Continuous positive airway pressure (CPAP) devices are used to treat obstructive sleep apnea and can improve patients’ blood pressure, reaction times while driving, and quality of life.¹ Health insurance generally covers CPAP devices, but the typical cost of $600 to $2000 for patients without insurance or with minimal coverage can be prohibitive.²

In the United States, CPAP devices require a prescription for purchase. According to the US Food and Drug Administration, CPAP devices are Class II medical devices with possible risks.³ Although the US Food and Drug Administration does not authorize sales of secondhand CPAP devices, such devices are bought and sold by private individuals.

**Methods** | Between October 1 and 31, 2014, we searched Craigslist.org, a classified advertisements website, weekly in 18 US cities and regions (Figure). We chose the locations to provide a range of geographic locations, median incomes, population densities, and number of sleep clinics. We searched for the term CPAP and extracted information from each advertisement, including reason for sale, price, hours of previous use, safety and medical content included with the CPAP device, and whether the need for a prescription was mentioned. We used 2014 US Census data for information on population and median income and the 2014 Yellow Pages for information on the number of sleep clinics in a given area. We calculated Pearson correlation coefficients with IBM SPSS.
Secondhand CPAP devices are frequently available for sale on a classified advertisements website, at prices that are generally far below full retail cost, and without mention of the need for a prescription. We were unable to obtain information about individual buyers and sellers, such as how many advertisements resulted in a sale, what percentage of buyers had diagnosed and symptomatic obstructive sleep apnea, and patient outcomes.

Unauthorized online sales of secondhand CPAP devices raise questions about safety and efficacy. Patients require individualized pressure settings for the CPAP device; a secondhand device may deliver a low pressure that is ineffective or a high pressure that is excessive, leading to discomfort or even central sleep apnea events.\(^4\) The use of auto-titrating devices that were specified in 27 advertisements (10.0%) may mitigate these problems but do not eliminate other concerns, such as the hygiene of secondhand devices and masks. Similar concerns have been raised about unauthorized online sales of contact lenses.\(^5\) Nonetheless, increasing access to low-cost CPAP devices has benefits, especially when the devices are hygienic, in good working order, and might otherwise be discarded.

An alternative to consumer-to-consumer online sales is the American Sleep Apnea Association’s CPAP Assistance Program,\(^6\) with which we are not affiliated. This program accepts donations of used CPAP devices in good condition, and cleans and reprograms them based on the patient’s prescription. The charge for the device is $100, much less than the mean price of $291 that we found. For patients with obstructive sleep apnea and limited resources, similar programs should be encouraged and supported.

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**Tables**

**Table. Characteristics of 270 Online Advertisements for CPAP Devices in 18 Areas of the United States, October 2014**

<table>
<thead>
<tr>
<th>Seller Characteristic</th>
<th>Value(^a)</th>
</tr>
</thead>
</table>
| Who used the CPAP device | Seller 43 (15.9)  
Family member 15 (5.6)  
Not mentioned 212 (78.5) |
| Reason for selling | Did not like or use CPAP 19 (7.0)  
Obstructive sleep apnea resolved 17 (6.3)  
Has newer machine 11 (4.1)  
Previous user died 2 (0.7)  
Not mentioned 221 (81.9) |
| Device characteristics | Hours of use 0 17 (7.1)  
1-250 50 (18.5)  
251-1000 56 (20.7)  
>1000 14 (5.2)  
Not mentioned 133 (49.3) |
| Pressure settings | Preset pressure mentioned 6 (2.2)  
Auto-titrating machine 27 (10.0)  
Mentioned that it needs to be reset 5 (1.9)  
Not mentioned 232 (85.9) |
| Condition | New 38 (14.1)  
Like new 38 (14.1)  
Excellent 35 (12.9)  
Good 17 (6.3)  
Not mentioned 142 (52.6) |
| Price, $ | Mean price, $ 291  
<100 49 (18.1)  
100-300 117 (43.3)  
301-500 69 (25.5)  
501-1000 30 (11.1)  
>1000 5 (1.9) |
| Other characteristics | Included used mask 165 (61.1)  
Included user’s manual 73 (27.0)  
Provided picture of device or mask 200 (74.1) |
| Medical content | Stated that a prescription was required 5 (1.9)  
Made claims about improved sleep 27 (10.0) |

Abbreviation: CPAP, continuous positive airway pressure.

\(^a\) Data are presented as number (percentage) of advertisements unless otherwise indicated.

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**Discussion**  
Secondhand CPAP devices are frequently available for sale on a classified advertisements website, at prices that are generally far below full retail cost, and without mention of the need for a prescription. We were unable to obtain information about individual buyers and sellers, such as how many advertisements resulted in a sale, what percentage of buyers had diagnosed and symptomatic obstructive sleep apnea, and patient outcomes.

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US Residency Competitiveness, Future Salary, and Burnout in Primary Care vs Specialty Fields

We previously found a strong association between the competitiveness of a specialty (as measured by the “fill rate,” the percentage of residency spots filled by US graduates) and physician salary.1,2 These findings, along with others, underlie efforts to encourage medical students into primary care specialties (family medicine, general internal medicine, and general pediatrics), which tend to be less rewarding financially. At the same time, physician burnout has risen in recent years, with more than half of US physicians now experiencing at least 1 symptom of professional burnout.3 In this study, we sought to identify the recent trends in the association between specialty competitiveness and salaries in 2015, and to also examine the association between lifestyle factors and selection of a primary care field.

Methods | Residency data, including the number of available positions, number of US and foreign applicants, and number of spots filled, was gathered from the National Residency Match Program for 2014.4 Median specialty salary data was obtained from the Medical Group Management Association for 2015.5 Burnout and lifestyle factor data were obtained from the Medscape Lifestyle Report6 2016, which collected 15 800 physician responses to questions regarding burnout and bias in their respective fields; and the Careers in Medicine webpage from the American Association of Medical Colleges.6 Correlation coefficients (r) were calculated using SPSS Statistics software (SPSS Inc, version 23.0).

Results | We found a strong positive correlation between the competitiveness of US residency spots and median specialty salary (r = 0.71) (Figure). Analyzing the data by salary quar-

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Figure. Association Between the Median Salary of a Specialty and Its Competitiveness, as Measured by the Percentage of Positions Filled by Graduates of US Medical Schools

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