



Annual Cost of Therapy for Novel Targeted Therapies for Advanced/Metastatic Non-Small-Cell Lung Cancer: Rapid Insights into Launch, Value and YOY Increases

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Background

- Non-Small-Cell Lung Cancer (NSCLC) comprises of 85% of all lung cancer cases and is the primary global cause of cancer-related deaths.¹
- NSCLC patients have a poor prognosis, with a 5-year overall survival (OS) rate of 17.4%.^{2,3,4}
- Over the last decade, advancements in targeted therapy and immunotherapy have demonstrated efficacy in managing NSCLC.⁵
- There is significant public debate and discussion on Drug Pricing both @ Launch prices, Year over year price increases and their Value
- In our study we have aimed to shine a light on some of these topics as they pertain to advanced or metastatic NSCLC

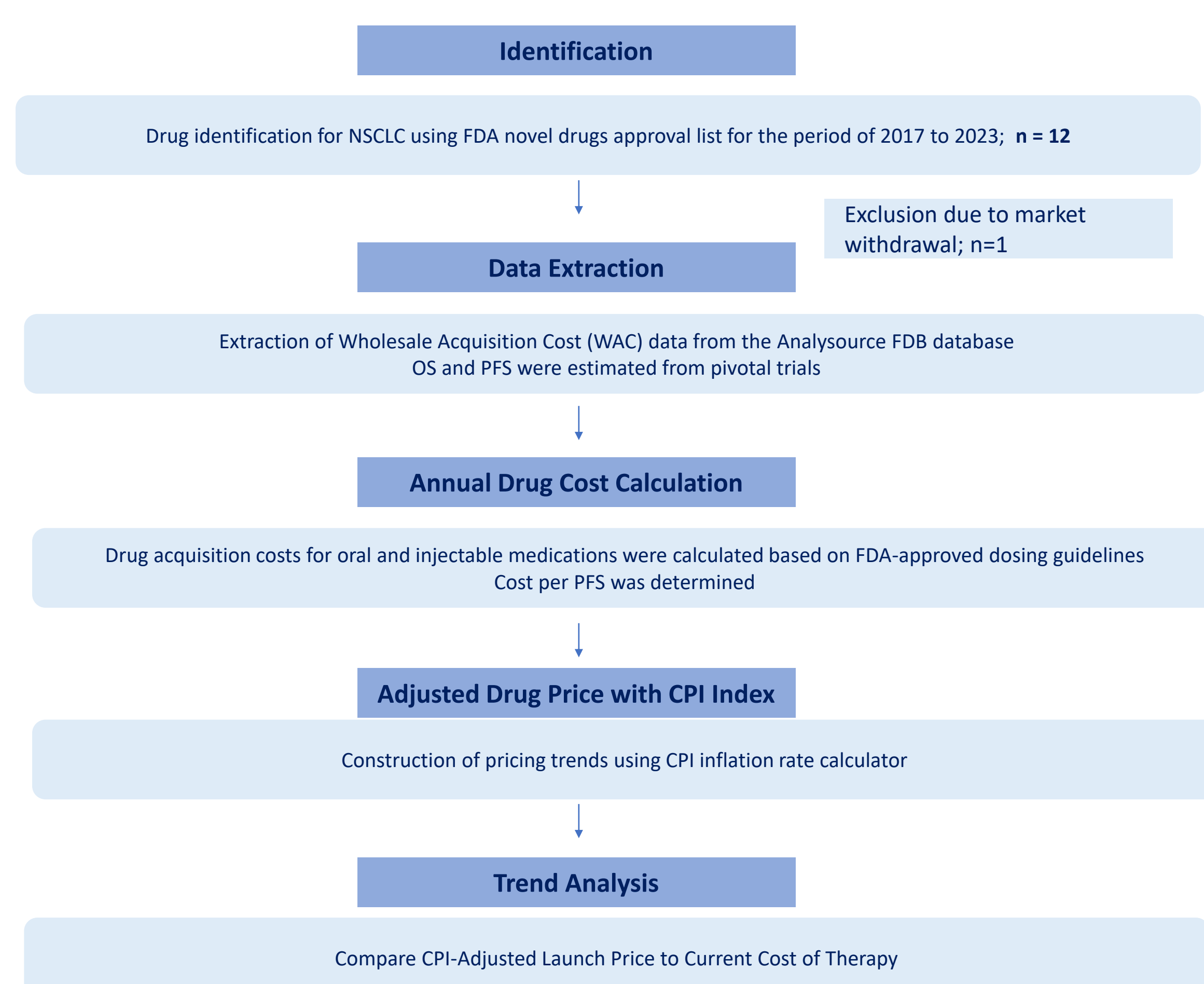
Objective

- To compare Annual Cost of Therapy @ launch and annual change compared to Consumer Price Index for novel therapies approved for metastatic NSCLC approved by the US FDA between 2017 and 2022

Methods

- FDA approved novel therapies for advanced NSCLC from 2017-2022 were identified.
- Historical and current Wholesale Acquisition Cost (WAC) data from the Anlysourc First Databank (FDB) database were extracted.
- Highest Overall survival (OS) and progression free survival (PFS) were extracted from corresponding pivotal trials for monotherapy in advanced/metastatic NSCLC.
- Annual drug acquisition cost based on FDA-approved dosing was calculated. Assumed of adherence and full therapeutic course till end of year.
- Cost per PFS month was calculated by dividing annual therapy cost by the total PFS.
- Year over year price increases were computed in the absolute as well as indexed over corresponding year Consumer Price Index. Net Price increase over net CPI increase till December 2023 was also computed to determine the real change over varying years on the market.

Fig 1. Study design (N=11)



Results

- 11 therapies approved for advanced or metastatic NSCLC were extracted from FDA drug approval database 2017-2022 (Table 1).
- All of the approved therapies were targeted therapies designed for specific mutations, such as ALK, RET, MET, and KRAS G12C.
- Launch Annual Cost of Therapy**
 - Average annual cost of therapy for those launched in 2018, 2019, 2020, 2021, and 2023 were \$173,196; \$204,400; \$242,312; \$239,259; and \$240,292 respectively (Figure 2).
 - In 2023, tepotinib annual cost of therapy was the highest (\$281,656) and dacomitinib was the lowest (\$189,342).
- Line of Therapy had minimal impact on 2023 Annual Cost of Therapy**
 - In 2023, the average annual therapy cost for six drugs approved for second-line treatment was \$254,287.
 - Four drugs approved for either first or second-line use had a comparable average annual cost of \$258,214.
- Cost of Therapy by Overall survival (OS)**
 - Most therapies have yet to yield mature results preventing any comparative analysis.
- Progression free survival (PFS)**
 - PFS in advanced/metastatic NSCLC ranged between 8.5 months to 25.8 months, Average cost per PFS month was \$17,300 and was consistent for RET fusion, ALK positive and KRAS G12C. Exception were the MET exon 14 skipping therapies with lower PFS. (Figure 3)
- YOY Changes in NSCLC Therapies Annual Cost compared to Inflation Rate**
 - Post-launch, compound annual growth rate of price for the drugs ranged between one to six percent.
 - For the majority of drugs studied, price increase was either below or equal to the inflation rate: entrectinib: -5%, selpercatinib: -13%, tepotinib: -4%, amivantamab: -1%, pralsetinib:-2%, and sotorasib: 0% (Figure 4)

Drug name	Line of Therapy	Route of Admin	Patient Population (mNSCLC)	Launch Year	Current Annual Cost of therapy (2023 Dec)	Highest Reported Median OS (Months)	Highest reported Median PFS (Months)	Cost /PFS Month
Brigatinib	2L (1L in 2020)	Oral	ALK-positive	2017	\$232,638.83	Result immature ^[10]	19.3 (15.7-NE) n=125 ^[10]	\$12,053.83
Dacomitinib	All Lines	Oral	EGFR exon 19 deletion or exon 21 L858R substitution	2018	\$189,341.56	34.1(29.5-37.7) n=227 ^[2]	14.7 (11.1-16.6) n=227 ^[2]	\$12,880.38
Lorlatinib	2L (1L in 2021)	Oral	ALK-positive	2018	\$245,163.69	Result immature ^[11]	Result Immature ^[11]	NA
Entrectinib	2L	Oral	NTRK gene fusion-positive, ROS1-Positive	2019	\$232,244.15	Result immature ^[4]	25.8 (0.03-44.0) n=126 ^[4]	\$9,001.71
Capmatinib	All Lines	Oral	MET exon 14 skipping mutation-positive	2020	\$281,272.90	20.8 (12.4-NE) n = 28 ^{[3]*}	12.4 (8.2-23.4) n = 28 ^{[3]*}	\$22,683.23
Selpercatinib	All Lines	Oral	RET fusion-positive	2020	\$258,157.20	Result Immature ^[5]	24.8 (16.9,NE) n=159 ^[5]	\$10,409.56
Pralsetinib	All Lines	Oral	RET fusion-positive	2020	\$258,270.90	Result immature ^[12]	16.4 (11.0-24.1) n=223 ^[12]	\$15,748.23
Tepotinib	All Lines	Oral	MET exon 14 skipping mutation-positive	2021	\$281,655.90	17.1 (12.0-26.8) n = 99 ^[1]	8.5 (6.7 - 11.0) n = 99	\$33,135.99
Sotorasib	2L	Oral	KRAS G12C mutation-positive	2021	\$244,678.10	12.5 months (10.0-17.8) ^[13] n=174	15.9 (10.4-NR) n = 95 ^[6]	\$15,388.56
Amivantamab	2L (1L in 2024)	Injection	EGFR exon 20 insertion mutations	2021	\$281,291.64	23 (18.5-29.5) n=114 ^[7]	11.4 (9.8, 13.7) n=153 ^[8]	\$24,674.71
Adagrasib	2L	Oral	KRAS G12C mutation-positive	2022	\$240,291.66	6.9 (5.4-8.7) n=128 ^[9]	14.1 (95% CI, 9.2-18.7) n=132 ^[9]	\$17,041.96

*The results for capmatinib, selpercatinib, and pralsetinib are derived from treatment-naïve populations, whereas tepotinib's data encompass both treatment-naïve individuals and those with prior therapy.

Fig 2. Trend of Annual Cost of Therapy due to Price Increases for NSCLC Therapies (2018 to 2023)

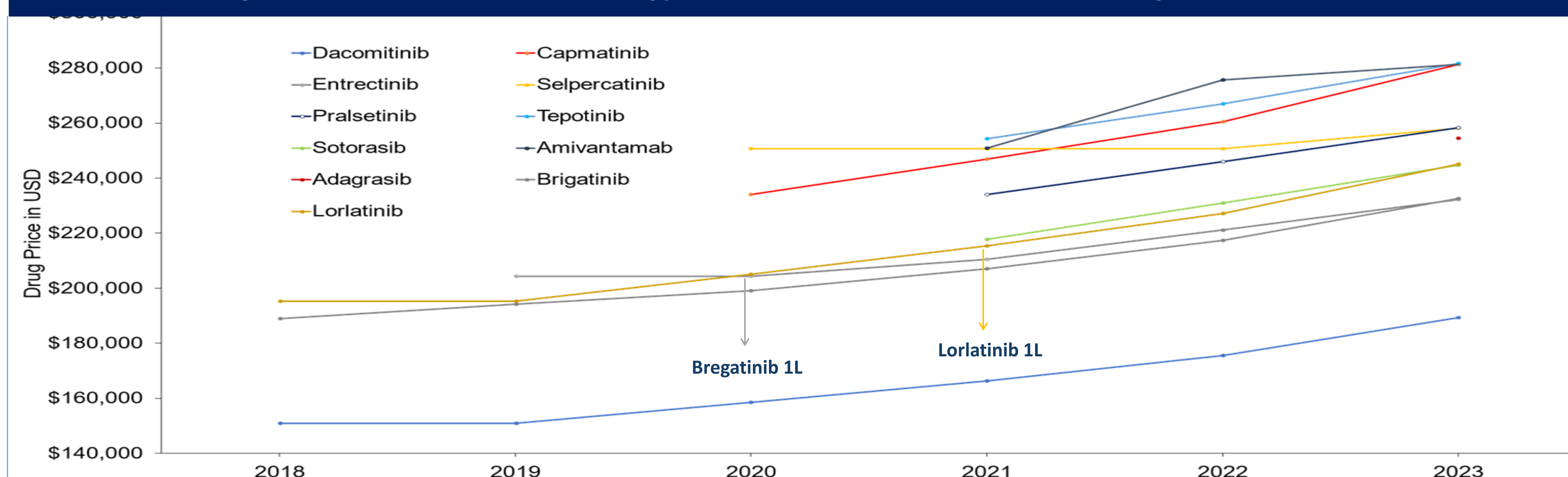


Figure 3. Annual Cost of Therapy per PFS month

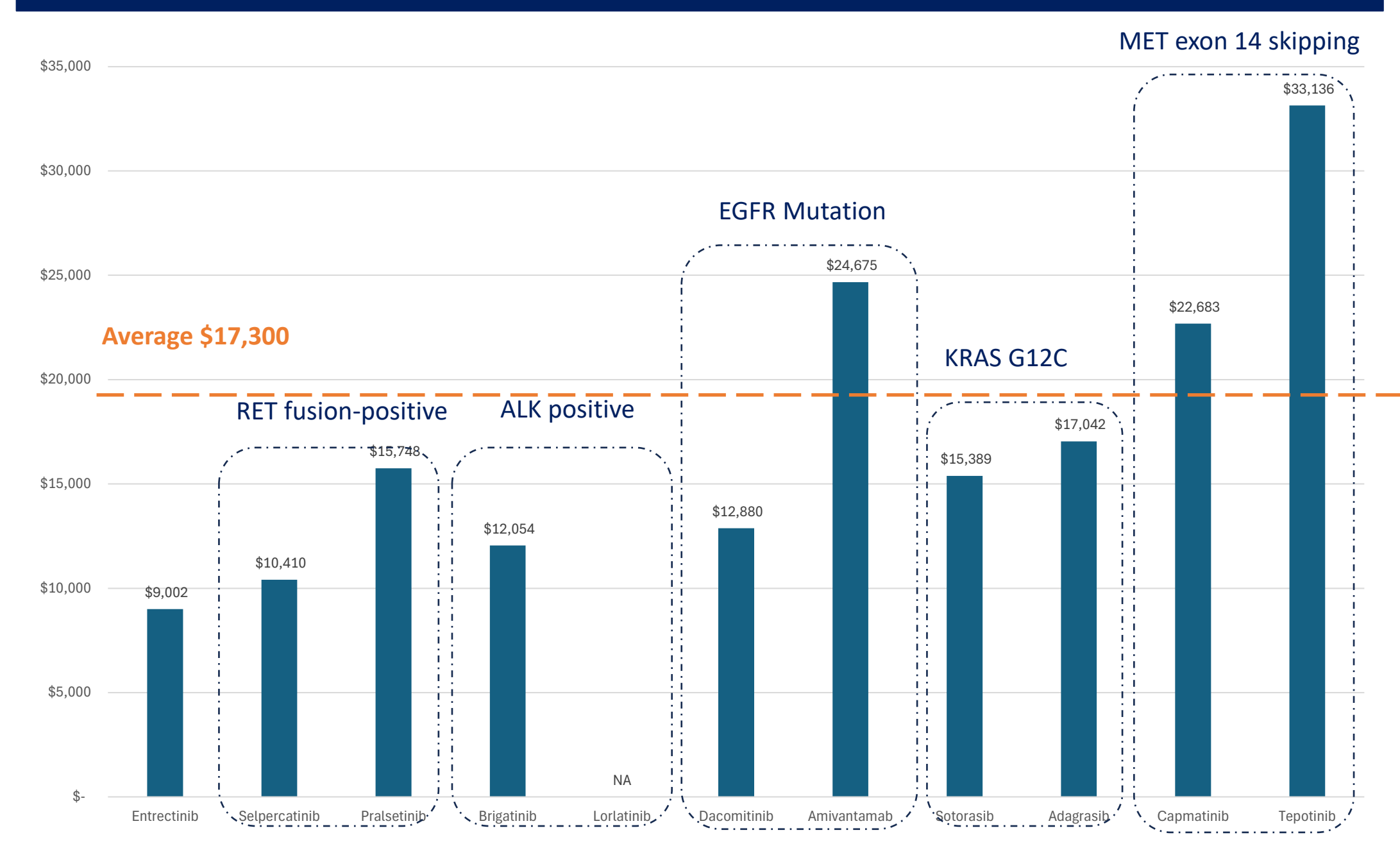
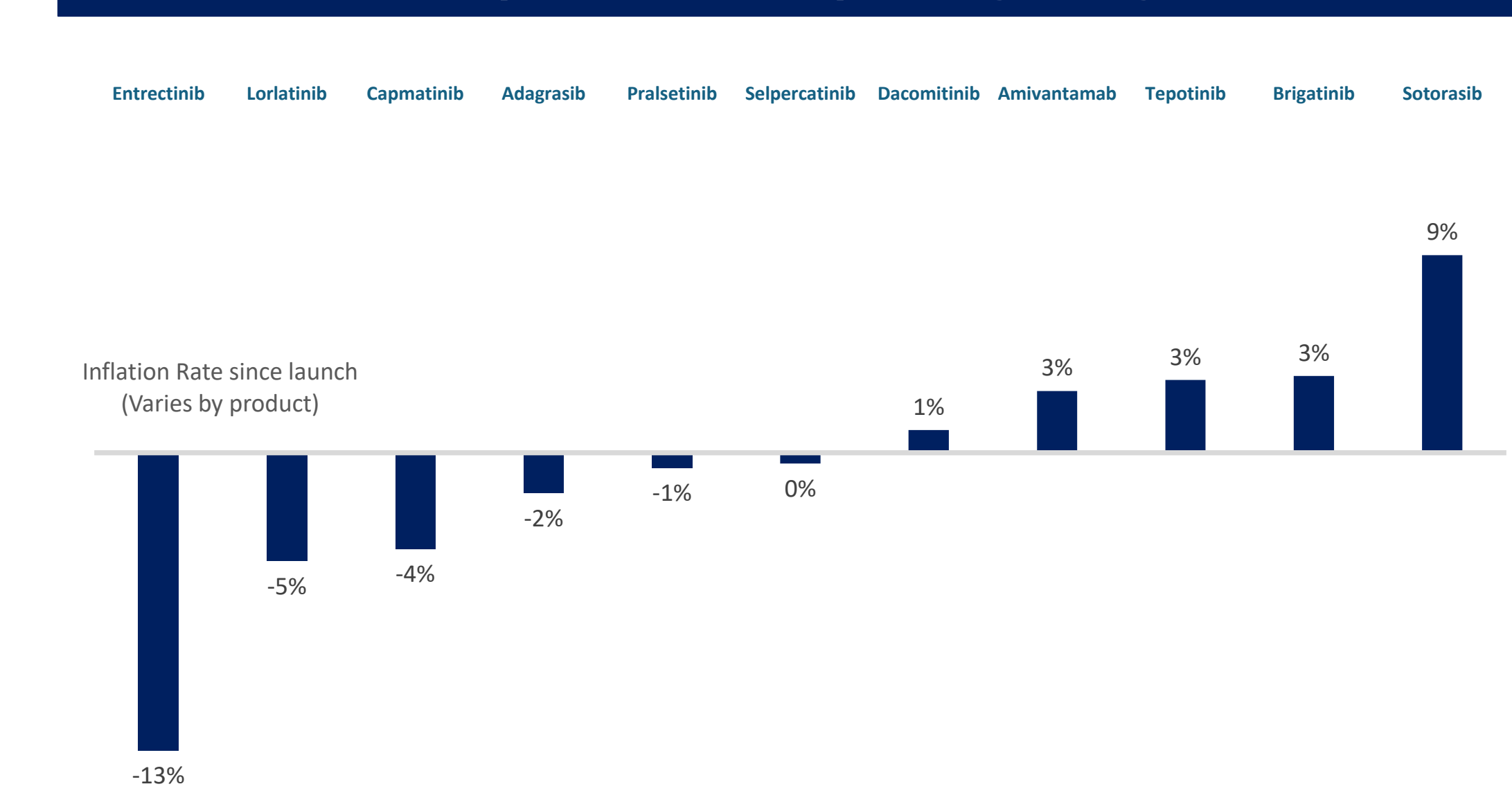


Figure 4. Overall Change in NSCLC Annual Cost of Therapy from Launch compared to corresponding change in CPI



Conclusion

- Novel Targeted Therapies for advanced/metastatic NSCLC were launched at comparable Annual cost of Therapies.
- Annual Cost for PFS month demonstrated equivalency across Targeted therapies except for MET exon 14 skipping and EGFR therapies
- Annual Cost of Therapy for Advanced/Metastatic NSCLC was lower than corresponding CPI increases for 7 of 11 therapies studied

Limitations

- WAC prices do not account for Net prices after rebates.
- Excludes additional costs like administration cost for injection and side effect management.
- The model did not adjust for differences in trial populations.

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