THE BROOKINGS INSTITUTION

WEBINAR

THE CONSUMER PRICE INDEX: HOW TO MAKE IT
A BETTER GAUGE OF INFLATION

Washington, D.C.

Wednesday, May 25, 2022

PARTICIPANTS:

Welcome:

LOUISE SHEINER
Senior Fellow and Policy Director
Hutchins Center

Summary of the CPI Report:

DAN SICHEL
Professor of Economics
Wellesley College

Moderator:

DAVID WESSEL
Director of Hutchins Center

How to Improvement Measurement of Housing Costs

RAVEN MOLLOY
Assistant Director
Division of Research and Statistics
Federal Reserve Board

FRANK NOTHAFT
Chief Economist
CoreLogic

How to Measure Inflation for Different Population Groups

LAURA ROSNER-WARBURTON
Senior Economist and Founding Partner
MacroPolicy Perspectives

DAVID JOHNSON
Senior Program Officer
Committee on National Statistics
National Academies of Science, Engineering, and Medicine

* * * * *

P R O C E E D I N G S

MS. SHEINER: Good morning. I'm Louise Sheiner, a Senior Fellow here at Brookings, and the Policy Director for the Hutchins Center on Fiscal & Monetary Policy. It's my privilege to welcome you all here today to hear about the new report issued by the National Academies' Committee on National Statistics. Modernizing the Consumer Price Index in the 21st Century.

The CPI is the Nation's most prominent inflation gauge. It's what's used to adjust benefits for programs like Social Security, adjust poverty thresholds, adjust tax brackets for inflation, and calculate interest payments on Treasury inflation index bonds or TIPs. The calculations of realty DP also rely in part on the CPI. So it's really important that the CPI is calculated accurately.

Although calculating inflation sounds simple, it is in practice

quite difficult. There are many challenging conceptual, technical, and data issues that need to be resolved. In recent years the data challenges have become much larger as response rates to the traditional survey have declined and as consumers have changed what they buy and where they buy things at an increasing rate.

At the same time the rise of alternative data sources, Big Data, offers the promise of addressing some of these challenges and even being used to improve the CPI beyond what was possible in the past. For example, with Big Data we may be able to track more closely what people are buying and where they're buying it practically in real-time and also in a much more granular fashion, meaning we could look at prices for different subgroups, including by income, by geography, etcetera.

So the National Academies of Science Committee on National Statistics put together a panel of experts to evaluate the potential to modernize the CPI. And also to look at some of the harder to measure pieces of the CPI, most notably housing and medical care.

The panel is chaired by Dan Sichel from Wellesley College who has made major contributions to understanding some of the important issues underlying CPI measurement over the course of his career. I was honored to be a member of this panel, and I must say I learned a ton during the process from Dan and the other panel members and other people who helped

educate us.

Under Dan's awesome leadership we worked really hard, we took our mission very seriously, and hopefully we produced a report that will be useful for BLS and for the public at large. There's a lot of material in the report, much of which we will not have time to get to today, so I encourage you all to read it.

So here's our plan for the morning. First, Dan will provide an overview of the report, and then my colleague David Wessel will moderate two discussions addressing specific areas of the report. First, the CPI's treatment of housing costs, a subject which is getting a ton of attention these days. Raven Molloy from the Federal Reserve Board, who was a panel member will discuss the report's conclusion about housing. And Frank Nothaft from CoreLogic will respond.

And then we'll move to another of the key recommendations that are part about how to measure inflation for different population groups. Laura Rosner-Warburton from MacroPolicy Perspectives, also a co-panelist, will summarize the report's recommendations, and David Johnson from the National Academies of Sciences will respond.

We're going to have time for Q&A after each set of presentations which you can participate in by either putting a question in the Q&A section of the Zoom chat or raising your hand. And with that, the floor

is yours, Dan. Thanks.

MR. SICHEL: All right. Slides are good. Excellent. Thank you. I'm delighted to be here, thank you, Louise, for getting us started. And really happy to have a chance to talk about some of the key elements of the report with everybody here this morning.

Before getting started of course a big thanks to the Hutchins Center, Louise Sheiner, David Wessel, Megan Waring for doing all the work to make this possible. And also to Brookings. And let me just jump right in.

So by way of background, Louise touched on much of this. About two years ago the Bureau of Labor Statistics contracted with the National Academies, the Committees on National Statistics to undertake this study. And BLS recognized the need for and opportunities for modernizing the CPI. And the Bureau of Labor Statistics has been very supportive throughout the process. Of course the report is done independently of BLS, but Commissioner Beech and staff were super helpful as the panel fired many, many questions at them over the period of a couple of years.

And then we had a really good opportunity just shortly before the report became public to share the recommendations of BLS and had a very good and very encouraging conversation with them about this.

Of course it took us two years to put this report together. And the timing actually turns out to be kind of fortuitous in that I think in this

environment with the high inflation prints that we've seen recently, it's just highlighted the need for maintaining a gold standard, maintaining the CPI as a gold standard measure of inflation, just highlights the real urgency.

So as Louise said, there was a sizeable group that did this, I won't read through the names but all the members of the panel here. It was a wonderful group with people with deep expertise on price measurement as well as experience in government statistical agencies and from outside the government and a wide range of perspectives represented. And then also it's highlighted down at the bottom. We had some really, really good support from staff at the National Academies who did a lot of the work to make this report come to fruition.

So Louise touched on some of this, what the report covers, focused on how to use, how to utilize, how to leverage Big Data for getting better measures of prices to improve timeliness and quality and representativeness of the CPI. Did a lot of work thinking about on the expenditure shares that are used to aggregate up prices for different items. And then as Louise said, a deep dive into a couple of particularly hard to measure sectors, housing, shelter, medical care. And also some significant group again with the possibility for greater granularity of developing price indexes by income group. And as the report came out some weeks ago, that's one of the areas that I think is generated more media interest than

some of the others.

And finally, given panelists' background in government and within statistical agencies, we spent some time thinking about what would be some ways that kind of organizational and instructional considerations for the BLS that might help make progress on these recommendations.

Put a link to the report in, Louise mentioned this, if you want to know more we're only going to be able to touch on a portion of what's in the report. If you pull down my slides, there's the link, there's the link to the report.

So to pick up on the point that Louise made, why now, why is there such urgency now about data modernization? Well as Louise highlighted, lots of changes in the consumer landscape, more products, a lot of product churn, larger share of information products, more diverse outlets, rising share of e-Commerce. The chart over to the right shows the share of e-Commerce within retail sales in the U.S. And you can see that rising from over the past couple decades from barely above zero to over 14 percent now.

And of course an explosion of alternative digital data sources, so called Big Data, which create opportunities for dealing with better measuring some of these changes and for developing more granular indexes for which I think there is significant demand.

So on the why now, one key element of putting together an inflation measure is getting price quotes. So until COVID hit about 70 percent of price quotes in the CPI were coming from field generated data, meaning personal visits to retail outlets. That's shown by the blue region in the chart to the right. And of course you can see that was sustained until COVID hit, and then of course those personal visits went away and online price quotes became far more dominate and replaced most of those personal visits.

So COVID is kind of Exhibit A for highlighting the challenges of the old methodology and the limitations of the old methodology of actually sending people to retail outlets to collect prices. It also highlights the opportunities of new methodologies and new data sources. BLS did this amazing thing within a very short period of time with COVID on an ad hoc basis developing online prices, web scraping prices. And that's something that just highlights as they begin to automate that great opportunities for not needing to go back to the old methodology of field generated data.

So I also mentioned expenditure shares. Again, why now? Well COVID is a great example of rapid changes and expenditure shares. So there's that piece. There's also the piece, right, that expenditure shares largely come from the Consumer Expenditure Survey, and survey response rates have been falling for a long time for a host of reasons. So that raises

questions about the representativeness of the data being used to generate expenditure shares.

And as I said, also there's the issue of COVID and big shifts in expenditure shares. So the current methodology really is too rigid to capture rapid changes in consumer behavior as we witnessed during the pandemic. And one element of that is that under current methodology new expenditure shares, so new data on expenditure shares, spending patterns, are incorporated with an average lag of about 36 months. So that's a long time. And the chart over to the right illustrates how this can be problematic. So the chart over to the right is a chart of the expenditure share for airfares in the Consumer Price Index shown in the green dash line. And also in the Bureau of Economic Analysis personal consumption expenditures shown by the solid blue line.

CPI, the green line, is using these very long lag waits, PCE, the blue line, is using contemporaneous shares or contemporaneous expenditure shares. And of course as we all know, air travel collapsed with the onset of the pandemic, as reflected in the blue line by the spending share in PCE, within Personal Consumption Expenditures.

You don't see that decline in the share in the CPI because the shares are from pre-COVID times. The shares being used to aggregate up prices during COVID were from pre-COVID times. The very far right you can

see kind of a dip in the share for airline fares. But of course that happened as air travel was recovering, and as the PCE share indicates, expenditure of airlines actually was increasing.

So big picture message from all of that. Modernization is imperative, will require BLS continuing to develop a more blended approach to incorporating alternative data with traditional data and it's going to require paradigm shift of less than reliance on older survey-based approaches and methodologies. Just a different approach to using alternative data.

We'll need new methodologies and new metrics for gauging data quality, new methodologies can't use the older survey-based kind of approaches to thinking about data quality. And again, bottom line message, status que not a viable path forward.

All right. So I want to give you a sample of some of the recommendations that the panel came to. I'm not going to talk about the ones that Raven and Laura are going to talk about but some of the other parts of the panel.

I also want to just mention that the panel, as is often the case for National Academies' reports, was a consensus panel. So all the recommendations that Louise, Raven, Laura, and I are going to talk about today were the consensus of the full panel.

So in terms of alternative data for price quotes I've talked

about, I've really made this point already but a strong recommendation for BLS to embark on the greater use of transactions data and other alternative data sources. So this would include scanner data, web scrape data, which of course BLS is doing a lot of now in response to COVID, as well as direct deeds of data from large retailers.

In addition to moving down that road, BLS also needs to continue a very active research program to support the use of alternative data. New data, new methodologies required to toss out one that has been used successfully by statistical agencies in other countries, multi-lateral indexes, there are a host of new approaches, new methodologies that would be important.

As I mentioned, need to support research and to understand the implications and best ways of measuring quality change in this new world and also developing new metrics for assessing data quality.

At the same time while making these suggestions for significant changes in data sources and methodologies, the panel very much recognizes that changes must be made carefully. As Louise highlighted, the CPI is a very important economic statistic. And so continued research also needs to proceed on testing of new indexes, evaluating and comparing new methodologies and indexes and data sources to the current approach, and maintaining parallel indexes with overlaps so that everybody can understand

exactly what are we gaining and what are the differences from these new sources.

And along those lines also imperative, again given how central the CPI is to so many aspects of public understanding, financial markets, and policymaking, imperative that BLS have an aggressive information campaign, communications campaign to convey information to all stakeholders about data modernization and changes that are being considered or that are under way.

Higher level expenditure shares, I highlighted the need for more frequent updates and more rapid updates. So again, as I mentioned, current lag is long so in January 2022 new weights were introduced while those were average weights for 2019 and 2020. So one important recommendation is that BLS needs to update these upper level expenditure shares or weights more frequently and rapidly.

And specifically the panel suggested within the current methodology and data structure that weights would come from a single 12-month period ending no more than six months prior to their introduction. So say the January 2022 weights would be coming from June or July of 2020 to June of 2021, and then those would be the weights that would come in in January of 2022, which would significantly shorten that lag and make the weights not quite contemporaneous, but closer to that.

Also a set of recommendations about alternative data that could be used for getting these spending shares. So lots of opportunities for drawing on electronic means of payments, so many transactions now are captured electronically so credit card, debit card data, other electronic payment processors. A host of statistical agencies have started using these data, and a strong recommendation that BLS continue with that work as a possible way of getting new data sources for expenditure shares to enhance the data coming from the Consumer Expenditure Survey.

So personal consumption expenditure data coming from the national accounts could be integrated so that ultimately spending shares could rely on Consumer Expenditure Survey, some of this electronic data, perhaps PCE data, and kind of a flexible approach needed depending on which data can provide the best information on spending shares for particular items.

Also at the bottom here, the last bullet, a recommendation that BLS explore developing a household-based scanner recording program to capture prices, quantities, and item characteristics. So a number of private sector companies do this now, Nielsen for example, where people in their sample have scanners and they scan barcodes of items that they purchase. BLS could purchase those data from these third-party vendors but those kinds of data seem important enough that BLS, the panel thought BLS

should consider setting up its own program. And that could be particularly valuable for what Laura is going to talk about in terms of developing private indexes for particular demographic groups.

Also a set of recommendations on medical care. There's this interesting set of questions around how best to price health insurance. I'm not going to get deep into the weeds of the specifics, but the panel, for those of you who are familiar with pricing of medical care and the CPI, panel recommends the continued use of the indirect method, though with a recommendation that they also continue to explore differences between the direct and indirect methods.

And then also a whole series of recommendations around opportunities for improving the current methodology, the direct pricing methodology, as well as opportunities for incorporating alternative data sources to, again, improve the timeliness and quality of representativeness of the inflation measures for medical care.

As I said, we also talked about organizational and structural considerations. This report is not the first report to focus on data modernization. It is one in a long series of reports that have been done, and surely is not the last. And so the panel recognizes that there are a whole variety of challenges to undertaking these kinds of changes in a major economic statistic like the CPI.

So as I said, we spent some time thinking about possible structural organizational considerations that might enhance the likelihood of success of pursuing some of these recommendations.

One would be for BLS to designate a single high-level person to lead a data transformation effort so as to ensure kind of coordinated effort and accountability. The panel also focused on the need for more extensive collaboration between, you know, labor statistics, census bureau, BEA, other statistical agencies within the U.S. system. It's a complicated, expensive, difficult process to acquire some of these alternative data sources and it would be best to avoid duplication. There could be cross-agency initiatives to acquire some of these data which several of these agencies would be interested and could use effectively.

Also a recommendation for BLS to enhance its contact and collaborations with CPI staff in statistical agencies outside the U.S. Other countries have faced the same issues, and there is plenty that the BLS and other U.S. statistical agencies could learn from seeing about successes, failures, challenges, as statistical agencies in other countries have done that.

And the panel heard from many representatives from other statistical agencies and learned a lot of interesting things about, again, their successes and failures.

And also these changes are going to require additional staff

expertise, will require more people with data science backgrounds to successfully implement and manage these kinds of changes. And recommendation both for BLS to pursue that in terms of hiring but also to develop that talent in-house by rewarding and incentivizing current staff to develop those skills.

So bottom line, modernization, the CPI is imperative. This is going to require high-level focus, new skills, and importantly, additional resources. BLS, from our meeting with them a week ago, about a month ago, just before the report was released, I think is very focused on this, very enthusiastic and interested in pursuing many of these directions. But it takes resources to do that and the panel, you know, fully recognizes that it's not just a matter of flipping a switch, it's a matter of marshalling the resources and then with high level focus on new skills making progress on these things. And again, bottom line from the panel is it maintaining the status quo is not a viable option.

So let me stop there. Thank you, Louise, back to you.

MR. WESSEL: Hi, I'm David Wessel, I'm --

MR. SICHEL: Oh, David, sorry, back to you. Apologize.

MR. WESSEL: Okay. I'm the Director of the Hutchins Center. Welcome everybody.

I just want to mention, Dan, that somebody put on the Chat that

the BLS announced this week that beginning with the January 2023 data, the BLS plans to update the weights annually for the CPI based on the single calendar year of data. So using a consumer expenditure data from 2021 for the 2023 thing it notes that this reflects a change from prior practice of updating the weights using two years of expenditure data. So I guess you're already having impact.

We're not going to take any questions right now but we will after the next panel. And what we're going to do now is Raven Molloy who is at the Federal Reserve Board but is not speaking for the Federal Reserve, is going to talk about the housing chapter for about 15 minutes. And then we've invited Frank Nothaft from CoreLogic, who is not a member of the panel, to respond and then we'll take some questions.

So with that, Raven, welcome, and the floor is yours.

MS. MOLLOY: Thank you, David. Hopefully you all can see my screen. So, yeah, so it's my job to present the panel's recommendations related to the housing components to the CPI. And before I begin I do need to remind everyone that since I'm from the Federal Reserve Board, nothing that I say is necessarily the view of anyone else in the Federal Reserve System.

Okay. So there are a couple of reasons why we wanted to focus on the housing component of the CPI in our panel. One is that housing

services are a large fraction of household expenditures. So you can see that in the graph here which shows the relative importance weight for housing services in the CPI. You can see that even back in the 1980s and early 1990s housing services were about 25 percent of household expenditures, and they've risen to more than 30 percent of household expenditures in the past 10 years or so.

I should note here that by housing services I mean the shelter and amenities that are providing by a housing structure. It's the price of these services that the CPI is trying to incorporate as the housing component of the CPI.

Now another reason why we wanted to think about housing is that the price of housing services is very difficult to measure so it's an interesting challenge to think about. This is difficult because housing services are unobserved for owner occupied housing, and roughly two-thirds of households in the U.S. are owner occupant. So that means that one has to impute the price of housing services to a large swath of housing units in the United States.

Now surprisingly there are multiple ways to do this computation and none of them are perfect. So that leads to a lot of uncertainty about the price of housing services for all of these owner occupied units.

Now for rental units it's a little bit easier because the price of

housing services can be observed as rent. Nevertheless there are still a number of measurement issues to consider. One is that the CPI Housing Survey under represents single family rentals. And that matters because research has shown that rent changes tend to be different from multi-family versus single-family properties. So this under representation means that the CPI Housing Survey may not be representative of rent for the entire United States.

Another issue that we talked about as a panel is that the CPI Housing Survey collects data on each unit only every six months, which means that high frequency rent changes cannot be observed in the CPI Housing Survey. Normally that's fine because rents tend to change pretty slowly, but there are cases such as over the past year when rents have changed fairly quickly and so the CPI Housing Survey captures that with a much longer lag than many other data sources.

So the goals of our chapter were two-fold, first to review the methodology for imputing the price of housing services to owner occupied housing and thinking whether a different method might be more appropriate. And next we wanted to consider whether a new data source might help improve the measurement to the price of housing services both for owners and for renters.

So I wanted to first talk about the methodology of imputing a

price of housing services for owner occupied housing. One common method is called the rental equivalent method. And as the name suggests, it involves using observed rents of nearby rental units and imputing the price of housing services based on the differences in the observed characterizes between the rental stock and the owner occupied stock. This is the current methodology that the BLS follows and it should work well for areas where rental markets are thick and owner occupied units are roughly similar to rentals.

Another common approach is called the user cost method. And in this method one adds up all of the costs of owning a home, that includes mortgage interest, property taxes, homeowner's insurance, maintenance, expected capital gains, and other costs as well. Now in theory, with perfect data, this user cost should also equal the price of housing services.

So again, if one were to have perfect data then one could use the rental equivalence method or the user costs method and get the exact same answer. But of course we don't have perfect data and there are going to be big differences between estimates using these two methods.

Our panel also discussed a couple of other approaches to measuring the price of housing services. One is the opportunity cost, where one calculates the rental equivalent method and the user cost method for individual housing units and then takes the maximum of the two.

Another approach that we discussed is the payments approach, where one takes all of these payments made by owners for ownership and upkeep. Now this payments approach is appealing from an empirical basis because it's fairly easy to observe some of the payments made by owners. However it's problematic from a theoretical perspective because it only includes some of the components of the user costs. So it's not really clear how to interpret the result of this approach because it's not actually equal to the price of housing services.

So that brings me to our first recommendation, which is that we think that the BLS should continue using the rental equivalent approach as its main method for calculating a headline CPI. We came to this conclusion because we think this method should work well for homes in many markets because there are a lot of markets for which there's a lot of overlap between owner occupied and rental units. In addition, the user costs is just very difficult to calculate. Many of the components of the user costs are difficult to observe and the estimates of the user costs are highly sensitive to the assumptions made about these unobserved components.

Just to give a concrete example, let me talk about mortgage interest payments for a minute. Now the user costs should include the mortgage interest payments paid by a household. But in practice, most data sets include total mortgage payments made by the household, which include

both principal payments as well as mortgage interest payments. And it's pretty difficult in practice to distinguish between those two pieces. And so if we talk about any of other components of the user costs there are going to be similar measurement issues as well.

So although we think the BLS should continue using the rental equivalence approach for its headline CPI for now we do have a recommendation that we think they should continue to pursue research estimating the price of housing services for individual housing units using various methods, including the user costs. And such research can help identify types of homes or markets for which some approaches might be better than others.

We also talked a lot about how to use new data. One way that we think it would be helpful to use new data would be to improve the coverage of the CPI. As I mentioned before, the CPI under represents single family rental and we think that there are data sets out there that would allow them to improve their coverage of single family rental.

Specifically we would encourage the BLS to try to obtain rent payment data from large single family landlords or property management companies that manage single family rentals. Large single family landlords can become a larger share of the single family rental market over the past 10 years so it would be possible to obtain data on tens of thousands of housing

units just by contacting one or a few of these firms.

Of course it might also be possible for the BLS to obtain rent payment data from multifamily property management companies. And the advantage here is that they might be able to get data on millions of multifamily rent payments. These private data sources have an additional advantages that they could provide monthly data which would improve the timeliness of the rent growth estimates relative to the CPI Housing Survey.

Now while we think these private data sources have a lot of potential, one caveat is that they could never fully replace the CPI Housing Survey because they're not nationally representative. So we're always going to need some kind of CPI Housing Survey in order to cover the types of housing units that are not covered well by these private data sources.

Our third recommendation in this chapter is we wanted to encourage the BLS to consider alternate data sources for estimating the expenditure shares for owner occupied housing. These expenditure shares are used as weights for the housing component of the CPI and the aggregate CPI.

The current method uses the American Community Survey to impute rental expenditures based on the housing characteristics of owner occupied units in an area. However, the ACS doesn't actually have much information on housing characteristics. For example, it lacks information on

unit square footage and lot square footage, and these are very important characteristics in determining the amount of housing services that a household consumes.

Therefore we wanted to encourage the BLS to explore using property tax records as an alternate data source for this specification. An advantage is that the property tax records have much more detailed characteristics and they also cover about 99 percent of the total U.S. housing stock. So we think there's a lot of potential here. Specifically the property tax records do have data on unit square footage and lot square footage for example.

Another important advantage is that the BEA actually already has these data. They had mentioned that we wanted encourage the BLS to work more closely with other government agencies. And this is a clear case whereby working with the BEA they might be able to obtain these data and use them to improve the CPI.

And then finally we wanted to encourage the BLS to publish additional detail on a variety of dimensions. One of these dimensions is structure type, specifically single family versus multifamily. It would have been very useful to assess the effects of the pandemic on changes in demand for different types of housing units if we had this kind of data, and we think it would be relatively straightforward for the BLS to implement.

We also want to encourage the BLS to publish data on a larger number of geographic areas. Currently they only publish data for 23 metropolitan areas because those are the areas for which they can publish data for the headline CPI. But housing costs vary much more across locations and the prices of many other goods and services so we think it could be useful to publish price indexes for a larger number of locations for this housing component even if they can't publish price indexes for some of the other goods and services for these other locations.

We also wanted to encourage the BLS to publish additional research series that would use alternate methods for imputing the price of housing services for owner occupied units. I think that would give people a much better sense about how the different methods used to impute the price of housing services to owner occupied units affects the headline CPI.

So just to summarize, our panel likes the general methodology used by the BLS but we do think new data sources have the potential to improve coverage, timeliness, and expenditure weights to their approach. And we also encourage the BLS to publish more detail on the price of housing services.

Before I turn it over to Frank I just wanted to thank the National Academies for inviting me to participate in the panel. It was a really great experience, I learned a lot and I really enjoyed working with the other panel

members as well as with the staff of the National Academies of Sciences. So again, so thank you for inviting me to be a part of it.

And with that I'll turn it over to Frank for his comments.

MR. WESSEL: Frank, the floor is yours.

MR. NOTHAFT: Thanks so much. It's my pleasure to be here. Thanks so much for the invite to provide some comments, especially on the housing and shelter chapter.

Overall this report is very, very important and really is I think relatively well-written, it's very accessible to a broad base of readers. The summary that Raven provided is an excellent summary of the recommendations of the panel for the housing, shelter component and I agree with the panel's recommendations as well.

And just to again summarize some of the key take aways the panel recommended. Keep the current approach. And that's essentially the rental equivalence, especially as applied to owner occupied homes. Expand the data sources and coverage, I think that's really critically important, especially because of the expansion of single family rental and for having sufficient amount of appropriate data for estimating the owners' equivalent rent.

And then publishing additional detail. I think those are all excellent recommendations for the Bureau to consider as they modernize the

CPI.

I want to take one element of something Raven touched on and expand upon it further. And that's this aspect of one family rental homes being under represented in the CPI housing sample. Raven is exactly on point when she noted that single family rental has expanded considerably over the last 15 years. And it's particularly important for having that enhanced sample for being able to come up with an improved measurement of what's happened with owner occupant homes with the housing costs, the housing services for owner occupant homes. Imputed rent on owner occupied homes has a really big weight. It's a really important part of the Consumer Price Index, but also of the personal consumption expenditures of price index.

The Bureau of Economic Analysis essentially takes the owner equivalent rent from the CPI and uses that, with some small adjustments, as their owner imputed rent in the personal consumption expenditures index as well. So it has really a broader line. So improving owner equivalent rent in the CPI also has benefits for the PC Price Index.

And I do think it's really important not just to expand the coverage of single family rental, but to over sample the upper tail so that there is sufficient information for really coming up with an improved data submit for the owner equivalent rent housing costs.

And a sufficiently expanded sample, whether it's monthly data collection or, you know, or just expanded set of transactions on the one unit housing stock, may allow an opportunity to explore in some situations alternate technologies for measuring rent change or housing cost change. For example, a repeat rent index.

Just to expand on some of the points that Raven mentioned. Absolutely housing costs, rent, is a very important part of the overall CPI. As Raven mentioned, rent comprises about 32 percent of headline CPI and about 40 percent of core CPI. And of that rent component, roughly three-quarters of it is known as equivalent rent. One-quarter is tenant rent, but three-quarters is the imputed rent for owner occupied homes. So it's got a really important weight in the CPI, an important weight in the PCE Index too, not quite as heavy as in the CPI, but it's very important. So in particular it's important to get that measurement correct.

Just to state something that's probably obvious to us. The type of residential structures that owner occupants live in is very, very different from that of renters. So among owner occupants about 92 percent live in one-unit homes. Either, primarily detached, single family detached, but also single family attached homes. That's very different compared to renters. For renters it's roughly 40 percent live in one-unit homes. The majority still live in multiunit properties.

It's important to expand the coverage of single family homes but also not just to take an expanded random sample of single family rental homes, but I believe to over sample the high end rentals so that we have sufficient data in order to come up with an improved measurement of what's really going on with housing costs in the owner equivalent rental metric. And that's because owner occupied one-family homes are really quite different from a one-unit rental homes. They tend to, what I've shown here is the difference in estimated market value from Census Bureau surveys for one-unit rental homes and for owner occupied homes. Two different time points, but as you can see, the median value of a one-family rental is a lot lower than the median value of an owner occupied home.

So an over sampling of some of the higher end or more expensive one-unit rental homes I think is important for really having a sufficient quantity of data for doing that imputation of what the rental equivalence measure is for an owner occupied home.

And the last thing I'll share is just some information on what's transpired over the last couple of years in terms of rent growth on new leases and contrast that with what we've seen in the CPI. And again, the CPI is trying to measure the change in average rents across the housing stock, not the margin. And the metrics I've shown here on the left-hand side for single family detached, attached, and multifamily is looking at the margin. That is

the new leases that are signed. So a little bit different concepts.

Raven made the point that over especially recently, we've seen a very differential growth rate on single family homes, rental homes and multifamily rental homes. This really underscores the importance of having good measurement of what's happening in the single family rental space, especially at the upper tail of the single family rental space if we want to use that information for coming up with a real good indication for owner occupied homes.

Some of this differential that we have observed between single family detached rental and single family attached and multifamily rental over the last two years reflects the pandemic that we've been in. Those consumers who rent, tenants, who have the financial wherewithal have revealed a preference for single family rental homes over apartments, rental apartments in high-rise structures. Single family detached rental has about on average twice as much square foot of living space as an apartment in a high-rise rental and has some greenery around the single family detached. And more interior space and more social distancing from neighbors has been absolutely preferred by consumers over the course of the pandemic.

Thanks so much for inviting me to comment. Excellent summary, Raven, and very important recommendations about how to treat housing costs in the CPI in this report.

MR. WESSEL: Thanks very much, Frank. Craig Brown, you had your hand up right from the beginning. Let me see if I can -- I think you should be able to talk. You still with us Craig Brown? I guess not.

Somebody put in the Chat, I'll just read it. That this is relevant to the people who are into the details of this. That CPI uses reported rental equivalents as reported by consumer units in the Consumer Expenditure Survey for its weights. It does not use the ACS for hedonic imputed rents for owners. So I guess there was some confusion there.

Craig Brown, if you're still with us? Right. I don't see any other questions. I had one question, Raven, if -- oh, hello?

MS. MOLLOY: There was just me. I wanted to address the comment that you just raised.

MR. WESSEL: Please, thank you, I appreciate that.

MS. MOLLOY: And so it uses both actually. So it does use the rental equivalence as reported by consumer units in the Consumer Expenditure Survey, but that's basically just to estimate the correlation between the housing characteristics and rental expenditures. And then what it does is it takes the characteristics as reported in the ACS and uses the hedonic estimates from that regression in the Consumer Expenditure Survey to estimate what would the rental expenditures be in different neighborhoods.

Because the problem is the CEX is too small to be able to

estimate the actual rental expenditures in all these different neighborhoods sampled by the, you know, for the CPI. So it uses both.

MR. WESSEL: Raven, I want to ask you a simple question that I hear a lot from people who are not as familiar with the measurement, the goals of measurement and the methods as you are and other people on the panel.

I think sometimes ordinary people have a hard time understanding why if housing prices, that is the market price of new houses goes up a lot, how does that effect the owner equivalent rent. And how do we think about those things as two different measures and to what extent are they related?

MS. MOLLOY: Yeah. So house prices are not used directly in the computation of the CPI. And the reason why is that the goal of the CPI is to calculate the price of goods and services based by households. And when we think about housing, what we consume for housing is housing services. So what we want to calculate for the CPI is the price of housing services.

Now when we buy a house, that's not the price of housing services. That's the price to buy the house as an investment. Now that investment, of course if you're going to live in it does provide housing services over time, but you can't use the one-time purchase price of the

house as the price of the housing service because that would suggest that you were, you know, you bought all your housing services in the first period and then you kind of had nothing over time or something. So we need to distinguish carefully between kind of the price of the house as the investment, which is the purchase price, and then of course all the ownership costs that go with it, versus the price of consuming those housing services. Which we can impute, you know, using one of two ways, well at least four ways, as I discussed earlier.

MR. WESSEL: Right.

MR. NOTHAFT: As I was mentioning is that over time you can have changes in the level of interest rates. So as we think about what effects value of a property, it's not just the net revenue, net rental stream or the net value of the services that's provided but it's also affected by the capitalization rate. And that can affect the property value as well. And over the last decade we've seen, until recently, a decline in interest rates have declined and capitalization rates of about 20 percent on rental homes over the last decade. So that in and of itself, even if there wasn't any change in net rental stream, that would still increase property values.

MR. WESSEL: And of course if property values go up a lot, presumably that's some effect what owners can get from rent. So it's not completely independent.

Someone offers a question that I'm going to offer the answer to, if you don't mind my arrogance.

John Hatley points out that there's been a big surge in corporate America's involved in single family home purchases over the last couple of years. And then these houses are rented out. And he asks what sort of challenges does this pose for a CPI calculation. I think Frank spoke to this directly, that to the extent that many more single family houses are owned by investors and rented, it's really important for the government to reflect those rents.

And I think Raven or Frank suggests, I can't remember which one, is actually it might be easier for the government to collect these rents because you can go to a big real estate investor and say what are you charging for rent and you can get thousands of prices at the same time.

Bob Cortel of BA has a question that I'm going to -- Frank, I'm not quite sure I understand it, but he says should BLEA, BLS, start using the measures that Frank Nothaft showed instead of the prices we currently use? Are there pitfalls to this?

Raven or Frank, is that a question you feel comfortable responding to?

MS. MOLLOY: I don't mind taking a stab at it. I mean I think, so one of the difference between -- so Frank was showing data, if I

understand it right, you know, kind of the rent on new leases. And that's great for measuring kind of the market price of rent so to speak, you know, at a given time, what is the intersection between supply and demand, you know, in terms of supply and demand for rent.

But for the purposes of calculating the prices that people are actually paying, what you want is, you know, the rents that people are paying in their rent contracts, you know. Because of rent contracts, leases, lots of people their rent only changes once a year for example.

So I think it makes more sense for the BLS to try to be capturing the prices, the rents that people are actually paying rather than only the rents in new leases.

MR. WESSEL: Right. Right. And someone else asked and -- yeah, Frank.

MR. NOTHAFT: Yeah, Raven described what I was showing that final chart very well. We were mentioning the rent growth on new leases, so that's like if you think in terms of average versus margin, we were measuring what's happening at the margin compared to what the CPI rental measures are doing, which is measuring the average.

Now one implication of the margin growing a lot more quickly than the average is that the average will be rising. And that's what I just think we're going to see over the course of the next several months in the

CPI's measurement of rent. Likewise in the Bureau of Economic Analysis measurement of housing costs, rent, in the PCE.

MR. WESSEL: And final there's a question, how does the CPI handle non-payment or expected non-payment of rent. Does that show up as zero in what people are paying if they're not paying it, or are we only looking at the rent that people are actually paying? I don't know the answer.

Raven or Frank, do you know the answer?

MS. MOLLOY: You know we discussed this as a panel. I don't know if anyone remembers what we discussed.

MS. ROSNER-WARBURTON: Raven, I can answer this.

MR. WESSEL: Thank you, Laura.

MS. ROSNER-WARBURTON: So actually the threshold for a zero to enter the BLS rent measurement is very high. So BLS speaks to a combination of tenants and landlords and they have to not only report no non-payment today, but they have to expect no future non-payment as well. And so it's very rare, you know, even if someone doesn't pay their rent in any given month, that the landlord just says, you know what, forget it, I'm going to forget that rent. Most landlords therefore expect, you know, repayment at some future date and therefore the contract rent is recorded not to zero, only, you know, true rent forgiveness is actually, you know, entered as a zero. And generally it's very rare and would be less than a handful.

Although one thing we did discuss as a panel was, you know, we think it would be helpful for the BLS to, you know, provide more detail on non-payments and, you know, more granular detail underlying the rent data just because of its importance in the CPI basket and, you know, the focus on it really among stakeholders.

MR. WESSEL: Thanks, Laura. And somebody has put in the Chat a link to a BLS page that talks about the COVID pandemic. I don't see the zero rent thing here, but it talks about what happens if the BLS cannot get it.

Anyway, Laura, since you have the floor, why you don't take the floor and talk about how to measure inflation for different population groups.

MS. ROSNER-WARBURTON: Okay. So let me share my screen. Okay. Can everyone see my slides?

MR. WESSEL: Yes, yes we can.

MS. ROSNER-WARBURTON: All right. So good morning. I just really want to first say thanks to the CN's staff and the panel members, also Brookings for organizing this event. It's really been a pleasure to work on these issues over the last two years. I have personally learned a lot, and I think we came up with some good ideas for improving the CPIs.

So today I'm going to discuss briefly the panel's thinking on

separate price indices and our main recommendations to the BLS.

So the flagship CPI view captures the inflation experience of one major population group, urban consumers, which represents about 93 percent of the total U.S. population. There is no reason to think that it matches any one person's inflation experience or that of any particular subgroup of the population.

Inflation differentials might emerge for two reasons. First of all different groups of people purchase different baskets of goods and services. Low income households tend to spend a higher fraction of their income on food than high income households. You can see that in the bottom left chart which shows consumption shares for food at home and entertainment by income quintiles for the year 2019.

Consumption patterns also different by age. The bottom right chart shows that older people spend a lot more of their income on medical care than younger people. To the extent that there are significant ongoing changes in relative prices that on average raise or lower the prices of goods and services typically bought by some groups of consumers relative to the prices of those bought by others, we could see inflation rates for particular subgroups diverge in a meaningful way.

But this isn't the only source of heterogeneity. Within a given category of goods or service, people by different qualities and brands. They

shop at different stores, they even pay different prices for the same product. So an example is there are 17,108 patio dining sets for sale on Wayfair, many of which are also sold on Amazon and Home Depot for different prices. Some households shop on line to take advantage of sales, some don't.

A high income household might purchase an aluminum set from Frontgate, a low income household might purchase a plastic one from Walmart. In general we know a lot less about this second source of heterogeneity really because of data limitations. Although recent research has made important strides which I'll come back to.

So when might be sources of heterogeneity be correlated with household characteristics. We currently don't really know but there are a few hypothesis out there. One is that liquidly constraints prevents low income households from taking advantage of sales and bulk discounts which would on average leave them to face higher rates of inflation. Another is that stores in low income neighborhoods may have fewer direct competitors and consumers in the area have lower mobility. The lack of competition gives those stores pricing power, again leading to higher inflation rates for low income households.

It might also be that high income households can more flexibly substitute towards alternative goods or outlets or that there are just more rapid innovation in goods that high income households tend to purchase, like

cell phones, which lower prices and inflation after quality adjustment.

So even though there's a lot we don't know about inflation differentials, the rationale for further research is very strong for a number of reasons. As we all know, the CPI is used to adjust Social Security benefits, index marginal tax rates, and adjust income eligibility levels for various forms of government assistance. If the recipients of these transverse experience significantly different inflation rates then the broader population there is hope for improvement in the public policy decision.

Also a consensus has emerged in the last decade or so that household inferred heterogeneity have important implications for aggregate economic outcome. We really need to better understand the forces and magnitude of this dispersion to improve our understanding of the broader macro economy.

And finally, I'll also note that the BEA has embarked on a project to produce personal income statistics by income debt files, and it would be very useful to be able to deflate these estimates with price indices by income debt files which currently do not exist. Unfortunately, the current BLS data collection system cannot produce a full set of subgroup price indices. And the reason is the BLS produces the CPI in two stages.

In the first stage they collect data on monthly price changes for individual items from a sample of retail stores throughout the nation. Those

items are grouped into 241 categories. Because they're collecting prices directly from retail stores, there's no way to currently link the particular price, quality, and brand of item purchased with the demographic characteristics of those who purchase them. The item level indices really is just reflecting average of prices by all households.

Then in the second stage they take a weighted average of these item level indices for the weight for the proportion of total consumer expenditures devoted to those items estimated from the Consumer Expenditure Survey. Because the Consumer Expenditure Survey is a household survey they can easily predict weights for different subgroups of the population.

But the key problem here is that BLS is collecting average prices directly from retailers and has no current way to link those prices to household characteristics.

So until recently most empirical research on inflation differentials has focused on the first source of heterogeneity and has involved reweighing the item indices with expenditure weights specific to a particular subgroup. Implicitly these studies and these approaches assume all households pay the same price for specific goods purchased and also buy the same mix of goods within each item strata. The studies that have produced these related indices generally have found minimal differences in

inflation rates relative to the flagship CPI.

The BLS also produces some subgroup price indices. For example there's the CPI for urban wage earners and clerical workers which covers about 29 percent of the CPIU population. Also they produce an experimental CPIE which covers urban consumers age 62 and older. These subgroup measures only differ from the CPIU in terms of expenditure weights used to aggregate the item indices.

The bottom part plots five-year moving averages, moving average spread between annual CPIE and CPIU inflation as well as a similar spread between CPIW and CPIU inflation. You can see differences between these measures in the CPIU have been fairly small historically, although I will note we have seen some larger divergences emerge since the pandemic, which you don't see directly in the five-year moving averages because of very extreme swings in relative prices during and following the pandemic.

More recent research has probed the second source of inflation differentials. The fact that different groups of households buy different qualities and brands within a given category of goods and even pay different prices for the same products. These studies exploit Nielsen's scanner data that links prices for individual items to household characteristics. The 50,000 or so households in the Nielsen panel actually scan the barcodes of the items they purchase on a particular date and in a particular store using a

barcode scanner.

Using this data, Kaplan and Schulhofer will all find enormous dispersions in inflation at the household level with an inner core tile range of 6 to 9 percentage points. Importantly, they find that the majority of this dispersion is coming from variation in prices paid for identical goods followed by differences in the mix of goods within broad categories. Only a very small amount, I think 7 percent, of the dispersion is coming from differences in consumption baskets.

They find that low income households experience higher inflation on average, with households earning below $20,000 a year experiencing cumulative inflation of 33 percent between 2004 and 2013 compared to just 25 percent for households with incomes above $100,000 per year. This 8 percentage point difference implies an average wedge of roughly 90 basis points per year.

For comparison between the same time period, inflation was roughly 23 percent according to the CPIU, 24 percent according to the CPIW, and 23 percent according the CPIE.

Another recent study exploiting the Nielsen data set found similarly large differentials across income groups. Jara Bell (phonetic) finds that over the period 2004 to 2015 annual inflation was about 65 basis points lower for households earning above $100,000 per year compared to

households making $30,000 or less per year. Based on this differential he estimates that U.S. poverty rates may have been significantly underestimated over the same period.

It's worth noting that although the Nielsen data cover a very wide range of goods, about 61 percent of the spending covered by the Nielsen Survey is on food and beverages, which make up only about 15 percent of the CPI. It's possible that more significant heterogeneity exists in a third of these categories outside the scope of Nielsen, such as medical care and housing. Although one recent study by a Larson and Levin, co-panelist, looked at housing and actually found little variation in rent inflation across income groups over the period 1985 to 2019.

So what were our key recommendations, you know, based on the recent research and what we know. So the panel thinks developing price indices for population subgroups along the income distribution should be a high priority for the BLS. But we think precious resources should be focused on creating a comprehensive set of price indices that capture both forces of heterogeneity rather than one set only relating to upper level expenditure categories.

In our view, subgroup indices that only relate the upper level expenditure categories are incomplete and could even be misleading given how much dispersion has been found within either categories at the

household level.

So how can the BLS link prices paid to household characteristics. One approach would be to ask consumers directly what they pay for specific items. However this would involve expanding the Consumer Expenditure Survey which is not the recommendation of the panel given the problem of steadily falling responses and increased costs. Instead we think the BLS should investigate and exploit commercial data sets like the Nielsen scanner data and perhaps even set up an internal phone scan project.

No one size will fit every category of goods and service, and we think that the BLS needs to be creative and flexible in finding and blending different data sources. We do think that exploiting commercial data sets will be essential.

So I will end there. Thank you very much.

MR. WESSEL: Thank you very much, that was very clear. I have three people who raised their hands. I want to start with Pat Lawler.

MS. SHEINER: David's discussion.

MR. WESSEL: Oh, I'm sorry, I apologize. So first David Johnson is going to discuss and then we'll turn to it.

MR. JOHNSON: Thanks, David, and thanks, Laura, for that summary. And thank you for inviting me to discuss this important report from the National Academies and to provide my view on taking what I call the

plutocracy out of the CPI and introducing more heterogeneity.

Let me first preface my remarks with the assurance that these are mine alone and do not reflect the views of the Academies or other staff members.

So this chapter on subgroup indices I think is one of the most important ones in the report. In fact when I was the Assistant Commissioner of Consumer Prices at BLS 15 years ago I wish I would have pushed this more. And I think you could use this heterogeneity to provide the basis for all the other improvements suggested in the report. Updating spending shares, looking at housing costs, looking at health costs, looking at alternative data. So let me try to examine what I think are the important aspects.

So first I want to thank the panel for referring to one of my papers with a number of co-authors, Erlick, et al., that looked at the scanner data and basically what they thought gives a criteria of how to evaluation the new contributions. And building on that I think the recommendation, 3.5, really captures what we were saying in our project, a resetting project, that we need to capture prices, quantities, and characteristics all from the same households, if not from the same source. So that BLS, BEA and census can produce these integrated accounts to measure prices and quantities.

Now BLS often suggests that the CPI reflects the experience of the relevant average household, which is correct. But as we all know, with

inequality. So much stemming from the high income people means that inflation for the average may be very different than inflation for the median or especially for low income. So they offer three recommendations, which I agree with. I'd like to put a little qualifier on Recommendation 6.2. But, yes, they should produce sub-indices by income, and they should always be creative and use commercial data.

However, in Recommendation 6.2 I like Laura's view of how the BLS should do both, looking at higher aggregate shares and the price changes. But I think, like Adam, I'm a fan of going for low hanging fruit. So BLS has always looked at the subgroup indices, they have a history of doing research on subgroup indices. But we have the CPIU, which is only for urban consumers, CPIW, the CPIE, and they have a lot of papers that have evaluated these different methods, and in particular there are two papers in the last couple of years by Martin and Klick and Stockberger that actually look at, create what would need to be the database of hooking all the expenditures with all the price indices so no matter what you substitute in there you could look at both the impact of the shares and the price indices.

So let's look at the distributions. Laura mentioned large distribution in prices. And so this paper by Kay Jeddoloh shows a very similar normal distribution with similar inter core file ranges as Kaplan and Schulhofer off the wall in terms of the aggregate indices. However, the

report focused on that light blue line which is looking at the household spending.

So unfortunately in the Nielsen data, over half the prices are from grocery stores, and in their paper three-quarters of the prices came off food and beverages. So there can be much difference in the spending, and especially on the difference on the expenditure shares just within food, to derive their result that only 8 or 9 percent came from the expenditure shares. So I think it's important to expand what they did across all the different categories.

So let's look and expand on what Laura talked about of what the CPI does. So she said there's two stages. So in the first stage they look at the expenditure probabilities and select 30,000 outlets and 80,000 prices. So again, since these are expenditure related they could be much more likely to be ones that higher income people buy than lower income people buy. But they have to average. Mind you you're going to have to average somewhere.

So they average all these in about 8,000 elementary indexes. So they're already assuming that there's some subgroup by 32 areas. There's a bunch of different areas that are subgroup categories. But they could change this and they could look at maybe high poverty zip codes, low poverty zip codes, high income zip codes, some other classification of the

areas to look at how these outlets.

So then they take the prices and they use the consumer expenditure weights, they even use the biannual weights they talk a lot about and produce the CPIU or they use the monthly expenditure weights which is more recent, more updated, with a core test formula and do the CCPIU. And those are the two indices they produce.

However they could put these all and just use the household spending to come up with household based or maybe what we call a democratic index as Martin shows, or they could put everybody into quintile one, everybody into quintile five, look at their spending shares and produce these household basis. Or they could use a number of different estimates to look at incomes for the poor.

The other thing they could do on the first stage is they could consider the CE that actually collects the outlets where people are buying all their goods, right? And then somehow reweight the outlets and the prices by the places that low income people buy or in the CE or that the high income people buy, without actually collecting anymore data. But again, I agree, using both, examine both in terms of what the prices are I think are important.

So like I said, they could look at prices for the poor, and this also matches another recommendation from an interagency technical

working group on consumer inflation members where they suggested you should look at the CPIU for the poor. Okay? So in this report they actually create one and they show that the changed CPIP, right, is higher than the overall changed CPIP. And a lot of this is because almost all the research that's looked at prices for different incomes shows that the substitution bias is much lower for the lower income households, right? So they can't substitute as much. So here many people out there suggested, oh, you should use the changed CPIP to update the poverty thresholds. Or the PCE deflator which is close to the changed CPI.

But that would be wrong because the prices faced by the poor, the changed CPIP is almost identical for the regular CPI. And hence if you update it with a higher inflation you're updating the thresholds with a higher inflation rate, that's going to yield a larger increase in poverty over time. So I think it's really important to get these right.

So then let's look at these expenditure shares since I'm making a big deal of it. So Klick and Stockberger looked at the expenditure shares from 2014 to '15 and created a bottom quartile and a top quartile CPI. And you can see for the bottom quartile, rent is way high than the top quartile. And food at home is much higher, as Laura showed, for the bottom, I'm sorry, than the top.

But other things like transportation, bottom spends less of their

share than the top. And again, these are the expenditure shares, not the total expenditures, the expenditure shares, because that's what's important that goes into this.

And so if you compared these to the actuals that are used in the CPI you can see that the actuals are much closer to the spending spares of the top quartile than the bottom quartile, giving a misrepresentation of the price indices, and hence this is where the plutocracy comes in.

But I think you could take the report further, and like Frank talked about on rent, there are different rents for different places. And multi person households and single person households, I'm sure are different for low income, high income people. So those price changes for rent could be important.

For medical care as well, the report suggests that medical care by type could be different. And we know that the poor get much different medical care and health insurance than the rich. And so I think every single category, whether it's scanner data or not, should be looked at for the different prices.

So all the research, I think all the recent research, even the stuff done by BLS, by Martin, shows that the price inflation falls within doubt, anywhere from .3 to .7 or I mean if you look at one of the Schulhofer roles they could be as high as .9 percentage points for the top. And so this is

critically important because let's look at what happens.

So CDO produces these income levels by the top quartile, down to the bottom quartile every year. And people make a big difference at the gap increasing, and inflation goes up. But if the top quintile experiences lower inflation, their real income will go up more. The bottom quintile experiences higher inflation, their real income goes up less. And here, I just assumed like a quarter of a percentage point per year difference between the bottom quintile and the overall PC.

And Laura mentioned the great work done by BEA on the distribution of personal income, and Dan did as well. And so they show, and you look at the distribution the first bottom quintile share personal income has fallen over the past 20 years and the top quintile share of personal income has increased. But again, if the bottom quintile is experiencing higher inflation, their share is going to fall more, and if the top quintile experiences lower inflation their share will go up more. Hence inequality is getting worse. So I think these are critical to work across the agencies.

So I sort of want to conclude with what I think is almost one of the most important recommendations of the report. There is no way BLS can do this alone. Okay? This is extremely complicated data, our reset project has been using the scanner data from Nielsen and NPD, we've tried to create a number of different price indexes that match and use DoneEx to

look at differences. But we think that this research would be helpful for BLS in terms of the prices, for census in terms of the regional trade, and for BEA in terms of the PCE. So I think they need to collaborate across all the agencies to work on this and I think there'll be better estimates of all economic statistics. And I think that the goal of this in the future is creating some data infrastructure where we can get the data from the government, households, and businesses to produce these integrated statistics where you can use different CPIs to adjust inequality and poverty, even to address GDP and personal income.

So with that I'd like to thank the panel and thank the CM stat report to pushing this forward to improve our estimates of economic wellbeing across American families.

Thank you.

MR. WESSEL: Great. Well I'm glad that Louise prevented me from stopping you from making that really interesting presentation, David.

So now questions. I'm going to unmute if you want, Patrick Lawler.

MR. LAWLER: Yes, thank you very much. All the speakers have been very stimulating. But one of the things I thought about on housing, during the last week someone released data that the average age of cars is something like 12.2 years, which is starting to look more and more

like houses, at least some categories of houses. Should we be more consistent in the way we treat houses and consumer durables in this CPI?

MR. WESSEL: Okay. Does anyone want to take that, should we think about cars and washing machines as investments the way we do houses? I think now we do, we put the purchase price in. Does anybody have a view on that?

MR. JOHNSON: I'm happy to say a word about that.

MR. WESSEL: Sure, please

MR. NOTHAFT: So thanks for the question. It's a great question because just as you point out, from a theoretical perspective one would think that these are long-lived consumer assets, houses, cars, washing machines, and that one wouldn't want to have comparable methodologies for each.

So on the theoretical point, agree. The panel discussed this at some length and decided for a hoist of reasons not to make a recommendation, and chose to focus attention elsewhere. So that was really a matter of kind of a tactical decision of the panel of where to focus, where to focus attention. And let me stop there.

MR. WESSEL: Thanks. Ben Haulk (phonetic).

MR. HAULK: My apologies, I don't have a question.

MR. WESSEL: Oh, come on. All right. Ursula Oliver. Ursula

Oliver? Okay.

David, you used the phrase democratic indices. And I wonder if you could explain what that means and respond to a comment which is that these indices are very sensitive to the weights assumed for each individual household. I don't quite understand the question but I hope you do.

MR. JOHNSON: Yeah. So the CPI takes those 8,000 indices and then uses the average expenditure share. So that would be like just using everybody's household expenditure, weighing by the total spending. So that's why it's called plutocratic because it's weighing everybody's houses by their total spending.

Democratic would do the same thing but then weight each individual, right? So each person would have similar weight in the construction of the aggregate index. So, hence, right, the shares, because the aggregate shares are basically the sum total spending for everybody, that's probably less sensitive than the individual shares of each household would be. And so I think that's what Rachel was getting at.

MR. WESSEL: I see. Great. Thanks. Well I don't see any other questions. Did any of the other panelists have a comment they want to make before I turn it over to Louise for the benediction?

Well I just want to thank everybody and, Louise, you want to bring us home?

MS. SHEINER: Yes, I do. Thank you. So I just have a few thoughts following this discussion and then I will close it up.

So I hope from the discussion people see how, you know, although it sounds easy to modernize the CPI and just use Big Data and like it's just a no brainer, it is obviously something we should be doing that is a challenging task. And so you shouldn't just criticize, oh, well, there's so much data out there.

And the other thing that Raven mentioned but it came up over and over again in our panel deliberations is this idea that Big Data can replaced official statistics is misguided. If you talk to the users of Big Data they all rely on the official representative surveys to basically calibrate what they have to reweight. So we need to figure out how to combine Big Data and new surveys that might be changing our official surveys to better match, you know, what the requirements of Big Data, but it's going to be some combination that's going to be the way forward and not junking the government surveys institutes.

So with that I want to thank Dan, Raven, Frank, Laura, David, for a really interesting discussion. Thank you, all of you for being here and watching, and I hope you enjoyed it. I hope you go and read the report.

So thanks very much. Have a great day everybody.

* * * * *

CERTIFICATE OF NOTARY PUBLIC

I, Carleton J. Anderson, III do hereby certify that the forgoing electronic file when originally transmitted was reduced to text at my direction; that said transcript is a true record of the proceedings therein referenced; that I am neither counsel for, related to, nor employed by any of the parties to the action in which these proceedings were taken; and, furthermore, that I am neither a relative or employee of any attorney or counsel employed by the parties hereto, nor financially or otherwise interested in the outcome of this action.

Carleton J. Anderson, III

(Signature and Seal on File)

Notary Public in and for the Commonwealth of Virginia

Commission No. 351998

Expires: November 30, 2024