



香港城市大學  
City University of Hong Kong

# Developing and Testing a Behavioral Theory of Performance Information Use for Hong Kong: Experimental Evidence on Cognitive Biases

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## Policy Workshop

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## The Current PPR Project—Citizens' Cognitive Biases

- Social Reference

RANK	CHANGE	ECONOMY	BLOOMBERG RESILIENCE SCORE
1	▲1	New Zealand	80.8
2	▼1	Singapore	79.4
10	–	Hong Kong	71.3

- Historical Reference

Pledged target	Percentage of achieving the target in 2018^ (%)	Percentage of achieving the target in 2019^ (%)
Within 2 minutes*	99	100
Within 12 minutes#	92	95

- Negativity Bias

10 % dissatisfaction vs 90% satisfaction

700 abnormal vaccine cases vs 1,300,000 normal cases

# The Current PPR Project—Citizens' Cognitive Biases

- Statistical Information

number

- Episodic Information

本人於2015年8月14日不幸遇上意外，承蒙 貴署的協助，現在案件已完滿解決，本人特此去信衷心感謝 貴署的幫忙。

在本人身心都因為意外而受創的同時，生活及經濟上曾陷入極度無助的困境，幸好後來獲 貴署的協助，專業並有效率地幫助本人了解法律程序。在本人整個法律援助的申請過程中，貴署各部門的職員一直以友善的態度提供專業的服務及法律意見，令本人深感滿意，希望 貴署能代表本人向 貴署職員表達本人對他們的讚揚及萬分感激。

另外，本人亦衷心感謝 貴署指派外委律師處理本人的案件，外委律師在處理本人的案件的過程中不但非常專業，更顧及本人作為一個傷者的脆弱心靈，無時無刻給予本人從心出發的關心，使我在面對訴訟壓力及身心創傷的情況下，仍能正面地面對所有困難，對此本人再一次向 貴署致謝。

## Olsen's Original Studies

--Olsen (2017) JPART

- Citizens' performance evaluation is fundamentally a relative process.
- Social reference points are almost twice as important in citizens' evaluations as historical reference points.
- Negativity bias in citizens' relative evaluations.

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Article

### **Compared to What? How Social and Historical Reference Points Affect Citizens' Performance Evaluations**

**Asmus Leth Olsen**

University of Copenhagen

#### **Abstract**

The question of what is "good" or "poor" performance is difficult to answer without applying a reference point—a standard for comparison. Citizens' evaluation of performance information will, therefore, tend to be guided by reference points. We test how reference points alter citizens' evaluation of organizational performance. In this article, drawing on Herbert Simon, we test how citizens use historical (internal) and social (external) reference points when making relative comparisons: how important is current performance relative to past performance? And how important is current performance relative to the performance of other organizations? Two experiments are embedded within a large nationally representative sample of citizens ( $n = 3,443$ ). The experiments assign historical and social reference points for performance data on education and unemployment to citizens. We find that citizens' performance evaluation is fundamentally a relative process. Interestingly, we show that social reference points are almost twice as important in citizens' evaluations as historical reference points. We find some evidence of a negativity bias in citizens' relative evaluations. The strong social reference point effects have implications for studying citizens' response to performance and how managers can frame and manipulate external performance data.

# Olsen's Original Studies

--Olsen (2017) PAR

- Citizens have strong preferences for statistical data when asked to evaluate an organization.
- Episodic information has in some instances a stronger impact on citizens' evaluations of an organization
- Citizens recall more on episodic information than statistics.

**Asmus Leth Olsen**

University of Copenhagen, Denmark

Human Interest or Hard Numbers?  
Experiments on Citizens' Selection, Exposure,  
and Recall of Performance Information

Asmus Leth Olsen is associate professor in the Department of Political Science at the University of Copenhagen, Denmark. His research lies in the areas of behavioral public administration, political-administrative psychology, performance management, and experimental public administration. His current research focuses on the effects of performance information on citizens and the role of dishonesty for selection into public sector employment. His work has appeared in *Political Behavior*, *Public Administration Review*, and *Judgment and Decision Making*.

**Abstract:** *The abundance of quantitative performance information has motivated multiple studies about how citizens make sense of "hard" performance data. However, research in psychology emphasizes that episodic information (e.g., case stories) often leaves a greater mark on citizens. This contradiction is tested using multiple experiments embedded in a large, nationally representative sample of Danish citizens. The results stress three differences between statistical and episodic data. Citizens have strong preferences for statistical data when asked to evaluate an organization. However, episodic information has in some instances a stronger impact on citizens' evaluations of an organization and often is more emotionally engaging than statistics. Finally, when asked to immediately recall recent performance information about public services, citizens report more elaborate information about personalized stories and experiences than about statistics. Overall, the results raise questions about the ability of hard performance data to dominate and crowd out episodic performance information.*

## The Current PPR Project—Research Questions

- Study 1: How do reference points affect citizens' performance evaluation?
- Study 2: How do multiple reference points affect citizens' performance evaluation?
- Study 3: How do information type (statistical vs. episodic) interact with negativity bias to affect citizens' performance evaluation?
- Study 4: How do information type (statistical vs. episodic) interact with reference points to affect citizens' performance evaluation?

## Performance Information Cues

- Education Policy (Secondary school's admission rate to local undergraduate programmes in Hong Kong)
  - Hong Kong Examinations and Assessment Authority HKDSE (2019) report/ BigExam (<https://dse.bigexam.hk/en>)
  - Draw values from the normal distribution (Mean=42.4%, SD=20%)
- Environmental Protection policy (Days in one year a hypothetical district in Hong Kong experienced PM2.5 pollution was over the recommended limit)
  - Environmental Protection Department Air Quality Report (2019)
  - Draw values from the normal distribution (Mean=3.19 months, SD=1 month)

## Performance Information Cues—Education Vignette Example

- Education Policy (Secondary school's admission rate to local undergraduate programmes in Hong Kong)

*“This year, local secondary school A’s local undergraduate programmes admission rate is X1%. The admission rate in another similar local secondary school B with the same school banding is X2%. (e.g., admission to the Chinese University of Hong Kong, City University of Hong Kong, Lingnan University, the University of Hong Kong, etc.)”*  
*(randomly assign X1, X2 in the following distribution  $N(\mu= 42.4, \sigma= 20)$ )*



## Performance Information Cues—Environmental Protection Vignette Example

- Environmental Protection policy (Days in one year a hypothetical district in Hong Kong experienced PM2.5 pollution was over the recommended limit)

*“There are about  $Y_1$  months when the concentrations of PM2.5 in the air are above the WHO (World Health Organization) Standard in District A. In another similar district B, there are  $Y_2$  months above the standard. (High concentrations of PM2.5 in the air can cause respiratory disease and lung cancer.)”*

*(randomly assign  $Y_1, Y_2$  in the following distribution  $N(\mu= 3.1875, \sigma= 1)$ )*

## Variables and Analysis

- Dependent Variable
  - Citizen's satisfaction ratings of organizational performance in the two policy areas (0-100)
- Covariates
  - Gender, Age, Education, Political orientation
- Analysis
  - Regression and difference-in-means
- Pre-registration and Pilot testing

## Study 1—Empirical replication of Olsen’s JPART article

- Overall, the Hong Kong findings in Study 1 confirm the importance of reference points in citizens’ evaluation of performance.
- However, we find limited support for the relative importance of social reference points compared to historical reference points, and the effect of negativity bias.

## Study 1—Social Reference

- **Social reference** point matters for citizens' evaluation of performance
  - In education policy, when citizens know **one school** is doing worse in admission rate than **another similar school**, their evaluation of **the school's** performance decreases. (consistent with Olsen's finding)
  - In environmental policy, when citizens know **another similar district** has more days of air pollution, their evaluation of **the district's** performance increases. (consistent with Olsen's finding)

## Study 1—Historical Reference

- **Historical reference** point matters for citizens' evaluation of performance
  - In education policy, when citizens know one school is doing worse in admission rate than **last year**, their satisfaction of the school's performance **this year** decreases. (consistent with Olsen's finding)
  - In environmental policy, when citizens know the district **last year** had more days of air pollution, their satisfaction of the district's performance **this year** increases. (consistent with Olsen's finding)

## Study 1—Relative importance of social reference and negativity bias

- We did not find a statistically significant interaction effect between reference type (social or historical) and reference point, which means the relative importance of social reference point than historical reference point is not found. (different from Olsen's finding)
- We did not find a statistically significant difference between negativity and positivity, which means the effect of negativity bias is not found. (different from Olsen's finding)

## Study 2—How do Multiple Reference Points Affect Citizens' Evaluation?

- Overall, the findings in Study 2 suggest that when multiple reference points are provided, citizens' evaluation of organizational performance can change, especially when poor historical information is added to the social comparison scenario.

## Study 2—How do Multiple Reference Points Affect Citizens' Evaluation?

- **In education policy**, when a poor historical cue is provided together with the a social comparison cue, citizens' evaluations of the school's performance is even lower.
- However, good historical cue does not mitigate the negative effects of social comparison.
- Neither good nor poor social comparison cue makes a difference in affecting the effects of historical reference admission rate.



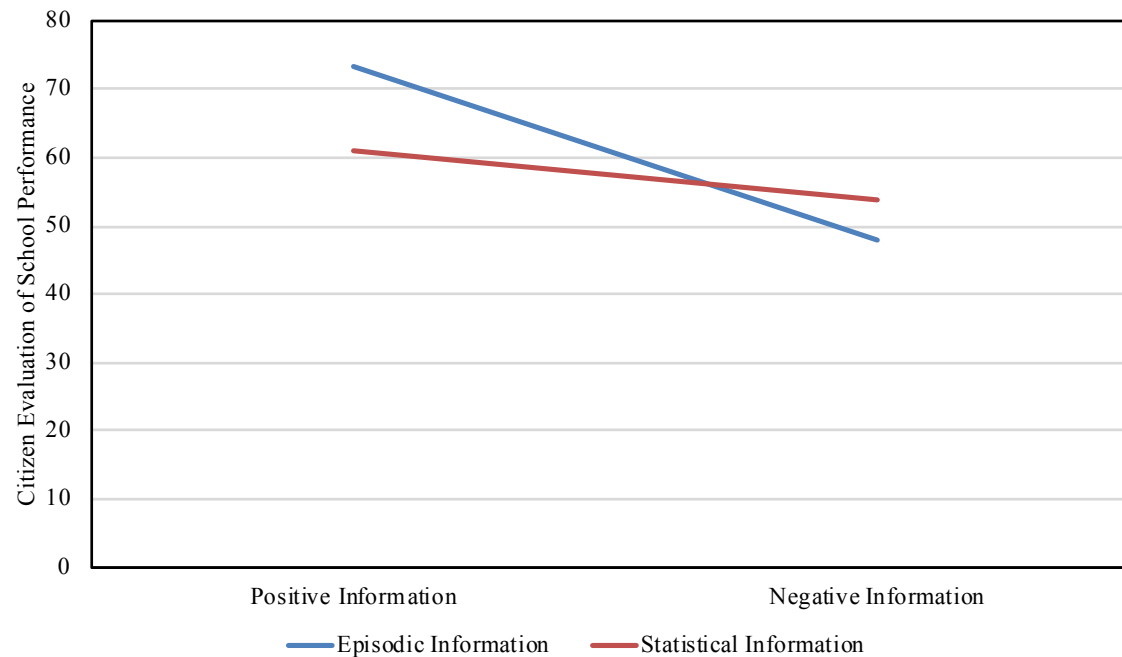
## Study 2—How do Multiple Reference Points Affect Citizens' Evaluation?

- **In environmental protection policy**, there is a much more noisy effect on the subsequent evaluation of the unnamed district's air quality performance. When exposing the performance information that may be affected by exogenous factors and multiple reference points, citizens might be confused with the complexity of the performance information.

## Study 3—Interaction Effects of Statistical/Episodic Information and Negativity Bias

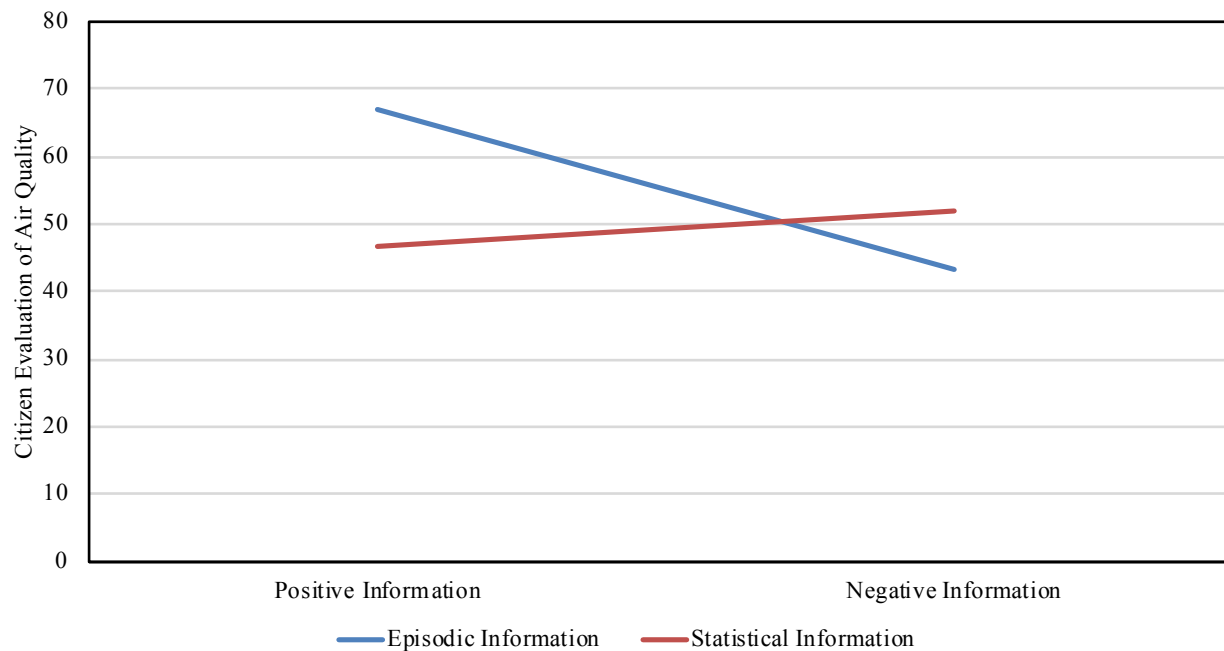
- Overall, in Study 3, we find that by providing episodic information (more detailed, subjective, emotional), the effect of negative information has been increased, but that this increase only happens in combination with social comparison cues.

## Study 3—Interaction Effects of Statistical/Episodic Information and Negativity Bias in Social Comparison



- **In education policy**, when citizens are provided with episodic information, they tend to rate the school's performance even lower when the school performs worse than others than when it performs better than others.

## Study 3—Interaction Effects of Statistical/Episodic Information and Negativity Bias in Social Comparison

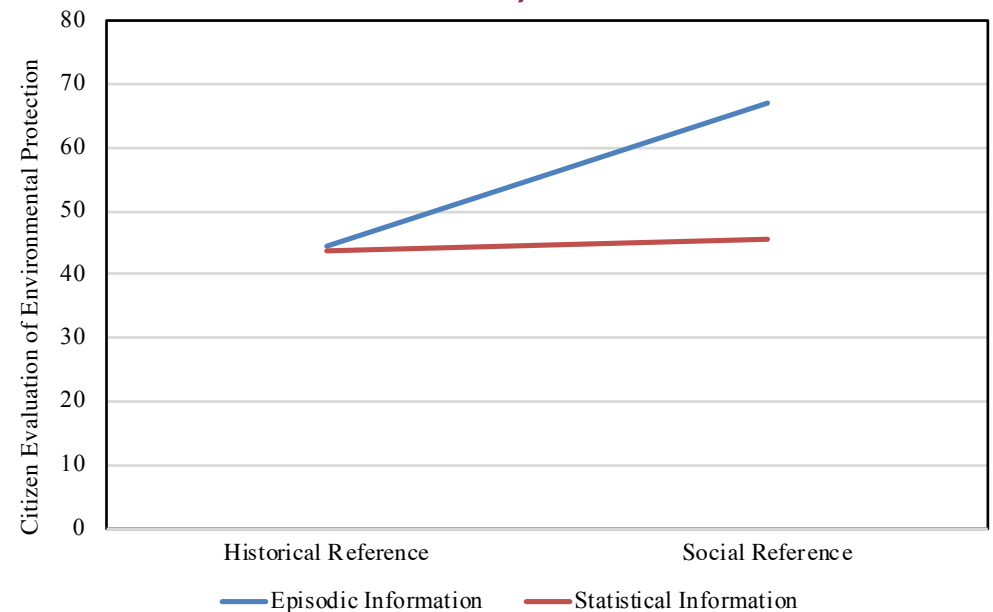
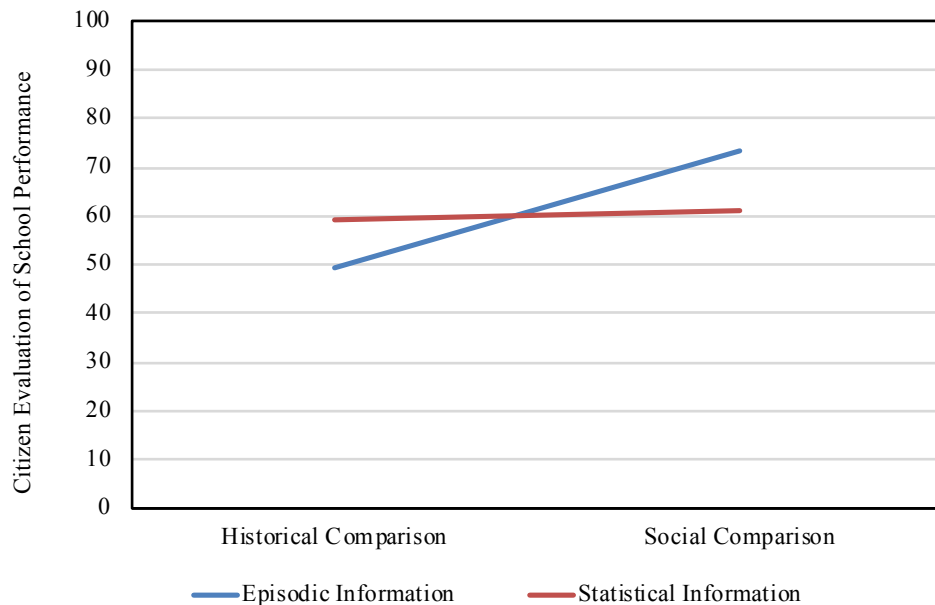


- **In environmental protection policy**, when citizens are provided with episodic information, they tend to rate the district's performance even lower when the district performs worse than others than when it performs better than others.

## Study 4—Interaction Effects of Statistical/Episodic Performance Information and Reference Point

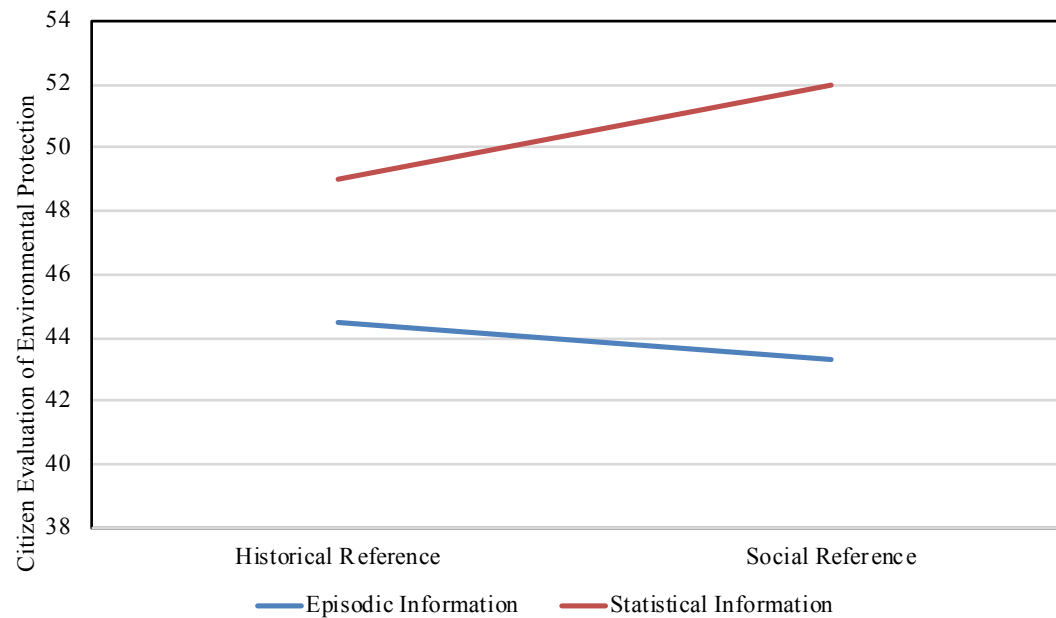
- Overall, the findings in Study 4 suggest that when given episodic information, citizens tend to evaluate the government performance higher when they feel that it performs better compared to its social reference group than when it performs better than its past.
- Across policy areas, citizens' reactions to information types and reference types vary under negative versus positive treatments.

## Study 4—Interaction Effects of Statistical/Episodic Performance Information and Reference Point (positive information)



- In **education policy**, when given episodic information, citizens tend to evaluate the school's performance higher when they feel that it performs better compared to its similar peers than when it performs better than its past.
- Similar pattern in **environmental protection policy** (right figure)

## Findings from Study 4—Interaction Effects of Statistical/Episodic Performance Information and Reference Point (negative information)



- In **environmental protection policy**, when given episodic information, citizens do not feel much of a difference between negative social and negative historical. However, when exposed to statistical information about the district's air quality, citizens give higher performance ratings when it performs worse compared to the similar districts than when it performs worse than its past

## Policy Implications and Recommendations

- 1<sup>st</sup> recommendation: Government needs to develop strategies to explore how to use reference points when communicating performance information with citizens.
- When provided with one type of reference point, Hong Kong citizens do not differentiate much between social and historical references points and also reference points in conjunction with negativity bias. Therefore, only providing such PI is insufficient to inform citizens about government performance.



## Policy Implications and Recommendations

- 2<sup>nd</sup> recommendation: When multiple reference points are provided simultaneously, citizens' evaluation of organizational performance changes, especially when poor historical/social information is added to the social/historical comparison scenario.
- The government needs to strategize using multiple reference points simultaneously when communicating PI to citizens, especially when poor historical/social information needs to be provided.

## Policy Implications and Recommendations

- 3<sup>rd</sup> recommendation: By providing episodic information, the effect of negative information has been increased, but this increase only happens in social comparison situation.
- The government needs to consider the ways in which valuable social comparison PI is communicated with citizens because of the joint effects of negativity bias.

## Policy Implications and Recommendations

- 4<sup>th</sup> recommendation: Episodic information works better when communicating to citizens positive performance information in comparison to their social peers.
- When communicating poor performance information of complex policy areas, it is better to use statistical information.

Thank you!!