

United States Anesthesiologists over 50

Retirement Decision Making and Workforce Implications

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ABSTRACT

Background: Anesthesiology is among the medical specialties expected to have physician shortage. With little known about

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*** Center for Workforce Studies, Association of American Medical Colleges: Recent Studies and Reports on Physician Shortages in the U.S. Washington (DC), AAMC, August 2011. Available at: <https://www.aamc.org/download/100598/data/recentworkforces-tudiesnov09.pdf>. Accessed June 19, 2012.

††† Idem: The Impact of Health Care Reform on the Future Supply and Demand for Physicians Updated Projections through 2025. Washington (DC), AAMC, June 2010. Available at: https://www.aamc.org/download/158076/data/updated_projections_through_2025.pdf. Accessed June 19, 2012.

‡‡‡ Daugherty, Fonseca R, Kumar KB, Michaud P-C: An Analysis of the Labor Markets for Anesthesiology. Santa Monica (CA), RAND Corporation, TR-688-EES, 2010. Available at: http://www.rand.org/pubs/technical_reports/2010/RAND/RAND_TR688.pdf. Accessed June 19, 2012.

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older anesthesiologists' work effort and retirement decision making, the American Society of Anesthesiologists participated in a 2006 national survey of physicians aged 50-79 yr.

Methods: Samples of anesthesiologists and other specialists completed a survey of work activities, professional satisfaction, self-defined health and financial status, retirement plans and perspectives, and demographics. A complex survey design enabled adjustments for sampling and response-rate biases so that respondents' characteristics resembled those in the American Medical Association Physician Masterfile. Retirement decision making was modeled with multivariable ordinal logistic regression. Life-table analysis provided a forecast of likely clinical workforce trends over an ensuing 30 yr.

Results: Anesthesiologists (N = 3,222; response rate = 37%) reported a mean work week of 49.4 h and a mean retirement age of 62.7 yr, both values similar to those of other older physicians. Work week decreased with age, and part-time work increased. Women worked a shorter work week (mean, 47.9 vs. 49.7 h, $P = 0.024$), partly due to greater part-time work (20.2 vs. 13.1%, P value less than 0.001). Relative importance of factors reported among those leaving patient care differed by age cohort, subspecialty, and work status. Poor health was cited by 64% of anesthesiologists retiring in their 50s as compared with 43% of those retiring later ($P = 0.039$).

Conclusions: This survey lends support for greater attention to potentially modifiable factors, such as workplace wellness and professional satisfaction, to prevent premature retirement. The growing trend in part-time work deserves further study.

ANESTHESIOLOGY is among the 21 medical specialties that have or are expected to have a physician shortage in the near future.^{1***,†††,‡‡‡} Physician workforce

◇ This article is featured in "This Month in Anesthesiology." Please see this issue of ANESTHESIOLOGY, PAGE 9A.

◆ This article is accompanied by an Editorial View. Please see: Turner JA, Cole DJ: Baby boom or bust ... is 64 the new 57? ANESTHESIOLOGY 2012; 117:931-3.

shortages reflect the confluence of many trends, including an aging physician population, burdensome medical-education indebtedness, a relatively static production of new physicians, reduced physician work hours, growth and aging of the general population, growth and expansion of health services, and enhanced access to health care.^{2,3§§§,||||} In addition, changing expectations for work–life balance may influence choice of specialty and the number of hours spent at work,⁴ a culture of high levels of stress may dissuade entry into a particular specialty,^{5–7} and a growing dissatisfaction with medicine as a career and resultant burnout may lead to an accelerated departure from clinical practice.^{8–10}

To increase our understanding of such issues in relation to the work effort and retirement decision making of older anesthesiologists, the American Society of Anesthesiologists participated in a survey of U.S. physicians aged 50 yr and older, led by the Association of American Medical Colleges Center for Workforce Studies, in collaboration with the American Medical Association, Council of Medical Specialty Societies, and several other medical specialty organizations. Using the survey responses of older anesthesiologists, we sought to identify the major factors influencing their decisions to remain clinically active or to retire and then evaluated the impact of their retirement decision making on the size of the clinical workforce now and into the future.

Methods and Materials

Survey Design

In 2006, representatives from Association of American Medical College's Center for Workforce Study, Council of Medical Specialty Societies, several medical specialty societies, and American Medical Association developed a cross-sectional survey of U.S. physicians, 50 yr of age and older, practicing in the United States. Using questions largely from previous workforce surveys, the instrument focused on practice activities, retirement plans, and demographic and other background information. Each specialty was permitted to make modifications in the survey or survey process; anesthesiology opted for an Internet-based survey^{###} (SurveyMonkey™, Palo Alto, CA). In total, 10 unique, but similar, specialty surveys were conducted in spring 2006: anesthesiology, cardiology, family

medicine, general internal medicine, obstetrics and gynecology, orthopedic surgery, pathology, pediatrics, plastic surgery, and "other specialties."

Respondents were considered "active in medicine" if they participated in clinical care, medical research, medical teaching, healthcare administration, or other professional medical activities. Anesthesiologists were asked whether they had a critical-care or pain-management subspecialty. The respondent self-defined his/her practice as "full-time" or "part-time." As well, he or she self-rated levels of professional satisfaction, health status, and personal financial status, using 5-point Likert scales.

Survey Sampling Plan

Samples of physicians aged 50 yr and older were selected from several sources: anesthesiology used American Society of Anesthesiologists' membership list (15,544 members aged 50 yr and older at time of sampling), selecting all members whose e-mail addresses were available at the time (8,895); orthopedic surgery and pediatrics relied on specialty society membership lists, and samples for the remaining seven surveys were drawn from the American Medical Association Physician Masterfile. Although anesthesiology approached all older anesthesiologists having e-mail addresses for survey participation, each of the other specialties drew a random sample. Sample sizes varied from 1,500 (plastic surgery) to 8,895 (anesthesiology). Before survey distribution, eligible respondents received notification that the survey would be arriving soon as well as the purpose of the survey; some surveys involved repeat-survey distribution to nonrespondents.

A complex survey design with a multistep, survey-specific weighting procedure was used to address (1) observable response-rate biases for each specialty survey, (2) biases introduced through sampling, and (3) biases due to under/oversampling of specialties when compiling the combined data set. Overall, the weighting procedures accounted for demographic differences among respondents to each survey and those of the referent specialty population in the American Medical Association Physician Masterfile, the authoritative record of all U.S. physicians. For example, anesthesiology respondents comprised a higher proportion of younger men and U.S. medical graduates than the referent universe of U.S. anesthesiologists. These corrective adjustments were conducted in two steps: (1) survey-specific weighting, and (2) combined data set weighting. Although the demographic variables selected for weighting varied by survey, they generally include location of medical school (U.S. medical graduate *vs.* international medical graduate), age (in 10-yr cohorts), and sex. Weights were derived from the American Medical Association Physician Masterfile.

Data Management and Analysis

Association of American Medical Colleges engaged the State University of New York's University at Albany's Center for Health Workforce Studies to administer all surveys but for pediatrics and anesthesiology, which collected and managed

§§§ Bureau of Health Professions, Health Resources and Services Administration, US Department of Health and Human Services: The Physician Workforce: Projections and Research into Current Issues Affecting Supply and Demand. December 2008. Available at: <ftp://ftp.hrsa.gov/bhpr/workforce/physicianworkforce.pdf>. Accessed June 19, 2012.

|||| Dill MJ, Salsberg ES: The Complexities of Physician Supply and Demand: Projections Through 2025. Washington (DC), Center for Workforce Studies, Association of American Medical Colleges; November 2008. Available at: https://services.aamc.org/publications/showfile.cfm?file=version122.pdf&prd_id=244&prv_id=299&p_d_id=122. Accessed June 19, 2012.

The anesthesiology survey and a detailed survey analysis are available at <http://www.asahq.org/For-Members/About-ASA/ASA-Committees/Committee-on-Occupational-Health.aspx>

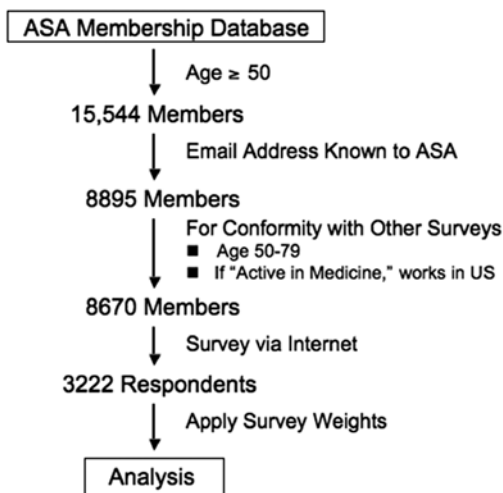


Fig. 1. Sampling scheme and data management for Internet-based survey of U.S. anesthesiologists, aged 50–79 yr, using the American Society of Anesthesiologists' (ASA) membership database.

their members' data. The Center analyzed data from most surveys, including those for anesthesiology. Figure 1 summarizes the data management as well as survey scheme for the anesthesiology data. Responses were received from 3,222 anesthesiologists and 8,657 other physicians. The anesthesiologists' response rate was 37.2%, which was within the range for the other nine surveys, from 33% (orthopedic surgery) to 72% (pediatrics). Because of the weighting procedure and rounding artifacts of the analytic software, totals in tabular data may not sum to 3,222 or 100%.

Descriptive statistics included counts and percentages for categorical variables, means and 95% confidence intervals for continuous data, and medians for nonnormally distributed variables. Hypothesis testing for continuous data used the Student *t* test, one-way ANOVA, and univariate ANOVA when adjusting for covariates; hypothesis testing for categorical data used chi-square tests, with the Fisher exact test for 2×2 tables. Correlations were evaluated with Pearson correlation coefficient. Modeling of retirement decision making used multivariable ordinal logistic regression, with a backward elimination algorithm; overall predictive value of a model was assessed with the *C* statistic. Analyses incorporated the survey weights and were conducted with SPSS software (SPSS, Inc., Chicago, IL). All statistical tests were two-tailed, with a *P* value of less than 0.05 considered to be significant.

Finally, we used static data from the cross-sectional survey to create a dynamic forecast of older anesthesiologists' likely future workforce participation. Using standard demographic methods,¹¹ we developed a life-table analysis for a theoretical cohort of 1,000 anesthesiologists aged 50 yr, which depicts their expected work effort over an ensuing 30 yr, encompassing the

period of 2006–2035. Survey data enabled probability estimates for being clinically active or retired from patient care for each 5-yr cohort. The critical missing data—the probability of being lost-to-follow-up due to death or no longer maintaining professional credentials—were approximated by using the annual decrease in the number of anesthesiologists licensed, by birth year, from the New York State Physician Re-Registration Survey^{****} for all specialties. These estimates were developed for 5-yr cohorts, without separate values for men and women, due to data limitations (*e.g.*, paucity of older respondents, particularly women). The analysis included estimates for the total number working less than 40 h/week as an approximation of the part-time workforce.

Results

Characteristics of the Anesthesiology Respondents

Demographic Characteristics. Table 1 summarizes the 3,222 anesthesiology respondents aged 50–79 yr: The majority were male and non-Hispanic white, married, with one third less than 55 yr of age, one half under 60 yr, and almost three quarters under 65 yr. This population had the same age distribution as that of other older physicians; 61.2% were U.S. medical graduates, and 88.5% were American Board of Anesthesiology diplomates. Among respondents, 63% worked full-time and 13% part-time; 22% had retired from medicine.

Work Contribution. Older anesthesiologists' work week was similar to that of other older physicians (mean, 49.4 *vs.* 48.6 hr; *P* = 0.31). Men worked a longer week than

Table 1. Characteristics of Anesthesiology Survey Respondents (N = 3,222)

Characteristic	N	%
Age, yr		
Mean (95% CI)	60.1 (59.8, 60.4)	
Median	58	
50–54	1,035	32.1
55–59	692	21.5
60–64	602	18.7
65–69	315	9.8
70–74	370	11.5
75–79	206	6.4
Sex		
Male	2,624	81.4
Race		
Asian or Pacific Islander	516	16.0
Black/African-American	41	1.3
Native American/Alaskan	11	0.3
White	2,454	76.2
Multiple	30	0.9
Other	132	4.1
Missing	37	1.1

(continued)

**** New York Physician Workforce Supply and Distribution data sets available from Center for Health Workforce Studies, School of Public Health, State University at Albany. Available at: <http://chws.albany.edu/index.php?nyphysicians>. Accessed June 19, 2012.

Table 1. (Continued)

Characteristic	N	%
Ethnicity		
Hispanic origin	120	3.7
Marital status		
Married/partner	2,844	88.3
Divorced/separated	203	6.3
Widowed	68	2.1
Single	92	2.9
Missing	15	0.5
Dependents		
0	460	14.3
1	1,229	38.1
2	557	17.3
3	550	17.0
4	258	8.0
5 or more	140	4.3
Missing	28	0.9
Location of medical school		
United States	1,916	59.5
Canada	56	1.7
Other country	1,235	38.3
Missing	15	0.5
Medical degree		
MD or equivalent	3,129	97.1
DO	78	2.4
Missing	15	0.5
American Board of Anesthesiology certification		
Yes	2,852	88.5
No	299	9.3
Missing	72	2.2
Employment status		
Employed full-time in medicine	2,013	62.5
Employed part-time in medicine	414	12.9
Fully retired from medicine	719	22.4
Temporarily not active in medicine	69	2.1
Never practiced medicine	1	0.03
Missing	5	0.2
Overall health status		
Excellent	964	29.9
Very good	1,257	39.0
Good	643	20.0
Fair	319	9.9
Poor	24	0.7
Missing	15	0.5
Overall financial status		
Excellent	553	17.2
Very good	1,247	38.7
Good	1,050	32.6
Fair	349	10.8
Poor	14	0.4
Missing	9	0.3

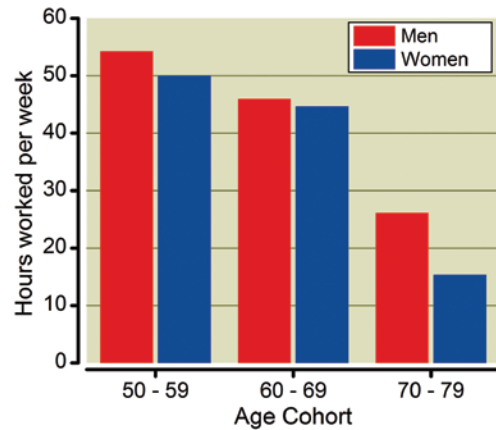


Fig. 2. Mean hours worked by older anesthesiologists by age cohort and sex. Mean hours worked per week decreased as each decennial cohort aged (all contrasts, P value less than 0.001). Overall, men worked a longer week than women ($P = 0.024$), with the sex difference present only for those in their 50s (P value less than 0.001) and 70s ($P = 0.003$).

women (mean, 49.7 *vs.* 47.9; $P = 0.024$), and the work week decreased as cohorts aged (Fig. 2). As a group, older anesthesiologists spent approximately 81% of their time in patient care, 7% in teaching, 7% in administration, and 2% in research. They spent about the same proportion of time in research as other older physicians did, more of their time in patient care (80.7 *vs.* 79.1%; $P = 0.015$) and teaching (7.4 *vs.* 6.2%; P value less than 0.001), and a smaller portion in administration (6.8 *vs.* 8.2%; P value less than 0.001). Their time allocated to patient care decreased as they aged, as their time allocated to teaching increased (Fig. 3) and a larger proportion of the cohort worked part-time (Fig. 4).

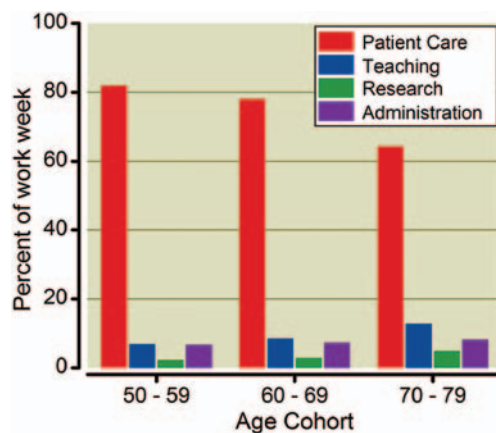


Fig. 3. Time spent by older anesthesiologists in selected activities by age cohort. As they aged, cohorts devoted less time to patient care (all contrasts significant, P value less than 0.01) as the time allocations associated with teaching increased (all contrasts significant, P value less than 0.05). Time allocation for research increased only in their 70s ($P = 0.011$), and that for administration did not change with aging.

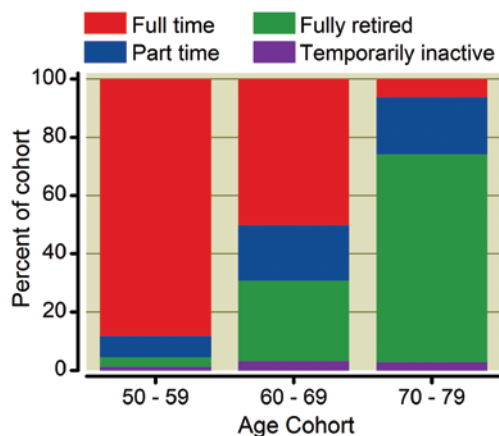


Fig. 4. Practice status of older anesthesiologists by age cohort (all contrasts different, P value less than 0.001).

Retirement Status. Figure 4 compares the practice status of older anesthesiologists by age cohort. They were more likely than other physicians to be fully retired from medicine (22.4 *vs.* 17.2%; P value less than 0.001), even after adjustment for age. Women were no more likely to be retired but more likely to be working part-time (20.2 *vs.* 13.1%; P value less than 0.001). Anesthesiologists with a critical-care or pain-management subspecialty were more likely than their colleagues to be working full-time (93.9 *vs.* 85.1%; $P = 0.002$ and 89.1 *vs.* 85.1%; $P = 0.04$; respectively).

Retirement Decision Making

Plans to Discontinue Patient Care. A smaller proportion of older anesthesiologists than other older physicians had plans to stop providing care (33.6 *vs.* 54.0%; P value less than 0.001). Older anesthesiologists' plans to stop providing patient care were associated with both career dissatisfaction and higher financial status. Among those with such plans, 41.1% were very or somewhat dissatisfied as compared with 33.4% who were very or somewhat satisfied with medicine as a career ($P = 0.02$), and 38% reported excellent or very good financial status as compared with only 22% noting fair or poor financial status (P value less than 0.001). Independent predictors for planning to leave patient care included increasing age, being somewhat (or less) satisfied with one's career, and having better than fair financial status.

Remaining Active in Medicine but Not Providing Patient Care. At survey time, 8.8% of anesthesiologists and 11.2% of other older physicians had stopped providing patient care, but had not retired. Older anesthesiologists active in medicine but not providing care were older than their clinical colleagues (mean age, 61.2 *vs.* 56.9 yr; P value less than 0.001) and more likely to be working part-time (35.8 *vs.* 15.5%; P value less than 0.001). They did not differ from their colleagues with regard to satisfaction with either medicine as a career or their current position.

Timing of Retirement from Patient Care. Anesthesiologists stopped providing care at the same age as other physicians

(mean, 62.7 *vs.* 62.9 yr). As compared with other older physicians, older anesthesiologists still providing patient care were more likely to report they planned to discontinue patient care in their 60s (78.4 *vs.* 68.6%) and less likely to say they planned to discontinue patient care in their 70s (11.6 *vs.* 22.7%; both comparisons, P value less than 0.001). Yet, among those who had stopped providing patient care, they were less likely than other older physicians to have stopped seeing patients in their 60s (39.7 *vs.* 53.0%; $P = 0.035$) and more likely to have stopped seeing patients in their 70s (28.4 *vs.* 23.6%; P value less than 0.001).

Factors Cited in Retirement Decision Making. Older anesthesiologists were most likely to cite on-call responsibilities as a factor in their decision to retire from patient care, followed by insufficient reimbursement, and lack of professional satisfaction, whereas other older physicians more often cited increasing regulation of medicine, decreasing clinical autonomy, and rising malpractice insurance costs (Table 2). However, in the decision to remain clinically active, older anesthesiologists were similar to other older physicians, with the top three factors being career satisfaction, financial needs, and good income. Older anesthesiologists were more likely than other older physicians to report that the need for health insurance was preventing their retirement from patient care (Table 2). Among anesthesiologists, reported Decision Making differed somewhat by whether the respondent had already retired or was still clinically active, with the former placing greater emphasis on increasing regulation of medicine, rising malpractice insurance costs, and the effort to keep up with clinical advances, and the latter focusing more on insufficient reimbursement, lack of professional satisfaction, and increased family responsibilities. Full-time anesthesiologists placed greater emphasis than part-time physicians on the importance of on-call responsibilities and insufficient reimbursement in their decisions to retire. Overall, there were no meaningful differences by age cohort or by sex.

There Were a Few Significant Differences by Subspecialty. In the decision to retire from patient care, older anesthesiologists with a pain-management subspecialty were more likely than their colleagues to cite insufficient reimbursement (50.6 *vs.* 41.7%; $P = 0.002$), increasing regulation of medicine (43.9 *vs.* 30.5%; P value less than 0.001), and decreasing clinical autonomy (46.9 *vs.* 30.5%; P value less than 0.001). However, in the decision to remain clinically active, pain-management specialists were more likely than other anesthesiologists to cite the needs of their patients and difficulty finding a replacement as very important factors. Older anesthesiologists with a critical-care subspecialty did not differ from other older anesthesiologists in the factors they reported were very important in their decision to retire from patient care, but were more likely than their colleagues to cite career satisfaction and the needs of their

Table 2. Factors Cited as “Very Important” in Retirement Planning among Older Anesthesiologists Compared with Other Older Physicians

Factors	Older Anesthesiologists (N = 3,222)	Other Older Physicians (N = 8,657)	P Value*
Decision to retire from patient care			
On-call responsibilities	50.8%	38.0%	<0.001
Insufficient reimbursement	38.5	45.0	<0.001
Lack of professional satisfaction	36.6	32.7	<0.001
Increasing regulation of medicine	33.7	48.6	<0.001
Decreasing clinical autonomy	33.3	44.2	0.026
Personal health issues	30.8	24.5	<0.001
Rising malpractice insurance costs	24.4	42.0	0.007
Increased family responsibilities	18.0	14.3	<0.001
Effort needed to keep up with clinical advances	16.0	20.3	0.08
Recertification requirements	8.8	15.8	0.89
Increasing competition within my specialty	5.4	8.9	<0.001
Decision to remain clinically active			
Career satisfaction	68.0	69.9	<0.001
Financial needs	45.0	55.5	<0.001
Good income	46.0	47.3	<0.001
Needs of my patients	45.5	43.2	<0.001
Need for health insurance	39.0	26.8	<0.001
Difficulty recruiting a replacement	13.5	10.6	0.002

*P values for differences in the distributions of all three categories of the response variable (viz., “very important,” “somewhat important,” and “not important”) across the two physician populations, whereas percentages reflect only the “very important” category. Percentages also reflect exclusion of missing values and “not applicable” responses.

patients as very important in their decisions to remain clinically active.

Modeling Retirement Decision Making. Logistic regression models of the retirement decision using the physician's priorities for the decision factors, by the three age cohorts, had good explanatory power (*C* statistic, 0.77–0.80) and, *in toto*, conveyed the older anesthesiologists' decision making (Table 3): For those in their 50s and 60s, each additional year of age increased the likelihood of retirement, with international medical graduates less likely to be retired than U.S. medical graduates. Those in their 50s were much more likely to be retired if they had cited personal health issues as very important, and less likely if they cited increased family responsibilities; whereas those in their 60s were less likely to be retired if they had cited insufficient reimbursement, career satisfaction, or need for health insurance. The only independent predictor of retirement status among those in their 70s was increased family responsibilities, which decreased the likelihood of retirement.

Timing of Retirement. Most retired anesthesiologists (66.4%) had retired during their 60s, at a mean age of 63.3 (median, 64.0), as did other older physicians; timing of retirement for each age cohort was also similar (Fig. 5). Retirement age has been increasing, from a mean age of 57.4 yr among anesthesiologists who retired before 1985 to 63.9 yr among those who retired in the period 1995–1999 ($r = 0.28$; P value less than 0.001), after which the

mean retirement age remained at 63.9 yr. Women retired earlier than men (mean, 61.2 *vs.* 63.8; P value less than 0.001).

Retirement status was closely associated to self-defined health status, specifically the categorization “very good” or “excellent” health, regardless of age cohort (Fig. 6). Almost no active anesthesiologists characterized their health as “poor,” as compared with up to 6.4% of retirees in each age cohort (P value less than 0.001). Retirees did not differ from clinically active colleagues in self-defined financial status.

Although almost half (48.4%) of retired anesthesiologists reported they had been able to retire when they expected, anesthesiologists overall were more likely than other physicians to retire later than planned (10.3 *vs.* 4.3%; $P = 0.003$). Among those retiring later than expected, the most common reason was high professional satisfaction, followed by not being able to afford to retire. Reasons for a late retirement were similar for older anesthesiologists and other older physicians (Fig. 7). Sex differences among anesthesiologists retiring later than expected were few: 31.4% of men reported they could not afford to retire as compared with 63.6% of women ($P = 0.010$); no men reported that they retired later than expected because their practice income was good, whereas 9.1% of women did ($P = 0.029$).

Among anesthesiologists who retired earlier than expected, by far the most common reason was health issues,

Table 3. Independent Predictors for Retirement among Older Anesthesiologists by Age Cohort

Predictor	Age Cohort (yr)					
	50–59		60–69		70–79	
	OR (95% CI) or [C statistic] N = 2,140	P Value	OR (95% CI) or [C statistic] N = 805	P Value	OR (95% CI) or [C statistic] N = 277	P Value
Age (years older than > 50 yr)	1.22 (1.08–1.39)	0.002	1.28 (1.17–1.40)	<0.001	1.19 (0.99–1.44)	0.067
International medical graduate (vs. U.S. Medi- cal graduate)	0.38 (0.18–0.79)	0.01	0.46 (0.21–0.98)	0.044	0.00 (0.00–0.00)	0.65
Male (vs. female)	0.56 (0.22–1.46)	0.23	0.94 (0.52–1.69)	0.83	1.82 (0.48–6.88)	0.38
Factors considered “very important” regarding retirement						
Rising malpractice insurance costs	1.32 (0.54–3.25)	0.54	1.70 (0.90–3.22)	0.11	2.39 (0.68–8.40)	0.17
Efforts needed to keep up with clinical advances	0.73 (0.23–2.34)	0.60	0.94 (0.44–2.00)	0.86	0.48 (0.11–2.08)	0.33
Recertification requirement	0.45 (0.09–2.12)	0.31	1.47 (0.61–3.52)	0.39	1.38 (0.15–12.81)	0.78
Increasing regulation of medicine	1.41 (0.56–3.59)	0.47	1.02 (0.45–2.34)	0.96	1.13 (0.32– 4.02)	0.85
Decreasing clinical autonomy	1.61 (0.63–4.10)	0.32	1.37 (0.63, 3.02)	0.43	2.36 (0.56– 9.95)	0.24
Increasing competition within specialty	1.19 (0.25–5.59)	0.83	0.97 (0.25–3.75)	0.96	9.14 (0.28–301.45)	0.22
Insufficient reimbursement	0.74 (0.34–1.64)	0.46	0.47 (0.24–0.92)	0.027	0.69 (0.12– 3.80)	0.67
On-call responsibilities	1.36 (0.65–2.82)	0.42	1.29 (0.78–2.12)	0.32	1.22 (0.43–3.47)	0.71
Lack of professional satisfaction	0.72 (0.33–1.54)	0.39	1.21 (0.68–2.16)	0.51	0.35 (0.10–1.24)	0.11
Personal health issues	5.39 (2.56–11.39)	<0.001	1.61 (0.85–3.03)	0.14	1.92 (0.35–10.52)	0.46
Increased family responsibilities	0.32 (0.11–0.95)	0.041	0.53 (0.23–1.18)	0.12	0.07 (0.01–0.64)	0.018
Factors considered “very important” regarding remaining clinically active						
Career satisfaction	0.92 (0.44–1.93)	0.82	0.54 (0.32–0.93)	0.026	0.41 (0.11–1.55)	0.19
Financial needs or obligations	0.67 (0.27–1.63)	0.37	0.75 (0.36– 1.55)	0.44	0.56 (0.09–3.42)	0.53
Good income	0.55 (0.23–1.34)	0.19	1.62 (0.80–3.28)	0.18	1.55 (0.21, 11.64)	0.67
Needs of patients	1.54 (0.73–3.22)	0.26	1.70 (1.00–2.90)	0.052	2.73 (0.85–8.77)	0.09
Difficulty recruiting a replacement	1.01 (0.31–3.27)	0.99	0.51 (0.19–1.38)	0.18	1.32 (0.15–11.39)	0.80
Need for health insurance	0.91 (0.43–1.89)	0.79	0.50 (0.26–0.95)	0.036	0.71 (0.15–3.37)	0.67
C statistic	[0.782]		[0.771]		[0.804]	

cited by 50% of anesthesiologists. Lack of professional satisfaction and rising medical malpractice premiums were also cited by a quarter of anesthesiologists (Fig. 8). Personal health concerns were cited by 64.0% of those who retired

in their 50s, as compared with 43.8% of those who retired in their 60s and 42.9% of those who retired in their 70s ($P = 0.039$). Lack of professional satisfaction was a reason for early retirement among 32.7% of those who retired

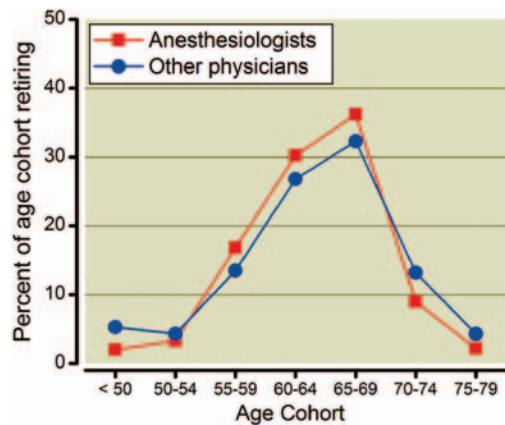


Fig. 5. Distribution of retirement among older anesthesiologists and other older physicians, by age cohort.

in their 50s, 24.5% of those who retired in their 60s, and none of those who retired in their 70s ($P = 0.025$). Overall, women were more likely than men to cite both rising medical malpractice premiums (50.0 *vs.* 18.4%; P value less than 0.001) and lack of professional satisfaction (58.5 *vs.* 18.8%; P value less than 0.001), whereas men were more likely than women to cite an improvement in retirement finances (14.2 *vs.* 1.9%; $P = 0.013$) as a reason for early retirement.

Impact of Retirement Patterns on Future Supply of Anesthesiologists

The life-table analysis illustrates how a hypothetical cohort of 1,000 50-yr-old anesthesiologists is likely to age out of the clinical workforce during the period 2006–2035 (Fig. 9). Early on, losses of approximately 15 physicians per year would be expected, which would accelerate when this cohort is in their 60s and slow when they reach their 70s. This older clinical workforce would shrink approximately 6% by 55 yr, 26% by 60 yr, 63% by 65 yr, 80% by 70 yr, and 86% by 75 yr. Within this older clinical workforce, part-time work status (assumed in this simulation to be less than 40 h/week) would grow at an accelerating rate as the cohort ages (Fig. 9).

Discussion

Among several salient messages emerging from this first national survey of U.S. anesthesiologists over 50 yr are their robust clinical work effort in tandem with growing part-time employment, the dynamic nature of retirement decision making, and the critical roles of professional satisfaction and personal health status in their retirement decisions.

Older anesthesiologists worked a substantially longer work week (mean, 49.4 h/week) than those of attorneys

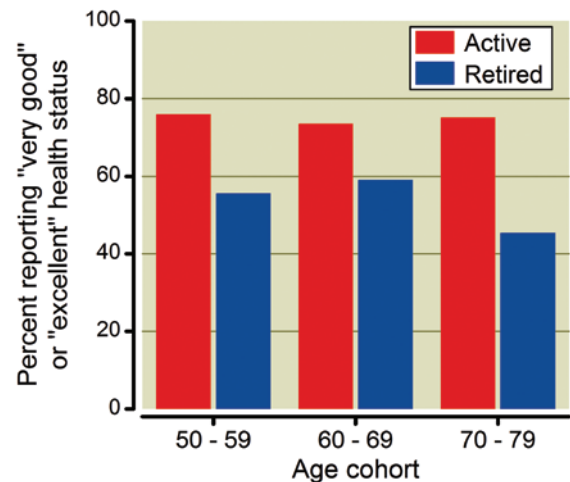


Fig. 6. Health status (self-defined "very good" or "excellent" health) among older anesthesiologists, by age cohort and retirement status. All contrasts are significantly different, P value less than 0.001.

(44.9 h/week),¹² engineers (43.0 h/week),¹² registered nurses (37.3),¹² and miscellaneous other privately employed, non-medical professionals (35.3^{††††}) at the time of this survey. Although the length of the work week of other older physicians was similar, anesthesiologists devoted a greater portion of their professional time (mean, 80.7 *vs.* 79.1%, P value less than 0.015) to clinical care. Critical-care medicine and pain-management subspecialists contributed particularly sturdy work efforts as compared with their anesthesiology colleagues, in part because they were less likely to work part-time. Clinical work effort decreased with age for older anesthesiologists, as for all older physicians, as the cohort allocated increasing effort to teaching (Fig. 3) and an increasing proportion of the cohort shifted to part-time work (Fig. 4).

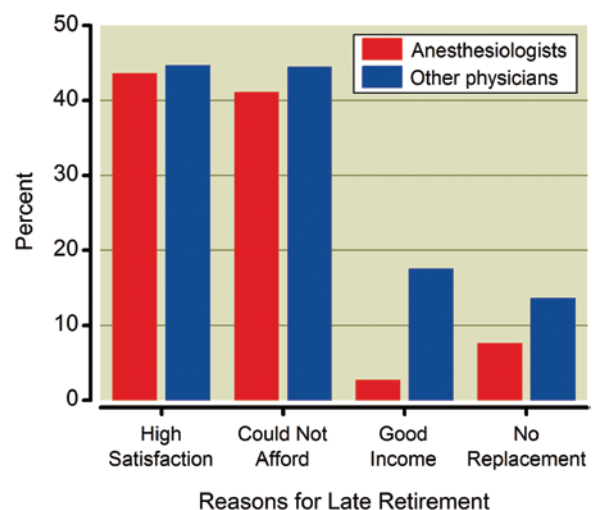


Fig. 7. Reasons for late retirement among anesthesiologists and other physicians.

†††† Bureau of Labor Statistics, US Department of Labor: Seasonally adjusted, average weekly employment hours for professionals in Fall 2006, extracted from the Current Employment Statistics survey (National). Available at: <http://data.bls.gov/pdq/querytool.jsp?survey=ce>. Accessed on June 19, 2012.

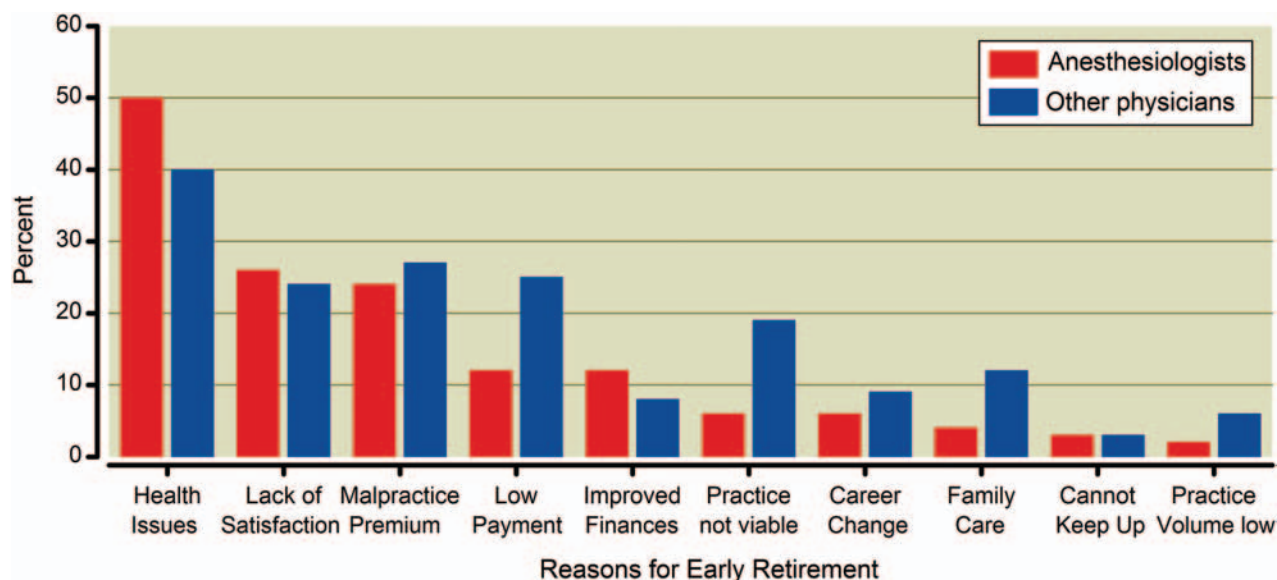


Fig. 8. Reasons for early retirement among anesthesiologists and other physicians. Anesthesiologists were less likely than other physicians to indicate that their early retirement was due to their practice being economically nonviable (6.0 vs. 19.0%; $P = 0.028$) or their reimbursement rates being insufficient (12.0 vs. 25.0%; $P = 0.043$), but other differences were not statistically significant.

Despite the robust work contribution of older anesthesiologists overall, one sixth of the cohort worked in a self-defined part-time mode. Part-time work was more prevalent among women, accounting in part for their shorter average week (Fig. 2), and generally a growing preference as the

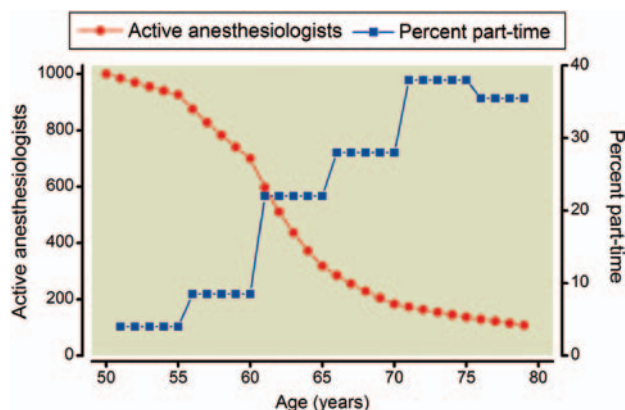


Fig. 9. Predicted clinical anesthesiology workforce as the cohort ages from 50 to 80 yr and the growth in part-time (assumed to be less than 40 h/week) work status. Due to sparse data (e.g., relatively small numbers of older individuals, especially women), the estimates for part-time status were developed only for 5-yr cohorts.

††††† Chen Y-P, Scott JC: Phased retirement: Who opts for it and toward what end? Washington, DC: AARP; January 2006. Available at: http://assets.aarp.org/rgcenter/econ/2006_01_retire.pdf. Accessed June 19, 2012.

§§§§§ Purcell P: Older Workers: Employment and Retirement Trends. Congressional Research Service Report for Congress; RL30629. Washington, DC: September 16, 2009. Available at: http://assets.opencrs.org/rpts/RL30629_20090916.pdf. Accessed June 19, 2012.

cohort aged, particularly for those with good or excellent financial status and/or those with poorer health status. Part-time work may have been a welcomed option enabling continued employment as well as postponed retirement (“phased retirement”).††††† A trend to postponing retirement, when flexible work options exist, has been noted among other work populations beyond medicine, particularly those in highly skilled positions, and among those who were more financially secure and better educated.†††††^{12,13} Flexibility inherent in part-time work enables a gradual rather than abrupt transition to retirement, potentially retaining some in the workplace longer than otherwise and offsetting their reduced work hours.††††† Given that part-time status was more prevalent among women and the representation of women in anesthesiology is rising, part-time work is likely to be increasingly common in the future and deserves further study.

Older anesthesiologists retired at the same age as colleagues in other disciplines did (mean, 63; median, 64), and retirement ages have been rising during the past two decades, mirroring a similar phenomenon in other medical specialties,^{14,15} as well as in the general population. §§§§§ Remarkably, anesthesiologists participated in clinical care well into their 60s and beyond (Figs. 3–5 and 9). As the life-table analysis forecasted, approximately 30% of the cohort is expected to work past 65 yr, approximately 18% past 70 yr, and 10% are likely to still be working at 80 yr (Fig. 9).

As one might expect, reasons for retiring (or not retiring) at a given age are numerous, varied, and personal. Yet, the retirement perspectives of older anesthesiologists, although quite diverse, coalesced around several common issues. Those remaining clinically active tended to cite two general

reasons, professional satisfaction and concern for patient care (e.g., difficulty finding replacement), and personal economic need (e.g., health insurance, family needs), whereas older anesthesiologists retiring tended to cite on-call responsibilities, insufficient reimbursement, lack of professional satisfaction, or health concerns, among other factors. In designing interventions to retain practitioners in the workforce, initiatives may need to be age-cohort and perhaps even subspecialist specific. For example, pain-management and critical-care subspecialists leaving practice often cited loss of clinical autonomy, and anesthesiologists leaving clinical practice in their 50s were especially likely to cite poor health, with more than half of early retirees having poorer health than their colleagues.

This study has many potential limitations, as survey-based results are especially subject to biases. The intended sampling frame, all American Society of Anesthesiologists members aged 50–79 yr, was incomplete because American Society of Anesthesiologists used Internet distribution of the study but had e-mail addresses for only 57% of this target population. Our response rate (37%) was within the range noted by the other specialties participating in this effort but was substantially lower than that typically reported for health-related surveys (60%),¹⁶ raising concern about nonresponse bias. Because nonrespondents may be different from respondents, their perspectives on retirement issues about which we inquired may also be different. Nonresponse bias, coupled with such a modest response rate, is concerning. However, the critical issues are whether and how much the nonrespondents differ from respondents, rather than the response rate *per se*.^{17,18} Using the Internet rather than the U.S. Postal Service to distribute the survey selected for a younger, more male, possibly more “tech savvy” subgroup. The complex survey design used in our analysis included statistical adjustments to force the respondent population to resemble the referent population with regard to common demographic characteristics (age cohort, sex, and medical school location). Yet, the proportion of American Board of Anesthesiology diplomates was higher among respondents than the target population (88.5 vs. 80.2%, *P* value less than 0.001), suggesting that other, unknown respondent differences may have been present, even if the survey results resembled those of other physicians in this and other surveys^{3,14,15} (face validity). Thus, our results may not be generalizable to all older anesthesiologists; yet, without knowledge of the nonrespondents, which might have come from analyzing successive distributions of surveys to former nonrespondents or analysis of early *versus* late respondents,¹⁷ concern about the representativeness of our results remains speculative.

Nonetheless, the modest response rate limited the robustness of attempts to statistically model satisfaction and

retirement decision making, as well as to develop a more detailed and informative life-table analysis. Also, the survey instrument was a generic one, developed by experienced survey methodologists familiar with physician workforce issues, principally to enable comparability of results across specialties. Yet, used by disparate medical specialties, the survey may not have been ideal for any physician specialty and may have even led to biased information. For example, some anesthesiologists may have discounted on-call hours, thus reporting a shorter work week. Also, as with any survey, the information was self-reported, may not be wholly true or may be biased toward more socially acceptable responses, despite the survey's anonymity, and cannot be directly validated.

Apart from technical issues, a different set of limitations relate to using a cross-sectional study design to learn about a dynamic process such as retirement decision making. Each respondent completed a survey that bore no specific temporal relationship to retirement, rather than at the time the retirement decision was made. Physicians still active in medicine were asked about factors potentially material to future retirement, whereas those already retired responded in relation to their past decision. Perspectives before or in retirement do not necessarily reflect those at the time of retirement. As a result, our modeling of retirement decision making may reflect unknown biases. Yet, in the absence of conducting a survey during a retirement exit interview, a cross-sectional study design may be the only feasible approach to obtaining such information. Finally, substantial changes in the general economy and health policy since 2006 may have created circumstances that modify the importance of some factors in retirement decision making and require further study.

In conclusion, we have identified factors influencing older anesthesiologists' practice patterns and retirement planning, with important implications for future workforce supply. This survey lends support for greater attention focused on potentially modifiable factors, such as workplace wellness programs already established in anesthesiology, in addition to other initiatives to enhance professional satisfaction to prevent premature retirement. By the same token, with aging inevitably affecting everything from muscle to mind, these results also call for initiatives to aid the older physician and the public, and determine when fitness for duty wanes enough that retirement is an appropriate and desirable choice.¹⁹ || || || This survey also highlights the under-recognized trend toward part-time work and the potential role of this employment mode in both decreasing the aggregate clinical workforce effort and retaining larger numbers of older but skilled anesthesiologists in the clinical setting longer.

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