A Discussion and Analysis of Counting International Visitors: Country of Residence Versus Nationality

Mark Brown
Economist
U.S. Department of Commerce
National Travel and Tourism Office

INTRODUCTION

Based on recommendations of international organizations, the United States Department of Commerce, National Travel and Tourism Office counts *international visitors* based on a traveler's country of residence and other criteria. Due to technological advances in options for processing travelers, and technical statistical issues caused by changes in methodology at the data source level, this methodology used for decades has been strained over the past several years. This paper discusses the issues for the United States in counting visitors, and the recent experience exploring defining *visitors* using other criteria, namely, country of nationality (citizenship).

BACKGROUND

The International Monetary Fund recommends countries use country of residence (country of origin) when calculating trade accounts.[1] The United Nations, based on guidance from their travel and tourism industry affiliate, the United Nations World Tourism Organization (UNWTO), similarly recommends counting a country's visitors based on the traveler's country of residence, among other criteria.[2]

The options and UNWTO recommendation framework for a destination in defining and counting an internatinal visitor for each key issue are as follows:

1) Geography.
    UNWTO recommends using country of **residence** versus nationality or other options, and further recommends using International Monetary Fund's recommendation of definition visitors based on (usual) residence. For example, a traveler may have a residence in more than one country.

2) Stay purpose.
    UNWTO recommends counting travelers who are traveling within the destination country for reasons—or trip purpose—that we would easily think of, such as *leisure*, *business*, and *visiting friends or relatives*, although there are several other countable trip

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purposes. Think of this set as the most 'marketable' subset of travelers, with *leisure* being the core of this subset for most destination countries.

3) <u>Stay length</u>.
   UNWTO recommends counting as visitors only those travelers who stayed one or more nights. But I would add, UNWTO is more interested in how stay length is classified and reported than in mandating an approach on this issue.

In the end the UNWTO, like everyone, wants both perfectly precise (accurate) and reliable counts, which they can't have across each and every country due to technical or cost reasons. So then it comes down to <u>tradeoffs</u> on validity and reliability. UNWTO wants BOTH by offering their recommended definitions, but when it comes down to a tradeoff, they favor *reliability* by focusing much of their attention on volume ***change metrics*** and less on volumes per se. They want countries to measure visitor volume this period the same as last period, and to let them know if and when a country changes it's counting approach.

Based on my three decades of working in the travel and tourism industry for destinations directly, or indirectly through travel data vendors, I would agree; the destinations and their travel sector components of hotels, restaurants, and attractions care more about reliability…in terms of describing meaningful <u>changes</u> in volume and behavior. Each knows it's own count, however measured, and they want to know if the relevant pie is getting bigger, smaller, or staying the same size. If I polled my office coleagues right now, or even some of my respected industry friends and consultants, nearly all would get an "A" grade for accurately saying global travel volume was "…up about seven percent in 2017." But few could accurately state the global traveler volume of 1.24 billion *arrivals,* the sum across all destination countries. And some guesses would be laughably wrong because they care less about where volume IS than where it's GOING.

By my analysis of UNWTO data, more than one-half of countries, including the U.S., use country of residence as a filtering criteria, and these countries account for approximately two-thirds of the global visitor count.[3] However, the world is changing in ways that challenge the ability of counting visitors by their residence. Border entry points are being eliminated, meaning collecting a traveler's information is being reduced or eliminated. Increasing numbers of both immigrants and persons retiring and living in other countries mean that a traveler's country of resident and country of citizenship increasingly are not the same. Moreover, changes in privacy issues and traveler processing technology such as retina scanning and methods throughout the traveler's journey and at border entry points means that traveler data is increasingly limited to their passport, which includes nationality, but not country of residence. Again, these factors currently strain the ability to easily collect residence data, and they are all <u>increasing</u> in their influence on the process.

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[3] United Nations World Tourism Organization. *World Tourism Barometer*. Volume 16. Issue 3. (June 2018). For a detailed analysis, the reader is directed to ***Appendix Table A***.

This paper will provide a starting point for the discussion of what these changes may mean for how a country, and how the world, counts visitors and measures travel and tourism.

HOW THE USA COUNTS VISITORS

For decades the U.S. has counted international visitors from <u>overseas</u> countries using a rigorous ten-step processing procedure. Most changes in methodology over the years were minor in scale and were either necessary or an improvement due to changes in the source data. The U.S. is of course not unique in sharing a land border with one or more other countries, but we may be unique in relying on those border countries for traveler volumes to and from the U.S. For traveler and visitor volumes to and from Canada, the U.S. relies on the statistical agency of Canada, Statistics Canada. This is necessary because Canadian citizens (for most travel situations) are exempt from traveler declaration reporting when entering the U.S. Moreover, they are also (for most travel situations) exempt from requiring a visa to enter the USA. Fortunately for NTTO's purposes, Statistics Canada counts visitors to the U.S. using country of residence. For traveler and visitor volumes to and from Mexico, the United States relies on the central bank, Banco de Mexico[4]. This is necessary because Mexico citizens crossing the border by land are exempt from traveler declaration reporting if their travel stays are within the U.S.'s 40 kilometer (25 mile) "border zone." This applies to the bulk of land mode travelers. Moreover, they are also (for most travel situations) exempt from requiring a 'regular' visa to enter the USA, and instead are required to have a 'border-crossing card, for which counts are not included in U.S. Department of State visa issuance counts. Again, fortunately Banco de Mexico counts visitors to the U.S. using country of residence. As we'll see below, these situations for Canada and Mexico require being addressed in the visitor count process. Thus, the U.S. counts international visitors based on country of residency regardless of the data source.

Below is a summary of how NTTO counts visitors to the U.S. A table showing actual numbers for the travel month of April 2018 is included in *Appendix B*. First we start with the source database of travelers to the United States collected and provided by the U.S. Department of Homeland Security; Bureau of Customs and Border Protection (CBP). For April 2018, the initial count was nearly seven million travelers. Here is the ten-step process:

Step 1:   remove duplicate records;

Step 2:   remove zero-night stays;

Step 3:   remove Mexico land mode travelers

Step 4:   remove 'non-visitors' based on DHS class of admission type (basically DOS visa type) Only 19 of hundreds of admission types are counted. The bulk of these are 'typical' leisure/business travelers.

Step 5:   remove duplicate entries by land mode.

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[4] Reporting of Mexico traveler and visitor volumes is changing from Banco de Mexico (BANXICO) to Instituto Nacional de Estadistical y Geografia (INEGI), the government of Mexico's equivalent of the U.S. Census Bureau.)

Step 6:   remove Mexico *air/sea/not reported* mode travelers

Step 7:   of remaining traveler records, substitute country of *citizenship* for any records missing a valid entry in the country of *residence* field. We'll see later in this paper how this was one of the technical issues encountered by NTTO regarding monthly volume processing.

Step 8:   remove Canada residents.

The result of processing steps one through eight produces <u>overseas</u> visitor volume for the month. For April 2018, this was 3.26 million.

Step 9:   Add in total VISITOR volume of one-plus nights from Mexico to USA reported by BANXICO.

Step 10:   Add in total VISITOR volume of one-plus nights from Canada to USA reported by Statistics Canada.

The resulting 6.91 million is the total international visitor volume to the USA for April 2018 reported by NTTO.[5]

DATA AUTOMATION

The source of overseas visitor records, the U.S. Department of Homeland Security; Bureau of Customs and Border Protection (CBP) phased in changes to their traveler information collection and processing system in response to mandates from the U.S. Congress following the tragic events of September 11, 2001. Many of these changes pertain to making the system more automated in terms of moving from a paper-based data collection system to a more real-time electronic system. For the purpose of this paper, I'll call all these changes "automation process," which began soon after September 2001 and continue to this day. As CPB proceeded with their automation process, they attempted to balance the need for heightened security and the needs of travelers as defined by the travel industry's various sectors such as destinations, attractions, hotels, and restaurants, and by travelers themselves. During the automation process, issues arose that challenged the visitor counts.

DATA CHALLENGES, ANALYSIS, AND FIXES

As the U.S. Department of Homeland Security; Customs and Border Protection phased in various components in their move to automate the border entry process, the rigor of the

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[5] Technical note: The near identical 6.91 million international visitor volume for April 2018 versus the 6.90 million original traveler count received by NTTO is purely coincidental. Moreover, I emphasize that the number of travelers removed at any step two through eight reflects the number removed at that step, and thus the proportion of total removed <u>at that step</u>. For example, at step 8, 1,009,255 records were removed because residence equaled Canada, and representing 38 percent of all records removed, and 15 percent of total original travelers. It is not valid to say "38 percent of removed April arrivals were Canada residents." It <u>is</u> valid to say "38 percent of records tested at step 8 for Canada residency were removed." That is, the order of data cleaning or processing matters regarding proportional incidence of that factor, but not in the overall results from all data cleaning or processing.

monthy data processing enabled NTTO to begin noticing anomalies in the arrivals data. These were anomalies from NTTO's perspective but not CBP's perspective because of the differences in mission, and the resulting differences in the needs of CBP's own data. It is beyond the scope of this paper to elaborate on each issue that emerged over the past several years. Rather, the point here is to focus on the most significant of these anomalies…and these were directly related to issues with country of residence field.

In early 2015, CBP phased in the use of Automated Passport Control (APC) kiosks at U.S. airports. Travelers use self-service kiosks to respond to CBP inspection-related questions and submit biographic information. These kiosks used information contained in the traveler's passport, which does not contain country of residence information. Use of these kiosks served the needs of CBP, but also served the needs of the traveler, which included faster passport control processing. According to CBP, travelers using APC experience shorter wait times, less congestion, and faster processing. The initial phase of the APC was limited to a few U.S. airports and a few of the countries participating in the U.S. Visa Waiver Program. That program eliminates the need for visas for most citizens of the participating countries who want to travel to the U.S.

Automated Passport Control kiosks located at international airports across the nation streamline the passenger's entry into the United States. Photo credit: James Tourtellotte

When the March 2015 data became available, the rigor of NTTO's monthly data processing showed an unusually high number of traveler records missing data in the country of residence field. The incidence of missing COR increased as the APC program was phased in to more airports and extended to more origin countries. The largest impacts of the top arrival markets were arrivals from Australia, Switzerland, the United Kingdom, France, and the Netherlands. Visitors from these countries were the first to use the APC kiosks, which—at that time—did not collect the traveler's country of residence.

This was the start of NTTO's increasing attention to the issue of country of residence and country of citizenship, and the first thought of possibly converting from a COR-based visitor count to a COC-based count. Prior to this event, NTTO's use and interest in citizenship-based data was limited to the *Advanced Passenger Information System* (APIS), a DHS/CBP database containing information on all air travelers to and from the U.S. NTTO uses this citizenship-based data as the census count of outbound travelers from the U.S., and NTTO and the U.S. travel industry use it as an advance read on visitor volume and other purposes.

Over the subsequent weeks and months, NTTO staff spent considerable time and effort analyzing standard monthly data output and producing additional custom analyses, including a cross-tabulation of COR by COC for every country. Thus, for any one country of origin based on residence, we could see what proportion were also citizens of that country…and vice-versa. Eventually, the APC kiosks were reprogrammed to collect COR data, the automation process included other changes that kept COR data in records intact, and the issue was effectively resolved.

Earlier in this paper, we used April 2018 data as an example of NTTO's data cleaning process for counting international visitors. Now let's see the results of the automation fixes. For April 2018, 4,193 records, or 0.06 percent of the entire traveler database of 6.90 million records were missing a valid country code in the country of residence field and were "in-filled" using the available COC data.[6] However, all but 741 of the April 2018 records would have been removed *anyhow* because of the other 1+ night and valid visa type criteria. Thus, for the most recent year of data available as of this writing, the use of using COC as a proxy for missing COR has a tiny impact on the overall data. Moreover, by the end of data processing, 36 records of the original 6.90 were removed because there was no COR nor COC.[7] In summary, the missing COR issue became insignificant.

A new COR issue emerged a year later. In October 2016 (based on May 2016 traveler month data), NTTO began to notice an increasing divergence in change metrics between the Advance Passenger Information System (APIS) database's citizenship-based *traveler* data and the monthly *visitor* volume. Both databases originate from the U.S. Bureau of Customs and Border Protection. **Appendix C** shows a side-by-side definitional comparison of the two programs. The overlap between the two programs is limited to air travelers to the USA who stayed one or more nights in the USA, whose class of admission (visa type) was one of the 19 used by NTTO. This is the bulk of travelers, and thus the two databases historically tended to move in a similar direction and magnitude. **Figure 1** below show a trend comparison in monthly volume change.

The relationship wasn't perfect, but was strong enough to be useful in anticipating volume release change metrics several months in advance. However, the change metrics increasingly became divergent including opposite directions in monthly change—APIS often reported an increase in air travelers, while I94 reported a steep decrease, even when removing the small proportion of I94 visitors who enter the U.S. via a land port. NTTO compared <u>total</u> I94 volume because that's what was published each month…it's what the industry saw.

After extensive review of the data, NTTO discovered there was a jump and continuous increase in the number of monthly data records for which the field for <u>country of residence</u> contained the code for 'USA'. In theory this shouldn't have happened and thus be an issue, because the CPB database shouldn't contain U.S. residents—citizens or legal permanent residents. We weren't looking for this in the data cleaning process, so this issue wasn't noticed at first.

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[6] This compares to the initial period when such records reached a level of one-third for some countries.

[7] Moreover, by the end of data processing, 36 records of the original 6.90 were removed because there was no COR nor COC.

Figure 1:   **APIS *Traveler* Volume Versus I94 *Visitor* Volume**
                    (percent change from same month previous year)
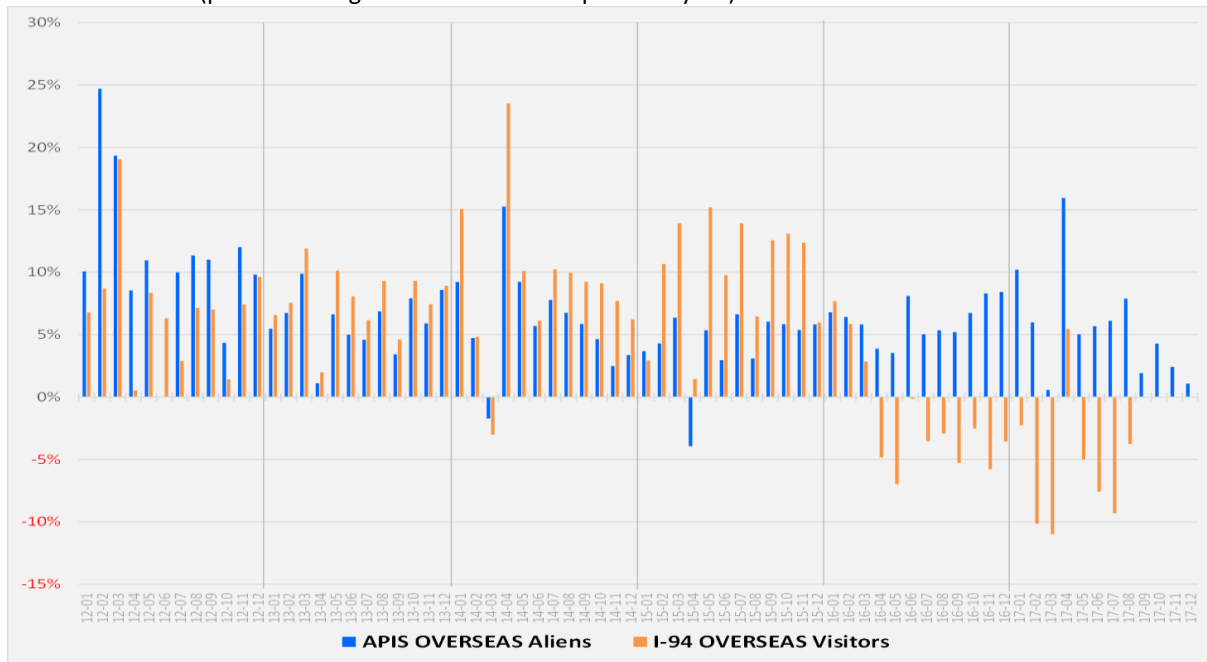
The solution to this issue and its timing was not apparent, and thus this is when NTTO decided in April 2018 to suspend the release of monthly data. Moreover, it is when NTTO became very serious about the potential of completely replacing residence-based visitor volume with citizenship-based visitor volume. The analyses of the differences in COR versus COC counting became more thorough and more refined.

FINDINGS

The primary statistical tool used to compare COR versus COC was a cross-tabulation table of residence volume versus citizenship volume for each overseas country from the same I94 monthly visitor volume database. This analysis is based on overseas data that has gone through the first eight steps of data processing described earlier. Thus all records for this analysis included only overseas travelers, one-plus night stays, and one of 19 visa types. **Figure 2** below shows an example of the output of this analysis for combined monthly data for January through April 2018 (most recent available at this writing, and for just the first few countries in alphabetical order). Thus for each column of data showing country of residence for a country, each row shows the number of persons who were citizens of that country of origin. Cells highlighted in yellow show the intersection…the number of persons who were BOTH residents AND citizens of the same country. Conveniently, the crosstabulation showed the opposite proportions-- for each row of data showing country of citizenship for a country, each column shows the number of persons who were residents of that country of origin.

Figure 2: **Crosstabulation Analysis: I94 Country of Residence versus I94 Country of Citizenship**
(percent change from same month previous year; January-April 2018)

Country of Residence ==>	Afghanistan	Albania	Algeria	Andorra	Angola	Anguilla	Antigua-Barbuda	Argentina	Armenia	Aruba	Australia	Austria
Country of Citizenship*												
Afghanistan	448	0	0	0	0	0	0	0	0	0	3	1
Albania	0	4,550	1	0	0	0	0	0	0	0	1	5
Algeria	0	2	3,090	0	0	0	0	2	1	0	0	2
Andorra	0	0	0	295	0	0	0	0	0	0	0	1
Angola	1	0	0	2	2,393	1	2	0	0	0	0	0
Anguilla	0	0	0	0	0	22	0	0	0	0	0	0
Antigua-Barbuda	0	0	3	0	0	0	3,187	3	0	0	0	0
Argentina	3	0	3	1	1	0	19	360,053	12	10	16	6
Armenia	0	0	0	0	0	0	0	3	3,073	1	0	2
Aruba	0	0	0	0	0	0	0	1	0	21	0	0
Australia	2	2	0	1	0	3	1	31	2	2	357,396	67
Austria	2	1	0	2	1	0	0	76	0	2	148	55,087
Azerbaijan	0	0	0	0	0	0	0	0	0	0	0	1
Bahamas	0	0	0	0	0	1	1	1	0	4	0	0
Bahrain	0	0	0	0	0	0	0	0	0	0	2	0
Bangladesh	0	1	0	0	0	0	0	0	0	0	21	4
Barbados	0	0	0	0	0	0	8	0	0	0	1	0
Belarus	0	0	0	0	0	0	0	0	0	0	0	4
Belgium	0	1	0	4	1	0	1	87	0	6	23	34
Belize	0	0	0	0	0	0	2	0	0	0	1	0
Benin	0	0	0	0	0	0	0	0	0	0	0	0
Bermuda	0	0	0	0	0	0	0	0	0	0	2	0
Bhutan	0	0	0	0	0	0	0	0	0	0	3	0
Bolivia	0	0	0	0	0	0	0	132	0	0	2	1
Bonaire, St Eustatius	0	0	0	0	0	0	0	0	0	0	0	0
Bosnia-Herzegovina	0	0	0	0	0	0	0	0	0	0	0	47
Botswana	0	0	0	0	0	0	0	0	0	0	1	0
Brazil	2	0	3	0	13	0	0	339	0	1	122	30
British Virgin Islands	0	0	0	0	0	0	0	0	0	0	0	0
Brunei	0	0	0	0	0	0	0	0	0	0	5	0
Bulgaria	0	0	0	0	0	0	0	3	0	0	4	38
Burkina Faso	0	0	0	0	0	0	0	0	0	0	0	0
Burma	0	0	0	0	0	0	0	0	0	0	7	0
Burundi	0	0	0	0	0	0	0	0	0	0	0	0
Cameroon	0	0	0	0	0	0	0	0	0	0	1	0
Cape Verde	0	0	0	0	2	0	0	0	0	0	0	0

This type of analysis was conducted earlier on the 2012 visitor volume dataset because it preceded ANY of the later issues pertaining to country of residence. Conversely, 2015 and 2016—and to a much lesser extent 2017—data had varying levels of imputing country of residence using country of citizenship when the country of residence field was blank or inappropriately contained "USA". Thus this data was less useful for this type of analysis. So, we had this crosstabulation analysis tool to use on 2012 data as we were still trying to figure out issues with 2016 and 2017 data.

The first question we wanted to answer was "just what is the percent of a country's visitors who are also citizens…especially among our top origin markets?" This was more of 'nice-to-know' analysis. **Figure 3** below shows the results for this question for 2012. Top origin markets in 2012 are shaded in orange. Data are sorted in descending order by column G. Clearly, this proportion ranges from a virtual 100 percent to a virtual zero percent. No clear patterns emerge from countries having high percentages, while countries having the lowest percentages

tend to be small population island countries. Interesting findings to be sure, but not all that important.

The second question we wanted to answer was "which countries are the biggest gainers, and which are the biggest losers by switching from COR-based volume to COC-based volume?" **Figure 4** below shows the results for this question for 2012. Data are sorted in descending order by column G. Top origin markets in 2012 are shaded in orange, and now we see they account for a greater share of the country gainers and losers. This is more interesting, but…

The third and most important question we wanted to answer was "which countries are the biggest gainers, and which are the biggest losers by switching from COR-based volume to COC-based volume—AMONG OUR TOP VISITOR ORIGIN COUNTRIES"? **Figure 5** below shows the results for this question for 2012 for the top overseas countries. Data are first sorted in descending order by column C to produce the top 21 visitor origin countries, then among these, sorted by column E to produce the biggest gainers and the biggest losers by switching from residence to citizenship. Countries at the top of the list are those for which the country attracts a relatively large number of non-citizen residents, and/or, for which the country has a large number of citizens who reside outside the country. **Figure 6** below shows this same analysis as in **Figure 5**, but applied to 2018 data for the months January through April (most recent available). Results are very different from those in **Figure 5**, and may reflect seasonality effects of using only the first four months, or perhaps structural changes over the six years. We will be revisiting this analysis for 2018 at year's end.

Figure 3: **Crosstabulation Analysis: I94 Country of Residence versus I94 Country of Citizenship—2012**

(Sort column G: Percent of a country's residents who were also a citizen of that country)

A	B	C	D	E	F	G	H
2012 rank	Country Name	2012 COR	2012 COC	Difference: COC Greater than COR	Percent Change If Use COC %	Percent: Residents who are ALSO Citizens %	Percent: Citizens who are ALSO Residents %
8	South Korea	1,251,432	1,278,730	27,298	2	99.5	97
11	India	724,433	791,070	66,637	9	99.1	91
2	Japan	3,698,073	3,677,941	-20,132	-1	98.9	99
65	Iceland	46,097	46,964	867	2	98.6	97
67	Pakistan	43,976	52,365	8,389	19	98.1	82
6	China, PRC	1,474,408	1,523,084	48,676	3	98.1	95
36	Philippines	176,218	195,345	19,127	11	98.0	88
81	Slovenia	18,608	19,787	1,179	6	97.9	92
71	Slovakia	33,655	36,605	2,950	9	97.8	90
44	Finland	125,475	129,466	3,991	3	97.6	95
10	Italy	831,343	947,551	116,208	14	97	85
25	Russia	259,997	266,079	6,082	2	97	95
95	Nepal	12,311	13,387	1,076	9	97	90
87	Latvia	14,929	16,127	1,198	8	97	90
63	Romania	47,753	53,667	5,914	12	97	86
127	Macedonia	4,720	5,331	611	13	97	86
58	Hungary	57,416	60,860	3,444	6	97	92
59	Vietnam	55,101	55,775	674	1	97	96
92	Croatia	14,484	17,806	3,322	23	97	79
84	Bangladesh	15,794	17,149	1,355	9	97	89
91	Bermuda	14,559	1,638	-12,921	-89	11	95
102	Netherlands Antilles	9,044	1,037	-8,007	-89	10	91
150	Anguilla	2,075	211	-1,864	-90	9	93
188	Marshall Islands	234	24	-210	-90	6	58
201	St. Pierre And Miquelon	87	6	-81	-93	5	67
199	Sao Tome And Principe	106	11	-95	-90	4	36
204	Wallis And Futuna Islan	65	4	-61	-94	3	50
182	New Caledonia	453	17	-436	-96	3	71
203	Falkland Islands	78	3	-75	-96	3	67
139	Palau	2,762	103	-2,659	-96	2	54
169	Gibraltar	1,131	28	-1,103	-98	2	64
176	Reunion	742	16	-726	-98	1	69
196	North Korea	160	19	-141	-88	1	11
200	Western Sahara	91	4	-87	-96	1	25
118	Guadeloupe	6,116	99	-6,017	-98	1	67
83	Aruba	17,325	188	-17,137	-99	1	96
171	French Guiana	1,063	14	-1,049	-99	1	79
115	Martinique	6,245	88	-6,157	-99	1	59
135	French Polynesia	3,189	21	-3,168	-99	0	43
209	St. Helena	22	1	-21	-95	0	0

Figure 4: **Crosstabulation Analysis: I94 Country of Residence versus I94 Country of Citizenship—2012**

(Sort column E: Change in volume using COC versus COR top 20/bottom 20.)

A	B	C	D	E	F	G	H
2012 rank	Country Name	2012 COR	2012 COC	Difference: COC Greater than COR	Percent Change If Use COC	Percent: Residents who are ALSO Citizens	Percent: Citizens who are ALSO Residents
					%	%	%
10	Italy	831,343	947,551	116,208	14	97	85
11	India	724,433	791,070	66,637	9	99.1	91
14	Spain	607,273	668,235	60,962	10	94	85
6	China, PRC	1,474,408	1,523,084	48,676	3	98.1	95
49	Portugal	93,346	130,767	37,421	40	97	69
19	Ireland	331,850	365,274	33,424	10	95	86
16	Netherlands	591,746	622,420	30,674	5	96	91
7	France	1,455,633	1,484,599	28,966	2	96	94
8	South Korea	1,251,432	1,278,730	27,298	2	99.5	97
4	Germany	1,875,952	1,896,946	20,994	1	96.3	95
36	Philippines	176,218	195,345	19,127	11	98.0	88
55	Malaysia	67,464	82,684	15,220	23	95	77
45	Poland	111,157	120,373	9,216	8	96	89
15	Colombia	602,338	611,495	9,157	2	96	95
32	New Zealand	185,706	194,821	9,115	5	92	87
67	Pakistan	43,976	52,365	8,389	19	98.1	82
33	Austria	183,276	190,164	6,888	4	94	91
25	Russia	259,997	266,079	6,082	2	97	95
63	Romania	47,753	53,667	5,914	12	97	86
57	Greece	58,212	63,936	5,724	10	95	87
89	British Virgin Islands	14,873	2,019	-12,854	-86	13	99
91	Bermuda	14,559	1,638	-12,921	-89	11	95
73	Qatar	24,043	11,051	-12,992	-54	45	98
21	Taiwan	290,163	274,474	-15,689	-5	91	96
83	Aruba	17,325	188	-17,137	-99	1	96
34	Saudi Arabia	182,225	164,531	-17,694	-10	88	98
27	Bahamas	224,997	207,273	-17,724	-8	91	99
9	Australia	1,122,180	1,102,779	-19,401	-2	95	97
2	Japan	3,698,073	3,677,941	-20,132	-1	98.9	99
41	Panama	133,268	111,050	-22,218	-17	82	98
68	Cayman Islands	43,456	20,505	-22,951	-53	47	99
12	Venezuela	674,754	648,864	-25,890	-4	92	95
38	Singapore	162,077	132,342	-29,735	-18	79	97
13	Argentina	614,504	580,495	-34,009	-6	90	96
1	United Kingdom	3,763,359	3,724,428	-38,931	-1	94.7	96
42	Hong Kong	133,104	84,328	-48,776	-37	60	94
3	Mexico Air Sea, And Not	2,138,482	2,086,834	-51,648	-2	96.4	99
54	United Arab Emirates	72,949	19,826	-53,123	-73	27	99
5	Brazil	1,791,103	1,714,594	-76,509	-4	94	99
17	Switzerland	476,637	399,221	-77,416	-16	80	95

Figure 5: **Crosstabulation Analysis: I94 Country of Residence versus I94 Country of Citizenship—2012**

(Sort column E: Change in volume using COC versus COR among top ORIGIN COUNTRIES)

A	B	C	D	E	F	G	H
2012 rank	Country Name	2012 COR	2012 COC	Difference: COC Greater than COR	Percent Change If Use COC	Percent: Residents who are ALSO Citizens	Percent: Citizens who are ALSO Residents
					%	%	%
10	Italy	831,343	947,551	116,208	14	97	85
11	India	724,433	791,070	66,637	9	99.1	91
14	Spain	607,273	668,235	60,962	10	94	85
6	China, PRC	1,474,408	1,523,084	48,676	3	98.1	95
19	Ireland	331,850	365,274	33,424	10	95	86
16	Netherlands	591,746	622,420	30,674	5	96	91
7	France	1,455,633	1,484,599	28,966	2	96	94
8	South Korea	1,251,432	1,278,730	27,298	2	99.5	97
4	Germany	1,875,952	1,896,946	20,994	1	96.3	95
15	Colombia	602,338	611,495	9,157	2	96	95
21	Taiwan	290,163	274,474	-15,689	-5	91	96
9	Australia	1,122,180	1,102,779	-19,401	-2	95	97
2	Japan	3,698,073	3,677,941	-20,132	-1	98.9	99
12	Venezuela	674,754	648,864	-25,890	-4	92	95
13	Argentina	614,504	580,495	-34,009	-6	90	96
1	United Kingdom	3,763,359	3,724,428	-38,931	-1	94.7	96
3	Mexico Air Sea, And Not	2,138,482	2,086,834	-51,648	-2	96.4	99
5	Brazil	1,791,103	1,714,594	-76,509	-4	94	99
17	Switzerland	476,637	399,221	-77,416	-16	80	95

Figure 6: **Crosstabulation Analysis: I94 Country of Residence versus
I94 Country of Citizenship—2018 YTD**
(Sort column E: Change in volume using COC versus COR among top 21 ORIGIN COUNTRIES)

A	B	C	D	E	F	G	H
2017 O/S Rank		2018 YTD Total COR	2018 YTD Total COC	Difference: COC Greater than COR	Percent Change If Use COC	Percent: Residents who are ALSO Citizens	Percent: Citizens who are ALSO Residents
	OVERSEAS	12,565,500	12,565,500	0	0.0		
12	Argentina	364,726	384,035	19,309	5	94	99
1	United Kingdom	1,260,889	1,276,010	15,121	1	95	97
7	Brazil	718,277	730,582	12,305	2	97	99
4	Mexico Air	777,008	786,216	9,208	1	98	99
2	Japan	1,124,713	1,127,614	2,901	0	99	99
10	Australia	366,600	369,357	2,757	1	97	97
21	Israel	118,545	120,530	1,985	2	97	98
20	Dominican Republic	100,584	101,976	1,392	1	98	99
18	Venezuela	141,206	140,582	-624	-0	94	93
16	Sweden	173,321	172,541	-780	-0	97	97
14	Colombia	239,953	238,448	-1,505	-1	97	97
19	Taiwan	149,827	147,436	-2,391	-2	99.7	98
17	Ireland	160,256	153,060	-7,196	-4	95	91
6	Germany	574,352	566,999	-7,353	-1	97	96
5	South Korea	729,795	720,623	-9,172	-1	99.7	98
15	Netherlands	218,109	208,112	-9,997	-5	97	92
8	France	550,266	530,421	-19,845	-4	97	94
9	India	408,722	387,371	-21,351	-5	99.8	95
13	Spain	267,290	230,495	-36,795	-14	96	83
11	Italy	332,910	292,470	-40,440	-12	99	87
3	China, PRC	1,003,415	959,245	-44,170	-4	99.6	95

CONCLUSIONS AND IMPLICATIONS

The results from the crosstab analyses shown here reveal that—for the US—switching from a COR-basis to a COC basis for counting visitors produces some, but not game-changing results. While true, it's a bit misleading to stop there in the conclusions. For sure, volume seems to stay the same, but that is because the COC analysis is based on data that has already been cleaned for use in a COR analysis using steps one through eight in the data cleaning process. But for many countries, the visitor volume is sizable. This means, for the year in which a conversion from COR to COC is made, the data would need to be run in parallel to isolate which changes are 'real', and which are simply manifestations of the methodology change. Ideally the comparison would be shown for more than one year.

Also, this analysis is only conducted on overseas data. Because the U.S. reports Canada and Mexico visitor volumes from those two countries, respectively, the findings here impact the 51 percent of visitors who are from overseas countries. So, if the U.S. began to use COC as a basis for counting overseas visitors, we would have a problem—NTTO would be using COC as a basis for reporting overseas country volumes, but would be using COR as a basis for reporting Canada and Mexico volumes. Moreover, as challenging as that sounds, we would *probably* be in a position to hope that Canada and Mexico DON'T switch from COR TO COC. I say "probably" because I'm not sure I can figure out the final income should that happen. For both countries, citizens of those countries living abroad would not get counted by anyone (NTTO, Statistics Canada, BANXICO). Conversely, I would want to wait and see how non-citizen residents of Canada and Mexico would be counted by U.S. Customs and Border Protection. In theory, these travelers who meet all criteria for the definition of an international visitors would be admitted under their country of citizenship. This means—overnight—the U.S. would have fewer visitors from Canada and more visitors from other countries who live in these countries. For Canada, this means a larger number of Asian visitors, who now account for the largest proportion of immigration. The numbers are not small; Canada admits 250,000 persons annually to their population, or about 0.7 percent of the base population. If these new immigrants have a high incidence of visiting the USA, perhaps more than once in a given year, the impact might be sizable. The U.S. might find itself in a position to find that a large proportion of Chinese visitors are from…Canada.

This analysis also suggests it is important to look at more than one ratio or percentage for a country to fully understand the full implications for that country. Using Italy as an example, this country has both the greatest proportion increase (14%) and the greatest volume increase (+116,208) in visitors under a COC-based volume count versus a COR-based volume count. The 97% of residents (who visited the U.S.) who are citizens, versus the 85% of citizens (who visited the U.S.) who are residents says that a relatively large number of Italians who visited the U.S. live outside Italy.

The analyses conducted by NTTO on COR versus COC has led us to begin reporting publicly on our website both sets of data on a monthly and annual basis. In doing so, we are not so much offering a "here, take your pick of the options…" as we are providing solace to the industry and

ourselves by reporting international volume based on COR, and having COC numbers already available and trended in our back pocket *in case* there are future COR-based issues.

And then there's visitor spending issues. Should the U.S. begin to report international visitor volume by country of citizenship, it would only add to the discrepancy in definitions between visitor volume and visitor travel exports and imports. For the United States, the U.S. Department of Commerce, Bureau of Economic Analysis estimates traveler exports and imports at a country level using IMF residence-based recommendations. For travel exports, BEA counts all spending by all travelers. This compares to NTTO counting as international visitors the subset of persons who stay one or more nights in the U.S. and who meet one of 19 visa-types.

I would like to end this discussion by emphasizing how the visitor volume anomaly issues and solutions were made possible by the intense and long-duration collaboration among the U.S. Bureau of Customs and Border Protection, NTTO staff, NTTO data vendor, NTTO data clients, private-sector and public-sector advisory boards, industry associations, and many insightful industry analysts across numerous travel analytics vendors. The various insights and varying agendas all contributed to better analyses and better decision-making.

Appendices

Appendix A: Summary of How Countries Count International Visitors

(Source: NTTO analysis of UNWTO data. United Nations World Tourism Organization. Statistical Compendium, 2016)

This analysis summarizes how countries count international volume based on the two main factors 1) COR vs COC; and 2) TOURIST (1+ night) vs VISITOR (0+ nights). The UNWTO recommendation of using only certain VISA TYPES (trip purposes) (the 3rd variable or dimenstion) is not included in this analysis and is NOT available.

KEY	
Counts	
Volumes	
Percentages	

2016 volume available for top 50 destination countries (reporting units)

The UNWTO recommendation of using only certain VISA TYPES (trip purposes) (the 3rd variable or dimenstion) is not included in this analysis and is NOT available.

12			UNWTO types of counting methods, representing combinations of	
			VISITOR vs TRAVELER, count at BORDER vs other such as HOTELS, NATIONALITY vs RESIDENCE	
1,239			millions of 2016 arrivals as reported by all reporting units to UNWTO	
	1,073		2016 volume top 50 country destinations	
		87%	of all global arrivals	
236			Countries as shown by UNWTO, including territories (reporting units)	
	212		Counting method available	These 212 countries use a total of 440 methods, i.e. often more than one.
		90%	of all reporting units	
	123		Count international volume using RESIDENCE with any other combination of methods	
		58%	with counting methods available.	
	724		Volume in millions	
		58%	of 2016 global arrivals	
		67%	of 2016 volume among top 50 destination countries	
	79		Count international volume using both, TOURIST and RESIDENCE (code 211)	
		37%	of countries with counting method available, which is the most frequent	
	472		Volume in millions	
		44%	of countries with counting method available AND in top 50 destination countries	
	44		Count international volume using RESIDENCE and some other definition other than visitor at the border	
		21%	of countries with counting method available	
	252		Volume in millions	
		23%	of countries with counting method available AND in top 50 destination countries	
		68	122	
		10	712	
		174	1912	
		0	2112	

Source: NTTO analysis of UNWTO *Statistical Compendium* publication data.

Conclusions:

1. (At least) 37% of countries (including USA) use the UNWTO-recommended combination of counting TOURIST based on RESIDENCE, accounting for (at least) 44% of global arrivals. Another 21% combine RESIDENCE with another factor other than TOURIST. Thus, this recommended method is also the most frequently used.

2. Thus, (at least) 58% of countries use RESIDENCE as a counting variable, accounting for (at least) 67% of global arrivals.

Appendix B: **U.S. Department of Commerce, National Travel and Tourism Office's Monthly Visitor Volume Data Cleaning Process**

STEP	Removed	Added	Description
6,902,285			total initial records received from U.S. Department of Homeland Security; Customs and Border Protection for April 2018;
1	- - -		substitute country of citizenship for any records missing a valid entry in the country of residence field (missing country of residence was a major problem in 2015 and 2016, but now accounts for a tiny percentage ultimate total overseas visitors);
2	42,974		remove duplicate records;
3	443,399		remove zero-night stays;
4	1,412,521		remove Mexico residents (land entry);
5	464,759		remove "non-visitors" based on visa type (DHS's "class of admission");
6	56,363		remove duplicate entries by land;
7	216,948		remove Mexico residents (air, sea, not reported entry);
8	1,009,255		remove Canada residents;
	3,256,066		SUBTOTAL: overseas visitors to the U.S.
9		1,720,286	add Mexico visitors (Banco de Mexico)
10		1,931,290	add Canada visitors (Statistics Canada)
	6,907,642		Total International Visitors to the U.S.

Note: The near identical level of original records received as total international visitors is purely coincidental.

Appendix C: Comparison of Two Traveler Databases:
I94 Volume (country of Residence-based) versus APIS (Advance Passenger Information System (country of citizenship-based)

Issue	APIS "alien"	I94 "visitor"	Notes
basis	citizenship	residence	
"country"	POD prior to USA	residence	APIS is foreign port of departure to USA port of entry. A Brit transiting through Shannon airport to JFK is 'Irish.'
visa type	any	19 select	Among hundreds of visa types for USA
stay length	any	1+ nights	
USA legal permanent residents (non US citizens)	yes	no	approximately 15 million LPRS in the USA; another 10M want-to-be(s)…some of whom are living in the USA.
U.S. foreign nationals living abroad	no*	no	approximately 9 million; * unless dual citizenship travelers use non-USA passport to enter the USA.
foreign students, any grade	yes	yes	1.1 million university students alone: who knows how many K-12; counted as a "visitor" EVERY time they return to the USA from seeing parents.
transit through USA	yes	if 1+ night	In 2017, 1.5M Canadian residents returned to Canada via USA airports. Another 1.5M overseas residents entered Canada via USA airports.
…transit through USA multiple counts	yes	no	Transits get counted…TWICE… LIM through MIA to NAS, NAS through MIA to LIM counts as Peru to USA… **and** Bahamas to USA; Using the Canada example directly above, that's 3M EACH WAY..into and out of Canada via USA …=6 million for Canada…alone. Note that these transit Canadians in APIS are counted as overseas when they enter the USA to go home, while overseas travelers are counted as CANADA on THEIR way home.