilities, percentages) whenever available.
5. Suggest how these findings could be **useful in real-world autonomous car decision-making**."

Perfect — now I'll follow your prompt and turn the visualizations into **Q&A with key findings, evidence, and real-world implications for autonomous cars** 🚗.

Pedestrian Detection – Key Findings as Q&A

1. Crossing vs Waiting

Q: Are pedestrians more likely to cross or wait?

A: About **61.5% crossed** while **38.5% waited**.

Explanation: The majority of pedestrians chose to cross.

Autonomous Car Insight: Cars should expect pedestrians to cross in most cases, so crossing prediction should bias towards anticipating crossing.

2. Age and Crossing

Q: Do children, adults, and seniors behave differently when crossing?

A: Yes. **Adults and children crossed more often**, while **seniors tended to wait**, especially

when distracted or on the sidewalk.

Evidence: Example: Senior + distracted + on sidewalk → **100% waited**. Adult + attentive + not on sidewalk → **100% crossed**.

Autonomous Car Insight: Age is a strong context signal; seniors may require extra caution as they hesitate more.

3. Gender and Crossing

Q: Does gender affect crossing behavior?

A: No significant effect. **Both males and females showed similar crossing behavior** (Chi-square $p = 0.2482 > 0.05$).

Explanation: Gender alone does not predict crossing reliably.

Autonomous Car Insight: Gender should not be prioritized in pedestrian intent prediction models.

4. Distraction and Crossing

Q: Are distracted pedestrians more or less likely to cross?

A: **Distracted pedestrians almost never crossed**. Bayesian probability of crossing given distracted = **0.0**.

Evidence: All distracted pedestrians waited.

Autonomous Car Insight: Detecting distraction (e.g., phone use) is crucial; cars can assume lower crossing risk but must still monitor closely.

5. Hand Signal and Crossing

Q: Does giving a hand signal increase the chance of crossing?

A: Surprisingly, **hand-signal users mostly waited**, while **non-hand-signal users crossed** (Chi-square $p \approx 0.0685$, borderline significance).

Autonomous Car Insight: Hand gestures may not always indicate intent to cross. Cars must interpret signals carefully, not as a guaranteed crossing action.

6. Relative Position and Crossing

Q: Does being closer to the road make pedestrians more likely to cross?

A: Yes. Pedestrians **near the curb were more likely to cross** compared to those in the middle or far.

Autonomous Car Insight: Distance from curb is a strong spatial cue — near curb = higher crossing likelihood.

7. Dress Code and Crossing

Q: Does dress style (Casual vs Formal) affect crossing?

A: No clear difference — crossing behavior was similar across dress styles.

Autonomous Car Insight: Clothing is not a reliable predictor.

8. Location and Crossing

Q: Does location (onSideWalk vs notOnSidewalk) affect crossing?

A: Yes. Pedestrians **not on the sidewalk were more likely to cross**.

Autonomous Car Insight: Cars should give higher crossing probability to pedestrians already off the sidewalk.

9. Combined Profiles

Q: How do combined factors (age + distraction + location) influence crossing?

A:

- **Adult + not distracted + not on sidewalk → 100% crossed.**
- **Senior + distracted + on sidewalk → 100% waited.**

Autonomous Car Insight: Risk prediction should consider **multi-factor profiles**, not single features.

10. Statistical Tests

Q: Which factors are statistically significant?

A: None of the single variables (age, gender, distraction, hand signals, location, position) had strong significance (all $p > 0.05$).

Explanation: Crossing is influenced by **interactions**, not single categories.

Autonomous Car Insight: Models should use feature interactions (e.g., age × distraction × location) to improve predictions.

11. Feature Importance (Modeling)

Q: Which features are most important for prediction?

A: The Random Forest model highlighted **location, distraction, age, and relative position** as top predictors.

Autonomous Car Insight: These features should be prioritized in real-time detection systems.
