Reducing EV Costs for High-Use Drivers

Evaluating EV Affordability for Rideshare Drivers in CA

Behavior, Energy & Climate Change Conference

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Why Are We Electrifying Ridesharing?

Policy context	Starting in 2023, the California Clean Miles Standard (CMS) set by the California Public Utilities Commission (CPUC) **mandates that transportation network companies (TNCs) achieve progressively higher percentages of electric vehicle miles traveled (eVMT)**, aiming for full electrification by 2030.[1]
Problem	EVs are **too expensive** for low-income rideshare drivers.

1. California Public Utilities Commission. (2023). Clean Miles Standard. California Public Utilities Commission. Retrieved from https://www.cpuc.ca.gov/regulatory-services/licensing/transportation-licensing-and-analysis-branch/clean-miles-standard

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Why TNCs Matter to GHG Reductions

- TNC (Uber, Lyft, etc.) drivers **account for at least 14% of total VMT** in major U.S. urban cities.[2]
- In CA, TNC vehicles drive an **average of 180 miles per day,** nearly **eight times more than a typical personal vehicle**, and emit 50% more GHG per passenger mile travelled.[3]
- Transitioning TNC drivers to EVs offers an efficient and high-impact pathway to **advance CA's climate and air quality goals**.

2. San Francisco County Transportation Authority. (2017). TNCs Today: A profile of San Francisco transportation network company activity. SFCTA. https://www.sfcta.org/projects/tncs-today
3. Fleming, K. L., & Cohen D'Agostino, M. (2020). *Policy pathways to TNC electrification in California* [Issue paper]. UC Davis Policy Institute for Energy, Environment, and the Economy. https://escholarship.org/uc/item/9zx112v2

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Purpose of the Study

Examine the **impact** of **a given financial incentive** on **EV affordability** to support achievement of CA climate and air quality goals while taking drivers' **financial burdens** into account:

- $10,400 proposed CPUC EV incentive.
- Monthly EV financing and operational costs (**Expense ratio**).

1. California Public Utilities Commission. (2023). Clean Miles Standard. California Public Utilities Commission. Retrieved from https://www.cpuc.ca.gov/regulatory-services/licensing/transportation-licensing-and-analysis-branch/clean-miles-standard

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Affordability Definition and Calculations

TOTAL MONTHLY OPERATING COSTS

$$< \left(\frac{\text{15\% of monthly income}}{\text{household purchase power adjustment}} \right)$$

- 10% down payment
- 5-year (60-month) loan

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Cost Calculation Components

Loan Costs

- Principal
  (incl. tax & fees)
- Interest

+

Operating Costs

- Insurance
- Fuel
- Average maintenance

=

TOTAL MONTHLY OPERATING COSTS

- Illustrative BEV and household income assumptions based on Clean Vehicle Rebate Project (CVRP) consumer survey (2020-2023) (See Appendix)
- Finance & Operating Costs assumptions (See Appendix)

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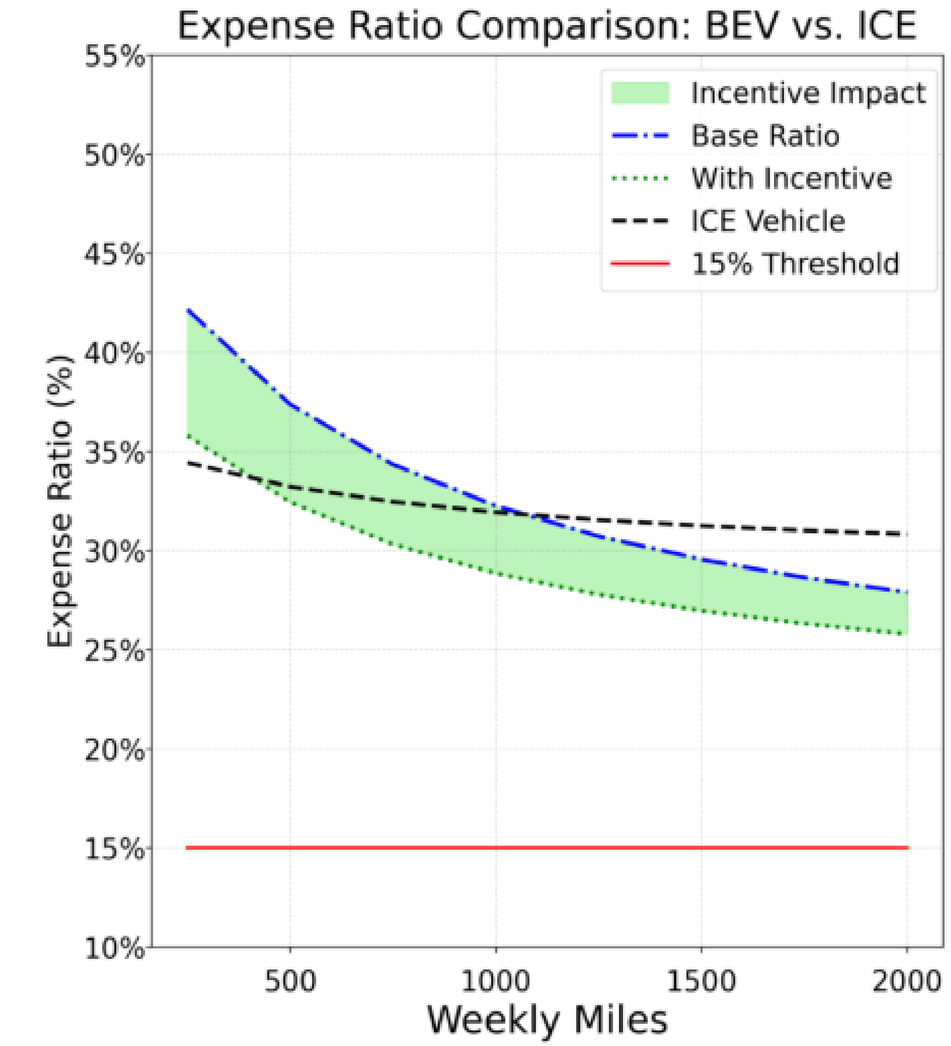
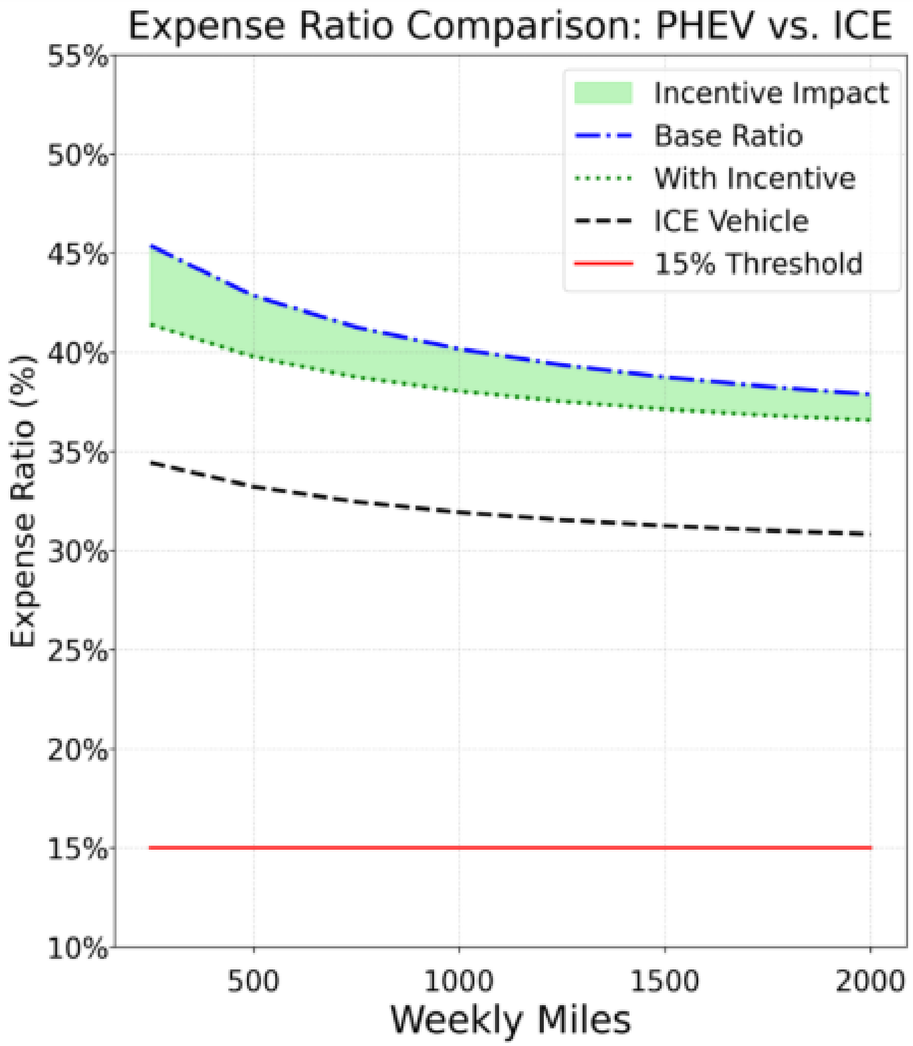
Illustrative EV and Comparable ICEV*





*Illustrative BEV: 2023 Tesla Model 3 Long Range AWD ($40,240)
PHEV: 2023 Toyota Prius Prime ($39,170)
ICEV: 2023 Toyota Corolla ($26,850)

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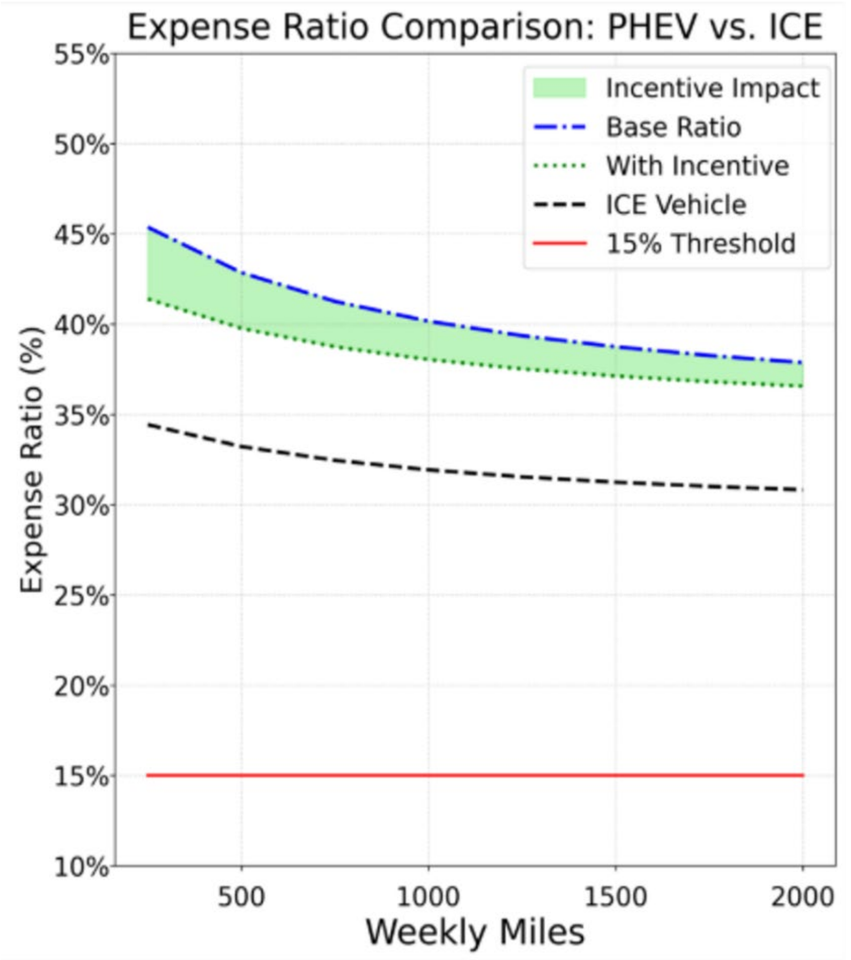
PHEV vs ICE

The PHEV maintains a higher monthly expense ratio than the ICEV across all mileage scenarios



PHEV: 2023 Toyota Prius Prime ($39,170); ICEV: 2023 Toyota Corolla ($26,850)

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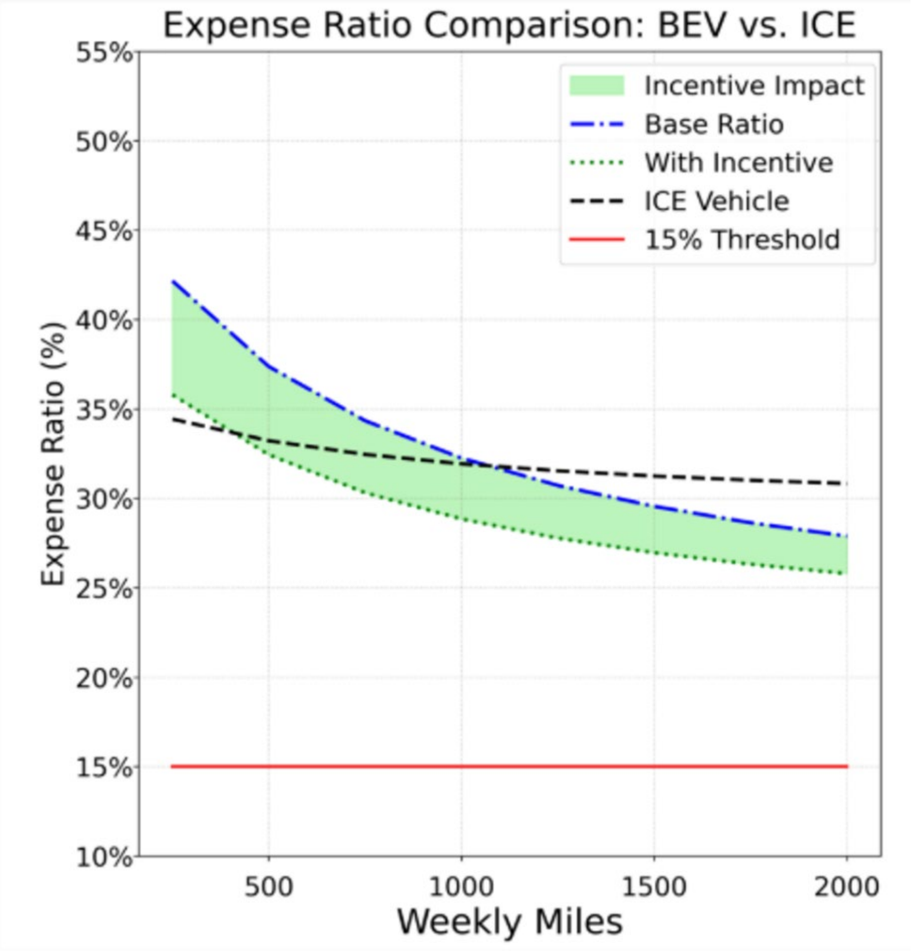
BEV vs ICE

However, the BEV – both with and without an incentive – become more cost-effective as usage (mileage) increases.

Incentives improve affordability, so what do we do to get closer to the 15% affordability threshold?



BEV: 2023 Tesla Model 3 Long Range AWD ($40,240); ICEV: 2023 Toyota Corolla ($26,850)

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Conclusion

- For drivers covering at least 500 miles per week, a purchase incentive (e.g., $10,400+) is key to improving affordability for a $40,000 BEV
- A coordinated mix of incentives further improves affordability (see Appendix sensitivity analysis):
  - Purchase incentive of $10,000+
  - Charging cost reductions
  - Low-interest financing (e.g., 8% cap)
  - Per-mile wage increases

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Appendix

Characteristics of Rideshare Driver Participants in CVRP*

CSE administered a voluntary survey of CVRP participants

- 2020-2023 edition.
- 610 out of 25,052 survey respondents reported using their rebated vehicle for TNC driving.

TNC characteristics	Findings
Highly urban	Most live in Los Angeles (29%), Orange (18%), San Diego (8%)
Low-income	51% received increased rebates
Reliant on Public Charging	26% use only public charging
Most rebated vehicle	2023 Tesla Model 3 Long Range AWD ($40K BEV)
Larger households	$50-70k annual income with 4 individuals per household

*CVRP = Clean Vehicle Rebate Project

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Finance and Operational Costs Assumptions

Finance Costs	
Down payment	10% of vehicle MSRP
Vehicle MSRP	$40,240 (BEV), $26,850 (ICE), $39,170 (PHEV)
Household income	$50,000
Household size	4
Insurance costs per month	$337 (BEV and PHEV), $281 (ICE)
Annual percentage rate on car loan	7.3%
Loan term	5 years (60 months)
TNC incentive	$10,400

Variable Costs	
Vehicle maintenance per mile	BEV ($0.06), ICE ($0.10), PHEV ($0.09)
TNC wages per mile	$1.31
Billable TNC miles	70% of total VMT
Weekly TNC VMT	250
Electricity rate or charging costs per kWh	$0.40 (DC fast charging), $0.30 (Level 2 Charging)
Fuel costs per gallon	$4.365
EPA fuel economy (kWh/mile or gal/mile)	0.26 (BEV), 0.029 (ICE), 0.29 kWh/mile and 0.021/mile (PHEV)
Incentive amount	**$10,400**

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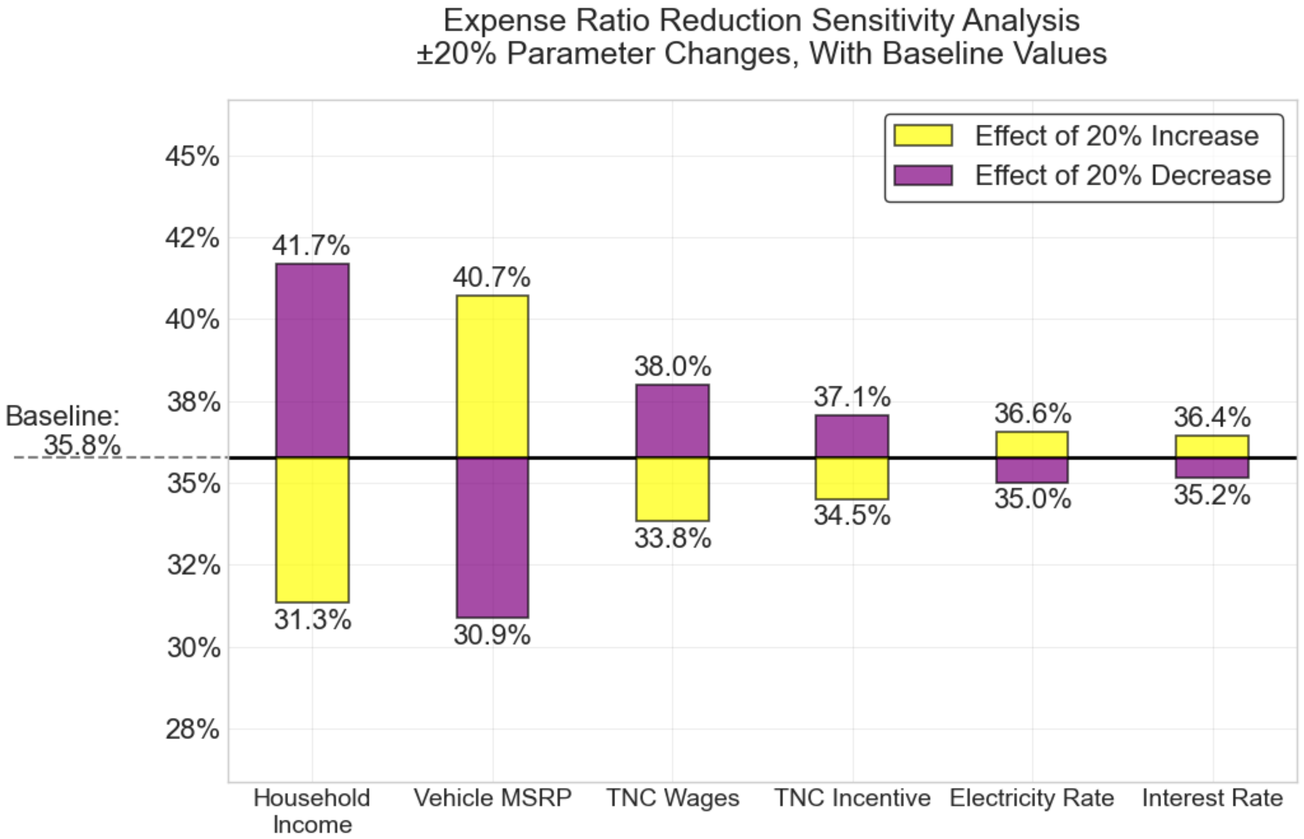
What Makes a Difference?



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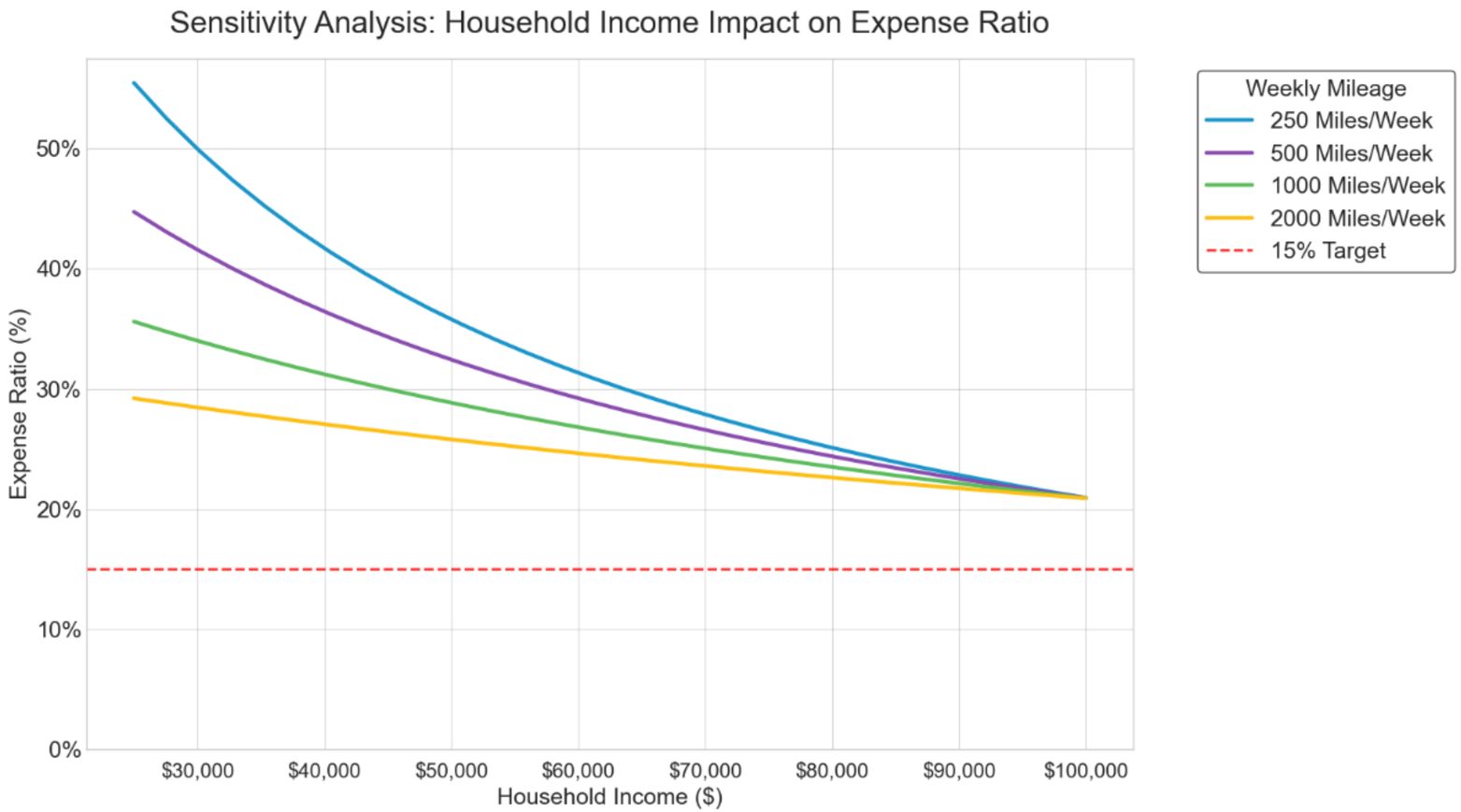
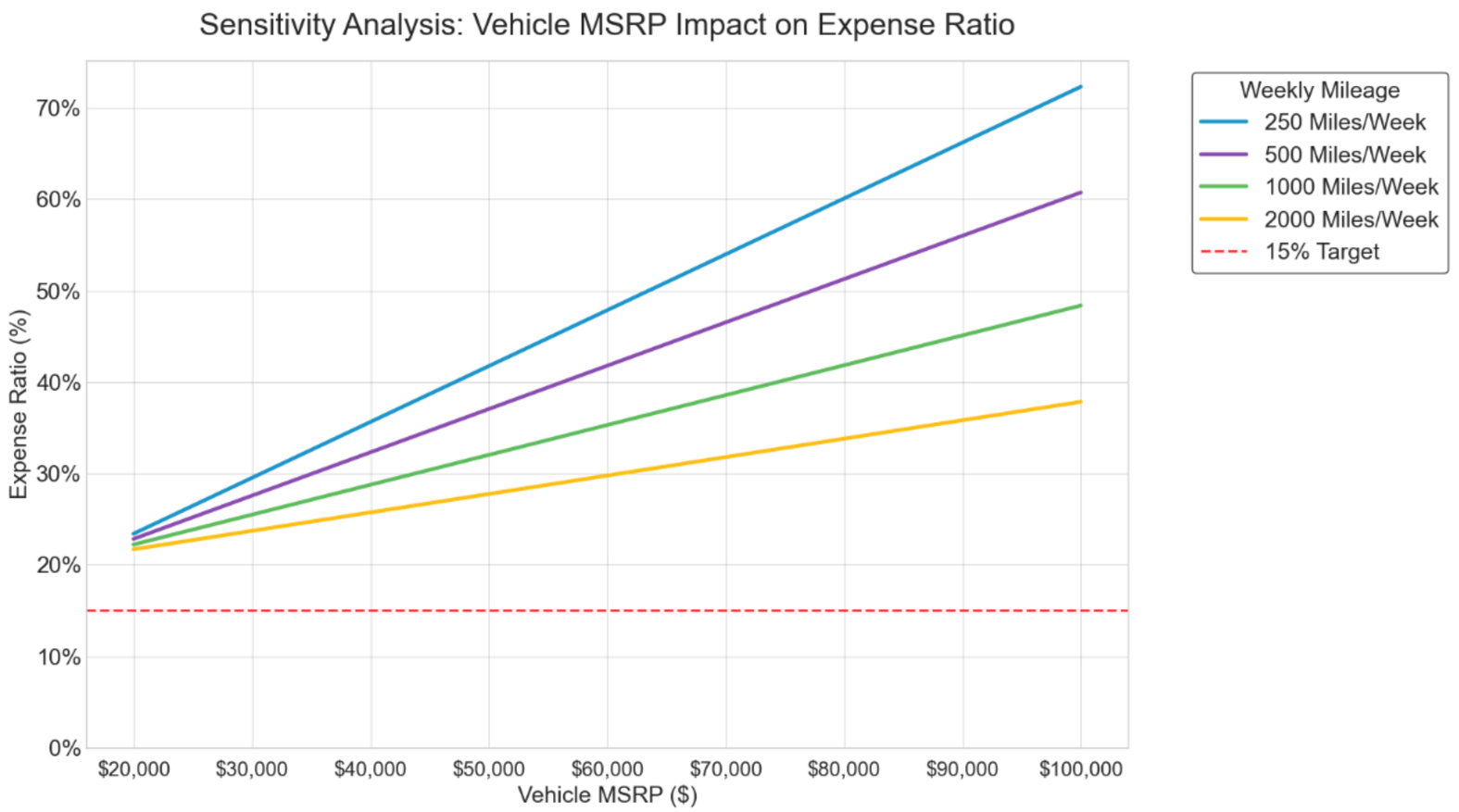
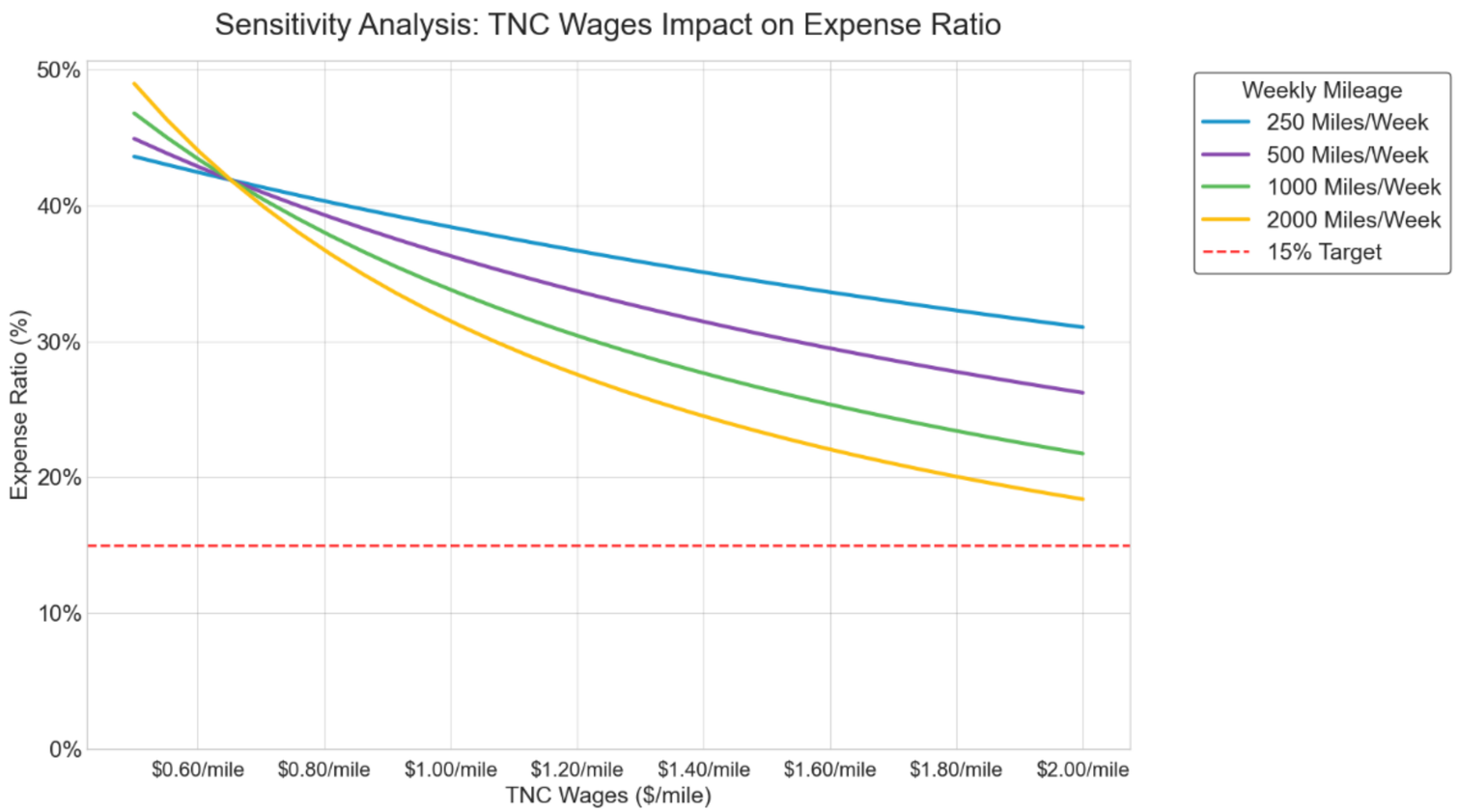
Household Income Sensitivity Analysis



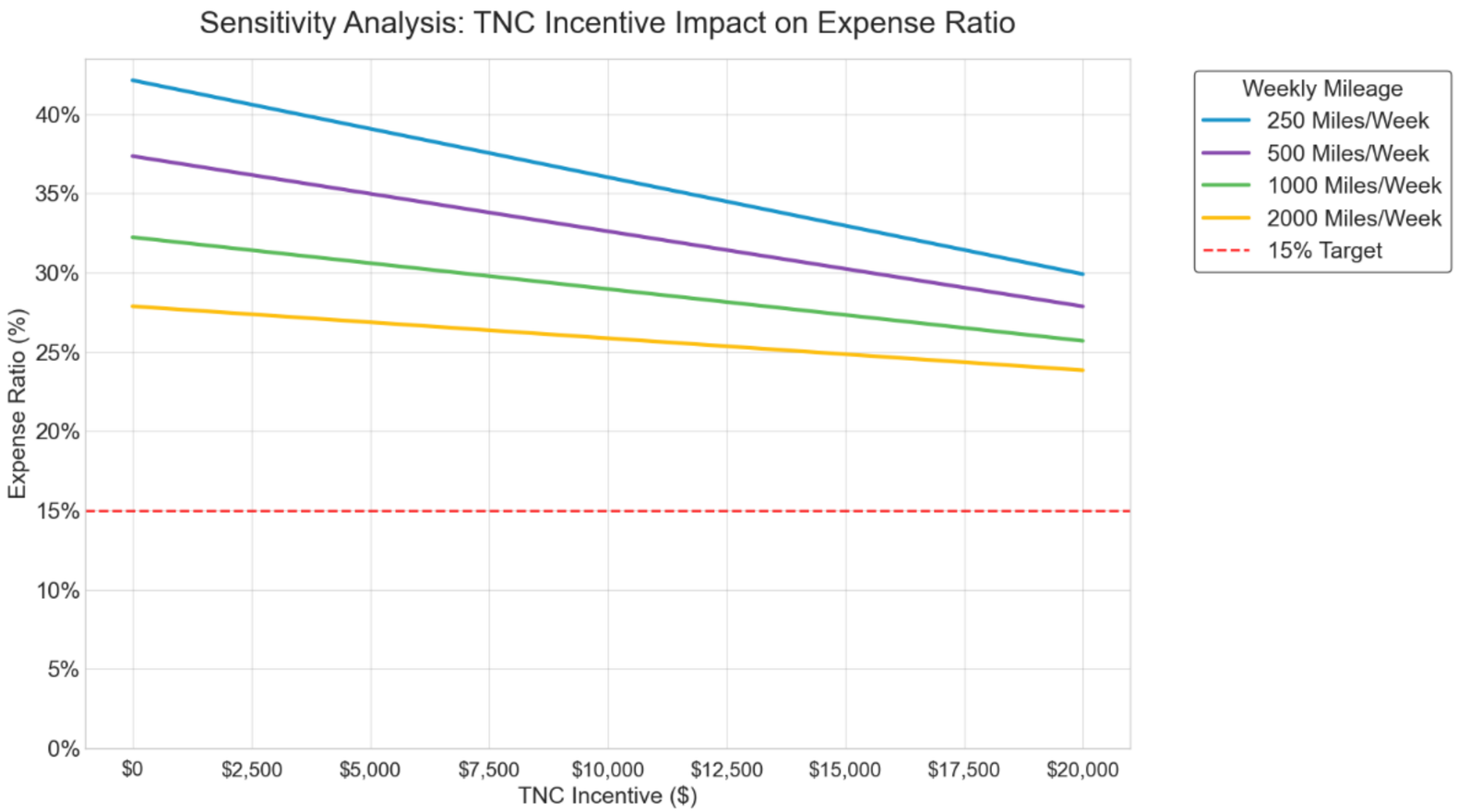
Vehicle MSRP Sensitivity Analysis



TNC Wages Sensitivity Analysis



TNC Incentive Sensitivity Analysis



Interest Rate Sensitivity Analysis