Oceanic Travel Conditions and American Immigration, 1890-1914

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Abstract

The pace and incidence of improvements to oceanic travel conditions for American immigrants, during the quarter century preceeding the First World War, were significantly constrained by shipping lines' capacity considerations. The improvements had no detectable impact on the overall volume of migration, but did influence the flow by route and, probably, the frequency of repeat crossings. Data gathered from transatlantic shipping sources quantify the evolution of travel accommodations for migrants, as "closed berth" cabins, for two to eight passengers each, slowly supplanted older and less comfortable "open-berth" dormitory style quarters. By 1900, roughly 20% of North Atlantic second and steerage (third) class passenger capacity was in closed berths; by 1914, 35%. Steerage alone went from about 10% to 24% closed berths. Accommodation of migrants in closed berths came sooner for northern Europe routes and later for the southern. Prior suggestions attributing the pace of the conversion to competitive impediments, and to discrimination against southern European passengers, are not corroborated. Closed berths for migrants came gradually to all routes regardless of shifting cartel effectiveness, passenger cartels enhanced non-price competition (e.g. in on-board conditions) and differentiation was much more by travel route than by passenger ethnicity. Instead, closed berths were significantly related to the incidence of tourist traffic (highest for north Europe, and seasonally somewhat opposite to migration) because capacity utilization could be raised by using the same quarters for tourists and migrants, provided that the thus interchanged units were closed berth cabins. Growing rates of repeat migration seem to have been mostly a (further contributing) cause, but also partly an effect, of conversion from open to closed berths. Travel condition improvements on North Pacific migration routes lagged the North Atlantic, possibly due to the Pacific's lower percentage of seasonally offsetting tourism, its less-concentrated migrant flows, and its smaller ships with lower scale economies.

Keywords:

Migration, repeat migration, immigration, transportation, shipping, travel, travel conditions, corporate capacity management, immigration policy

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Introduction: Transportation developments, travel conditions and mass migration

This essay addresses the causes and effects of travel conditions experienced by overseas migrants journeying to and from the United States between 1890 and 1914, and the changes in those travel conditions over this period. Half of all voluntary immigrants to North America before 1914 came over the course of those two and a half decades, arriving from all over Europe, and in considerably smaller but significantly evolving numbers from non-European sources as well. In the overall life-cycle of adjustment to a new life in a far-off land, the physical intercontinental relocation was a temporary hiccup, and is seldom focused on at length by historians. The oceanic crossing to America was nonetheless an important common denominator experience shared across an unusually long-lasting and ethnically diverse flow of many millions of people.[1]

The nineteenth century transportation revolution that is commonly and logically associated with powerful and sustained growth in global long distance *goods trade,* had more modest though still noteworthy impacts on long distance *passenger* movements.[2] Across the North Atlantic core of the burgeoning *belle epoch* global economy, some fourteen million migrants from a labor-supplying Old World took advantage of generally safe, reliable and regular oceanic transit links, during the years 1890-1914, in order to pursue economic opportunities in an industrializing United States. This relocation was undoubtedly assisted by the then newly extended network of *railways* connecting remoter regions of inland Europe to its Atlantic ports, although it is not easy to isolate this travel facilitation from other factors, notably the liberalization of border controls within Europe, and the tremendous growth of short term, low-skilled industrial and urban employment in America which enabled a long distance mass migration overwhelmingly self-financed and self-insured through family networks.[3]

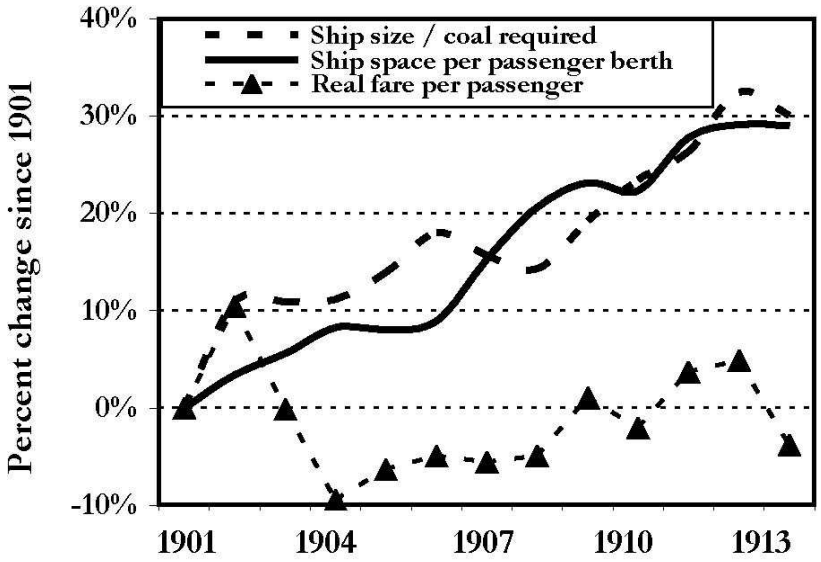
Historians have been rather more skeptical about the degree to which *oceanic* transport improvements facilitated mass migration to North America in the late nineteenth and early twentieth centuries. Across the Pacific, restrictive regulations impeded the growth of relocation from Asia to America regardless of travel conditions. Transatlantic movers faced fewer legal barriers, but their long term volume grew in line with, not faster than, the development of the U.S. economy. Arguably, the single most significant improvement to pre-First World War transatlantic travel conditions came with the conversion of the migrant trade from sailing ships to steamships during the 1850s and 1860s, which cut travel times by up to two-thirds, yet immigration from Europe to America in the early 1870s boom years (almost all by steam) was less in absolute terms than it had been in the early 1850s (almost all by sail), and relative to population levels markedly lower. Furthermore, though travel conditions upon the mid-19th century Atlantic crossing were often harsh, and at times brutal and exploitative, recent historical research indicates that the actual risks of death or severe injury to health (e.g. from disease enroute or shipwreck) were not as high as popular belief since then often implies. The

[1] Keeling, "Repeat," p. 164, Keeling, "Capacity," pp. 267-68.
[2] Keeling, Transportation Revolution, pp. 40-44.
[3] Taylor, pp. 167-209, Keeling, "Networks," pp. 141-43, *Historical Statistics of the United States*, p. 1-547.

subsequent improvement resulting from conversion to steamships, though significant, did not have the decisive effects on migration volumes that are sometimes supposed.[4]

Improvements to transatlantic travel conditions after 1890 arguably had even less impact upon migration volumes than the earlier sail-to-steam conversion did. Migrant travellers benefitted as Atlantic steamships became larger, roomier, and less uncomfortable between 1890 and 1914, but not because disease outbreaks, travel times,[5] or ticket prices declined. Already by the 1880s, there was a higher average risk of dying by staying in Europe than by emigrating to America, and the average passage price had become equivalent to only about a month's unskilled wages in the United States. The basic economic incentives for migration changed little after 1900. As Figure 1 shows, the wage-adjusted average steerage fare in 1913 was almost exactly what it had been in 1900.[6] A closer look at travel conditions, and the causes and effects of their changes over time, can however add specificity and qualification to these general impressions.

Figure 1 Increasing fuel efficiency, increasing space per passenger, no lasting trend in fares, 1901-13



Sources and Notes: The figure covers voyages between Europe and the four largest U.S. ports (New York, Boston, Philadelphia, Baltimore; see also notes to Figure 2 in the appendix). Size or space (gross tons) from Bonsor, coal requirements based on seventy-six vessels in J.H. Isherwood (*Sea Breezes* and *Steamers of the Past*) which carried 35 percent of all second-class and steerage passengers during these years, passenger berths (here, first class, second class, and steerage all combined together) from PCR. Fares are steerage westbound (from Keeling, "Capacity," p. 228) discounted by changes in the average U.S. unskilled wage (from http://www.measuringworth.com/). Second-class fares were higher but closely correlated with those of steerage. (see Keeling, "Transportation Revolution," p. 56). Deck plans indicate that space per passenger increased over time for all classes of travel. See also Keeling, "Abstracts," pp. 21-22.

[4] Barde, pp. 80, 133-34, Takaki, pp. 194, 255, Cohn, pp. 125-54, Killick, p. 76, Keeling, "Capacity," pp. 267-68.
[5] To New York, the average Atlantic transit time dropped by only about half a day (from 11 to 10½ days) between 1890 and 1900, and then remained essentially unchanged up to 1914. See following footnote for sources.
[6] Re death rates, see Moltmann, "Steamship Transport," p. 312, and Reports of the U.S. Immigration Commission, chaired by Senator William Dillingham, 1911 [Dillingham Report] vol. 37, p. 12. Wage equivalent fares per Keeling, "Capacity," pp. 227-28, 250 n. 16, transit times derived from vessel speeds of Bonsor, weighted before 1899 by vessel schedules of Morton Allan, thereafter by passenger volumes of PCR (see Table 1, source), divided by the route distances of ARCN, 1900, pp. 312-17, and double-checked against newspaper and other shipping logs.

Migration and travel conditions across the North Atlantic after 1890

Transoceanic mass migration to and from and to the United States during the late nineteenth and early twentieth centuries was a major demographic phenomenon carried out by a complex transnational travel business.[7] Comprehensive shipping line records available from 1898 on document the associated substantial and notably cyclical passenger-flows to and from major U.S. Atlantic ports:[8]

Table 1: 2nd and 3rd Class traffic between Europe and New York Boston, Baltimore, and Philadelphia, 1898-1914 (in '000s)

	Westward	Eastward		Westward	Eastward
1898	**c. 300**	**c. 155**	**1907**	**1,378**	**626**
1899	**411**	**160**	**1908**	**484**	**626**
1900	**533**	**209**	**1909**	**1,036**	**700**
1901	**578**	**186**	**1910**	**1,103**	**349**
1902	**778**	**227**	**1911**	**806**	**441**
1903	**907**	**306**	**1912**	**1,061**	**551**
1904	**796**	**419**	**1913**	**1,378**	**526**
1905	**1,037**	**301**	**1914**	**705**	**500**
1906	**1,251**	**402**			
Totals, 1898-1914:				**14,542**	**6,561**

Note: As used here throughout, "3rd Class" is synonymous with "steerage."

Source: Transatlantic Passenger Conference reports, "Trans-Atlantic Passenger Movements" [hereafter PCR] New York, 1899-1914.

Over the quarter century following 1890, transatlantic passenger steamships became cheaper to operate due to deployment of more-efficient engines requiring less coal, and these efficiencies were passed on to the traveling public not by way of lower fares, but through more space per passenger. A range of evidence indicates that this additional space was used to help reduce the discomforts of the oceanic traverse for all categories of travellers, including migrants.[9] Qualitative descriptions are an insufficient source for such analysis, however.

Surviving first-hand accounts by transatlantic travellers are like fragments of a great mosaic encompassing the frightening and the exhilarating, the tedious and the amusing, the

[7] Nugent, pp. 27-37, Keeling, "Cartels," pp. 195-96, Keeling, "Patterns," pp. 281-82, Coleman, pp. 22-60.

[8] U.S. Bureau of Immigration (BI) data provide a similar but less complete picture because they omit passengers in the second class before 1903, most westbound repeat migrants after 1905, and all eastbound migrants before 1908, and are furthermore mostly available on only an annual basis, whereas the shipping records have subtotals for each voyage. The flows in Table 1 amounted to about 80 percent of all migration between Europe and North America (including Central America and the Caribbean islands) in the 1898 to 1914 period. See Keeling, "Repeat," pp. 165-69, 184, Nugent, p. 14, and Willcox and Ferenczi, vol. 1, pp. 167, 364-65, 501-73.

[9] Keeling, "Capacity," pp. 42, 45-50, Maxtone-Graham, pp. 5-6, 28-30.

unbearable and the pleasant. Passengers' ratings of the accommodations ranged from fair to atrocious, the food from tasty to inedible, the crews from helpful to brutish.

Traversing the Atlantic aboard White Star's *Majestic* in 1890, Swedish emigrant Gustaf Erickson complained about tea that was some kind of bad-tasting "dishwater." Mary Antin wrote about a rough night in 1894 when her ship from Hamburg "pitched and rolled so that people were thrown from their berths." Samuel Chotzinoff's 1906 crossing on the American Line's *St. Paul* was "smooth and pleasant." In a 1907 letter to relatives back in Holland, Anna Kuijt said she had been "sick for the five days before landing because we had such bad weather and that was not very nice." Writing in 1906, based on observations from some years earlier, Edward Steiner variously decried the steerage of unbearable air, "miserable" food, and violations of privacy amongst passengers "packed like a cattle" in a travel class that "ought to be condemned as unfit for the transportation of human beings," while also noting the hours of dancing and multilingual amusement among migrants entering into a "larger fellowship than they ever enjoyed." The diary of Marius Larsen, crossing in 1912 from Denmark, on the Scandinavian-American Line's *Hellig Olav*, described shipboard service "far above my expectations" and "fun and merriment" day after day.[10]

The recollected experience of crossing the Atlantic depended on the shipping line, the route, the vessel, the crew, the fellow passengers, the time of year, the weather, the age of traveller, and how far back into the past the memories lay. Patterns can be discerned across eclectic portrayals and ad-hoc reminiscences, notably the salient role of weather (the North Atlantic is a stormy sea, and fine weather generally made for an agreeable journey, while bad weather meant seasickness, misery and outrageous stench), but to more systematically assess the quality of the services dispensed by the shipping firms, and how they were experienced by migrants, more tangible and consistent metrics are called for.

Gauging the improvements on the North Atlantic: the incidence of closed berths

Between 1890 and 1914, roughly fourteen million European migrants made twenty four million Atlantic crossings to and from the United States. During this twenty five year period, approximately 87 percent travelled in steerage or third class (sometimes called " 'tweendeck"), 12 percent in second class, and less than 1 percent in first class. Most first class passengers were U.S. tourists making summer visits to Europe.[11] By contrast, 95 percent of passengers in second class and steerage were European migrants.[12]

[10] Barton, p. 213, Antin, p. 178, Chotzinoff, p. 57, Brinks, p. 444, Steiner, pp. 35-36, 42-43, Larsen, pp. 6, 11. See also Howe, pp. 39-42, Baines, p. 19.

[11] Approximately seven million crossings east and three million west were made by European migrants who had previously made an (initial) westward crossing. (The 14.5 million westward total for 1898-1914 in Table 1 counts crossings, not people). Measurements in this paragraph are derived from calculations underlying the appendices in Keeling, "Repeat," pp. 176-78, 184, PCR data, and Keeling, "Transportation Revolution," pp. 56-57. As a share of total passenger volume, second class rose from about 10 percent in 1890 to about 15 percent in 1914. Migrants in second class were about 7 percent of all migrants in 1890. By 1914 this proportion had grown to about 17 percent.

[12] Keeling, "1908," p. 247.

An in-depth study of migrants' Atlantic travel conditions was conducted in 1908 for the Immigration Commission of the U.S. Congress. The Commission's undercover investigators documented observations made of steerage quarters on twelve voyages. In its resulting report, the Commission concluded that "disgusting, demoralizing" and "revolting" conditions generally prevailed in transatlantic steerage. A newer type of steerage, quite "unobjectionable," could be found on some vessels of "lines carrying emigrants from the North of Europe," but such emigrants were a relatively small percentage of the total flow to the United States. The report attributed the introduction of "new steerage" to "competition," and its limited extent to the shipping industry's market-carving agreements which lessened such competition. The coexistence of "both unobjectionable and revolting" conditions, sometimes even occurring simultaneously in different sections of the same vessel, was mentioned in support of the proposition that legislation could "complete what competition began" and lead to the "better type of steerage" becoming "general instead of exceptional."[13]

In broad terms, these findings are consistent with other evidence, and the supposition that stricter regulation *could* have forced additional improvements is certainly persuasive. The report, however, lacks a convincing explanation for the *actual* improvements that did occur. For example, why competition should lead to a rising quality of service on the northern but not the southern routes from Europe was not addressed (see, however, the next section here below). This report is also incomplete because it failed to note that vessels from northern European ports also carried substantial numbers of transit migrants from southern and eastern Europe.[14] Subsequent histories have elaborated upon these Commission findings, but provided few specifics as to how and why shipboard amenities varied over time and by travel route.

Within his definitive general history of nineteenth- and early-twentieth-century European relocation to America, Philip Taylor used vessel deck plans to help put the Immigration Commission's report on steerage conditions into historical context. Around 1890, enclosed cabins for two to eight migrants began to augment the older dormitory or "open-berth" compartments housing a hundred or more per large room. While the type and size of the beds (usually simple metal bunks) were generally the same as in "open-berth" quarters, the more modern "closed-berth" arrangements offered passengers greater privacy, and were typically supplemented by much more public space (washrooms, toilets, dining rooms, lounges, promenade decks) than before. On ships containing steerage with both open and closed berths, the latter was often more advantageously situated on the vessel (e.g., higher up and more toward the exterior, in better-ventilated sections) than was the former. In closed-berth steerage (new steerage), passengers typically received a level of service (crew attention, quality of food, bedding, ventilation, etc.) more closely resembling second-class accommodations than open-berth steerage (old steerage). Contrary to Taylor's belief, however, that "there is no way of estimating the proportion of emigrants who travelled under the two main sets of conditions," early

[13] Dillingham Report, vol. 37, pp. 1-51. Quoted passages are from pp. 6, 10.
[14] Most notable examples were Russian Jews going to America by way of British, rather than continental Europe, ports, and Italians embarking from French ports; see Murken, pp. 210-11, 288, 364-5, Evans, p. 59, Barbance, pp. 156-9, BI Conditions, pp. 21, 63 (chap. 1 subchap. 3, and chap. 3 subchap. 1).

twentieth-century transatlantic migration was heavily documented, and records enabling reliable approximations do exist.[15]

Passenger shipping conferences (cartels) kept consistent, comprehensive and accurate records of North Atlantic voyages and passenger totals, eastbound and westbound. Maritime chroniclers (e.g., Bonsor) have since compiled passenger capacity figures (first, second, steerage) for the ships. Press articles, deck plans, and other sources recorded the proportions within steerage that were open berth and closed berth for vessels accounting for a third of all voyages, capacity deployed, and passengers carried (Table 3 in the appendix). Given the extensive degree of standardization in the industry, this is a sufficiently large sample for estimating the overall trend. Figure 2, in the appendix, shows the resulting measurement of closed berths.[16]

Closed berths were most prevalent on ships servicing British ports, and least common on ships connecting to Mediterranean ports. Vessels on other routes (North Continental and Scandinavian) were in between these two extremes. The 1899-1914 period averages ranged from 50 percent closed berths on U.K. port ships to 25 percent for North Continental plus Scandinavia, and 11 percent for the Mediterranean. Second class, sometimes called intermediate or second cabin, was (by virtue of being cabin) made up entirely of closed-berth rooms. Second-class capacity, expressed as a percentage of second class *and* steerage, varied by European embarkation region (although less dramatically than did closed-berth steerage): for vessels from and to U.K. ports, the 1899-1914 average was 17 percent, for their North Continental counterparts 12 percent, and for the Mediterranean routes 5 percent. *Total* closed berths available to migrants, as a percentage of the sum of all second and steerage berths, is thus derived by adding the second-class figures (known for all vessels) to the closed-berth steerage numbers and estimates. The year-by-year development, and sources for these data, are shown in Figure 2 in the appendix. The percentage of migrants traveling in closed berths (second class and new steerage) rose over time on all the major routes, and nearly doubled from 18 percent in 1899 to 35 percent in 1914. It remains then to discuss the likely causes and effects of this limited yet significant improvement in travel conditions.

Reasons for the transatlantic travel improvements

Although very uncomfortable by twenty-first-century travel standards, conditions for low-budget travellers on transatlantic vessels between 1890 and 1914 were validly considered, then and since, to be considerably ameliorated compared to those aboard sailing ships a half century earlier. Most immigrants, focused on establishing new lives in America, devoted little comment

[15] Taylor, p. 164.

[16] The PCR passenger totals are almost identical to those given in the BI passenger lists (U.S. National Archives: microfilmed passenger lists of arriving vessels). Bonsor's two thousand-page catalogue is quite comprehensive. As a makeshift adherence to rules requiring separate areas for single women and families, a few vessels had dormitory-style steerage temporarily partitioned into smaller enclosures; see BI Conditions, p. 132 (Red Star Line), Dillingham Report vol. 37, pp. 10-11, McCart, p. 47; such accommodations were closer to old steerage than to new steerage, and are not considered as closed berth in the calculations for Figure 2 (Appendix). Based on the New York vessel arrivals listed in Morton Allan, the trends of Figure 2 can be approximately extrapolated back to 1890.

afterwards to the one to two weeks spent on the Atlantic, but periodic complaints nonetheless helped motivate governmental regulation of oceanic travel conditions. Minimum requirements as to onboard space and services were also supported by those who hoped that such stipulations would reduce immigrant numbers by raising the cost of travel.[17]

The main operative act of the U.S. government in this period was the 1882 Passenger Act. "Honored in breach" as one historian put it, this act evidently had little effect either upon transatlantic travel conditions or the numbers of people migrating. Dining facilities for open-berth steerage passengers remained, for example, notably inadequate. The typical excuse given was that immigrants "are not used to tables and chairs and do not miss them when they are lacking." Regulations enacted in 1907 -as part of the same law creating the U.S. Immigration Commission- increased passenger space requirements to a level beyond that specified in 1882 but below what was already generally in effect.[18]

In general, inspections under the 1882 and 1907 acts had little lasting effect. As the Immigration Commission noted, a typical entry port inspector made only a "passing glance" over the vessel after it had been "prepared for his approval and not as it was in actual use." U.S. government officials in charge of enforcing the acts were sympathetic to the steamship lines and reluctant to impose fines.[19] Historians have generally agreed that legal regulations, though significant to other aspects of the European emigrants' relocation, had comparatively little effect upon the pre-World War I Atlantic crossing. More often, they have ascribed improvements in oceanic travel conditions to competition between the various shipping companies, and attributed regional variation in on-board accommodations to discrimination between ethnicities or nationalities.[20] These judgments seem plausible but leave key historical questions unanswered. Most particularly, why were the improvements slow to come, yet so clear and consistent as to amount to (where they did occur) a distinct "new" steerage?

The Immigration Commission's own explanation -that competition motivating improvements was sharply checked by cooperative agreements between the shipping lines- is highly doubtful. Market share quotas under these arrangements applied to steerage passengers only and were enforced by compensation payments (from overquota lines to underquota lines) that set an effective floor on ticket prices. Far from checking competition by quality enhancements, these conference contracts encouraged it, especially in the second class. This class was not subject to the market share agreements, was mainly occupied by migrants, and grew rapidly as a share of overall passenger volume during the period. Companies sometimes willingly exceeded their steerage shares anyway in advance of renegotiating for higher quotas.

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[17] Dillingham Report vol. 37, pp. 5-6, Zolberg, pp. 105, 112-3, 146, 158.

[18] *New York Tribune*, 23 August 1905 (in National Archives Record Group 85, Entry 9, 51435/1 [Box 13]), for the quoted passage; see also Williams to Collector of the Port of New York Stranahan, 13 June 1904 (Ibid), *New York Times*, 15 December 1909, p. 3, *New York Times,* 30 November 1913, p. 10, Jones, p. 330, Dillingham Report, vol. 39, pp. 377-79.

[19] Dillingham Report, vol. 39, pp. 12-13; see also Jones, pp. 328-31.

[20] ARCN, 1906, p. 52, Moltmann, "Steamship Transport," p. 312, Jones, p. 331, Aldcroft, p. 35; see also Nadell, p. 277 ("economic competition, not legislative action"), and Maxtone-Graham, p. 28 ("market forces") and p. 11 ("calculated nationalistic double-standard"). Re transpacific travel, see the section "Migration and travel conditions between Asia and the United States…" below.

These market-carving cartels were generally relatively weak before 1904, quite weak during 1893 to 1895, and again from mid-1904 to early 1908, from 1904 until 1908, and relatively strong after 1908, yet this ebb and flow of cartel effectiveness shows no reflection (as the Commission's theory might suggest) in the steadily upward (not up and down) trend of closed berths (Figure 2 in the appendix).[21]

Competition is a good reason for doubting whether shipping company prejudice against southern and eastern Europeans explains the slower diminution of discomforts on ships from those regions. Competition -without specification as to how and why it occurred- does not, however, satisfactorily explain the significant yet slow and uneven improvements that developed. It also does not account for why steerage in enclosed cabins (as compared to "old steerage" dormitories) was nearly always accompanied by better food, more and better public areas, and "a vast difference in discipline, service and general attitude" of crew members toward passengers.[22]

Shipping lines, as several historians have noted, were not philanthropists, nor were they in business to discourage immigration of any particular ethnic group. To understand why profit-seeking private enterprises improved conditions for the class of passengers sometimes referred to as self-loading freight, one needs to be more specific about how cross-Atlantic migration operated as a key segment of a huge, mature, concentrated and standardized long-distance transportation business.[23] Because nearly all costs in this business were fixed (did not adjust up or down with revenue) a top priority was to optimally market and allocate available vessel space between three jointly carried revenue segments: tourist passengers on the top decks, freight on the lowest decks, and migrant passengers in between.[24]

To economically operate large energy-efficient vessels required juggling the different needs of these three business sectors. Goods shipment was the most price-sensitive, and competition kept profit rates low on freight after 1900. The margin of ticket price above costs was higher in steerage than in first class. Improvements to the first class, however, brought prestige to the line and more passengers (including migrants), and tourist traffic fluctuated less than migration did.[25]

The critical need to maximize capacity utilization encouraged interchangeability of ship sections between customer categories. Use of steerage for both migrants and freight, thought to be common on the much smaller sailing ships of the early nineteenth century, was very infrequent after 1890, mainly because the by then gigantic steamers had room enough in their cavernous holds *below* the steerage decks to accommodate freight shipment demands; and also,

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[21] Aldcroft, p. 335, Murken, pp. 91, 113-6, Keeling, "Cartels," pp. 195-213, Keeling, "Fare War," pp. 359-60, 374, Broeze, pp 8-12.

[22] Dillingham Report, vol. 37, p. 12, Maxtone-Graham, p. 29.

[23] Moltmann, "Steamship Transport," p. 312; Maxtone-Graham, p. 5.

[24] Maxtone-Graham, p. 2. Because over 90 percent of shipping line costs were fixed while average net profit margins were less than 10 percent of revenues, a small percentage change in fare-paying travellers translated into a much larger percentage change in earnings (Keeling, "Capacity," p. 231). This amplified the impact of the wide fluctuations of migrant traffic upon shipping company earnings.

[25] Harley, pp. 1052-56, Keeling, "Capacity," pp. 240-42, Maxtone-Graham, p. 24. Several smaller lines relying heavily on steerage went out of business when economic downturns in the United States drastically curtailed migration flows. Bonsor, pp. 234-35, 608, 706, 695, 712, 1190, 1232-33, 1348, 1371, 1378.

because heavy cargos on the lower levels were needed for vessel stability.[26] Instead, shipping lines increasingly swapped capacity between tourists and migrants, and in two related ways.

Tourists and migrants had somewhat offsetting seasonal movements. The flow of *westbound* migrants peaked in the late spring or early summer, roughly coinciding with the peak of U.S. tourists *eastbound* to Europe. By the 1890s, a rising percentage of shipping capacity devoted to the second class was being used interchangeably by both a subset of migrants willing to pay fares above than normal steerage rates, and a budget-conscious minority of tourists. An additional form of interchange was the temporary reallocation of rooms between second class and first class. Temporary reclassifications of rooms and upgrades for travellers were also possible between steerage and second, *provided* that the steerage units were closed berths (new steerage).[27]

There is considerable evidence of these sorts of interchanges. Tourist traffic (and the associated revenue from first class passengers) was heaviest, and the interchange potential greatest, on the United Kingdom-United States routes, as Table 2 shows. This is a key reason why second class and closed-berth steerage grew most there, and ahead of other routes.[28]

Table 2 Estimated Revenues by Class, European Port Region, 1900-1913

	United Kingdom	Cont.	Med.	All Regions
First Class	46%	22%	12%	27%
Second Class	22%	18%	6%	16%
Steerage	32%	60%	82%	57%
	100%	100%	100%	100%
Passengers (*millions*)	5.8	9.8	5.7	

Source: Passengers (in both directions, to and from the United States, and in all travel classes) from PCR multiplied by fares estimated from sources in Keeling, "Capacity," p. 272.

Note: This encompasses passengers between Europe and New York, Boston, Philadelphia, and Baltimore, divided by region of European port: United Kingdom, North Continental and Scandinavia (Cont.), and Mediterranean (Med.). Note that many passengers embarking at U.K. ports were transit migrants from other regions of Europe.

Marketing considerations also encouraged provision of closed berths, especially on the U.K. routes. Migrants there were somewhat more experienced with amenities such as running water and dining tables. They travelled more often as families with children (preferring more private enclosed quarters) than did their Mediterranean contemporaries, who were more preponderantly young single males focused on maximizing savings from their American sojourns. Rates of repeat migration rose over the steamship era, and were higher from the British Isles and Scandinavia than from eastern and southern Europe. The typical repeat migrant

[26] Harley, pp. 1040-43, 1047, 1053.
[27] Keeling, "Transportation Revolution," p. 50.
[28] Keeling, "Capacity," pp. 238-39.

making a summer visit to relatives in northern Europe after several successful years in America, having prior experience at crossing the ocean and the financial means to pay above rock-bottom rates for a ticket, was considered to be more attuned to travel conditions than the first-time crosser, and better able to choose between competing lines.[29]

With an average vessel life of about twenty-five years, the overall quality of onboard service for migrant travellers increased slowly, although retrofits of existing liners accelerated the process somewhat. By the end of the period, most migrants journeying between the British Isles and North America were lodged in cabins. The incidence of closed berths rose on the other routes as well, but with a considerable lag. [30]

Effects of travel improvements upon migration between Europe and the United States

The reasons for improvements to travel conditions in ships crossing the late nineteenth and early twentieth century North Atlantic are traceable within the actions of a dozen major shipping corporations. The impacts of those improvements upon transatlantic migration are more difficult to gauge because they were dispersed across the lives of millions of families. Emigrants' own accounts say more about the hardships and hazards of living and working in a strange and distant land than about the short-term discomforts of getting there. After 1890, the groups with the highest emigration rates relative to source population -Italians, Poles, and Russian Jews- travelled overwhelmingly on oceanic routes where the ship improvements came relatively slowly.[31]

Overall, improvements to oceanic travel conditions had little impact upon fundamental decisions about migrating or not migrating across the North Atlantic, but there is evidence for a moderate influence upon subsidiary decisions concerning *how* to move to America (from which European embarkation port) and *how often* to traverse the ocean (once or more than once). Most early twentieth century European emigrants had more than one possible route to America. To a limited extent, for instance, generally better new steerage in ships from British ports after 1900 encouraged continental emigrants to travel go the United States *through* Britain.[32] Many had more than one opportunity to relocate across the Atlantic.

It seems likely that the substantial rise in the rate of *repeat* migration between Europe and America (to about 20 percent during 1910-1914 versus about 10 percent during the early 1890s) was not only a cause, but also to some degree an effect of trends toward less-objectionable travel conditions. Italian migrants were famously multiple crossers, and most -though not all- did so in old steerage. In fact, however, Italian immigrants to the United States overwhelmingly crossed the ocean only once (from Italy) or twice (from and back to Italy). Short-term visits back to

[29] Although more expensive, second class provided a better bargain relative to the service offered than steerage, especially open-berth steerage (Keeling, "Capacity," pp. 240-42 and 258 n. 68, Nadell, p. 274).
[30] Keeling, "Capacity," p. 232, Figure 2 below (Appendix).
[31] Amran, p. 35. Re regional incidence of closed berths, see Figure 2 (Appendix) below.
[32] Moltmann, "Risiko," pp. 182-211, here p. 203, La Sorte, p. 19, Dillingham Report, vol. 37, pp. 26-27.

Europe by already successfully immigrated Europeans in the United States, who left from America temporarily, and then returned again later back again (thus making a total of three crossings or more, counting the initial westward move), were more prevalent among British and Scandinavians, and after about 1905-08 they mostly travelled in closed berths.[33] Better-quality accommodations may also help explain a positive correlation between the proportion of second class and steerage offered as closed berths on vessels and the rate of eastward transits (all repeat) to westward transits (mostly first-time) transits on those vessels. Travel-quality inducements to repeat migration, however, had relatively little impact on migrants with minimal interest in ever moving back to Europe (regardless of travel conditions) such as most eastern European Jewish migrants.[34]

To quantitatively measure the effects of closed berths on migration volumes involves confronting several challenges: firstly, distinguishing decisions to migrate, or remigrate, from choice of route or vessel, secondly, isolating the role of accommodations quality from other (though related) factors such as the age and speed of the vessel, the perceived quality of the shipping line, the time of year, and motive for the journey etc., and thirdly, data on the portion of steerage provided as closed berths has so far been located from only about one third of vessel voyages to major U.S. Atlantic ports, 1900-14 (although these seem to be roughly representative in most respects).[35]

An extensive statistical analysis lies beyond the scope of this essay. Nevertheless, a database of voyages to and from those major ports -constructed for the broader research of transportation and migration processes- does enable indicative calculations.[36] On eastward sailings during the spring (travelled on by relatively experienced repeat migrants returning to Europe for the summer), vessels with over a fifth of steerage quarters in closed berths had a higher average capacity utilization (28% versus 20%) than those with fewer than one in five steerage berths being in closed cabins. Ships with over 20% of steerage in closed berths were preferred by an even greater margin than this overall result suggests, moreover, because some of the vessels with more than a fifth of steerage in closed berths, such as those of the Holland America line, were relatively lightly travelled on for other reasons (slow speed, somewhat out-of-the-way routing, etc.). Without those lightly-travelled-on vessels, the 28% result would be higher.

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[33] Figure 2 (Appendix), below, Keeling, "Repeat," p. 172, Keeling, "Capacity," p. 283, Maxton-Graham, pp. 5-6, 11. Another reason for greater rates of repeat migration from northern Europe (compared to southern), was the large number of immigrants from northern Europe who had migrated to the United States already earlier in the nineteenth century, relative to new inflows after 1890 (*Historical Statistics of the United States*, pp. 1-560-1-562).

[34] Proportion of closed berths from Table 3 (Appendix) compared to passenger movements from PCR. See also note 36 below. Eastbound Europeans were more experienced travellers, having crossed the Atlantic at least once already. Ships with a high percentage of closed berths were also generally of more recent vintage, and migrants preferred modern vessels. (Keeling, "Transportation Revolution," p. 53, Maxtone-Graham, p. 23).

[35] See table 3 (Appendix) below.

[36] The database covers voyages to and from New York, Boston, Philadephia and Baltimore from July 1899 through June 1914. See the notes to Figure 2 in the Appendix, and http://www.business-of-migration.com/data/voyage-database/ . Capacity utilization is defined here as the percentage of pasenger berths that were occupied by passengers. The 28% utilization rate for ships with a known greater than 20% provision of closed berths in steerage reflects 319 thousand eastward steerage passengers embarking during the months of April, May and June, divided by a total capacity of 1,416 thousand eastward steerage berths, provided on 820 voyages of 40 vessels of 10 lines. See also, Keeling, "Capacity," pp. 226, 232-40.

Migration and travel conditions between Asia and the United States: preliminary observations and comparative issues

Crucial differences between transpacific and transatlantic relocation to the United States between 1890 and 1914 may help explain why the improvement to travel conditions on the Pacific crossing lagged those on the Atlantic and had relatively less impact upon migration flows. Compared to American immigration from Europe in these years, immigration from Asia was much smaller (somewhat less than 2% as much), more restricted legally (Chinese Exclusion, first adopted in 1882, and Japanese Gentlemen's agreement of 1907), and more compartmentalized (the largest two Pacific migration entry ports, Honolulu and San Francisco took about one-third each, versus New York with two-thirds of the Atlantic inflow), and the official number of arrivals was augmented by a larger related fraction of undocumented entries.[37]

The basic economic dynamics of the transoceanic passenger travel business were much the same on the two oceans. The vessels used were mostly large coal-fired steamships, many built in the same leading European or U.S. shipyards, high operating and capital costs of these ships were little affected by changes in revenues, regular schedules were essential, and managing capacity so as to efficiently and simultaneously handle migrants, non-migrants and freight cargos was crucial.[38]

Nonetheless, Robert Barde, in one of the so far most extensive historical analyses of Pacific steerage conditions, was "struck by the differences in accommodations between [cross-Pacific] emigration ships and the passenger ships plying the North Atlantic." On Canadian Pacific's *Abyssinia* (1887), "in bad weather seas would break over the upper deck making it impossible for passengers to stay dry, there was no running water, no refrigeration, no steam heat." *Abyssinia* had been built 17 years earlier for the Cunard Line's service from Liverpool to New York. Running water for passengers was common on those routes by the 1870s, refrigeration had been introduced in the early 1880s, and steam-heating already in the 1850s. On the 1899 *Nippon Maru*, "surely the most splendid ship on the Pacific," two-thirds of steerage accommodations were based on convertible "open deck space." Open-berth steerage, Barde noted, remained common on transpacific passenger ships into the 1950s.[39]

On the transatlantic migration routes, the replacement of open-berth steerage by closed berthed second class and "new" steerage, correlates with the fraction of passengers who were

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[37] Immigration by origin country, *Historical Statistics of the United States*, p. 1-556, by U.S. entry port, BI annual reports, 1895-1914, Table 1. Undocumented and extra-legal migration are described, for Europe, in Dillingham Report, vol. 1, p. 185, vol. 4, p. 119, BI Conditions, pp. 25-30 (chapter 2, section 1), BI annual reports, 1904, pp. 46-47, 77-82, 103, 121, 1906, pp. 57, 1912, 206-09, Brandenburg, p. 36, La Sorte, pp. 31-36, and from Asia, Lee, "Borders," p. 55, Barde, pp. 11-13, 128, and Takai, pp. 10-11. Despite clear incentives for it, undocumented flows of Asian migrants through Canada or Mexico were limited by the cost and difficulty of the multi-week Pacific crossing (for all migration, legal or otherwise). Furthermore, many restriction-evading entries *were* documented, albeit incorrectly or fraudulently, and restriction evasion was relatively greater at west coast ports, where tougher regulatory barriers applied. Some transpacific passengers also arrived as stowaways or through smugglers (e.g. see Barde, pp. 209-33).

[38] Barde, pp. 78-82, Keeling, "Transportation Revolution," pp. 46-49, 52.

[39] Barde, p. 97 (quoting Robert Turner, *The Pacific Empresses*) and pp. 134-45, 184. Barde also mentions his reliance upon earlier stuides of Michio Yamada. See also Bonsor, pp. 151, 202

tourists and business travellers demanding closed cabins, e.g. quarters which during slack periods -at least at the low end of the price range- might also house migrants. The somewhat offsetting seasonal flow patterns of migrants and tourists thus enabled companies to boost overall capacity usage by using some closed berths interchangeably in one voyage direction for tourists and the other direction for migrants.[40] On transatlantic voyages along routes out of the Mediterranean ports, through which transatlantic first class traffic was the least frequent, closed berths were slower to develop than on other routes (closed berths out of Mediterranean ports did not exceed 5% of overall steerage[41] until after 1910). In terms of travel conditions for migrant passengers, the Pacific routes were thus behind even the slowest-to-improve trans-North Atlantic corridor. This was, however, evidently due to some reason other than a low level of non-migrant traffic. In his analysis, Barde suggests that "Asians were more price-sensitive when it came to transoceanic travel. How else to explain that American and Japanese lines retained the concept of semi-open steerage [on the Pacific] so long after it went out of vogue on the Atlantic?"[42]

It does indeed seem highly likely that much of Asian emigration in this period was more sensitive to the prices of transoceanic tickets than its European counterpart was. A sizable minority of the emigration from China and Japan (and more than on contemporaneous migration from Europe) was financed or organized under contractual or quasi-contractual arrangements. To a middleman firm or employer in California or Hawaii the low importation cost of low-wage labor mattered more than the travel conditions experienced by the future laborers. Furthermore, even the larger fraction of transpacific migrants whose travel *was* self-financed faced ticket prices and travel times nearly double those of the Atlantic traverse. Given the greater and more complex legal hurdles applied to Asian immigration, costs other than travel expenses were probably also considerably higher, on average, for transpacific migration travel.[43]

Nevertheless, it is doubtful that higher price sensitivity was the only factor impeding development of closed berths and associated travel improvements for transpacific migrants, or even the most important of multiple factors. Repeat and return migrants (more experienced with oceanic travel than first-timers, often better off financially, and generally better able to appreciate, afford and obtain more expensive closed berth accommodations) seem to have been at least as high relative to overall transpacific migration flows as on the Atlantic. Barde's data analysis for 1913-19, corroborated by BI data for 1910-14, indicate a rate of migrant travel in cabin class (in excess of ten percent) that is also comparable to the transatlantic rates. At San Francisco, one of the two largest entry ports for immigration from Asia, a third of arriving passengers between 1890 and 1914 were recorded as being U.S. citizens. Given the then prevailing naturalization laws, most of these were probably not recent immigrants from Asia, and were probably passengers of some financial means (perhaps not unlike the tourists and business

[40] Thus, for instance, the closed berth second class cabin housing "upscale" European immigrants arriving in New York in late May, might, on the ship's return trip to Europe in early June, then house "budget-minded" American tourists departing for European summer vacations. See Keeling, "Capacity, pp. 238-40.
[41] 11% of steerage plus second class, see Figure 2 below (Appendix).
[42] Barde, p. 135.
[43] McKeown, pp. 239-91, Barde, pp. 80-89, Lee, "Gates," pp. 111-45, Daniels, pp. 241-51, Takaki, pp. 209, 250, Keeling, "Transportation Revolution," p. 50.

travellers on the Atlantic) who accordingly journeyed mainly in the cabin class (mostly in first cabin) not in steerage.[44] Moreover, of "Aliens" *departing* from San Francisco to China and Japan during 1910-14, 25% travelled in the costlier cabin class rather than in steerage. This is *higher* than the 17% of "aliens in cabin" going from major U.S. Atlantic ports to Europe during those years.[45] First class passengers were thus seem not to have been a lower percentage on the Pacific than on contemporaneous Atlantic-Mediterranean routes (see Figure 1); indeed they may have been almost up to the percentage levels of the (relatively high closed-berth steerage) U.K-to-U.S. corridor.

Furthermore, on the North Atlantic, price sensitivity had little inhibiting effect on improvements to travel conditions because the principal means of delivering the improvements - increased offerings of closed-berth accommodations in steerage- was provided to migrants at little, or more often no, extra charge.[46] Passengers' decision-making based more on travel costs can logically explain why transpacific steam companies were reluctant to charge a higher fare for better travel accommodations within the same basic travel class. It cannot explain the Pacific companies, in contrast to their transatlantic counterparts, not offering improved steerage accommodations at *unchanged* prices. For that explanation, a closer look at the structural conditions in the early twentieth century oceanic passenger steamship business is useful.

Compared to the North Atlantic, passenger shipping to and from the United States across the North Pacific seems to have been on a lower scale relative to the volume of travel, with less inter-firm competition and less concentration of the traffic. Instead of one big port, comparable to the Atlantic's New York, the Pacific had three (San Francisco, Seattle, and, after the Hawaiian annexation, Honolulu). Instead of luxury class traffic being overwhelming dominated by long-standing and strongly seasonal tourist travellers, as on the Atlantic, the upper ticket price customers on the Pacific were a more diffuse (and probably less seasonal) mixture of businessmen, diplomats and missionaries. Such differences reduced the scope and incentives, on the Pacific, for sharing closed berths between migrants and non-migrants in order to increase capacity utilization.[47]

Vessels on the transpacific migration routes seem to have averaged about half the size of their transatlantic counterparts.[48] This would not, per se, have hindered the provision of closed berths to the migrant travel segment, but it suggests that the Pacific, in general, lagged the Atlantic in terms of realizing scale economies in passenger ships and associated possibilities for passing along engine efficiencies to the customers by increasing average on-board space available per passenger.

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[44] Barde, p. 134, .S. Bureau of Immigration, annual reports, "Passengers departed…"[BI Departures], 1910-14. The 1870 Naturalization Act is described briefly by Daniels, p. 245.

[45] Table 2 above, BI Departures. See also Takaki, pp. 194, 255.

[46] Dillingham Report, p. 37, pp. 31-32.

[47] Keeling, "Capacity," BI Departures, Auslin, p. 19.

[48] The 6 thousand ton *Nippon Maru* was, upon its first U.S. arrival in 1899, "the largest passenger ship to have entered" the port of San Francisco. *Nippon Maru* was a little more than one third the size of the 17 thousand ton *Oceanic* of 1899, the North Atlantic's biggest in 1899, and could carry about half as many migrants -depending on how its "open deck space" convertible to steerage is counted (Barde, p. 184 Bonsor, p. 760). *Manchuria* and *Mongolia* of 1904, said to be the then largest on the Pacific, had, at just under 14 thousand tons, and with 1450 steerage berths, about half the capacity of the biggest Atlantic vessel that year, White Star's *Baltic* (Bonsor, pp. 763, 1094-95).

Competition between migrant-carrying steamship lines, especially including competition on travel conditions,[49] was less pronounced on the North Pacific than on the North Atlantic. Almost all migrants returning to Europe embarked at New York. From there, most of these relatively experienced repeat migrant crossers (who were also relatively sensitive to travel conditions) generally had a readily apparent choice of both routes and lines. The North Atlantic passenger cartel agreements were furthermore relatively weak with respect to eastbound traffic to Europe. From the key Pacific port, San Francisco, in contrast, there was but one line each to China and Japan for most of the period, and the two transport companies together had a relatively strong cartel deal between them.[50] Competition between lines was also limited at other major Pacific ports (two carriers in Honolulu, three in Seattle), and the migrant travel market was further segmented due to reliance on stage migration (e.g. through Hawaii), transit migration (e.g. through Canada), differential regulation and the various forms of evading it, and in some instances separate, racially-segregated, travel sections on the ships.[51]

There is also likely to have been some gradual overall improvement, over time, in travel conditions *within open-berth* steerage on transpacific routes. This might have been comparable, if somewhat lagging behind, contemporaneous improvements on the Mediterranean-to-U.S. corridor that were encouraged, in part, by Italian and U.S. regulatory stipulations and administration.[52] Such regulations, however, had more to do with eligibility for relocation than with conditions of the transit. It is doubtful whether official legal intervention (for instance, of Italy or Japan), that was directly applicable to travel conditions, had effects comparable to the movement towards closed berth steerage on board vessels voyaging from northern Europe, e.g., the "New Steerage" improvements on the Atlantic crossing that were mainly motivated by capacity management, risk management and non-price competition considerations of the main steamship lines themselves. Relatively low demand, among ticket price-focused Asian immigrants, for relatively less uncomfortable on-board accommodations (in a more expensive cabin class of travel), certainly seems to have been less significant than supply-side factors in constraining improvements to transpacific steerage conditions.

These are tentative results that raise further questions. To reach firmer conclusions, one would need more qualitative and quantitative information on transpacific travel conditions and on the migrants experiencing them in the years before the First World War. For instance: what portion of cabin accommodations was in a utilitarian "intermediate" or "second class" affordable to successful but not wealthy migrants or repeat migrants, and how did these accommodations change over time?

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[49] As noted already above, commercial contractors who organized much of the Asian migration, are likely to have sometimes preferred one shipping line over another based on ticket price, but not based, for instance, on the amount of on-board space, degree of privacy or quality of food served to migrant passengers.

[50] Passenger volume data based on PCR, BI Departures, cartel agreements described in Keeling, "Fare War," pp. 359-63, 374, and Deltas, et. al., pp. 30-32. Unlike in Europe, where migrants embarked from many different ports, nearly 90 percent of second and steerage passengers traveling *to* Europe from the United States left from New York, and many of the shipping lines had their offices on the same street block in Manhattan (Keeling, "Capacity," p. 252 n. 28, Feys, pp. 43-45).

[51] Daniels, pp. 250-54, Barde, pp. 83-84, 98.

[52] Italian Emigration Act of 1901.

Travel conditions, and their causes and effects, evolved over time on both oceans, along with technological developments in shipping, changes in labor markets, and shifting government regulations, and at a pace constrained by the roughly ten-year turnover time for vessel replacements within the shipping lines' fleets. The conversion from open to closed berths on the North Atlantic happened in two basic, though overlapping, stages: (1) the expansion of the intermediate *second class* capacity relative to both first class and steerage (starting in the 1880s and continuing thereafter), and (2) ongoing increases in the percentage of *steerage* berths that were closed instead of open. Before 1914, the transpacific lines evidently did not progress much beyond stage 1. Return and repeat moves were significant sub-components of the overall mass migration across both oceans, and clearly tied to the migrant kinship networks and labor market opportunities propelling foreigners to both North American coasts. In contrast to the movement between Europe and America, however, return and repeat migration of Asians was clearly associated much more with regulatory constraints than with oceanic travel conditions.[53]

Conclusions

The complex of influences shaping and altering the transoceanic travel experiences of American immigrants, in the quarter century prior to the First World War, was an important element of the processes through which this powerful instance of modern globalization occurred. Governmental investigation and public regulation had relatively minor effects on the travel conditions experienced by European migrants crossing the North Atlantic in the early twentieth century. The business calculus of the oceanic transporters enabling this mass intercontinental population transfer played a more significant role.

After 1890, a growing minority of transatlantic migrants travelled in closed berths. These particularly appealed to repeat migrants able and willing to pay a premium for such improved accommodations, especially in second class, which was not governed by cartel volume quotas, and thus was offered at only a relatively small premium over steerage fares. More importantly, the relative growth of both second-class and closed-berth steerage reflected the interest of shipping lines in passenger quarters interchangeably housing migrants and tourists. Such interchanges were most common on routes from the British Isles, which were most heavily used by tourists. Repeat migration was also heaviest on the United Kingdom-United States routes. Along with the late-nineteenth-century growth of temporary employment opportunities in the United States and reduced travel times (more on land than on sea), improved travel conditions were probably partly responsible for making migration travel, after 1890, more often circular, and less often the one-time ordeal at least stereotypically associated with the sailing ship era. Across Pacific routes to America, a significant incidence of repeat and return crossings largely reflected legal restrictions against mass one-way movement. The relative absence of such legal constraint upon Atlantic crossings before 1914 thus enabled a greater role for travel conditions to shape the pattern and flows of transatlantic mass migration to and from the United States.

[53] Keeling, "Capacity," pp. 232, 240, "Repeat," pp. 170-75, Barde, pp. 79-81.

APPENDIX

Table 3 Ships in service between Europe and major U.S. ports, 1900-14, with percentages of steerage capacity in closed berths

Region	Ship	Line	Year	Gross tons	Steerage capacity	% Closed	Source
UK	*Umbria*	Cunard	1884	8,128	800	6 %	Gibbs, p. 538
UK	*Etruria*	Cunard	1885	8,120	800	6 %	Gibbs, p. 538
UK	*Friesland*	American	1889	7,116	800	0 %	deck plans
UK	*Campania*	Cunard	1893	12,950	1000	12 %	deck plans
UK	*Lucania*	Cunard	1893	12,952	1000	14 %	deck plans
UK	*Oceanic*	White Star	1899	17,272	1000	25 %	Taylor, p. 157
UK	*Teutonic*	White Star	1899	9,984	1000	10 %	NY Trib, 21-May-03, p. 9
UK	*Ultonia*	Cunard	1899	8,845	675	0 %	Taylor, p. 161
UK	*Ivernia*	Cunard	1900	14,066	1800	100 %	Bost, 14-Dec-09, p. 4
UK	*Saxonia*	Cunard	1900	14,281	1800	100 %	Bost, 14-Dec-09, p. 4
UK	*Celtic*	White Star	1901	20,904	2350	36 %	Taylor, p. 157
UK	*Haverford*	American	1901	11,635	1700	10 %	deck plans
UK	*Cedric*	White Star	1903	21,035	2000	48 %	deck plans
UK	*Majestic* *	White Star	1903	10,147	800	75 %	NY Trib, 21-May-03, p. 9
UK	*Merion*	American	1903	11,621	1700	10 %	deck plans
UK	*Baltic*	White Star	1904	23,876	2000	48 %	Est. from Isherwood (1976), p. 507.
UK	*Carmania*	Cunard	1905	19,524	2000	53 %	deck plans
UK	*Caronia*	Cunard	1905	19,678	2000	53 %	deck plans
UK	*Adriatic*	White Star	1907	24,541	2000	42 %	Taylor, p. 157
UK	*Lusitania*	Cunard	1907	31,550	1138	100 %	McCart, p. 57
UK	*Mauretania*	Cunard	1907	31,937	1138	100 %	McCart, p. 73
UK	*Cameronia*	Anchor	1911	10,963	802	29 %	L'pool Jrl, 29-May-11
UK	*Franconia*	Cunard	1911	18,149	1900	100 %	Bost, 27-Apr-11, p. 4
UK	*Olympic*	White Star	1911	45,324	1026	84 %	Isherwood (1956), p. 105
UK	*Laconia*	Cunard	1912	18,099	1900	100 %	Bost, 27-Apr-11, p. 4
UK	*New York* *	American	1913	10,499	725	21 %	BI Cond, pp. 112-13
UK	*Andania*	Cunard	1913	13,405	1540	100 %	Isherwood (1974), pp. 321-23
UK	*Alaunia*	Cunard	1914	13,405	1540	100 %	Isherwood (1974), pp. 321-23
UK	*Aquitania*	Cunard	1914	45,647	2052	93 %	Isherwood (1974), p. 73

Region	Ship	Line	Year	Gross Tons	Steerage capacity	% Closed	Source
Cont	*Spaarndam*	Holland America	1881	4,539	800	10 %	deck plans
Cont	*Karlsruhe*	NDL	1889	5,057	1955	0 %	deck plans
Cont	*Stuttgart*	NDL	1890	5,048	1955	0 %	deck plans
Cont	*Rotterdam (III)*	Holland America.	1897	8,302	2000	20 %	deck plans
Cont	*Maasdam*	Holland America	1899	3,984	800	0 %	VoorTech
Cont	*Statendam*	Holland America	1899	10,491	2000	25 %	VoorTech
Cont	*Potsdam*	Holland America	1900	12,606	1914	39 %	VoorTech

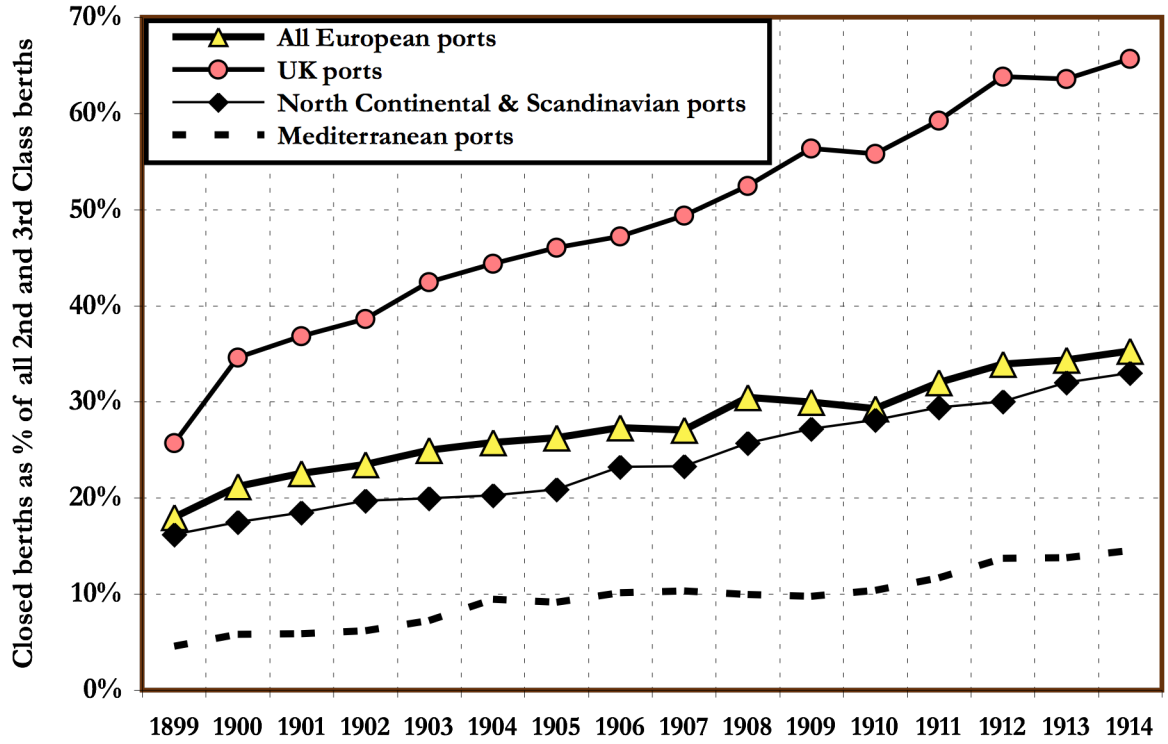
Region	Ship	Line	Year	Gross Tons	Steerage capacity	% Closed	Source
Cont	*Rijndam*	Holland America	1901	12,340	1800	22 %	VoorTech, BI Cond, pp. 127-29
Cont	*Noordam*	Holland America	1902	12,531	1800	22 %	VoorTech, BI Cond, pp. 127-29
Cont	*Amerika*	HAPAG	1905	22,225	2190	10 %	Kludas, p. 56
Cont	*K. Aug Viktoria*	HAPAG	1906	24,581	2046	10 %	Kludas, p. 56
Cont	*La Provence*	CGT	1906	13,753	948	33 %	deck plans
Cont	*Nieuw Amsterdam*	Holland America	1906	16,967	2300	52 %	Voor Tech
Cont	*President Grant*	HAPAG	1907	18,072	3006	23 %	Bonsor, p. 413
Cont	*President Lincoln*	HAPAG	1907	18,168	3088	26 %	Bonsor, p. 413
Cont	*Chicago*	CGT	1908	10,501	1250	22 %	Barbance, p. 162, Bonsor, pp. 660-61
Cont	*Gothland* *	Red Star	1908	7,755	1800	100 %	Bonsor, p. 842
Cont	*Rotterdam (IV)*	Holland America	1908	24,149	2232	52 %	Voor Tech
Cont	*Russia*	RusAm	1908	8,596	1626	13 %	Bonsor, p. 1355
Cont	*Cincinnati*	HAPAG	1909	16,339	2305	21 %	Bonsor, p. 414
Cont	*Cleveland*	HAPAG	1909	16,960	2391	21 %	Bonsor, p. 413
Cont	*George Washington*	NDL	1909	25,570	2000	31 %	Isherwood (1966 book), p. 48
Cont	*Kursk*	RusAm	1910	7,858	1288	13 %	Bonsor, p. 1356
Cont	*Rochambeau*	CGT	1911	12,678	1700	15 %	Barbance, p. 162, Bonsor, pp. 660-61
Cont	*Czar*	RusAm	1912	6,503	1086	13 %	Bonsor, p. 1356
Cont	*Bergensfjord*	Norw. Am.	1913	10,666	850	88 %	Kolltveit, pp. 36-37
Cont	*Imperator*	HAPAG	1913	52,117	2714	35 %	Bonsor, p. 415
Cont	*Kristianiafjord*	Norw. Am.	1913	10,669	850	88 %	Kolltveit, pp. 36-37
Cont	*K. W. d. Grosse* *	NDL	1914	13,592	2130	30 %	Est. from Bonsor, p. 560
Cont	*Vaterland*	HAPAG	1914	54,282	2386	36 %	Bonsor, p. 415

Region	Ship	Line	Year	Gross Tons	Steerage capacity	% Closed	Source
Med	*Hamburg*	HAPAG	1900	10,523	1780	4 %	Isherwood (1981), p. 158
Med	*Prinzess Irene*	NDL	1900	10,881	1954	0 %	BI Cond, p. 130
Med	*Perugia*	Anchor	1901	4,348	1200	0 %	BI Cond, p. 117
Med	*Carpathia*	Cunard	1903	13,555	1500	100 %	McCart, p. 42
Med	*Republic*	White Star	1903	15,378	2508	20 %	BI Cond, p. 109
Med	*Pannonia*	Cunard	1904	9,851	2066	0 %	McCart, p. 38
Med	*Slavonia*	Cunard	1904	10,606	1954	0 %	McCart, p. 39
Med	*Kaiser Franz Josef*	Austro-Am.	1912	12,567	1230	19 %	NY Times, 9-Jun-12, p. 11

Sources: "Gross tons" and "Steerage capacity" are from Bonsor. "Year" is the first year for which the closed berth percentage applies. Usually this is the first year of vessel service, but sometimes (noted with *) it is the year of a retrofit. Sources for the closed berth percentages are Barbance, *Boston Evening Transcript* [Bost], BI Conditions [BI Cond], Gibbs, Holland America Line, Isherwood, Kludas, Kolltveit, *Liverpool Journal of Commerce* [*L'pool Jrl*], McCart, *New York Times* [NY Times], *New York Tribune* [NY Trib], Taylor, Voornaamste Technische Gegevens (Gemeentearchief, Rotterdam) [VoorTech]. For deck plans, see Keeling, "Capacity," p. 264.

Notes: Cont. = North Continental and Scandinavian ports, Med = Mediterranean ports, HAPAG = Hamburg-Amerikanische Paketfahrt Aktiengesellschaft (Hamburg-American Line), CGT = French Line; RusAm = Russian-American Line, NDL = Norddeutscher Lloyd (North German Lloyd), Norw. Am. = Norwegian-American Line, Austro-Am. = Austro-American Line. Dates of newspaper article sources abbreviated (e.g., 9-Jun-12 means 9 June 1912).

Figure 2 Estimated percentage of Second and Third Class (Steerage) berths that were "closed berths", 1899-1914
On voyages between Europe (divided into three embarkation regions) and the U.S. ports of New York, Boston, Philadelphia and Baltimore.



Sources: Table 3 (Appendix), Bonsor, PCR.

Notes: The figure is based on voyages (divided by port embarkation into three European regions, plus the total for all regions) to and from the four largest U.S. ports (New York, Boston, Philadelphia, and Baltimore). Ninety-nine percent of migrants from Europe to the United States between 1899 and 1914 travelled through those four U.S. ports (PCR data). Second-class and steerage passengers between Europe and those four ports made twenty million crossings during these sixteen years on eighteen thousand voyages of 487 vessels supplying a cumulative total carrying capacity of fifty-two million passengers in second class and steerage. Breakdowns of steerage capacity between open and closed berth have been discovered for the sixty-seven passenger vessels shown in Table 3 (Appendix). These sixty-seven accounted for 28 percent of the voyages, 35 percent of the carrying capacity, and 36 percent of the passengers on these routes. On these sixty-seven vessels, the incidence of closed berths rose from 35 percent in 1899 to 54 percent in 1914 -that is, they were at a higher level than the overall averages estimated here, because large modern express steamers, and steamers on United Kingdom-United States routes, both with higher-than-average rates of closed berths, are disproportionately represented among these sixty-seven vessels. The chart here thus reflects trends on these sixty-seven vessels plus estimates for the other vessels based on qualitative statements in the contemporary and historical literature. Second class had only closed berths (of second class and steerage closed berths together, in 1899, 56 percent were in second, in 1914, 41 percent). Steerage was partly closed (9 percent of all steerage in 1899, 24 percent in 1914). First class accommodations were also exclusively closed berths, but very few migrants travelled in first class. See also Keeling, "Capacity," especially p. 248 n. 8, p. 255 n. 56.

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