

Projected Impact of Resmetirom on Liver Transplant Waitlist, Mortality, and Organ Reallocation in France

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OBJECTIVES

- Resmetirom received conditional marketing authorization from the European Union (EU) Commission in August 2025 for treating adults with noncirrhotic MASH patients with moderate-to-advanced fibrosis.
- The availability of resmetirom has the potential to decrease demand for LT, thereby improving access to donor livers for patients with any LT indications.

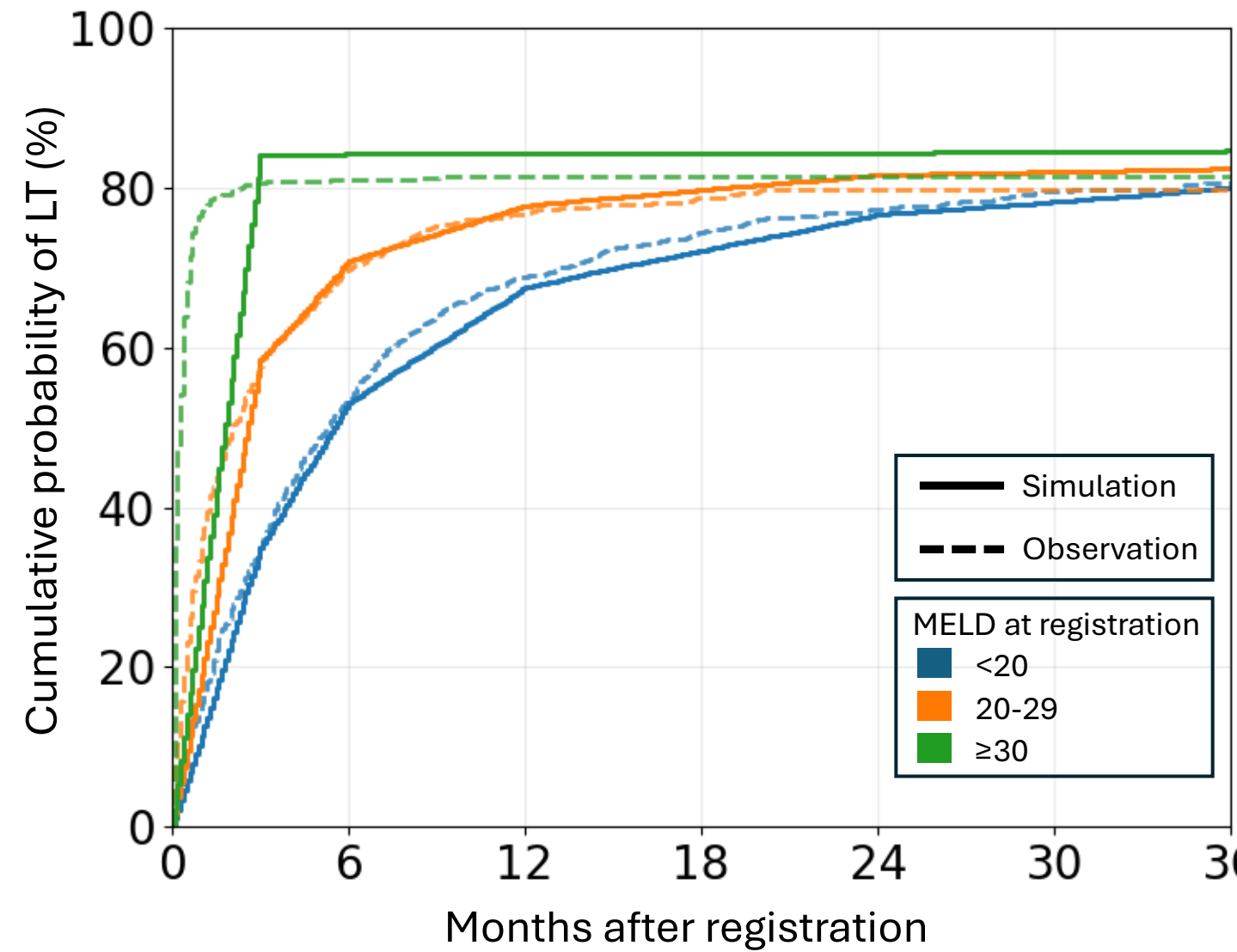
Aim

- To evaluate the potential population-level impact of resmetirom on LT demand, waitlist outcomes, and organ reallocation in France

MODEL VALIDATION

- Our model-estimated waitlist outcomes, during 36 months after registration, closely matched the reported outcomes in the ABM 2024 Annual Report [2] (Figure 1).

FIGURE 1. Liver Transplant Probability: Simulation vs. Observation by MELD score



RESULTS

- Patients who were eligible and received resmetirom achieved either **slower disease progression** or **resolution of steatohepatitis** (i.e., MASH resolution) compared to themselves in the NoRES scenario → **Fewer** patients developed DCC and HCC that required LTs
 - Fewer waitlist registrations & LTs in the RES vs NoRES scenario:** Patients receiving resmetirom in the RES scenario experienced improved or stabilized disease progression, thereby avoiding waitlist registration and LT. In the NoRES scenario, these patients would otherwise have progressed to waitlisting and required LT (Table 2).
 - Reduction in the MASH patients on LT waitlists**, induced by the avoided waitlist registrations (Figure 3)
 - Due to the avoided LTs, the associated donor livers could be reallocated to other patients (regardless of LT indication or liver disease etiologies) → **Reallocated** saved livers to patients with the highest MELD score on the waitlist at the time of availability
 - Compared to the NoRES scenario, patients were able to receive LTs sooner → **Reduction in time on waitlist and waitlist mortality** (Table 2)

TABLE 2. Impact of resmetirom adoption on LT waitlist

Annual Treatment Rate*	Avoided Waitlist Registrations	Avoided LTs	Waitlist Deaths Averted ^{†,‡}	Waitlist Time Reduction ^{‡,§}
5%	346 (7.23%) [¶]	247	259	10.56 days
10%	661 (13.81%)	481	481	18.58 days
15%	923 (19.28%)	667	667	24.95 days

*: Proportion of diagnosed MASH-F2/F3 patients who initiated resmetirom each year from 2028 onwards (1% in 2027 regardless of the annual treatment rate)
¶: Percentage out of 4,784 MASH patients who were waitlisted in NoRES scenario.
†: Absolute number of deaths in NoRES averted in RES
‡: Waitlist outcomes include patients with any LT indications (e.g., MASH, HCV, ALD).
§: Reduction in the average days per waitlisted patient (including patients who did not receive resmetirom)

METHODS

- Populations:** Metabolic Dysfunction-Associated Steatotic Liver Disease (MASLD) patients with age/sex distribution reflecting the France population (mean age 54.4 yrs, 49.1% male)
 - Simulated MASLD populations to incorporate resmetirom-induced MASH resolution/fibrosis regression
- Simulation Period:** 2027 – 2067 (after simulating 2015-2026 for model validation [Figure 1])
- Hybrid Decision Analytic Model:**
 - Markov model:** simulating MASLD disease progression (yearly model cycle) [1] (Figure 2)
 - F2/F3 diagnosis rate:** we assumed that 14.7% of F2/F3 patients were diagnosed in 2027. We increased the diagnosis rate linearly to 33.2% by 2040, after which a fixed annual rate of 33.2% was applied.
 - LT Module:** a synthetic LT waitlist system was developed to mirror the real-world statistics based on the organ procurement and transplantation reports from Agence de le Biomédecine (ABM) [2]. Two key factors included:
 - Annual waitlist registrations by patients with different LT indications
 - Patient-specific attributes, e.g., MELD score and time on the waitlist
- Simulated Scenarios**
 - NoRES:** Natural history scenario, where no one received resmetirom
 - RES:** Resmetirom scenario, where the model assumed 1% of diagnosed F2/F3 patients (consistent with the European Summary of Product Characteristics label) received resmetirom in 2027 and 5% annually after 2028.
 - Resmetirom treatment effects were estimated based on the MAESTRO-NASH trial results [3].
- Outcomes:** (1) avoided waitlist registrations, (2) avoided LTs, (3) reduction in the proportion of MASH patients on LT waitlists, and (4) reduction in time and mortality without LT (across patients with any LT indications)

FIGURE 2. Model Schematic of the MASLD and LT Module

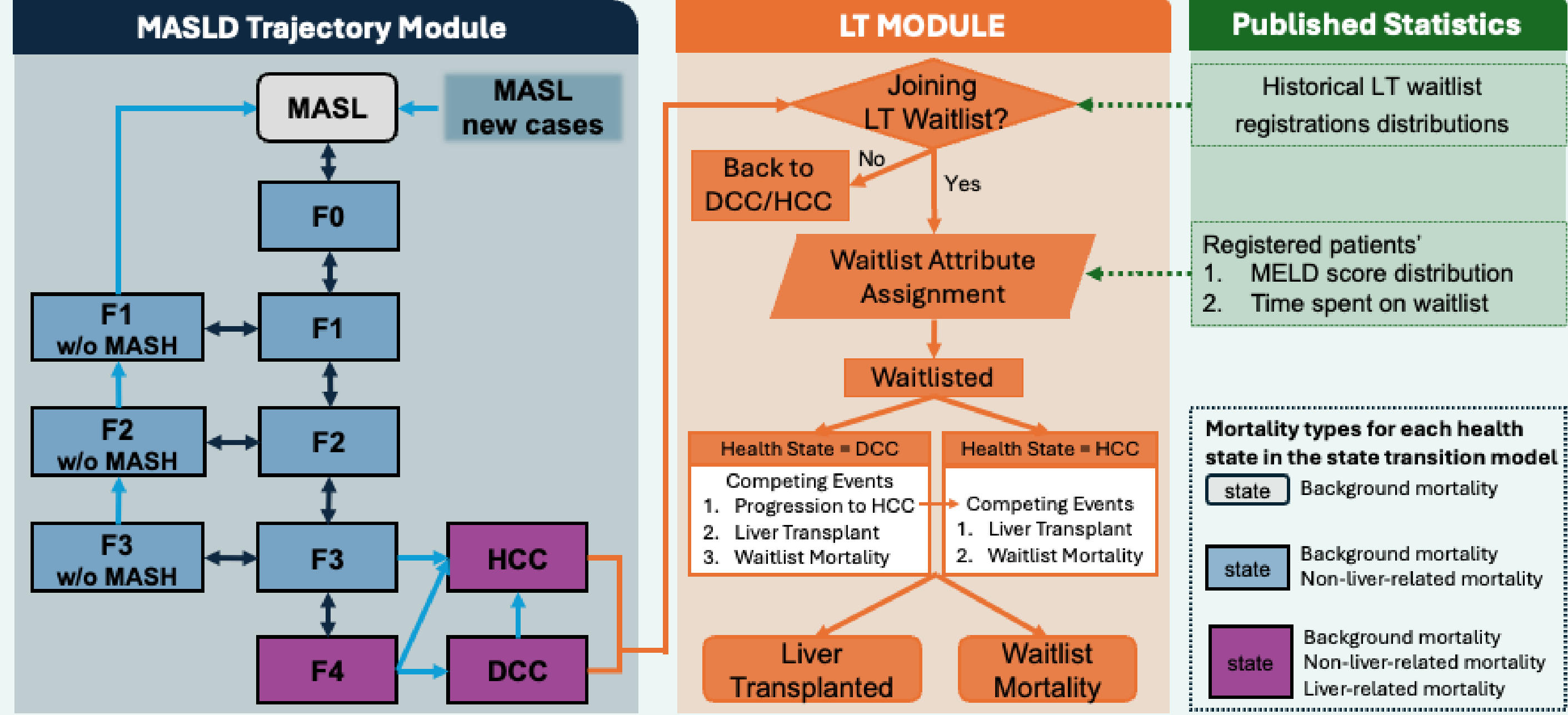
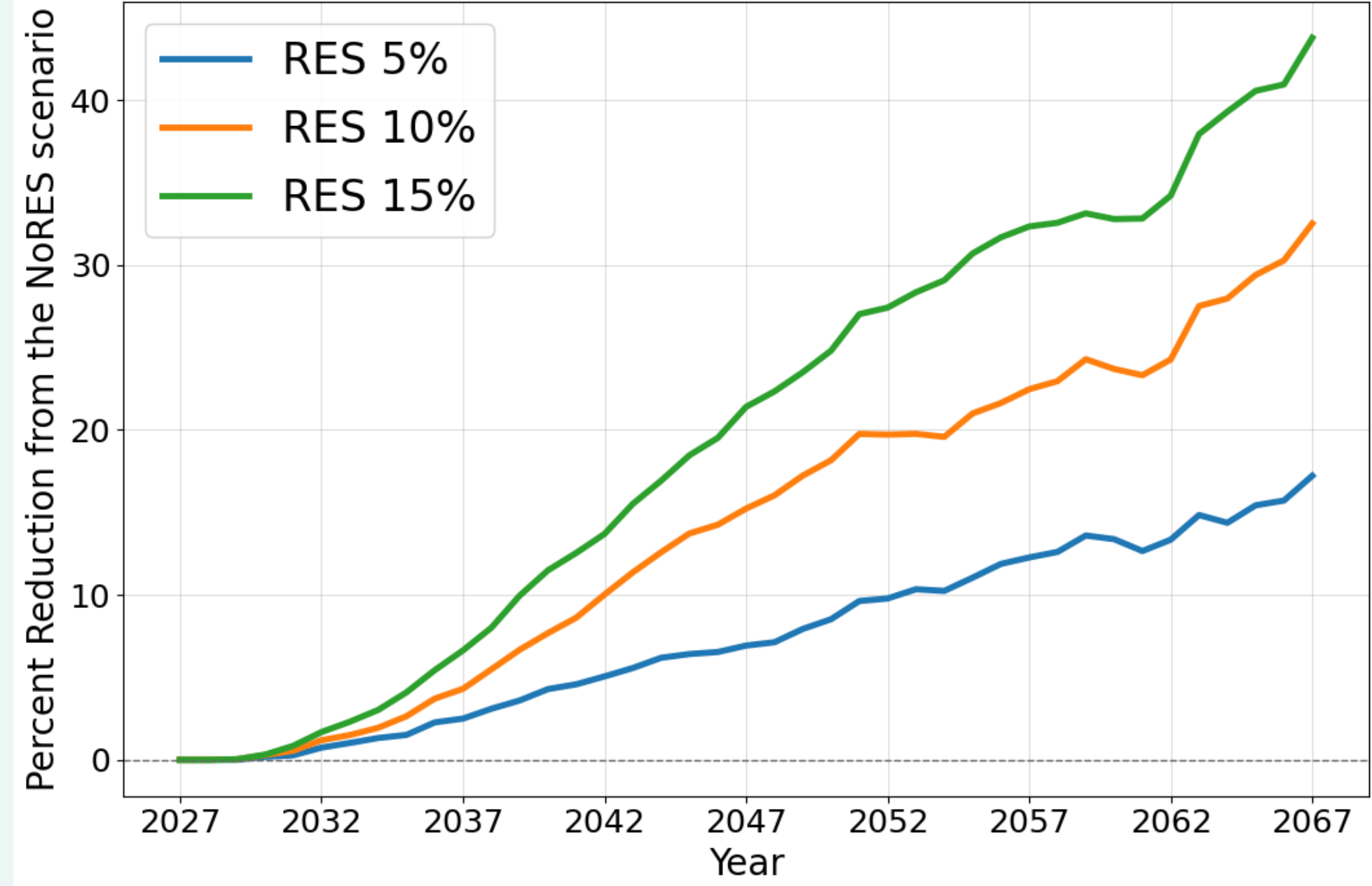


FIGURE 3. Proportion of MASH Patients in LT Waitlists: Percent Reduction from the NoRES scenario



Note. A 5-year moving average was applied.

CONCLUSION

- This model demonstrated that resmetirom has the potential to reduce the burden of MASH and alleviate pressure on the LT system in France.
- By reducing the number of patients requiring LT, resmetirom may improve overall access to donor organs and lower waitlist mortality, thus demonstrating broader population-level benefits of early MASH treatment.
- Increases in diagnosis rates and market share uptake could yield more substantial effects on LT demand and outcomes.

REFERENCES

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3. Harrison, Stephen A., et al. "A phase 3, randomized, controlled trial of resmetirom in NASH with liver fibrosis." The New England journal of medicine 390 (2024): 497-509.

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