GS SUSTAIN: DEMOGRAPHICS TO DEMAND

Key Debates on Aging and Declining Populations and Impacts on Demand

Evan Tylenda, CFA
Goldman Sachs International

Brian Singer, CFA
Goldman Sachs & Co. LLC

Brendan Corbett
Goldman Sachs & Co. LLC

Xavier Zhang
Goldman Sachs (Asia)

Grace Chen
Goldman Sachs International

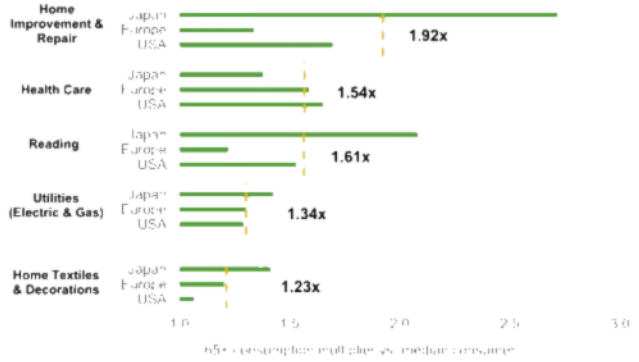
In the latest installment of our Demographic Dilemma series, we address the key debates raised by investors on the implications of longer lifespans and lower fertility rates for product, industry, and company-specific demand. While population aging is not a new theme, investor questions are expanding beyond the labor supply debate to more specific impacts on product demand, growth and earnings. According to UN data, the core consumer population (35-55) is likely to have peaked in developed economies and is set to see an accelerated decline of 3 million (~-0.75%) p.a. starting in 2030, while retirees (65+) will experience continued growth of 4 million annually over the coming decade. At present, the implications of developed market fertility rates reaching a peak in 2007-08 are becoming more visible in education and vocational labor. Overall, we reiterate our view that aging and declining populations will play an increasingly important role in driving product demand. **We continue to see:**

- **Demographic-driven demand tailwinds for** Home Improvement & Repair, Healthcare, Reading, Utilities, Home Textiles, Senior Nursing Home and At Home Care, Cruise Lines, and Discount Retail.
- **Demographic-driven demand headwinds** for Education, Food Outside the Home, Apparel & Footwear, General Electronics, and Vehicles.

Goldman Sachs does and seeks to do business with companies covered in its research reports. As a result, investors should be aware that the firm may have a conflict of interest that could affect the objectivity of this report. Investors should consider this report as only a single factor in making their investment decision. For Reg AC certification and other important disclosures, see the Disclosure Appendix, or go to www.gs.com/research/hedge.html. Analysts employed by non-US affiliates are not registered/qualified as research analysts with FINRA in the U.S.

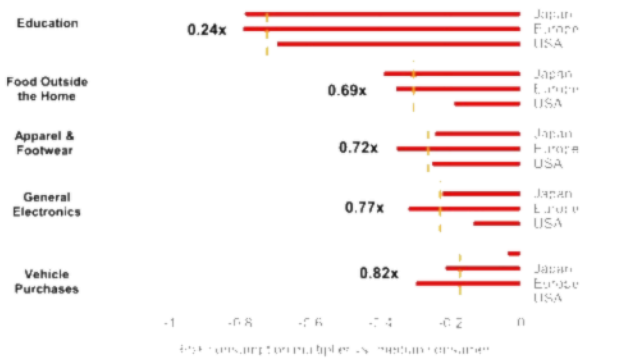
Demographers in recent research are now estimating that the total global fertility rate is likely to fall below replacement in 2026 for the first time. Latest UN population data suggests that the core consumer population (35-55) has likely peaked in developed economies and is set to see an accelerated decline of 3 million (~-0.75%) p.a. starting in 2030, while retirees (65+) will experience continued growth of 4 million annually over the coming decade. China, a key end market for many products, is set to see a decline of 109 mn in core consumers (35-55), -1% to -2% annually, by 2050 (-24% vs. 2024), based on UN data. Globally, individuals over 65 now outnumber younger children under 5, and are set to double from 800 mn to 1.6 bn by 2050. This could shift broader consumer demand toward older demographics, altering companies' long-term growth outlook for individual products and requiring strategic adjustments to product and geographic mix.

Exhibit 1: Populations ages 65+ in the US, Europe and Japan spend more on Home Improvement, Healthcare, Reading, Utilities, and Decorations...
Top 5 categories with highest 65+ consumption multiplier vs. median consumer by region



Source: BLS, Eurostat, SBJ, Data compiled by Goldman Sachs Global Investment Research

Exhibit 2: ...and less on Education, Food Outside the Home, Apparel & Footwear, Electronics, and Vehicle Purchases
Bottom 5 categories with lowest 65+ consumption multiplier vs. median consumer by region



Source: BLS, Eurostat, SBJ, Data compiled by Goldman Sachs Global Investment Research

Our Demographic-Driven Demand (DDD) framework: Measuring company exposure to demographic headwinds and tailwinds

We combine global consumer spending and engagement data (across the US, Europe, and Japan) with corporate product and geographic revenue exposure to provide a view of companies facing demographic headwinds and tailwinds to demand in the years ahead. Our **Demographic-Driven Demand model** combines the following steps:

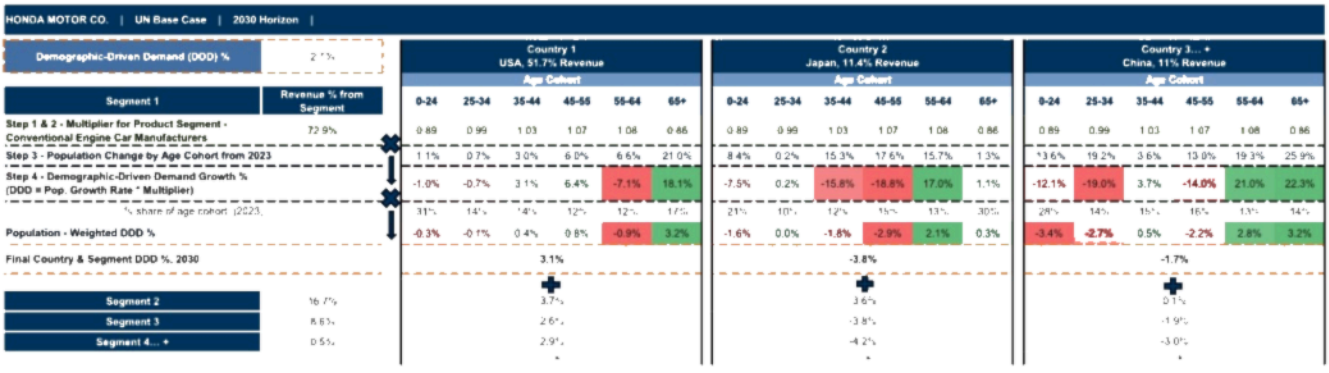
1. **Uses consumer spending / engagement data** to evaluate spending propensity by different age cohorts in the US, Europe, and Japan to build a view on average global consumer.
2. **Builds consumer spending multipliers by product and age range** (0-24, 25-34, 35-44, 55-65, 65+) to measure product type spending propensity by age vs. the median.
3. **Applies country-level population change by age cohorts** (0-24, 25-34, 35-44, 55-65, 65+) over the coming decades (2030, 2040, 2050) by population scenario

(base case, low fertility, zero migration) using UN forecasts.

4. **Calculates Demographic-Driven Demand (DDD) —** by mapping consumer preferences by product and age range multipliers and country-level population change by age cohort data with detailed company product/service and geographic revenue exposure to measure demand headwinds and tailwinds for companies by 2030, 2040, and 2050 vs. a 2023 base.

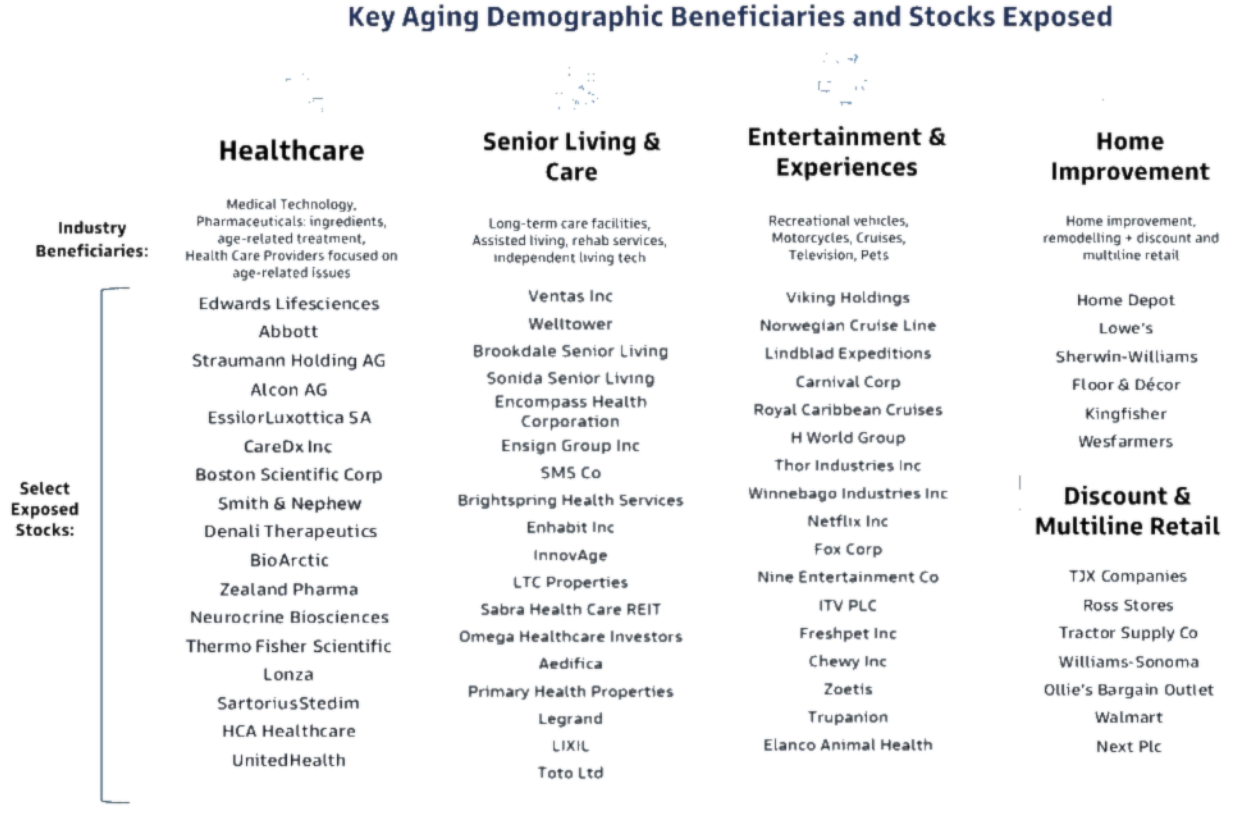
Our Demographic-Driven Demand (DDD) Model covering ~3,000 companies is available upon request.

Exhibit 3: Our Demographic-Driven Demand framework highlights where companies have product and geographic exposure to demographic challenges or opportunities
Steps for our DDD model: Honda Motor example - UN Base Case, 2030



Source: UN, FactSet, Goldman Sachs Global Investment Research

Exhibit 4: Select companies exposed to tailwinds from aging demographics and spending shifts



Source: Goldman Sachs Global Investment Research

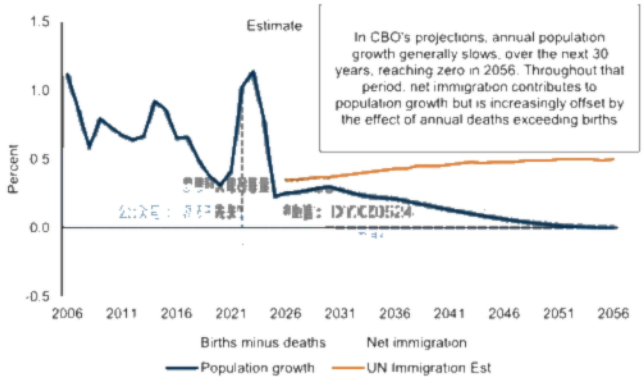
Question 1: Why is this relevant now, when aging populations have been a trend for decades?

Populations are peaking earlier than expected and impacting product, industry, and company-specific demand — driving changes in business strategy, competition, and geographic expansion. While aging and declining populations have been the case in Japan, China, and parts of Europe for decades, **fertility rates continue to come in lower than expected,** with demographers now predicting that **the total world fertility rate is likely below replacement levels for the first time in 2026, signaling a potential peak in global population in the 2050s, much earlier than previously expected under UN scenarios. But why does this matter now? We see some key new developments:**

- **Lower fertility rates are beginning to strain the higher education and vocational-age population in the US.** The number of births peaked in 2007, and, as a result, the number of high school graduates entering college or vocational programs is now declining. This could impact labor supply, especially as the remaining wave of Boomers is set to retire. The implications of peak developed market fertility rates in 2007-08 are becoming more visible in education and vocational labor.
- **Core consumers across multiple large economies have likely peaked based on UN data.** Main consumers aged 35-55 in developed economies are set to see an accelerated decline of 3 million (~-0.75%) p.a. starting in 2030, based on UN data. **In China, core consumers (35-55) are set to decline** by 109 mn (-24% vs. 2024), or ~2-6 mn pa., under the UN base case scenario, while young cohorts (0-24) see a decline of 182-265 mn individuals (-48% under base case to -68% under a low fertility scenario vs. 2024) by 2050. **On a per annum basis, these declines in China represent a -1% to -2% decline in core consumers (35-55) and a -2% to -3% (or -2.5% to -7% under a low fertility scenario) decline in young consumers (0-24) every year out to 2050.**
- **Declining demographics already impacting product demand.** We believe these demographic shifts are already causing impacted companies to pivot their business strategy to find new / stickier revenue sources, expand into new geographies or navigate mounting competition, driven in part by declining demographics for key product end markets (e.g. Autos). *See the section 'How demographic shifts could impact corporate, industry and investor behavior' for more details.*

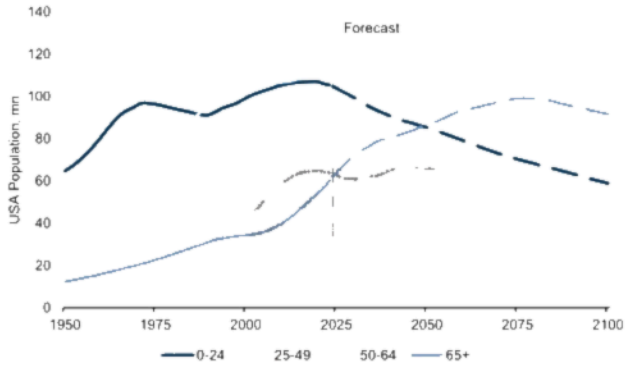
Even the US — which maintains a relatively better demographic profile vs. the rest of the developed world — is seeing accelerated aging and earlier population peaks than expected. US population peak estimates have been pulled forward significantly to 2056 — the Congressional Budget Office now estimates deaths to surpass births in 2030 vs. in 2039 just two years ago. Under zero migration scenarios, the US population peaks in 2030, leaving the 65+ age cohort as the only growing demographic.

Exhibit 5: The US CBO expects deaths to exceed births starting in 2030 in the US and peak population in 2056
Population growth and contributing factors



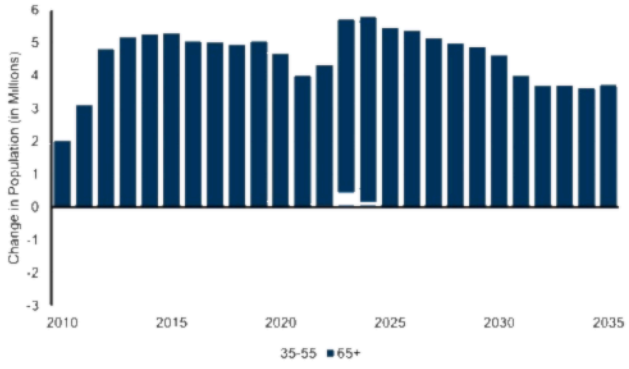
Source: CBO, Data compiled by Goldman Sachs Global Investment Research

Exhibit 6: Under scenarios limiting immigration, the US population aged <65 would peak much earlier than expected in the early 2030s
Current population (mn) by age demographic, forecasts after 2023 UN zero migration



Source: UN

Exhibit 7: In developed economies, retirees are growing ~4 mn pa, while peak consumers (35-55) are set to decline ~3 mn a year over the next decade
Annual change in population (millions) by age cohort in more developed regions, 2010-2035E; medium variant estimate 2024 onwards



Source: UN, Data compiled by Goldman Sachs Global Investment Research

Exhibit 8: UN data implies that China is set to see a significant decline in middle-aged and younger consumers over the next 25 years
Total population by single age 0-100 by UN base case estimates, 2024-2050, low fertility 2050



Source: UN, Data compiled by Goldman Sachs Global Investment Research

Question 2: Younger for longer: If 70 is the new 50, won't society continue to consume for longer?

In developed economies, life expectancy at birth has increased from ~74 in 1990 to 80 currently, while total life expectancy for those reaching 65 has risen from 81.4 in 1990 to 85 currently, according to UN data. While life expectancy has increased, most of the gains have come from reductions in child mortality, with gains in latter life slowing. **The key debates here center on two main elements: Expected continued increases in overall and healthy life expectancy:**

- **Upside from longevity:** As highlighted by our economists, higher life expectancy could contribute to longer working and consuming life which helps offset an aging and declining population. According to demographic and longevity economists, every year of increased life expectancy is worth US$38 trillion of overall economic

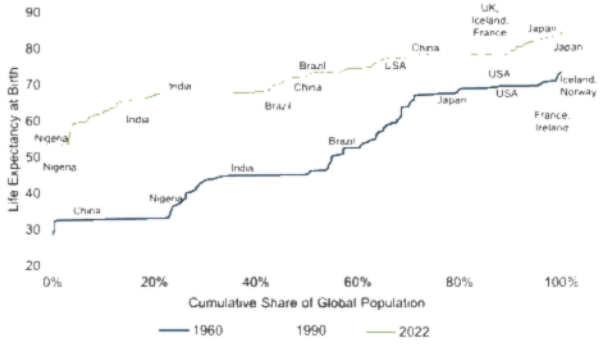
value, highlighting potential for significant economic benefits from life extensions.

- **Downside from increasing disease burden and declining healthy life:** Rising disease burden threatens to reverse life expectancy gains and the economic benefits of longevity. Recent data has highlighted an increase in disease burden among younger populations (for both mental and early-onset cancer diseases), while government data has also shown a decline in 'healthy life expectancy' in many developed countries (Exhibit 10). Rising disease burden among younger populations will have a significantly more material effect on overall consumption levels / labor availability than an increase in disease burden rise among older demographics. Additionally, despite gains in life expectancy, if healthy life expectancy declines this would contribute to fewer healthy life years, negatively impacting working life years and consumption.

AI, the big unknown: AI offers significant potential for improving life expectancy through improved drug discovery, early disease prevention, and better diagnoses. This remains an area to watch to see if AI and medical advancements are able to offset recent increases in disease burden among younger populations and improve healthy life expectancy. **Related read:** In partnership with our Biotechnology team, we have previously written on the benefits of AI and improving efficiency of drug discovery: *Byte-ology: Quantifying AI's value creation in drug development.*

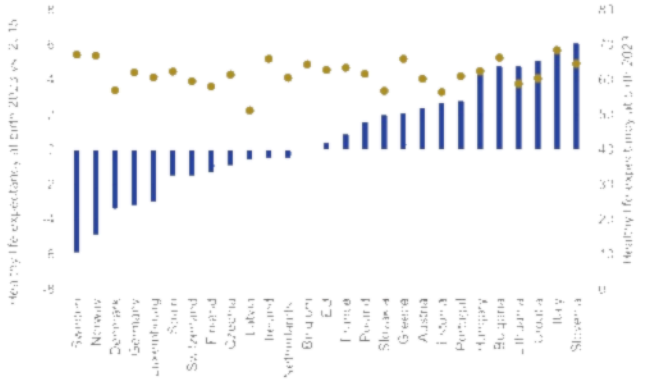
Investment implications: Increased longevity that delivers longer working and consuming lives would benefit the overall economy and consumer spending, while rising young-age disease burden and declines in healthy life expectancy would skew spending towards healthcare relative to other consumer categories earlier in life.

Exhibit 9: Life expectancy has increased in nearly all countries of the world since 1960s, with the largest increases in China, the Arab World and Upper middle income countries
Life expectancy per country, shown with countries' cumulative share of the global population on x axis, 1960 vs 1990 vs 2022



Source: World Bank, Goldman Sachs Global Investment Research

Exhibit 10: Some of the most developed economies are seeing the largest declines in healthy life expectancy across Europe
Healthy life expectancy at birth, men, 2023 vs. 2015 (LHS), HLE 2023 (RHS)



Source: Eurostat

Question 3: If aging societies are working for longer, won't consumption and spending continue later in life?

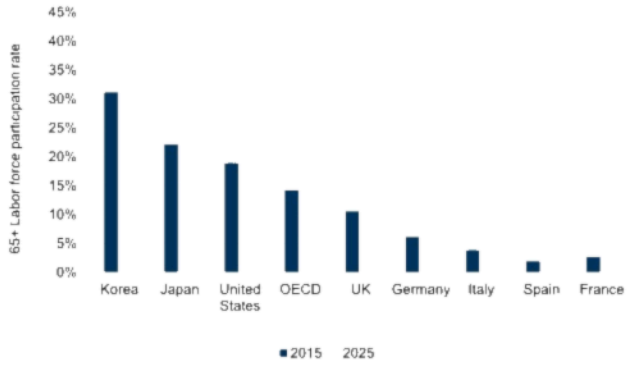
Labor force participation rates for 65+ have been increasing in many OECD countries over the past 10 years, rising the most in Korea and Japan (Exhibit 12), two countries experiencing rapid aging. At the same time, the US has started to see a rapid decline in labor force participation among those aged 55+ (Exhibit 11). Data from the OECD suggests that where workers are working longer into later stages of life, they tend to work only part-time. For example, Japan has seen only a modest rise in people aged 65+ working full time, while the majority of the increase in 65+ labor force participation rates came from workers working fewer than 30 hours a week, only partially offsetting declines in the full-time working age population (Exhibit 13). Therefore, increasing older worker participation rates in the labor force may not fully offset declines in the working age population (Exhibit 14), and the income earned appears to be more supplemental in older age rather than fully replacing wages earned during working years. Additionally, considerations from wealth effects for workers (21% of workers in the US are very confident regarding their financial position through retirement, based on data from EBRI) and rising disease burden among younger adults could further limit the rise in working life longevity, putting additional pressure on the available workforce.

Exhibit 11: In the US, older worker 55+ labor force participation rates have fallen significantly post COVID and in the last 12 months...
% 55+ labor force participation rate, 2016 to July 2026



Source: U.S. Bureau of Labor Statistics

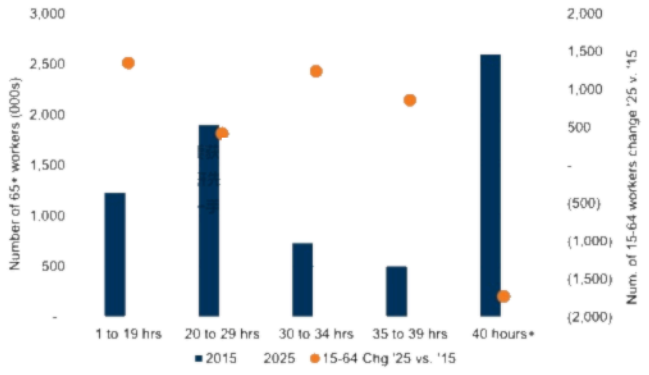
Exhibit 12: ...while rates have been increasing significantly across other developed economies over the past 10 years
65+ Labor force participation rate, 2015 and 2025



Source: OECD

Exhibit 13: While labor force participation of older workers (65+) in Japan has increased, it is mainly driven by part-time work (<30 hours)

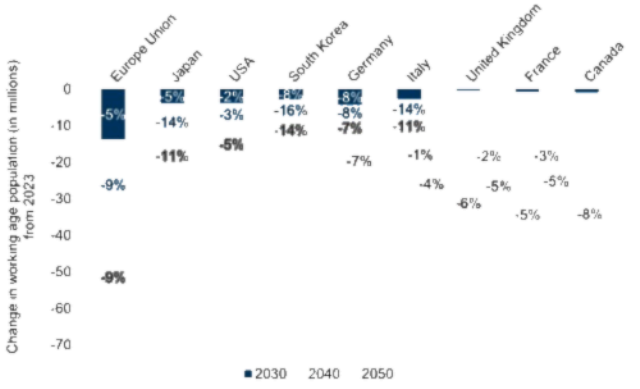
Japan: number of 65+ workers (000s) by average weekly hours worked (LHS), number of 15-64 number change (RHS), 2015 v. 2025



Source: OECD

Exhibit 14: Excluding migration, the working age population is expected to decline in all G7+ countries, with Europe the hardest hit

Estimated cumulative decline in working age population (mn) with no migration from 2023 baseline



Source: UN, Data compiled by Goldman Sachs Global Investment Research

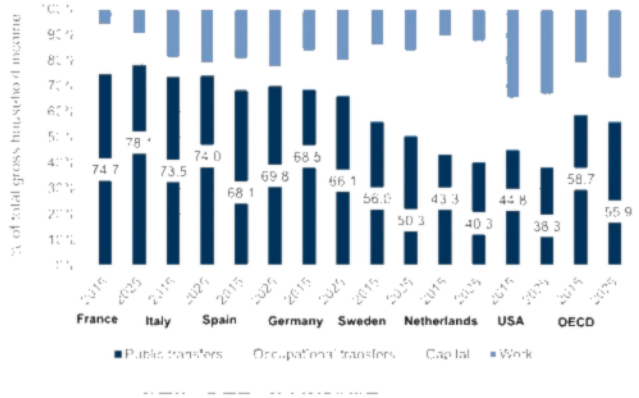
Investment implications: *Declining working age populations appear likely to present labor supply challenges across many skilled / technical and lower-skilled / lower-wage jobs, some of the fastest-growing and most in-demand jobs expected over the coming decade. The labor dislocation is likely to drive companies to adopt a mix of solutions including 1) Automation, 2) Retention, and 3) Training & Upskilling to address labor challenges.* ***Physical AI and Humanoids are set to benefit from declining labor pools, with our analysts estimating a global market of 890,000 units by 2030 and 6.5 mn by 2035 (representing a $138 bn market opportunity).*** *For more information and company-specific highlights please see: Labor Risks - How companies are adapting to aging and declining labor pools; and Global Physical AI: Framing the Forward Progress of Humanoids (with a Studied Focus on the Logistics Landscape).*

Question 4: Retirees in DMs have seen strong wealth increases, so won't retirement spending and consumption continue?

A segment of retirees in developed economies has seen wealth tailwinds from record stock markets, high home prices, and guaranteed defined benefit plans. However, it remains unclear whether the next wave of retirees will experience the same outcome, as future retirees face headwinds their predecessors did not. As public transfers (government support for retirement) as a % of retirement income decline across the OECD (Exhibit 15) and guaranteed defined benefit plans continue to fall (Exhibit 16), the responsibility for funding retirement has shifted to individual savings. This shift amplifies the importance of inflation and market returns, where adverse outcomes / outlooks (such as the Global Financial Crisis and the recent period of elevated inflation) have tended to erode retirement confidence among workers and retirees over time (Exhibit 19, Exhibit 20).

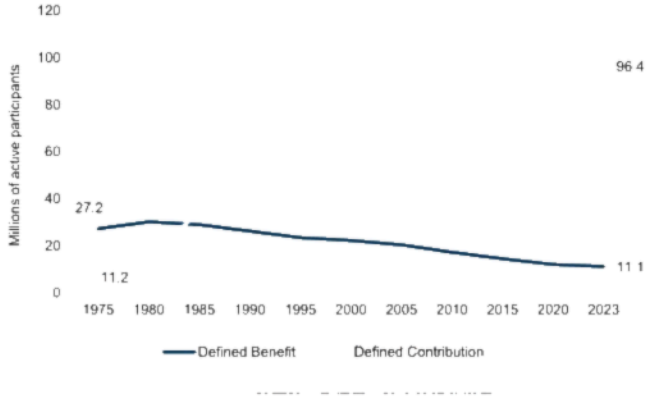
The K-shaped retirement. Data shows that each younger generation in the US has higher real earnings compared to the generation before, with Millennials having a 20% higher real median household income than Gen X (Exhibit 17) — highlighting encouraging trends for wealth creation among younger generations. However, **43% of individuals aged 55-64 do not have a retirement account, and the median value for those that do sits at $185,000 based on the latest (2022) Survey of Consumer Finances data** (Exhibit 18).

Exhibit 15: Public transfers (state support) as a share of retirement income have been falling across the OECD, with a slight increase in Europe for those 65+
% of total equivalized gross household income and transfers for people aged 65+, 2015 vs. 2025



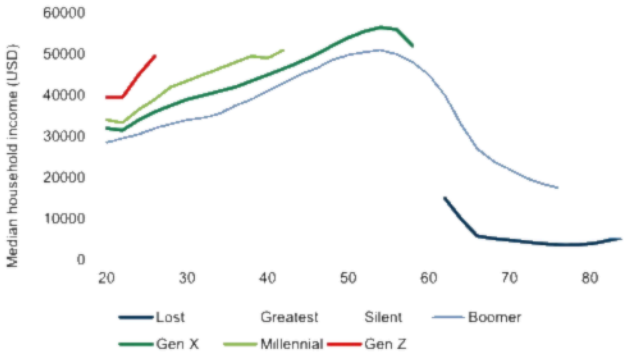
Source: OECD, Data compiled by Goldman Sachs Global Investment Research

Exhibit 16: Financial positions in retirement in the US are increasingly supported by defined contribution plans, placing a greater financial burden on retirees vs. employers
Total active participants (mn) in private sector pension plans, 1975-2023



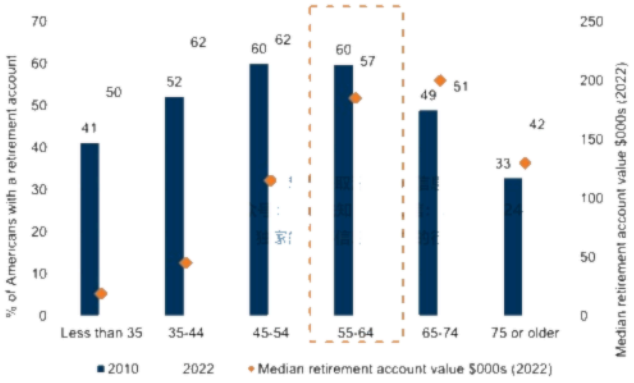
Source: US DOL, EBSA

Exhibit 17: Younger generations are earning more than each previous generation
US median household income by generation in USD indexed to 2019



Source: Corinth, K., & Larrimore, J. (2026)

Exhibit 18: In the US, among ages 55-64, 57% (43% without) had a retirement account in 2022 with a median value of only $185,000
% of Americans with a retirement acount (LHS), and median account value in $000s (RHS), (2022)



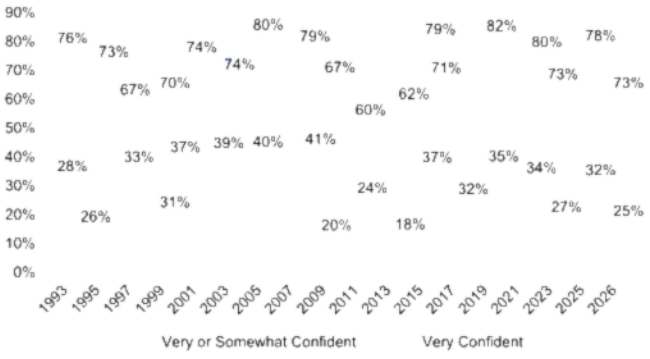
Source: Survey of Consumer Finances

Exhibit 19: Worker confidence in retirement has waned during recessions and following recent affordability concerns
Worker confidence in having enough money in retirement (2026 workers n = 1007)



Source: EBRI

Exhibit 20: Retiree confidence is also waning, while only a quarter remain very confident in having enough money
Retiree confidence in having enough money in retirement (2026 retirees n = 1045)



Source: EBRI

Question 5: Changing tastes: Do older consumers show signs of maintaining spending habits for longer, resulting in benefits to consumption?

While each generation has carried forward spending habits (e.g. physical retail experience / brand loyalty), spending data by age cohort in the US has shown fairly persistent trends, with each age cohort consuming similar to the decade prior.

Spending propensity by age cohort shows clear aging trends: Consumer household survey data in the US shows a clear trend of older populations that are **65+ spending significantly less on education, vehicle purchases, apparel and footwear, and entertainment / electronics, while spending more on healthcare, household operations, utilities, and reading** (Exhibit 21). We identified similar trends in Europe and Japan (Exhibit 1, Exhibit 2).

Persistent spending by age over time: Spending by age cohort has been fairly persistent over time as consumption habits and preferences appear to be anchored to age. There are, however, some notable exceptions where habits appear more dynamic, with significant declines in tobacco and alcohol consumption among younger cohorts vs. 12 years prior (Exhibit 22).

The challenge for aging populations and continued consumption: While older individuals have shown a rapid rise in adopting new technology, based on AARP data, there remains an aversion to newness and change, in part driven by a lack of confidence in digital skills and concerns over privacy, data use and usability, which limit adoption. Additionally, as consumers age, the demand and need for certain products naturally falls, with the largest declines in spending seen across education, food outside the home, vehicles, electronics, and apparel and footwear (Exhibit 2).

Exhibit 21: Latest BLS Household surveys show very clear spending preferences and progression by age cohort
BLS Household Survey data 2023-2024

Categories	Mean Expenditure (per adult)						% change from previous age group				
	0-24	25-34	35-44	45-54	55-65	65+	25-34	35-44	45-54	55-65	65+
Food at home	2,147	3 126	3 848	3 487	3,125	3 196					
Food away from home	1,712	2 245	2 591	2 357	1,946	1 697					
Personal care products and services	389	489	598	558	496	486					
Alcoholic beverages	209	348	371	376	344	321					
Tobacco products and smoking supplies	120	171	205	206	240	168					
Shelter	7,145	9 472	9 752	8 426	7,896	7 983					
Household furnishings and equipment	885	1 257	1 459	1 286	1 426	1 293					
Household operations	442	1 093	1 557	890	794	1 086					
Electricity	599	905	1 021	955	965	1 044					
Telephone services	494	678	839	835	792	753					
Housekeeping supplies	244	350	507	435	466	531					
Water and other public services	178	349	449	432	442	508					
Natural gas & oil	134	250	346	337	374	442					
Vehicle purchases (net outlay)	2,749	3 066	3 402	3 203	3,088	2 156					
Other vehicle expenses	1,525	2 110	2 426	2 384	2,250	1 944					
Gasoline and other fuels	1,173	1 457	1 666	1 650	1,420	1 135					
Public and other transportation	408	516	656	622	642	588					
Apparel and services	870	1 197	1 475	1 164	990	776					
Health insurance	535	1 361	1 996	1 939	2,181	3 313					
Retirement, pensions, and Social Security	2,754	5 678	6 721	6 445	5,459	1 748					
Life and other personal insurance	35	148	303	334	387	364					
Medical services	255	452	664	635	733	877					
Drugs	82	157	251	271	421	542					
Medical supplies	73	79	110	136	140	231					
Education	1,648	692	767	1 407	960	263					
Reading	49	51	71	85	46	89					
Audio and visual equipment and services	318	409	496	506	548	639					
Pets	264	440	480	503	500	476					
Other entertainment supplies, equipment, and services	219	341	439	358	348	298					
Fees and admissions - Outdoor	214	409	759	654	431	373					
Toys, hobbies, and playground equipment	73	135	145	100	74	66					
Total	27,939	39,431	46,370	42,957	39,897	35,385	41%	18%	-7%	-7%	-11%

Source: BLS, Data compiled by Goldman Sachs Global Investment Research

Exhibit 22: Spending habits and tastes by age cohort have remained fairly consistent over time since 2012, except for alcohol and tobacco consumption among younger groups
How America Spends by Age: 2012 Baseline and the 2024 Shift

Categories	2012 % of Total Spend by Categories						2024 vs 2012 Change in Percentage Points (pp)					
	Under25	25-34	35-44	45-54	55-64	65+	Under25	25-34	35-44	45-54	55-64	65+
Food at home	8.2%	7.6%	8.2%	8.0%	7.7%	9.0%	-0.5	0.4	0.1	0.1	0.1	0.0
Food away from home	6.4%	5.9%	5.8%	5.4%	5.2%	5.0%	-0.3	-0.3	-0.2	0.0	-0.4	-0.2
Personal care products and services	1.1%	1.2%	1.3%	1.2%	1.3%	1.6%	0.2	0.0	0.0	0.1	-0.1	-0.2
Alcoholic beverages	1.3%	1.1%	0.9%	0.8%	0.9%	0.9%	-0.5	-0.3	-0.1	0.0	-0.1	0.0
Tobacco products and smoking supplies	0.9%	0.8%	0.6%	0.8%	0.7%	0.6%	-0.4	-0.3	-0.2	-0.3	-0.1	-0.1
Shelter	23.5%	22.2%	21.6%	19.6%	18.9%	20.2%	2.1	1.8	-0.6	0.0	0.9	2.3
Household furnishings and equipment	3.0%	3.4%	3.1%	3.0%	3.3%	3.5%	0.1	-0.2	0.1	0.0	0.2	0.2
Household operations	1.7%	2.9%	2.8%	1.8%	1.9%	3.0%	-0.2	-0.1	0.6	0.3	0.1	0.1
Electricity	2.5%	2.6%	2.8%	2.8%	3.0%	3.7%	-0.4	-0.3	-0.6	-0.6	-0.6	-0.7
Telephone services	2.6%	2.6%	2.6%	2.6%	2.5%	2.5%	-0.8	-0.8	-0.8	-0.7	-0.5	-0.4
Housekeeping supplies	1.0%	1.0%	1.2%	1.2%	1.4%	1.7%	-0.1	-0.1	-0.1	-0.2	-0.2	-0.2
Water and other public services	0.6%	0.9%	1.0%	1.0%	1.1%	1.4%	0.0	0.0	0.0	0.0	0.0	0.0
Natural gas & oil	0.6%	0.8%	1.0%	1.1%	1.2%	1.7%	-0.2	-0.2	-0.2	-0.3	-0.2	-0.4
Vehicle purchases (net outlay)	8.3%	7.8%	6.4%	5.4%	5.7%	5.3%	1.6	-0.1	1.0	2.1	2.1	0.8
Other vehicle expenses	4.3%	4.9%	4.6%	5.3%	5.6%	5.5%	1.1	0.4	0.6	0.3	0.0	0.0
Gasoline and other fuels	6.3%	5.9%	5.9%	5.9%	5.4%	4.8%	-2.1	-2.2	-2.3	-2.0	-1.9	-1.6
Public and other transportation	1.0%	1.1%	0.9%	1.1%	1.2%	1.2%	0.5	0.2	0.5	0.3	0.4	0.4
Apparel and services	4.5%	4.1%	4.1%	3.5%	3.2%	2.9%	-1.4	-1.1	-0.9	-0.8	-0.8	-0.7
Health insurance	1.5%	2.6%	3.0%	3.4%	4.3%	8.6%	0.4	0.8	1.3	1.1	1.1	0.8
Retirement, pensions, and Social Security	7.4%	11.0%	12.2%	13.0%	12.4%	4.5%	2.4	3.4	2.3	2.0	1.2	0.4
Life and other personal insurance	0.2%	0.3%	0.6%	0.7%	1.0%	0.9%	-0.1	0.1	0.1	0.0	-0.1	0.1
Medical services	1.1%	1.1%	1.3%	1.6%	2.2%	2.4%	-0.2	0.0	0.2	-0.1	-0.3	0.1
Drugs	0.3%	0.5%	0.7%	0.9%	1.4%	2.1%	-0.1	-0.1	-0.1	-0.3	-0.3	-0.5
Medical supplies	0.1%	0.2%	0.2%	0.3%	0.3%	0.5%	0.1	0.0	0.0	0.0	0.0	0.1
Education	6.9%	2.2%	1.7%	3.8%	1.9%	0.7%	-1.0	-0.4	0.0	-0.5	0.5	0.1
Reading	0.1%	0.2%	0.2%	0.2%	0.3%	0.4%	0.0	0.0	0.0	-0.1	-0.2	-0.2
Audio and visual equipment and services	2.0%	2.0%	2.0%	1.9%	2.0%	2.3%	-0.9	-1.0	-0.9	-0.8	-0.7	-0.5
Pets, toys, hobbies, and playground equipment	1.0%	1.2%	1.2%	1.3%	1.6%	1.5%	0.2	0.2	0.1	0.1	-0.1	0.1
Other entertainment supplies, equipment, and services	0.5%	0.7%	0.9%	0.9%	0.7%	0.7%	0.3	0.1	0.1	0.0	0.2	0.2
Fees and admissions - Outdoor	0.9%	1.1%	1.5%	1.4%	1.2%	1.1%	-0.1	-0.1	0.1	0.2	-0.1	-0.1

Source: BLS, Data compiled by Goldman Sachs Global Investment Research

How demographic shifts could impact corporate, industry and investor behavior

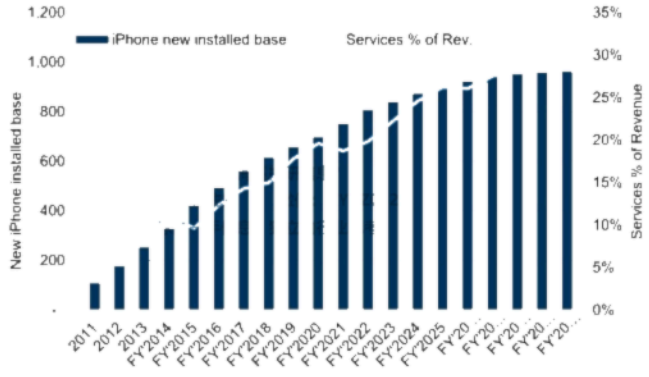
We see multiple implications where aging and declining populations are already impacting product demand, leading companies and industries to evaluate key business strategies and investors to shift outlooks for longer-term product and/or company growth rates:

- **Product Redesign, ReFormulation, and Products-as-a-Service offerings will likely be necessary strategies for industries/companies, where demographic headwinds could otherwise drive declining volumes, in order to maintain customer relationships and revenue over time.** For example, as Apple's iPhone volumes and penetration rates mature, service revenue has continued to grow as a larger portion of overall revenue, with a rise from 9% in 2011 to an expected 32% by 2030 (GSe) (Exhibit 23). Similar strategies for other industries and companies will need to be deployed to retain revenue as volume growth decelerates or customers / units decline.

- **Expansion into new geographies — Companies exposed to strong domestic demographic growth appear to be 'riding the demographic wave', while those exposed to the weakest outlooks show growth in share of foreign revenue — a key antidote to slower domestic sales.** From our analysis of companies' Demographic-Driven Demand (DDD), those ranking in the bottom quintile of their DDD outlook to 2030 have shown the largest rise in revenue from foreign sources over the trailing 15 years, while companies with the best (top quintile) DDD outlook have shown the lowest share of revenue from foreign sources and no change over the last 15 years (Exhibit 24). For example, Fast Retailing generates 40% of its revenue from Japan, which is set to see a DDD of -5.0% by 2030, based on our model, and -11.4% by 2040, mainly driven by declines in younger age cohorts who spend the most on clothing and apparel (Exhibit 25). As a result, the company has grown its share of revenue from foreign sources from 16.5% in 2010 to 56.2% in 2025 (GSe 63.5% in 2028) and delivered compounded earnings off international strength, highlighting how poor demographics in domestic markets do not necessarily translate into declines (Exhibit 26). *Please see Fast Retailing: Raising earnings outlook for Uniqlo International on strength across the board.*

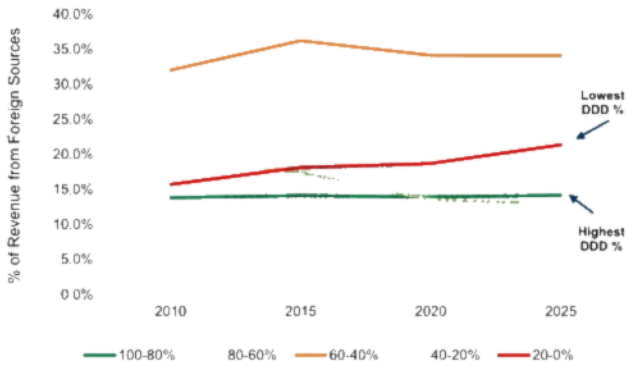
- **Mounting industry competition and/or expansion into new product markets.** When demand is structurally in decline, we see the risk that competitive pressures may lead to aggressive price cutting as producers prioritize market share. Additionally, as one product market declines, companies will increasingly look for new growth opportunities. The Auto industry serves as an example for both these instances. China has seen a consistently declining domestic auto market (core drivers aged 25-55 are set to decline ~-9 mn pa. out to 2030, based on UN data), which has triggered intensifying competition, eroding industry margins over the last few years. Chinese companies are now expanding into new geographies, driving additional competition for other players (Exhibit 29). Additionally, many autos companies are exploring new products markets such as humanoids (Tesla, Hyundai, Xiaomi) and energy systems (Ford) to find new growth opportunities.

Exhibit 23: Apple's Service revenue as a % of total has grown significantly as new iPhone volume growth starts to plateau
New iPhone installed base (LHS), Service revenue as a % of total



Source: Company data, Goldman Sachs Global Investment Research

Exhibit 24: Companies with exposure to the best demographic growth profile have shown the lowest / flat exposure to foreign revenue sources, while those exposed to weak demographic growth show rising foreign revenue
% of foreign revenue by current DDD percentile, 2010-2025



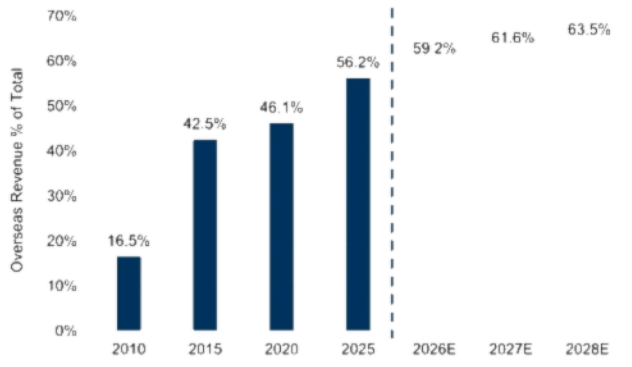
Source: UN, Bloomberg, Goldman Sachs Global Investment Research

Exhibit 25: Fast Retailing has exposure to declining demographic markets...
Headline and country level demographic-driven demand %, 2030-2050 vs 2023

Fast Retailing Co Ltd				
Demographic-Driven Demand % (vs. 2023)				
		2030	2040	2050
UN Base Case		-2.1%	-5.7%	-9.6%
Country Level Demographic-Driven Demand Impact				
Country	% of Revenue	2030	2040	2050
Japan	40%	-5.0%	-11.6%	-17.4%
China	18%	-4.4%	-12.1%	-20.0%
United States of America	9%	2.5%	5.9%	8.4%
India	7%	5.5%	10.4%	11.7%
Germany	3%	-3.4%	-7.2%	-9.8%
Others	23%	0.6%	0.4%	-1.1%

Source: FactSet, Goldman Sachs Global Investment Research

Exhibit 26: ... but has been growing foreign revenue significantly
Fast Retailing % share of overseas revenue, 2010-2028E

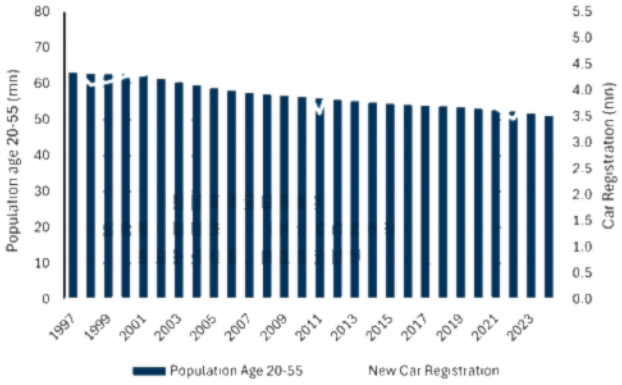


Source: Bloomberg, Goldman Sachs Global Investment Research

Global Autos at a strategic crossroads amid aging and declining driver populations
The Global Auto industry is confronting a demographic dilemma of a declining driver population. In mature markets, Japan and Germany, declining populations of typical first time new car buyers (ages 20-55) have tracked with falling vehicle registrations (Exhibit 27, Exhibit 28).

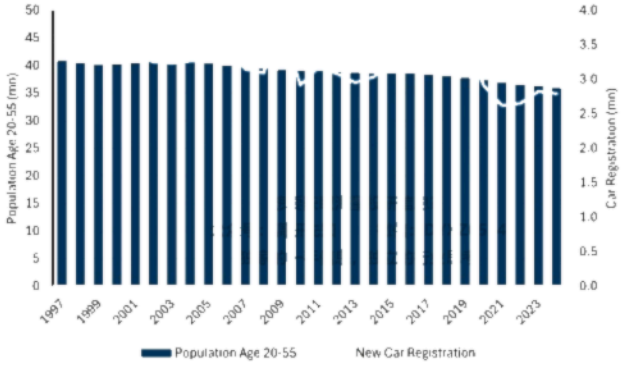
Spending data from both Japan and Europe shows a meaningful decline in new vehicle purchases for older age cohorts. While older consumers (ages 60-69) exhibit the highest absolute transportation spending in Japan, the proportion of that spending directed at vehicle purchases falls sharply for those aged 70+. In Europe, the latest spending shows peak vehicle purchase spending from ages 30-59 and a decline of -26% for those aged 60+. *For more information please read our case studies in How Aging and Declining Populations Will Drive Product and Company Demand Tailwinds/Headwinds.*

Exhibit 27: In Japan, declines in the population aged 20-55 has coincided with declining vehicle registrations...
Total 20-55 aged population vs. annual new car registrations, 1997-2024



Source: LSEG Data & Analytics, UN Population Prospects 2024

Exhibit 28: ...with similar trends in Germany
Prime-age population (20-55) vs annual new car registrations, 1997-2024



Source: LSEG Data & Analytics, UN Population Prospect 2024

Demographics tailwinds and headwinds: Projected county-level revenue Impact for major OEMs (2030-2050). Our Demographic-Driven Demand estimates show significant divergence for OEMs across India, the US, Europe/Germany, and China. OEMs with concentrated revenue exposure to demographically challenged markets (China/Europe/Germany) face compounding pressure, while those with significant presence in younger, growing markets, particularly India, are positioned to benefit from volume tailwinds. US OEMs are still expected to see demographic tailwinds through the 2030-2050s, while Europe/German OEMs and Chinese OEMs face demographic headwinds. However, Chinese OEMs remain significantly geographically concentrated, offering greater opportunity (alongside higher execution risk) for geographic expansion — presenting opportunities for higher ASPs and profit outside China. *For more details, please see China Automobiles: The overseas EV opportunities & the risks that may ensue.*

Exhibit 29: India and US see demographic tailwinds, while Germany and China face headwinds, yet China has greater potential for new market diversification, but also greater execution risk
Demographic-Driven Demand for Major OEMs by top 5 revenue markets, 2030-2050 vs. 2023 baseline.

Demographic Tailwinds

Maruti Suzuki India Ltd				
		2030	2040	2050
Demographic Demand %		5.8%	11.7%	15.1%
Country Level Demographic Demand Impact				
Country	% of Revenue	2030	2040	2050
India	65%	6.3%	13.5%	17.5%
United States of America	4%	3.1%	7.2%	10.1%
China	3%	-1.8%	-5.9%	-11.0%
Germany	1%	2.6%	5.7%	8.4%
Japan	1%	3.8%	10.1%	15.9%
Others	5%	2.3%	4.2%	4.7%

General Motors Co				
		2030	2040	2050
Demographic Demand %		2.6%	5.8%	8.8%
Country Level Demographic Demand Impact				
Country	% of Revenue	2030	2040	2050
United States of America	83%	3.0%	7.3%	9.9%
China	4%	3.7%	6.2%	12.1%
Germany	2%	-2.7%	-5.9%	-8.5%
India	1%	6.3%	13.4%	17.2%
Japan	1%	3.8%	10.2%	16.0%
Others	7%	2.2%	4.0%	4.5%

Demographic Headwinds

Volkswagen AG				
		2030	2040	2050
Demographic Demand %		0.2%	0.1	1.2
Country Level Demographic Demand Impact				
Country	% of Revenue	2030	2040	2050
Germany	19%	-2.8%	-5.9%	-8.6%
United States of America	18%	3.0%	7.0%	9.9%
China	9%	-1.7%	-4.2%	-12.0%
United kingdom	9%	3.4%	6.6%	8.9%
France	8%	0.6%	1.4%	1.7%
Others	36%	0.1%	1.1	3.3%

SAIC Motor Corp Ltd				
		2030	2040	2050
Demographic Demand %		0.9%	4.0	8.7%
Country Level Demographic Demand Impact				
Country	% of Revenue	2030	2040	2050
China	82%	1.0%	5.4%	11.0%
United States of America	5%	3.2%	7.3%	10.3%
China, Hong Kong SAR	2%	-2.4%	-4.2%	-14.6%
Germany	1%	2.6%	5.6%	8.3%
Japan	1%	1.7%	10.0%	15.6%
Others	7%	2.5%	4.5%	5.0%

Source: FactSet, LSEG Data & Analytics, Goldman Sachs Global Investment Research