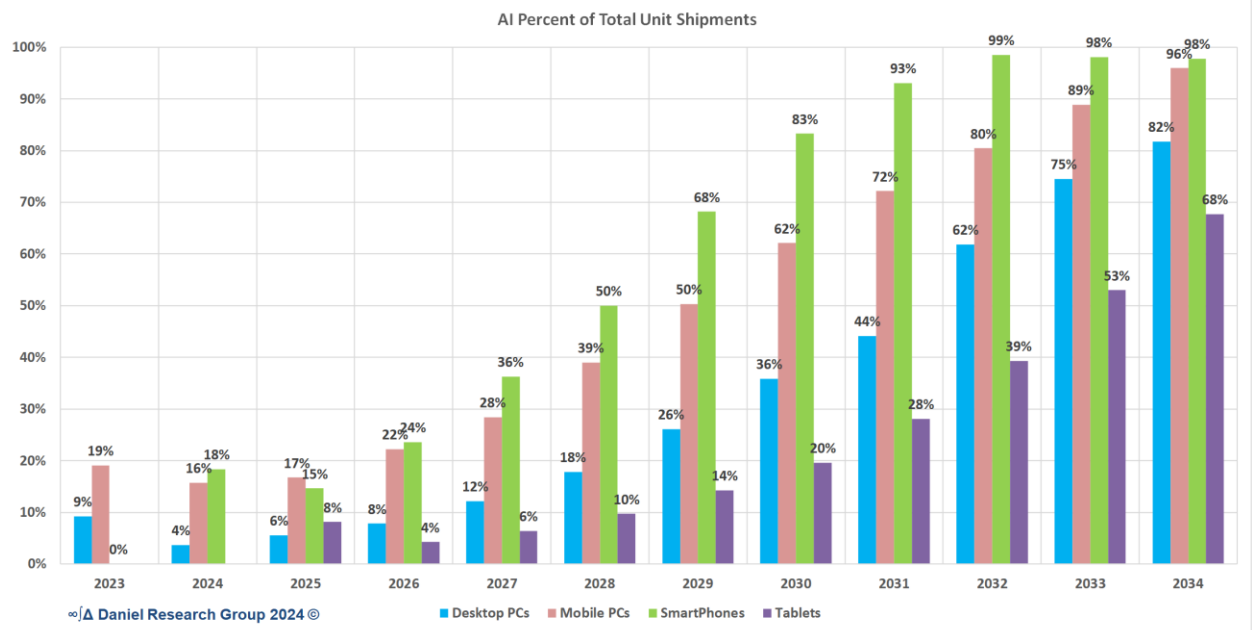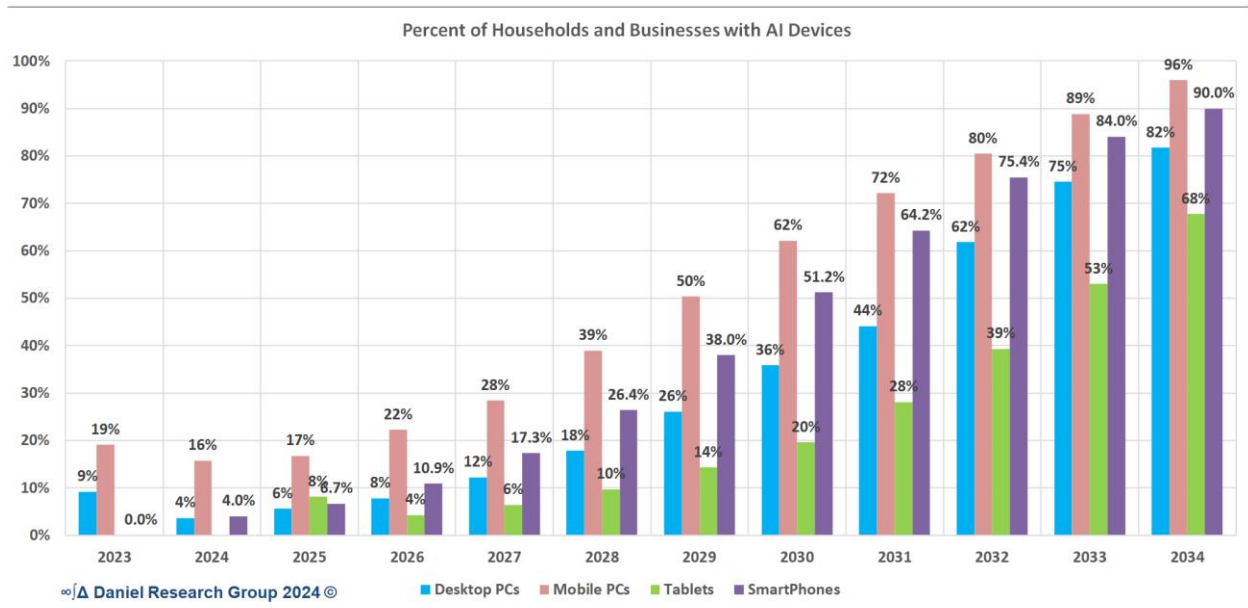## Daniel Research Group
Understanding the Future

The United States AI Enabled Personal Computing Devices Market Size and Ten-Year Forecast
September 2024

Update: The tables and charts presented in the forecasts represent output from our current forecast model that has been updated with actual data through 24Q2.

AI Percent of Unit Shipments

AI Percent of Total Unit Shipments

AI Market Penetration of Households and Businesses that own the Device

Percent of Households and Businesses with AI Devices

Legend: Desktop PCs, Mobile PCs, Tablets, SmartPhones

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Year	Desktop PCs	Mobile PCs	Tablets	SmartPhones
2023	9%	19%		0.0%
2024	4%	16%		4.0%
2025	6%	17%	8%	8.7%
2026	8%	22%	4%	10.9%
2027	12%	28%	6%	17.3%
2028	18%	39%	10%	26.4%
2029	26%	50%	14%	38.0%
2030	36%	62%	20%	51.2%
2031	44%	72%	28%	64.2%
2032	62%	80%	39%	75.4%
2033	75%	89%	53%	84.0%
2034	82%	96%	68%	90.0%

Overview

Its' been a bumpy ride for the Personal Computer Market the last four years, rising through the pandemic purchasing surge and then tumbling down through the demand drop over the last years. The market transformational impact of the pandemic on the consumer and enterprise segments in now understood in terms of (1) changes to the demographic and economic structure of the US economy and (2) the absence of any new compelling product introductions. Perhaps it is time to stop looking back and start looking forward to the next potential transformative event – Artificial Intelligence - AI. Or more specially, AI Enabled PCs, Tablets, and Phones.

Looking longer-term we see AI as the next major destructive/innovation event. As in the past, there is a lag, usually longer than expected, from the introduction of a new innovation to the full realization of it potential. Yet, AI (or the promise of AI) is here, and this arrival will have a significant impact on the demand for Personal Computing Devices by individual, households, businesses, and government entities.

Hardware vendors, application developer, and service providers, as well as distributors & marketers, investors, and business & consumer buyers/users all are facing decisions that require a greater clarity and understanding about the future of AI devices This forecast aims to provide some of that hat clarity and understanding. Specifical, the size, growth, and segmentation of the total available market for AI devices.

Forecasting Challenges and Solutions

When Desktops PC, Mobile PCs, Tablets and Mobile Phones were first introduced, the benefits of owning one or more were clear and compelling. That is not the case yet for AI devices. To date, AI success is primarily in areas that require very large databases, experts in designing and

utilizing AI application, and require massive amounts of computing power, Access for almost all these areas today is through the cloud.   The challenging questions for forecasting AI devices that need to be addressed are:

- What are the clear and compelling business and consumer use cases that benefit more from an AI device than cloud-based AI ?   Currernt AI use cases may be grouped into four broad categories.
    - Process Control
    - Content Creation and Improvement
    - Advice, Recommendation, Decision Support
    - Research and Discover
- What is an AI device in terms of hardware and system/application software requirement?
- What additional skills and resources do buyers and users need to acquire and master in order to realize the benefits of AI?
- What is the initial and on-going costs of buying and maintaining an AI device in the household or business?
- What is the buying process for both the consumer and enterprise segments

With so many unanswered questions, is it possible to develop a forecast model for AI devices? The answer is yes, if the logic of the model is independent of the answers to these questions. When the answers are known, only the input parameters will need to be changed. For now, the AI device market is what the market say it is.

Recently, a number of technology industry market research firms published forecasts of the percent of PCs and phones that will be AI Enabled over for the next few years. We believe these forecasts are overly optimistic. The AI device market is essentially a replacement market of existing non-AI devices. While there may be a relatively small number of first-time AI device buyers, the overwhelming purchases will be replacements for exiting PCs, Tablets, or Phones.

The number of Units Shipments for any Segment-Product-Form Factor in any forecast period is dependent on the value of five influencing variables at the start of each forecasting period.
1. **TAM** - The size of the Total Available Market – Number of Households and Businesses
2. **Penetration** - What percent of those Households and Business own at least one device
3. **Density** – The average number of devices owned by a Penetrated Household or Business
4. **Replacement Rate** – How long is the device in use before replacement.
5. **Initial Installed Base** – The number of devices currently in use.

Forecasting AI devices therefore requires developing estimates for each of these influencing variables.   It also requires a previously or concurrently developed forecast for the Total Devices that may be replaced. Two of the influencing variables, are known. Because the AI device market is a replacement market, the **TAM is the Penetrated TAM of the Total Market**, and the initial **Installed Base at the start of the first year is zero**.   Estimates the other three

influencing variable inputs requires addressing each of these questions, recognizing constraints, and reflecting additional assumptions.

1. **Penetration** - What percent of Households or Businesses will own at least one device in each of the forecast years?

   While simply estimating these percents seem like the obvious approach, it lacks a validating framework. Almost all new inventions and innovation will follow the classic diffusion of innovation, S-Shaped logistic curve. The parameter for generating this curve may be derived from estimates for just two years.   However, they may also be derived from two other metrics: The time it will take to reach 50% TAM penetration (α), and the time it will take for penetration to grow from 10% to 90% (Δ).   The α and Δ can be computed for all major Segment-Product-Form Factor device introduction since the introduction of the first PC in 1975. These provide a framework for developing reasonable Penetration estimates as well as validation alternatives estimates.

   Assumption: Initial Penetration rates will be within the ranges of the historic devices.   In many new innovation introductions, an initial buying surge fueled by the pent-up demand of the very early buyers may be followed by a brief drop in unit shipments until the normal early market buyers demand is reached. We may see this pattern for some AI devices. Given the expect length of time for most AI device to reach near full penetration a Ten-Year rather than Five-Year forecast provides a better understanding of the adoption of AI devices.

2. **Density** – what is the average number of AI devices owned by a penetrated household or business compared to the total average.

   The Average Densities per Household or Business vary considerably by Segment-Product-Form Factor from one for some consumer product-form factors to over 100 for some enterprise products. Densities also vary over time depending on the additional unit buying pattern. Will early adopters be more likely to purchase multiple units than later adopters, or will additional unit purchases per Household or Business occur at a later time?

   Assumption: AI Device densities will be below the total device densities and then increase asymptotically to the total level over the forecast period.   However, the very early buyers may be more likely to be multi-unit buyers than the next group or buyers. This may be truer in the Enterprise segment than the Consumer Segment.

3. **Replacement Rate** – How much faster or slower will the AI device replacement rate be compared to the total replacement rate?   There are several metrics that may be used to answer the question "what is the average life of a device."
   a. The average age of the units in the installed base.
   b. The average age of units that are being replaced.

c. How long will it take to replace all of the units in the installed base, (the Replacement Cycle Length, RCL).

Assumption: The average installed base age and the average removal age will be, by definition one year in 2024 and will increase asymptotically to the total level over the forecast period. The RCL will be an output of the model but is expected to be slightly lower than the total RCL implying that AI devices will be replaced slightly sooner than non-AI devices.

4. **Constraints:** Given assumptions about the TAM, Penetration, Density, and Replacement Rates, the model output forecast must also meet these following conditions.
   a. AI unit shipment must be less than or equal to the forecasted total device unit shipments for all forecast years. This is the constraint that most of the current forecasts violate.
   b. The AI installed Base must be less that or equal to the Installed Base for the total devices for all forecasted years.
   c. The AI penetrated TAM must be less than or equal to the Total Device Penetrated TAM.

5. **Additional Assumptions:**
   a. AI device adoption will be fastest in Phones, followed by Desktop PCs, Mobile PCs, and slowest in Tablets.

   b. Adoption will be initially faster in the Consumer Segment than Enterprise, but Enterprise will eventually catch-up and surpass the Consumer Adoption Rates.

   These two assumptions are based partially on our analysis of prior device adoption rates, and the recognition that there is considerably less effort to implement an AI device in the home than in a business where the rate of adoption faces the headwinds of security, support, training, and integration issue. For the home, it is essentially plug and play. We expect application developers to prioritize consumer applications more the enterprise applications to accelerate revenue recognition, as well establish market share.

   c. After the initial surge of buying, unit shipment growth will temporarily slow before resuming its predicted growth rate.

   There are several reasons for this pattern. First algorithmically, in year one (2023) there are no removals from prior years that net against new sales, as there will be in all subsequent year. Additionally, since year one will include an above trend level of buying due to satisfying early adopter pent-up demand, this will increase removals above trend in the next year, as well as including excess removal due to year one returns due to buyer remorse and DOA cases. Finally, this is normal for many innovations introduction and is known as the "crossing the chasm" problem.

Approach and Methodology

Daniel Research Groups' (DRG) EquilibriumSolver (EQS) methodology and application was used to develop the AI device forecasts. Unit Shipments and the above discussed five influencing variables are expressed in the **EQS** algorithm such that any of the variables may be computed from the others. The allow the models to be direction agnostic facilitating a recursive and iterative forecast modeling process.

While the Replacement Rate and Density variables contribute to the Unit Shipment forecast, the Penetration assumptions are significantly more important. Our approach to determining the Penetration input parameters is based on a review and analysis of the penetration rates of all of the prior relevant device and system software introduction since the introduce of the first Desktop PC in 1975. For each of the introductions we computed three statistics.

1. What was the maximum penetration percent. Many have since declined since that level
2. How long did it take from introduction to reaching 50% of maximum penetration, the **α**.
3. How long did it take to grow from 10% penetrative to 90% penetration, the **Δ.**

Penetration Percents from Introduction to Maximumm TAM Penetration

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Maximum Penetration

Category	Value
Total Convertible Mobile PC	10.6%
Enterprise Detachable Tablets	11.8%
Consumer Detachable Tablets	15.5%
Consumer Convertible Mobile PC	17.5%
Total Detachable Tablets	18.4%
Total Windows 8, 8.1	20.2%
Enterprise Slate Tablets	24.7%
Enterprise Total Tablets	29.3%
Consumer e-Readers	33.5%
Total 5G Smart Phones	39.5%
Total Slate Tablets	58.1%
Consumer Slate Tablets	60.0%
Enterprise Convertible Mobile PC	61.5%
Total Windows 7	64.7%
Total Total Tablets	66.5%
Total Traditional Mobile PC	67.5%
Consumer Total Tablets	68.3%
Consumer Total Mobile PC	71.5%
Total Total Mobile PC	72.6%
Enterprise Traditional Mobile PC	78.5%
Smart Enterprise Mobile Phone	78.9%
Consumer Traditional Mobile PC	79.1%
Consumer Total Desktop	81.1%
Total Total Desktop	81.8%
Total Windows 10	89.5%
Smart Total Mobile Phone	90.4%
Standard Consumer Mobile Phone	91.6%
Smart Consumer Mobile Phone	94.2%
Standard Total Mobile Phone	96.2%
Enterprise Total Mobile PC	96.6%
Standard Enterprise Mobile Phone	99.5%
Total Consumer Mobile Phone	99.9%
Enterprise Total Desktop	99.9%
Total Total Mobile Phone	100.0%
Total Enterprise Mobile Phone	100.0%

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Years to Grow From 10% to 90% Penetration

Category	Value
Total Windows 8, 8.1	3
Total Windows 7	3
Total 5G Smart Phones	3
Smart Enterprise Mobile Phone	3
Total Slate Tablets	4
Consumer Total Tablets	4
Consumer e-Readers	4
Total Total Tablets	5
Total Windows 10	6
Consumer Slate Tablets	6
Total Total Mobile Phone	7
Total Enterprise Mobile Phone	7
Standard Enterprise Mobile Phone	7
Consumer Convertible Mobile PC	8
Total Convertible Mobile PC	8
Enterprise Total Desktop	8
Enterprise Convertible Mobile PC	8
Enterprise Detachable Tablets	9
Total Consumer Mobile Phone	9
Consumer Detachable Tablets	10
Standard Consumer Mobile Phone	10
Total Detachable Tablets	11
Enterprise Slate Tablets	12
Enterprise Total Tablets	13
Smart Total Mobile Phone	15
Smart Consumer Mobile Phone	15
Total Total Desktop	17
Consumer Total Desktop	18
Consumer Total Mobile PC	18
Enterprise Total Mobile PC	19
Total Total Mobile PC	19
Total Traditional Mobile PC	20
Consumer Traditional Mobile PC	24
Enterprise Traditional Mobile PC	26
Standard Total Mobile Phone	27

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Years to reach 50% Penetration

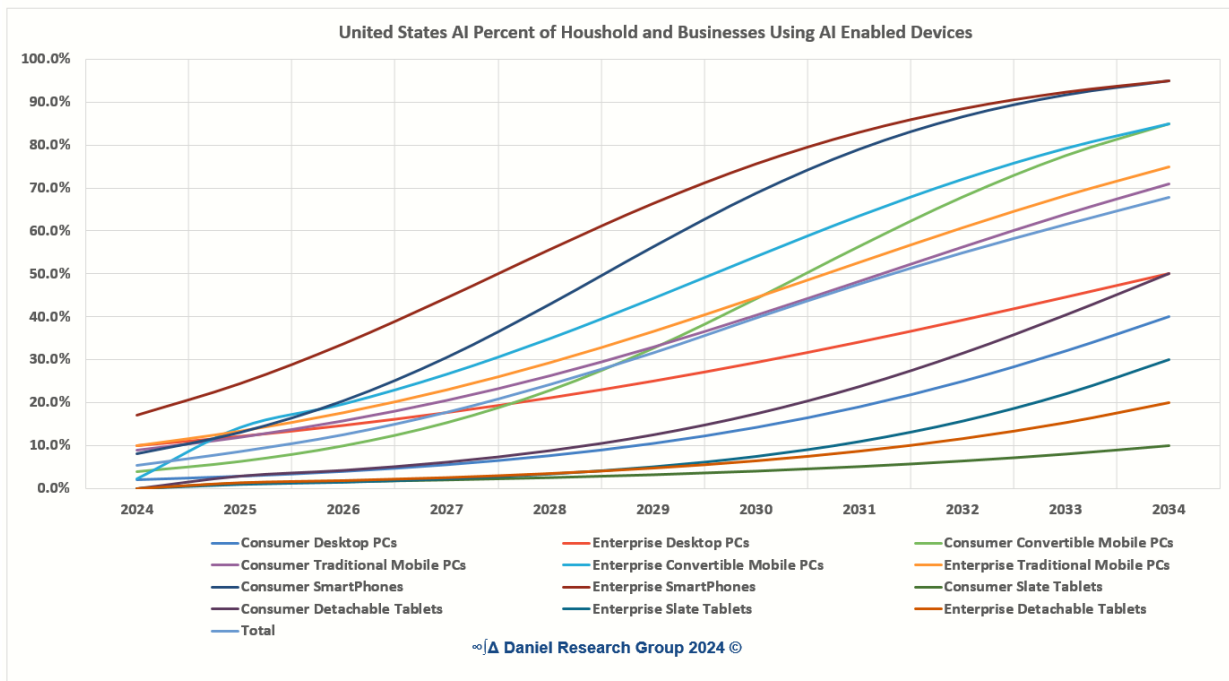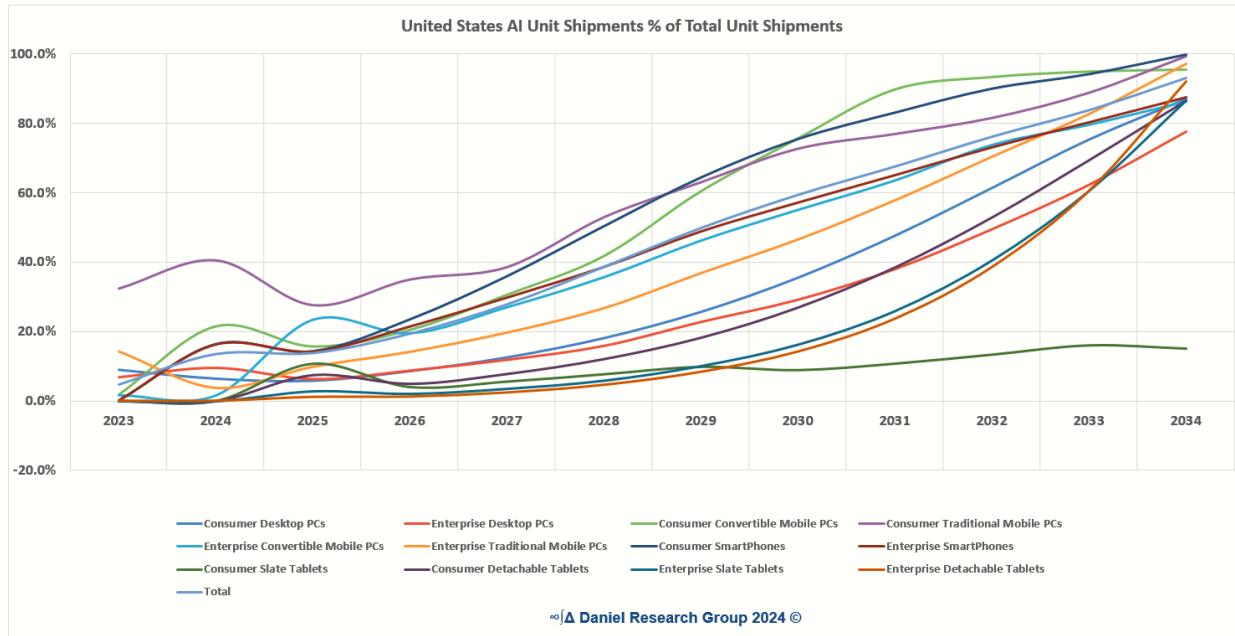| Segment	Years
Total Windows 8, 8.1	2
Total Windows 7	2
Total Windows 10	4
Total Total Tablets	4
Total Slate Tablets	4
Consumer Total Tablets	4
Consumer Slate Tablets	4
Total 5G Smart Phones	5
Consumer e-Readers	6
Enterprise Traditional Mobile PC	6
Total Detachable Tablets	7
Consumer Convertible Mobile PC	7
Enterprise Slate Tablets	8
Total Convertible Mobile PC	8
Enterprise Total Desktop	8
Enterprise Total Tablets	9
Consumer Detachable Tablets	9
Enterprise Convertible Mobile PC	11
Consumer Traditional Mobile PC	11
Enterprise Detachable Tablets	12
Total Total Mobile Phone	14
Total Enterprise Mobile Phone	14
Standard Enterprise Mobile Phone	14
Smart Enterprise Mobile Phone	15
Standard Consumer Mobile Phone	16
Enterprise Total Mobile PC	18
Smart Total Mobile Phone	20
Smart Consumer Mobile Phone	20
Standard Total Mobile Phone	20
Total Total Desktop	21
Consumer Total Desktop	21
Total Total Mobile PC	23
Total Traditional Mobile PC	23
Consumer Total Mobile PC	23
Total Consumer Mobile Phone	28

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Our assumptions for the initial Penetration parameters for each base level Segment-Product-Form Factor case was based on our analysis of this date.
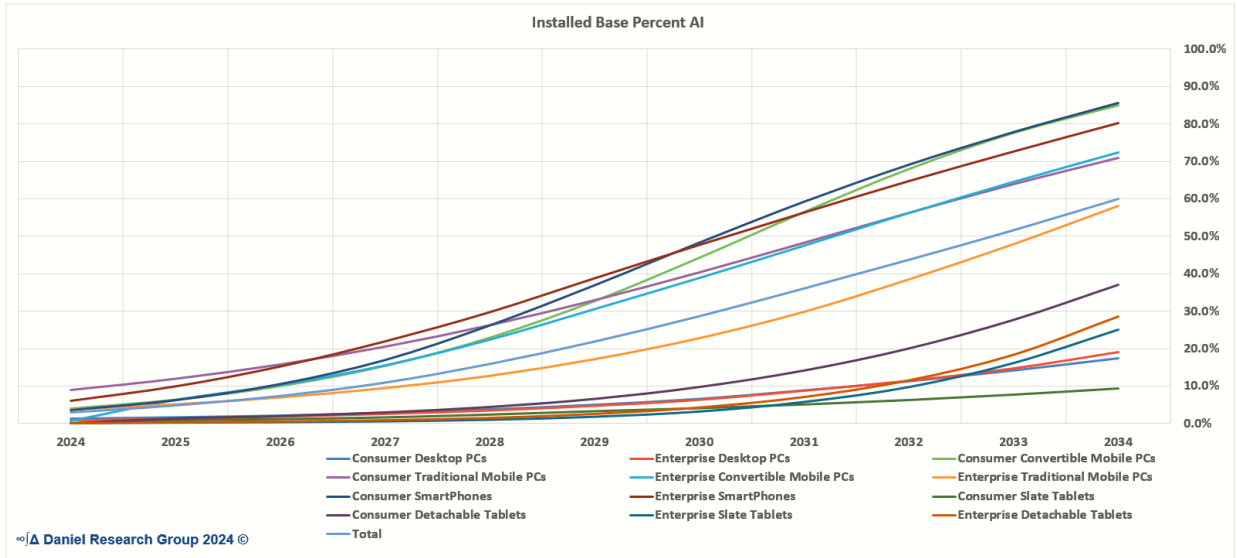
Years to Reach 50% Penetration	Consumer	Enterprise
Desktop	12.5	11.8
Mobile PC		
Convertible	9.1	8.8
Traditional	9.0	8.7
Tablets		
Detachable	9.7	9.3
Slate	7.4	7.1
Phone	14.0	10.8

Years to Grow from 10% to 90%	Consumer	Enterprise
Desktop	13.1	12.8
Mobile PC		
Convertible	11.4	11.3
Traditional	19.9	19.8
Tablets		
Detachable	10.4	10.2
Slate	10.1	10.0
Phone	11.1	10.8

This provided us with a starting framework based on relevant historical data from which adjustments for the constraints, assumptions, and current conditions were made.

Given our starting assumption about the TAM, Penetration, Densities, Replacement Rates, **as well as actual data for 2923 and 2024 through Q2,** and having an existing forecast for total devices for each case, we developed AI device forecasts for each base Segment-Product-Form Factor base case, as well as roll-up aggregations that did not violate any of the constraints and reflected all of the other assumptions.

Installed Base Percent AI

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Legend:
- Consumer Desktop PCs
- Enterprise Desktop PCs
- Consumer Convertible Mobile PCs
- Consumer Traditional Mobile PCs
- Enterprise Convertible Mobile PCs
- Enterprise Traditional Mobile PCs
- Consumer SmartPhones
- Enterprise SmartPhones
- Consumer Slate Tablets
- Consumer Detachable Tablets
- Enterprise Slate Tablets
- Enterprise Detachable Tablets
- Total

Forecast Tables and Charts
Summary Tables

Segment, Product, Form Factor	2024	2025	2028	2034	2025 AGR	2028 CAGR	2024 CAGR
United States Units Shipment Forecast (K)							
Consumer Desktop PCs	5,594	4,796	2,877	999	-14.3%	-15.3%	-15.8%
Enterprise Desktop PCs	7,319	6,463	4,413	1,839	-11.7%	-11.9%	-12.9%
Total Desktop	12,913	11,259	7,290	2,838	-12.8%	-13.3%	-14.1%
Consumer Convertible Mobile PCs	2,658	2,415	2,368	2,210	-9.1%	-2.8%	-1.8%
Consumer Traditional Mobile PCs	19,389	45,505	20,882	22,238	134.7%	1.9%	1.4%
Total Consumer Mobile PCs	22,046	47,920	23,250	24,448	117.4%	1.3%	1.0%
Enterprise Convertible Mobile PCs	6,007	6,831	9,533	18,353	13.7%	12.2%	11.8%
Enterprise Traditional Mobile PCs	25,731	27,486	33,359	46,801	6.8%	6.7%	6.2%
Total Enterprise Mobile PCs	31,738	34,317	42,891	65,154	8.1%	7.8%	7.5%
Total Mobile PCs	53,784	82,237	66,142	89,602	52.9%	5.3%	5.2%
Total PCs	66,698	93,495	73,432	92,439	40.2%	2.4%	3.3%
Consumer Slate Tablets	13,667	14,330	12,184	8,541	4.9%	-2.8%	-4.6%
Consumer Detachable Tablets	20,753	19,020	18,631	18,217	-8.3%	-2.7%	-1.3%
Total Consumer Tablets	34,419	33,350	30,815	26,758	-3.1%	-2.7%	-2.5%
Enterprise Slate Tablets	1,169	1,212	1,112	874	3.6%	-1.3%	-2.9%
Enterprise Detachable Tablets	2,582	2,690	3,019	3,700	4.2%	4.0%	3.7%
Total Enterprise Tablets	3,751	3,902	4,131	4,574	4.0%	2.4%	2.0%
Total Tablets	38,170	37,252	34,946	31,332	-2.4%	-2.2%	-2.0%
Total PCs & Tablets	104,868	130,747	108,378	123,772	24.7%	0.8%	1.7%
Consumer SmartPhones	115,411	114,396	110,481	102,695	-0.9%	-1.1%	-1.2%
Enterprise SmartPhones	11,634	11,621	11,485	10,989	-0.1%	-0.3%	-0.6%
Total SmartPhones	127,045	126,017	121,966	113,684	-0.8%	-1.0%	-1.1%
Total Personal Devices	231,913	231,255	230,343	237,456	-0.3%	-0.2%	0.2%
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Segment, Product, Form Factor	2024	2025	2028	2034	2025 AGR	2028 CAGR	2034 CAGR
United States AI Units Shipment Forecast (K)							
Consumer Desktop PCs	218	306	705	953	*40.3%*	*34.2%*	*15.9%*
Enterprise Desktop PCs	258	323	593	1,367	*25.1%*	*23.1%*	*18.2%*
Total Desktop	**476**	**628**	**1,298**	**2,320**	*32.1%*	*28.5%*	*17.2%*
Consumer Convertible Mobile PCs	100	96	340	2,051	*-3.6%*	*35.8%*	*35.3%*
Consumer Traditional Mobile PCs	**4,874**	**4,529**	**9,685**	**22,111**	*-7.1%*	*18.7%*	*16.3%*
Total Consumer Mobile PCs	**4,974**	**4,625**	**10,024**	**24,162**	*-7.0%*	*19.1%*	*17.1%*
Enterprise Convertible Mobile PCs	100	463	2,367	18,316	*363.1%*	*120.6%*	*68.4%*
Enterprise Traditional Mobile PCs	3,401	4,396	13,387	43,494	*29.2%*	*40.9%*	*29.0%*
Total Enterprise Mobile PCs	**3,501**	**4,859**	**15,754**	**61,810**	*38.8%*	*45.6%*	*33.3%*
Total Mobile PCs	**8,475**	**9,484**	**25,779**	**85,972**	*11.9%*	*32.1%*	*26.1%*
Total PCs	**8,951**	**10,112**	**27,077**	**88,292**	*13.0%*	*31.9%*	*25.7%*
Consumer Slate Tablets		354	675	8,520		*24.1%*	*42.4%*
Consumer Detachable Tablets		3,673	4,481	17,335		*6.9%*	*18.8%*
Total Consumer Tablets		**4,026**	**5,156**	**25,855**		*8.6%*	*23.0%*
Enterprise Slate Tablets		65	101	864		*15.9%*	*33.3%*
Enterprise Detachable Tablets		97	322	3,686		*49.2%*	*49.8%*
Total Enterprise Tablets		**162**	**423**	**4,550**		*37.7%*	*44.9%*
Total Tablets		**4,188**	**5,579**	**30,404**		*10.0%*	*24.6%*
Total PCs & Tablets	**8,951**	**14,301**	**32,656**	**118,696**	*59.8%*	*38.2%*	*29.5%*
Consumer SmartPhones	21,147	16,610	55,076	100,511	*-21.5%*	*27.0%*	*16.9%*
Enterprise SmartPhones	2,208	1,854	5,896	10,627	*-16.0%*	*27.8%*	*17.0%*
Total SmartPhones	**23,355**	**18,464**	**60,972**	**111,137**	*-20.9%*	*27.1%*	*16.9%*
Total Personal Devices	**32,306**	**32,764**	**93,628**	**229,833**	*1.4%*	*30.5%*	*21.7%*
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United States AI Units Shipment % of Total Unit Shipments Forecast						
Segment, Product, Form Factor	2024	2025	2028	2034	50% Year	10% to 90% Time
Consumer Desktop PCs	3.9%	6.4%	24.5%	95.4%	2029	7.1
Enterprise Desktop PCs	3.5%	5.0%	13.4%	74.3%	2032	10.0
Total Desktop	**3.7%**	**5.6%**	**17.8%**	**81.7%**	**2031**	**9.2**
Consumer Convertible Mobile PCs	3.8%	4.0%	14.3%	92.8%	2030	7.6
Consumer Traditional Mobile PCs	25.1%	10.0%	46.4%	99.4%	2026	7.0
Total Consumer Mobile PCs	**22.6%**	**9.7%**	**43.1%**	**98.8%**	**2026**	**7.8**
Enterprise Convertible Mobile PCs	1.7%	6.8%	24.8%	99.8%	2028	4.3
Enterprise Traditional Mobile PCs	13.2%	16.0%	40.1%	92.9%	2028	9.9
Total Enterprise Mobile PCs	**11.0%**	**14.2%**	**36.7%**	**94.9%**	**2028**	**8.8**
Total Mobile PCs	**15.8%**	**11.5%**	**39.0%**	**95.9%**	**2027**	**9.1**
Total PCs	**13.4%**	**10.8%**	**36.9%**	**95.5%**	**2028**	**8.9**
Consumer Slate Tablets		2.5%	5.5%	99.8%	2027	4.1
Consumer Detachable Tablets		19.3%	24.0%	95.2%	2027	9.0
Total Consumer Tablets		**12.1%**	**16.7%**	**96.6%**	**2027**	**7.4**
Enterprise Slate Tablets		5.4%	9.1%	98.9%	2029	5.4
Enterprise Detachable Tablets		3.6%	10.7%	99.6%	2028	4.5
Total Enterprise Tablets		**4.2%**	**10.2%**	**99.5%**	**2028**	**4.7**
Total Tablets		**11.2%**	**16.0%**	**97.0%**	**2028**	**7.1**
Total PCs & Tablets	**8.5%**	**10.9%**	**30.1%**	**95.9%**	**2028**	**8.0**
Consumer SmartPhones	18.3%	14.5%	49.9%	97.9%	2027	8.3
Enterprise SmartPhones	19.0%	16.0%	51.3%	96.7%	2027	9.1
Total SmartPhones	**18.4%**	**14.7%**	**50.0%**	**97.8%**	**2027**	**8.3**
Total Personal Devices	**13.9%**	**14.2%**	**40.6%**	**96.8%**	**2027**	**8.4**
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Segment-Product-Form Factor Forecast Tables and Charts
Desktop PCs
Consumer

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Unit Shipments (K)	534	356	276	346	427	521	621	722	813	878	902	871
AGR		-33%	-22%	25%	24%	22%	19%	16%	13%	8%	3%	-3%
Percent of Total Unit Shipments	8.9%	6.4%	5.8%	8.5%	12.5%	18.1%	25.7%	35.5%	47.7%	61.5%	75.5%	87.2%
Market Penetration	1.1%	2.0%	2.8%	3.9%	5.5%	7.6%	10.4%	14.2%	19.0%	24.9%	32.0%	40.0%
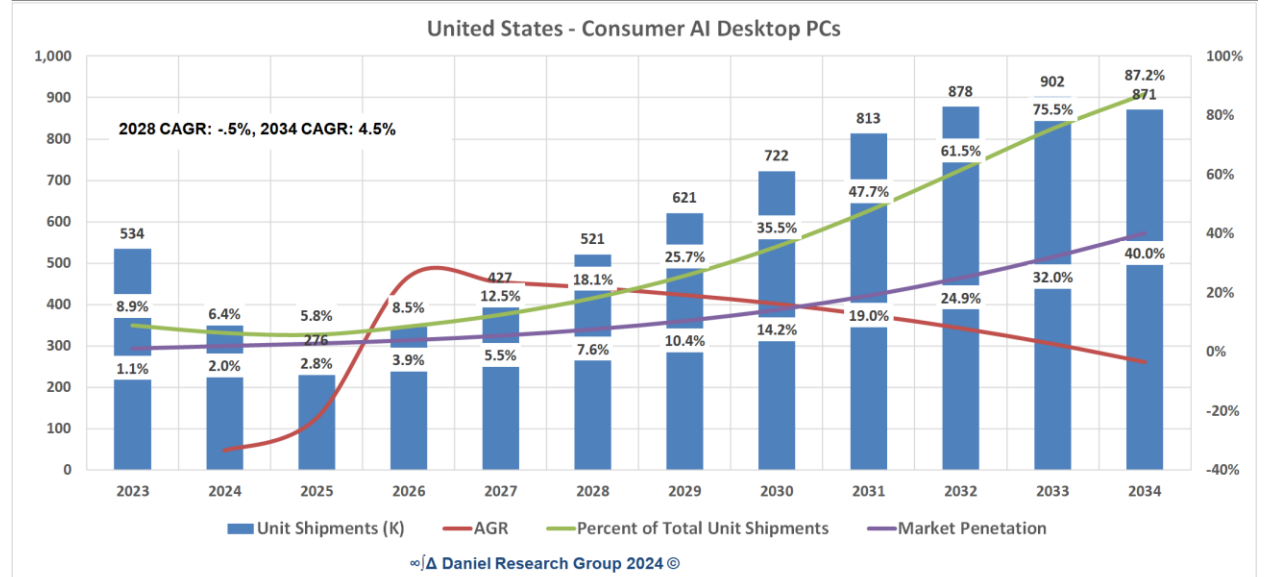
Enterprise

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Unit Shipments (K)	522	695	404	496	593	700	872	968	1,091	1,228	1,333	1,430
AGR		33%	-42%	23%	20%	18%	25%	11%	13%	13%	9%	7%
Percent of Total Unit Shipments	6.8%	9.5%	6.3%	8.7%	11.8%	15.9%	22.8%	29.2%	38.0%	49.6%	62.4%	77.8%
Market Penetration	8.2%	10.0%	12.2%	14.7%	17.7%	21.1%	25.0%	29.3%	34.1%	39.2%	44.5%	50.0%
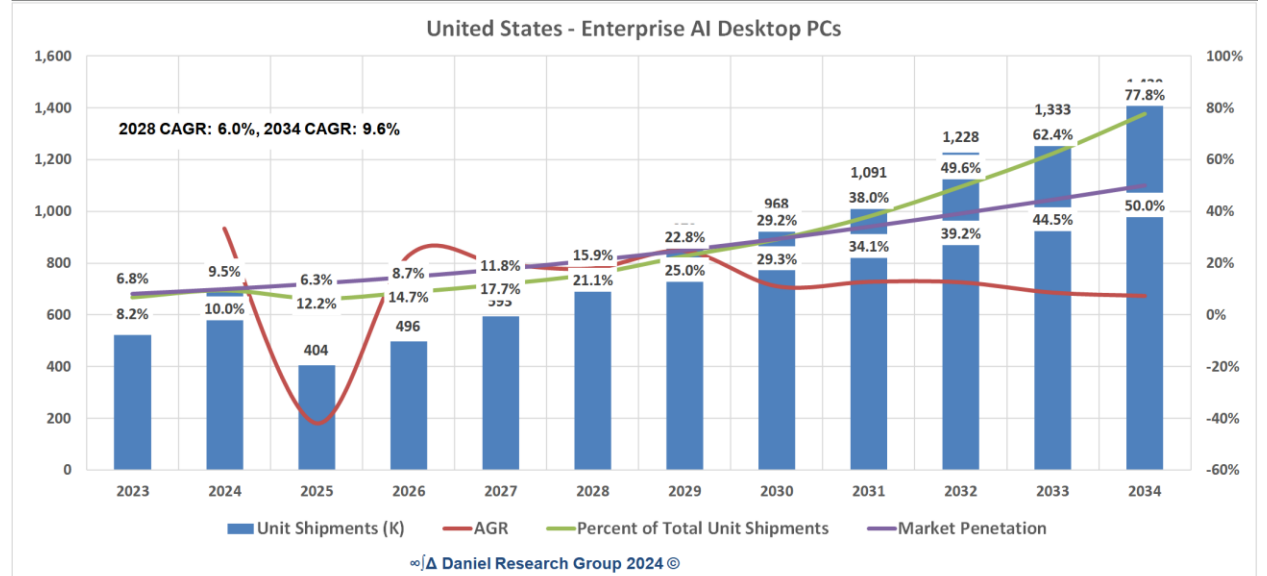
Total

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Unit Shipments (K)	1,056	1,051	680	842	1,021	1,220	1,493	1,690	1,904	2,106	2,235	2,301
AGR		0%	-35%	24%	21%	20%	22%	13%	13%	11%	6%	3%
Percent of Total Unit Shipments	7.7%	8.1%	6.0%	8.6%	12.1%	16.7%	23.9%	31.6%	41.6%	53.9%	67.1%	81.1%
Market Penetration	1.6%	2.5%	3.4%	4.6%	6.2%	8.4%	11.3%	15.0%	19.8%	25.6%	32.6%	40.5%

United States - Consumer & Enterprise AI Desktop PCs

2028 CAGR: 2.9%, 2034 CAGR: 7.3%

Legend: Unit Shipments (K), AGR, Percent of Total Unit Shipments, Market Penetration

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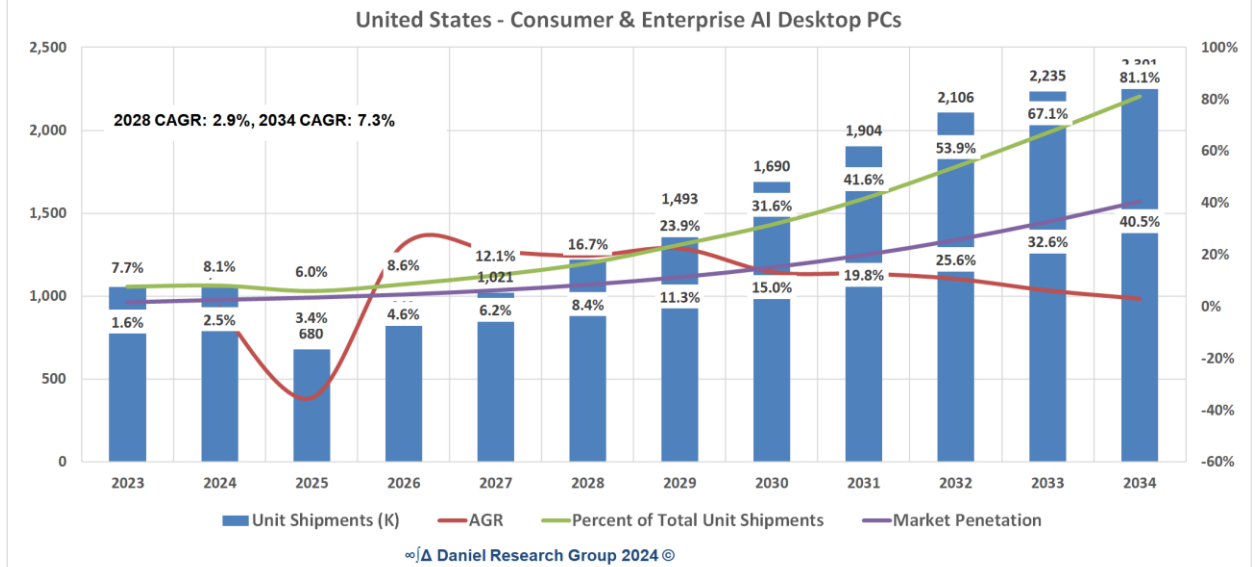
Mobile PCs

Consumer Convertible

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Unit Shipments (K)	43	570	378	491	730	988	1,418	1,757	2,063	2,119	2,126	2,109
AGR		1233%	-34%	30%	49%	35%	43%	24%	17%	3%	0%	-1%
Percent of Total Unit Shipments	1.8%	21.4%	15.6%	20.4%	30.6%	41.7%	60.4%	75.6%	89.8%	93.3%	94.9%	95.4%
Market Penetration	0.3%	4.0%	6.4%	10.0%	15.4%	22.9%	32.7%	44.3%	56.5%	68.0%	77.6%	85.0%

United States - Consumer AI Convertible Mobile PCs

2028 CAGR: 87.4%, 2034 CAGR: 42.5%

Legend: Unit Shipments (K), AGR, Percent of Total Unit Shipments, Market Penetration

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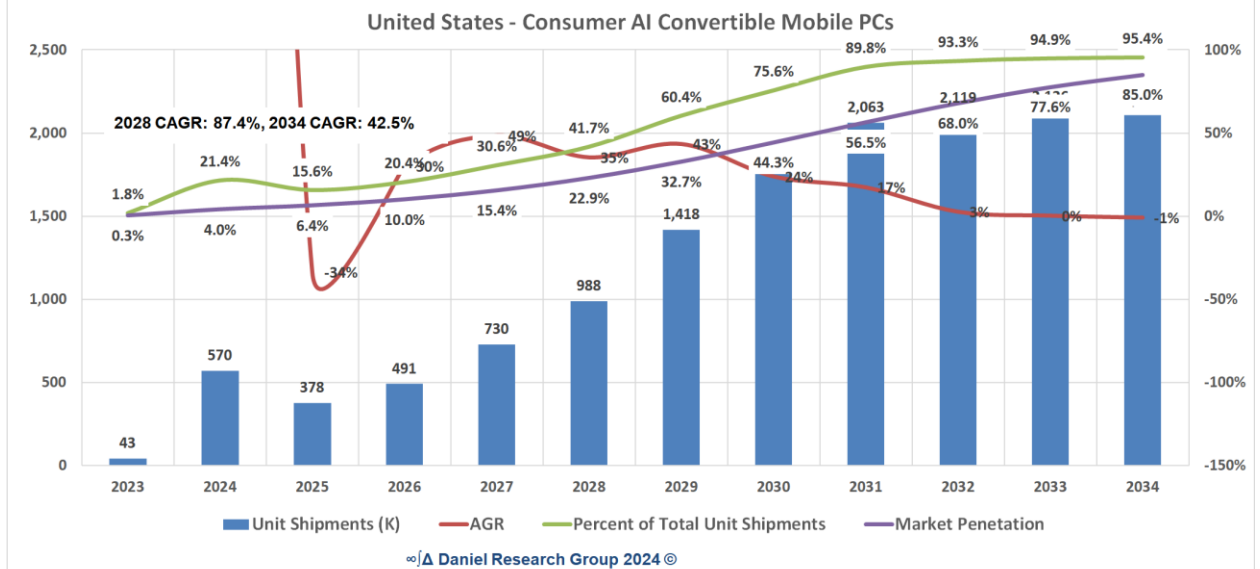
Consumer Traditional

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Unit Shipments (K)	6,012	7,872	5,536	7,133	7,970	11,081	13,364	15,601	16,695	17,874	19,638	22,127
AGR		31%	-30%	29%	12%	39%	21%	17%	7%	7%	10%	13%
Percent of Total Unit Shipments	32.5%	40.6%	27.7%	35.1%	38.7%	53.1%	63.1%	72.8%	77.1%	81.7%	89.0%	99.5%
Market Penetration	4.1%	9.0%	12.0%	15.8%	20.6%	26.3%	33.0%	40.4%	48.3%	56.3%	64.0%	71.0%

United States - Consumer AI Traditional Mobile PCs
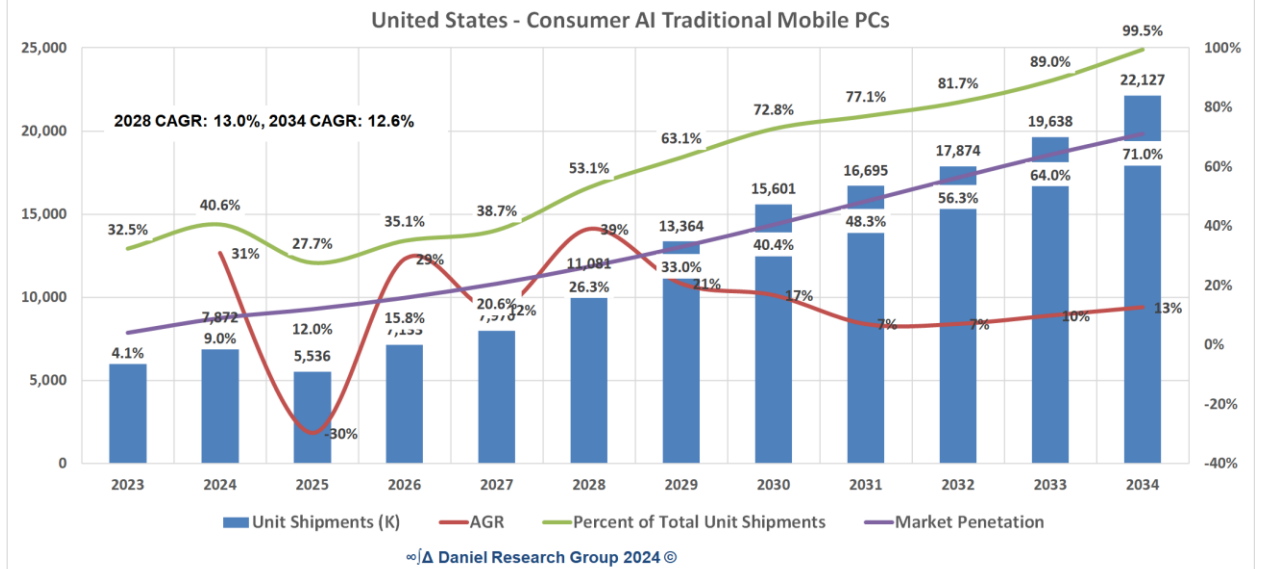
Enterprise Convertible

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Unit Shipments (K)	88	100	1,604	1,505	2,326	3,410	4,972	6,641	8,560	11,061	13,233	15,864
AGR		14%	1504%	-6%	55%	47%	46%	34%	29%	29%	20%	20%
Percent of Total Unit Shipments	1.7%	1.7%	23.5%	19.6%	27.1%	35.8%	46.3%	55.2%	63.7%	73.9%	79.7%	86.4%
Market Penetration	1.3%	2.2%	14.1%	19.6%	26.5%	34.9%	44.2%	54.0%	63.5%	72.1%	79.3%	85.0%

United States - Enterprise AI Convertible Mobile PCs
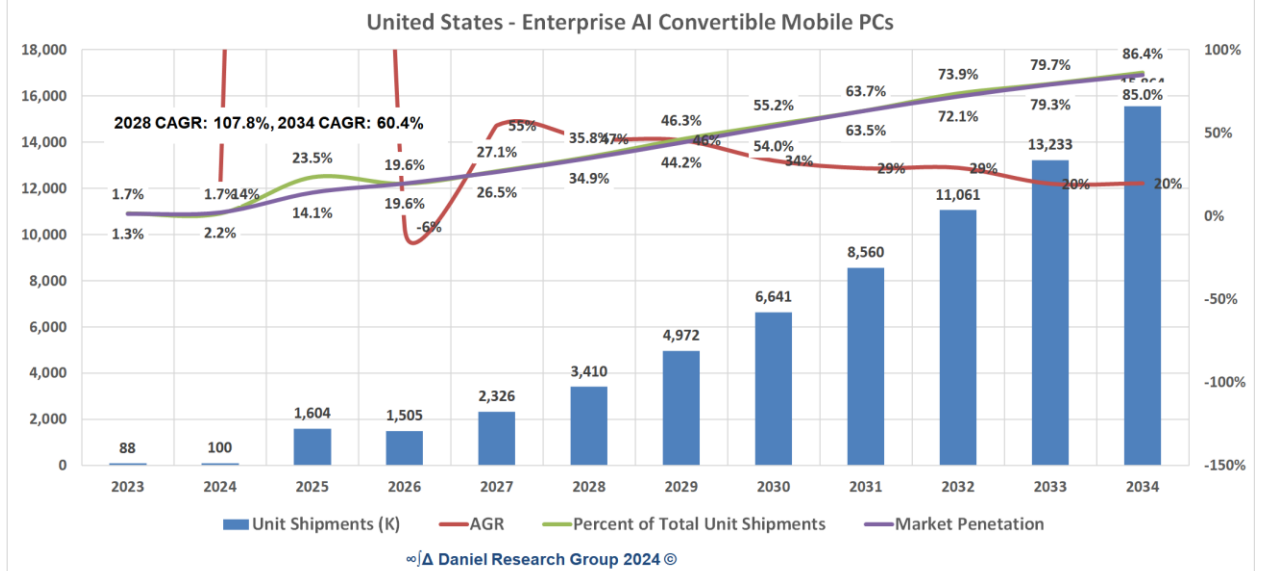
Enterprise Traditional

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Unit Shipments (K)	3,461	986	2,728	4,173	6,190	8,941	13,057	17,466	22,976	29,585	36,696	45,495
AGR		-72%	177%	53%	48%	44%	46%	34%	32%	29%	24%	24%
Percent of Total Unit Shipments	14.3%	3.8%	9.9%	14.2%	19.8%	26.8%	36.9%	46.6%	57.9%	70.5%	82.7%	97.2%
Market Penetration	7.4%	10.0%	13.4%	17.7%	23.0%	29.3%	36.6%	44.5%	52.7%	60.8%	68.3%	75.0%

United States - Enterprise AI Traditional Mobile PCs
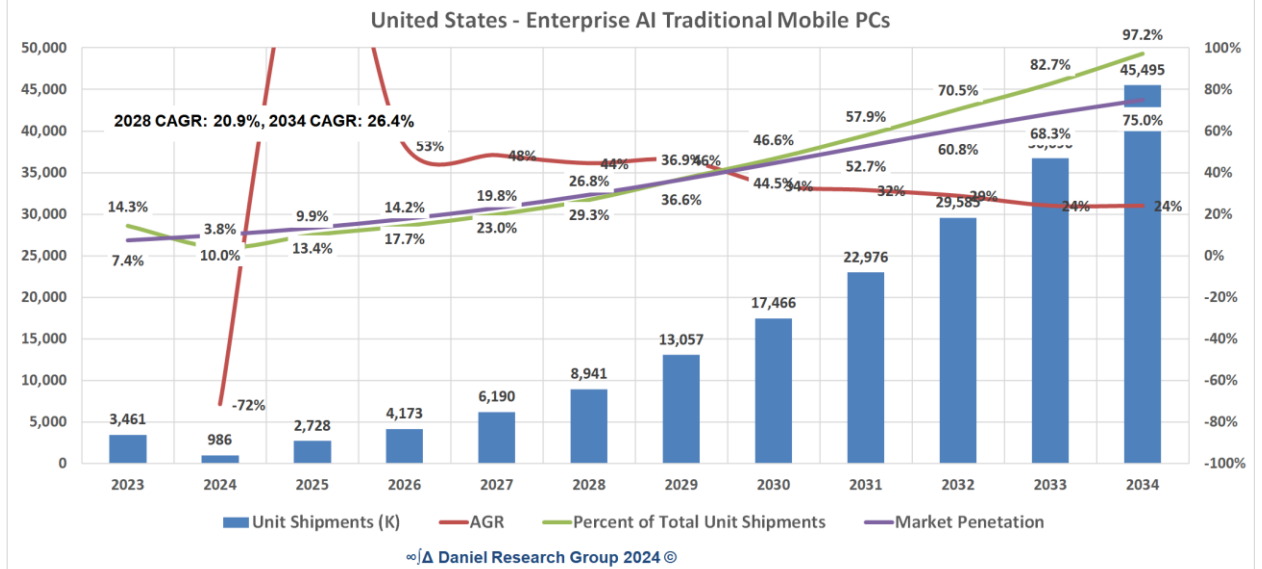
Total

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Unit Shipments (K)	9,604	9,528	10,245	13,301	17,216	24,421	32,810	41,465	50,294	60,638	71,692	85,594
AGR		-1%	8%	30%	29%	42%	34%	26%	21%	21%	18%	19%
Percent of Total Unit Shipments	19.1%	17.7%	18.1%	22.2%	27.4%	36.9%	47.1%	56.6%	65.2%	74.8%	84.1%	95.5%
Market Penetration	0.9%	2.7%	6.0%	12.9%	22.1%	28.9%	36.6%	44.8%	53.2%	61.5%	69.1%	75.9%

United States - Consumer & Enterprise AI Mobile PCs
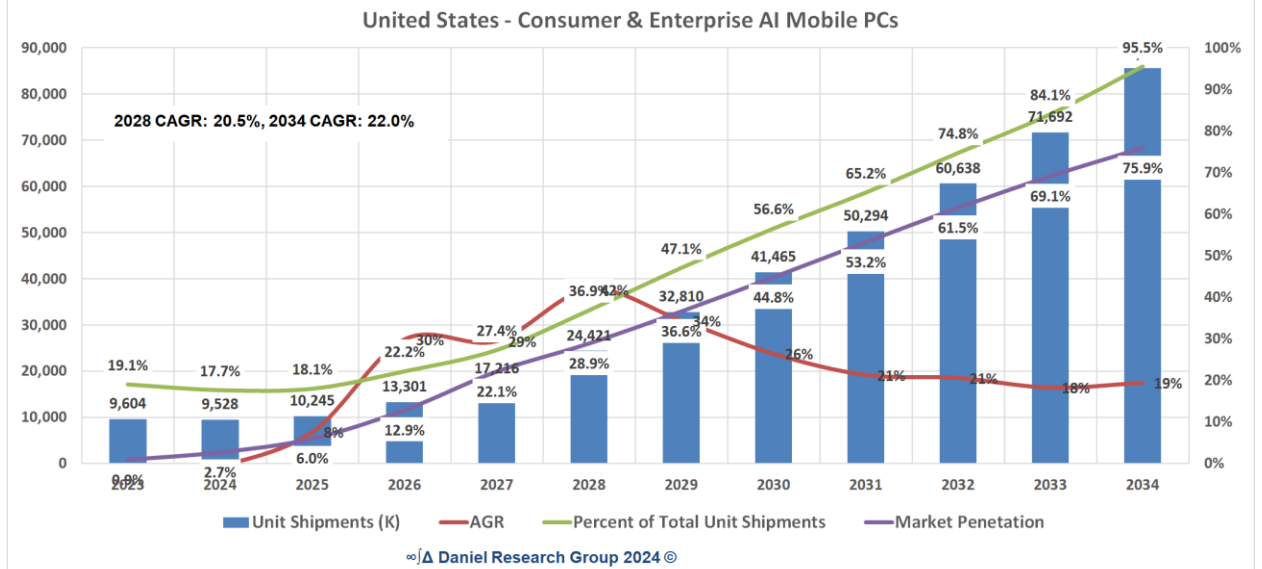
Total PCs (Desktops and Mobile PCs)
Consumer

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Unit Shipments (K)	6,589	8,798	6,189	7,970	9,127	12,590	15,402	18,081	19,571	20,871	22,666	25,107
AGR		34%	-30%	29%	15%	38%	22%	17%	8%	7%	9%	11%
Percent of Total Unit Shipments	24.5%	31.8%	22.7%	29.8%	34.5%	48.2%	59.4%	70.1%	76.3%	81.6%	88.9%	98.7%
Market Penetration	1.6%	3.4%	6.9%	13.8%	17.1%	21.7%	27.1%	33.0%	39.1%	46.5%	53.9%	61.1%

United States - Consumer AI Total PCs
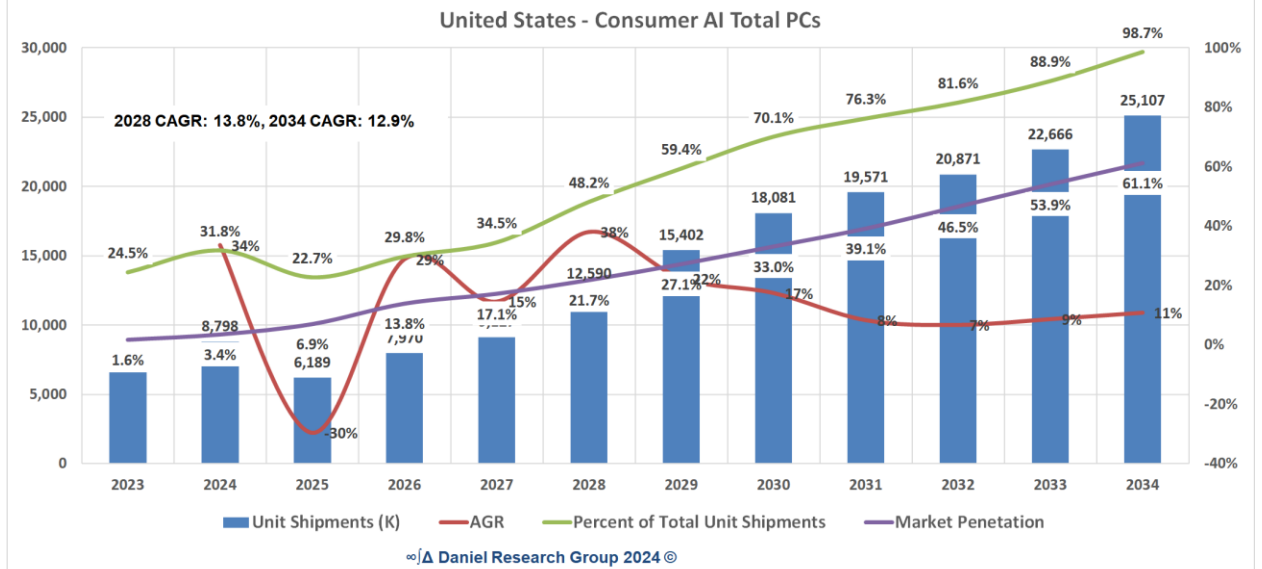
Enterprise

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Unit Shipments (K)	4,071	1,781	4,736	6,174	9,110	13,051	18,901	25,074	32,627	41,874	51,262	62,789
AGR		-56%	166%	30%	48%	43%	45%	33%	30%	28%	22%	22%
Percent of Total Unit Shipments	11.0%	4.6%	11.6%	14.4%	20.3%	27.6%	37.8%	47.5%	58.3%	70.4%	81.3%	93.7%
Market Penetration	7.6%	13.9%	24.2%	38.6%	55.3%	70.9%	82.7%	90.4%	94.9%	97.3%	98.6%	99.3%

United States - Enterprise AI Total PCs
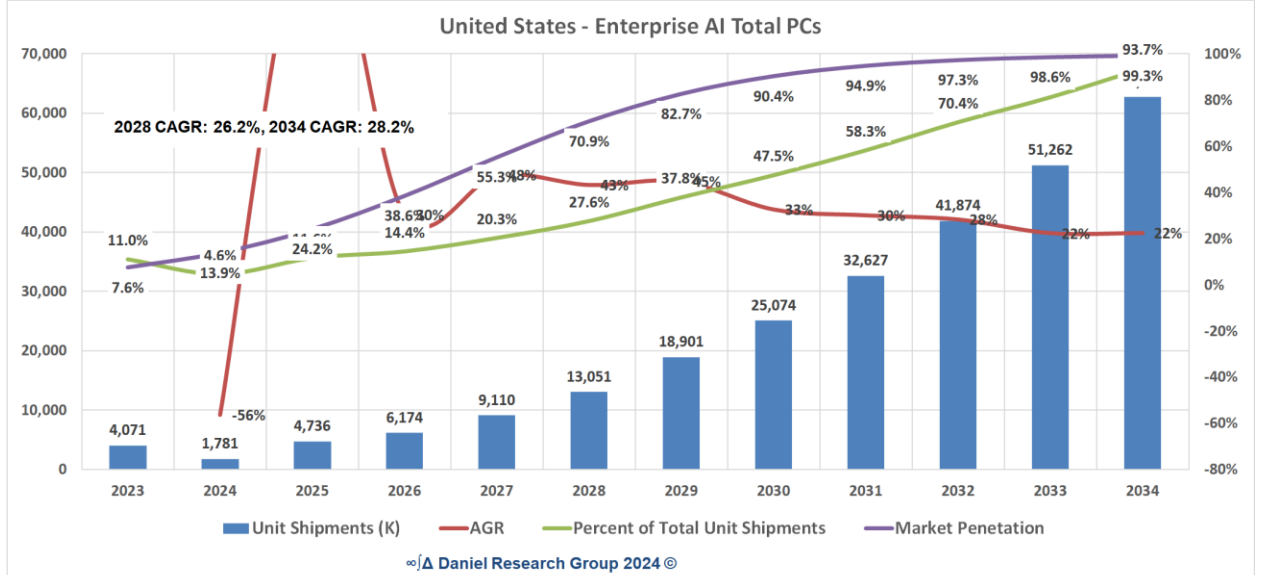
Total

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Unit Shipments (K)	10,660	10,580	10,925	14,144	18,237	25,641	34,303	43,155	52,197	62,744	73,927	87,895
AGR		-1%	3%	29%	29%	41%	34%	26%	21%	20%	18%	19%
Percent of Total Unit Shipments	16.7%	15.9%	16.1%	20.3%	25.6%	34.9%	45.2%	54.9%	63.9%	73.8%	83.4%	95.1%
Market Penetration	1.9%	4.0%	7.8%	15.1%	19.1%	24.3%	30.0%	36.0%	42.0%	49.2%	56.4%	63.2%

United States - Consumer & Enterprise AI Total PCs

2028 CAGR: 19.2%, 2034 CAGR: 21.1%

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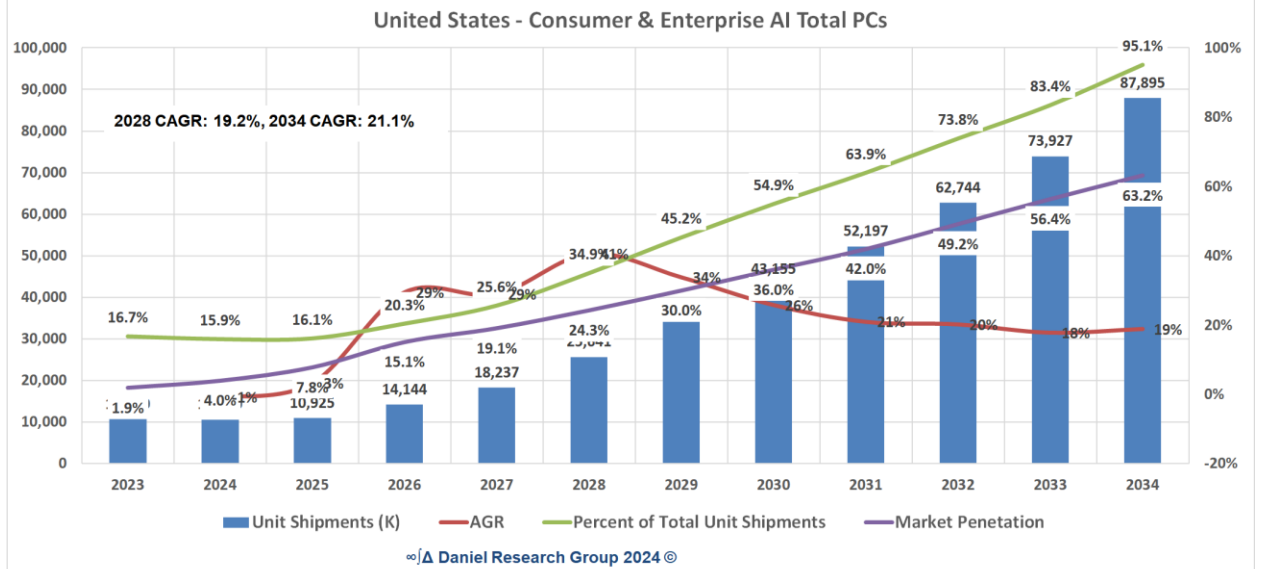
Tablets

Consumer Slate

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Unit Shipments (K)			1,537	546	718	936	1,131	965	1,102	1,288	1,455	1,288
AGR				-64%	32%	30%	21%	-15%	14%	17%	13%	-11%
Percent of Total Unit Shipments			10.7%	4.0%	5.6%	7.7%	9.8%	8.9%	10.8%	13.3%	16.0%	15.1%
Market Penetration			1.3%	1.6%	2.0%	2.6%	3.2%	4.1%	5.1%	6.4%	8.0%	10.0%

United States - Consumer AI Slate Tablets

2028 CAGR: -15.2%, 2034 CAGR: -1.9%

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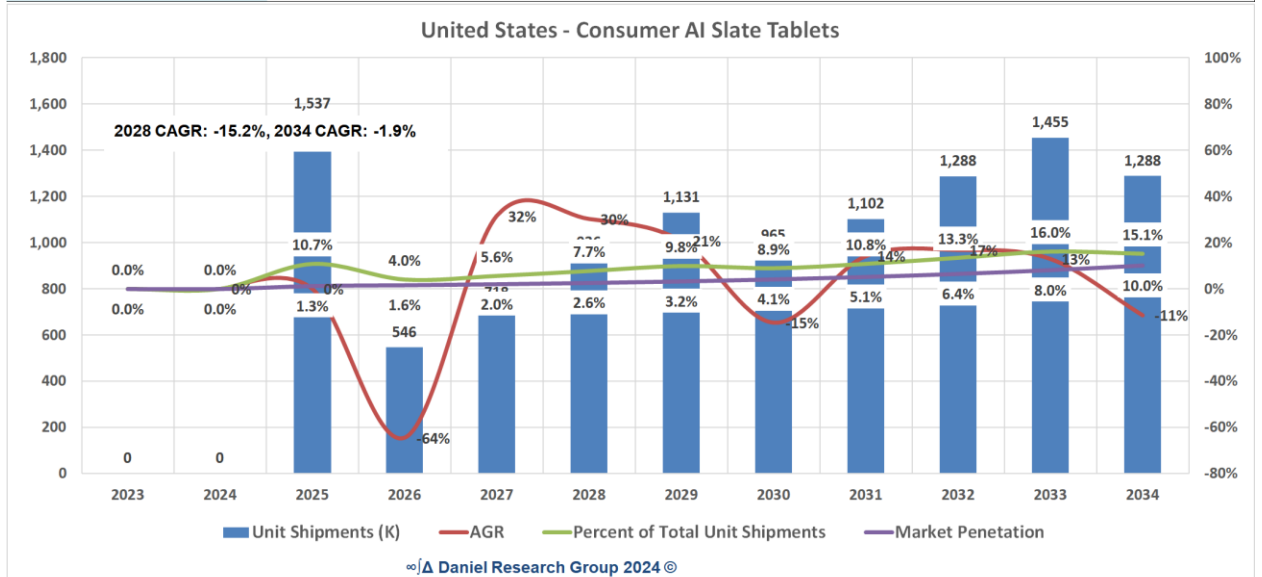
Consumer Detachable

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Unit Shipments (K)			1,424	949	1,476	2,255	3,415	5,040	7,183	9,814	12,771	15,766
AGR				-33%	56%	53%	51%	48%	43%	37%	30%	23%
Percent of Total Unit Shipments			7.5%	5.0%	7.8%	12.1%	18.3%	27.0%	38.5%	52.9%	69.4%	86.5%
Market Penetration			2.9%	4.3%	6.2%	8.8%	12.5%	17.4%	23.7%	31.5%	40.4%	50.0%

United States - Consumer AI Detachable Tablets

2028 CAGR: 16.6%, 2034 CAGR: 30.6%

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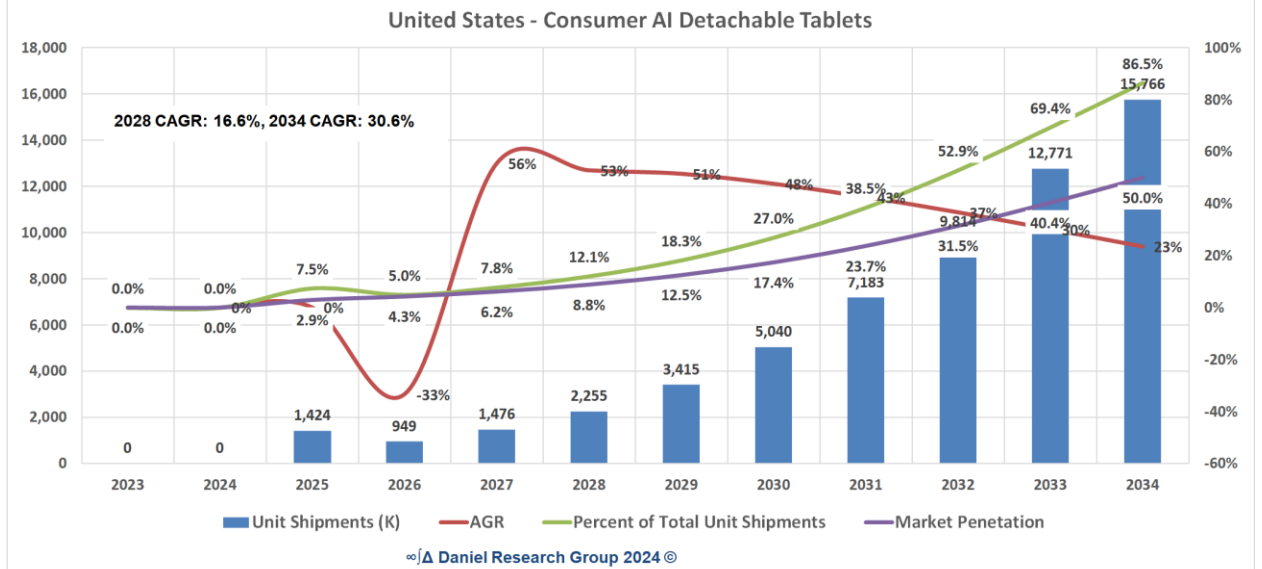
Enterprise Slate

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Unit Shipments (K)			35	25	41	66	109	168	258	386	553	758
AGR				-28%	63%	61%	65%	55%	53%	50%	43%	37%
Percent of Total Unit Shipments			2.9%	2.1%	3.6%	5.9%	10.2%	16.3%	26.0%	40.6%	60.7%	86.7%
Market Penetration			1.0%	1.5%	2.3%	3.4%	5.1%	7.5%	10.9%	15.7%	22.0%	30.0%

United States - Enterprise AI Slate Tablets

2028 CAGR: 23.7%, 2034 CAGR: 40.8%

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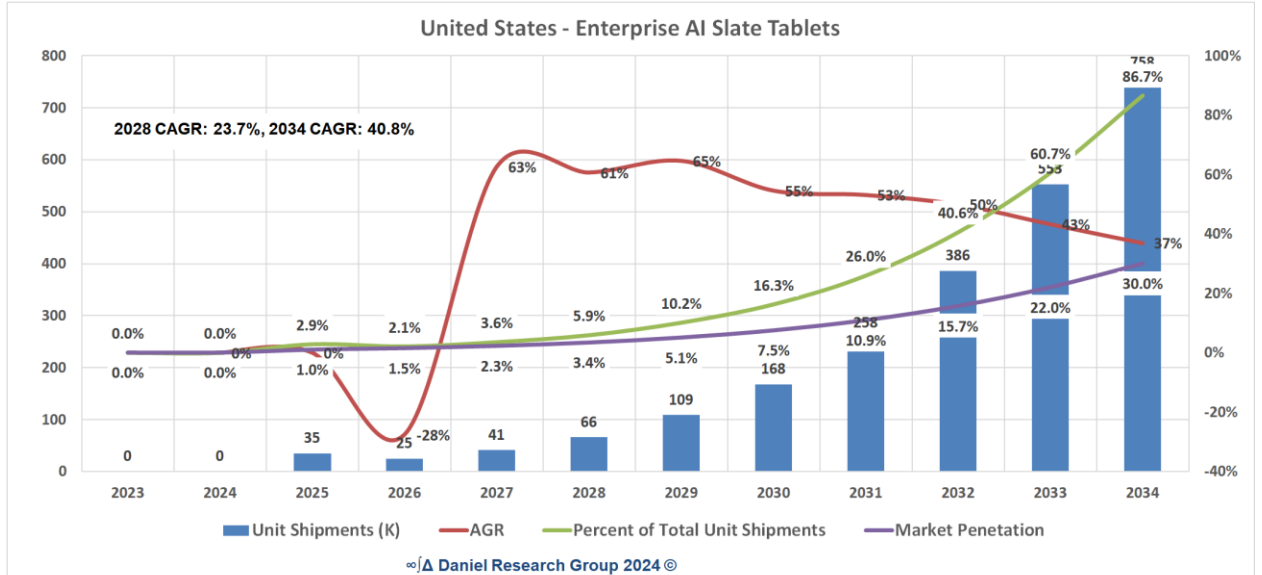
Enterprise Detachable

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Unit Shipments (K)			30	34	69	139	261	461	796	1,341	2,174	3,412
AGR				13%	107%	100%	88%	76%	73%	69%	62%	57%
Percent of Total Unit Shipments			1.1%	1.2%	2.4%	4.6%	8.4%	14.2%	23.7%	38.6%	60.6%	92.2%
Market Penetration			1.4%	1.9%	2.6%	3.5%	4.8%	6.5%	8.7%	11.6%	15.4%	20.0%

United States - Enterprise AI Detachable Tablets

2028 CAGR: 67.1%, 2034 CAGR: 69.4%

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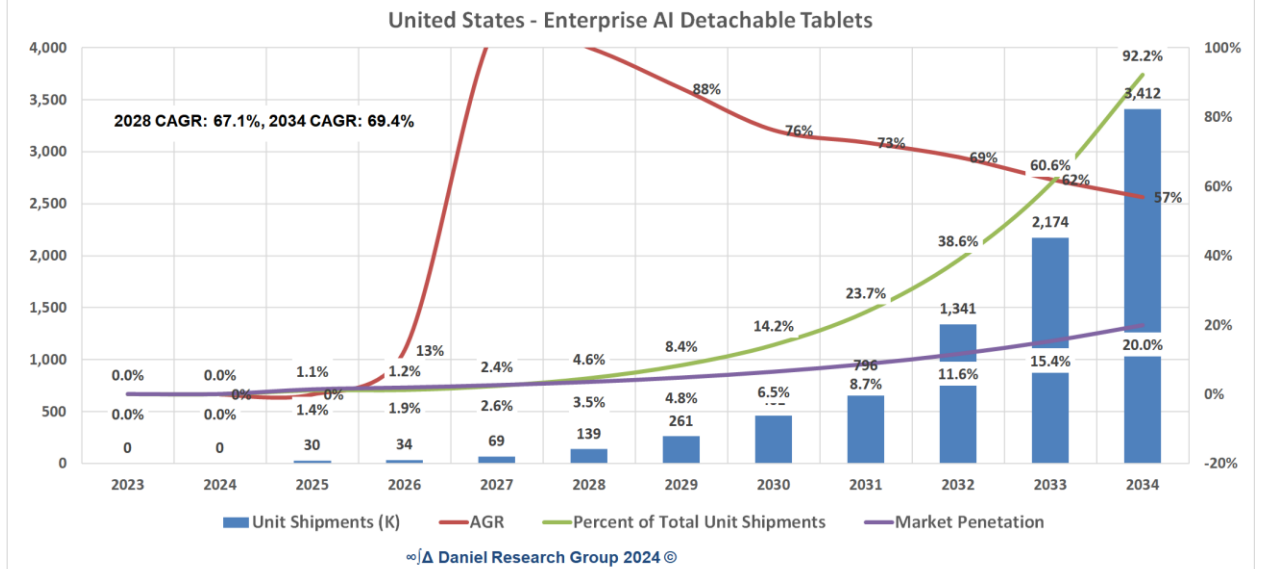
Total

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Unit Shipments (K)			3,026	1,554	2,305	3,396	4,916	6,635	9,339	12,829	16,953	21,224
AGR				-49%	48%	47%	45%	35%	41%	37%	32%	25%
Percent of Total Unit Shipments			8.1%	4.2%	6.4%	9.7%	14.3%	19.6%	28.1%	39.3%	53.0%	67.7%
Market Penetration			1.1%	1.7%	2.6%	3.9%	5.9%	9.4%	14.6%	21.8%	30.4%	40.2%

United States - Consumer & Enterprise AI Tablets

2028 CAGR: 3.9%, 2034 CAGR: 24.2%

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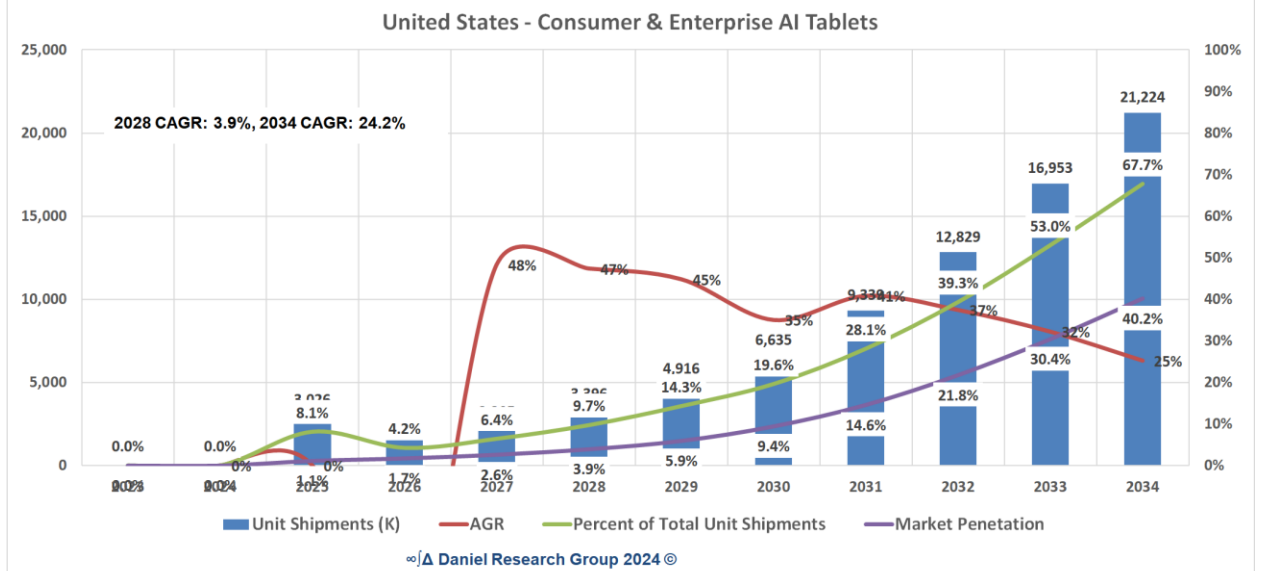
PCs and Tablets
Consumer

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Unit Shipments (K)	6,589	8,798	9,150	9,465	11,322	15,781	19,948	24,087	27,856	31,972	36,892	42,161
AGR		34%	4%	3%	20%	39%	26%	21%	16%	15%	15%	14%
Percent of Total Unit Shipments	11.6%	14.2%	15.1%	15.9%	19.5%	27.7%	35.5%	43.5%	51.1%	59.4%	69.6%	80.8%
Market Penetration	2.0%	3.4%	5.7%	9.4%	15.0%	23.3%	30.8%	38.6%	47.0%	56.2%	66.3%	76.7%
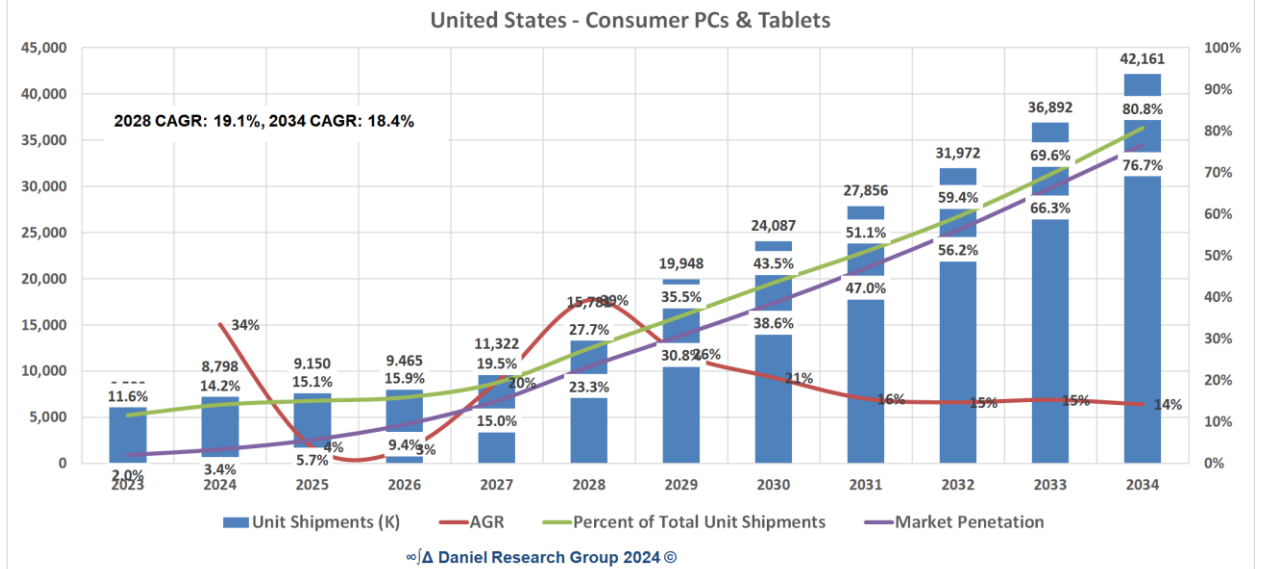
United States - Consumer PCs & Tablets

2028 CAGR: 19.1%, 2034 CAGR: 18.4%

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Enterprise

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Unit Shipments (K)	6,589	8,798	9,150	9,465	11,322	15,781	19,948	24,087	27,856	31,972	36,892	42,161
AGR		34%	4%	3%	20%	39%	26%	21%	16%	15%	15%	14%
Percent of Total Unit Shipments	16.0%	20.6%	20.5%	20.3%	23.1%	30.7%	36.8%	42.2%	46.2%	50.1%	54.6%	58.9%
Market Penetration	38.9%	65.3%	109.5%	181.2%	293.4%	458.6%	602.3%	757.3%	926.6%	1108.6%	1310.6%	1518.8%
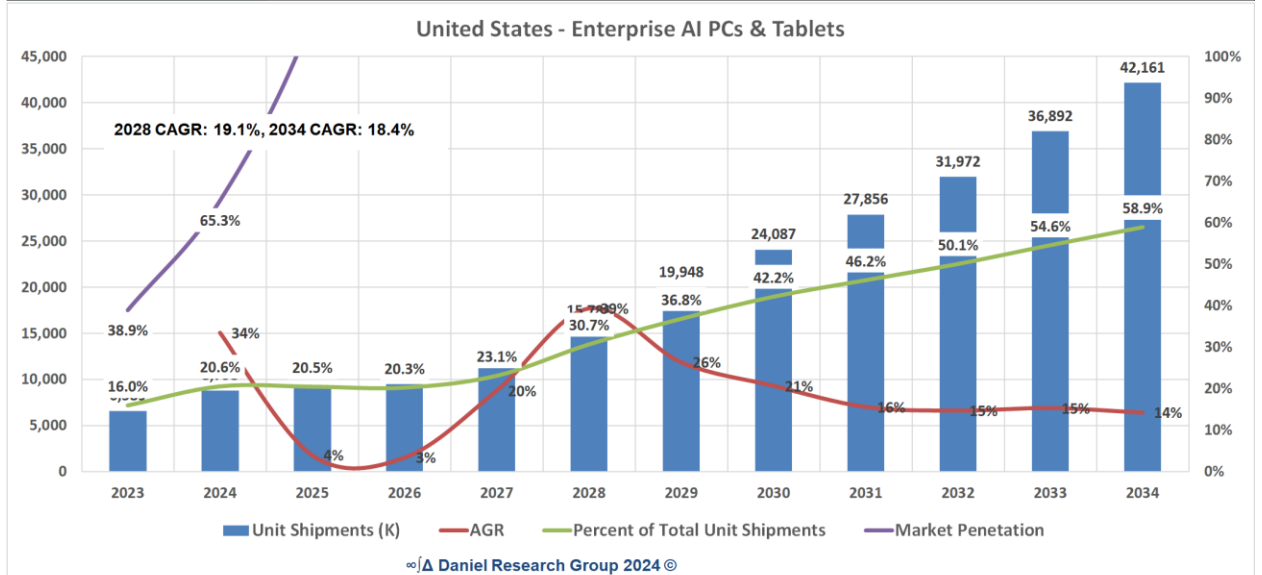
United States - Enterprise AI PCs & Tablets

2028 CAGR: 19.1%, 2034 CAGR: 18.4%

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Total

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Unit Shipments (K)	6,589	8,798	9,150	9,465	11,322	15,781	19,948	24,087	27,856	31,972	36,892	42,161
AGR		34%	4%	3%	20%	39%	26%	21%	16%	15%	15%	14%
Percent of Total Unit Shipments	6.7%	8.4%	8.7%	8.9%	10.6%	14.6%	18.1%	21.4%	24.2%	27.2%	30.6%	34.1%
Market Penetration	1.9%	3.2%	5.4%	8.9%	14.3%	22.2%	29.3%	36.7%	44.7%	53.5%	63.1%	73.0%

United States - Consumer & Enterprise AI PCs & Tablets

2028 CAGR: 19.1%, 2034 CAGR: 18.4%

Legend: Unit Shipments (K), AGR, Percent of Total Unit Shipments, Market Penetration

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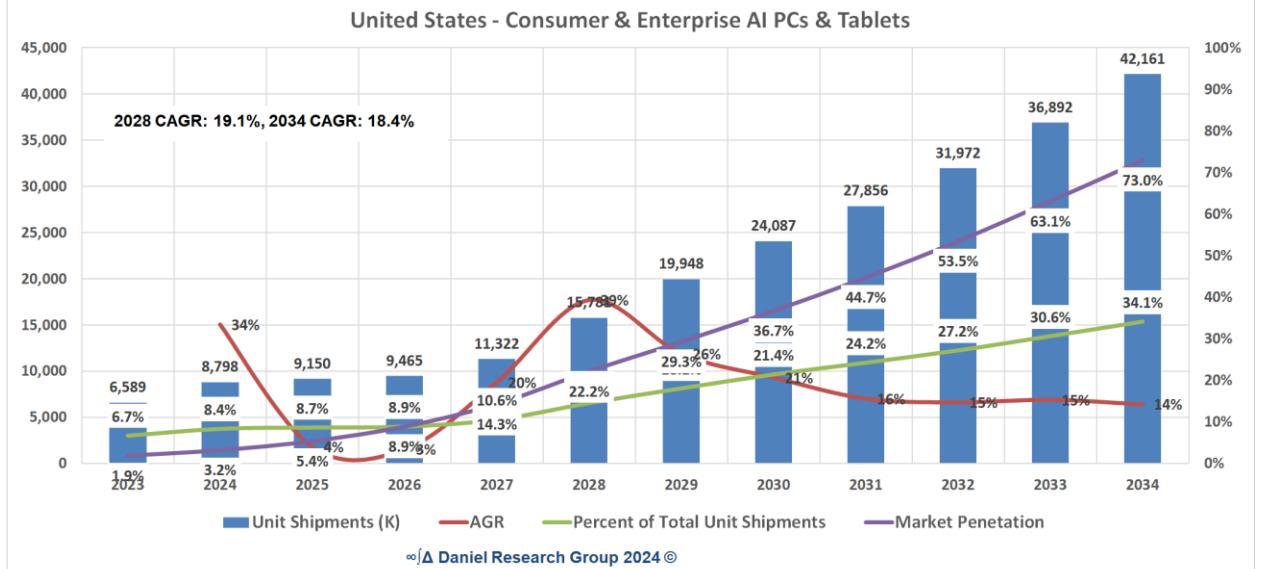
Smartphones

Consumer

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Unit Shipments (K)	46	21,147	16,610	26,536	40,497	55,076	75,024	90,600	99,998	104,446	102,304	100,511
AGR		45452%	-21%	60%	53%	36%	36%	21%	10%	4%	-2%	-2%
Percent of Total Unit Shipments	0.0%	18.3%	14.5%	23.4%	36.2%	49.9%	68.5%	83.9%	93.9%	99.3%	98.5%	97.9%
Market Penetration	0.0%	4.0%	6.7%	10.9%	17.3%	26.3%	38.0%	51.2%	64.2%	75.4%	84.0%	90.0%

United States - Consumer AI SmartPhones

2028 CAGR: 312.0%, 2034 CAGR: 101.0%

Legend: Unit Shipments (K), AGR, Percent of Total Unit Shipments, Market Penetration

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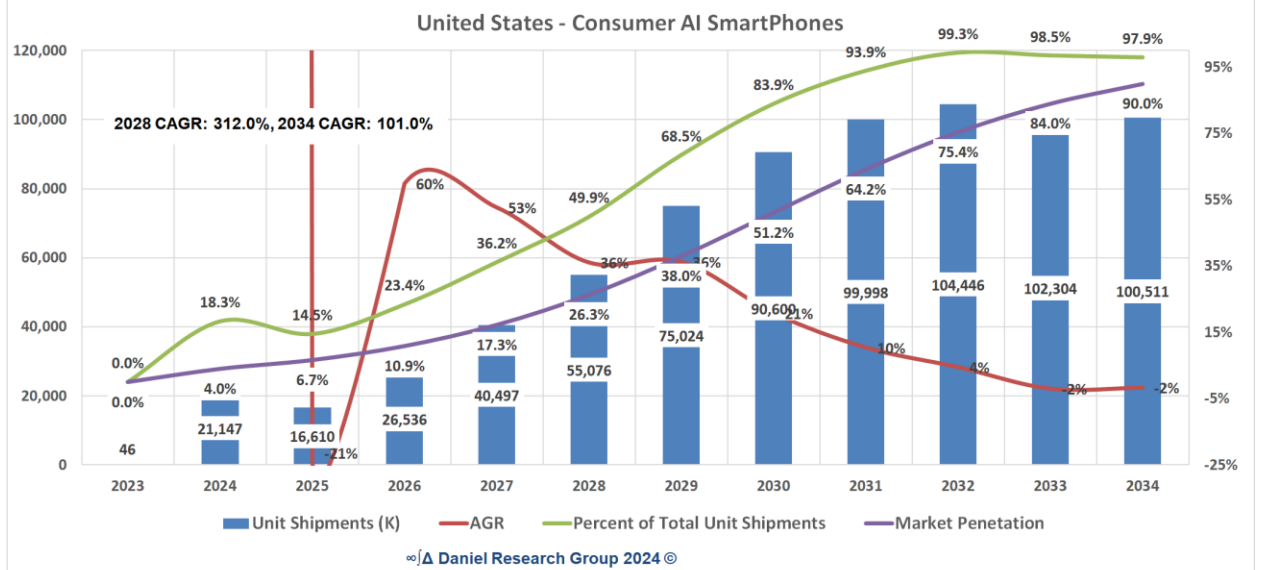
Enterprise

`	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Unit Shipments (K)	4	2,208	1,854	2,937	4,312	5,896	7,485	8,784	9,652	10,191	10,484	10,627
AGR		49815%	-16%	58%	47%	37%	27%	17%	10%	6%	3%	1%
Percent of Total Unit Shipments	0.0%	19.0%	16.0%	25.3%	37.3%	51.3%	65.3%	77.3%	85.6%	91.2%	94.6%	96.7%
Market Penetation	0.2%	7.0%	11.3%	17.7%	26.6%	37.9%	50.8%	63.5%	74.6%	83.2%	89.3%	93.4%

United States - Enterprise AI SmartPhones

2028 CAGR: 321.6%, 2034 CAGR: 102.9%

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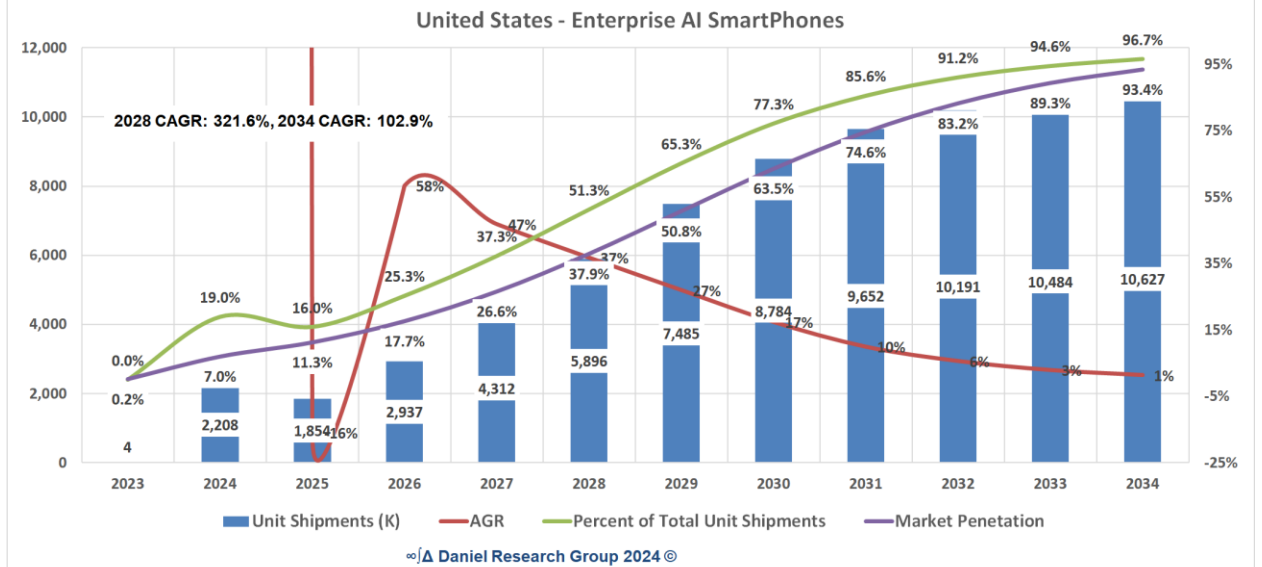
Total

`	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Unit Shipments (K)	51	23,355	18,464	29,473	44,809	60,972	82,509	99,384	109,650	114,638	112,788	111,137
AGR		45831%	-21%	60%	52%	36%	35%	20%	10%	5%	-2%	-1%
Percent of Total Unit Shipments	0.0%	18.4%	14.7%	23.6%	36.3%	50.0%	68.2%	83.3%	93.1%	98.5%	98.1%	97.8%
Market Penetration	0.0%	4.0%	6.7%	10.9%	17.3%	26.4%	38.0%	51.2%	64.2%	75.4%	84.0%	90.0%

United States - Consumer & Enterprise AI SmartPhones

2028 CAGR: 312.8%, 2034 CAGR: 101.2%

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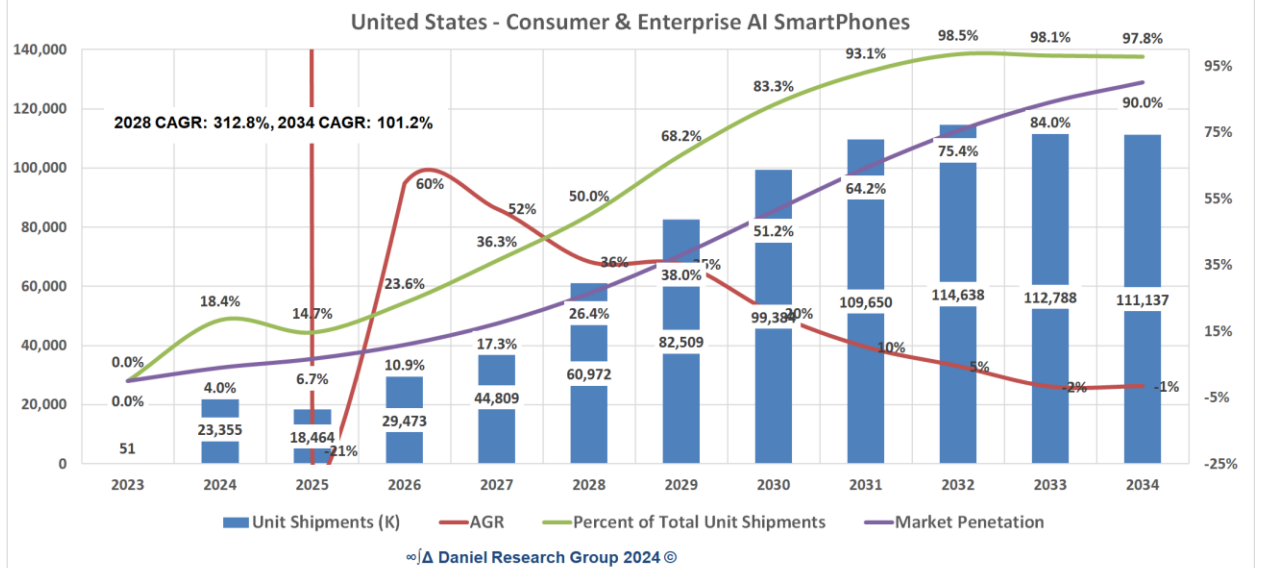
Total Personal Devices (PCs, Tablets, and Phones)
Consumer

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Unit Shipments (K)	6,636	26,339	25,567	35,498	51,707	70,962	95,900	117,098	132,206	143,038	147,646	151,479
AGR		297%	-3%	39%	46%	37%	35%	22%	13%	8%	3%	3%
Percent of Total Unit Shipments	3.7%	14.5%	14.3%	20.1%	29.6%	41.3%	56.4%	69.8%	79.8%	87.5%	91.4%	95.0%
Market Penetation	1.7%	3.6%	7.4%	14.8%	27.3%	44.8%	63.6%	79.1%	89.1%	94.6%	97.4%	98.8%

United States - Consumer AI Personal Devices

2028 CAGR: 60.6%, 2034 CAGR: 32.9%
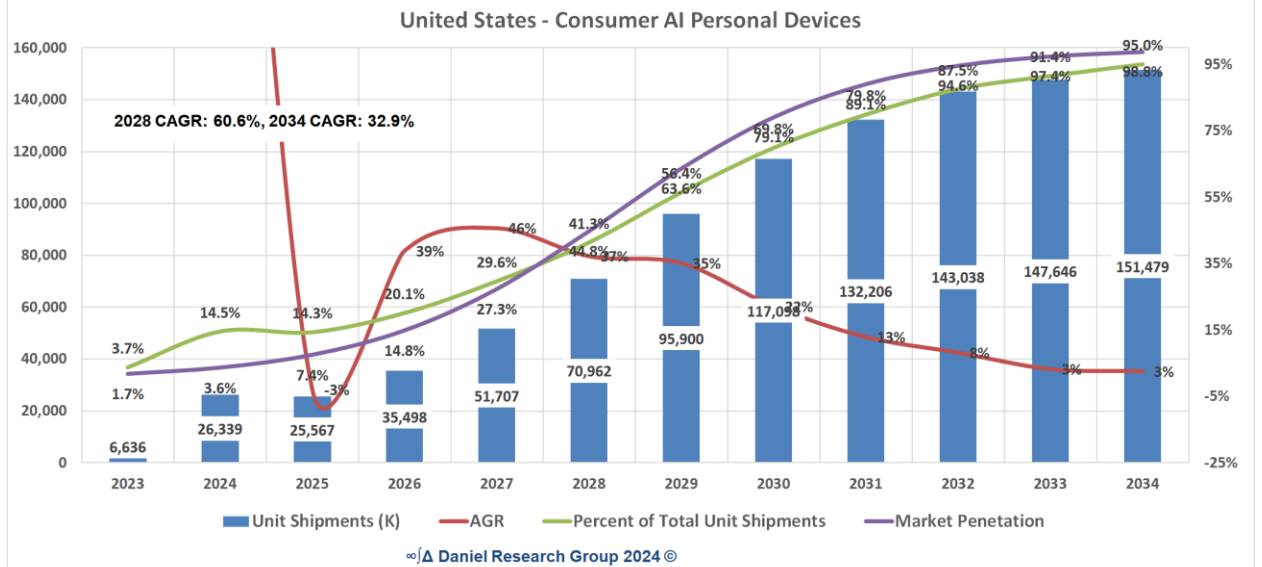
Enterprise

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Unit Shipments (K)	4,279	5,967	7,198	10,646	15,855	22,666	31,399	40,977	50,710	60,169	69,760	78,354
AGR		39%	21%	48%	49%	43%	39%	31%	24%	19%	16%	12%
Percent of Total Unit Shipments	8.1%	11.0%	12.8%	18.2%	26.2%	36.0%	47.8%	59.8%	70.7%	80.1%	88.6%	94.8%
Market Penetation	1.6%	5.9%	19.1%	47.0%	76.9%	92.6%	97.9%	99.4%	99.8%	100.0%	100.0%	100.0%

United States - Enterprise AI Personal Devices

2028 CAGR: 39.6%, 2034 CAGR: 30.3%
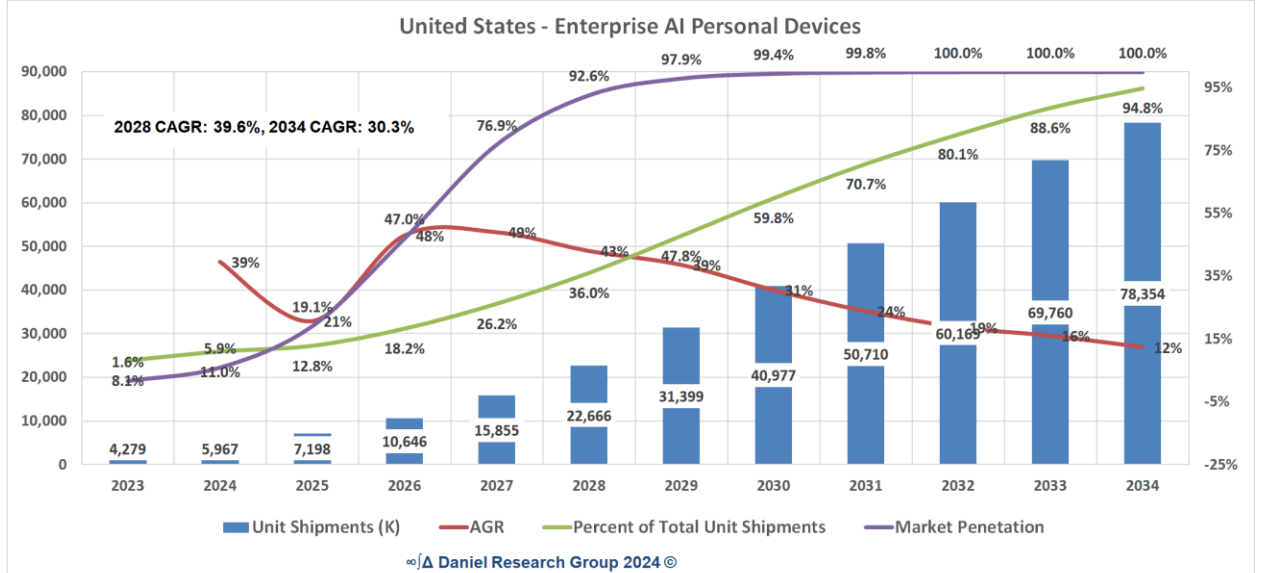
Total

`	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Unit Shipments (K)	10,914	32,306	32,764	46,144	67,562	93,628	127,299	158,076	182,916	203,207	217,406	229,833
AGR		196%	1%	41%	46%	39%	36%	24%	16%	11%	7%	6%
Percent of Total Unit Shipments	4.7%	13.7%	13.9%	19.6%	28.7%	39.9%	54.0%	66.9%	77.1%	85.2%	90.5%	94.9%
Market Penetation	1.7%	3.7%	8.0%	16.4%	29.7%	47.1%	65.3%	80.1%	89.6%	94.9%	97.6%	98.9%

United States - Consumer & Enterprise AI Personal Devices

2028 CAGR: 53.7%, 2034 CAGR: 31.9%

∞∫∆ **Daniel Research Group 2024** ©
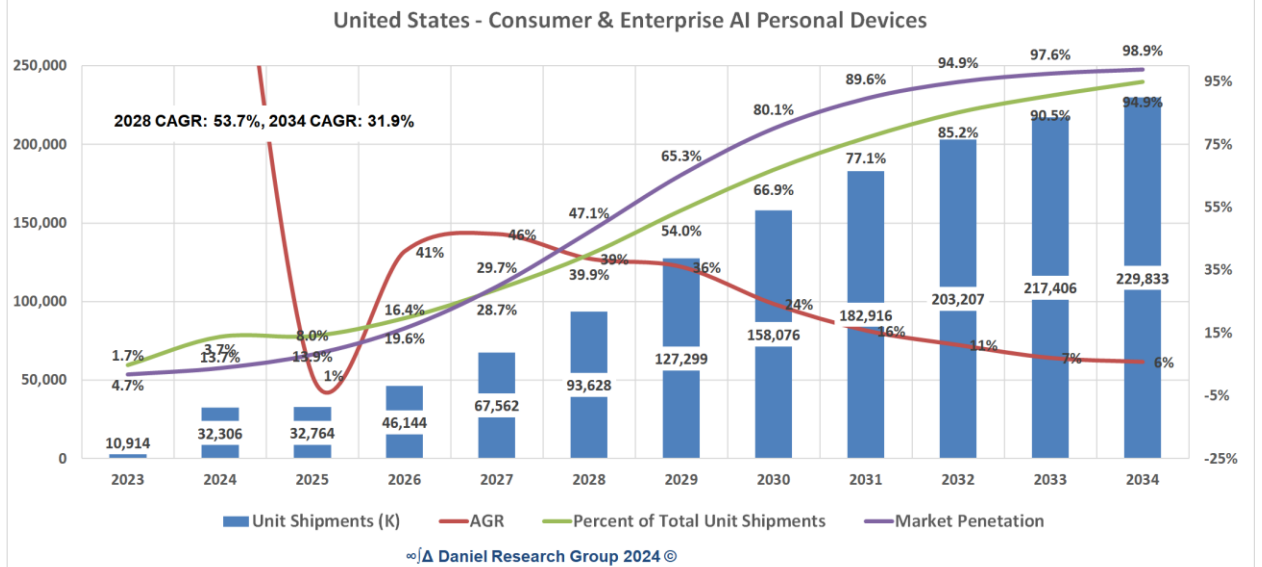
About Daniel Research Group

Daniel Research Group is a market research and consulting firm primarily servicing technology clients. Our focus is developing custom market models and forecasts. We support clients three ways.

1. We work independently or collaboratively with the client's own analysts to **produce custom** technology product/service **market models and forecasts.**
2. We work collaboratively with the client's own analysts to **design and develop the modeling applications** that they will use to develop their own market models and forecasts.
3. We **train client's analysts** in the theory and practice of technology market modeling and forecasting.

Most of our work utilizes the inventory of proprietary methodologies and algorithms that we have developed over more than 35 years. We have built technology forecasting market models for many major technology vendors, market research firms, and industry organizations. While our core competency is forecasting, our subject experience covers the entire technology and technology-enabled product/service landscape. We also support our engagements with traditional qualitative and quantitative research, as well as tactical and strategic consulting services.

Stephen J. Daniel - President

With over four decades in the Information Technology Industry, Mr. Daniel has developed a unique blend of Market and Technology experience coupled with a deep understanding of Market Research Methodology. His primary strength is in understanding the decision-making context within which the results of his research will be applied. This is manifested by his ability to design and execute studies that precisely meet client objectives in a timely fashion and at reasonable costs.

Mr. Daniel received his BS in Finance from Northeastern University and earned an MBA in Quantitative Analysis from New York University. He is a member of the American Statistical Association, American Economic Association, The Market Research Association of America, the American Marketing Association, National Association for Business Economics, and the Qualitative Research Association of America.

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